Николай СЛОНИМСКИЙ

ТЕЗАУРУС ГАММ И МЕЛОДИЧЕСКИХ ОБОРОТОВ

Справочник для музыкантов — композиторов и исполнителей

В двух томах

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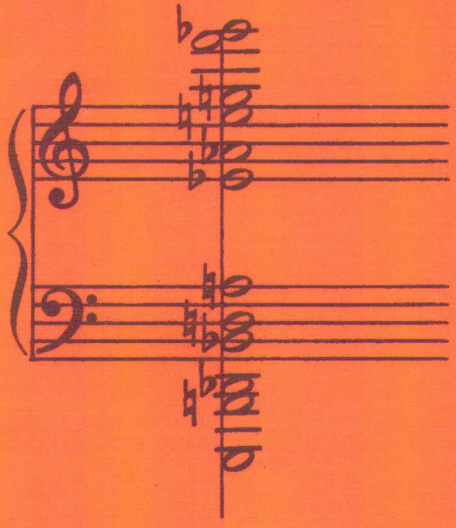
Том 1

СВОД ПРАВИЛ И ОБРАЗЦОВ
Основные последовательности



Nicolas SLONIMSKY

THESAURUS OF SCALES AND MELODIC PATTERNS

Reference book for musicians — composers and executors

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Volume 1

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Main Patterns

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Настоящий справочник включает результаты исследования гамм и фигурационных мелодических моделей, образованных как в опоре на диатоническую основу или искусственные ладовые системы, так и в 12-тоновой технике, которые обладают качествами универсальных средств композиции. Работа была опубликована Николаем Леонидовичем Слонимским в 1947 году в США и с тех пор приобрела беспрецедентную популярность у джазовых музыкантов. Настоящее издание в переводе на русский язык предназначается для преподавателей, студентов и учащихся, а также для всех желающих освоить гармонию или развить технику исполнения сложных пассажей через изучение их структуры.

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От редактора-переводчика

Николай Леонидович Слонимский (1894–1995) — американский композитор, пианист, музыковед, музыкальный критик и лексикограф, дирижер. Он приходится дядей российскому композитору Сергею Михайловичу Слонимскому, которому во время визитов в Россию и дарил свои книги, изданные за рубежом. Среди его работ выделяется «Тезаурус гамм и мелодических оборотов» ("Thesaurus of scales and melodic patterns"), выпущенный ранее в США и прошедший несколько переизданий.

«Тезаурус» создан в жанре справочника, но этой функцией не ограничивается, ибо довольно скоро после выхода из печати стал служить учебным пособием, потому что его «открыли» для себя джазовые музыканты. Многие из них не получают профессионального образования, практически во весь период своей деятельности оставаясь малограмотными в области музыкальной теории. По трудам Н. Л. Слонимского зарубежные джазисты, и не только представители этого направления, осваивали теорию музыки и гармонию, получали представление о музыкальных системах. Высокий профессионализм, системность и безупречная логика делают эту «умственную гимнастику» в «Тезаурусе», по выражению А. Шёнберга[1], весьма привлекательной и полезной. Характерно, что многих музыкантов — и джаз-авангардистов, и рок-музыкантов, и композиторов-минималистов (примерами могут служить Джон Колтрейн, Фрэнк Заппа, Джон Адамс и другие) — таблица необычных гамм и гармонизаций вдохновила, по их собственным признаниям, на творческие поиски[2].

Н. Л. Слонимский в «Тезаурусе» представляет результаты масштабного исследования фигурационной составляющей фактуры и способов гармонизации, то есть формирует свод многообразных гамм и мелодических и гармонических оборотов. Стремясь учесть все возможные в музыкальном мире сочетания звуков, он приходит к выводу о неисчерпаемости допустимых комбинаций. Научный подход к собиранию сведений по теории музыки, полученный свод правил и возможных вариантов гармонизации гамм и мелодических оборотов высоко оценивается профессионалами, а желающие освоить теорию с успехом могут использовать эту книгу в качестве учебника.

В тексте американского издания обозначения звуков и тональностей произведены в западной системе, принятой в США. Для удобства российских музыкантов выполнена адаптация к отечественной системе обозначений. Н. Л. Слонимский вводит и собственную оригинальную терминологию, которая полностью сохранена. Однако стремление донести до читателя «авторскую интонацию» повлекло за собой некоторые нарушения в организации материала. Например, в разделе «Словарь терминов» слова расположены в алфавитном порядке, а не так, как в авторском тексте (на английском языке).

Редактор-переводчик выражает искреннюю признательность Сергею Михайловичу и Раисе Николаевне Слонимским за поддержку и ценные замечания при подготовке данного издания.

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[1] *Слонимский Н. Л.* Абсолютный слух. История жизни / Пер. Н. Кострубиной, В. Банкевича; прим. О. Рудневой, В. Банкевича, А. Вульфсона. СПб.: Композитор • Санкт-Петербург, 2006. 424 с.; ил. — С. 269

[2] Там же. С. 270.

От автора

Настоящий *Тезаурус* представляет собой справочник по гаммам и мелодическим оборотам, функционально аналогичный фразеологическим сборникам и словарям идиоматических выражений. Вместе с тем тогда как фразеологические сборники имеют ограничения по территориальному применению, *Тезаурус* включает большое число универсальных мелодически возможных оборотов, среди которых есть и неизвестные ранее. На самом деле многие произведения, появившиеся в последние годы, содержат тематические фигуры, идентичные тем, которые включены в *Тезаурус*.

Время от времени теоретики музыки предлагали обратиться к возможности создания совершенно новых, неизвестных ранее гамм, основанных на делении октавы на равные части. Так, в 1911 году итальянец Доменико Алалеона предложил именно такие виды гамм. Алоиз Хаба в своем «Новом учебнике гармонии» (*Neue Harmonielehre*) классифицирует большое число гамм, основанных на равенстве интервальных делений, и предлагает гармонизации этих неизвестных ранее гамм. Йозеф Шиллингер в своей посмертно опубликованной «Системе музыкальной композиции Шиллингера» классифицирует новые тональные последовательности в главе «Теория высотных гамм».

Гаммы и мелодические обороты в *Тезаурусе* систематизированы так, как это удобно композиторам, находящимся в поиске новых средств. Название «Тезаурус гамм и мелодических оборотов» выбрано намеренно. Терминологически под гаммой здесь понимается последовательность, диатоническая либо хроматическая, которая направлена в одну сторону, в восходящем либо нисходящем движении, и идущая до конечной точки. Мелодический оборот, в свою очередь, может быть сформирован из любой группы нот, если в этом имеется какой-либо мелодический смысл. Существуют гаммы, состоящие всего из 4 нот; но есть гаммы и обороты из 12 различных нот. Однако, если учитывать повторяющиеся ноты в разных октавах, гамма может содержать ни много ни мало 48 функционально различных нот, как, например, это происходит в непоступенном мажорном политетрахорде (№ 958). Для мелодических оборотов ограничений по численности составляющих их тонов фактически не существует.

Тезаурус организован по типу исследования различных видов фортепианных гамм и мелодических оборотов. Аппликатура не прописывается, так как пианист сам найдет способ группировки, подходящий для его руки. Другие инструменталисты также смогут приспособить большинство гамм и мелодических оборотов к своим инструментам. Нотация на всем протяжении является энгармонической, и случайные знаки используются в соответствии с удобством для чтения нот. Двойные диезы и бемоли избегаются. Предупреждающие знаки отмены выставляются то там, то здесь, если встречается необычный мелодический ход. Все знаки альтерации относятся только непосредственно к последующей за ними ноте.

Гаммы и обороты в *Тезаурусе* расположены в соответствии с интервалом, определяющим каждый конкретный раздел. Для того чтобы избежать ассоциации с конкретной тональностью, эти базовые интервалы обозначаются здесь латинскими и греческими наименованиями, выведенными из характера их употребления в старину. Кроме того, новые термины были изобретены для интервалов, которые не входят в систему

исторически существовавших гамм. В этих новых терминах приставка *сескви-* ставится для обозначения полутона. Таким образом, сесквитон — это 1½ тона, или минорная терция, сесквиквадритон — это 4½ тона, или мажорная секста, а сесквиквинкветон — это 5½ тонов, или мажорная септима.

Таблица интервалов от полутона до мажорной септимы приобретает следующий вид:

Семитон	малая секунда	*Тритон*	увеличенная кварта
Тон	большая секунда	*Диапента*	чистая квинта
Сесквитон	малая терция	*Квадритон*	малая секста
Дитон	большая терция	*Сесквиквадритон*	большая секста
Диатессарон	чистая кварта	*Квинкветон*	малая септима
		Сесквиквинкветон	большая септима

Интервал большой ноны назван *септитоном*, чтобы обозначить, что он содержит 7 тонов.

Эти базовые интервалы рассматриваются как доли одной или нескольких октав. Таким образом, тритоновая последовательность представляет деление октавы на 2 равные части, и оно способствует созданию секвенцирующих гамм и оборотов. Дитоновая последовательность является разделением октавы на 3 равные части, она интервально идентична увеличенному трезвучию. Сесквитоновая последовательность представляет собой разделение октавы на 4 равные части, она идентична хорошо знакомым уменьшенным септаккордам. Целотоновая гамма представляет деление октавы на 6 равных частей. Семитоновая последовательность является эквивалентом хроматической гаммы. Благодаря процессу пермутации хроматическая гамма способна продуцировать характерные обороты в 12-тоновой технике.

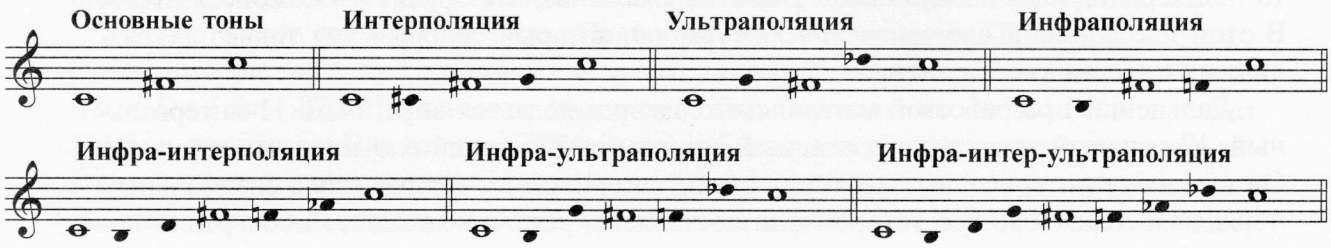
Разделив 2 октавы на 3 равные части, мы получаем квадритоновую последовательность, которая близко родственна дитоновой последовательности, являясь фактически расширением увеличенного трезвучия. Разделив 3 октавы на 4 равные части, мы получаем интервал большой сексты. Это сесквиквадритоновая последовательность, которая является развернутой сесквитоновой последовательностью, образующей модели, родственные гармониям уменьшенных септаккордов.

Интервал чистой квинты составляет одну двенадцатую часть от 7 октав, именно так он и представлен в диапентовой последовательности. Чистая кварта составляет одну двенадцатую часть от пяти октав и классифицируется в разделе «Диатессароновые последовательности».

Развивая далее этот процесс, мы находим, что сесквиквинкветоновая последовательность, или последовательность больших септим, является результатом деления 11 октав на 12 равных частей. Наконец, септитоновая последовательность представляет собой деление 7 октав на 6 равных частей, основанное на интервале большой ноны.

Некоторые гаммы и мелодические обороты образуются благодаря процессам интерполяции, инфраполяции и ультраполяции. Слово «интерполяция» употребляется в обычном смысле; здесь оно обозначает внедрение одной или нескольких нот между основными тонами. «Инфраполяция» и «ультраполяция» — это новые, введенные в употребление слова. Инфраполяция обозначает добавление ноты ниже последующего основного тона; ультраполяция — это добавление ноты сверху от следующего основного тона. Инфраполяция и ультраполяция выражаются в изменениях направления движения, когда мелодическая линия перемещается зигзагами. Инфраполяция, интерполяция и ультраполяция могут сочетаться свободно, представая в комбиниро-

ванных видах, названия которых записываются через дефис: инфра-интерполяция, инфра-ультраполяция, инфра-интер-ультраполяция.



Последовательности и обороты, основанные на неравном делении октавы, представлены гептатоническими и пентатоническими гаммами. Среди гептатонических, или 7-тоновых, гамм есть как известные нам мажор и минор, так и церковные лады. В разделе гептатонических арпеджио гаммы развернуты по терциям. В разделе битональных арпеджио до-мажорное арпеджио сочетается с арпеджио во всех остальных 23 мажорных и минорных тональностях.

Бузони, добросовестно исследовавший новые музыкальные ресурсы, нашел 113 различных гамм, состоящих из 7 тонов. Упоминая в качестве примера гамму: *C, Des, Es, Fes, Ges, As, B, C* (№ 1035 в *Тезаурусе*), он пишет в своем «Эскизе новой эстетики музыкального искусства»: «Существует большое различие в употреблении звуков этой новой гаммы, когда *C* взят в качестве тоники или когда мы считаем его вводным тоном *des-moll*'а. Новая гармоническая сенсация рождается, когда обычное *C-dur*'ное трезвучие используется [в составленном звукоряде. — *Прим. пер.*] для гармонизации тоники».

В «Хронике моей музыкальной жизни» Римский-Корсаков отмечает использование им 8-тоновой гаммы, образованной путем альтерации секунды, с получением ее малой и большой разновидностей. Это гамма № 393 в *Тезаурусе*. Спорадическое использование целотоновой гаммы можно найти у Глинки и даже у Моцарта (в качестве насмешки над неадекватными *Dorfmusikanten (Деревенские музыканты)*, но это не стало свободно употребляемым приемом до Дебюсси. В фортепианной пьесе Дебюсси *Voiles* (*Паруса)* опорной мелодической структурой является целотоновая гамма, но середина написана вся на черных клавишах, воплощая средства пентатонической гаммы.

В целотоновой гамме 6 нот в каждой октаве, в пентатонической — 5. Целотоновую гамму от предложенной ноты можно образовать только в одном варианте, а пентатонических — множество. В *Тезаурусе* 49 пентатонических гамм.

Двенадцатитоновая техника композиции, которую пропагандирует Шёнберг, основывается на пермутациях семитоновой гаммы. Различные 12-тоновые модели помещены в примерах № 1214 и 1318 *Тезауруса*. Например, можно составить из 12 хроматических тонов два мажорных и два минорных трезвучия без повторений нот. При использовании всех 12 хроматических тонов возможно также образование 4 взаимоисключающих увеличенных трезвучий. Тема *Фауст-симфонии* Листа скомпонована из 4 таких увеличенных трезвучий. Далее, возможно расщепление хроматической гаммы на уменьшенные трезвучия, минорные трезвучия, мажорные трезвучия и увеличенные трезвучия. Эти взаимно исключающие друг друга трезвучия можно организовать в виде квадритоновых арпеджио.

Недавнее развитие 12-тоновой техники по своей сути является 11-интервальной техникой, которая предписывает образование последовательностей, содержащих

11 различных интервалов. Идея впервые была представлена австрийским музыкантом Фрицем Клейном в 1921 году в любопытной композиции, названной «Машина» и имеющей подзаголовок «Экс-тональная самосатира». Имя композитора было скрыто под характерным псевдонимом *Heatontimorumenus*, что значит — Самоистязатель. В этой пьесе Клейн ввел *материнский аккорд*, который содержит не только 11 различных интервалов, но также и 12 различных нот.

Дальнейшей разработкой материнского аккорда является обратимый 11-интервальный, 12-тоновый аккорд, предлагаемый автором и названный *бабушкиным аккордом*. Он имеет все интервальные характеристики материнского аккорда плюс специальный порядок интервалов, при котором они составлены так, что являются поочередно нечетными и четными, если считать их в полутонах, при этом ряд нечетных интервалов образует понижающуюся арифметическую прогрессию, а ряд четных интервалов — возрастающую арифметическую прогрессию. Порядок нот в бабушкином аккорде идентичен с 12-тоновой спиральной моделью № 1232a.

Все аккорды, образованные из 11 различных интервалов, слагаются в интервал, состоящий из 66 полутонов, что является суммой арифметической прогрессии величин от 1 до 11. Интервал из 66 полутонов равняется 5½ октавам и, таким образом, образует тритон между самыми низкими и самыми высокими тонами в пирамидальном аккорде, материнском аккорде, бабушкином аккорде и других 11-интервальных структурах.

Гаммы и модели, помещенные в основной части *Тезауруса*, готовы к использованию в новых мелодических возможностях. Например, нисходящую гамму можно играть как вариант мелодической инверсии восходящей гаммы, что предложено в разделе «Зеркальные интервальные последовательности». Можно сформировать сложные составные гаммы протяженностью в 2 октавы, если во второй октаве использовать ноты, которые не употреблялись в первой октаве. Другие возможности по созданию новых оборотов представлены в разделе «Пермутации».

Диатоническим аналогом 12-тоновой техники является система пандиатонической композиции. Термин «пандиатоника», впервые использованный автором в 1937 году, обозначает свободное использование всех 7 тонов диатонической гаммы, и мелодически и гармонически [то есть в горизонтальном и в вертикальном расположении. — *Прим. пер.*]. В одноголосной пандиатонической последовательности мелодия составлена из 7 различных нот диатонической гаммы. Такую последовательность можно сделать мелодически обратимой, прочитать в обратном порядке или выполнить то и другое вместе, что позволяет получить результат из 34 разновидностей. Пандиатонический контрапункт в строгом стиле использует последовательности из 7 различных нот в каждом из голосов, без вертикальных дублировок.

Пандиатоническая гармония в XX веке становится аналогом классической гармонии. Современные композиторы, имеющие различные взгляды и музыкальные пристрастия, такие как Равель, Стравинский, Хиндемит, Мийо, Копланд и Рой Харрис, обращаются к этой технике, приходя к ней с помощью разных творческих процессов. Джазовые композиторы тоже путем всеми ободряемого экспериментирования вышли на эффективное применение обогащенных аккордов пандиатонических образований. Распространенной практикой стало оканчивать оркестровое переложение популярной песни обогащенным мажорным трезвучием с добавленной секстой, септимой или ноной.

В заключительных разделах *Тезауруса* показываются различные методы, с помощью которых можно успешно употреблять тональные материалы. В разделе «Двойные ноты» показываются комбинации, выведенные из соответствующих гамм и моделей. Раздел «Мультигаммы и мультиарпеджио» дает образцы последовательностей обыч-

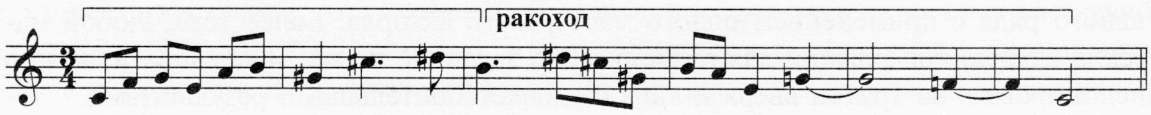
ных мажора и минора, расположенных в хроматической транспозиции. «Политональные гаммы» — это последовательности, идущие параллельно в разных тональностях. Полиритмические гаммы — это последовательности в различных ритмах. Политональные полиритмические гаммы сочетают разные ритмы в разных тональностях.

Особо нужно сказать о разделе «Палиндромические каноны». Палиндромы — это слова, которые читаются одинаково вперед и назад, как, например, предложение «*Able Was I Ere I Saw Elba*» [буквально: *Мне многое было подвластно до того, как я увидел Эльбу,* в отношении Наполеона. — *Прим. ред.*]. Аналогично, прочтение ритмических канонов вперед и назад также дает одинаковый результат. Особый интерес представляют два палиндромических канона, базирующиеся на модели № 72. Они дают последовательность энгармонически равных трезвучий или их инверсий, различных в мажорных и минорных тональностях.

Фрагменты гамм и оборотов из *Тезауруса* можно использовать в качестве мотивов и тем. Их ритмическая разработка отдается на волю композитора. Используя часть модели в прямом и обратном движении, в изменяющихся ритмах внутри заданного метра, можно сформировать неисчерпаемое число мелодических фигур.

Ритмическое развитие

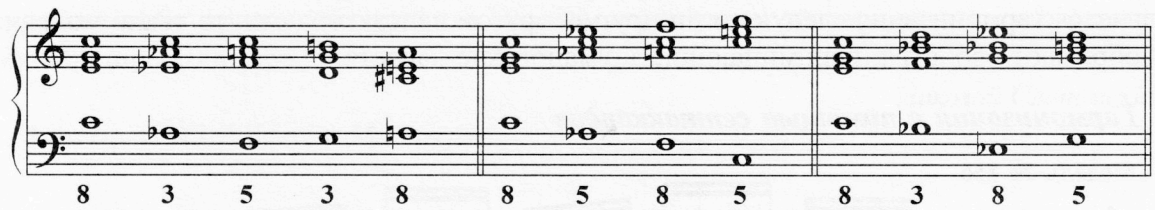
Модель № 194



В гармонизации гамм и оборотов используются две формулы: одна выполняется с помощью обычных трезвучий, а другая опирается на септаккорды. При гармонизации обычными трезвучиями применяются только основные обращения мажорных трезвучий в тесном расположении. Либо основной тон, либо терция, либо квинта могут появиться в мелодии. Их расположение отмечается как октавное, терцовое и квинтовое или цифрами, как 8, 3 и 5. Если мелодия движется вверх, в диатонике или с использованием хроматики, расположение меняется с октавного на терцовое, далее на квинтовое и октавное. Когда мелодия идет вниз, порядок позиций обратный. Более того, порядок расположений может быть изменен в конце каденции даже при восходящем движении. Когда мелодия остается статичной, порядок расположения свободный. Складывающаяся гармония проходит через несколько тональностей в регулярной смене следующих друг за другом мажорных аккордов.

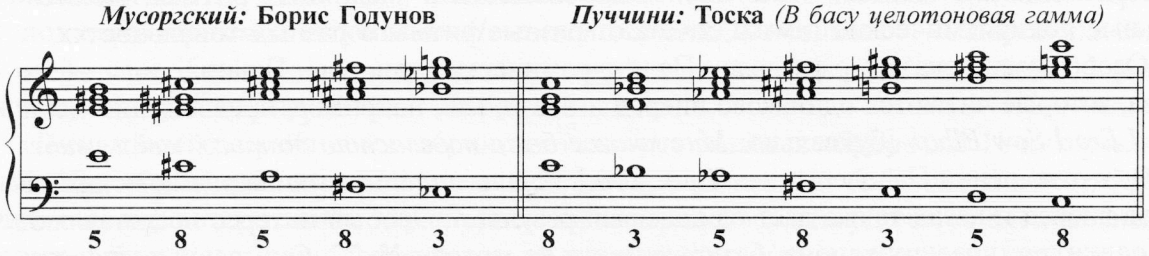
Гармонизация мажорными трезвучиями

(цифры обозначают интервалы между мелодией и басом)



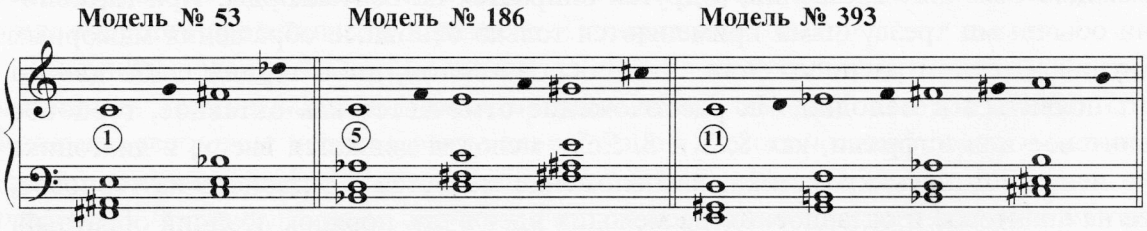
Гармонизацию мажорными трезвучиями можно встретить у Дебюсси, Мусоргского и других композиторов из французской и русской школ. Классическим примером может служить сцена в келье монаха из оперы Мусоргского «Борис Годунов». Во втором акте оперы Пуччини «Тоска» целотоновая гамма в басу гармонизуется

с помощью ряда мажорных трезвучий, с положениями мелодических звуков, следующими по формуле: октава — терция — квинта (8–3–5).



Другой тип гармонизации связан со средствами *мастерских аккордов*. Это доминантсептаккорды с пропущенной квинтой. В сочетании с мелодическими элементами заданных гамм или оборотов эти аккорды образуют гармонические структуры типа септаккордов, нонаккордов или целотоновых аккордов. Мастерские аккорды взяты за основу в восходящих гаммах и моделях в разделах «Тритоновые последовательности», «Дитоновые последовательности», «Сесквинтоновые последовательности» и обозначены с помощью цифр в кружочках, например ⑤, и они используются для гармонизации целой ритмической группы в заданной последовательности. В тритоновых и сесквинтоновых последовательностях возможна также гармонизация всего октавного ряда с применением одного мастерского аккорда. Более того, любой мастерский аккорд, подходящий для гармонизации заданной последовательности, можно транспонировать на тритон вверх и вниз с удовлетворительными результатами.

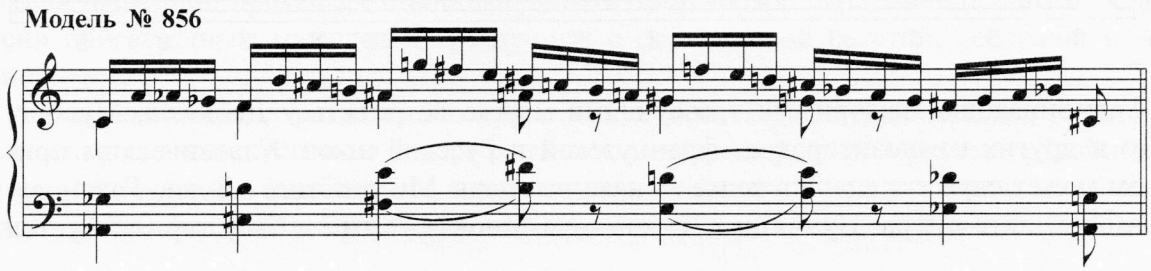
Гармонизация с употреблением мастерских аккордов



Оба типа гармонизации представлены в таблицах на страницах 264–265. Для того чтобы гармонизовать мажорными трезвучиями, нужно изменить октавное, терцовое и квинтовое расположение, представленное в таблице. При гармонизации септ-, нон- и целотоновыми аккордами любой аккорд, поставленный под заданными нотами мелодии, добавляет приемлемую гармонию.

Обороты в диатессароновых и диапентовых последовательностях позволяют выполнить гармонизацию, типичную для тонико-доминантовых отношений. Если выполняется гармонизация следующими друг за другом септаккордами, то такие модели приобретают свойства, напоминающие шумановское качество.

Гармонизация с помощью септаккордов

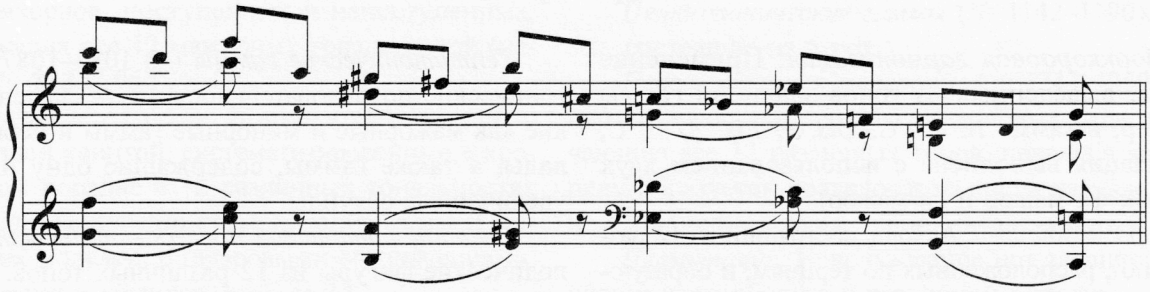


с 6754 к

Гармонизация тонико-доминантового типа придаст ощущение наличия тональности даже в 12-тоновой последовательности.

Тональная гармонизация 12-тонового оборота

Модель № 646



При традиционной гармонизации в мажорных и минорных тональностях используются аккорды, образованные в диатоническом звукоряде. Точно так же новые гаммы можно гармонизовать с помощью аккордов, сложенных из нот, составляющих сами гаммы. Примеры такой автоаккордовой гармонизации приведены в специальной таблице. Существуют гаммы, допускающие образование только двух различных трезвучий, как, например, гамма № 7, которую можно гармонизовать мажорными трезвучиями *C-dur*'а и *Fis-dur*'а. Восьмитоновая гамма № 393 способна образовать 8 различных трезвучий, в то время как другие гаммы, например № 5, не производят ни одного.

Все гаммы и обороты в *Тезаурусе* строятся от центра на *C* как начальном и заключительном тоне. Само собой разумеется, что эти последовательности можно транспонировать относительно любого другого тонального центра согласно требованиям композитора.

Джон Стюарт Милль однажды написал: «Я был серьезно озадачен мыслью о неисчерпаемости музыкальных комбинаций. Октава состоит всего из пяти тонов и двух полутонов, которые можно сложить в ограниченном числе вариантов, из которых хороши лишь некоторые: бóльшая их часть, на мой взгляд, уже открыта, и вряд ли найдется много Моцартов и Веберов, способных нас поразить, подобно тем, кто черпает идеи из новых богатых источников музыкальной красоты. О такого рода беспокойстве, возможно, стоило подумать, чтобы не походить на философов Лапуты, которые опасались того, что солнце погаснет».

Страхи Джона Стюарта Милля не подтверждаются. Существует 479 001 600 возможных комбинаций 12 тонов хроматической гаммы. Учитывая ритмическое разнообразие, которое соединяется с безбрежной вселенной мелодических оборотов, нет каких-либо признаков того, что новая музыка умрет от внутреннего истощения в ближайшие 1000 лет.

Николай Слонимский

1 января 1947 г. Бостон, Массачусетс

Словарь терминов

Автоаккордовая гармонизация. Применение аккордов, выведенных из тонов заданной гаммы (например, в гамме № 12: *C, Dis, F, Fis, A, H, C*, гармонизация выполнена с использованием двух трезвучий: фа мажор и си мажор).

Аккорд малой 23-й. Аккорд, состоящий из 12 различных нот, расположенных по терциям, и образующий 4 взаимно исключающих друг друга по составу трезвучия.

Бабушкин аккорд. Аккорд, изобретенный Николаем Слонимским 13 февраля 1938 года, состоящий из 12 различных тонов и различных интервалов, симметрично обратимых по отношению к центральному интервалу — тритону, который обратим по отношению к самому себе; интервальная структура является рядом, состоящим из четных и нечетных интервалов (посчитанных в полутонах), причем серия, составленная из четных интервалов, образует уменьшающуюся арифметическую прогрессию, а та, что составлена из нечетных интервалов, формирует возрастающую прогрессию.

Битональные арпеджио (№ 1191–1213). Мелодические последовательности, построенные из отличающихся друг от друга арпеджио в 2 различных тональностях.

Битональные палиндромические каноны. Каноны, которые приводят к образованию 6-тоновых аккордов, состоящих из двух трезвучий (например, гамма № 7: *C, Cis, E, Fis, G, Ais, C*, развиваясь канонически, образует битональные аккорды *до мажора* и *фа-диез мажора*).

Взаимно исключающие друг друга трезвучия. Четыре трезвучия (мажорное, минорное, уменьшенное или увеличенное), включающие все 12 различных тонов (например, до мажор, фа-диез мажор, ре минор и соль-диез минор).

Гамма. Последовательность тонов, меняющая направление движения в конечных точках (все интерполированные последовательности являются гаммами).

Гептатонические арпеджио (№ 1088–1141). Мелодические последовательности, с расположением звуков по терциям, выведенные из гептатонических гамм.

Гептатонические гаммы (№ 1034–1087). Диатонические последовательности из 7 ступеней, такие как мажорные и минорные гаммы и церковные лады, а также гаммы, содержащие одну или две увеличенные секунды.

Двенадцатитоновая последовательность. Мелодические фигуры из 12 различных тонов.

Диапента. Интервал, состоящий из 3½ тонов; чистая квинта.

Диатессарон. Интервал, состоящий из 2½ тонов; чистая кварта.

Дитон. Интервал, состоящий из двух целых тонов; мажорная терция.

Зеркальные последовательности интервалов. Гаммы и последовательности, в которых нисходящая фигура является мелодической инверсией восходящей фигуры (например, восходящая гамма № 1 является зеркальной инверсией нисходящей гаммы № 4).

Инфра-интер-ультраполяция. Модель, образованная вставками нот под, между и над основными тонами последовательности (например, модель № 341).

Инфраполяция. Внедрение нот под основными тонами последовательности (например, модель № 231).

Интерполяция. Внедрение одной или нескольких нот между основными тонами последовательности (например, гамма № 21).

Интер-ультраполяция. Внедрение двух нот, одна из которых располагается между основными тонами заданной последовательности, а другая — над основным тоном (например, модель № 123).

Квадритон. Интервал, состоящий из четырех целых тонов; минорная секста.

Квадритональные арпеджио (№ 1251–1291). Мелодические последовательности, образуемые из четырех исключающих друг друга по звуковому составу трезвучий, например до мажор, ре минор, фа-диез мажор и соль-диез минор.

Квартовый аккорд. 12-тоновый аккорд, образованный из чистых кварт.

Квинкветон. Интервал, состоящий из пяти целых тонов; малая септима.

Квинтовое положение. В четырехголосной гармонии трезвучие с основным тоном в басу и квинтой в мелодии.

Мажорный битональный аккорд. Аккорд, состоящий из двух мажорных трезвучий, обычно в тональностях, тоники которых отстают друг от друга на тритон, как, например, до мажор и фа-диез мажор.

Мажорный политетрахорд. Серия из мажорных тетрахордов, поступенных и непоступенных, охватывающих все 12 мажорных тональностей (например, № 833 и 958).

Мастерские аккорды. Доминантсептаккорды с пропущенной квинтой, систематизированные в хроматическом порядке в 12 различных тональностях для использования при гармонизации гамм и мелодических моделей, с цифровыми обозначениями, помещенными в кружках, от 1 до 12.

Материнский аккорд. Аккорд, введенный Фрицем Клейном в 1921 году, который включает все 12 тонов и 11 различных интервалов.

Минорный битональный аккорд. Аккорд, состоящий из двух минорных аккордов, тоники которых обычно находятся на расстоянии тритона, как, например, до минор и фа-диез минор.

Минорный политетрахорд. Серия, состоящая из минорных тетрахордов, поступенных и непоступенных, охватывающих все 12 минорных тональностей (например, № 832 и 956).

Мультигаммы. Последовательности, образованные непоступенными гаммами, например: до мажор, ре-бемоль мажор, ре мажор и ми-бемоль мажор.

Непоступенный политетрахорд. Последовательность из 12 тетрахордов, проходящая по всем 12 тональностям, где расположение тетрахордов разделено одним диатоническим шагом (например, непоступенный фригийский политетрахорд № 951; непоступенный минорный политетрахорд № 956; непоступенный мажорный политетрахорд № 956; непоступенный лидийский политетрахорд № 959).

Несимметричная интерполяция. Свободное включение дополнительных нот между основными тонами лада.

Оборот. Мелодическая фигура, в которой направление меняется с восходящего на нисходящее или наоборот, до тех пор, пока не достигается конечный тон (все инфраполяционные и ультраполяционные последовательности являются оборотами).

Октавная позиция. В четырехголосной гармонии — трезвучие с основным тоном в мелодии и басу.

Пандиатоническая гармония. Голосоведение в аккордах, связанное со свободными комбинациями, составленными из семи тонов диатонической гаммы.

Палиндромические каноны. Каноны, которые дают одни и те же сочетания, как при движении вперед, так и в обратном направлении.

Пандиатонические последовательности. Тональные ряды, построенные от всех семи различных тонов диатонической гаммы.

Пентатонические гаммы (№ 1142–1190). Гаммы, состоящие из 5 нот.

Пересекающиеся интервалы (№ 1243–1250). Два перекрывающих друг друга 6-тоновых ряда, включающие все 12 различных тонов, причем в каждом ряду образуется последовательность из мажорных или минорных секунд, терций, кварт, квинт и сект.

Пермутация. Использование нот заданного мелодического оборота в различном порядке.

Пирамидальный аккорд. Аккорд, введенный Фрицем Клейном в 1921 году, который образован из серии уменьшающихся интервалов от октавы до полутона.

Полиритмические гаммы. Одновременные последовательности в разных ритмах.

Политетрахорд. Последовательность из 12 тетрахордов, проходящих через все 12 тональностей поступенно (последний тон одного тетрахорда совпадает с первым тоном следующего) или непоступенно (последний тон первого тетрахорда отделен диатоническим ходом от начального тона последующего тетрахорда).

Политональные полиритмические гаммы. Одновременные последовательности в различных тональностях и разных ритмах.

Политональные гаммы. Гаммы в различных тональностях, которые играются одновременно.

Полутоновая последовательность. Гамма, состоящая из следующих подряд полутонов; хроматическая гамма.

Последовательность. Основной термин для обозначения любой гаммы или мелодической модели.

Поступенный политетрахорд. Последовательность из 12 тетрахордов, проходящая по всем 12 тональностям, в которой заключительный тон одного тетрахорда является начальным тоном следующего (например, фригийский политетрахорд № 830; минорный политетрахорд № 832; мажорный политетрахорд № 833).

Прометеевская гамма (№ 50). Шеститоновая гамма (до, ре, ми, фа-диез, ля, си-бемоль), использованная Скрябиным в его симфонической поэме «Прометей».

Сложные гаммы. Мелодические последовательности на протяжении двух октав, включающие все 12 тонов хроматической гаммы (например,

до-мажорная гамма плюс пентатоническая гамма на черных клавишах).

Септитон. Интервал, составленный из семи целых тонов; большая нона.

Сескви-. Приставка, обозначающая добавление полутона к заданному интервалу (сесквитон = 1½ тона; сесквиквадритон = 4½ тона).

Сесквиквадритон. Интервал, состоящий из 4½ тонов; большая секста.

Сесквиквинкветон. Интервал, состоящий из 5½ тонов; большая септима.

Сесквитон. Интервал, состоящий из 1½ тонов; малая терция.

Симметричная интерполяция. Включение нот на равных интервалах от осевых точек, что выражается в образовании соответствующих инверсивных последовательностей (например, гамма № 37: *C, D, F, Fis, G, B, C,* где образуются одни и те же интервалы при движении от *C* вверх и от верхнего *C* вниз).

Спиралевидные обороты. Мелодические последовательности, ориентированные на связь с центральным тоном.

Терцовое положение. В четырехголосной гармонии трезвучие с основой в басу и терцией в мелодии.

Тоно-кластер. Термин, введенный Генри Коэллом, обозначающий комплекс нот, заполняющих одну или несколько октав диатонически, хроматически или пентатонически.

Тритон. Интервал, составленный из трех целых тонов; увеличенная кварта или уменьшенная квинта.

Ультраполяция. Включение одной или нескольких нот над основным тоном гаммы (например, модель № 53, в которой *G* вставлен над $F_\sharp$).

Фригийский политетрахорд. Политетрахорд, составленный из 12 поступенных и непоступенных фригийских тетрахордов (один полутон плюс два целых тона, примеры № 830 и № 951).

Целотоновые аккорды. Аккорды, построенные из интервалов, каждый из которых содержит один или несколько тонов.

Thesaurus of Scales and Melodic Patterns

Nicolas Slonimsky

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CONTENTS

INTRODUCTION i

EXPLANATION OF TERMS vii

TRITONE PROGRESSION
Equal Division of One Octave into Two Parts 1

DITONE PROGRESSION
Equal Division of One Octave into Three Parts 27

SESQUITONE PROGRESSION
Equal Division of One Octave into Four Parts 51

WHOLE-TONE PROGRESSION
Equal Division of One Octave into Six Parts 74

SEMITONE PROGRESSION
Equal Division of One Octave into Twelve Parts 83

QUADRITONE PROGRESSION
Equal Division of Two Octaves into Three Parts 91

SESQUIQUADRITONE PROGRESSION
Equal Division of Three Octaves into Four Parts 100

QUINQUETONE PROGRESSION
Equal Division of Five Octaves into Six Parts 106

DIATESSARON PROGRESSION
Equal Division of Five Octaves into Twelve Parts 109

SEPTITONE PROGRESSION
Equal Division of Seven Octaves into Six Parts 124

DIAPENTE PROGRESSION
Equal Division of Seven Octaves into Twelve Parts 125

SESQUIQUINQUETONE PROGRESSION
Equal Division of Eleven Octaves into Twelve Parts 136

HEPTATONIC SCALES 137

HEPTATONIC ARPEGGIOS 155

PENTATONIC SCALES 160

BITONAL ARPEGGIOS 169

TWELVE-TONE PATTERNS (Dodecaphonic) 173

CROSSING INTERVALS 176

DIVISION OF TWELVE TONES INTO FOUR MUTUALLY EXCLUSIVE TRIADS 177

QUADRITONAL ARPEGGIOS 178

INVERTIBLE DODECAPHONIC PROGRESSIONS 184

INTERVALLIC SERIES
Increasing and Diminishing Intervals 186

MIRROR INTERVAL PROGRESSIONS 187

COMPLEMENTARY SCALES 188

PERMUTATIONS 188

PANDIATONIC PROGRESSIONS 192

DOUBLE NOTES 196

PLURAL SCALES AND ARPEGGIOS 218

POLYTONAL SCALES 220

POLYRHYTHMIC SCALES 224

POLYTONAL POLYRHYTHMIC SCALES 226

PALINDROMIC CANONS 234

AUTOCHORDAL HARMONIZATION 238

HARMONIZATION IN MAJOR TRIADS AND SEVENTH-CHORDS 240

SYNOPSIS OF CHORDS 242

THESAURUS OF SCALES AND MELODIC PATTERNS

INTRODUCTION

THE PRESENT THESAURUS is a reference book of scales and melodic patterns, analogous in function with phrase books and dictionaries of idiomatic expressions. But while phrase books are limited to locutions consecrated by usage, the THESAURUS includes a great number of melodically plausible patterns that are new. In fact, many compositions appearing in recent years contain thematic figures identical with those found in the THESAURUS.

From time to time musical theorists have suggested the possibility of forming entirely new scales based on the division of the octave into several equal parts. As early as 1911 the Italian musician Domenico Alaleona proposed such new scales. Alois Haba, in his *Neue Harmonielehre* (1927), classifies a great number of scales based on equal intervals and suggests harmonizations of these new scales. Joseph Schillinger in his posthumously published *Schillinger System of Musical Composition* classifies new tonal progressions in the chapter Theory of Pitch-Scales.

The scales and melodic patterns in the THESAURUS are systematized in a manner convenient to composers in search of new materials. The title THESAURUS OF SCALES AND MELODIC PATTERNS is chosen advisedly. The term scale, as here used, means a progression, either diatonic or chromatic, that proceeds uniformly in one direction, ascending or descending, until the terminal point is reached. A melodic pattern, on the other hand, may be formed by any group of notes that has melodic plausibility. There are scales of 4 notes only; and there are scales and patterns of 12 different notes. But counting repeated notes appearing in different octaves, a scale may have as many as 48 functionally different notes, as in the Disjunct Major Polytetrachord (No. 958). As to melodic patterns, there is virtually no limit to the number of such tones.

The THESAURUS is arranged in the form of piano scales and melodic studies. No fingering is given, for the pianist will readily find the type of digitation best suited to the hand. Other instrumentalists, too, will find most of the scales and melodic patterns in the THESAURUS adaptable to their instruments. The notation throughout is enharmonic, and accidentals are used according to convenience. Double sharps and double flats are avoided entirely. Precautionary natural signs are placed here and there when an unusual melodic interval occurs. All accidentals affect only the note immediately following.

The scales and patterns in the THESAURUS are arranged according to the principal interval of each particular section. In order to avoid association with a definite tonality, these basic intervals are here referred to by Latin and Greek names derived from old usage. In addition, new terms had to be coined for intervals not in the system of historic scales. In these new terms the prefix *sesqui* stands for the addition of one-half of a tone. Thus, Sesquitone is 1½ tones, or a minor third; Sesquiquadritone is 4½ tones, or a major sixth; and Sesquiquinquetone is 5½ tones, or a major seventh.

The table of intervals from the semitone to the major seventh appears as follows:

Semitone	Minor Second	*Tritone*	Augmented Fourth
Whole Tone	Major Second	*Diapente*	Perfect Fifth
Sesquitone	Minor Third	*Quadritone*	Minor Sixth
Ditone	Major Third	*Sesquiquadritone*	Major Sixth
Diatessaron	Perfect Fourth	*Quinquetone*	Minor Seventh
		Sesquiquinquetone	Major Seventh

The interval of a major ninth is called Septitone, to indicate that it contains 7 whole tones.

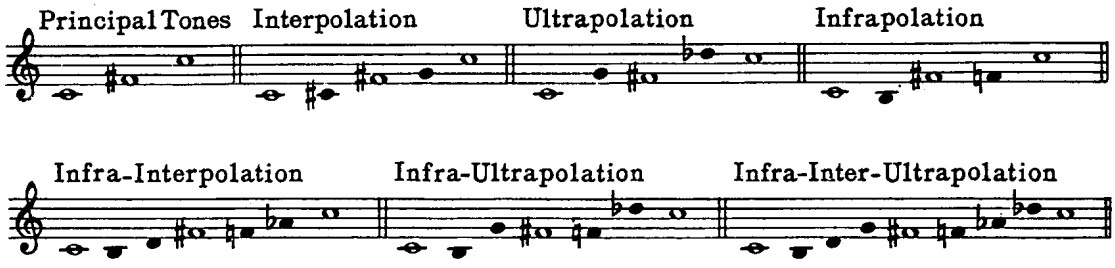
These basic intervals are regarded as fractions of one or more octaves. Thus, the Tritone Progression represents the division of the octave into 2 equal parts, and it produces sequential scales and patterns. The Ditone Progression is the division of the octave into 3 equal parts, and is intervallically identical with the augmented triad. The Sesquitone Progression is the division of the octave into 4 equal parts, and is identical with the familiar diminished-seventh chord. The Whole-Tone scale represents the equal division of the octave into 6 parts. The Semitone Progression is equivalent to the chromatic scale. By the process of permutation the chromatic scale is productive of characteristic patterns of the 12-tone technique.

By dividing 2 octaves into 3 equal parts we obtain the Quadritone Progression, which is closely related to the Ditone Progression, being in fact a spread-out augmented triad. By dividing 3 octaves into 4 equal parts we obtain the interval of the major sixth. This is the Sesquiquadritone Progression, which is an unfolded Sesquitone Progression, productive of patterns related to diminished-seventh harmonies.

In the cycle of scales the interval of a perfect fifth is one-twelfth part of 7 octaves, and it is so represented in the Diapente Progression. A perfect fourth is one-twelfth part of 5 octaves, and is classified as such in the section Diatessaron Progression.

Pursuing a similar process, we find that the Sesquiquinquetone Progression, or the progression of major sevenths, is the result of the equal division of 11 octaves into 12 parts. Finally, the Septitone Progression is the equal division of 7 octaves into 6 parts, with the basic interval of a major ninth.

Scales and melodic patterns are formed by the processes of Interpolation, Infrapolation, and Ultrapolation. The word Interpolation is in common usage; here it signifies the insertion of one or several notes between the principal tones. Infrapolation and Ultrapolation are coined words. Infrapolation indicates the addition of a note below a principal tone; Ultrapolation is the addition of a note above the next principal tone. Infrapolation and Ultrapolation result in the shift of direction, with the melodic line progressing in zigzags. Infrapolation, Interpolation and Ultrapolation may be freely combined, resulting in hyphenated forms: Infra-Interpolation, Infra-Ultrapolation, and Infra-Inter-Ultrapolation.



Progressions and patterns based on unequal division of the octave are exemplified by Heptatonic scales and Pentatonic scales. Among Heptatonic scales, or 7-tone scales, are our familiar major and minor scales as well as the church modes. In the section Heptatonic Arpeggios the scales are spread out in thirds. In the section Bitonal Arpeggios the C major arpeggio is combined with arpeggios in all other 23 major and minor keys.

Busoni, who had earnestly explored new musical resources, found 113 different scales of 7 notes. Mentioning as an example the scale: C, Db, Eb, Fb, Gb, Ab, Bb, C (it is No. 1035 in the THESAURUS), he writes in his *Entwurf einer neuen Aesthetik der Tonkunst:* "There is a significant difference between the sound of this new scale when C is taken as the tonic and when it is taken as the leading tone of the scale of Db minor. By harmonizing the tonic with the customary C major triad as a fundamental chord, a novel harmonic sensation is obtained."

In his *Chronicle of My Musical Life* Rimsky-Korsakov mentions the use he made of an 8-tone scale, formed by alternating major and minor seconds. This is Scale No. 393 in the THESAURUS. Sporadic uses of the Whole-Tone scale are found in Glinka and even in Mozart (as a jest to mock the inept *Dorfmusikanten*), but it did not become a deliberate device before Debussy. In Debussy's piano piece *Voiles* the principal melodic structure is in the Whole-Tone scale, but the middle part is written exclusively on the black keys, exemplifying the Pentatonic scale.

The Whole-Tone scale has 6 notes to the octave; the Pentatonic scale has five. The Whole-Tone scale is possible in only one form on a given note, but there can be many Pentatonic scales. There are 49 Pentatonic scales in the THESAURUS.

The 12-Tone Technique of composition promulgated by Schoenberg is based on permutations of the Semitone scale. Various 12-tone patterns are found in the THESAURUS in examples No. 1214 to No. 1318. For example, it is possible to arrange the 12 chromatic tones in 2 major and 2 minor triads without repeating a note. It is also possible to form 4 mutually exclusive augmented triads using all 12 chromatic tones. The theme of Liszt's *Faust* Symphony is composed of 4 augmented triads. It is further possible to split the chromatic scale into a diminished triad, a minor triad, a major triad, and an augmented triad. These mutually exclusive triads can be arranged in the form of Quadritonal Arpeggios.

A recent development of the 12-Tone Technique is the 11-interval technique, which prescribes the formation of progressions containing 11 different intervals. The idea was first introduced by the Austrian musician Fritz Klein in 1921 in a curious composition entitled *Die Maschine,* with the sub-title *Ex-Tonal Self-Satire.* The name of the composer was concealed behind a characteristic nom de plume *Heautontimorumenus* which means Self-Torturer. In this piece Klein introduced a Mother Chord which contains not only all 11 different intervals, but 12 different notes as well.

A further elaboration on the Mother Chord is an invertible 11-interval, 12-tone chord introduced by the author and appropriately christened Grandmother Chord. It has all the intervallic properties of the Mother Chord plus an especial order of intervals so arranged that they are alternately odd-numbered and even-numbered when counted in semitones, with the row of odd-numbered intervals forming a decreasing arithmetical progression and the row of even-numbered intervals forming an increasing arithmetical progression. The order of notes in the Grandmother Chord is identical with the 12-tone Spiral Pattern No. 1232a.

All chords composed of 11 different intervals add up to the interval of 66 semitones, which is the sum of the arithmetical progression from 1 to 11. The interval of 66 semitones equals 5½ octaves, and so forms a Tritone between the lowest and the highest tones in the Pyramid Chord, Mother Chord, Grandmother Chord, and other 11-interval structures.

Scales and patterns listed in the main body of the THESAURUS readily lend themselves to new melodic possibilities. For instance, a descending scale may be played in the form of the melodic inversion of the ascending scale, as suggested in the section Mirror Interval Progressions. It is possible to form complementary scales in the range of 2 octaves, by using in the second octave the notes not used in the first. Other possibilities for the formation of new patterns are demonstrated in the section on Permutations.

A Diatonic counterpart of the 12-Tone Technique is the system of Pandiatonic composition. The term Pandiatonic, first introduced by this writer in 1937, denotes the free use of all 7 tones of the diatonic scale, both melodically and harmonically. In one-part Pandiatonic Progressions, the melody is made up of 7 different notes of the diatonic scale. Such a progression may then be melodically inverted, read backward, or both, resulting in 4 different forms. Pandiatonic Counterpoint in strict style uses progressions of 7 different notes in each voice, with no vertical duplication.

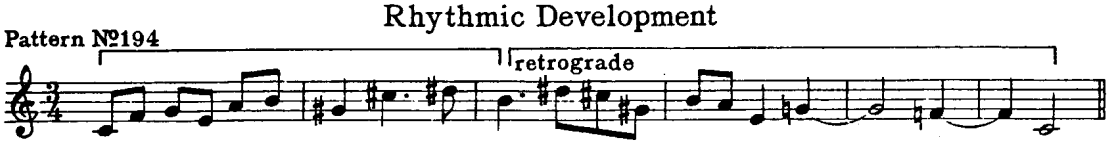
Pandiatonic Harmony is the twentieth century counterpart of classical harmony. Modern composers of such varied backgrounds and musical persuasions as Ravel, Stravinsky, Hindemith, Milhaud, Copland and Roy Harris make use of this technique, arriving at it by different creative processes. Jazz composers, too, have found, by sheer experimentation, effective application for the enriched chords of Pandiatonic formations. It is a common practice to end an orchestral arrangement of a popular song by the enriched major triad with an added sixth, seventh, or ninth.

The concluding sections of the THESAURUS demonstrate the various methods by which tonal materials may be used to best advantage. The section Double Notes shows the combinations derived from corresponding scales and patterns. Plural Scales and Arpeggios give examples of common major and minor progressions arranged consecutively in chromatic transposition. Polytonal Scales are simultaneous progressions in different keys. Polyrhythmic Scales are progressions in different rhythms. Polytonal Polyrhythmic Scales combine different rhythms in different tonalities.

A special word is to be said about Palindromic Canons. Palindromes are words or sentences that read the same forward or backward, as the sentence *Able Was I Ere I Saw Elba* (applied to Napoleon). Similarly, Palindromic Canons read the same backward or forward. The two Palindromic Canons based on Pattern No. 72 are particularly interesting. They result in a progression of enharmonic triads or their inversions, alternating in major and minor keys.

Fragments of the scales and patterns in the THESAURUS may be used as motives and themes. The rhythmical elaboration is left to the imagination of the composer. By using a portion of a pattern in forward and retrograde motion, in varied rhythms within a given meter, it is possible to form an unlimited number of melodic figures.

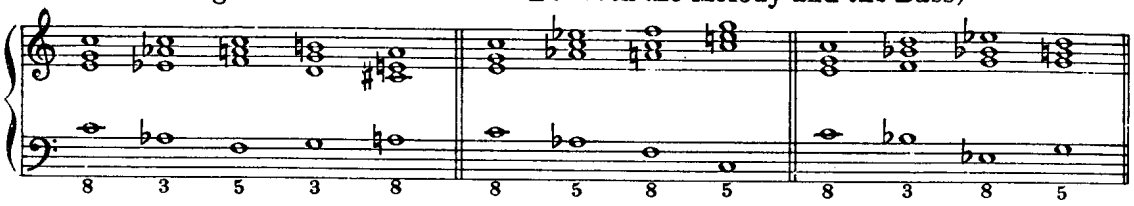
Rhythmic Development



Two formulas are used in the harmonization of the scales and patterns: one by common triads, and one by seventh-chords. In the harmonization by common triads, only root positions of major triads in close harmony are applied. Either the root, the third, or the fifth may appear in the melody. These positions are referred to as Octave, Tertian, and Quintan, or in figures, 8, 3, and 5. When the melody ascends, diatonically or chromatically, the positions change from the Octave to the Tertian to the Quintan to the Octave. When the melody descends, the order of the positions is reversed. Furthermore, the order of positions may be reversed at the end of a cadence even in ascending motion. When the melody is stationary, the order of positions is free. The resulting harmony traverses several tonalities in an alternation of successive major chords.

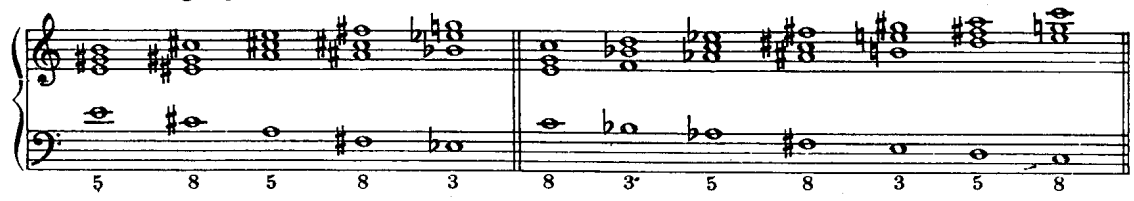
Harmonization in Major Triads

(Figures Indicate Intervals Between the Melody and the Bass)



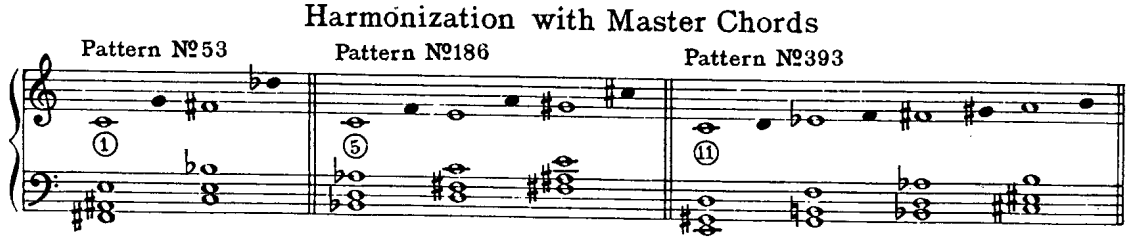
The harmonization in major triads is found in the music of Debussy, Moussorgsky, and other composers of the French and Russian schools. A classical example is the scene in the monk's cell in Moussorgsky's opera *Boris Godunov*. In the second act of Puccini's opera *Tosca* the Whole-Tone scale in the bass is harmonized by a row of major triads with the positions following the Octave-Tertian-Quintan (8-3-5) formula.

Moussorgsky: *Boris Godunov* Puccini: *Tosca* (Whole-Tone Scale in the Bass)



The second type of harmonization is effected by means of Master Chords. These Master Chords are dominant-seventh chords with the fifth omitted. In combination with melodic elements of a given scale or pattern, these chords form harmonic structures of the type of seventh-chords, ninth-chords, or whole-tone chords. The Master Chords are indicated for ascending scales and patterns in the sections Tritone Progression, Ditone Progression and Sesquitone Progression by figures within circles, as ⑤, and are used to harmonize an entire rhythmic group in a given progression. In the Tritone and Sesquitone Progressions it is also possible to harmonize the entire octave range with a single Master Chord. Furthermore, any Master Chord suitable for harmonization of a given progression may be transposed a tritone up or down with satisfactory results.

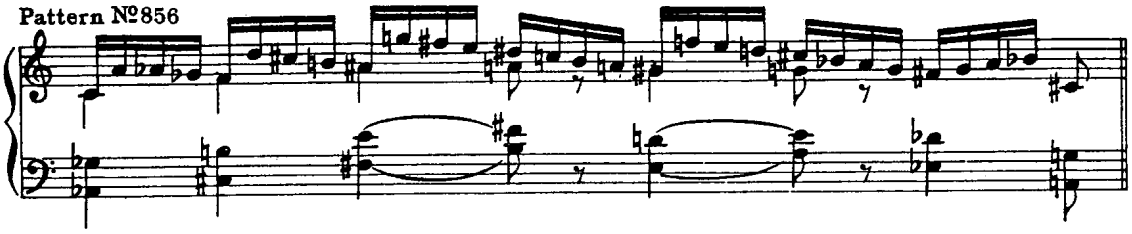
Harmonization with Master Chords



Harmonization of both types is given in the tables on pp.240-241. To harmonize in major triads, it is necessary to alternate the Octave, Tertian, and Quintan positions given in the table. In harmonizing by seventh-chords, ninth-chords, and whole-tone chords, any chord under a given melody note will furnish a workable harmony.

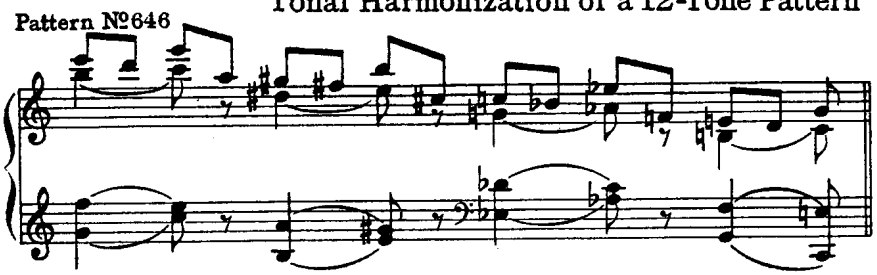
The patterns in the Diatessaron and Diapente Progressions lend themselves to harmonization characteristic of the Dominant-Tonic cycle. When harmonized in consecutive seventh-chords, such patterns acquire a Schumannesque quality.

Harmonization in Seventh-Chords



A harmonization of the Dominant-Tonic type will impart a feeling of tonality even to a 12-tone progression.

Tonal Harmonization of a 12-Tone Pattern



Traditional harmonization in major and minor keys uses chords formed by the diatonic scale. Similarly, new scales may be harmonized with the aid of chords formed by the notes of the scale itself. Examples of such Autochordal Harmonization are given in a special table. There are scales that admit of only 2 different triads, as Scale No. 7, which can be harmonized with C major and F♯ major triads. The 8-tone scale No. 393 is capable of forming 8 different triads, while other scales, such as No. 5, do not yield a single triad.

All scales and patterns in the THESAURUS are centered on C as the initial and concluding tone. It goes without saying that these progressions can be transposed to any tonal center according to a composer's requirements.

John Stuart Mill once wrote: "I was seriously tormented by the thought of the exhaustibility of musical combinations. The octave consists only of five tones and two semitones, which can be put together in only a limited number of ways of which but a small proportion are beautiful: most of these, it seemed to me, must have been already discovered, and there could not be room for a long succession of Mozarts and Webers to strike out, as these have done, entirely new surpassing rich veins of musical beauty. This sort of anxiety, may, perhaps, be thought to resemble that of the philosophers of Laputa, who feared lest the sun be burnt out."

The fears of John Stuart Mill are unjustified. There are 479,001,600 possible combinations of the 12 tones of the chromatic scale. With rhythmic variety added to the unbounded universe of melodic patterns, there is no likelihood that new music will die of internal starvation in the next 1000 years.

NICOLAS SLONIMSKY

1 January 1947 Boston, Massachusetts

EXPLANATION OF TERMS

AUTOCHORDAL HARMONIZATION. Application of chords derived from the tones of a given scale (Example, Scale No. 12: C, D♯, F, F♯, A, B, C, harmonized in 2 triads, F major and B major).

BITONAL ARPEGGIOS. [Nos. 1191-1213]. Melodic progressions formed of alternating arpeggios in 2 different keys.

BITONAL PALINDROMIC CANONS. Canons that result in the formation of 6-tone chords composed of 2 triads (Example, Scale No. 7: C, C♯, E, F♯, G, A♯, C, developed canonically, forming bitonal chords of C major and F♯ major).

CHORD OF THE MINOR 23RD. Chord consisting of 12 different notes, arranged in thirds, and forming 4 mutually exclusive triads.

COMPLEMENTARY SCALES. Melodic progressions of two octaves in range, comprising all 12 tones of the chromatic scale (Example, C major scale plus the pentatonic scale on black keys).

CONJUNCT POLYTETRACHORD. Progression of 12 tetrachords traversing all 12 keys, with the terminal tone of one tetrachord being the initial tone of the next (Examples, Phrygian Polytetrachord, No. 830; Minor Polytetrachord, No. 832; Major Polytetrachord, No. 833).

CROSSING INTERVALS. [Nos. 1243-1250]. Two overlapping 6-tone rows comprising all 12 different tones, each row forming a progression of major or minor seconds, thirds, fourths, fifths and sixths.

DIAPENTE. Interval of 3½ tones; a perfect fifth.

DIATESSARON. Interval of 2½ tones; a perfect fourth.

DISJUNCT POLYTETRACHORD. Progression of 12 tetrachords traversing all 12 keys, with adjacent tetrachords separated by one diatonic degree (Examples, Disjunct Phrygian Polytetrachord, No. 951; Disjunct Minor Polytetrachord, No. 956; Disjunct Major Polytetrachord, No. 958; Disjunct Lydian Polytetrachord, No. 959).

DITONE. Interval of 2 whole tones; a major third.

GRANDMOTHER CHORD. Chord, invented by Nicolas Slonimsky on February 13, 1938, containing all 12 different tones and different intervals symmetrically invertible in relation to the central interval, the tritone, which is the inversion of itself; the intervallic structure being a row of alternatingly odd and even intervals (counted in semitones), the odd-numbered series forming a diminishing arithmetical progression, and the even-numbered series an increasing progression.

HEPTATONIC ARPEGGIOS. [Nos. 1088-1141]. Melodic progressions by thirds derived from Heptatonic scales.

HEPTATONIC SCALES. [Nos. 1034-1087]. Diatonic progressions of 7 degrees, such as major and minor scales and church modes, and also scales containing 1 or 2 augmented seconds.

INFRA-INTER-ULTRAPOLATION. Pattern formed by the insertion of notes below, between, and above the principal tones of a progression (Example, Pattern No. 341).

INFRAPOLATION. Insertion of a note below the principal tones of a progression (Example, Pattern 231).

INTERPOLATION. Insertion of one or more notes between the principal tones of a progression (Example, Scale No. 21).

INTER-ULTRAPOLATION. Insertion of 2 notes, one between the principal tones of a given progression, the other above the principal tone (Example, Pattern No. 123).

MAJOR BITONAL CHORD. Chord of 2 major triads usually in keys whose tonics are at the interval of a tritone, as C major and F♯ major.

MAJOR POLYTETRACHORD. A series of major tetrachords, conjunct or disjunct, covering all 12 major keys (Examples, No. 833 and No. 958).

MASTER CHORDS. Dominant-seventh chords with the fifth omitted, tabulated chromatically in 12 different keys, to be used in harmonizing scales and melodic patterns, and indicated by figures, enclosed in circles, from 1 to 12.

MINOR BITONAL CHORD. Chord consisting of 2 minor chords, usually with tonics at the interval of a tritone, as C minor and F♯ minor.

MINOR POLYTETRACHORD. A series of minor tetrachords, conjunct or disjunct, covering all 12 minor keys (Examples, No. 832 and No. 956).

MIRROR INTERVAL PROGRESSIONS. Scales and patterns in which the descending figure is the melodic inversion of the ascending figure (Example, Scale No. 1 ascending is the mirror inversion of Scale No. 4 descending).

MOTHER CHORD. Chord, introduced by Fritz Klein in 1921, containing all 12 tones and 11 different intervals.

MUTUALLY EXCLUSIVE TRIADS. Four triads (major, minor, diminished or augmented) comprising all 12 different tones (Example, C major, F♯ major, D minor, and G♯ minor).

NON-SYMMETRIC INTERPOLATION. Free insertion of additional notes between the principal tones.

OCTAVE POSITION. In four-part harmony, a triad with the root both in the melody and in the bass.

PALINDROMIC CANONS. Canons that read the same backward or forward.

PANDIATONIC HARMONY. Part-writing in chords freely combined from the 7 tones of the diatonic scale.

PANDIATONIC PROGRESSIONS. Tonal rows composed of all 7 different tones of the diatonic scale.

PATTERN. Melodic figure in which the direction changes from ascending to descending, or vice versa, before arriving at the terminal point (All infrapolated and ultrapolated progressions are patterns).

PENTATONIC SCALES. [Nos. 1142-1190]. Scales of 5 notes.

PERMUTATION. Distribution of notes of a given melodic pattern in different orders of succession.

PHRYGIAN POLYTETRACHORD. Polytetrachord composed of 12 conjunct or disjunct Phrygian tetrachords (1 semitone plus 2 whole tones), (Examples, No. 830 and No. 951).

PLURAL SCALES. Progressions formed by disjunct scales, as C major, D♭ major, D major, and E♭ major.

POLYRHYTHMIC SCALES. Simultaneous progressions in different rhythms.

POLYTETRACHORD. Progression of 12 tetrachords passing through all 12 keys conjunctly (with the last tone of one tetrachord coinciding with the first tone of the next), or disjunctly (with the terminal tone of the first tetrachord separated by a diatonic degree from the initial tone of the next).

POLYTONAL POLYRHYTHMIC SCALES. Simultaneous progressions in different keys and in different rhythms.

POLYTONAL SCALES. Scales in different tonalities played simultaneously.

PROGRESSION. General term for any scale or melodic pattern.

PROMETHEUS SCALE. [No. 50]. The 6-tone scale (C, D, E, F♯, A, B♭) used by Scriabin in his symphonic poem *Prometheus.*

PYRAMID CHORD. Chord, introduced by Fritz Klein in 1921, composed of a series of diminishing intervals from an octave to a semitone.

QUADRITONE. Interval of 4 whole tones; a minor sixth.

QUADRITONAL ARPEGGIOS. [Nos. 1251-1291]. Melodic progressions formed by 4 mutually exclusive triads, as C major, D minor, F♯ major, and G♯ minor.

QUARTAL CHORD. 12-tone chord arranged in perfect fourths.

QUINQUETONE. Interval of 5 whole tones; a minor seventh.

QUINTAN POSITION. In four-part harmony, a triad with the root in the bass and the fifth in the melody.

SCALE. Progression of tones changing its direction only at terminal points (All interpolated progressions are scales).

SEMITONE PROGRESSION. Scale consisting of consecutive semitones; a chromatic scale.

SEPTITONE. Interval of 7 whole tones; a major ninth.

SESQUI. Prefix signifying the addition of a semitone to a given interval (Sesquitone = 1½ tones; Sesquiquadritone = 4½ tones).

SESQUIQUADRITONE. Interval of 4½ tones; a major sixth.

SESQUIQUINQUETONE. Interval of 5½ tones; a major seventh.

SESQUITONE. Interval of 1½ tones; a minor third.

SPIRAL PATTERNS. Melodic progressions converging toward a central tone.

SYMMETRIC INTERPOLATION. Insertion of notes at equal intervals from respective pivotal points, resulting in invertible progressions (Example, Scale No. 37: C, D, F, F♯, G, B♭, C, in which the intervals are the same from C upward and from the upper C downward).

TERTIAN POSITION. In four-part harmony, a triad with the root in the bass and the third in the melody.

TONE-CLUSTER. Term, introduced by Henry Cowell, signifying a complex of notes filling one or more octaves, diatonically, chromatically, or pentatonically.

TRITONE. Interval of 3 whole tones; an augmented fourth, or a diminished fifth.

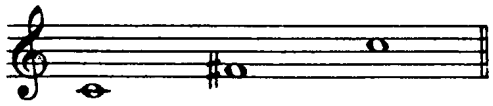
TWELVE-TONE PROGRESSIONS. Melodic figures of 12 different tones.

ULTRAPOLATION. Insertion of one or more notes above a principal tone of a scale (Example, Pattern No. 53, in which G is inserted above F♯).

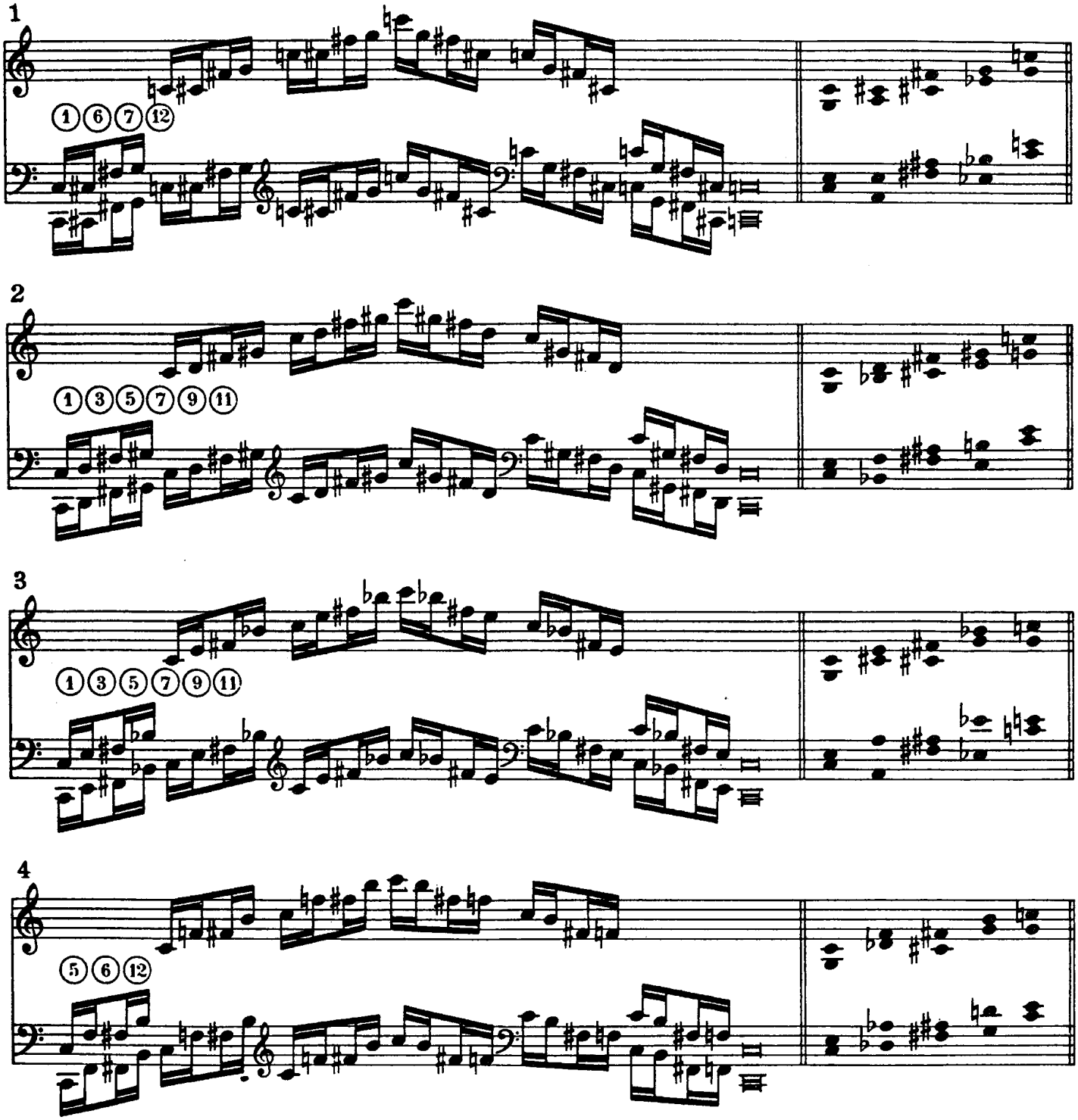
WHOLE-TONE CHORDS. Chords composed of intervals of one or several whole tones each.

Tritone Progression

Equal Division of One Octave into Two Parts

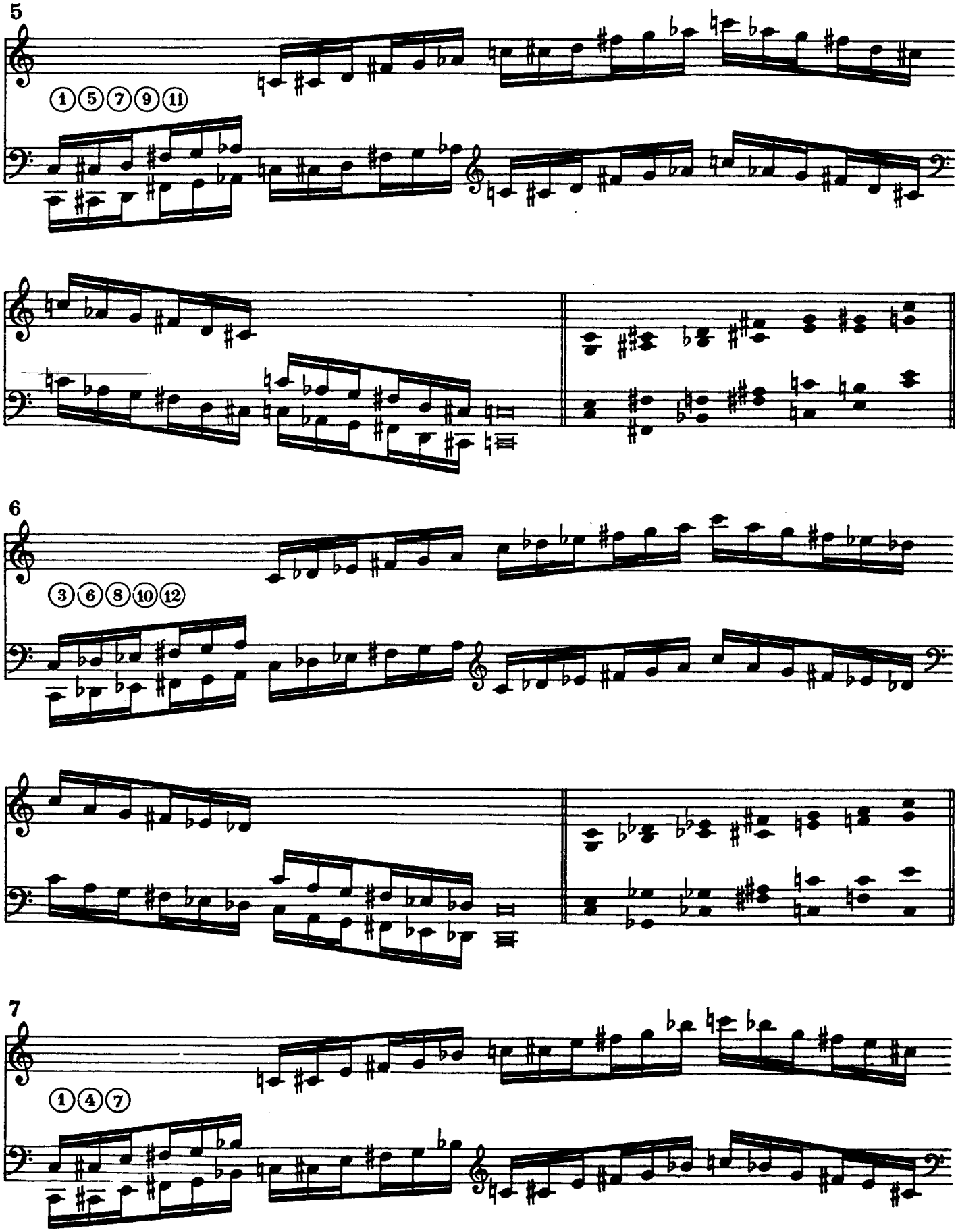


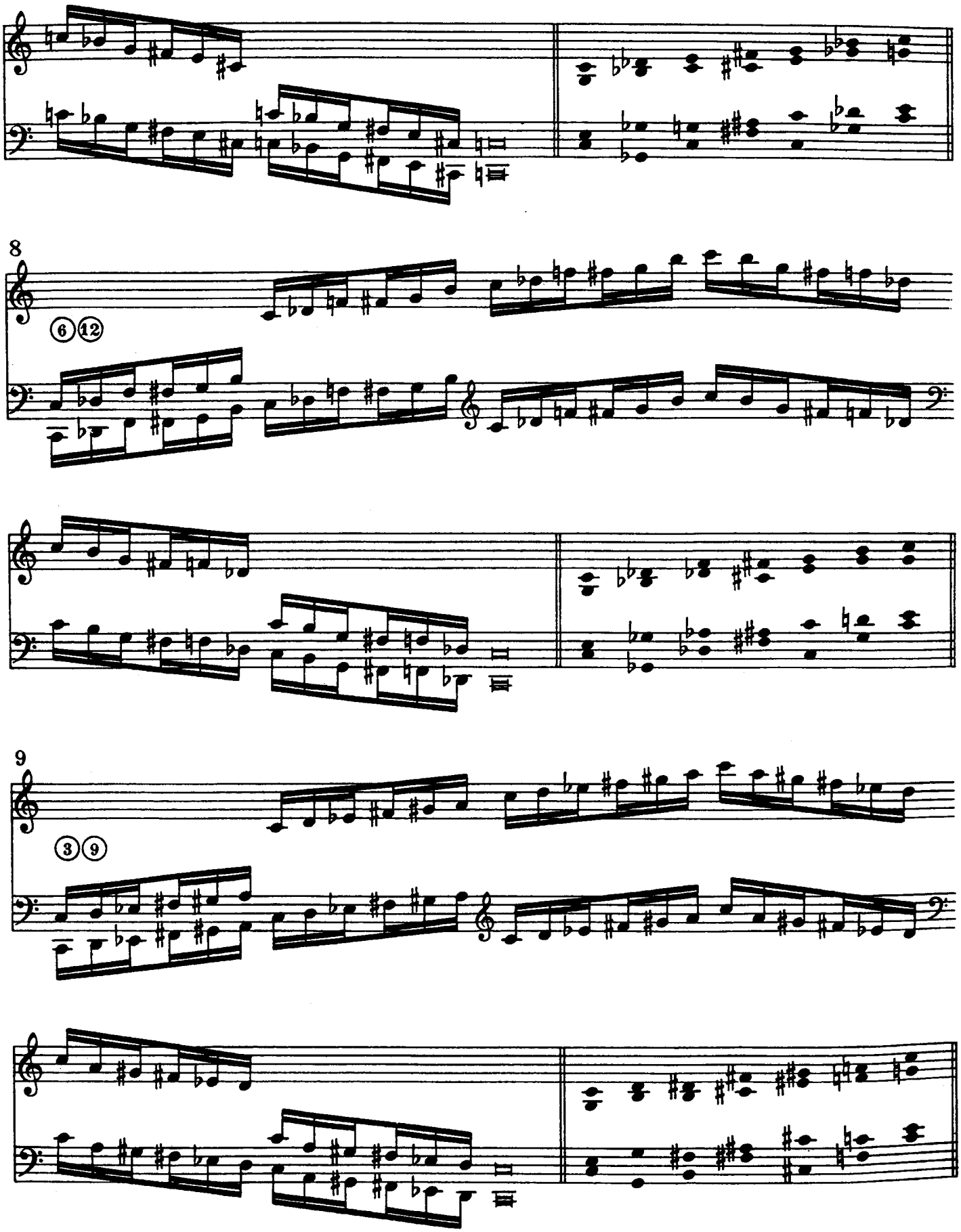
Interpolation of One Note



①②③④⑤⑥⑦⑧⑨⑩⑪⑫ indicate Master Chords.

Interpolation of Two Notes

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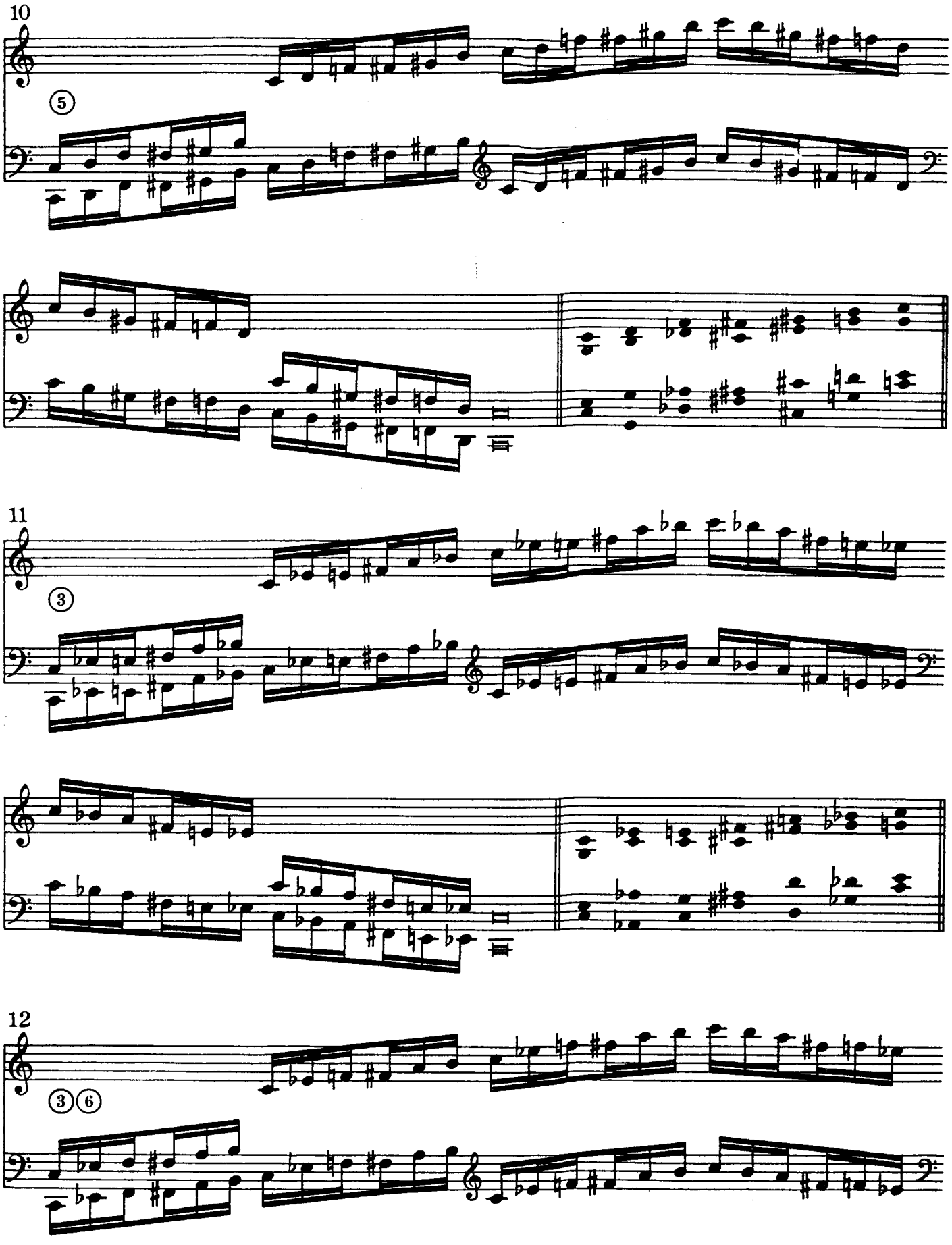
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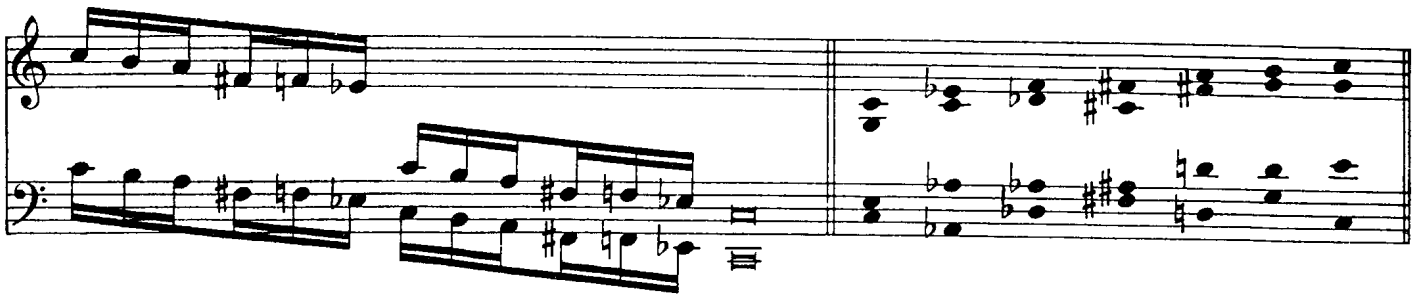

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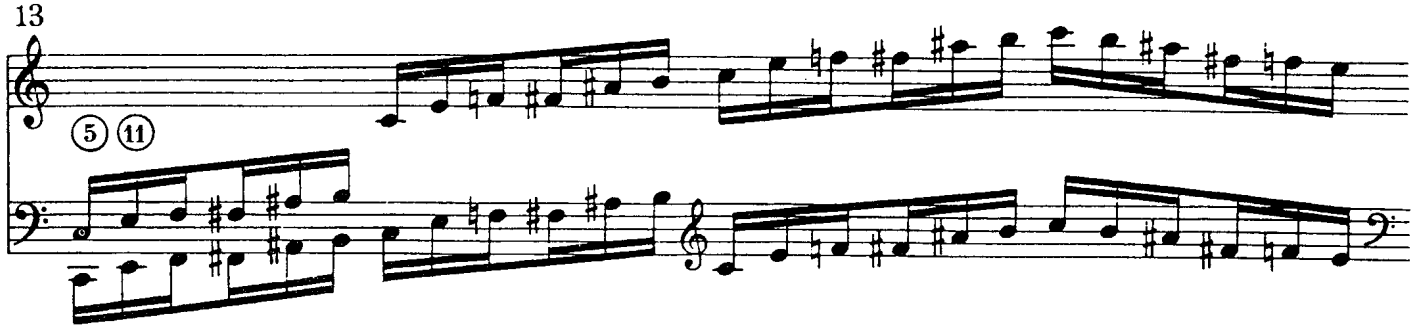

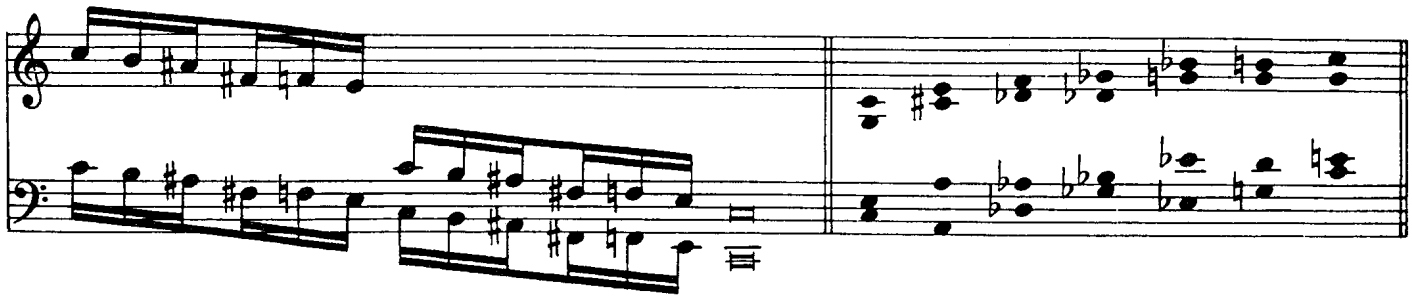

Interpolation of Three Notes

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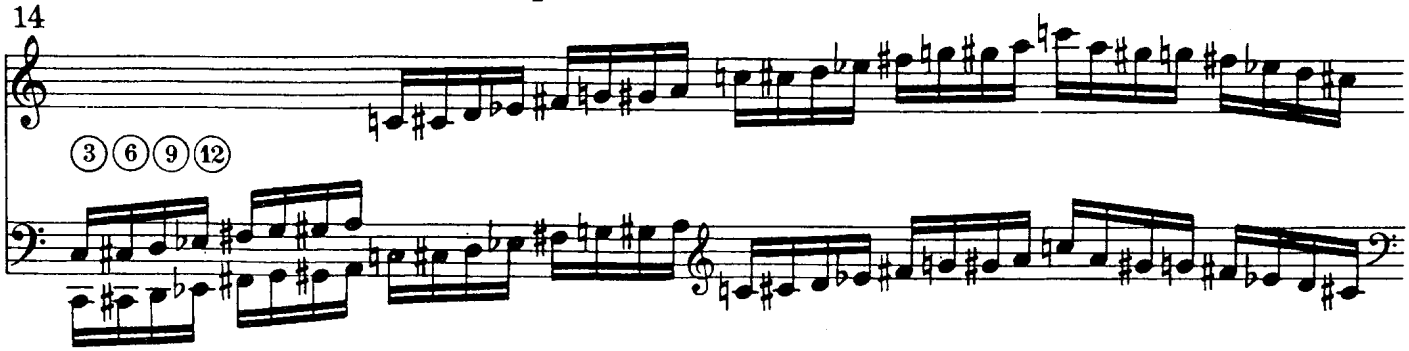

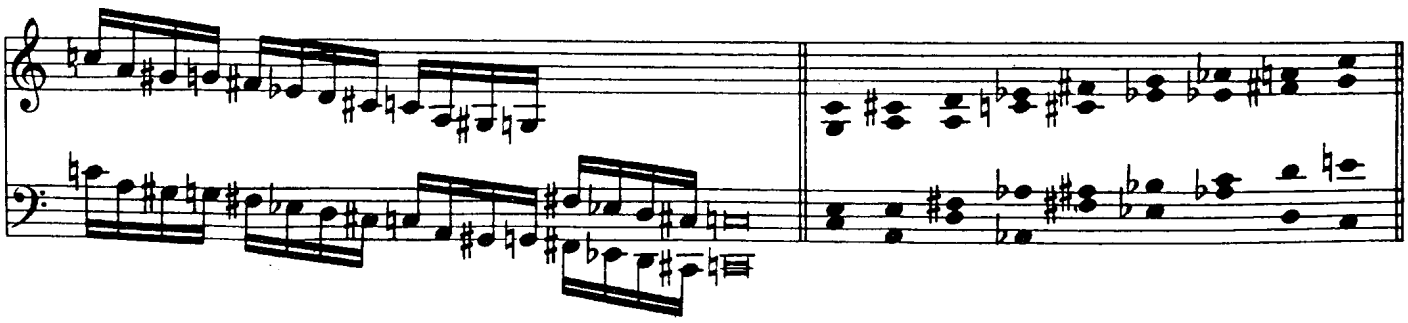

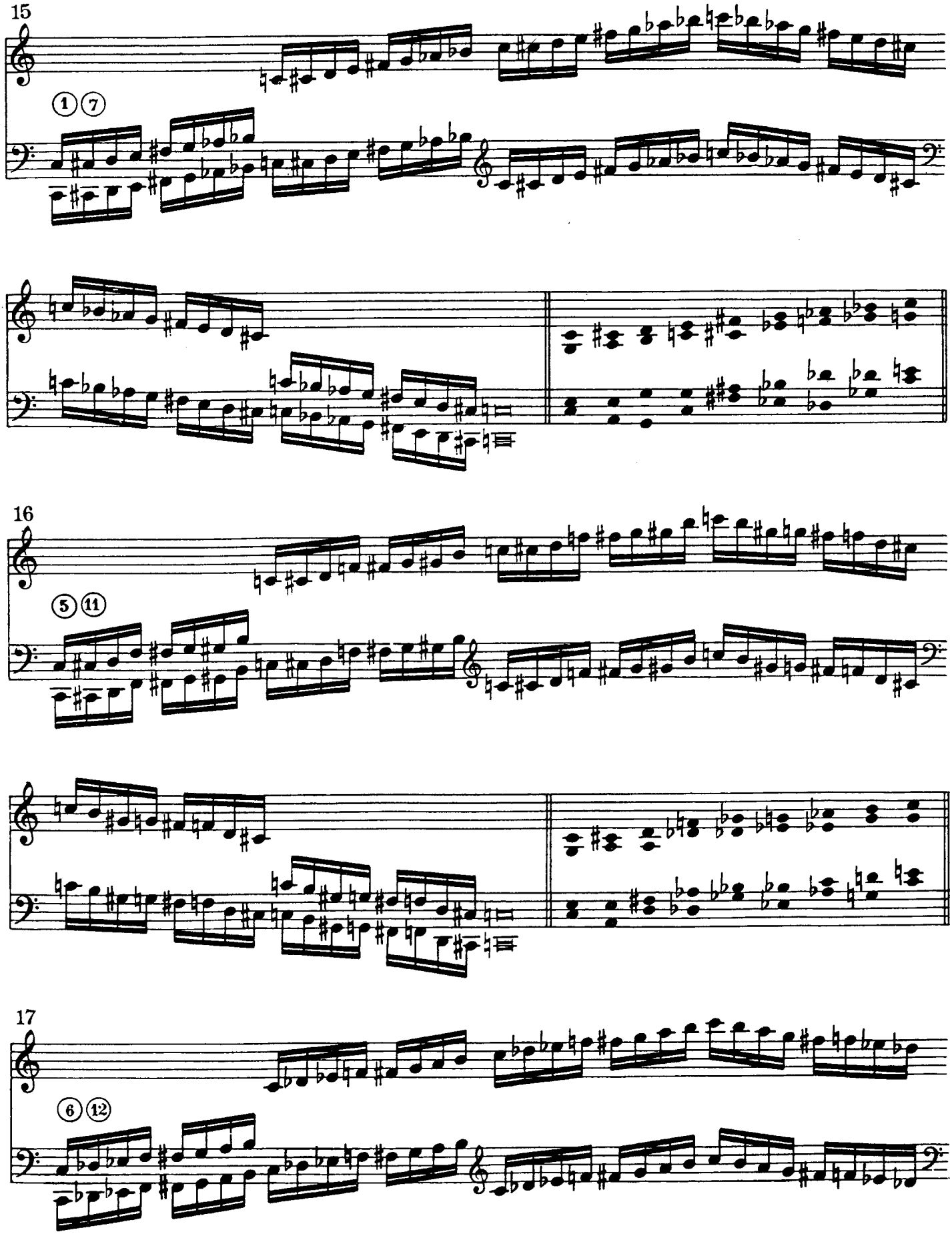
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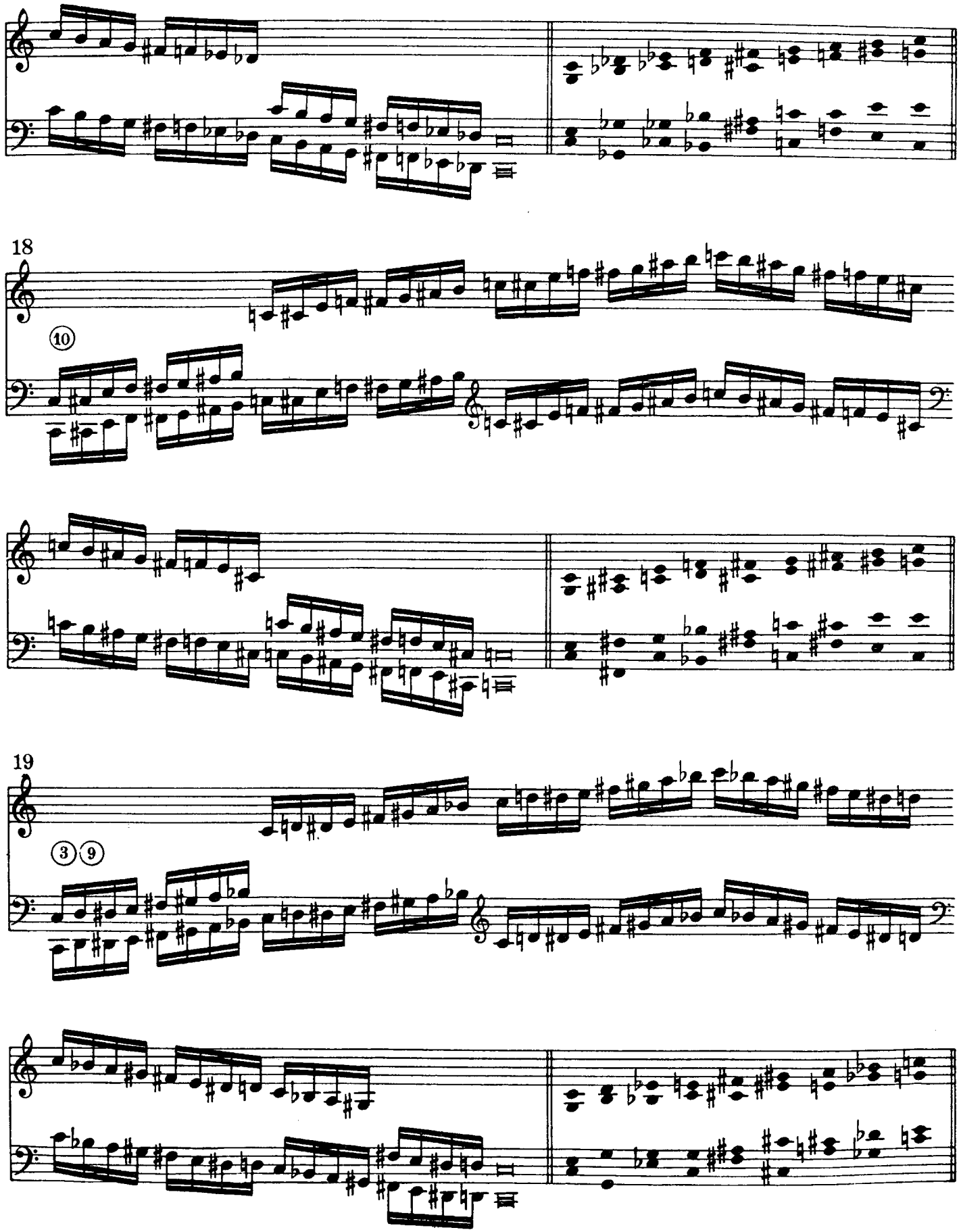
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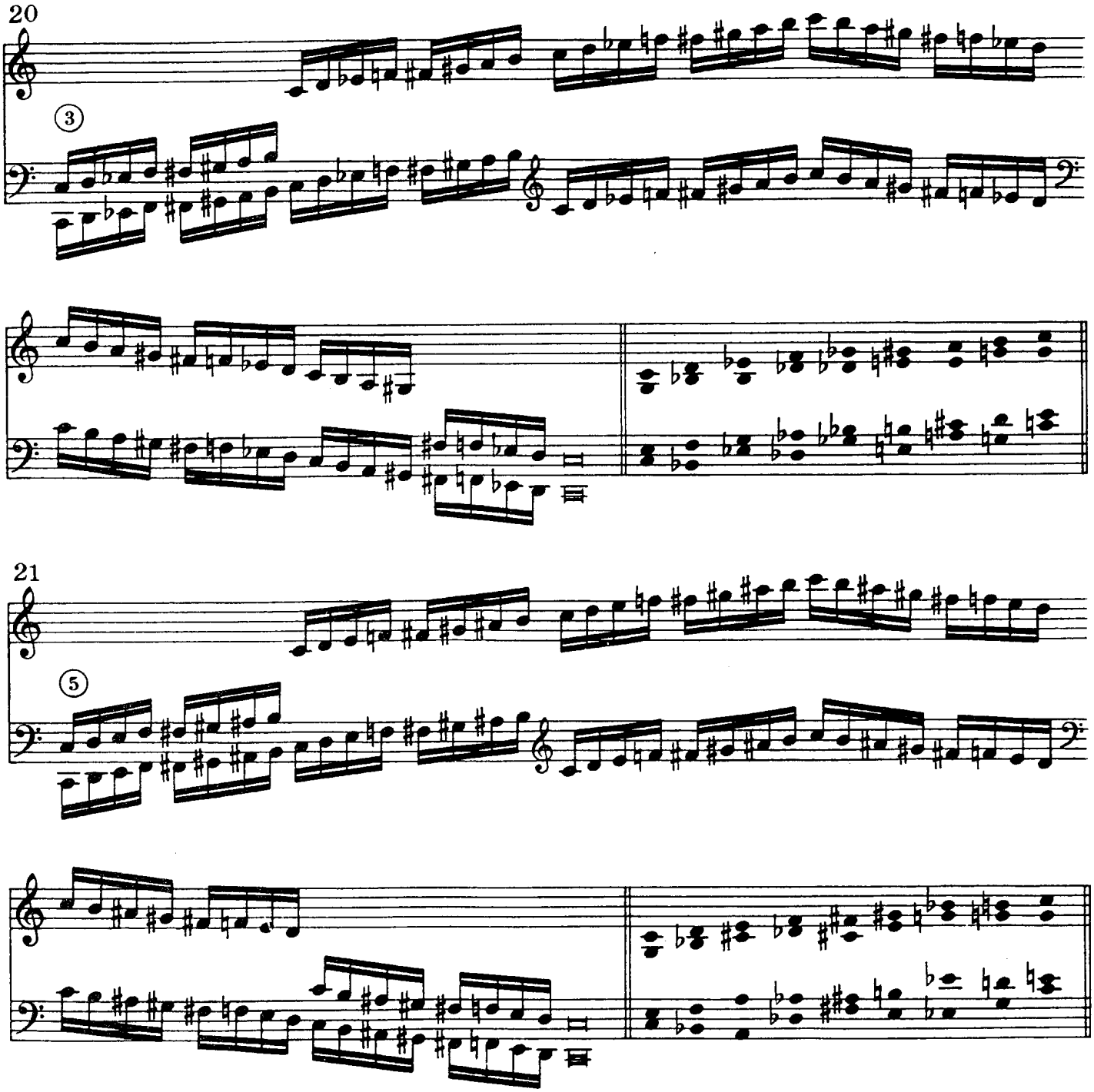
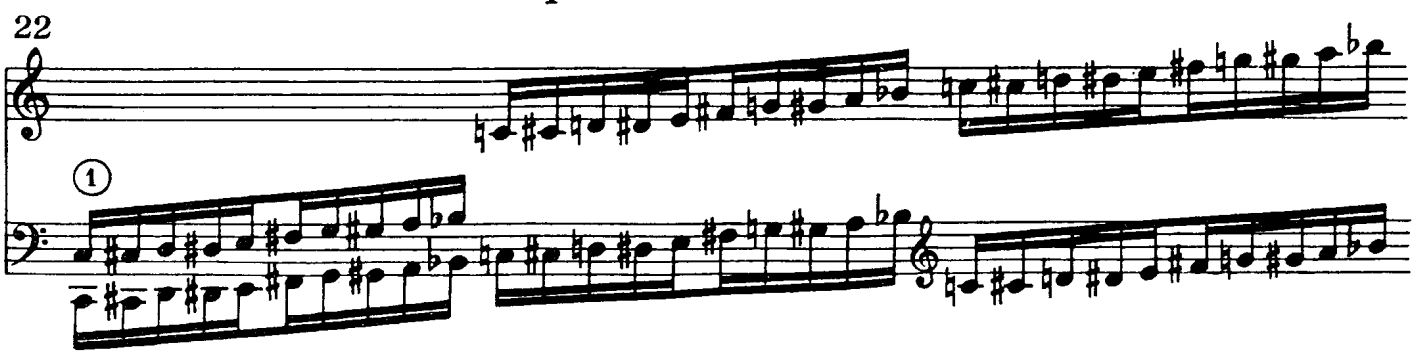
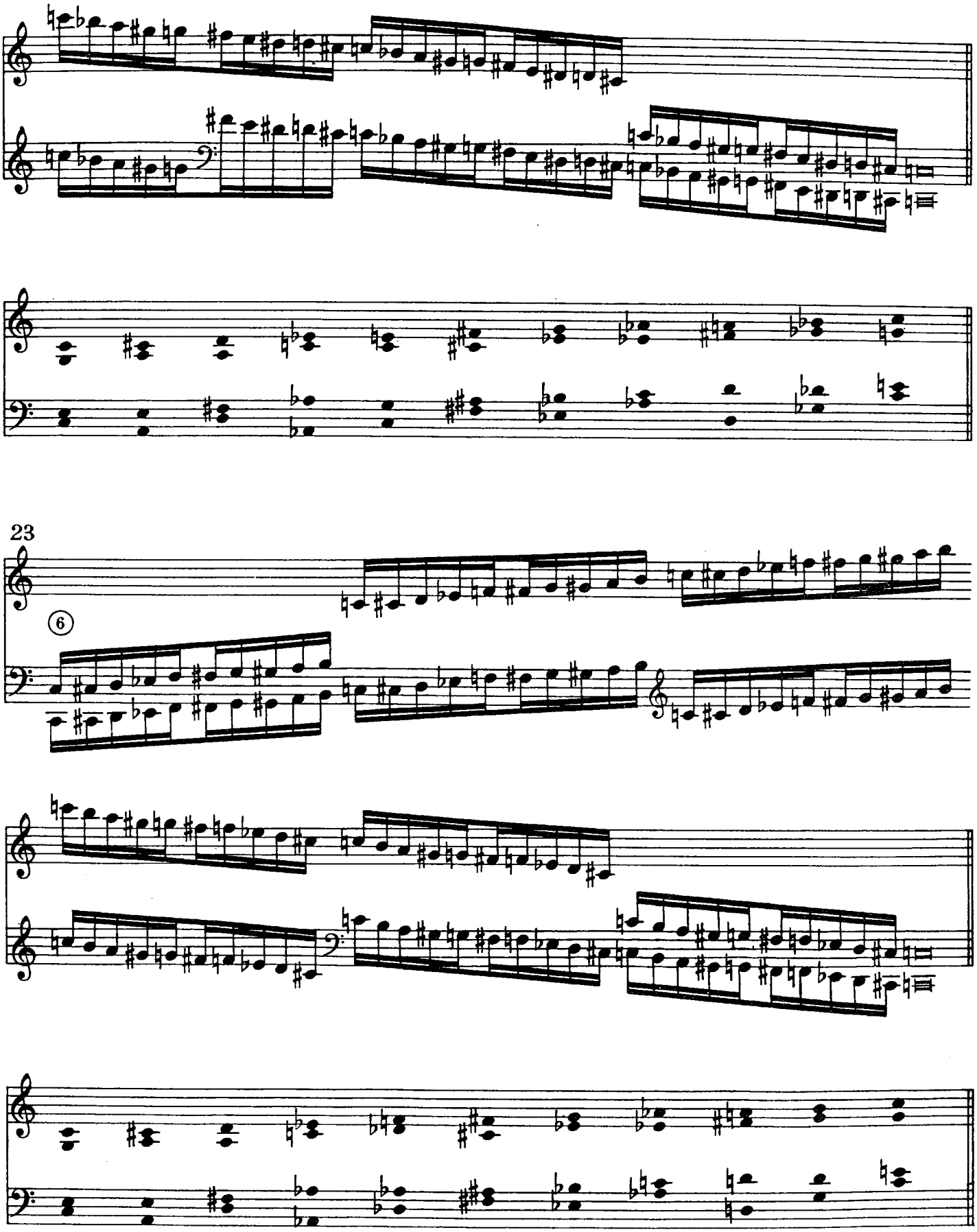


Interpolation of Four Notes

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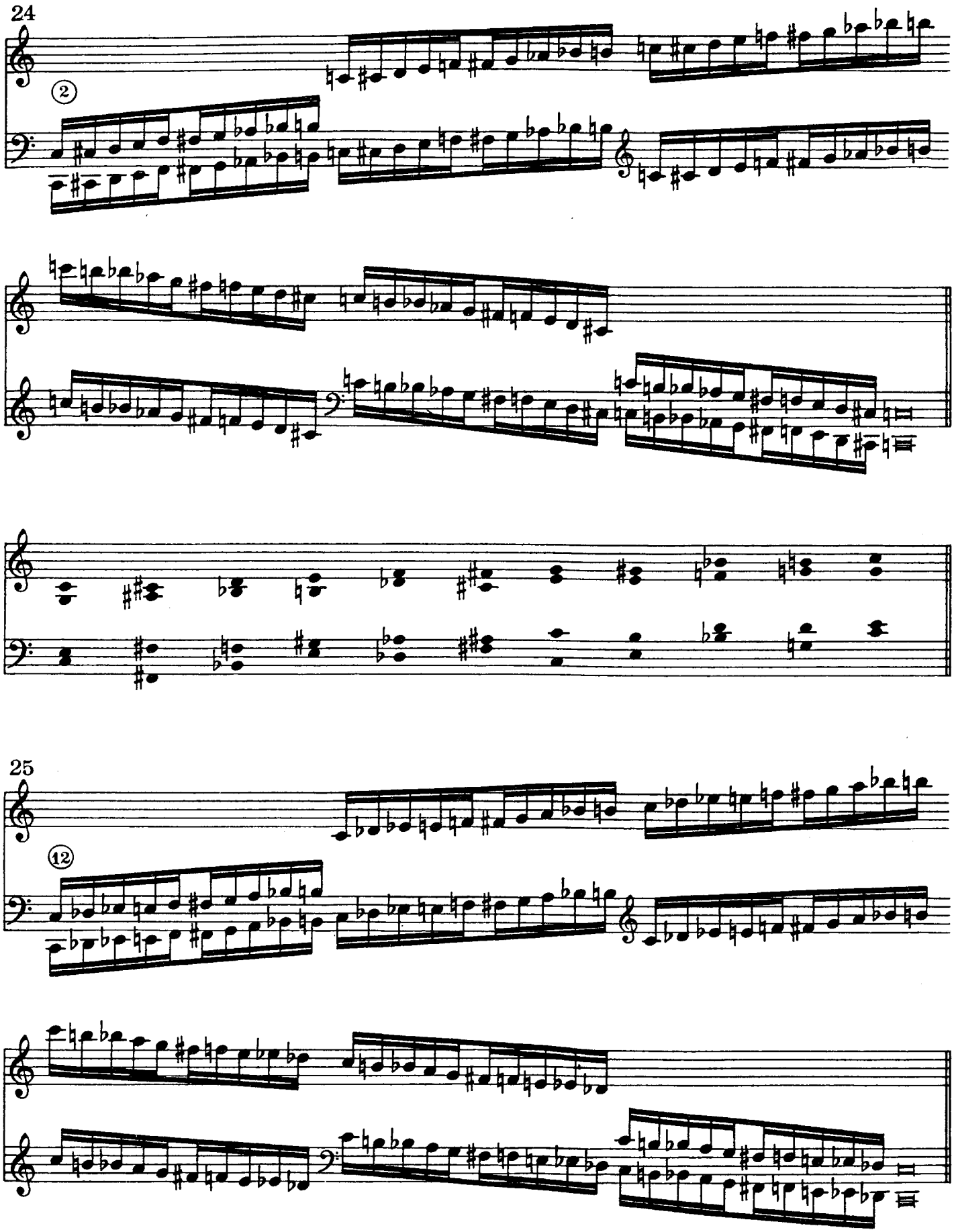
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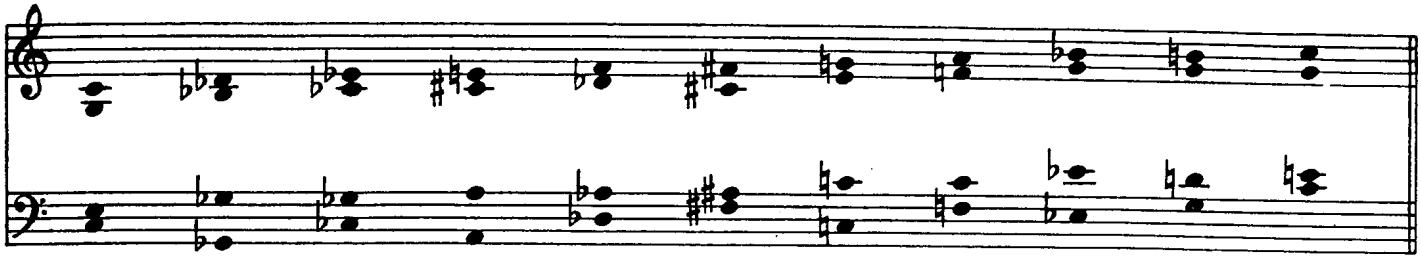

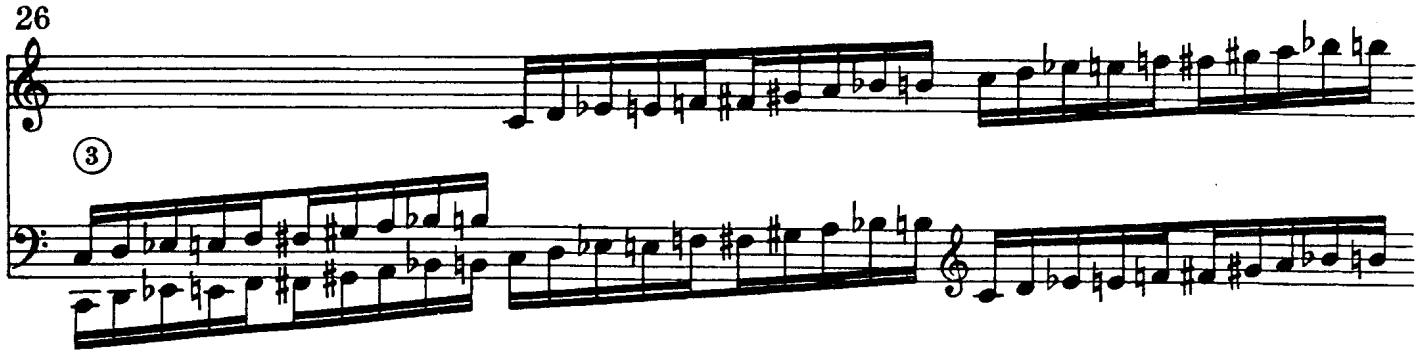
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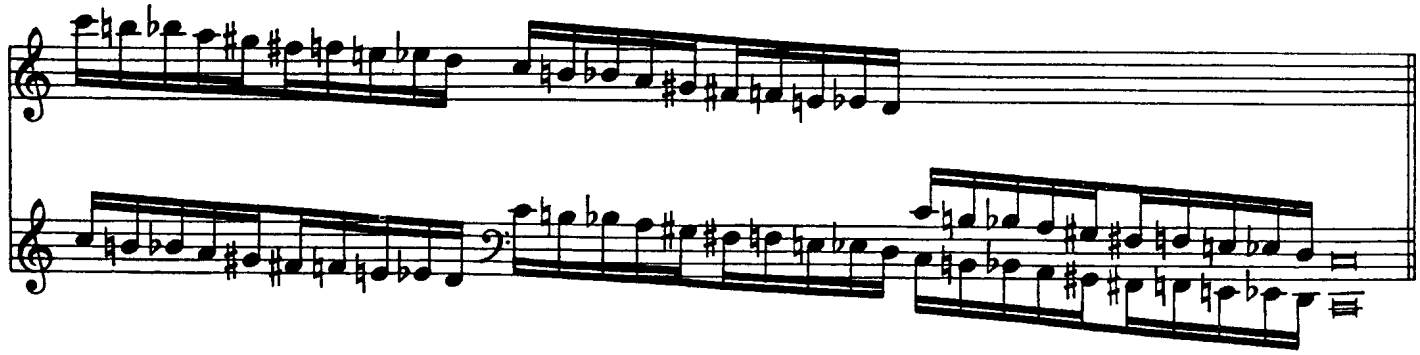
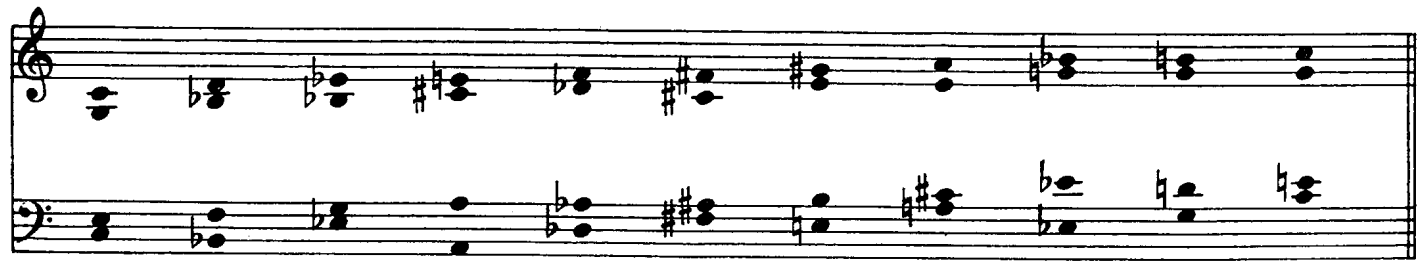
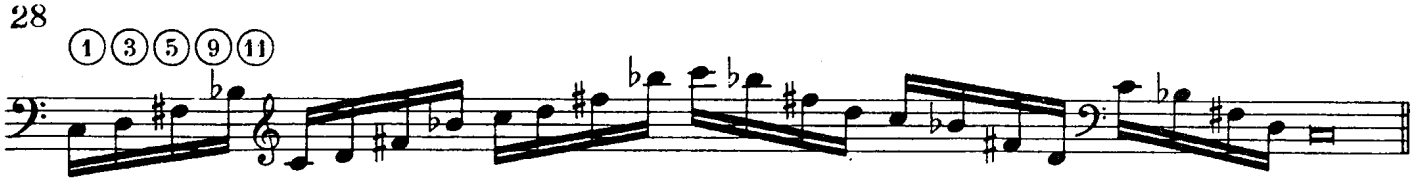




Symmetric Interpolation of One Note

27 ⑥ ⑫

28 ① ③ ⑤ ⑨ ⑪



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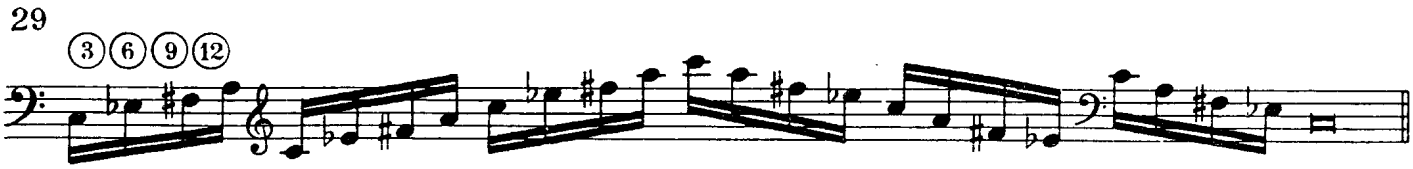

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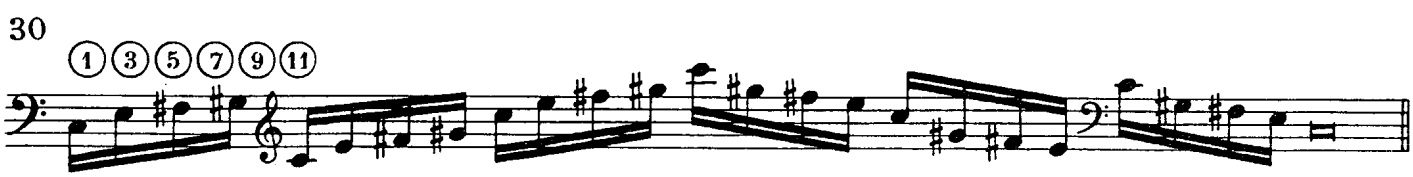

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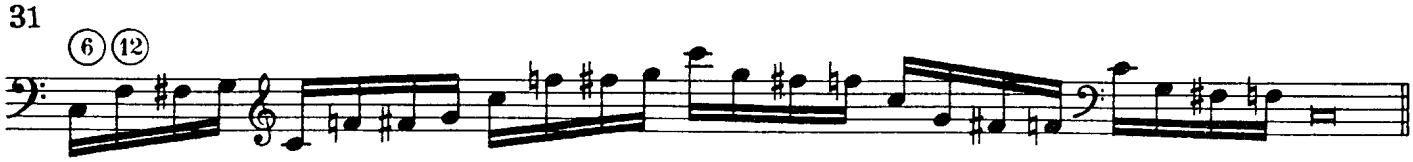

Symmetric Interpolation of Two Notes

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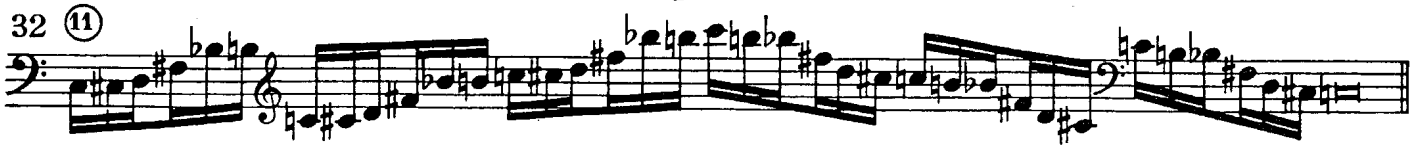

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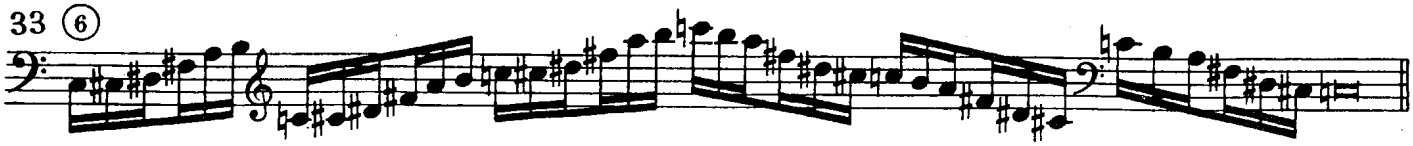

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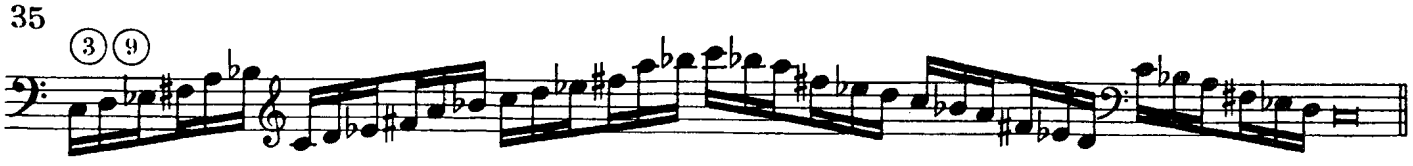
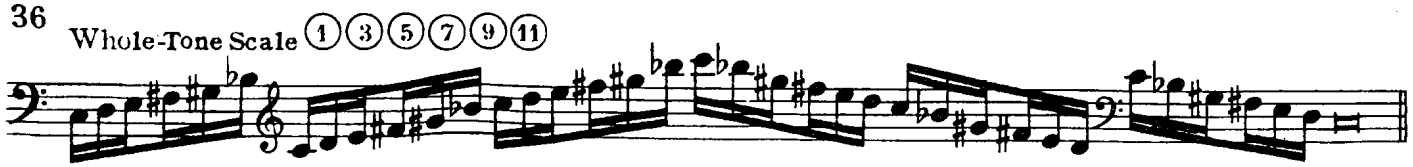


36 Whole-Tone Scale ① ③ ⑤ ⑦ ⑨ ⑪



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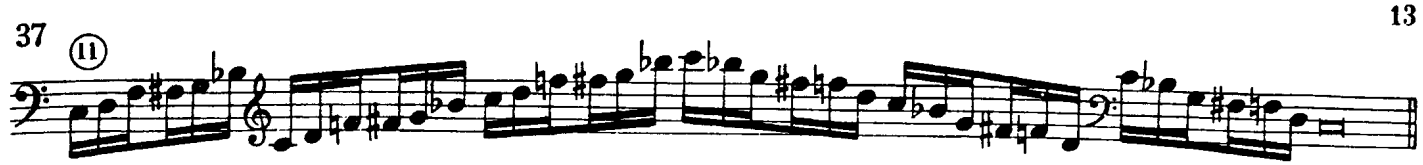
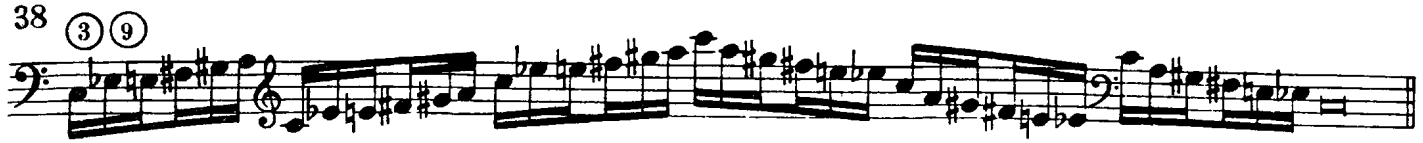
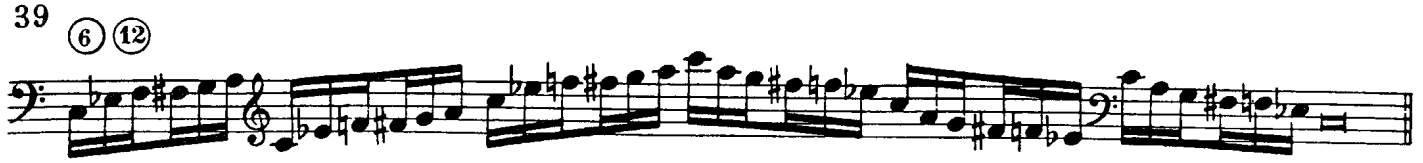


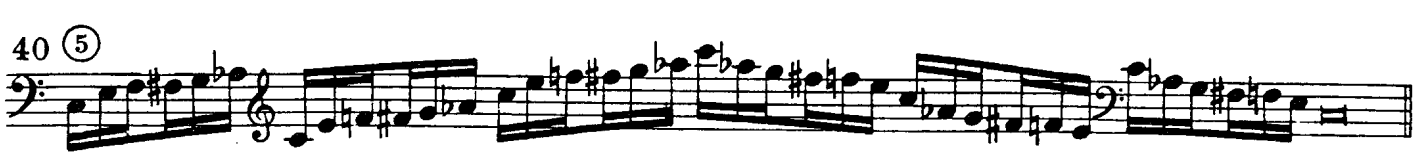
38 ③ ⑨



39 ⑥ ⑫

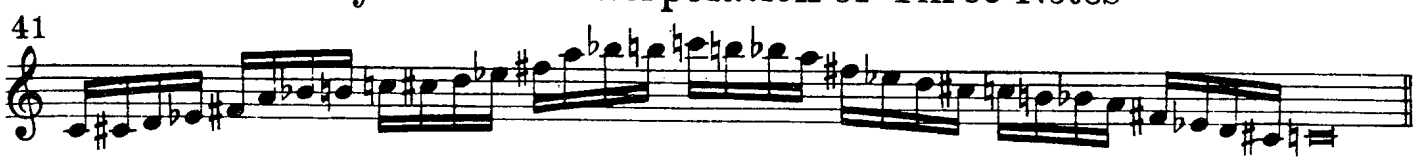


40 ⑤



Symmetric Interpolation of Three Notes

41



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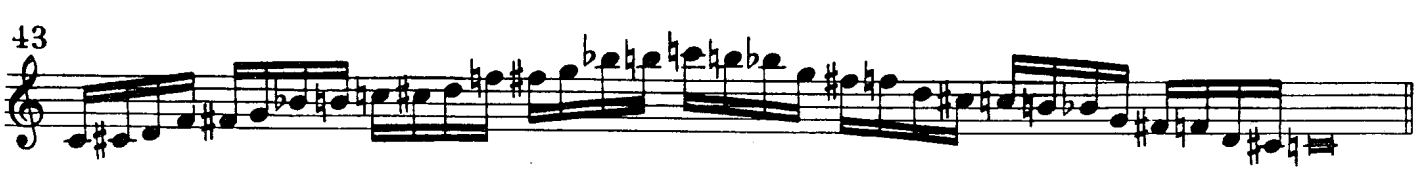

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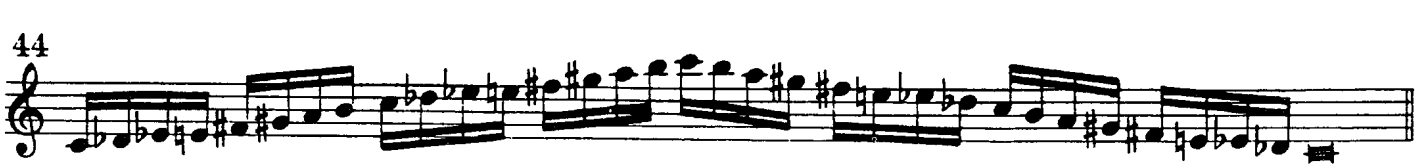

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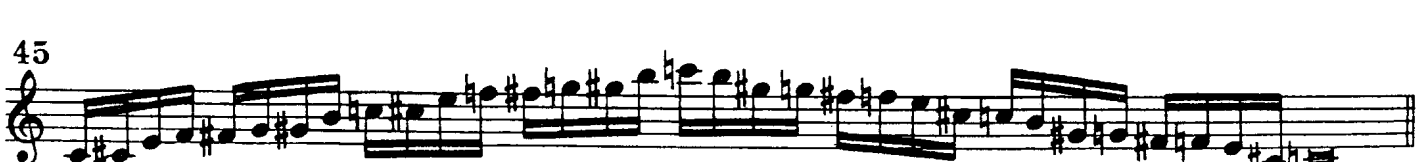

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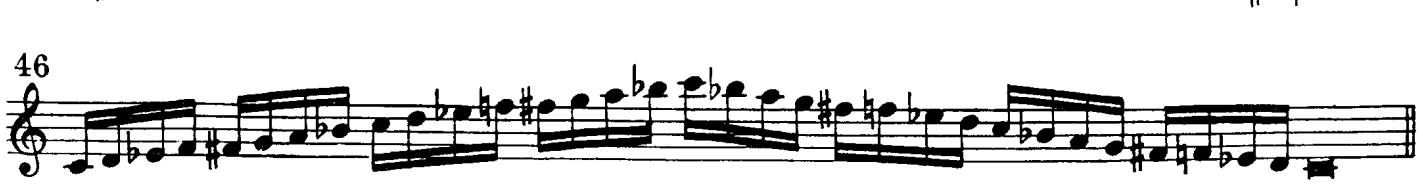

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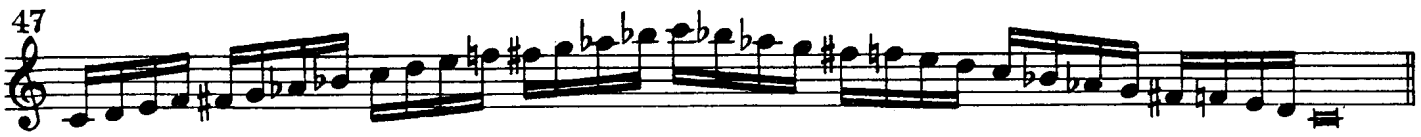

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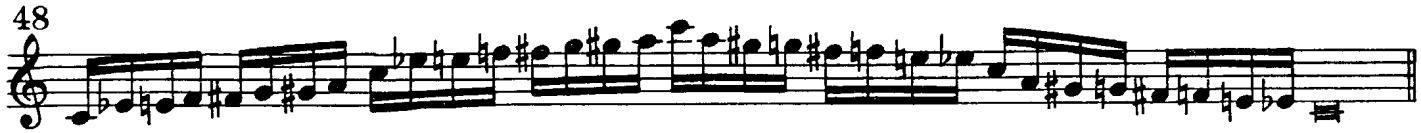
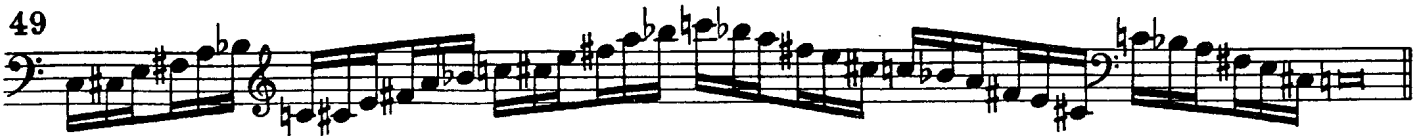
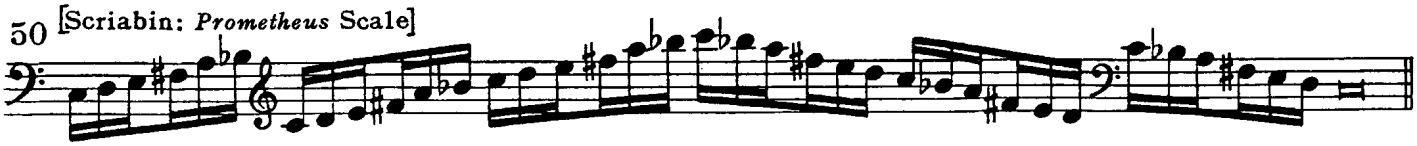


Non-Symmetric Interpolation

49



50 [Scriabin: *Prometheus* Scale]

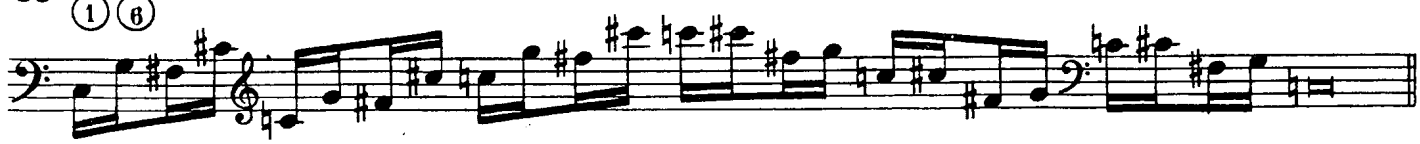


51

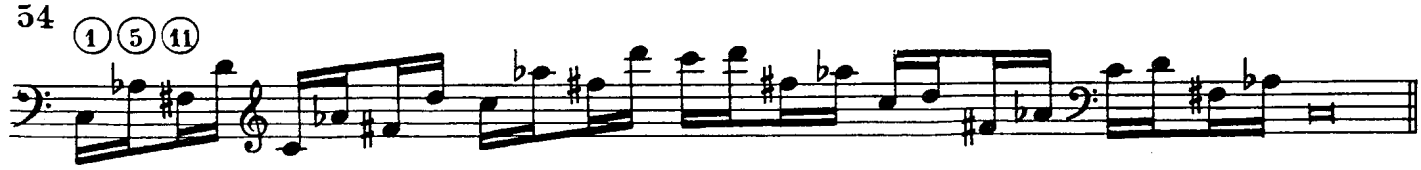
52

Ultrapolation of One Note

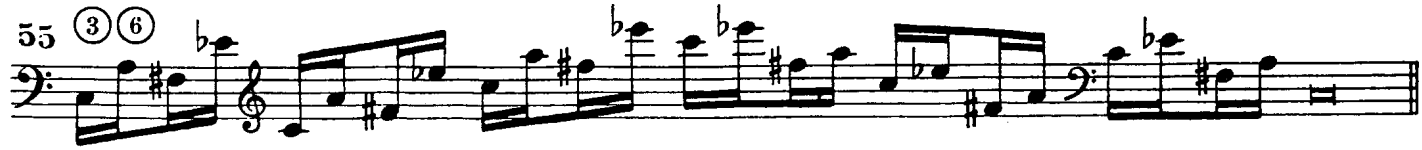
53 ① ⑥



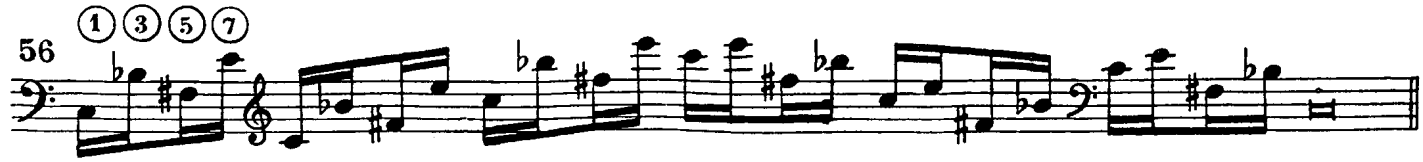
54 ① ⑤ ⑪



55 ③ ⑥



56 ① ③ ⑤ ⑦



57 ⑤⑥⑪⑫

58 ①⑫

Ultrapolation of Two Notes

59 ①

60 ⑥⑫

61 ①

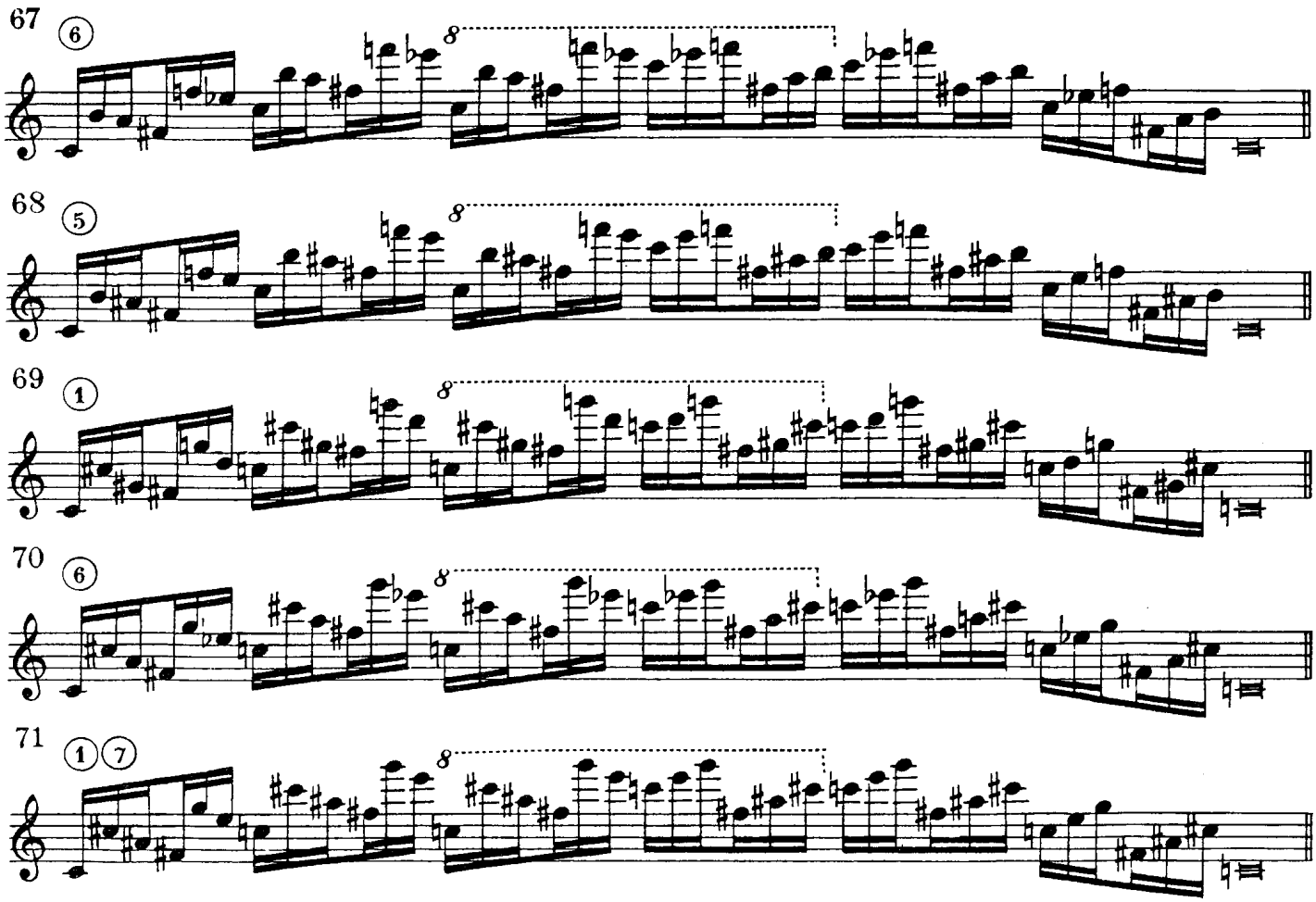
62 ⑥⑫

63 ③

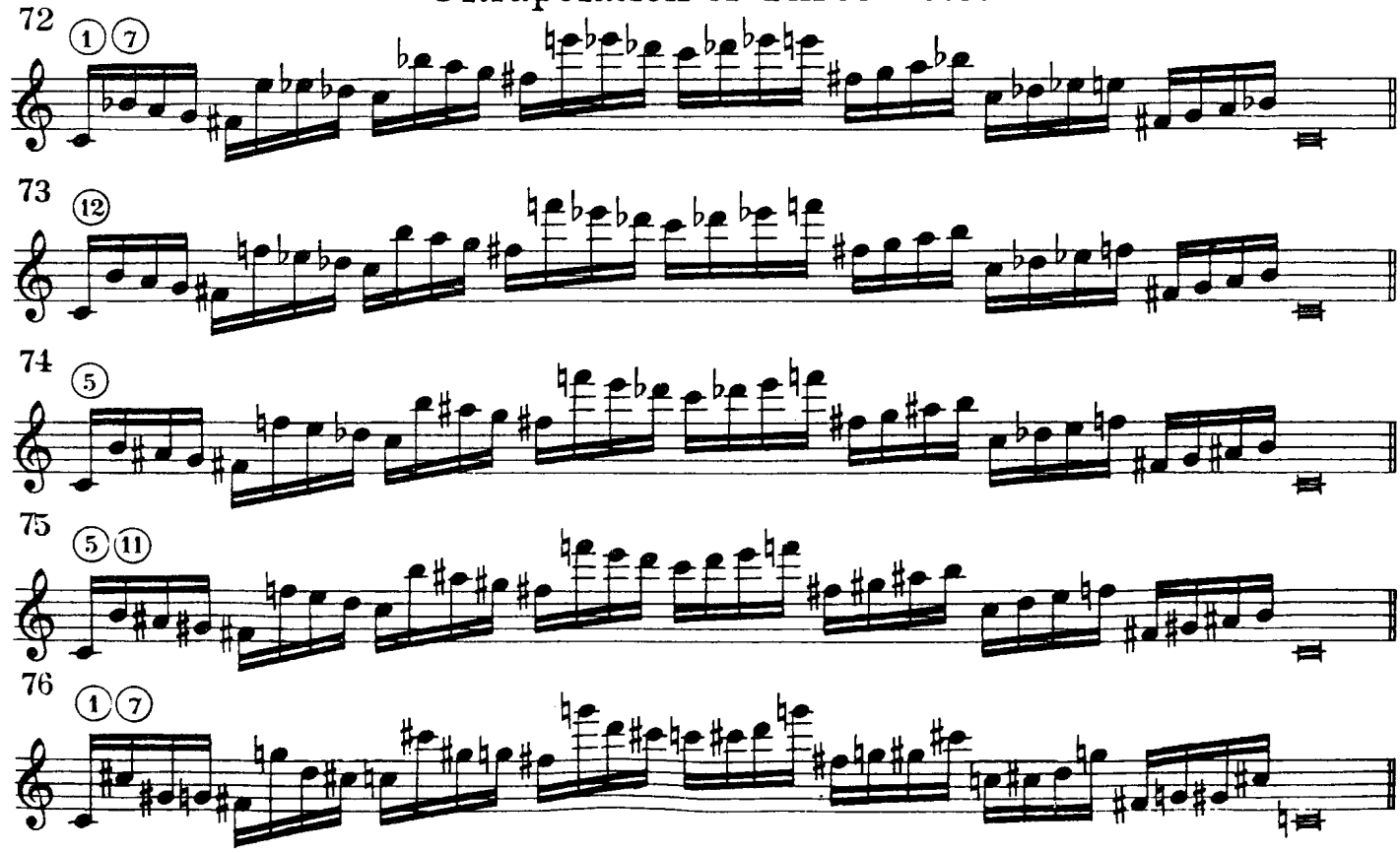
64 ③⑤⑦⑨⑪

65 ⑤⑪

66 ③⑨



Ultrapolation of Three Notes



77 ⑥⑫

78 ①⑦

79 ①

Infrapolation of One Note

80 ⑤⑪

81 ①③⑤⑦⑨⑪

82 ③⑥⑨

83 ③⑤⑨

84 ①⑥⑫

Infrapolation of Two Notes

85 ⑤⑥⑩ 8

86 ⑥⑫ 8

87 (5)(11)

88 (6)

89 (3)(9)

90 (1)(3)(5)(7)(9)(11)

91 (1)(7)

92 (3)(9)

93 (6)(12)

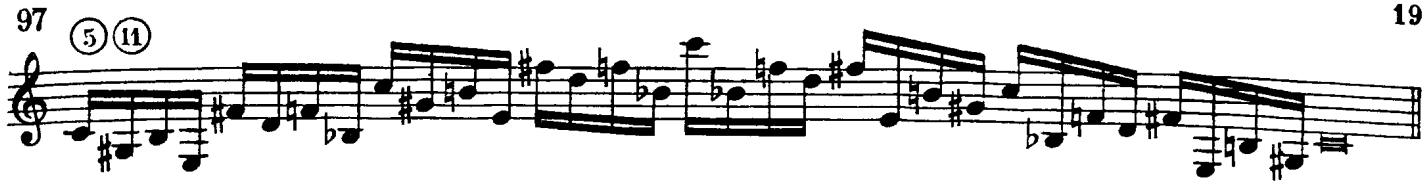
Infrapolation of Three Notes

94 (6)(12)

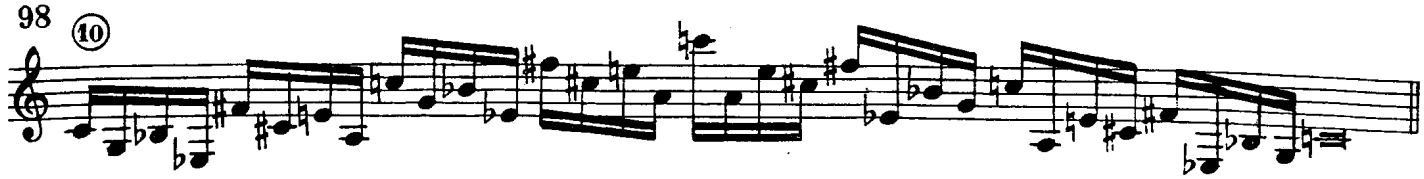
95 (1)(7)

96 (3)(9)

97 ⑤⑪

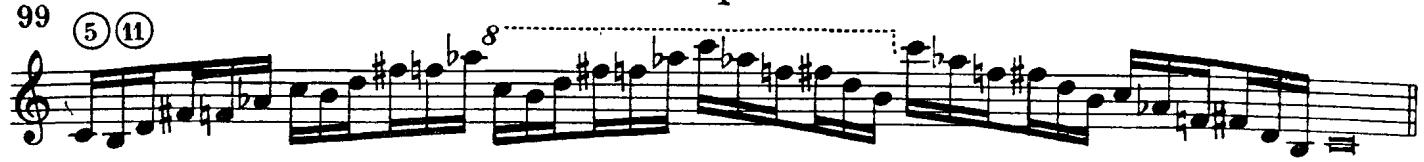


98 ⑩

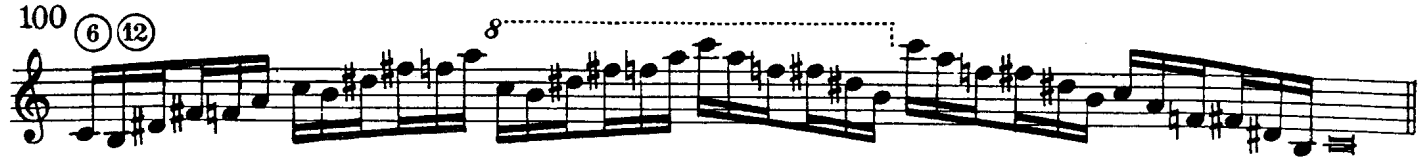


Infra-Interpolation

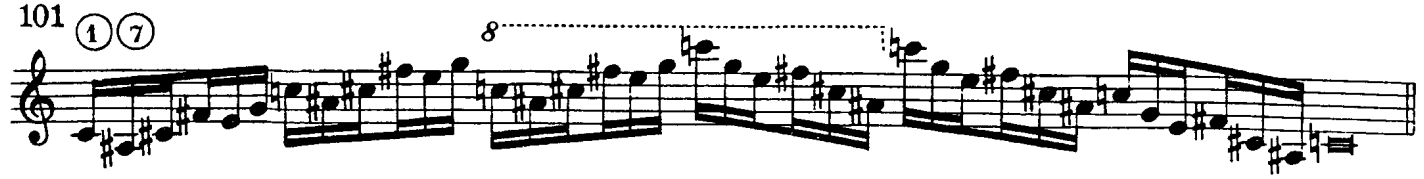
99 ⑤⑪



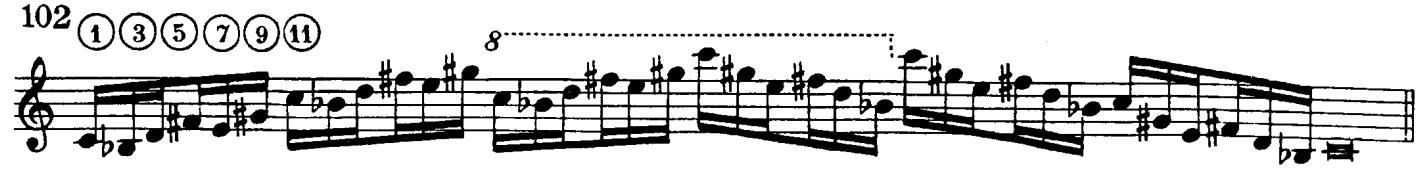
100 ⑥⑫



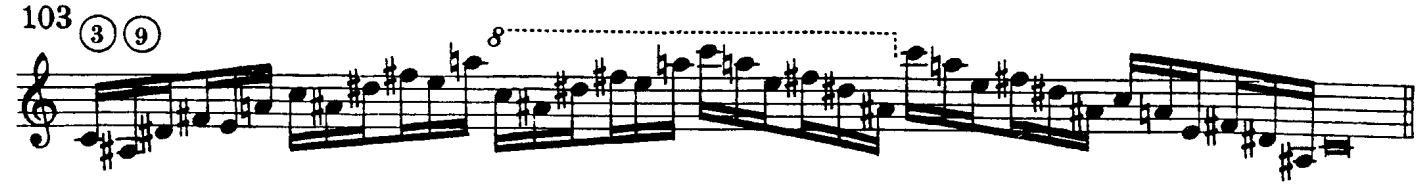
101 ①⑦



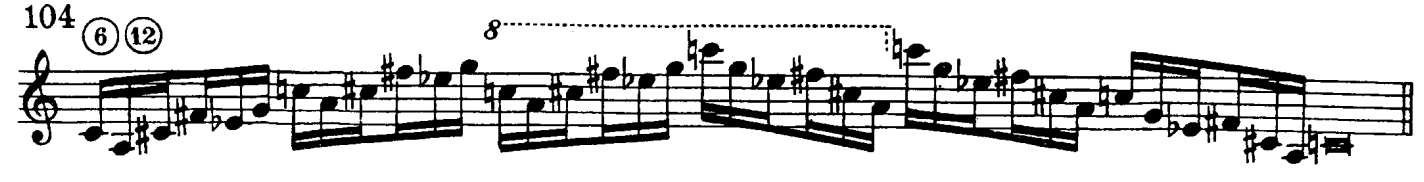
102 ①③⑤⑦⑨⑪



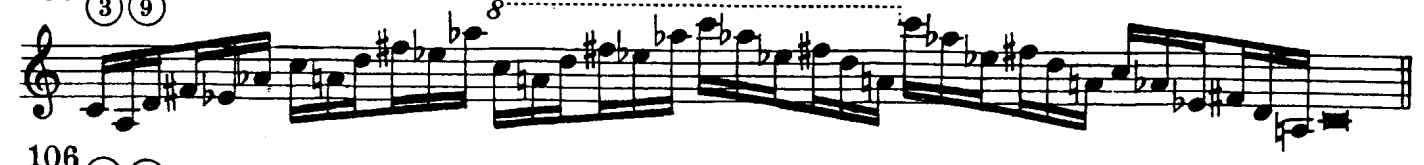
103 ③⑨



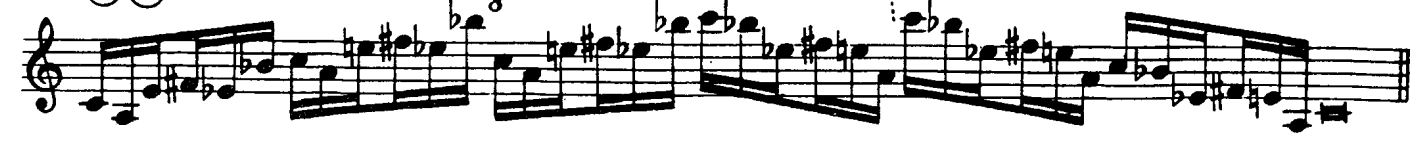
104 ⑥⑫

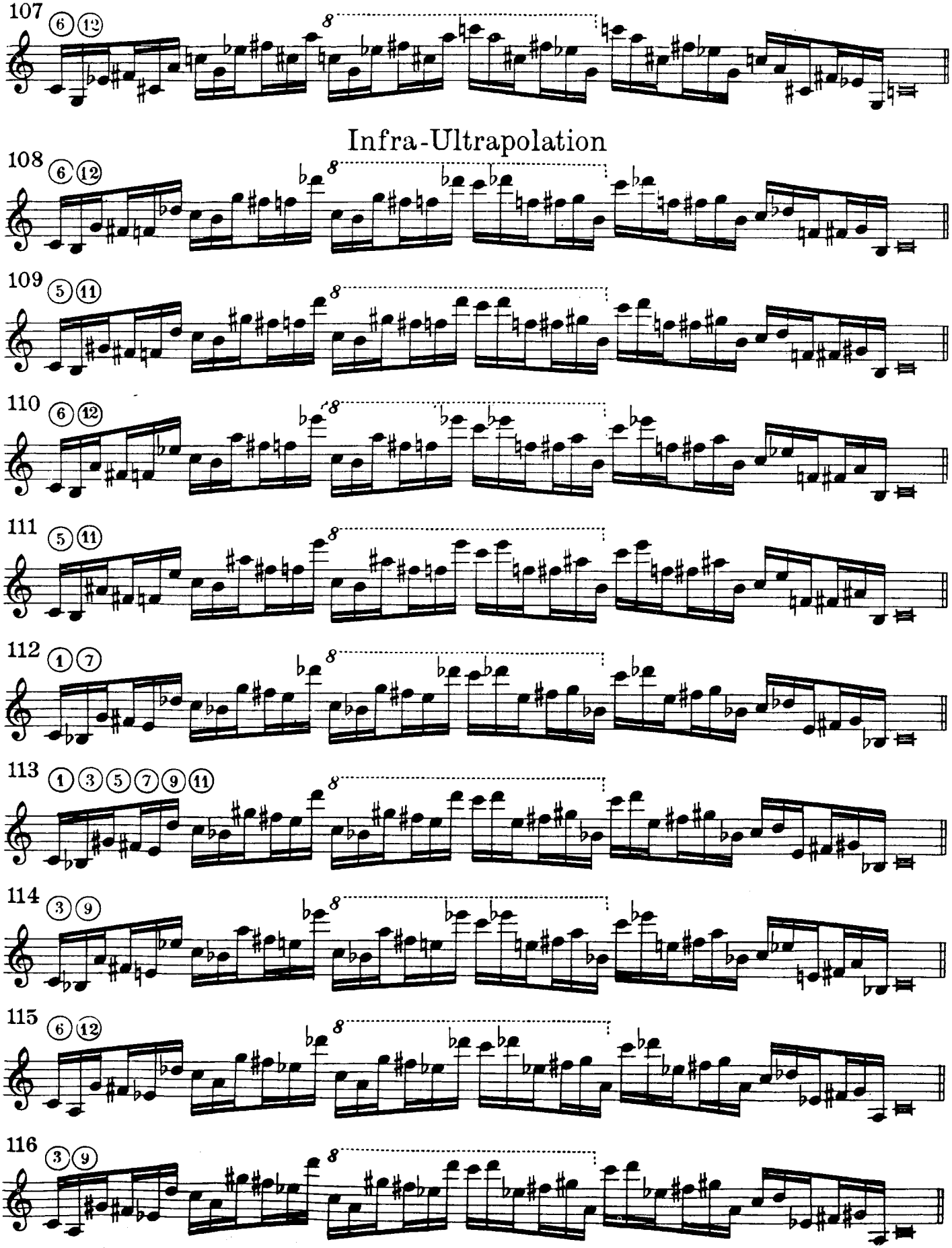


105 ③⑨



106 ③⑨




107
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Infra-Ultrapolation
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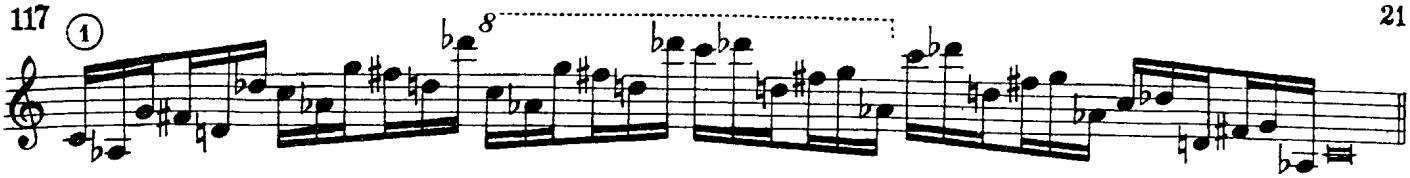
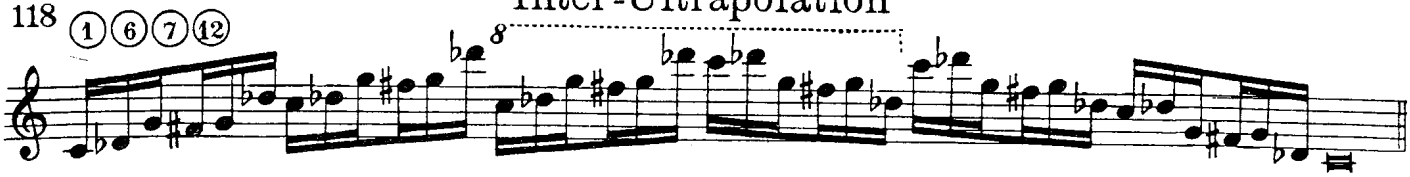
116
3 9

Inter-Ultrapolation

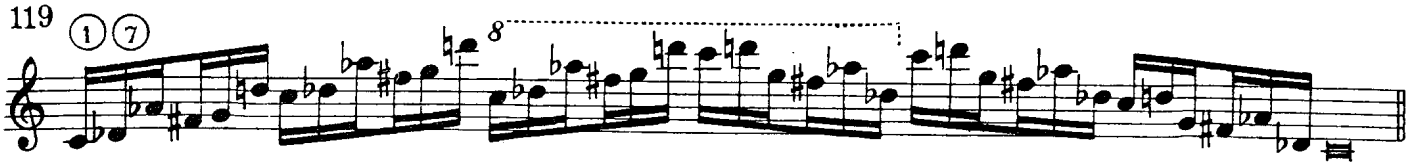
117 ①



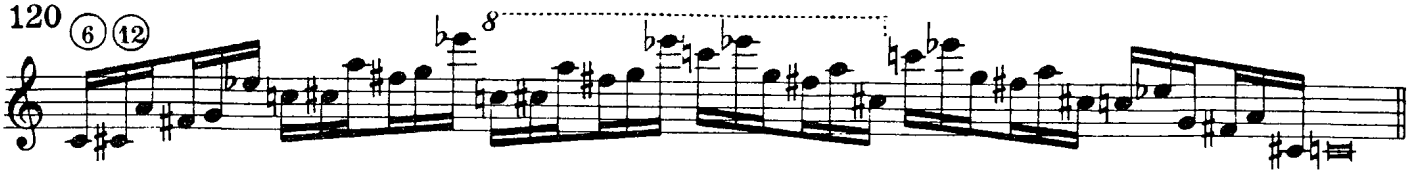
118 ①⑥⑦⑫



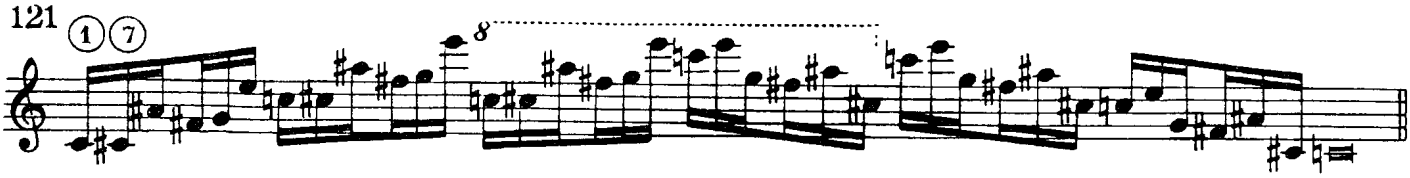
119 ①⑦



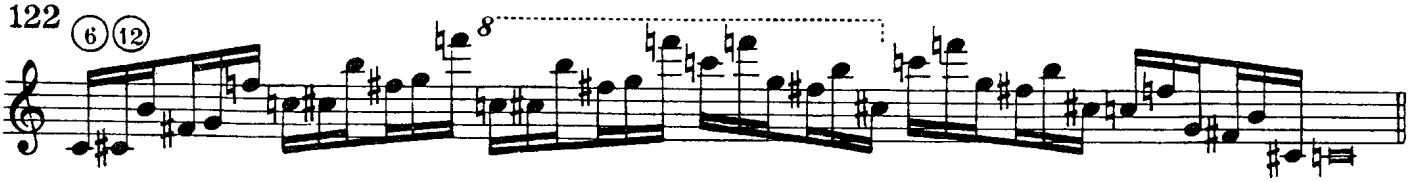
120 ⑥⑫



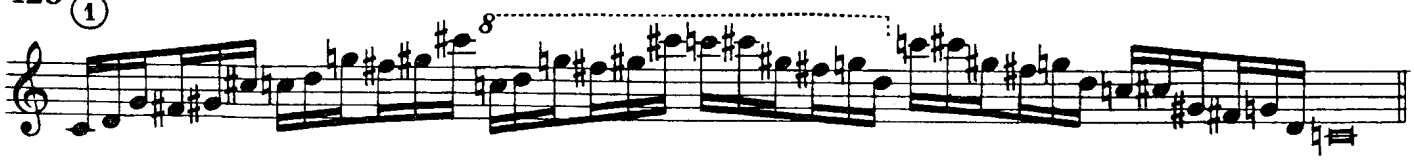
121 ①⑦



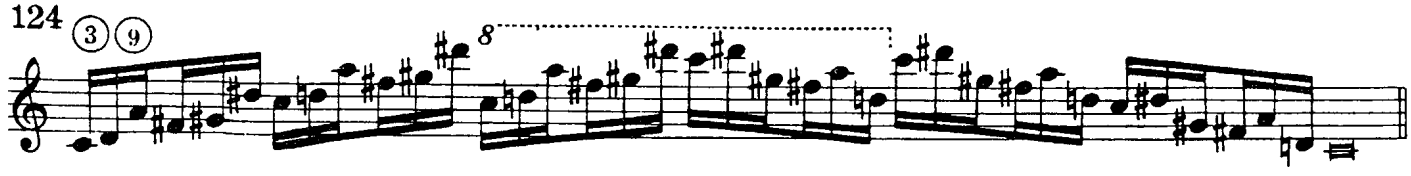
122 ⑥⑫



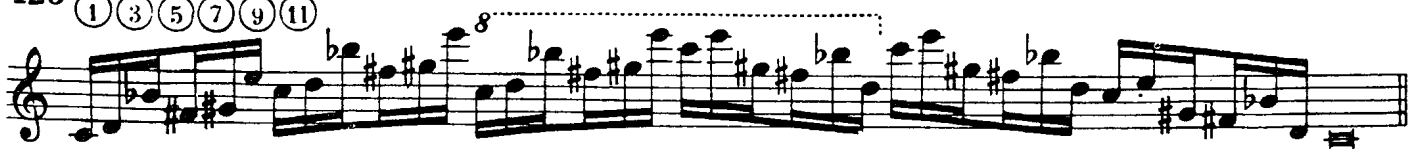
123 ①



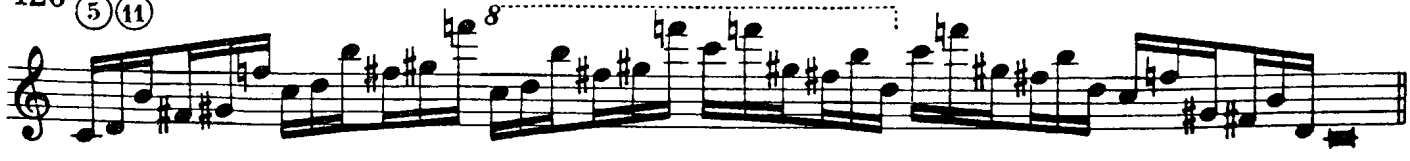
124 ③⑨

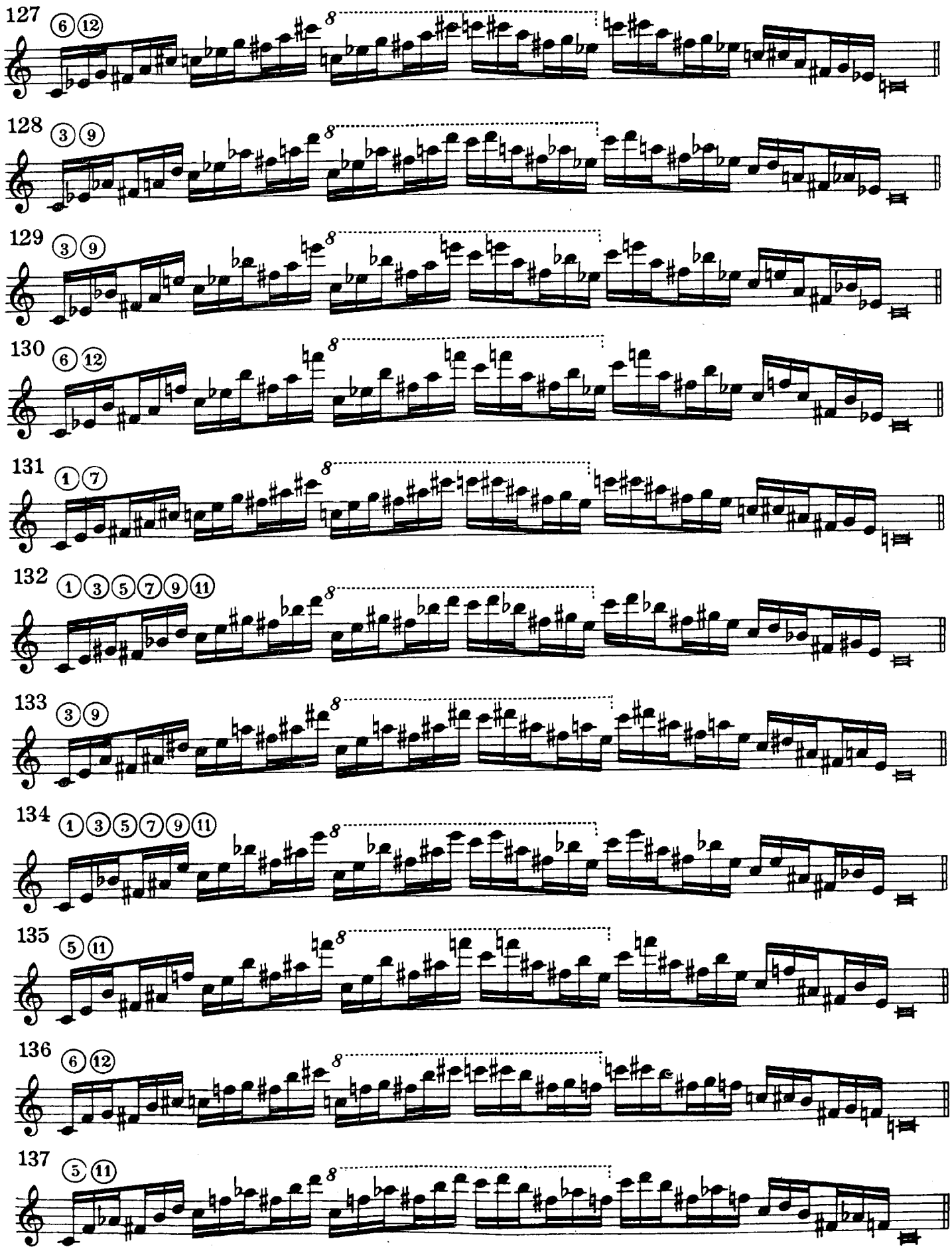


125 ①③⑤⑦⑨⑪



126 ⑤⑪

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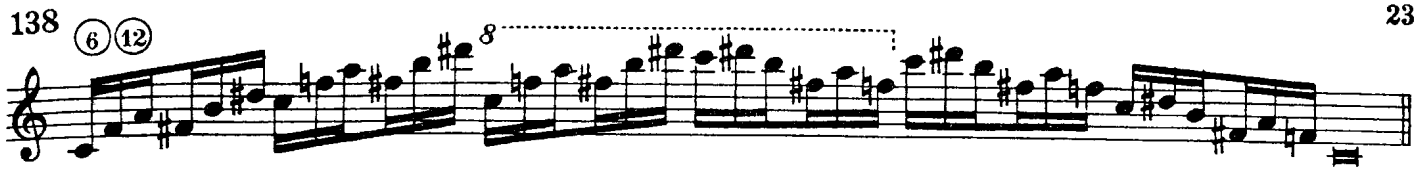
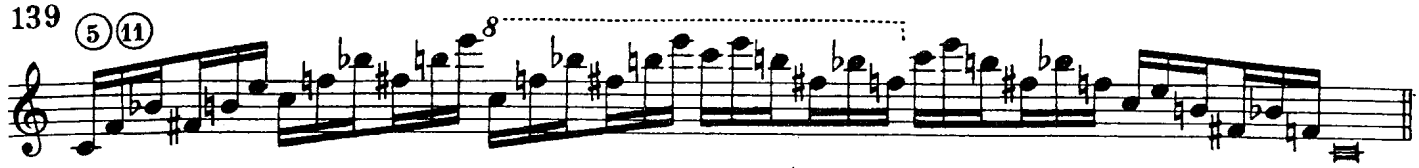
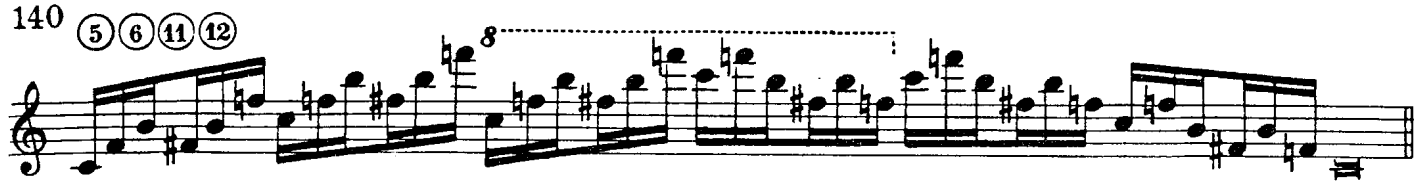
138 ⑥⑫



139 ⑤⑪

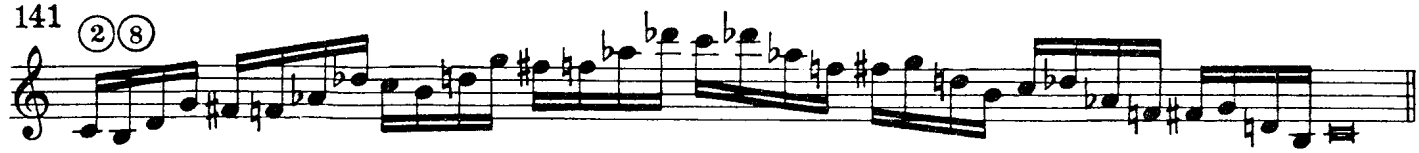


140 ⑤⑥⑪⑫

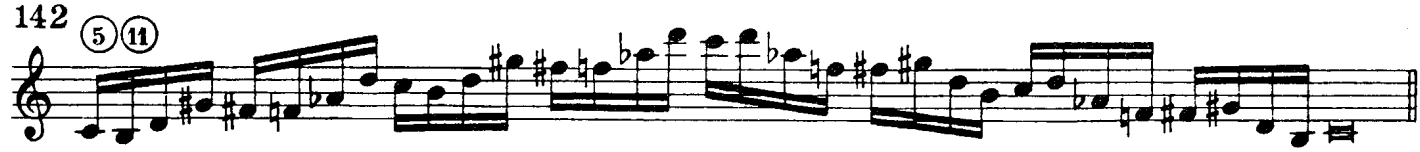


Infra-Inter-Ultrapolation

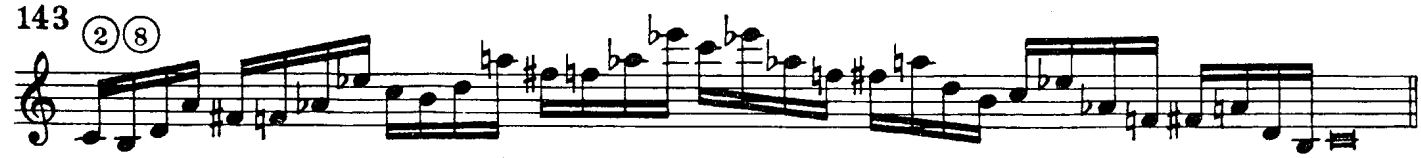
141 ②⑧



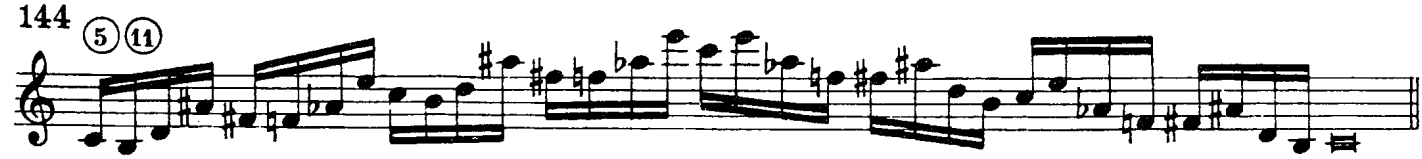
142 ⑤⑪



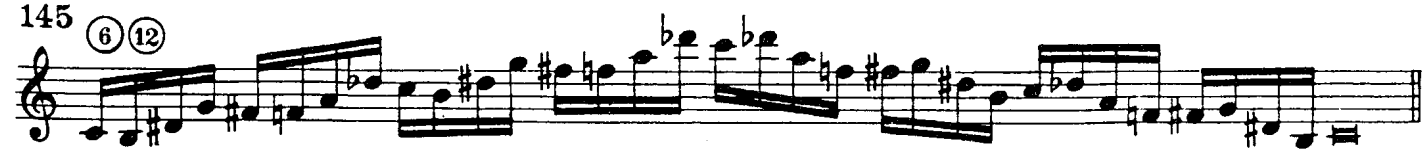
143 ②⑧



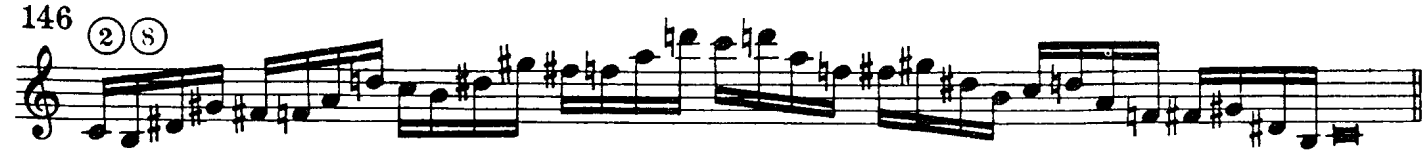
144 ⑤⑪



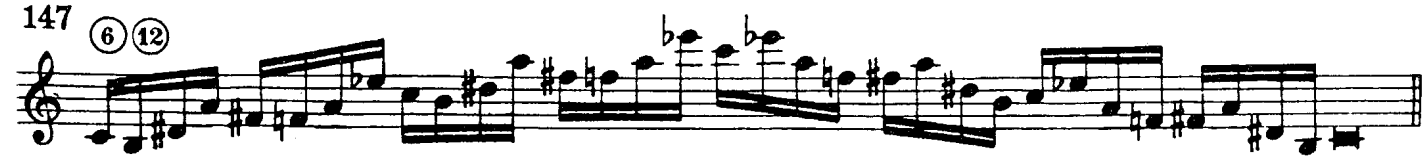
145 ⑥⑫

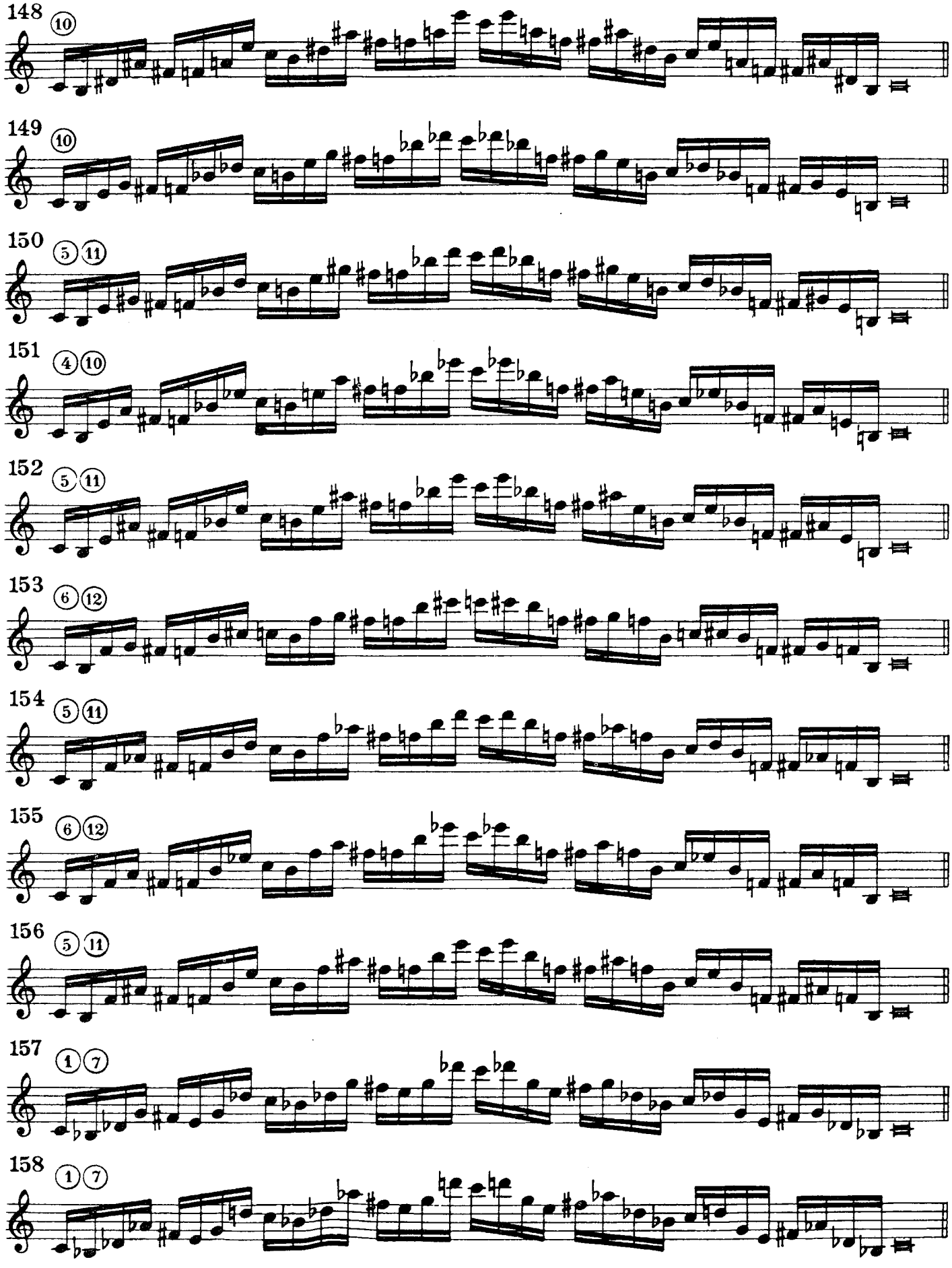


146 ②⑧



147 ⑥⑫




148 ⑩
149 ⑩
150 ⑤ ⑪
151 ④ ⑩
152 ⑤ ⑪
153 ⑥ ⑫
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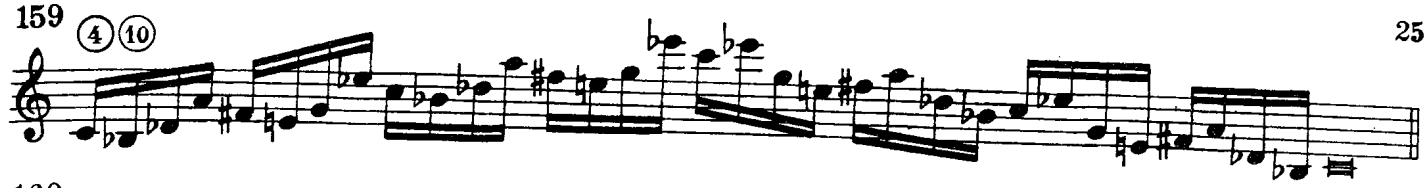
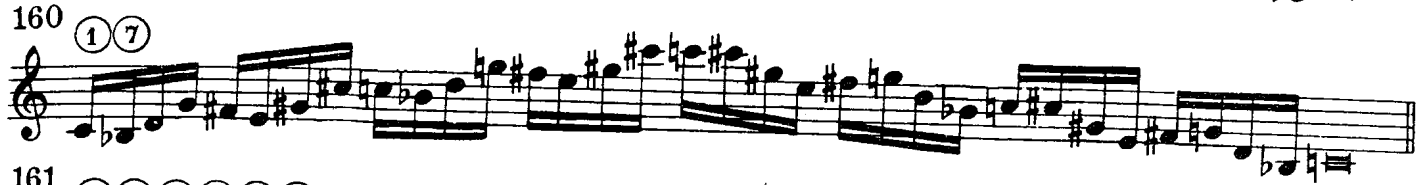
155 ⑥ ⑫
156 ⑤ ⑪
157 ① ⑦
158 ① ⑦

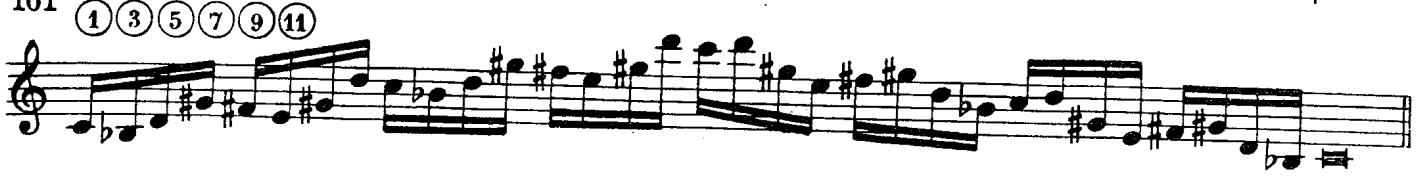
159 ④⑩



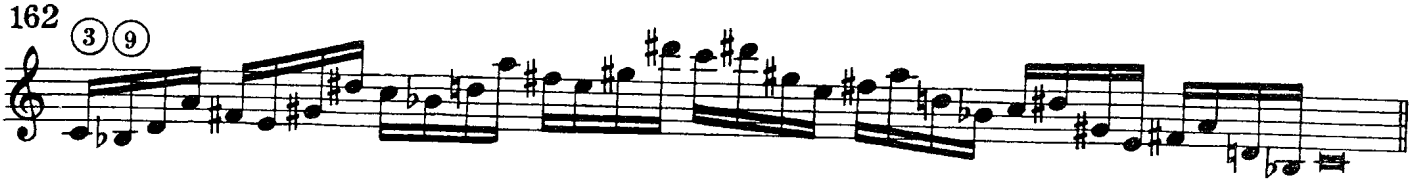
160 ①⑦



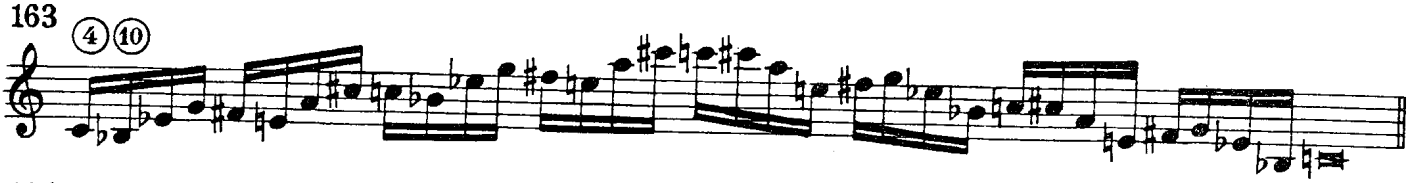
161 ①③⑤⑦⑨⑪



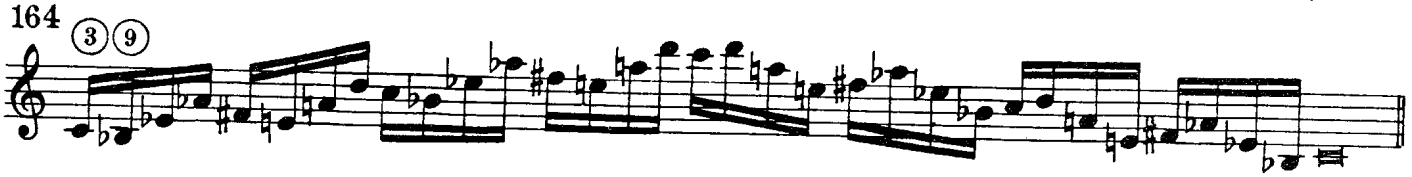
162 ③⑨



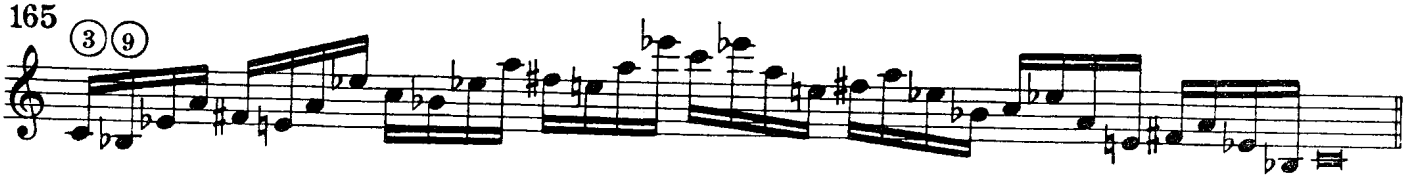
163 ④⑩



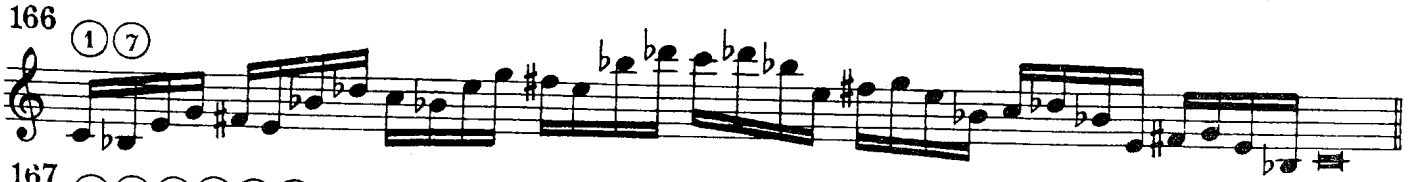
164 ③⑨



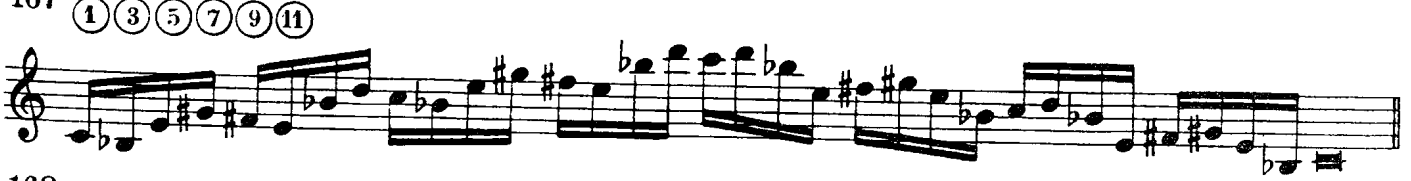
165 ③⑨



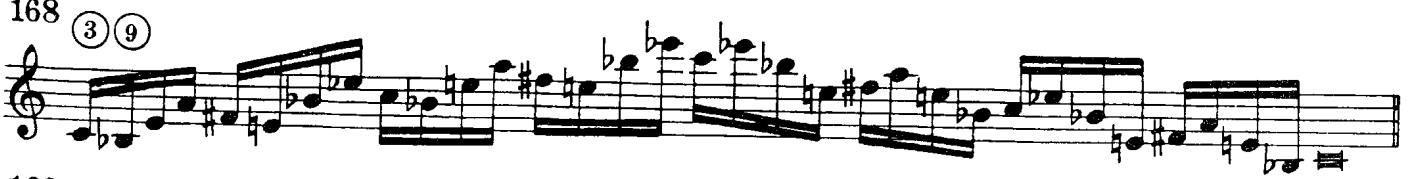
166 ①⑦



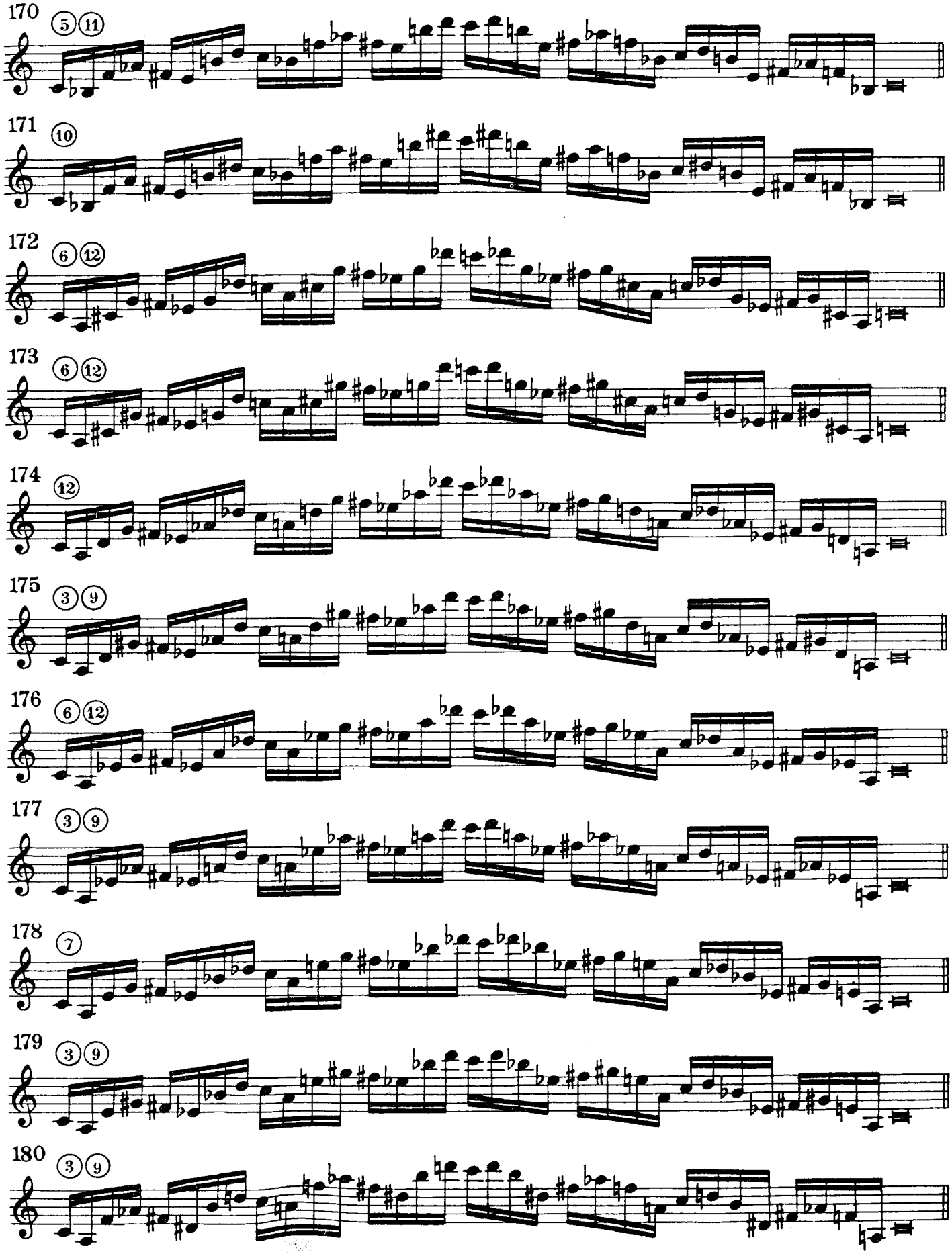
167 ①③⑤⑦⑨⑪



168 ③⑨



169 ⑤⑪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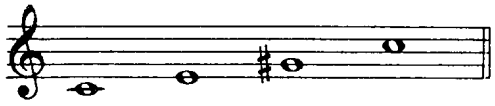
3 9

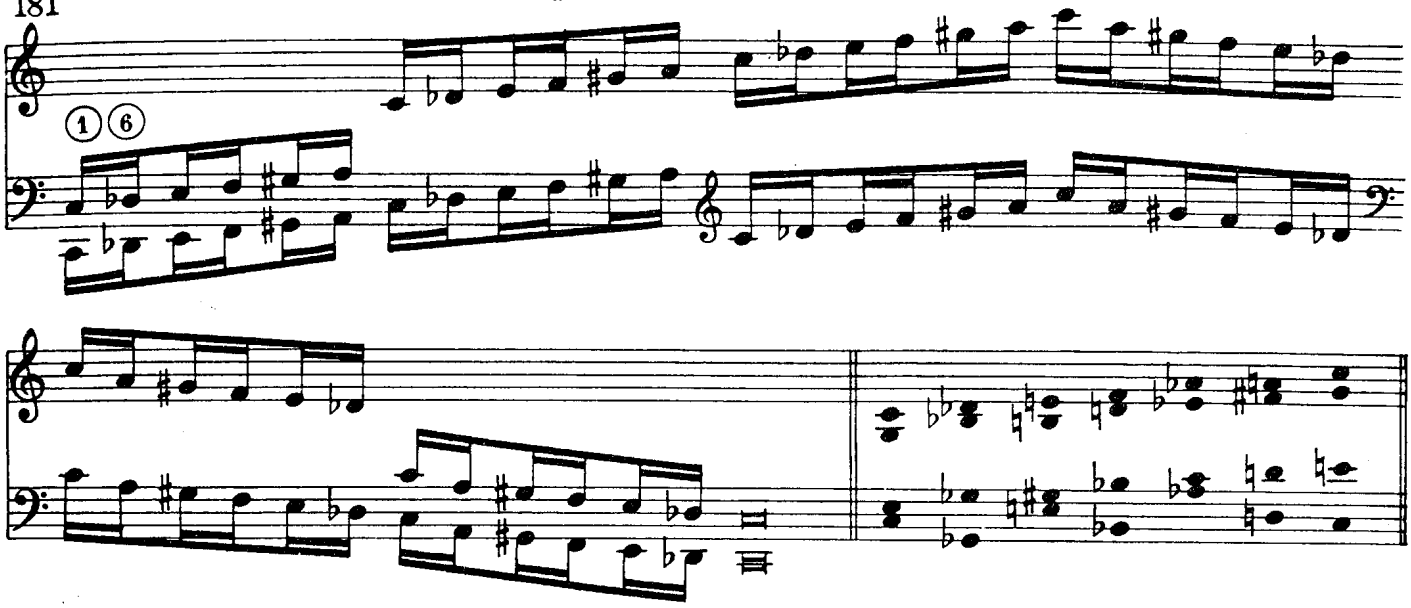
Ditone Progression

Equal Division of One Octave into Three Parts



Interpolation of One Note

181



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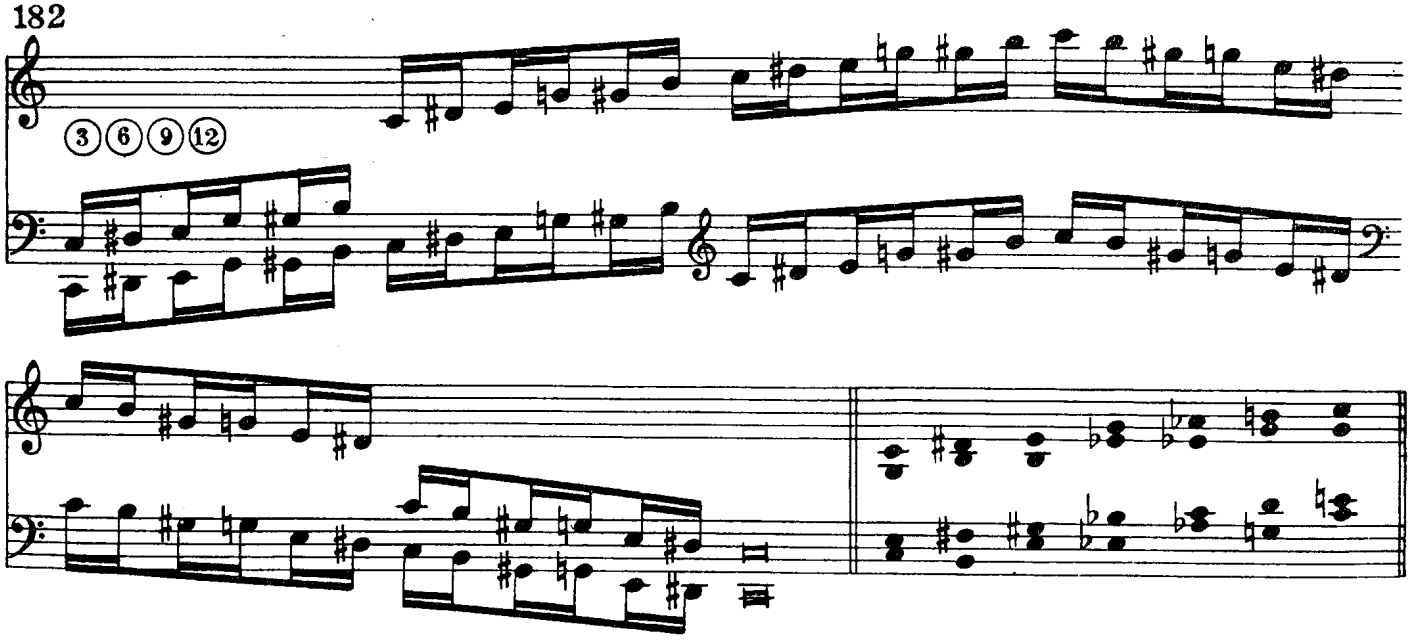
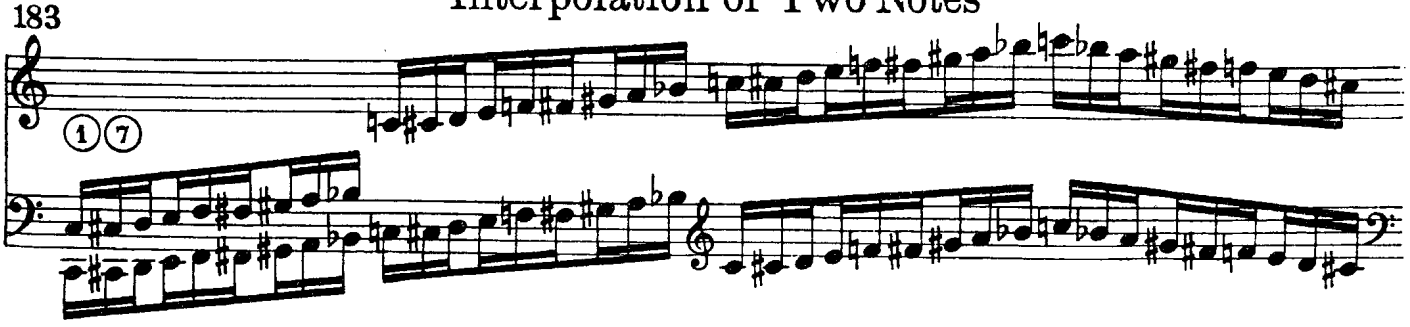
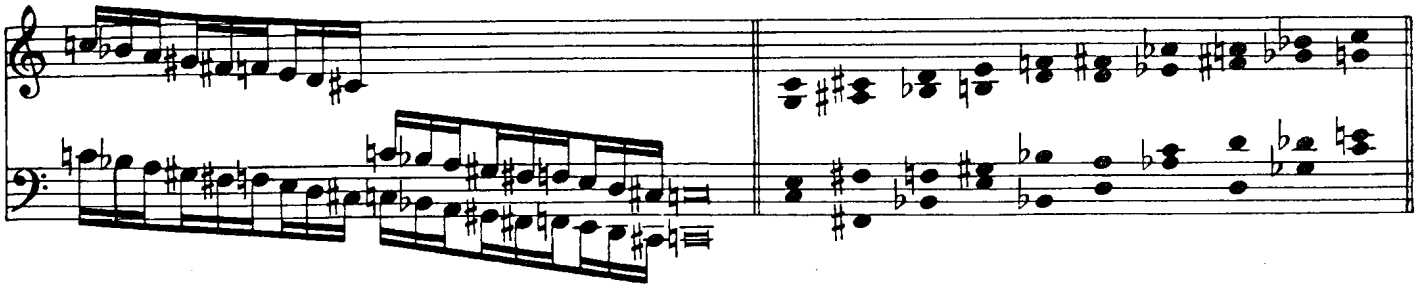


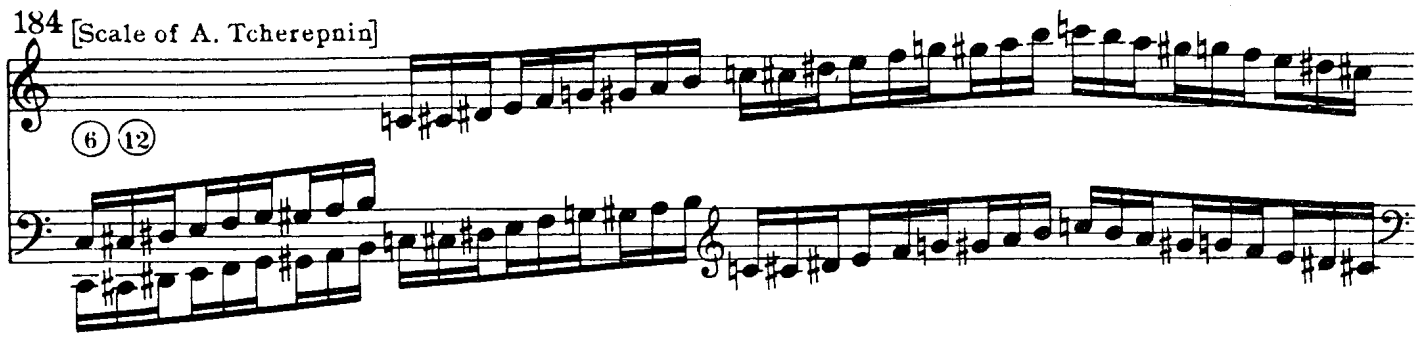
Interpolation of Two Notes

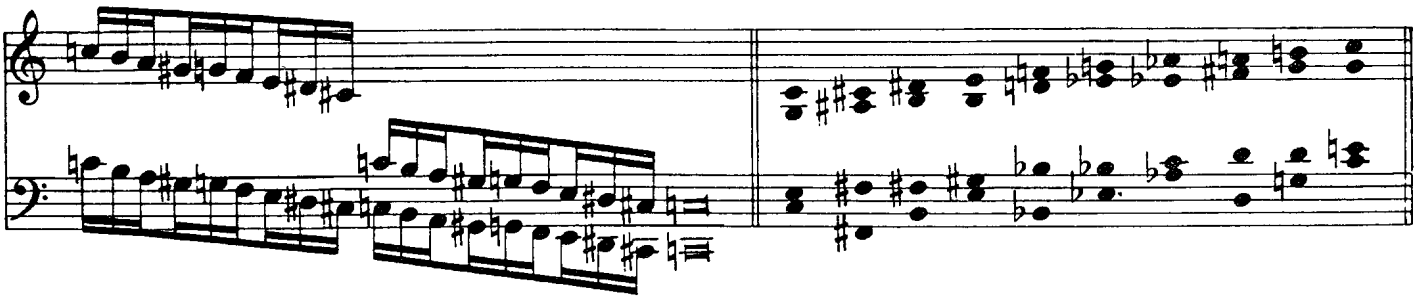
183





184 [Scale of A. Tcherepnin]





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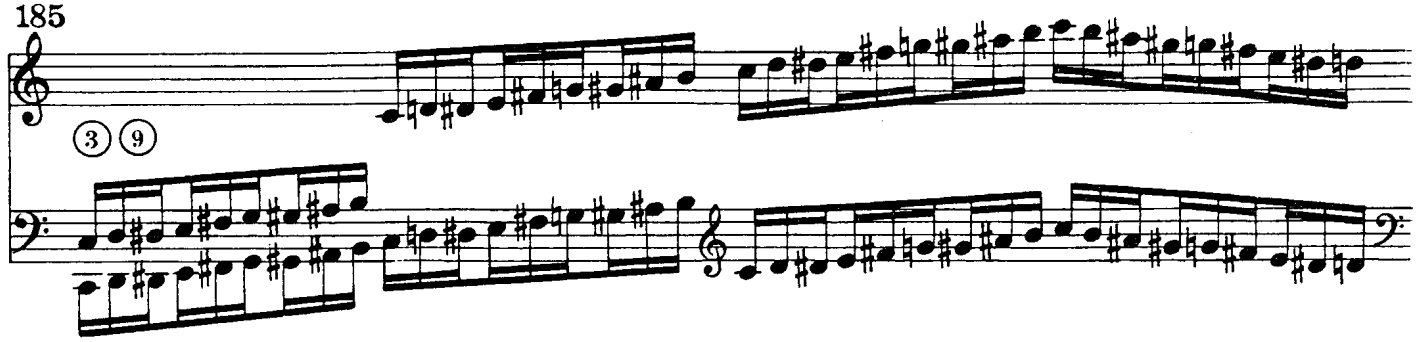
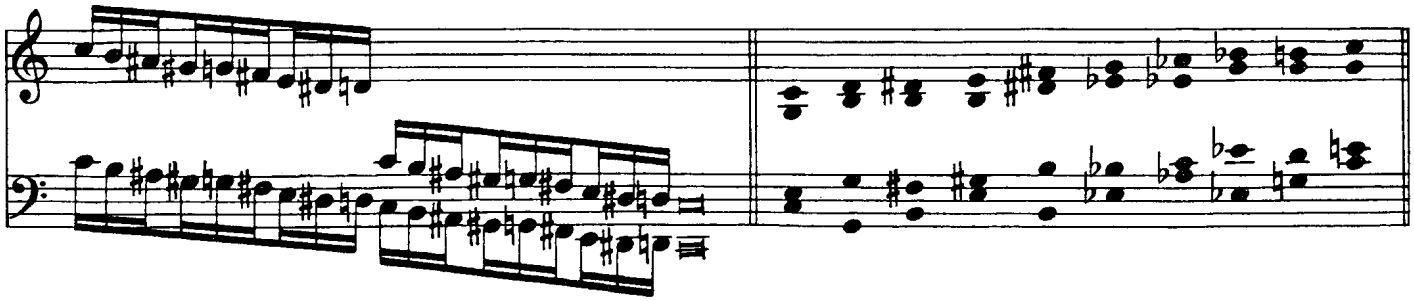
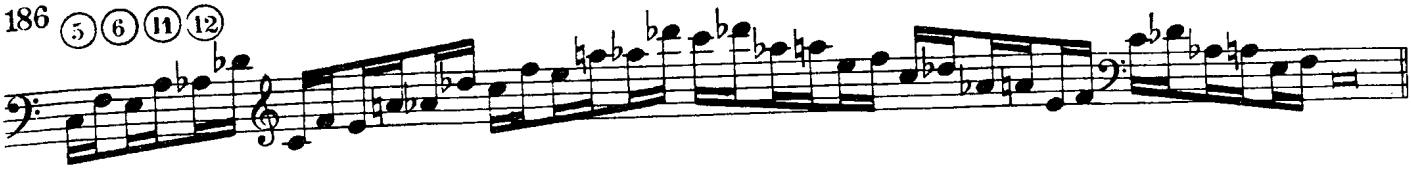




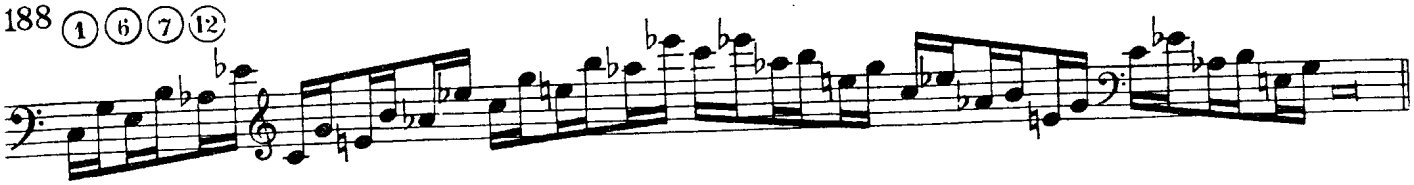
Ultrapolation of One Note

186 ⑤⑥⑪⑫



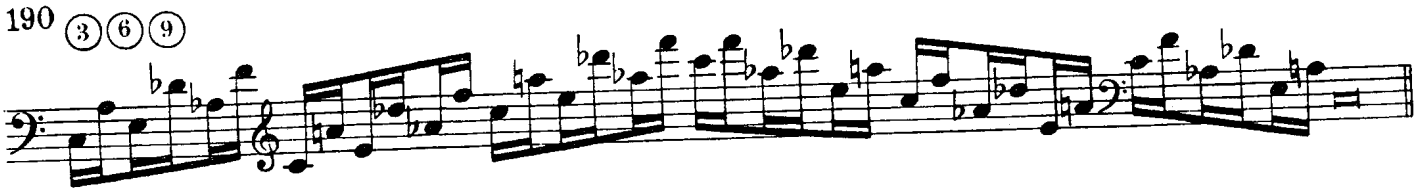
187 ①③⑤⑦⑨⑪

188 ①⑥⑦⑫

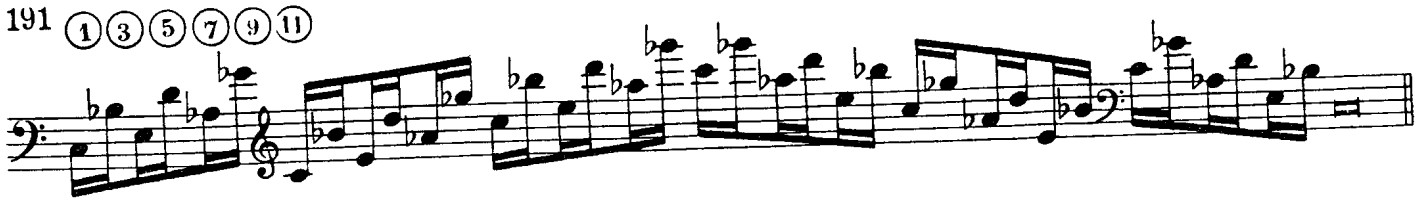


189 ①③⑤⑦⑨⑪

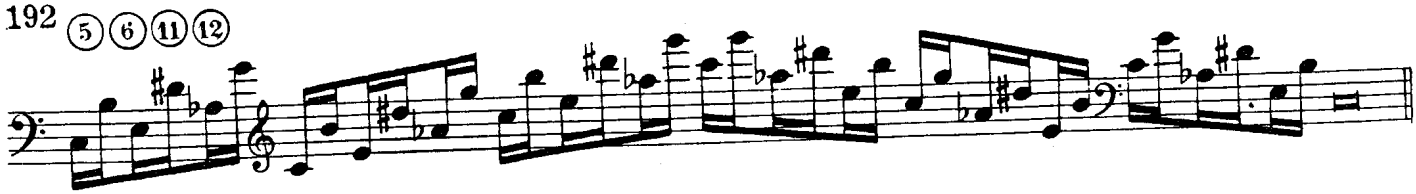
190 ③⑥⑨



191 ①③⑤⑦⑨⑪



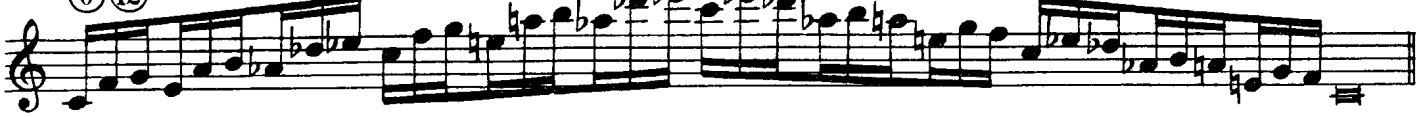
192 ⑤⑥⑪⑫



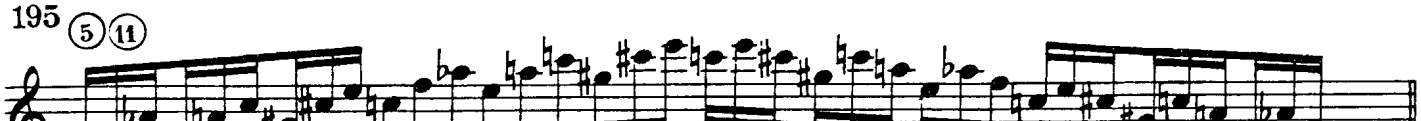
Ultrapolation of Two Notes

193 ⑤⑥⑪⑫

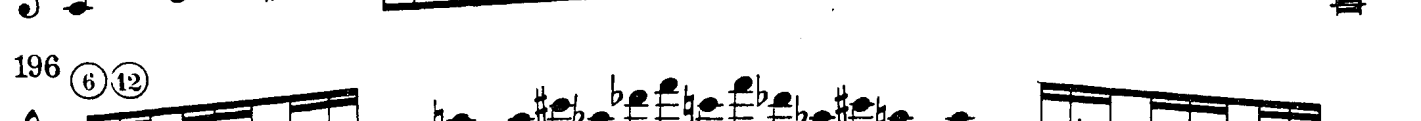
194 ⑥⑫



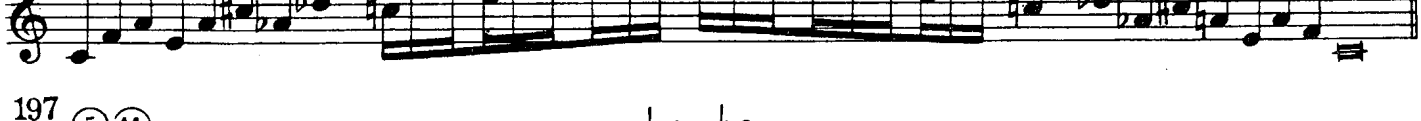
195 ⑤⑪



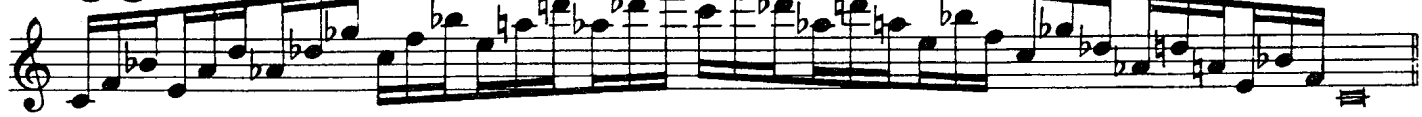
196 ⑥⑫



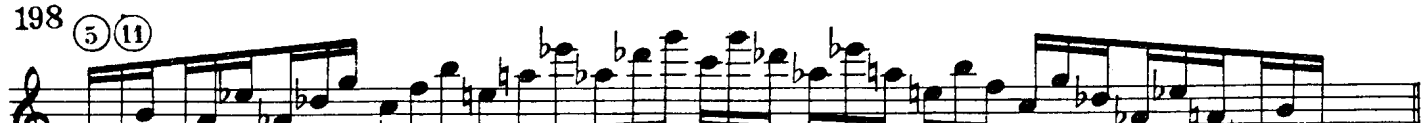
197 ⑤⑪



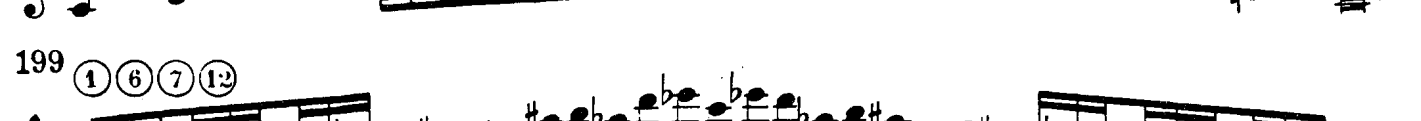
198 ⑤⑪



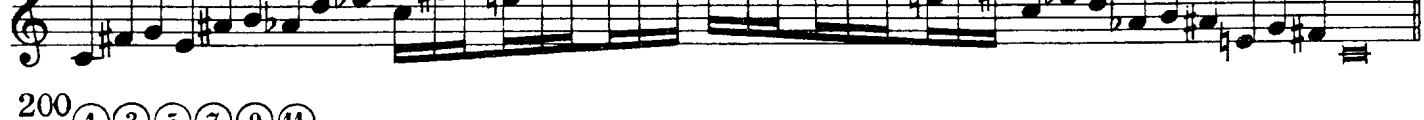
199 ①⑥⑦⑫



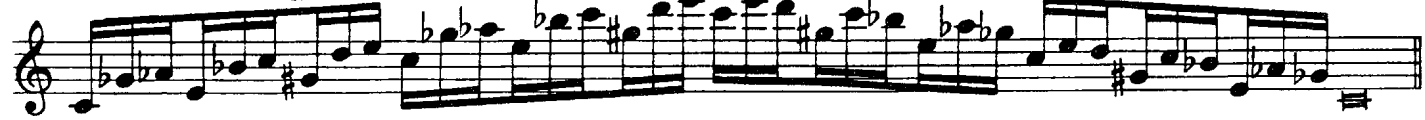
200 ①③⑤⑦⑨⑪



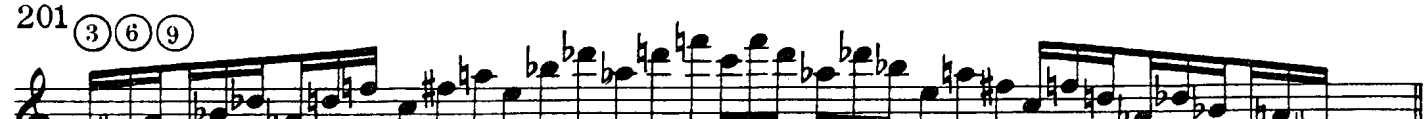
201 ③⑥⑨



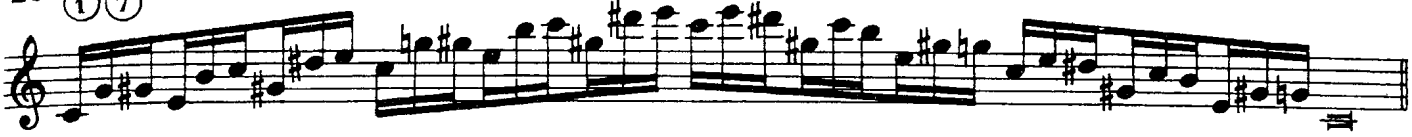
202 ①③⑤⑦⑨⑪



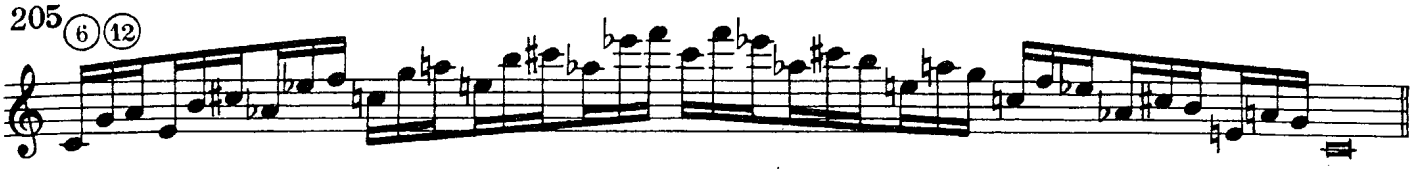
203 ⑤⑥⑪⑫



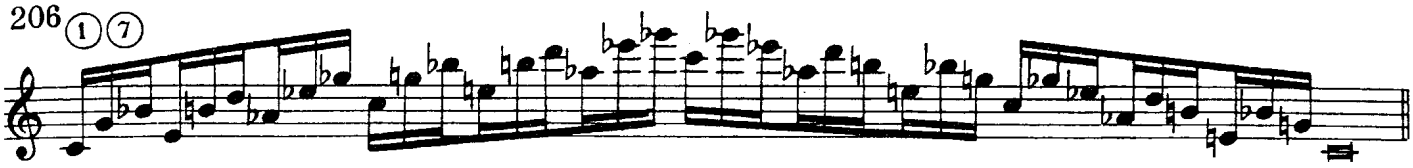
204 ① ⑦



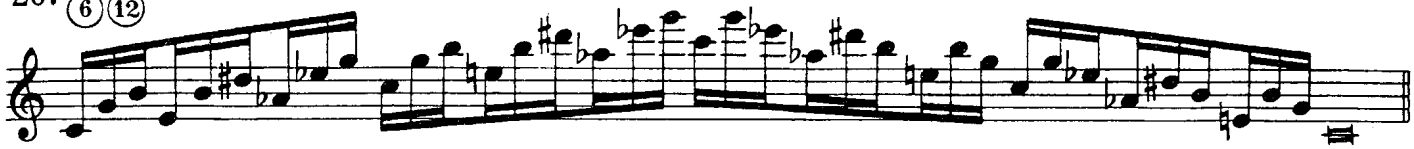
205 ⑥ ⑫



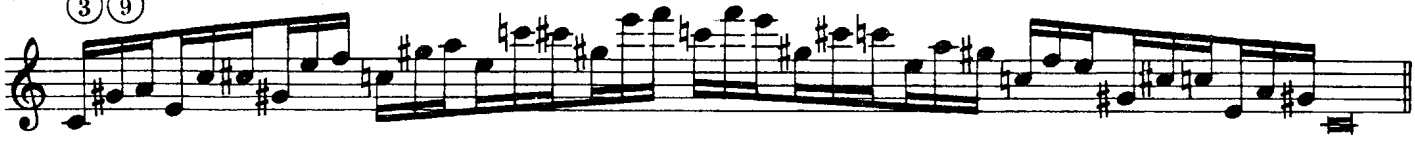
206 ① ⑦



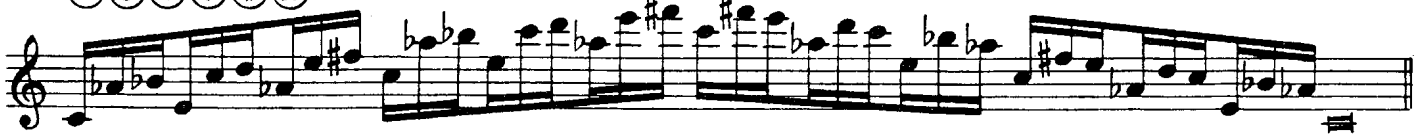
207 ⑥ ⑫



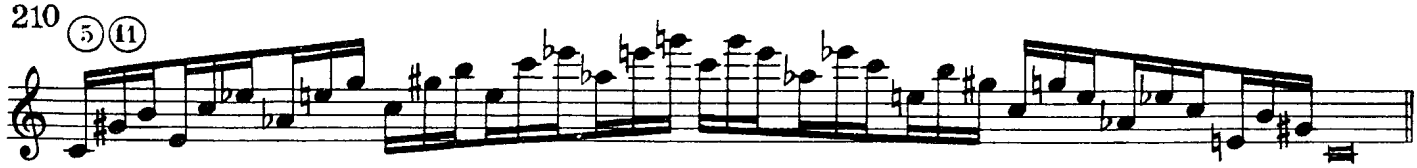
208 ③ ⑨



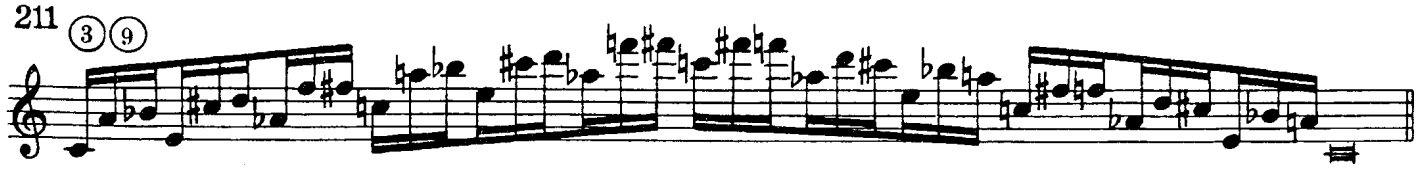
209 ① ③ ⑤ ⑦ ⑨ ⑪



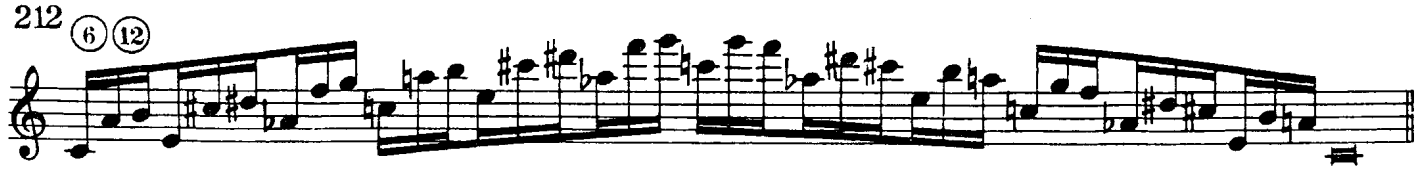
210 ⑤ ⑪



211 ③ ⑨

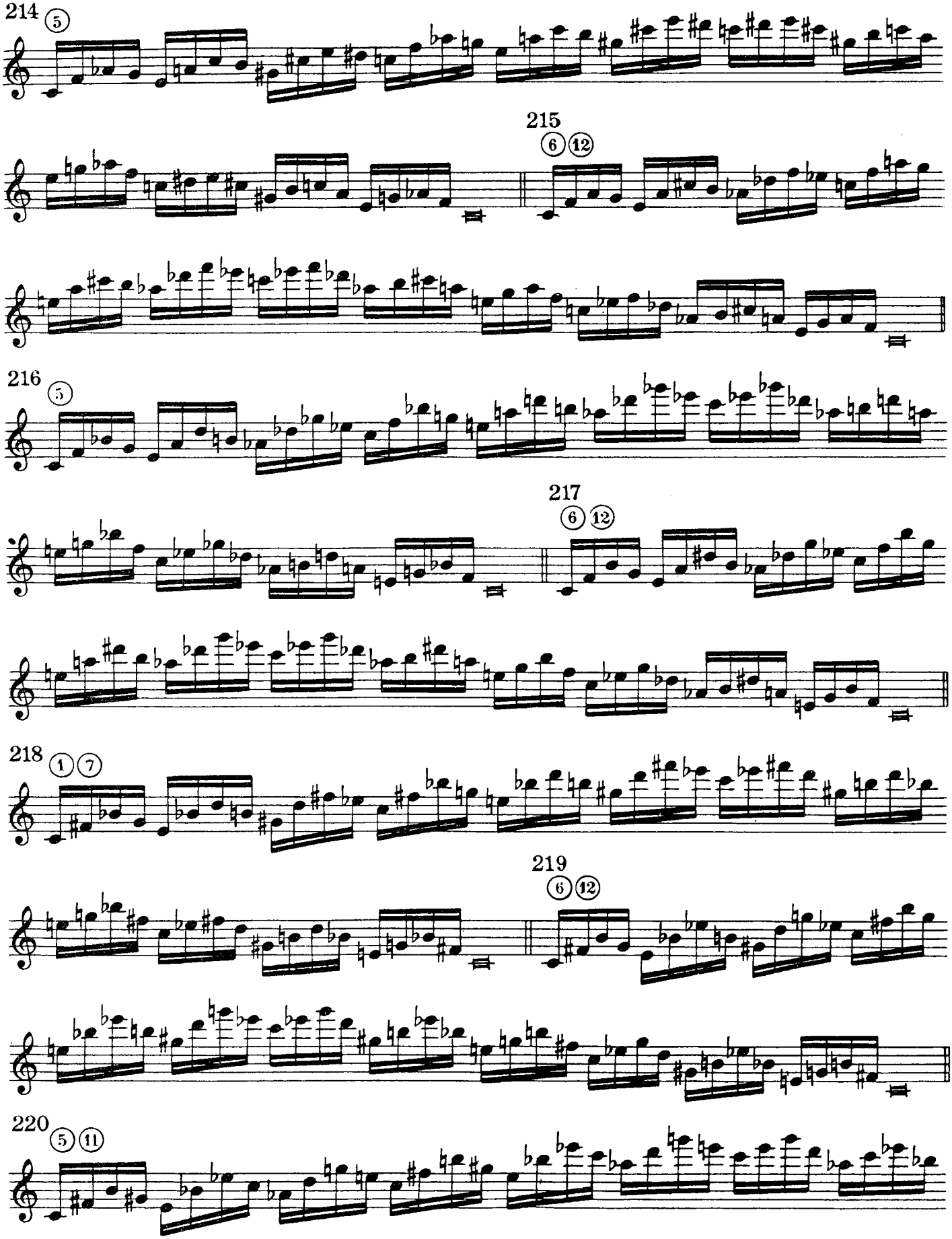


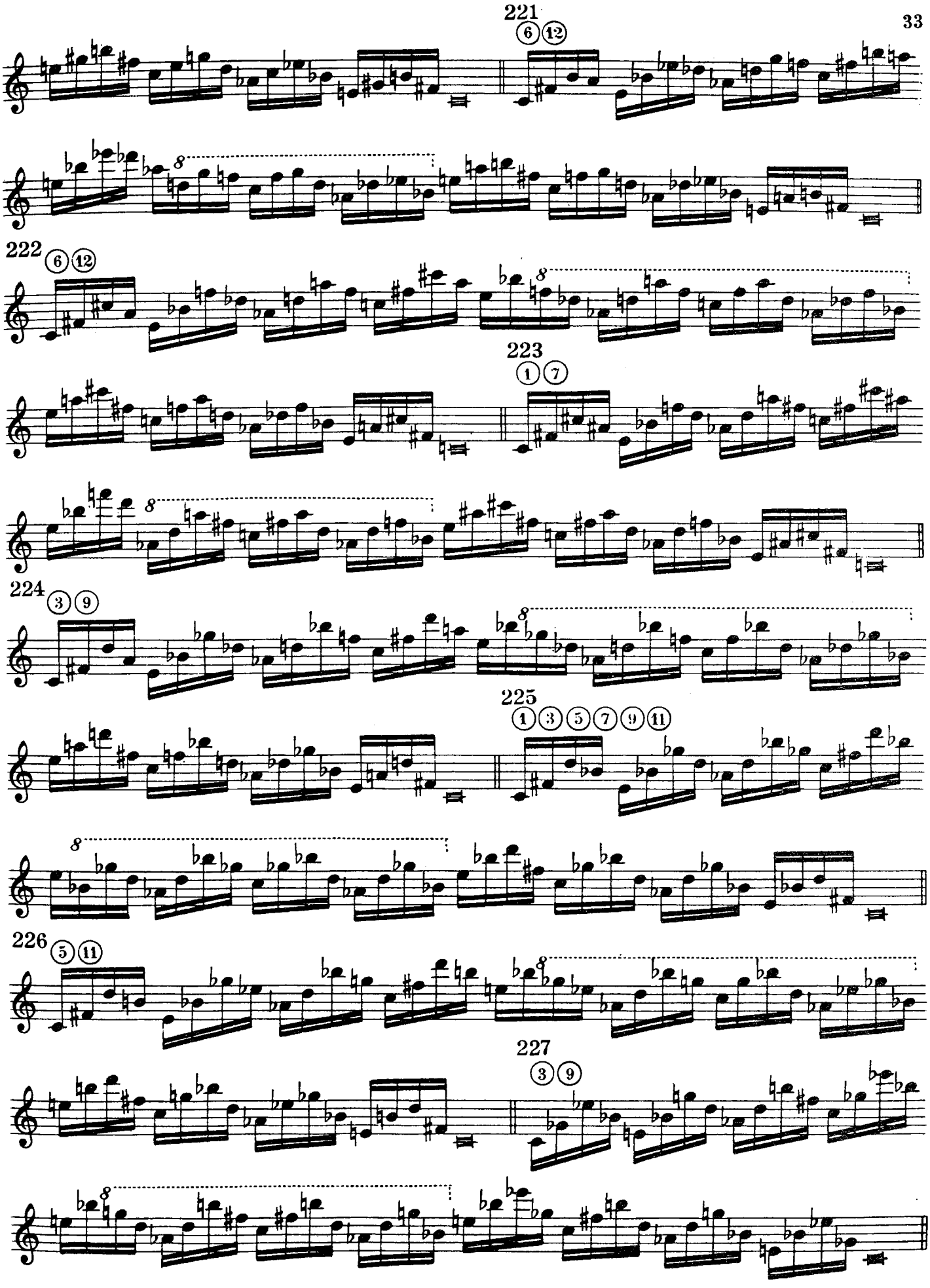
212 ⑥ ⑫



213 ⑤ ⑪

Ultrapolation of Three Notes

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227
3 9
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228 ⑥⑫

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229 ⑤⑪

8

230 ⑤⑪

8

Infrapolation of One Note

231 [Schoenberg: *Ode to Napoleon*] ⑤⑥⑪⑫

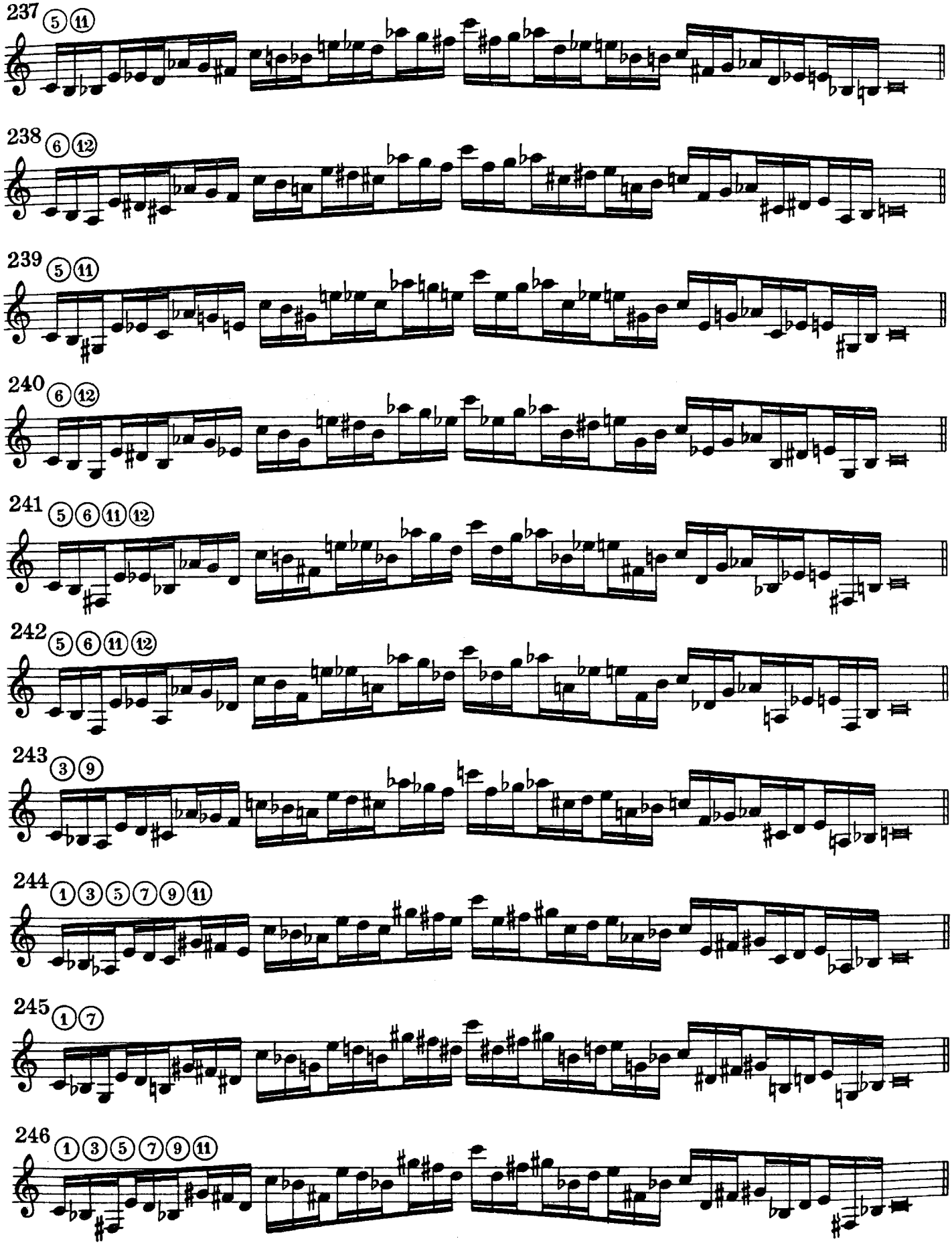
232 ①③⑤⑦⑨⑪

233 ③⑥⑨⑫

234 ①⑥⑦⑫

235 ①③⑤⑦⑨⑪

236 ⑤⑥⑪⑫


237 ⑤⑪
238 ⑥⑫
239 ⑤⑪
240 ⑥⑫
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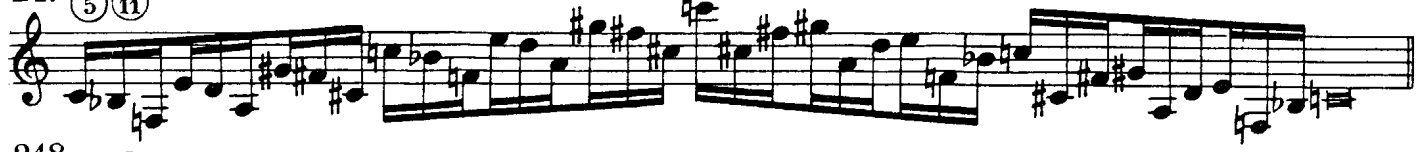
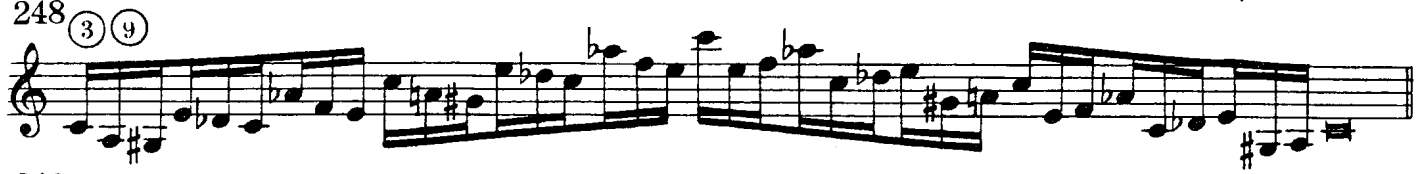
243 ③⑨
244 ①③⑤⑦⑨⑪
245 ①⑦
246 ①③⑤⑦⑨⑪

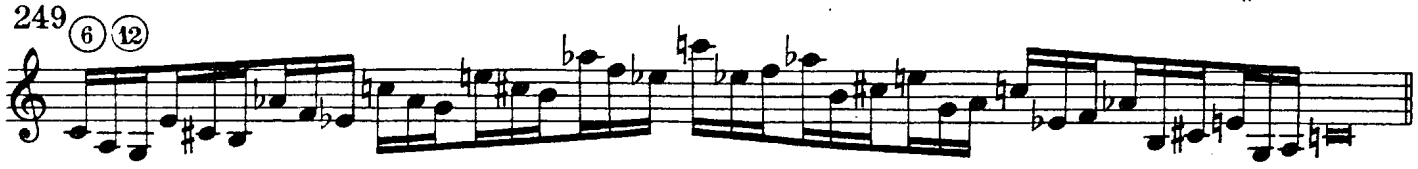
247 ⑤⑪



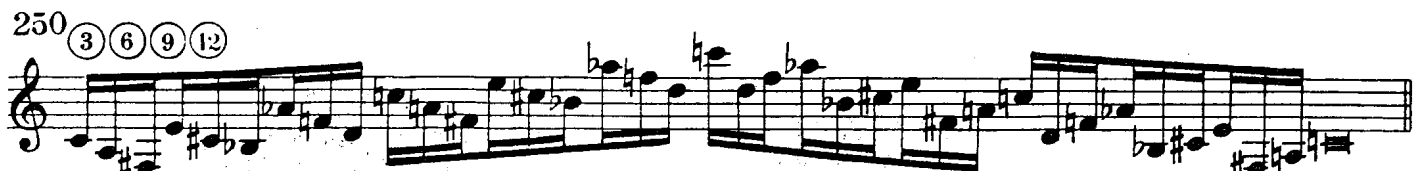
248 ③⑨



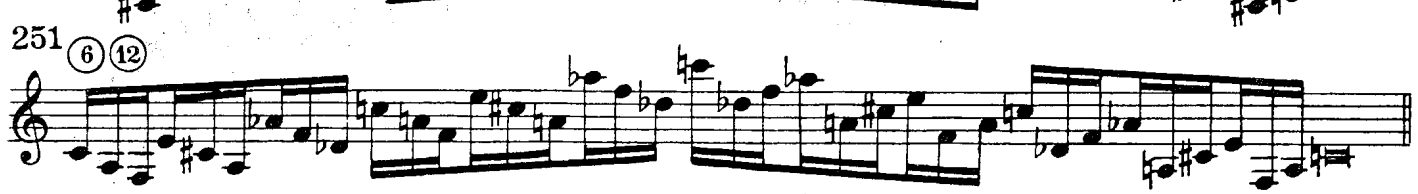
249 ⑥⑫



250 ③⑥⑨⑫



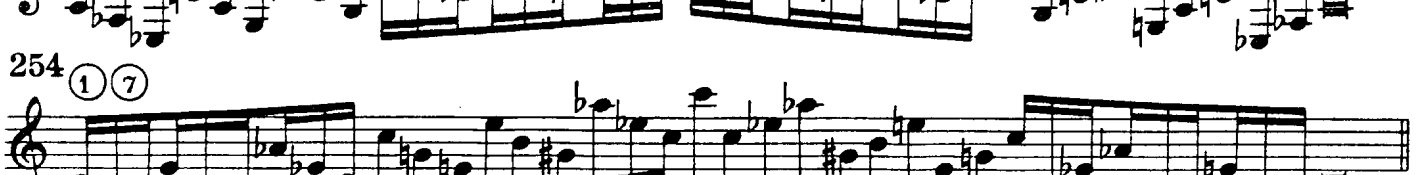
251 ⑥⑫



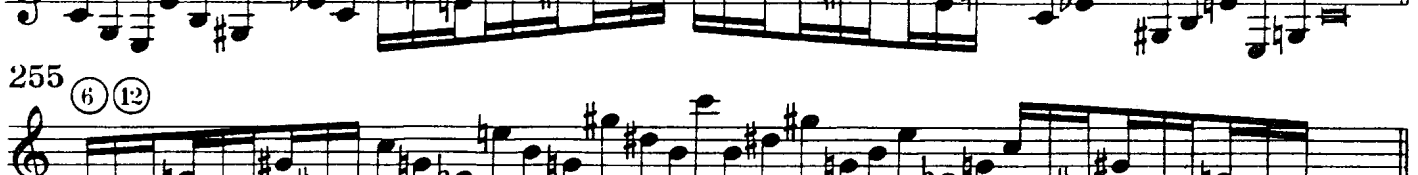
252 ③⑨

253 ⑨

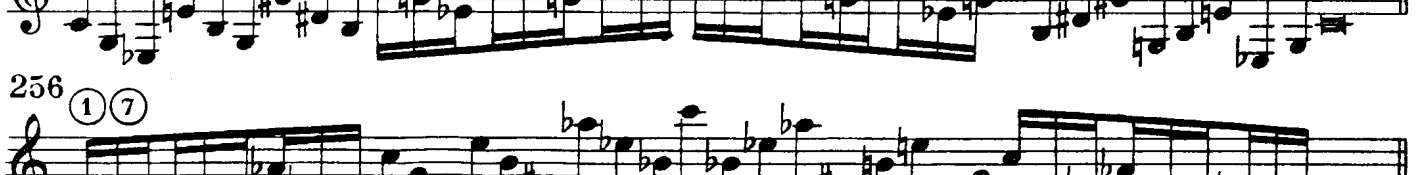
254 ①⑦



255 ⑥⑫



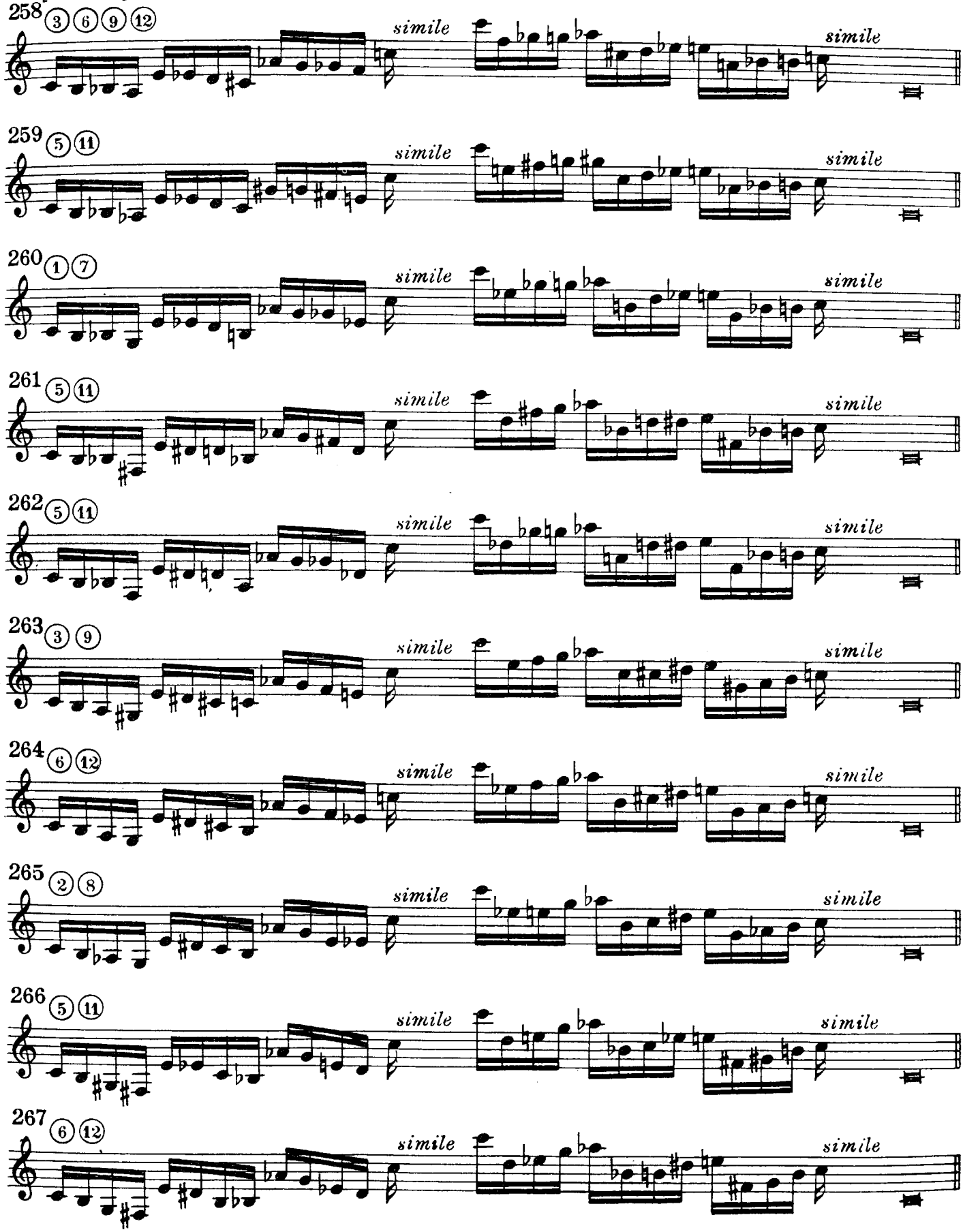
256 ①⑦

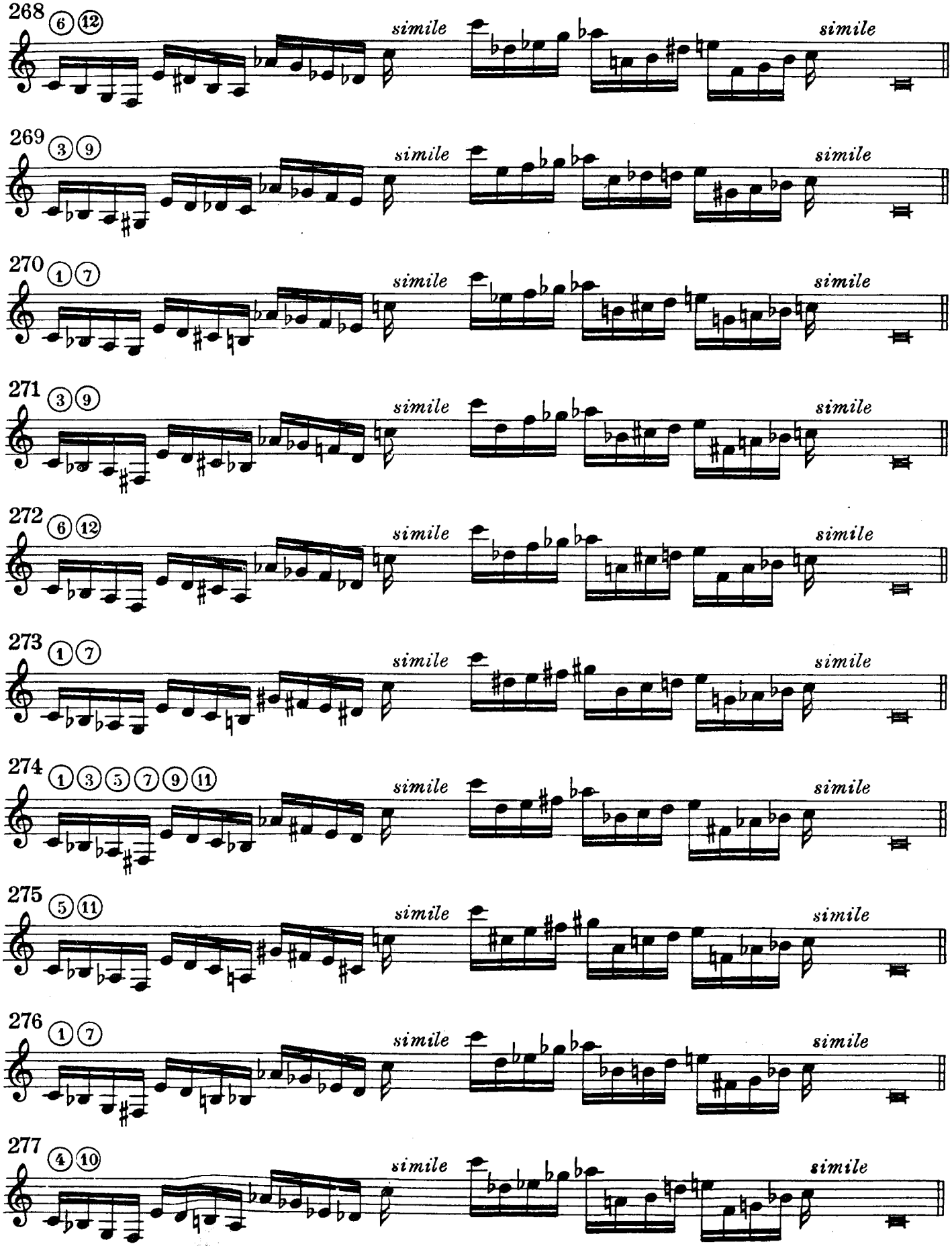


257 ①⑥⑦⑫

Infrapolation of Three Notes

[12 Tones]




268 ⑥ ⑫
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269 ③ ⑨
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270 ① ⑦
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271 ③ ⑨
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272 ⑥ ⑫
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273 ① ⑦
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274 ① ③ ⑤ ⑦ ⑨ ⑪
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275 ⑤ ⑪
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276 ① ⑦
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277 ④ ⑩
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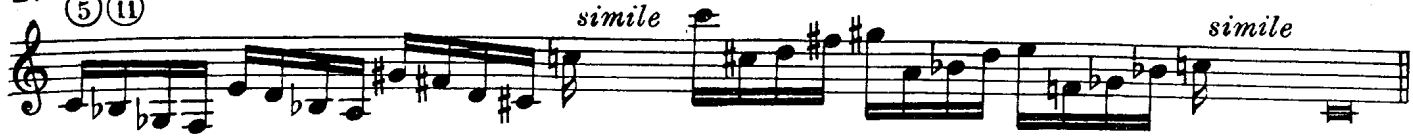
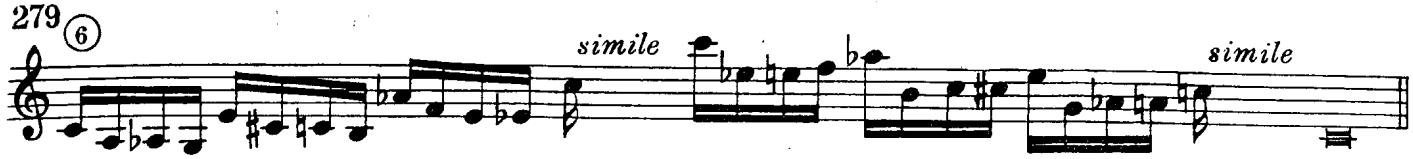
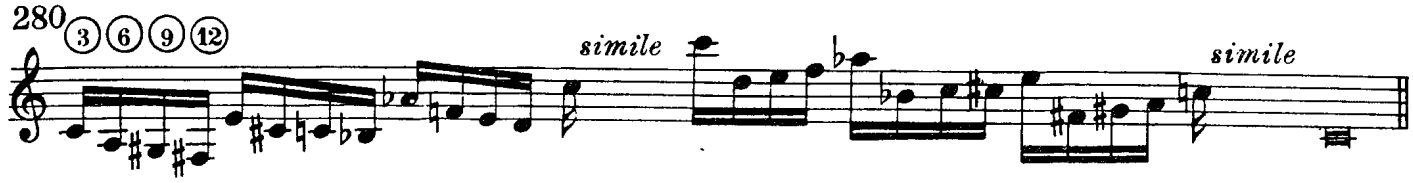
278 ⑤ ⑪



279 ⑥



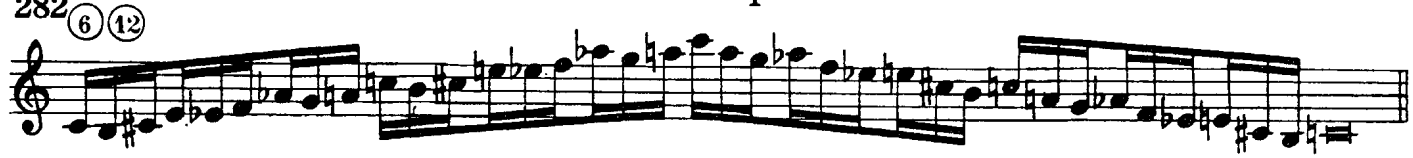
280 ③ ⑥ ⑨ ⑫



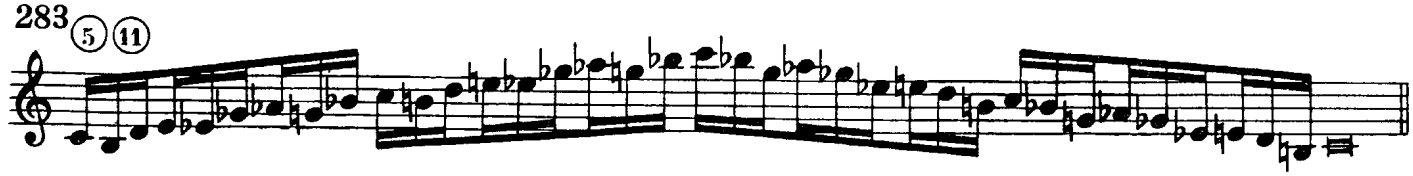
281 ⑤

Infra-Interpolation

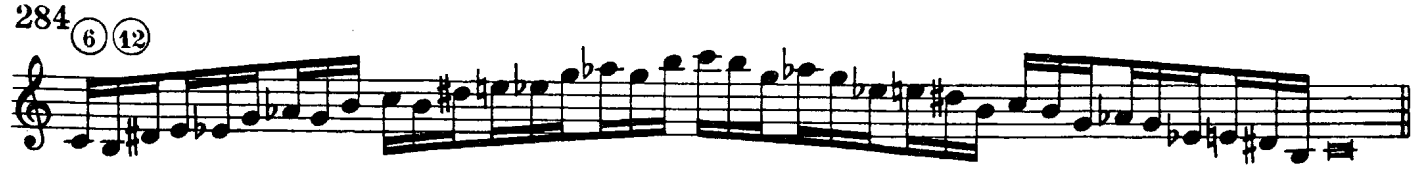
282 ⑥ ⑫



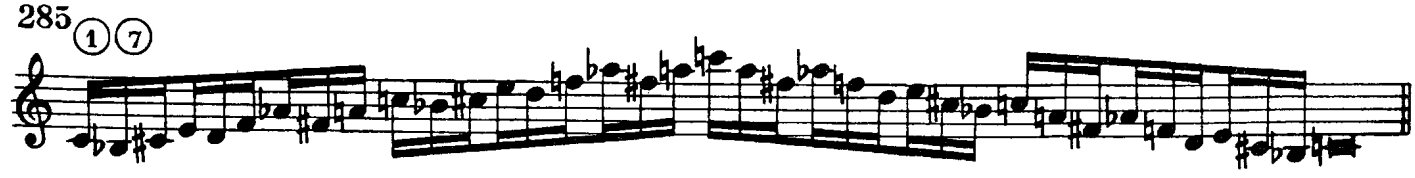
283 ⑤ ⑪



284 ⑥ ⑫

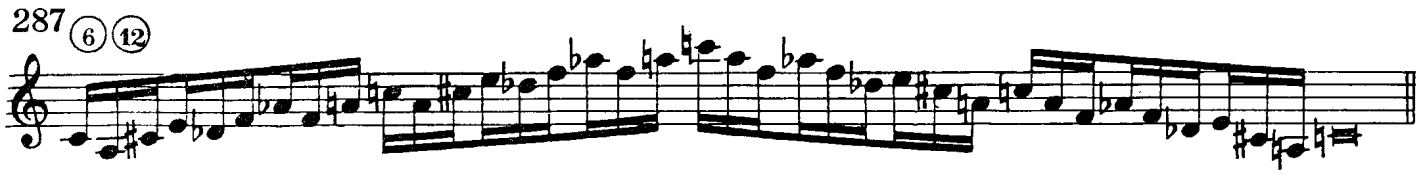


285 ① ⑦

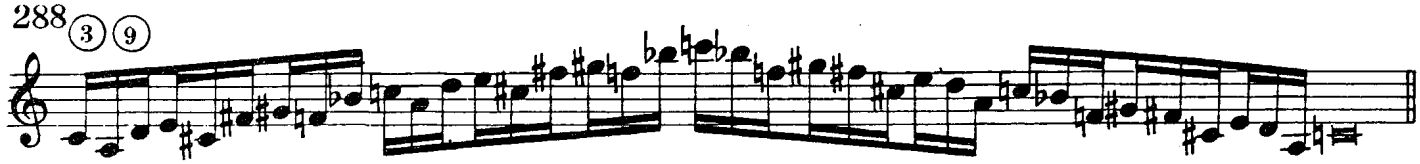


286 ③ ⑨

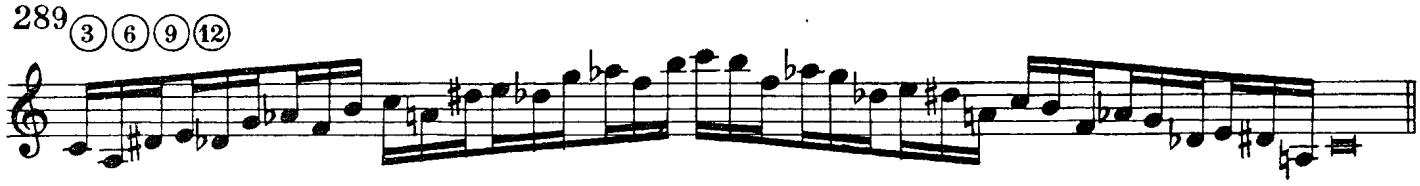
287 ⑥ ⑫



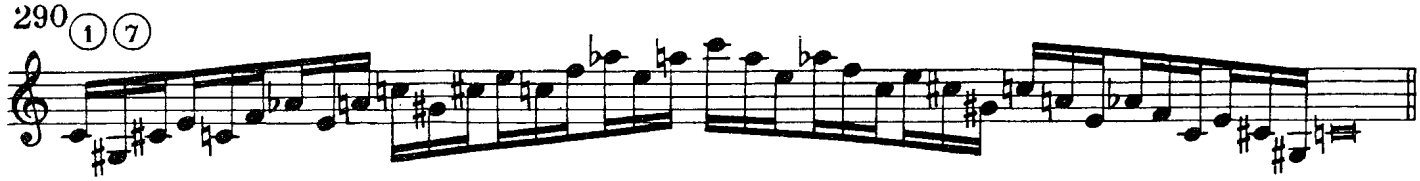
288 ③ ⑨



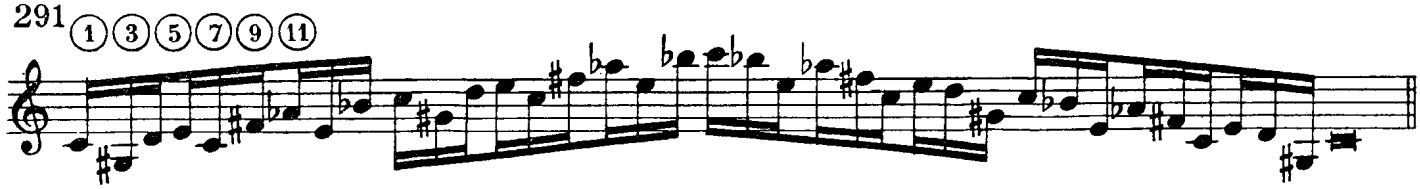
289 ③ ⑥ ⑨ ⑫



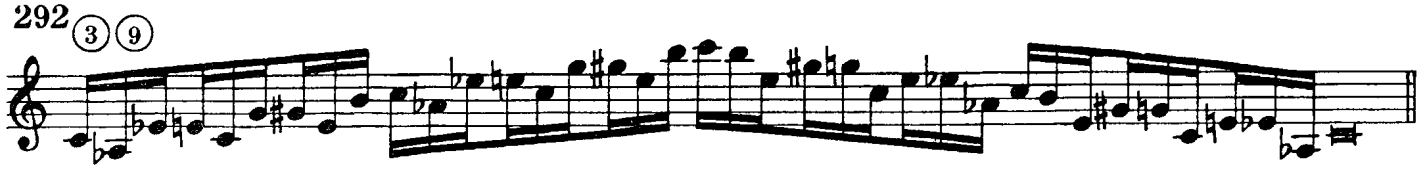
290 ① ⑦



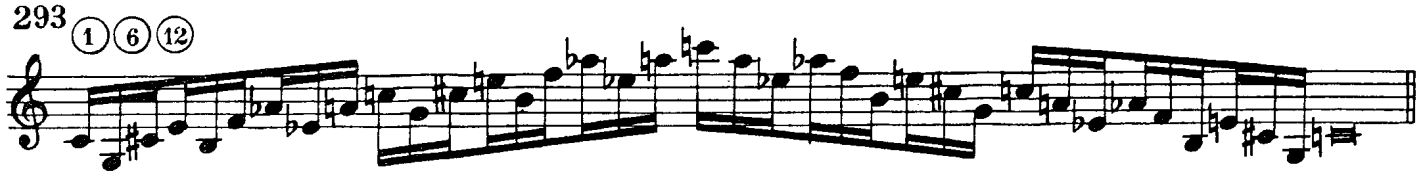
291 ① ③ ⑤ ⑦ ⑨ ⑪



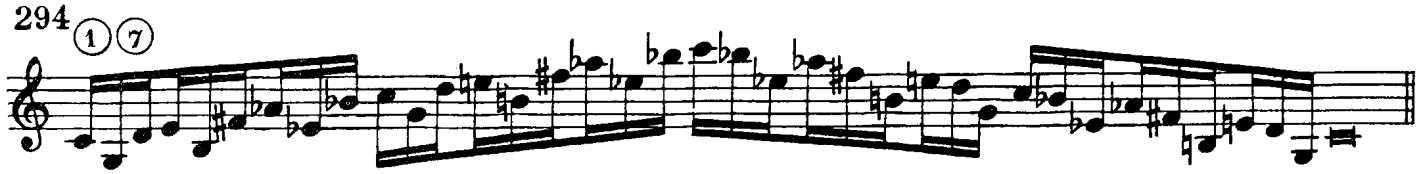
292 ③ ⑨



293 ① ⑥ ⑫

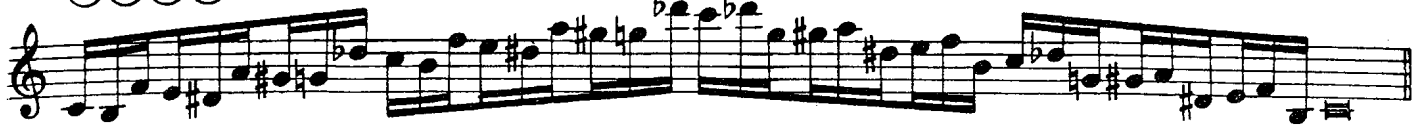


294 ① ⑦



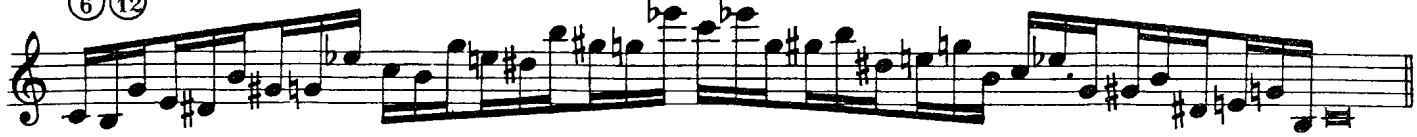
Infra-Ultrapolation

295 ⑤⑥⑪⑫

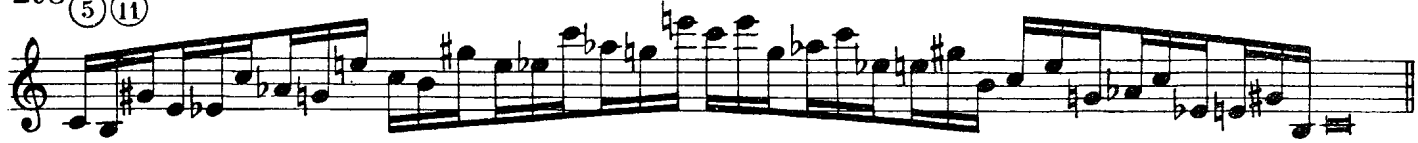


296 ⑤⑥⑪⑫

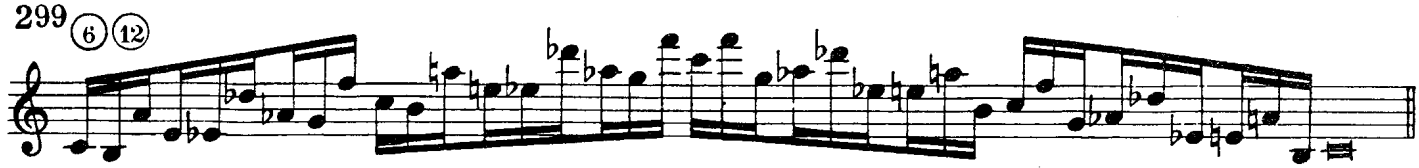
297 ⑥⑫



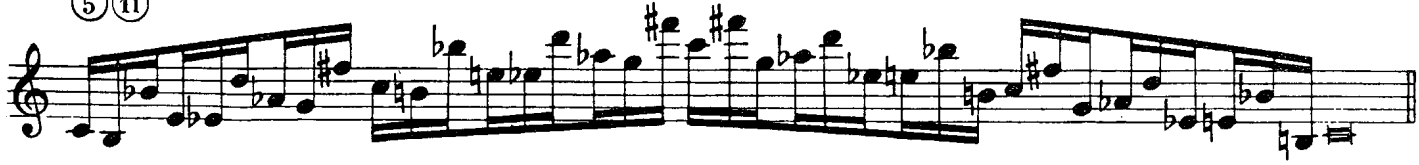
298 ⑤⑪



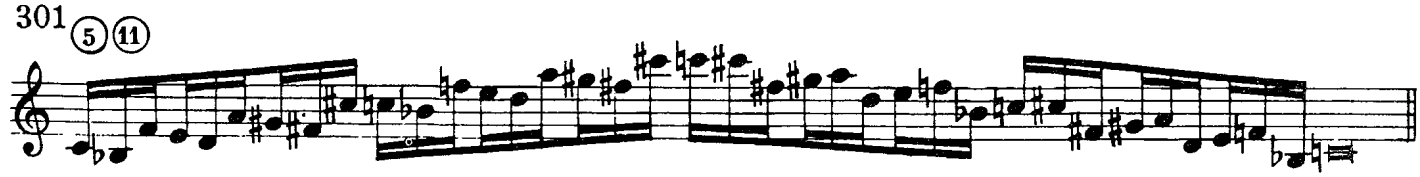
299 ⑥⑫



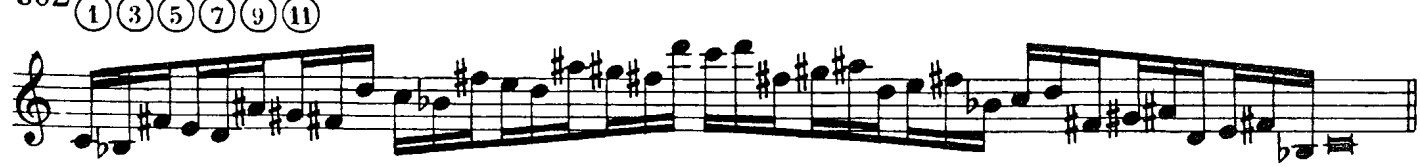
300 ⑤⑪



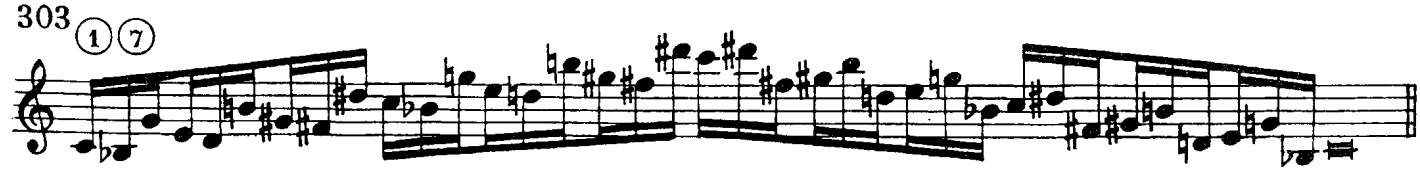
301 ⑤⑪



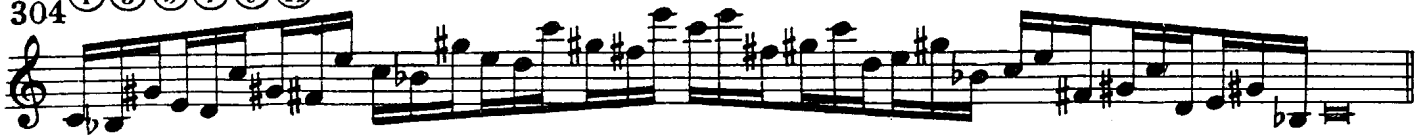
302 ①③⑤⑦⑨⑪



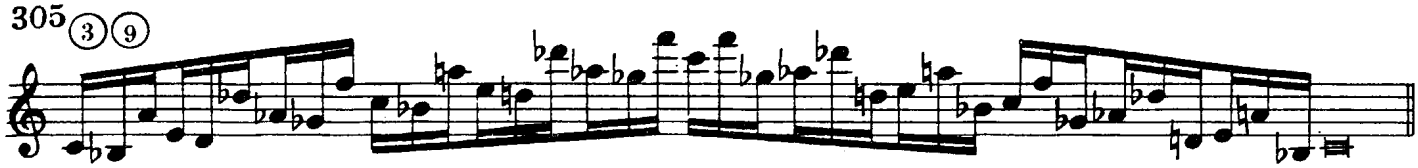
303 ①⑦



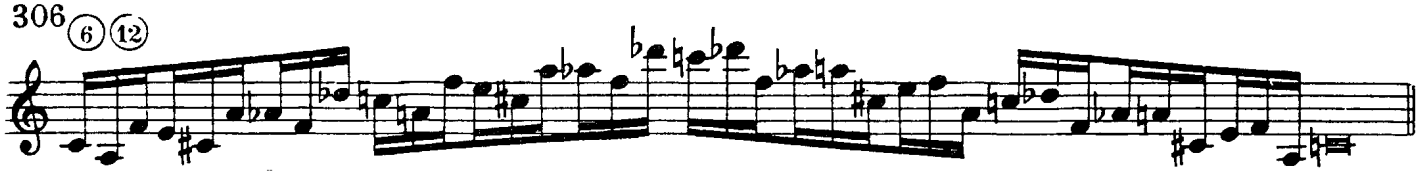
304 ①③⑤⑦⑨⑪



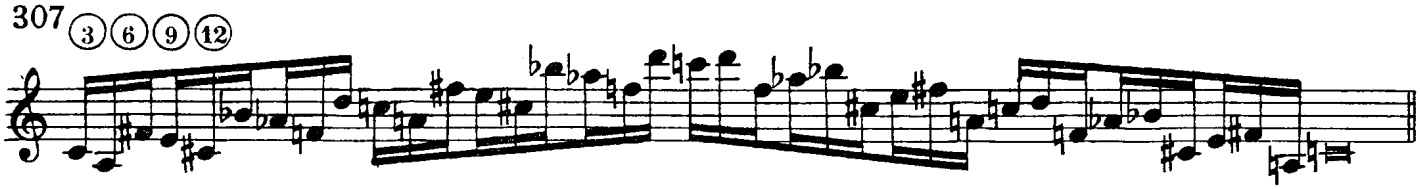
305 ③⑨



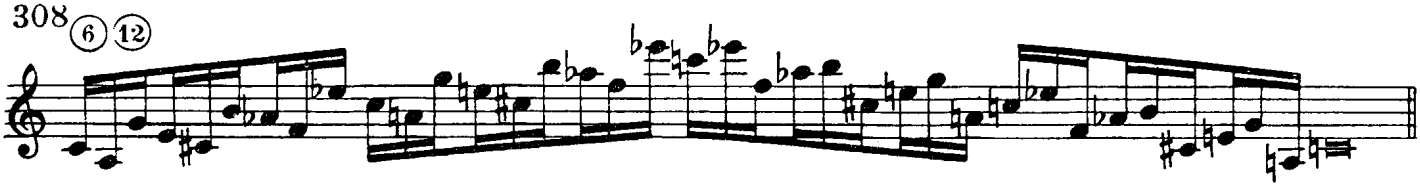
306 ⑥⑫



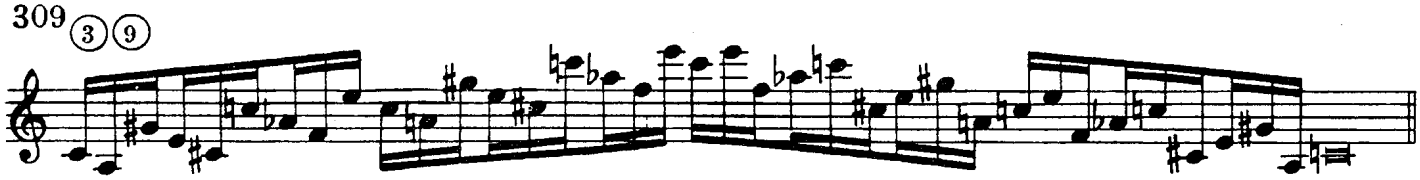
307 ③⑥⑨⑫



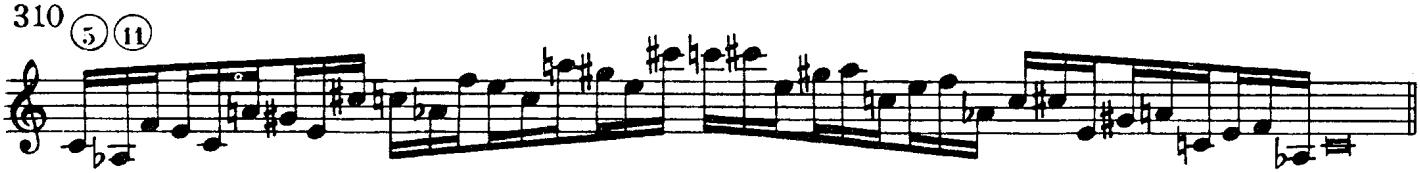
308 ⑥⑫



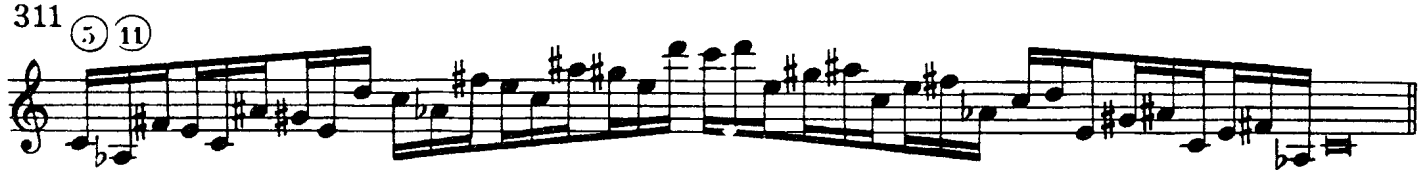
309 ③⑨



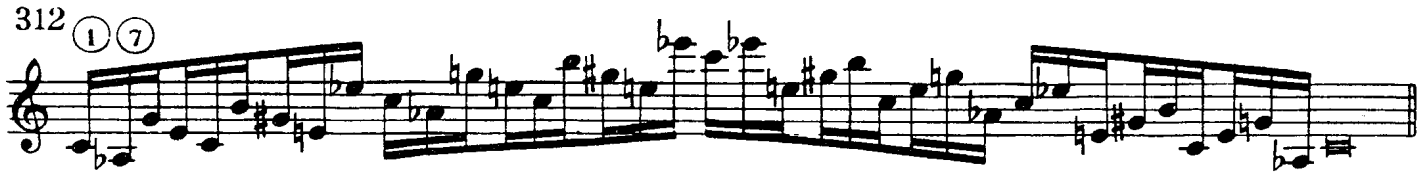
310 ⑤⑪



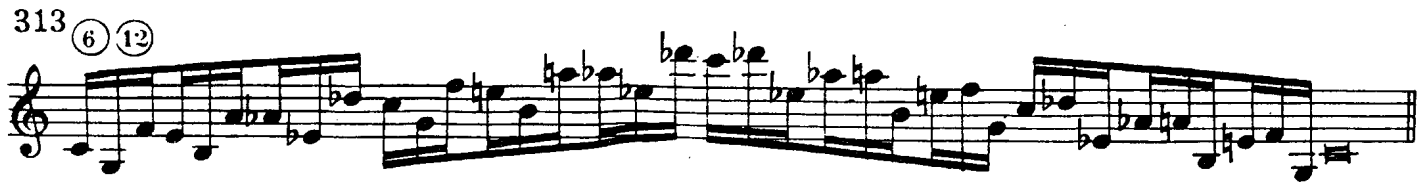
311 ⑤⑪



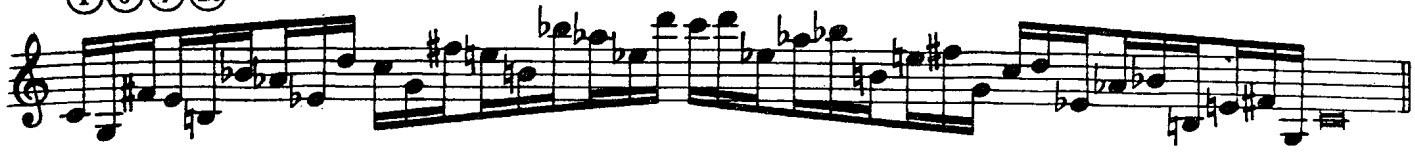
312 ①⑦



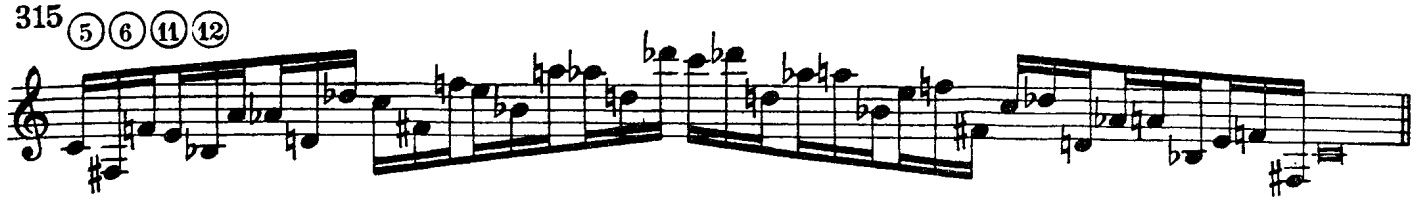
313 ⑥⑫



314 ①⑥⑦⑫



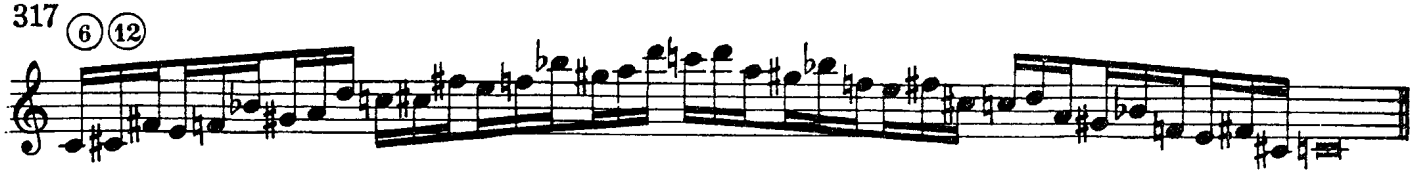
315 ⑤⑥⑪⑫



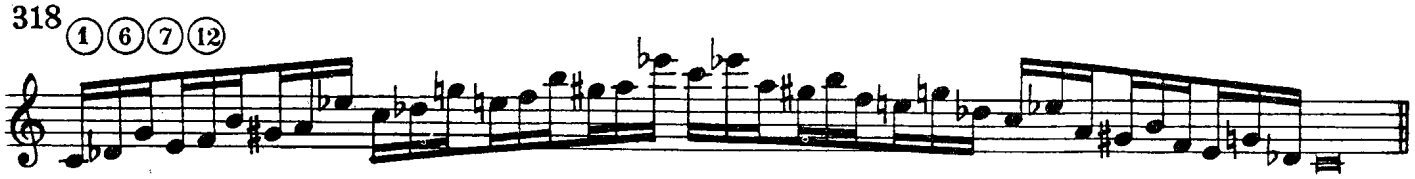
Inter-Ultrapolation

316 ⑥⑫

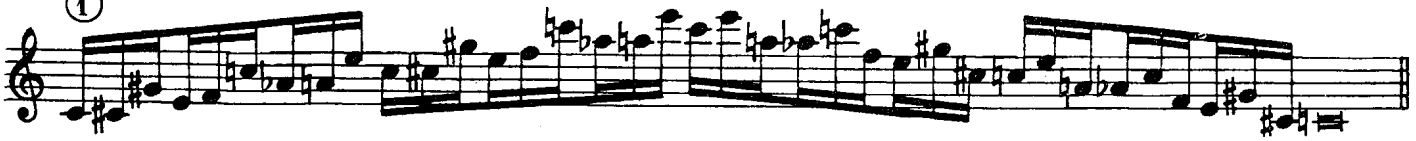
317 ⑥⑫



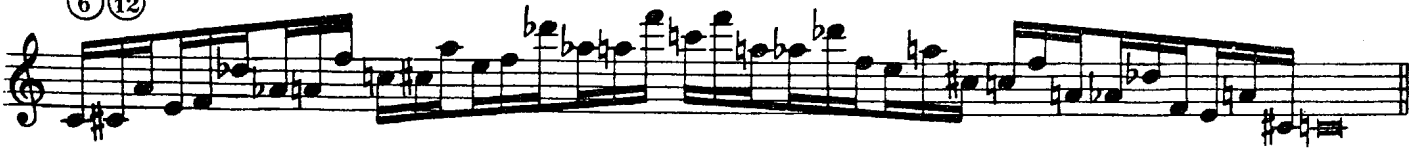
318 ①⑥⑦⑫



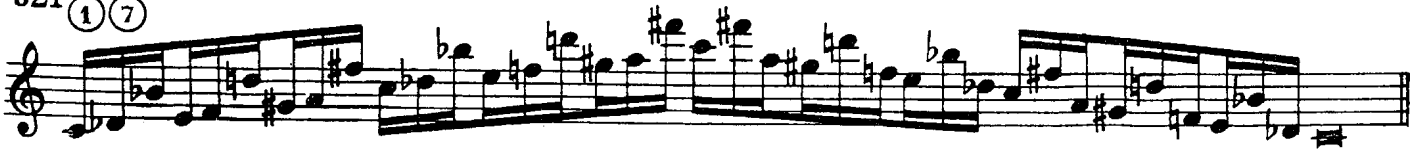
319 ①



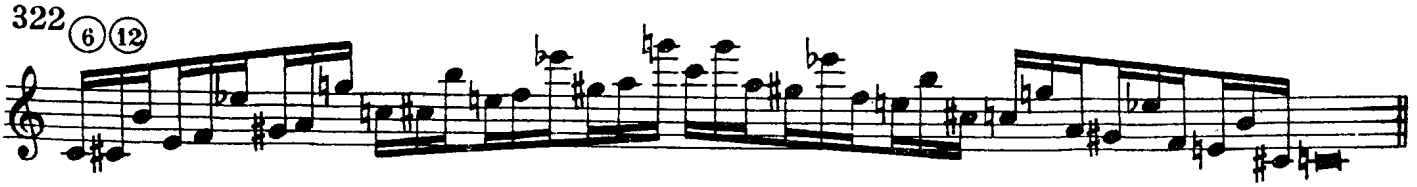
320 ⑥⑫



321 ①⑦

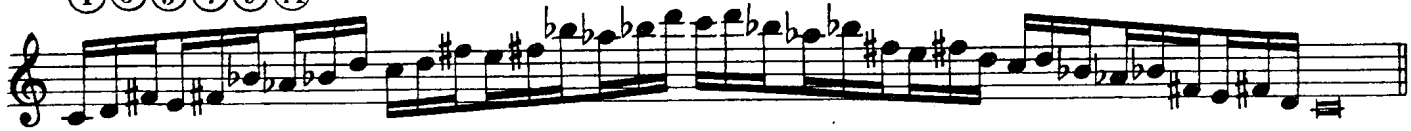


322 ⑥⑫

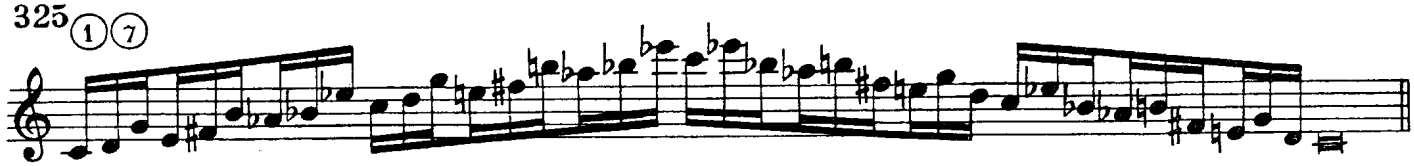


323 ⑤⑪

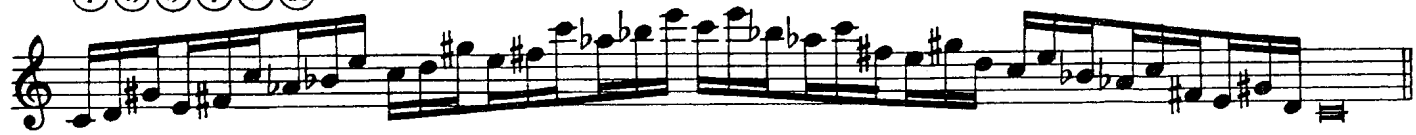
324 ①③⑤⑦⑨⑪



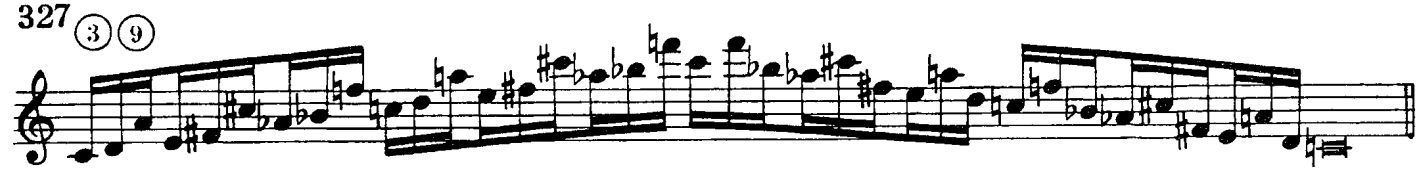
325 ①⑦



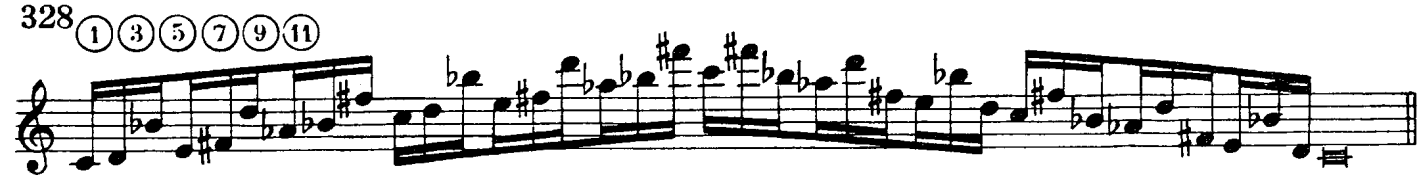
326 ①③⑤⑦⑨⑪



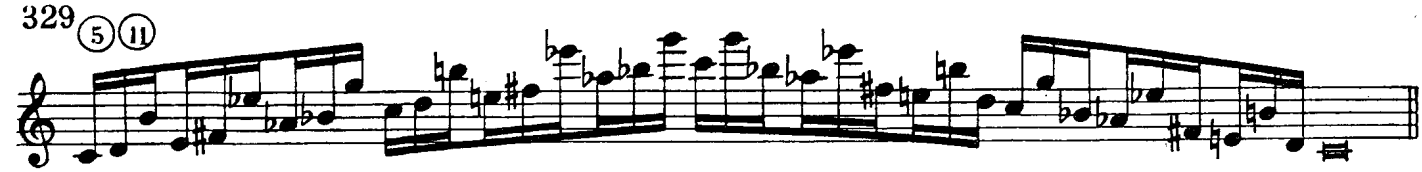
327 ③⑨



328 ①③⑤⑦⑨⑪

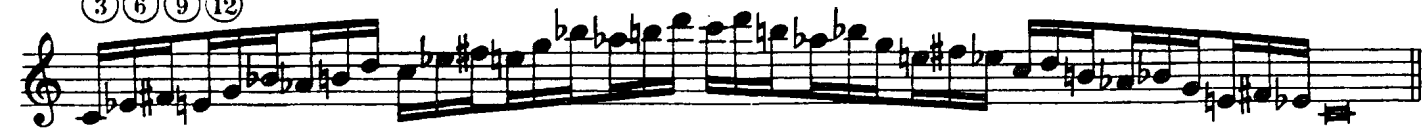


329 ⑤⑪

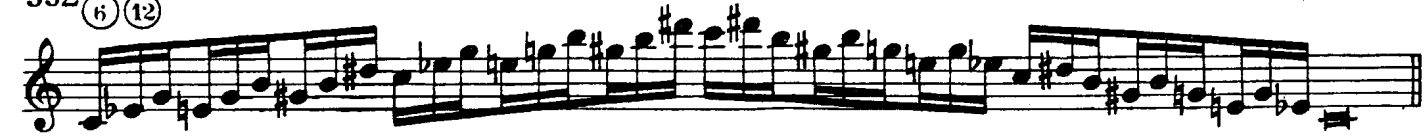


330 ⑥⑫

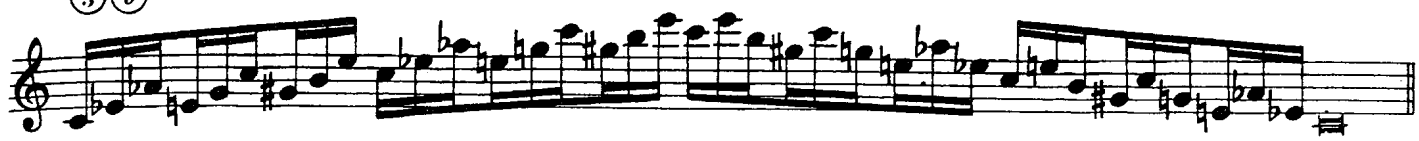
331 ③⑥⑨⑫



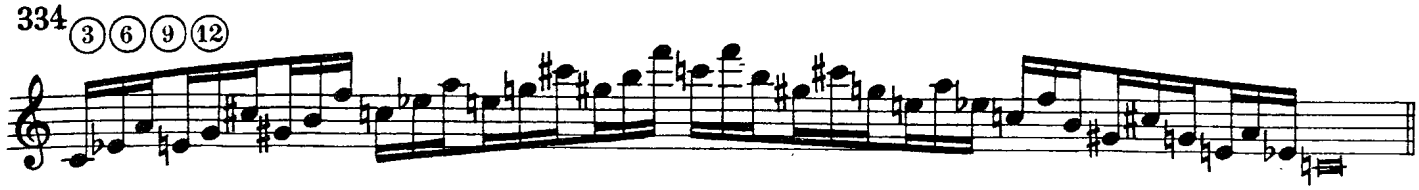
332 ⑥⑫



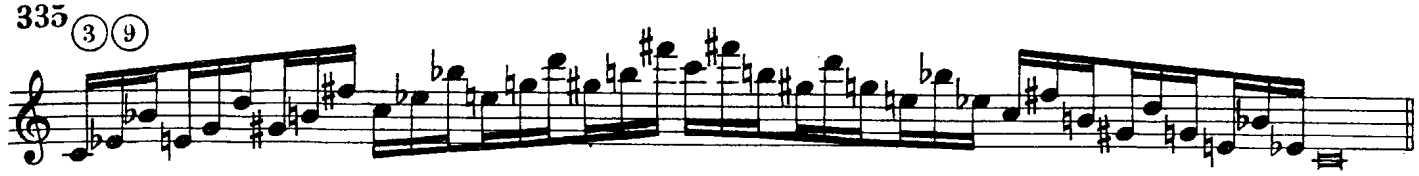
333 ③ ⑨



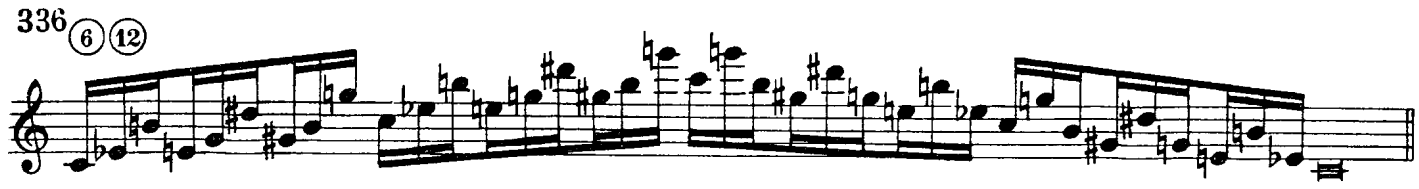
334 ③ ⑥ ⑨ ⑫



335 ③ ⑨

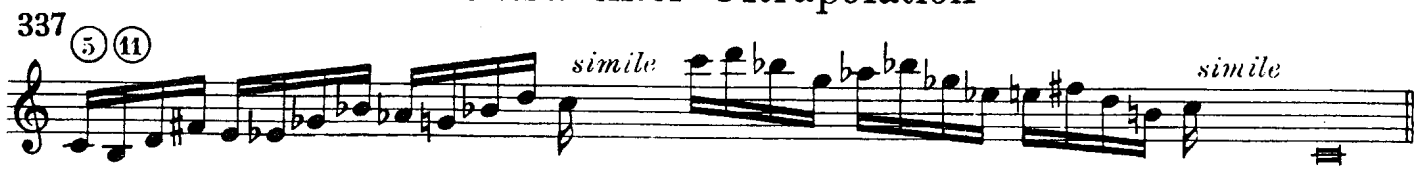


336 ⑥ ⑫

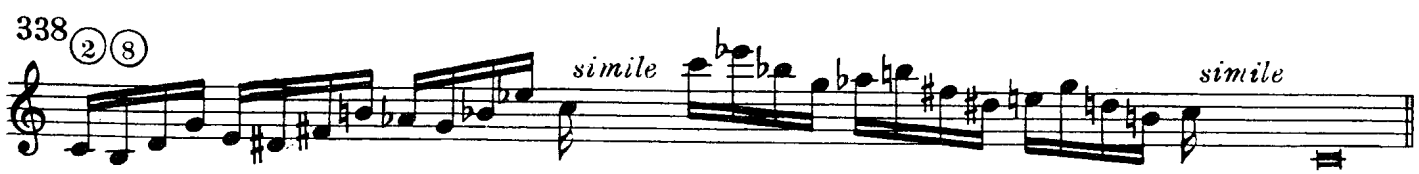


Infra-Inter-Ultrapolation

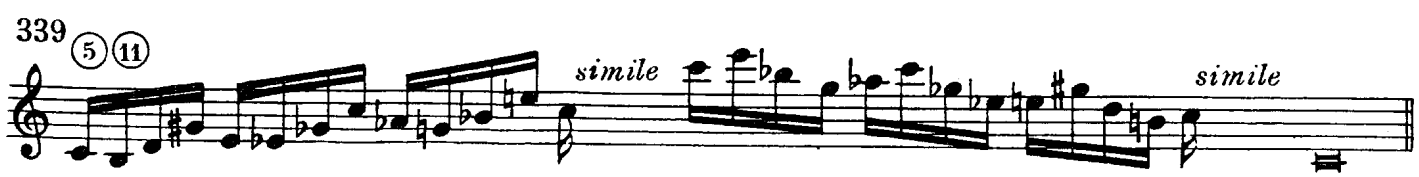
337 ⑤ ⑪



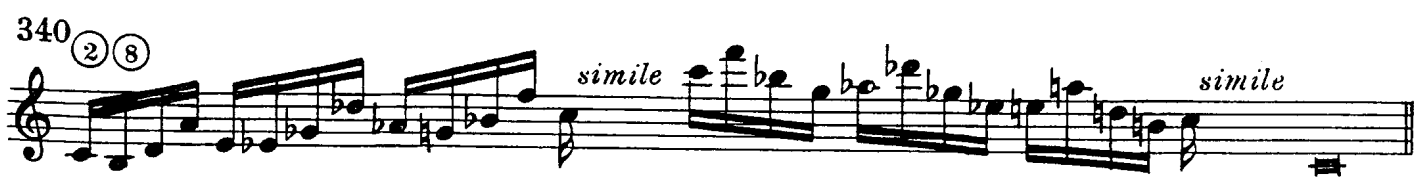
338 ② ⑧



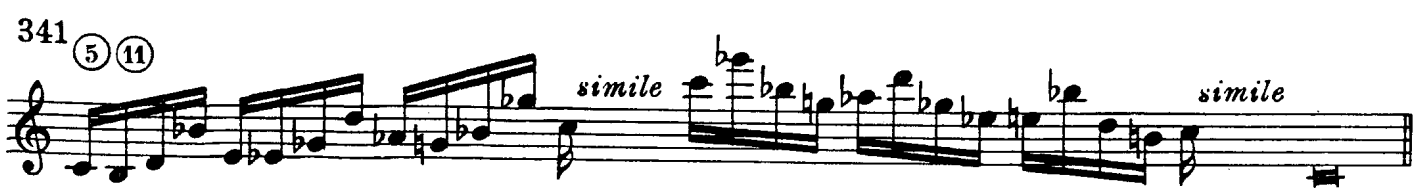
339 ⑤ ⑪



340 ② ⑧



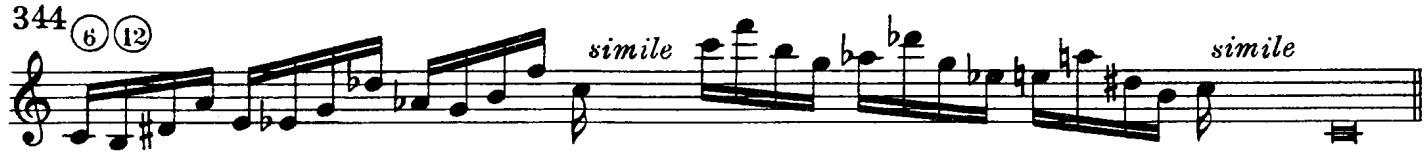
341 ⑤ ⑪



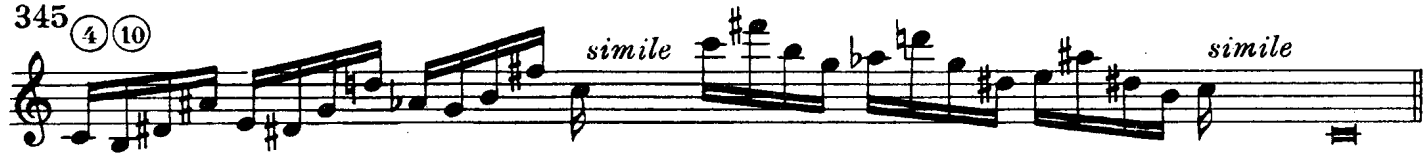
342 ⑥ ⑪

343 ② ⑧

344 ⑥ ⑫

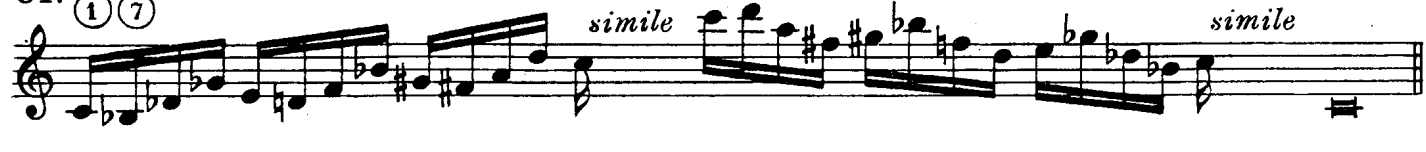


345 ④ ⑩

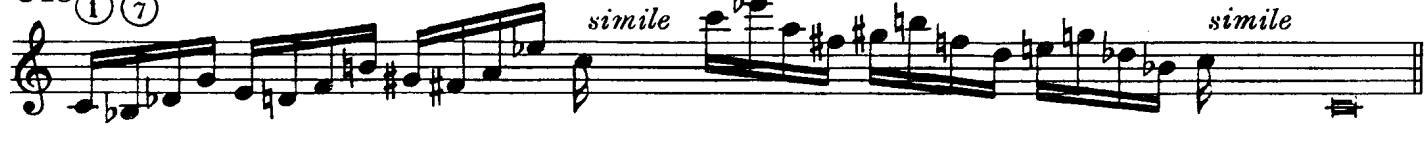


346 ⑩

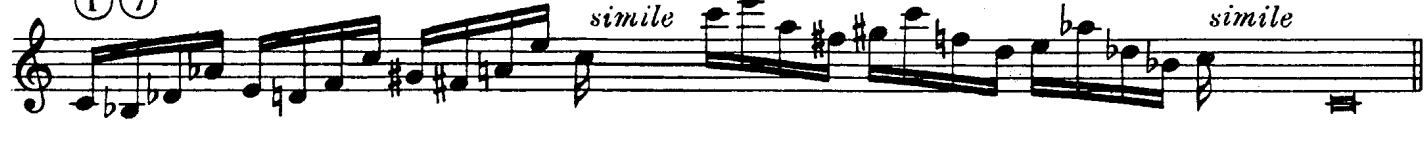
347 ① ⑦



348 ① ⑦



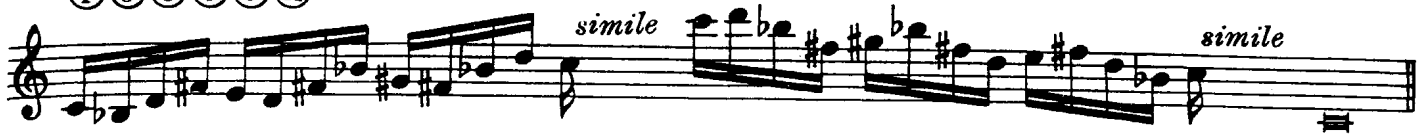
349 ① ⑦



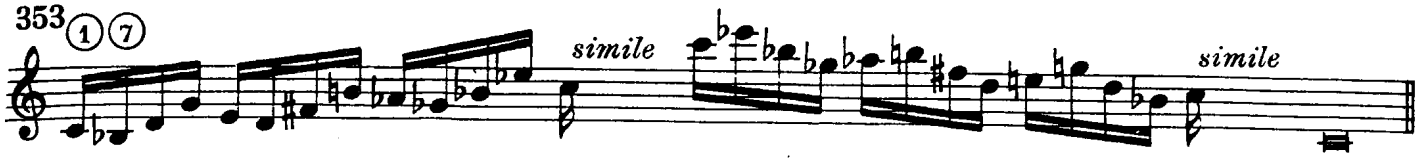
350 ④ ⑩

351 ⑤ ⑪

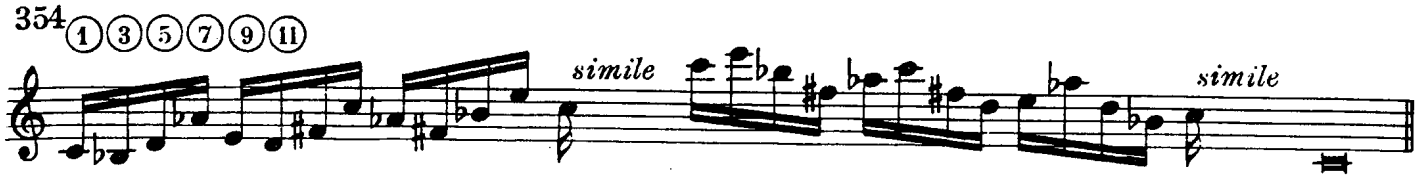
352 ① ③ ⑤ ⑦ ⑨ ⑪



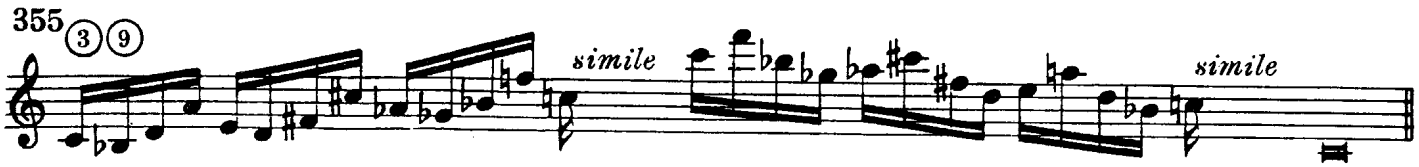
353 ① ⑦



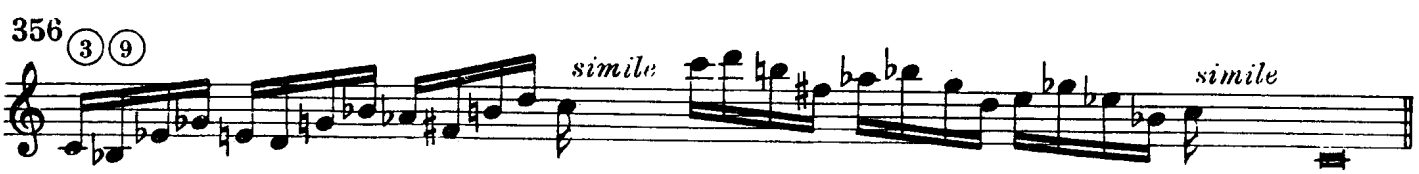
354 ① ③ ⑤ ⑦ ⑨ ⑪



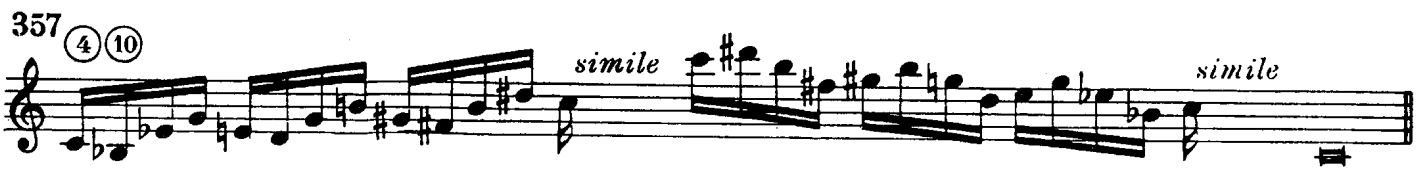
355 ③ ⑨



356 ③ ⑨

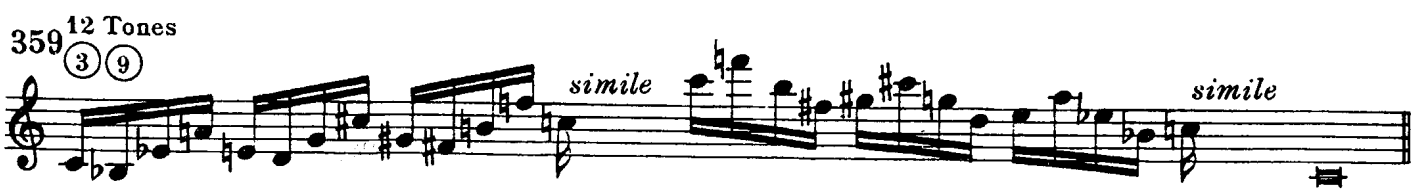


357 ④ ⑩

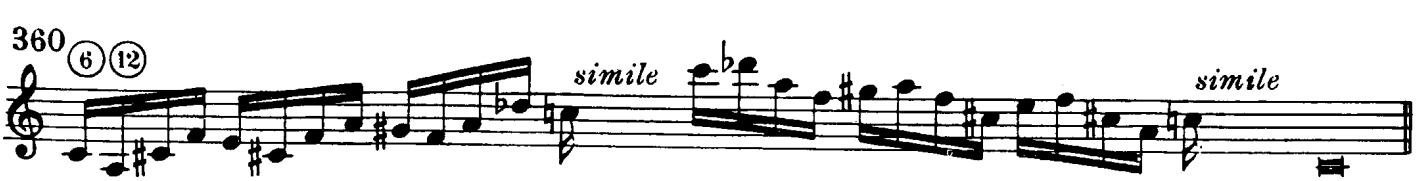


358 ③ ⑨

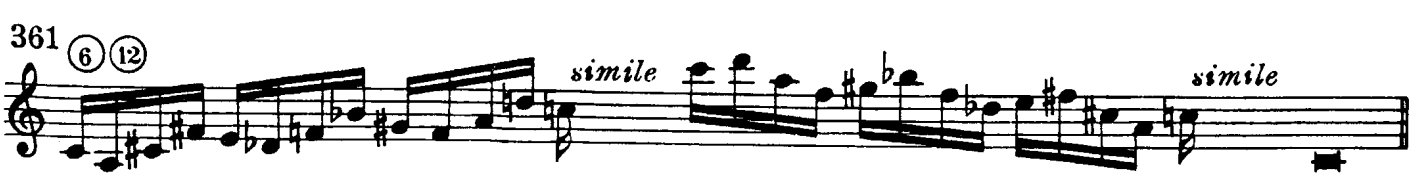
359 12 Tones ③ ⑨

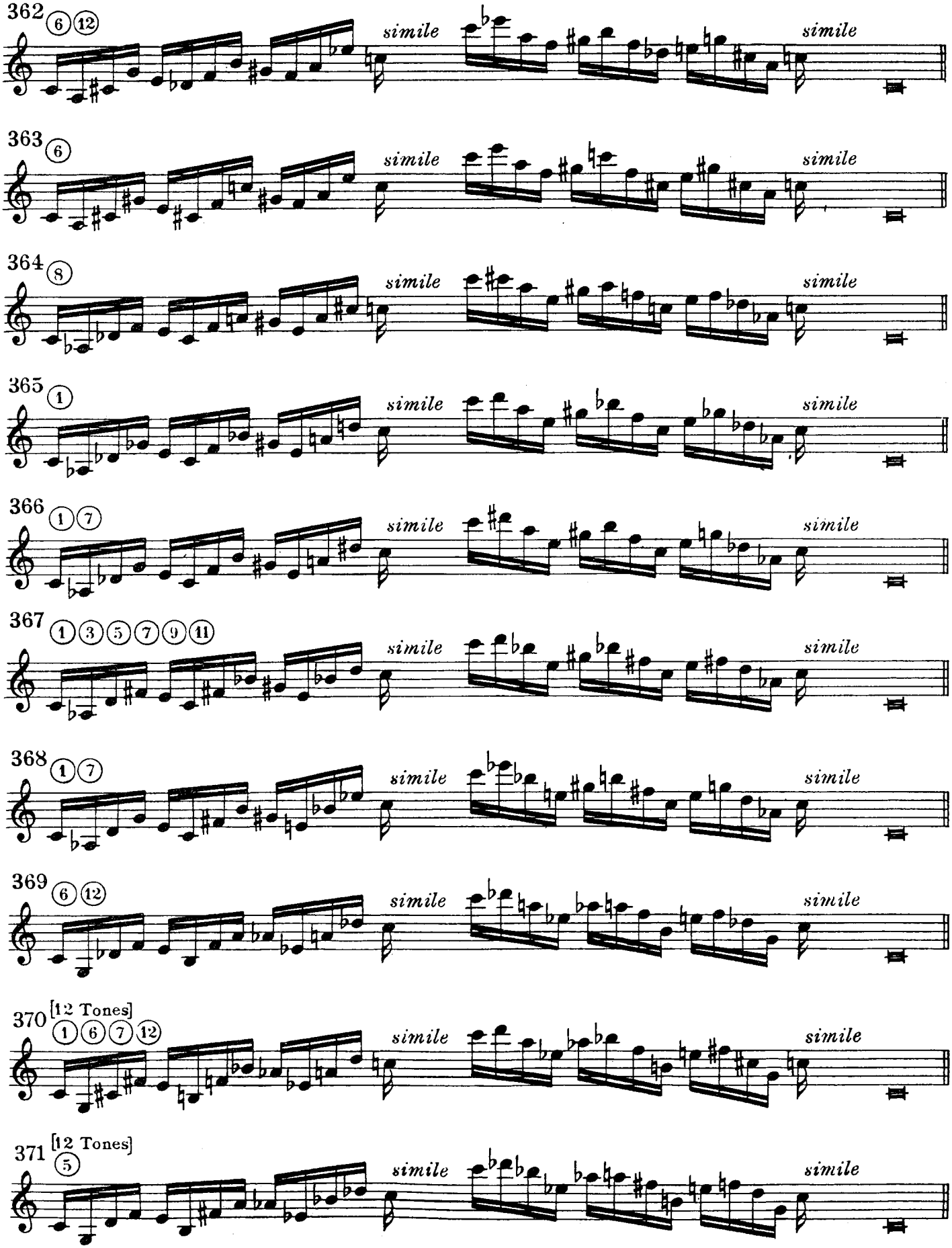


360 ⑥ ⑫

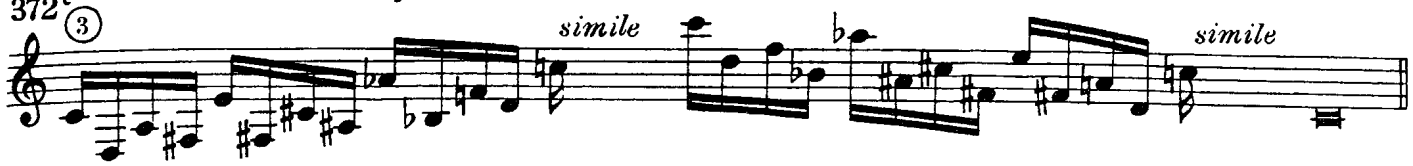


361 ⑥ ⑫

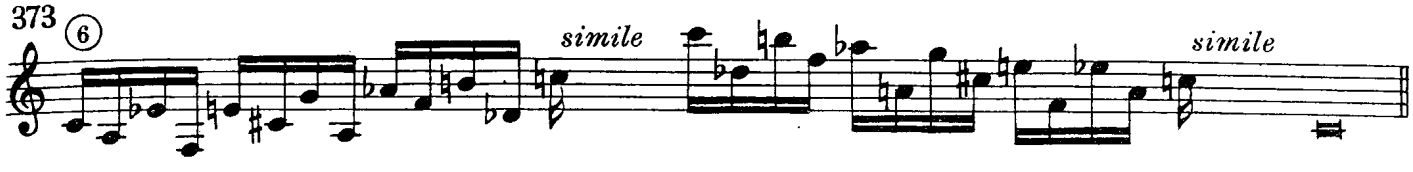



362 6 12
simile
simile
363 6
simile
simile
364 8
simile
simile
365 1
simile
simile
366 1 7
simile
simile
367 1 3 5 7 9 11
simile
simile
368 1 7
simile
simile
369 6 12
simile
simile
370 [12 Tones]
1 6 7 12
simile
simile
371 [12 Tones]
5
simile
simile

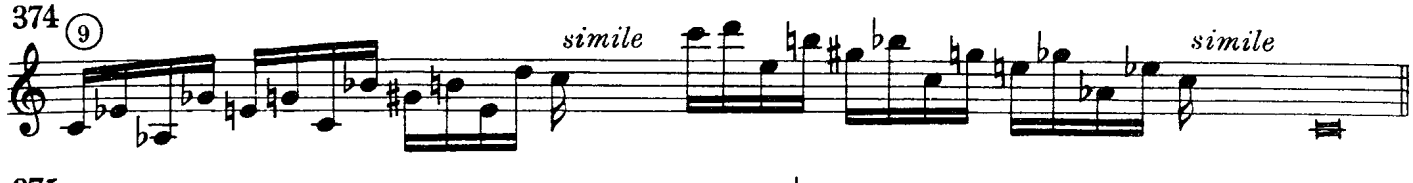
372 [Dominant Seventh Chords] ③



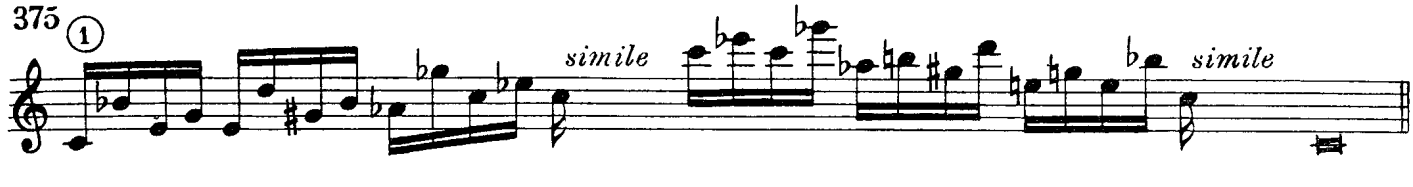
373 ⑥



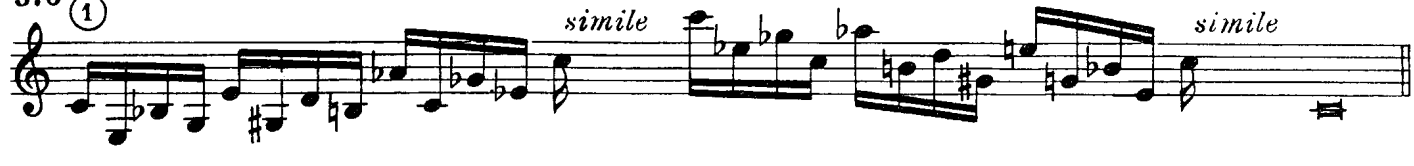
374 ⑨



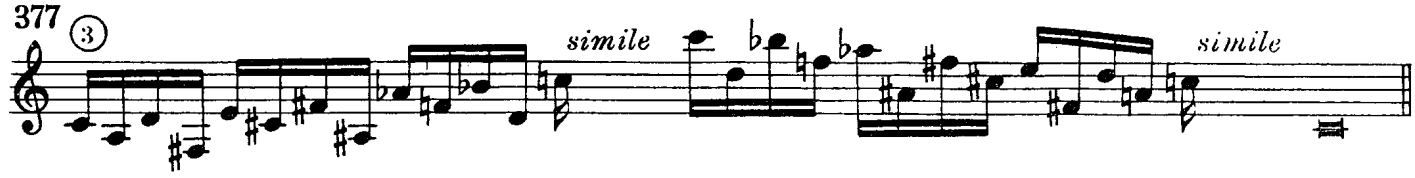
375 ①



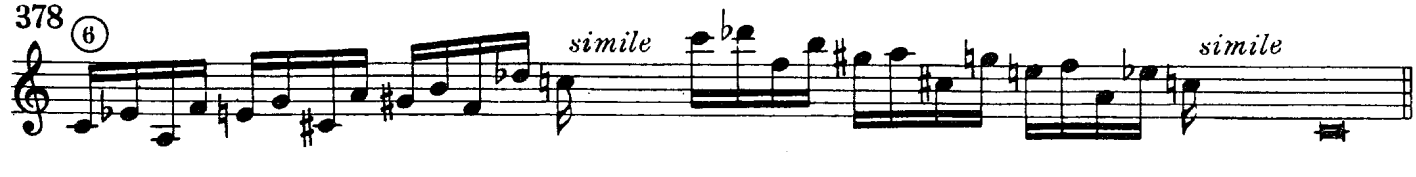
376 [Six-five chords] ①



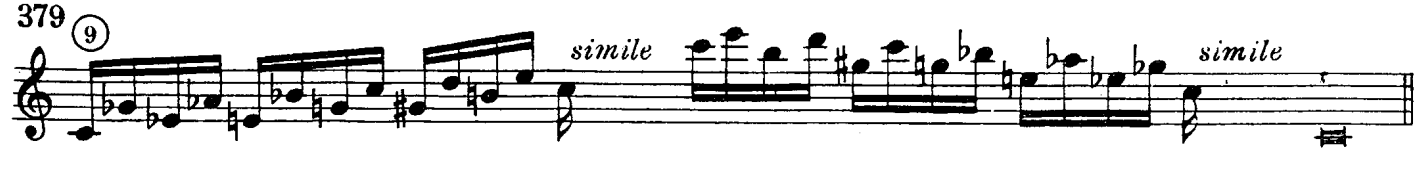
377 ③



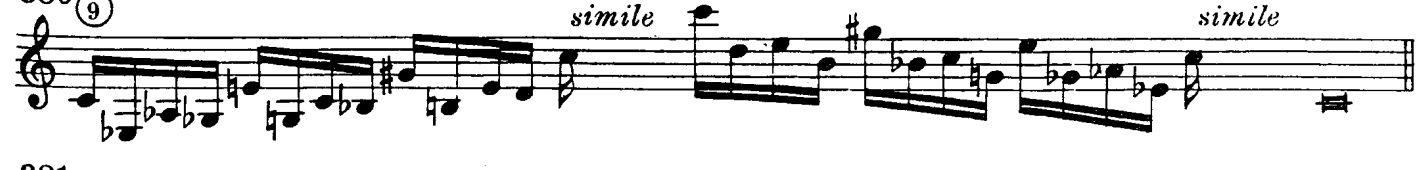
378 ⑥



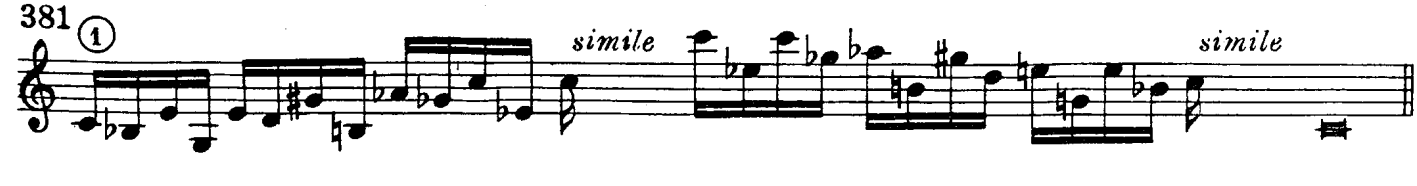
379 ⑨

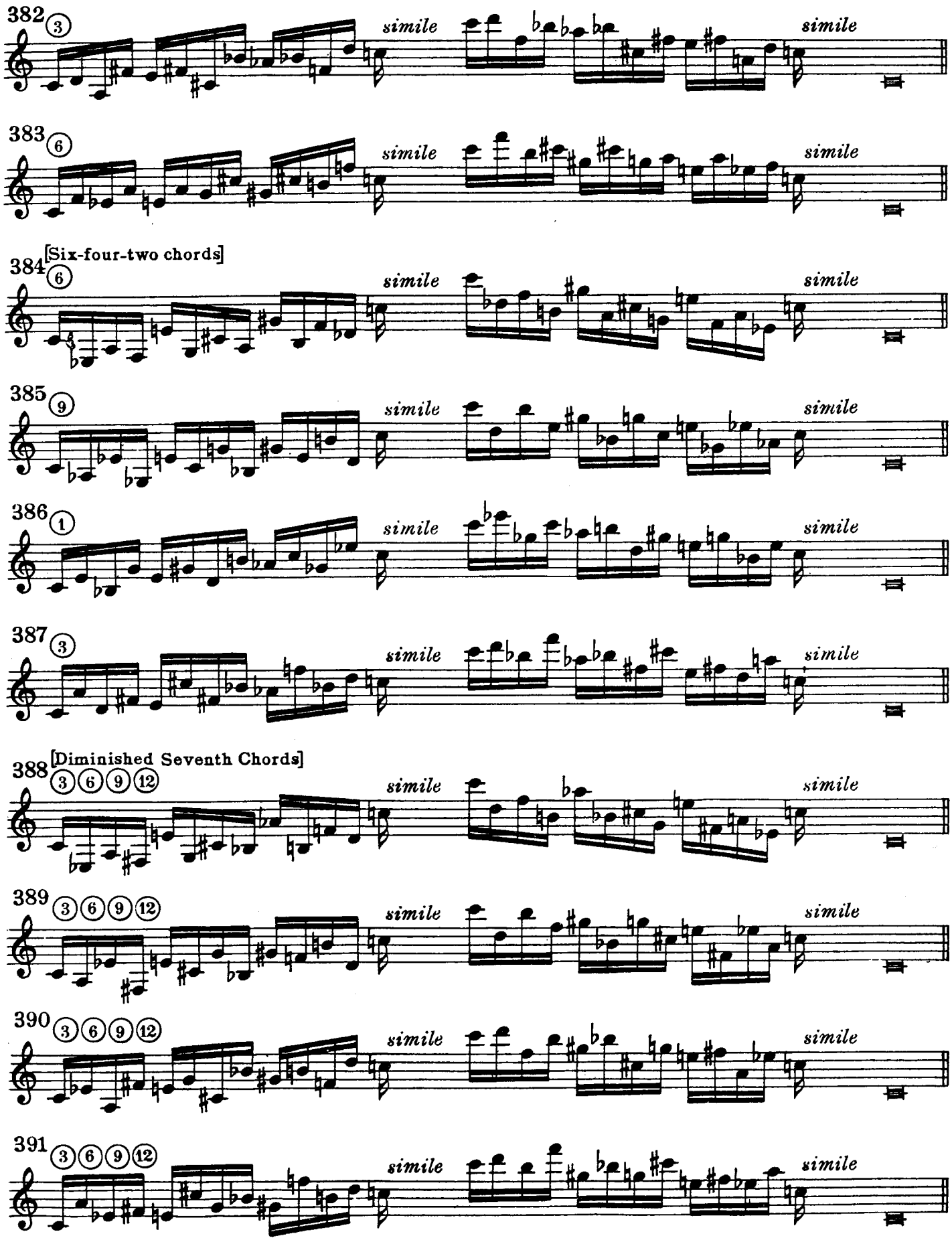


380 [Six-four-three chords] ⑨



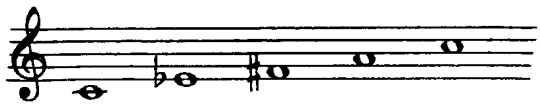
381 ①




382 ③
simile
simile
383 ⑥
simile
simile
[Six-four-two chords]
384 ⑥
simile
simile
385 ⑨
simile
simile
386 ①
simile
simile
387 ③
simile
simile
[Diminished Seventh Chords]
388 ③ ⑥ ⑨ ⑫
simile
simile
389 ③ ⑥ ⑨ ⑫
simile
simile
390 ③ ⑥ ⑨ ⑫
simile
simile
391 ③ ⑥ ⑨ ⑫
simile
simile

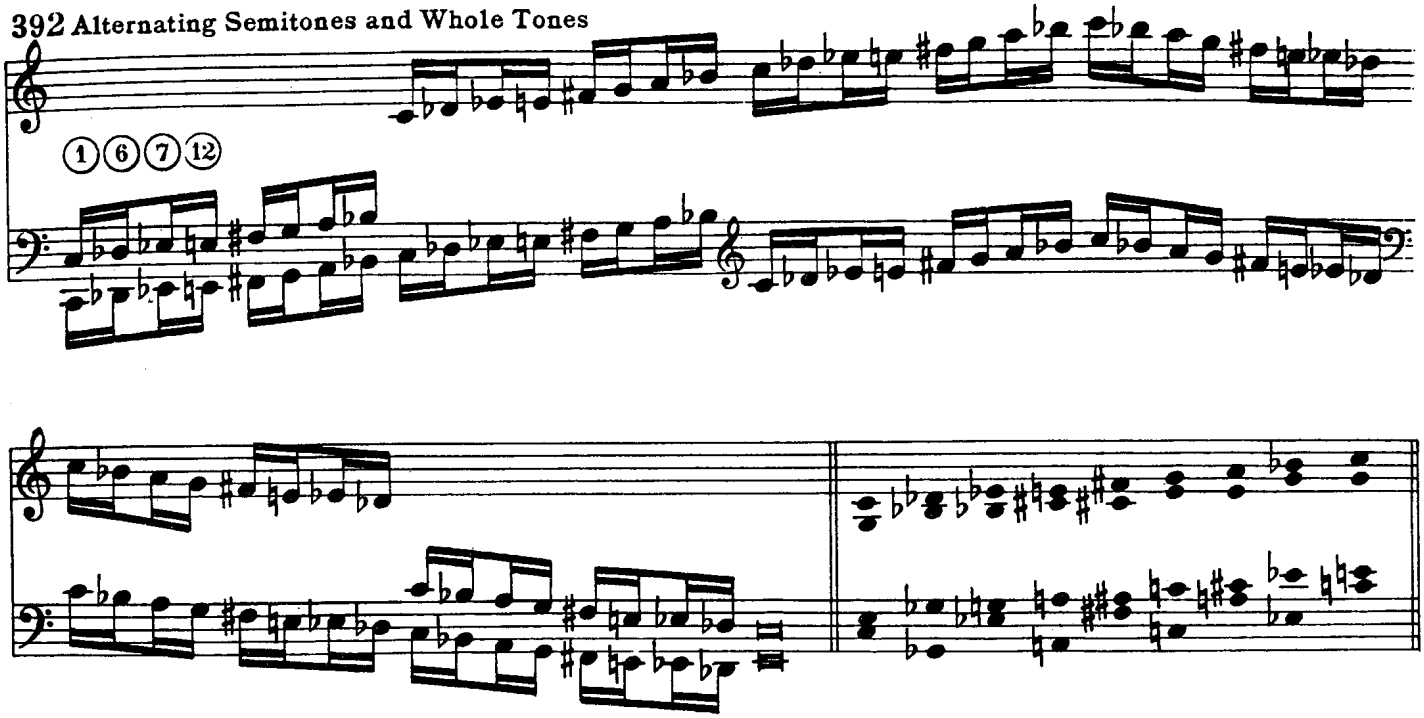
Sesquitone Progression

Equal Division of One Octave into Four Parts

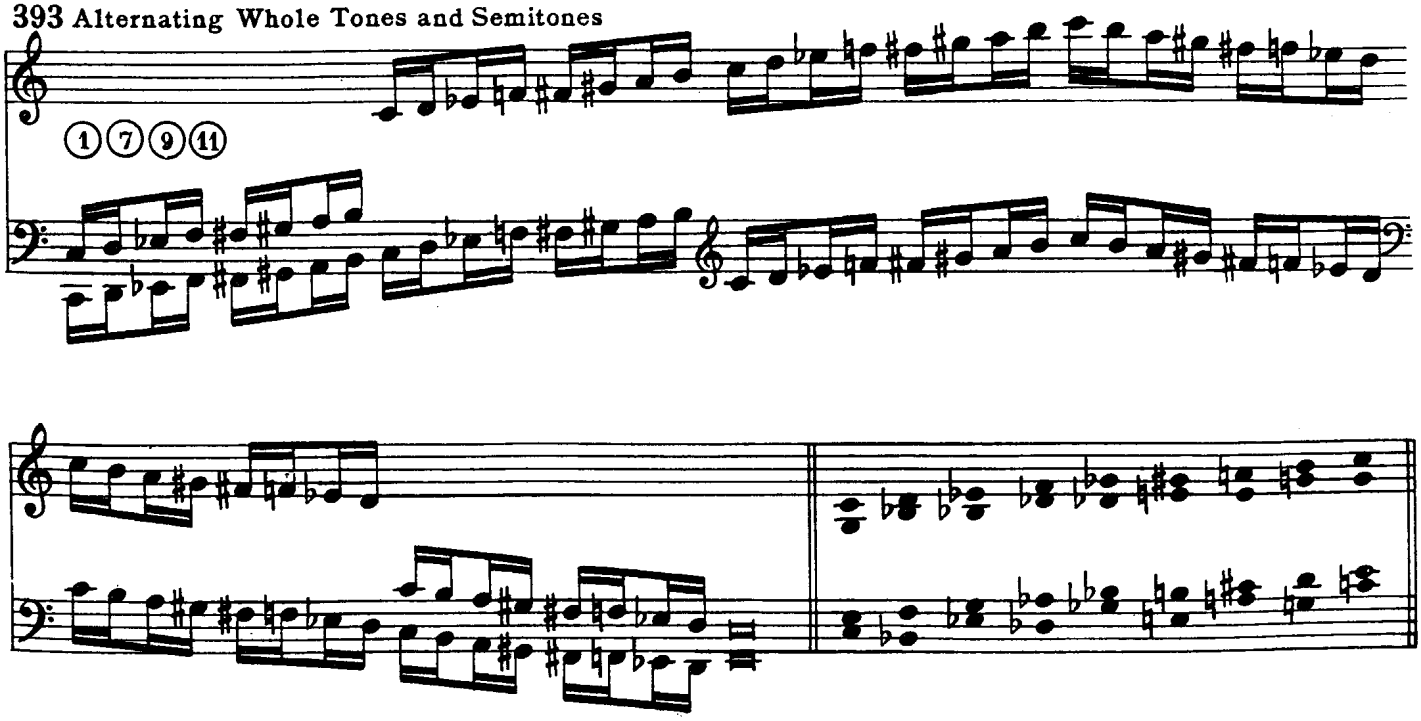


Interpolation of One Note

392 Alternating Semitones and Whole Tones



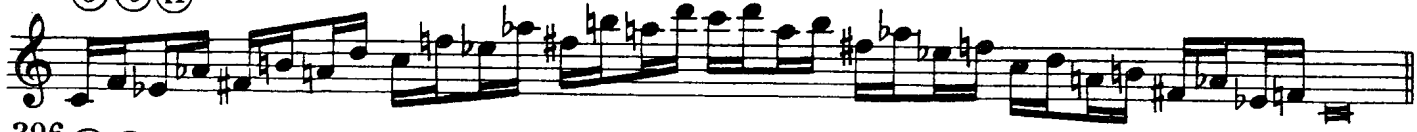
393 Alternating Whole Tones and Semitones



Ultrapolation of One Note

394 ① ③ ⑤ ⑦ ⑨ ⑪

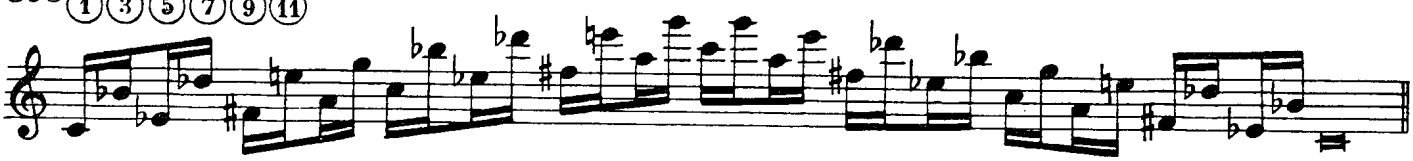
395 ⑤ ⑥ ⑪



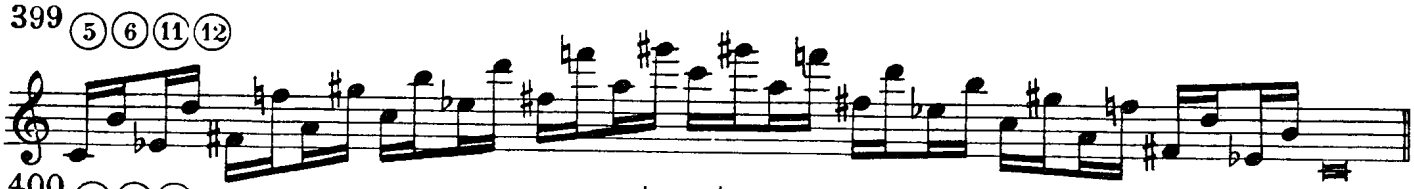
396 ① ⑥ ⑫

397 ⑤ ⑪

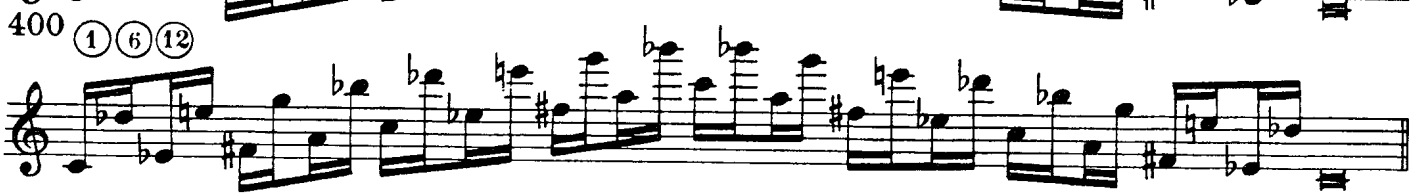
398 ① ③ ⑤ ⑦ ⑨ ⑪



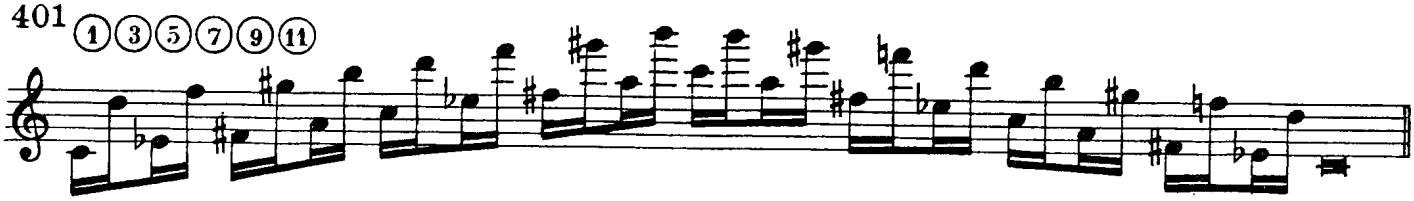
399 ⑤ ⑥ ⑪ ⑫



400 ① ⑥ ⑫

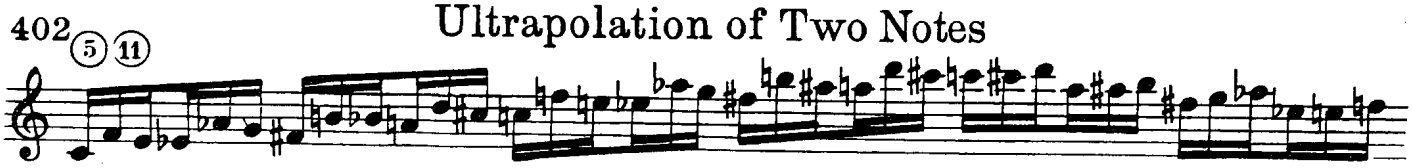


401 ① ③ ⑤ ⑦ ⑨ ⑪

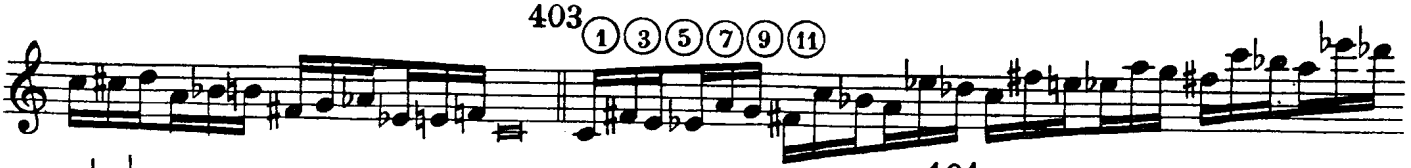


Ultrapolation of Two Notes

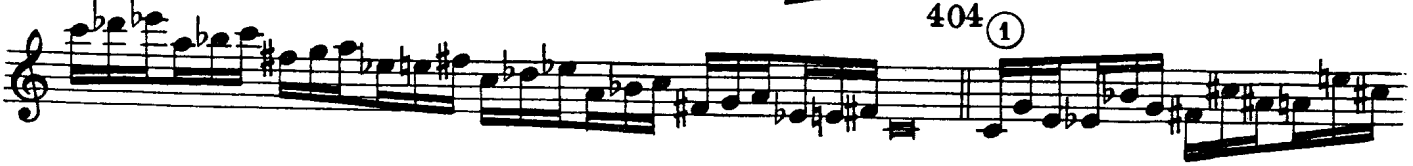
402 ⑤ ⑪

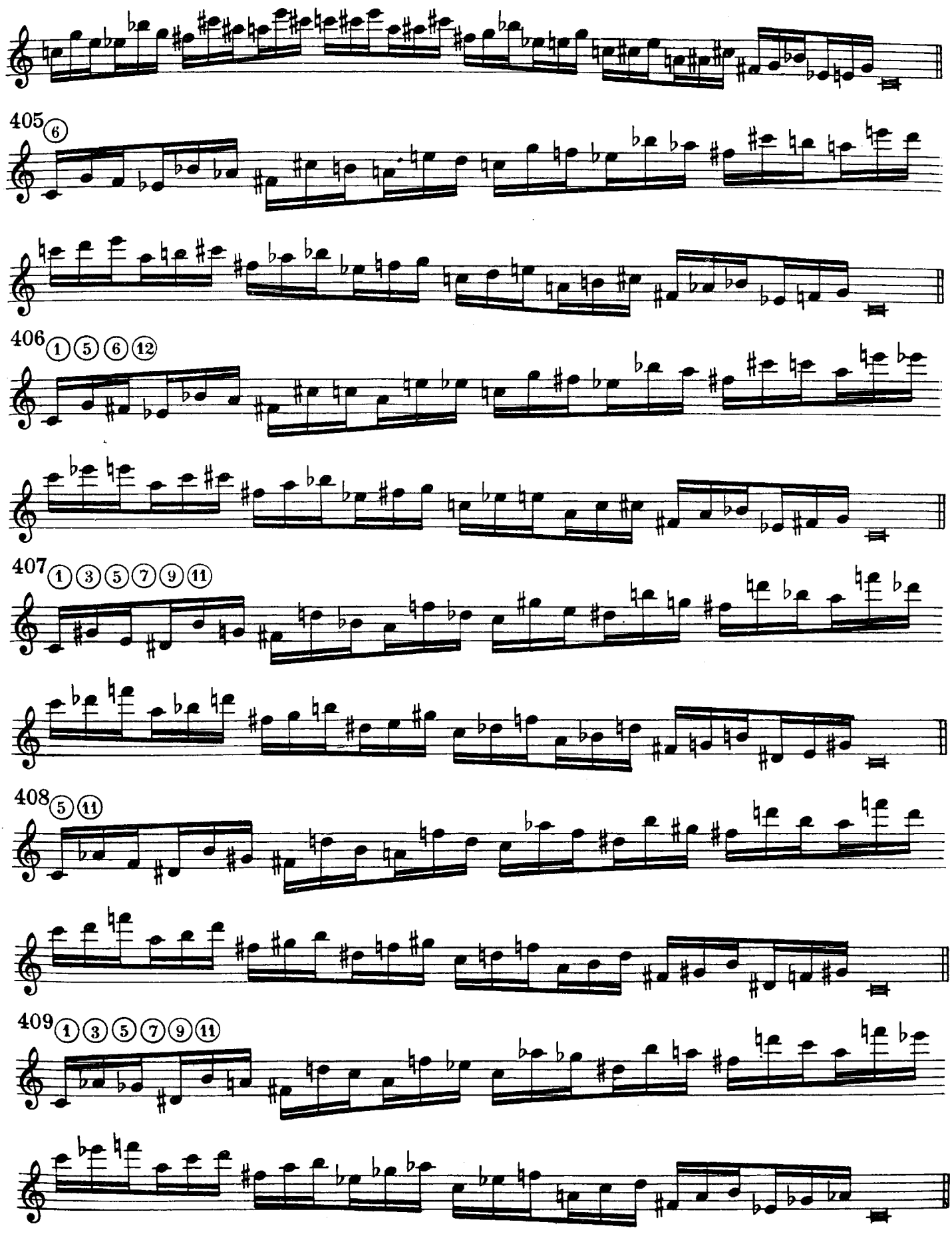


403 ① ③ ⑤ ⑦ ⑨ ⑪

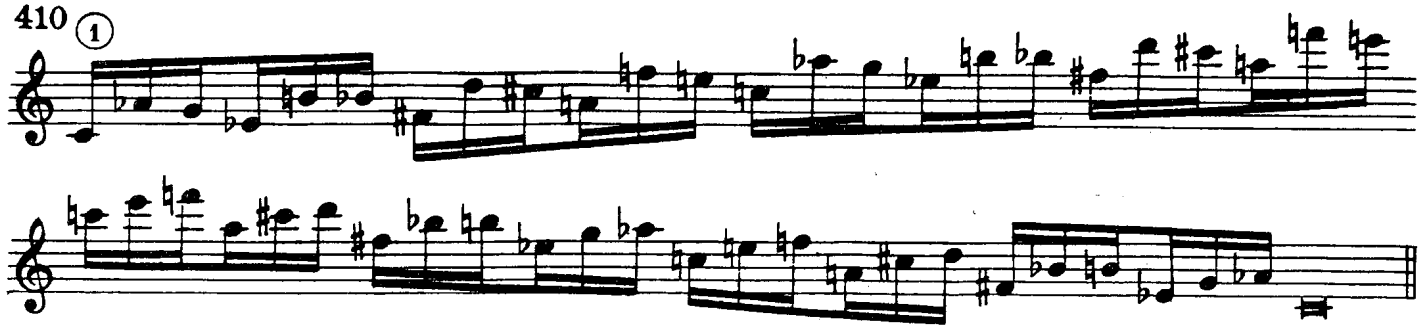


404 ①

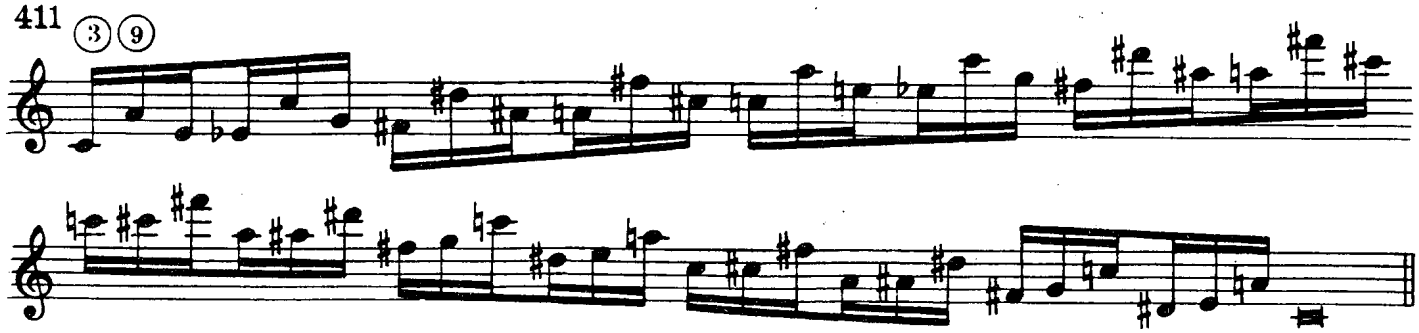



405 ⑥
406 ① ⑤ ⑥ ⑫
407 ① ③ ⑤ ⑦ ⑨ ⑪
408 ⑤ ⑪
409 ① ③ ⑤ ⑦ ⑨ ⑪

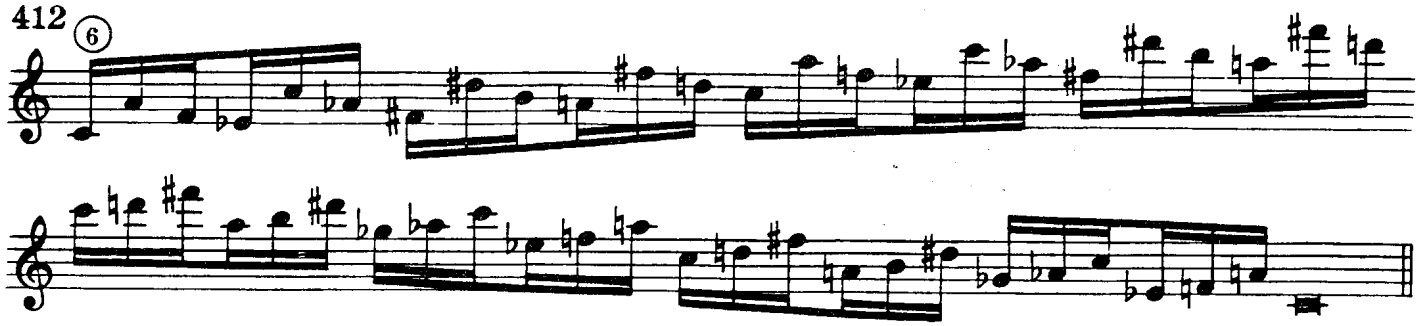
410 (1)



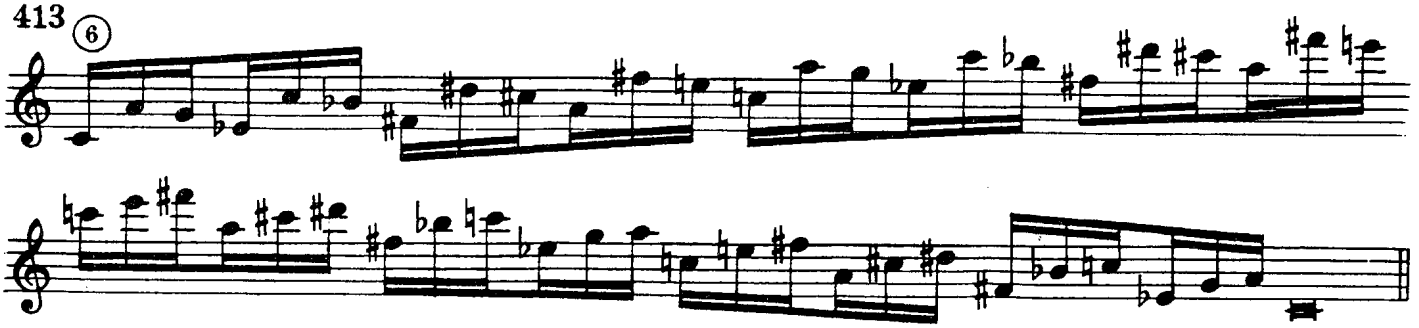
411 (3) (9)



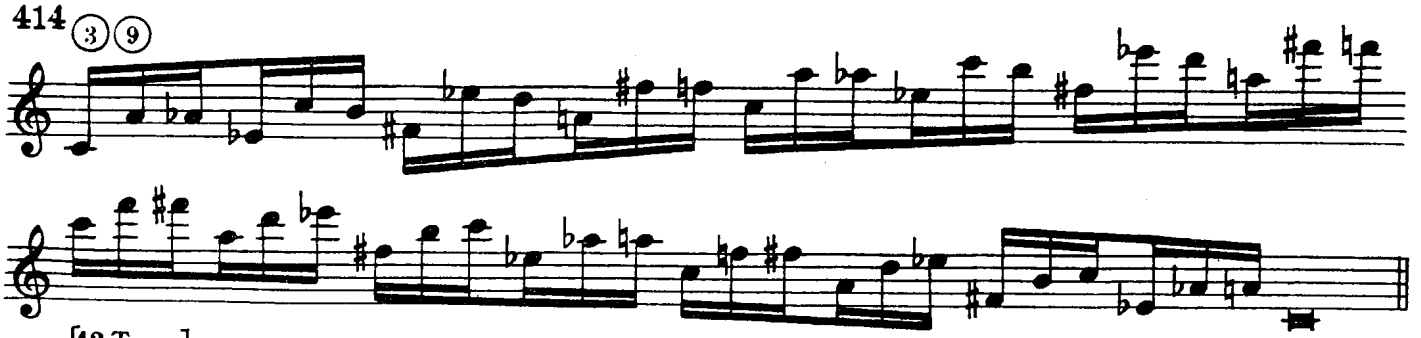
412 (6)



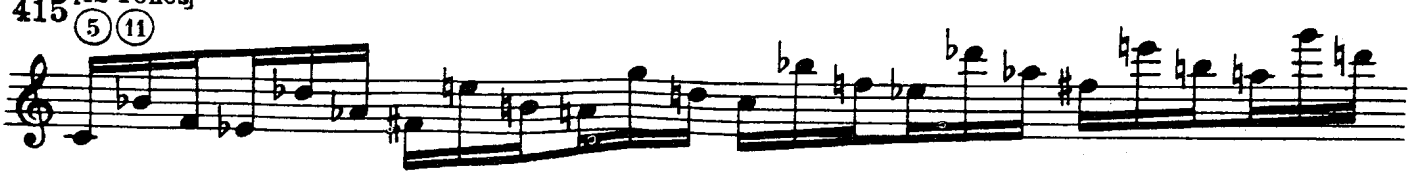
413 (6)



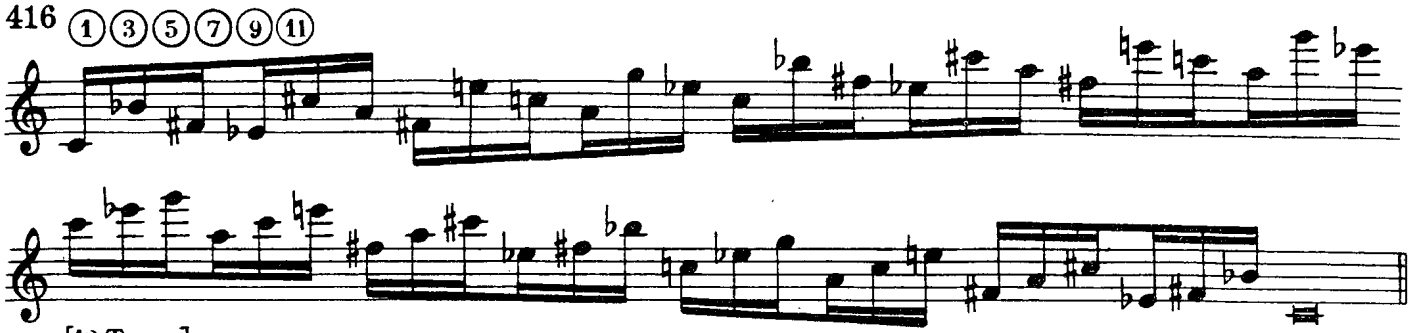
414 (3) (9)



415 [12 Tones] (5) (11)

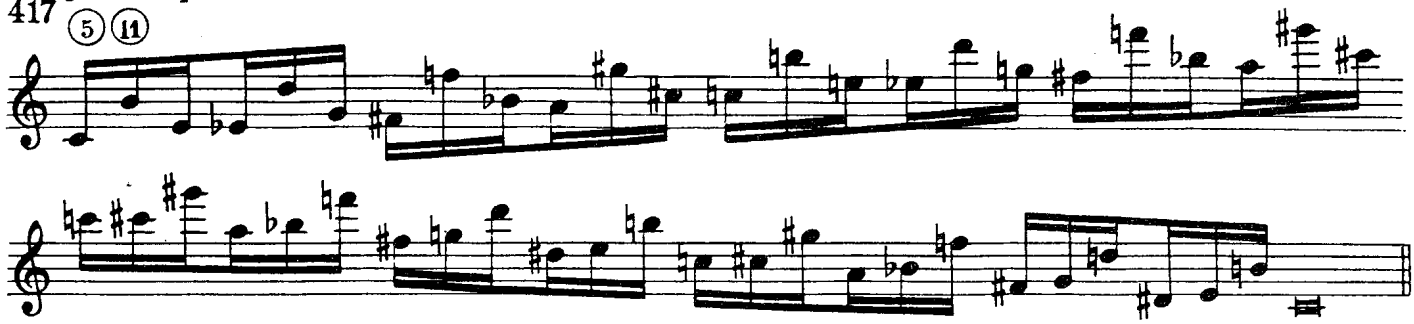


416 ① ③ ⑤ ⑦ ⑨ ⑪

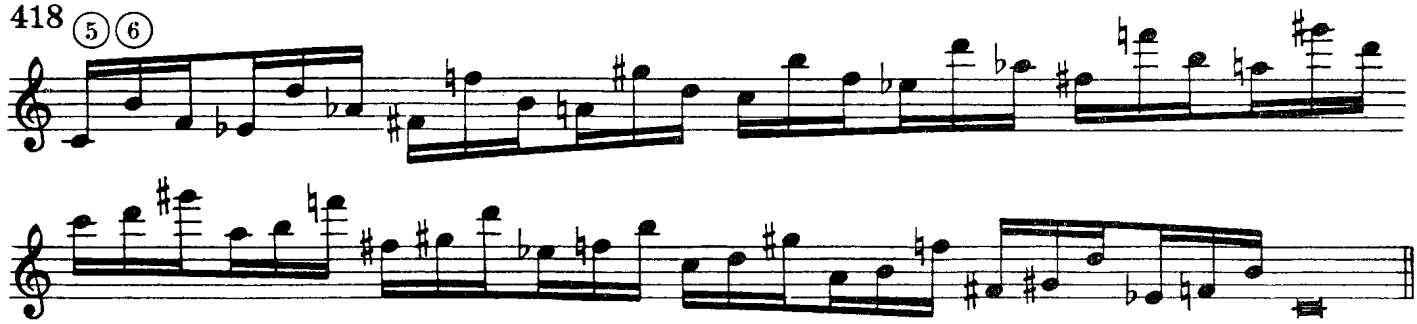


[12 Tones]

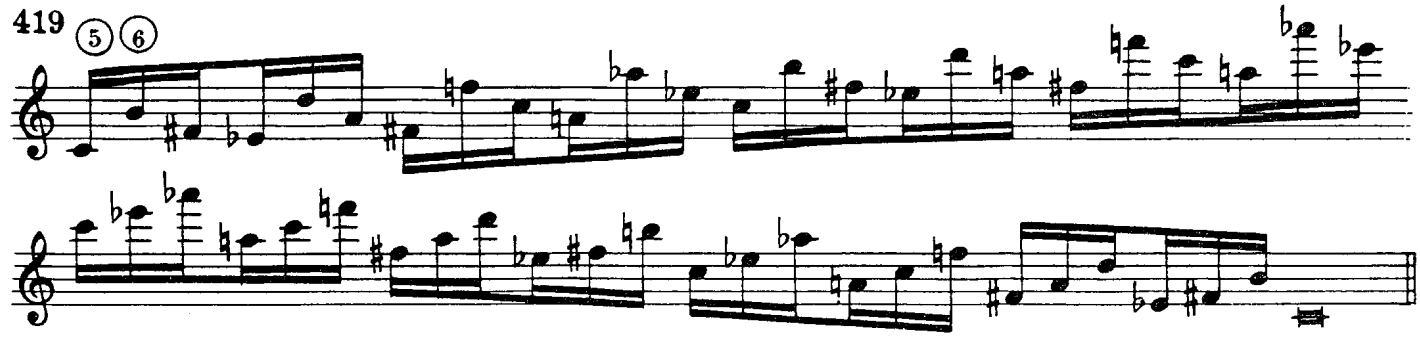
417 ⑤ ⑪



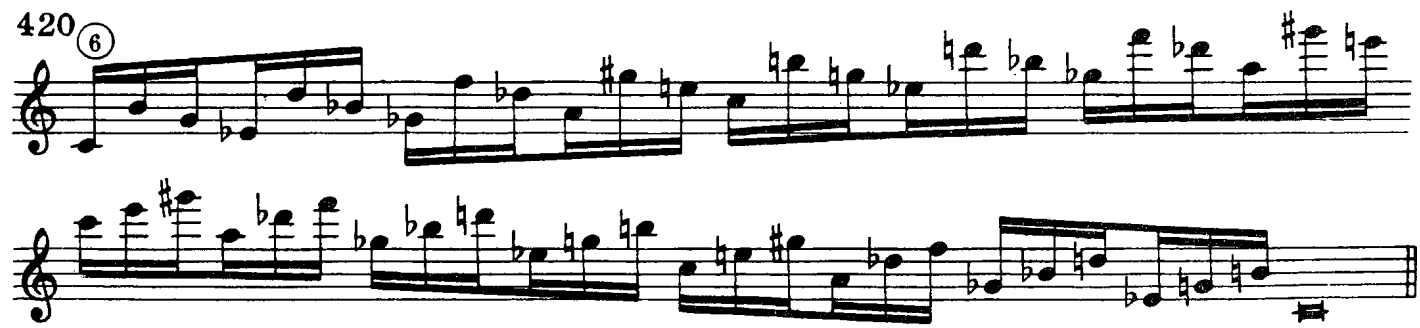
418 ⑤ ⑥



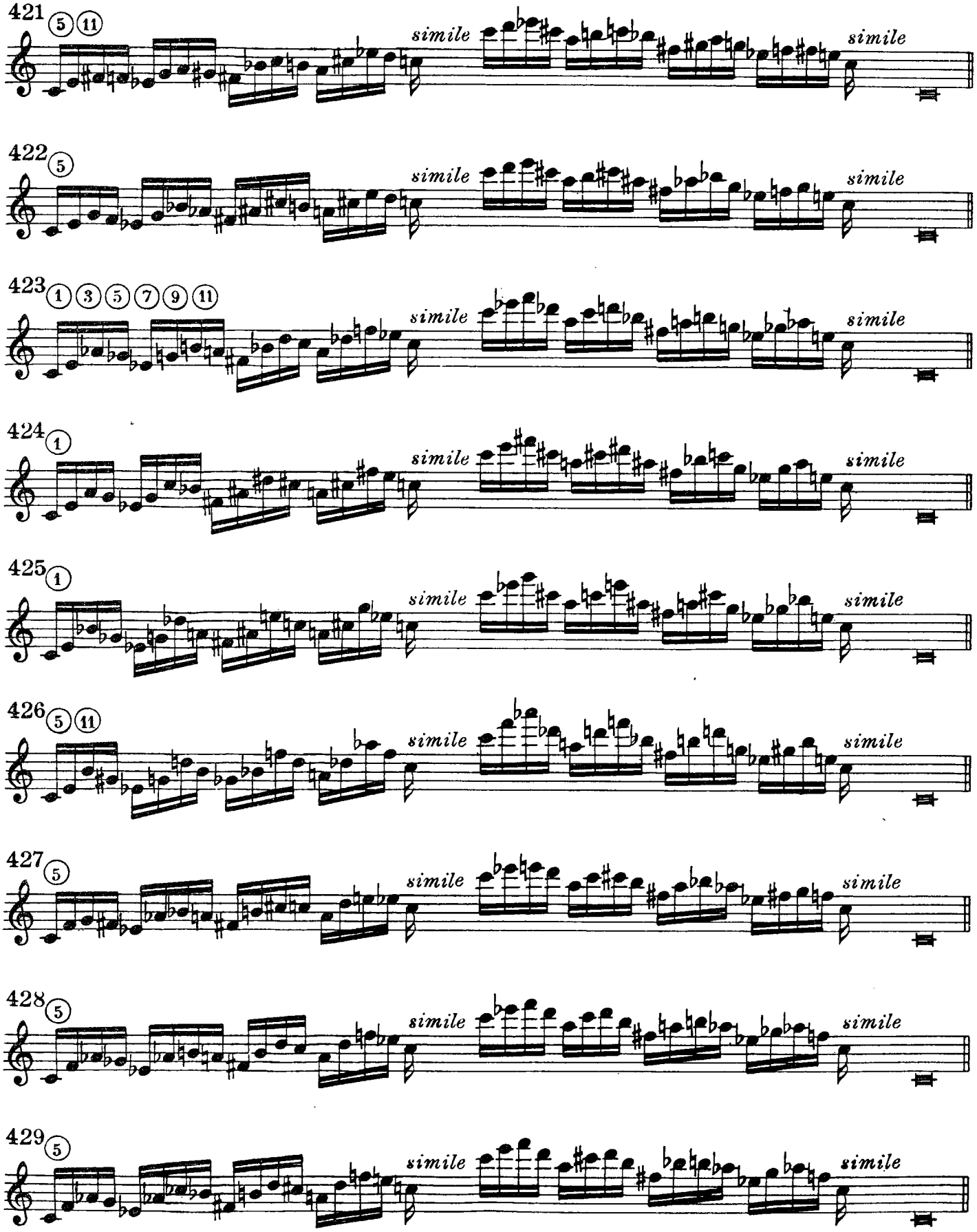
419 ⑤ ⑥

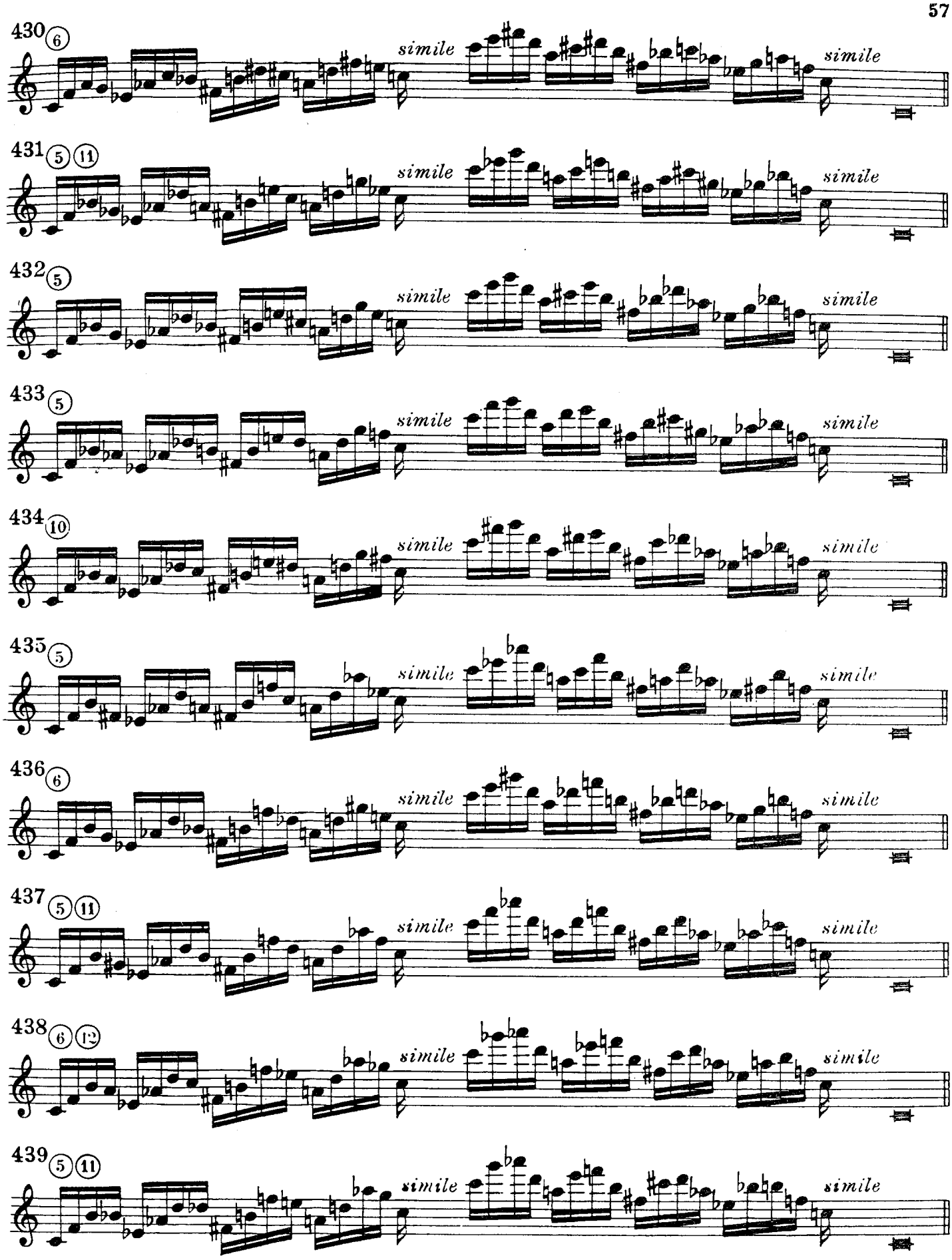


420 ⑥



Ultrapolation of Three Notes




430 6
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431 5 11
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432 5
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433 5
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434 10
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435 5
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436 6
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437 5 11
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438 6 12
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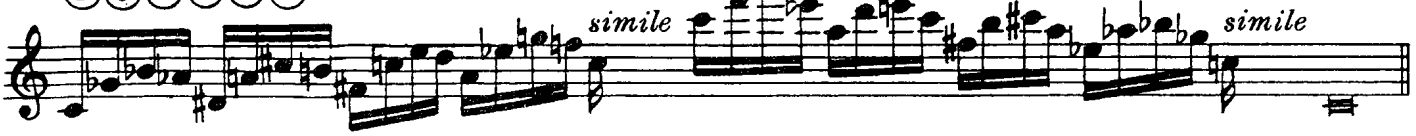
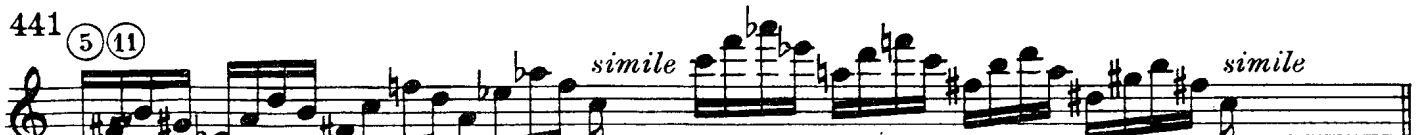
439 5 11
simile
simile

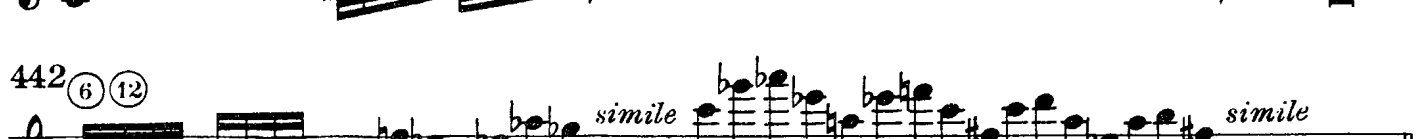
440 ① ③ ⑤ ⑦ ⑨ ⑪



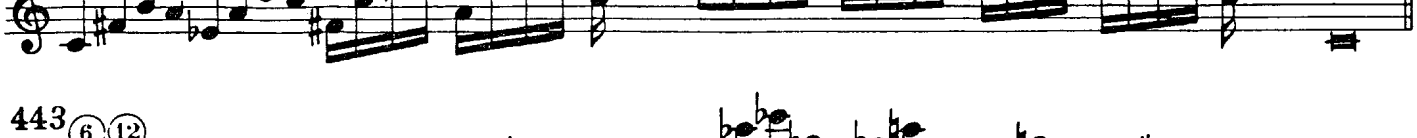
441 ⑤ ⑪



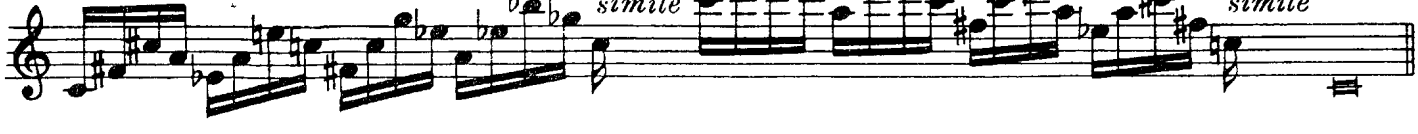
442 ⑥ ⑫



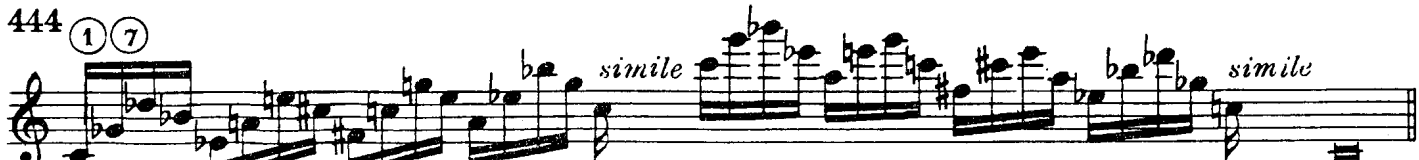
443 ⑥ ⑫



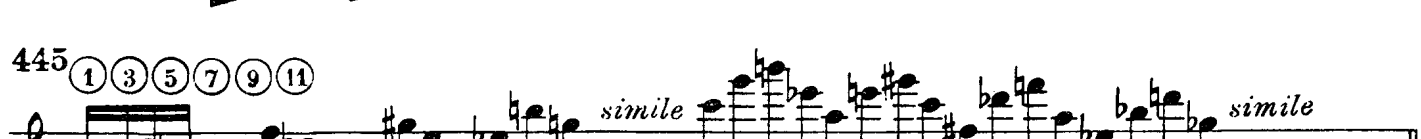
444 ① ⑦



445 ① ③ ⑤ ⑦ ⑨ ⑪

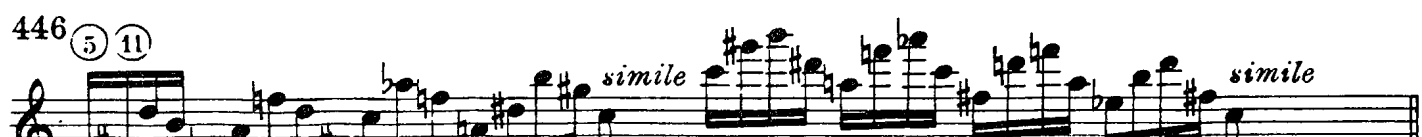


446 ⑤ ⑪

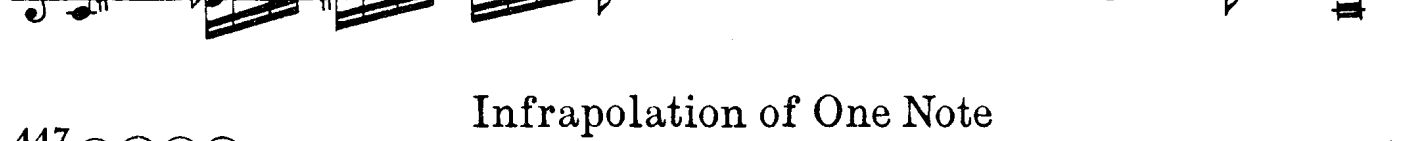


Infrapolation of One Note

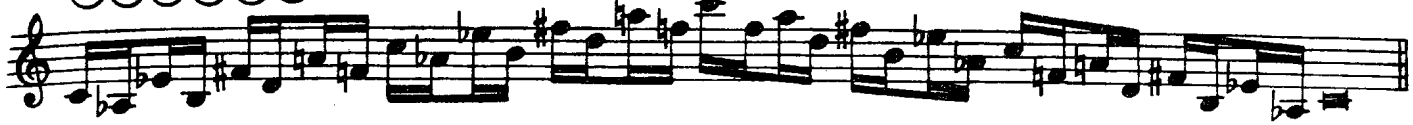
447 ⑤ ⑥ ⑪ ⑫



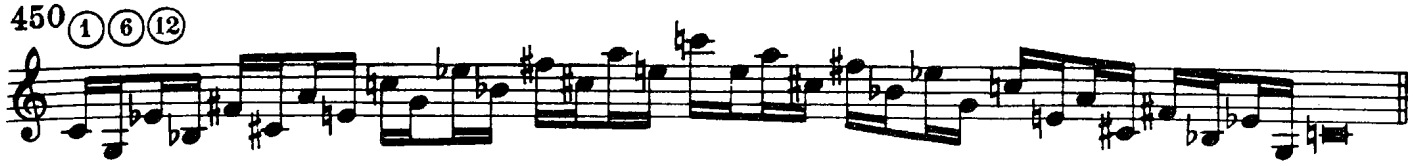
448 ① ③ ⑤ ⑦ ⑨ ⑪



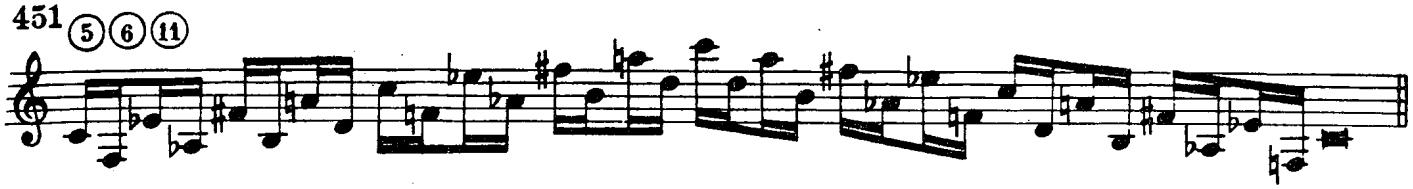
449 ①③⑤⑦⑨⑪



450 ①⑥⑫



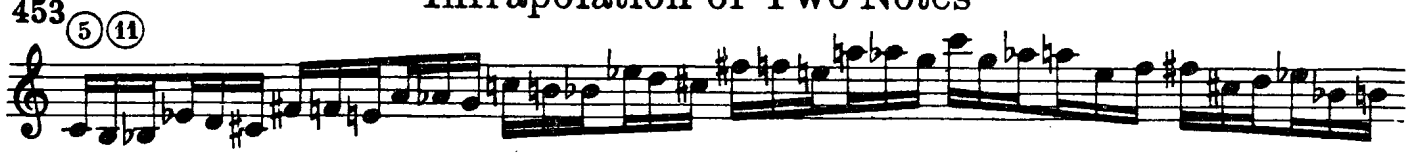
451 ⑤⑥⑪



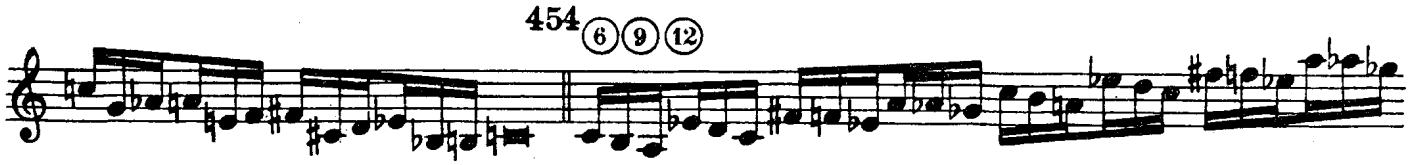
452 ①③⑤⑦⑨⑪

Infrapolation of Two Notes

453 ⑤⑪

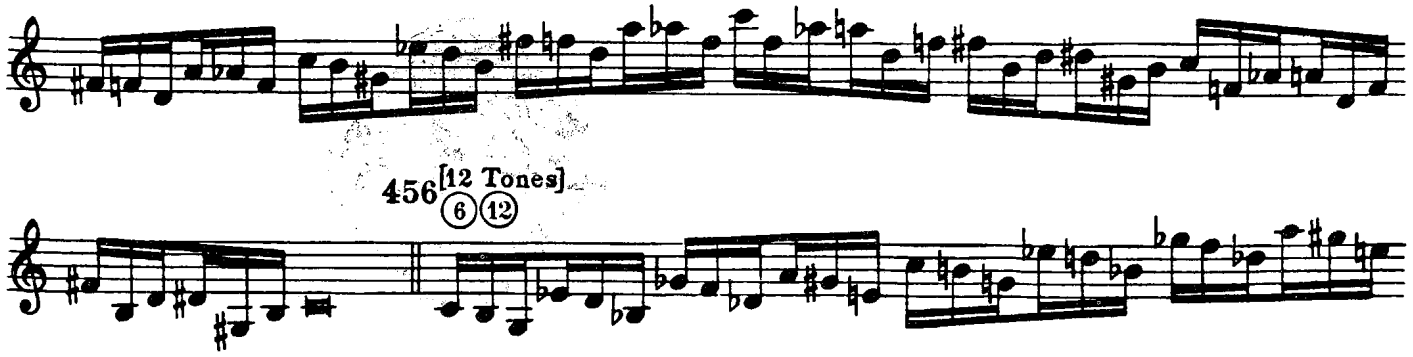


454 ⑥⑨⑫



455 ⑤⑪

456 [12 Tones] ⑥⑫



457 ⑤ ⑥ ⑪ ⑫

458 ③ ⑨

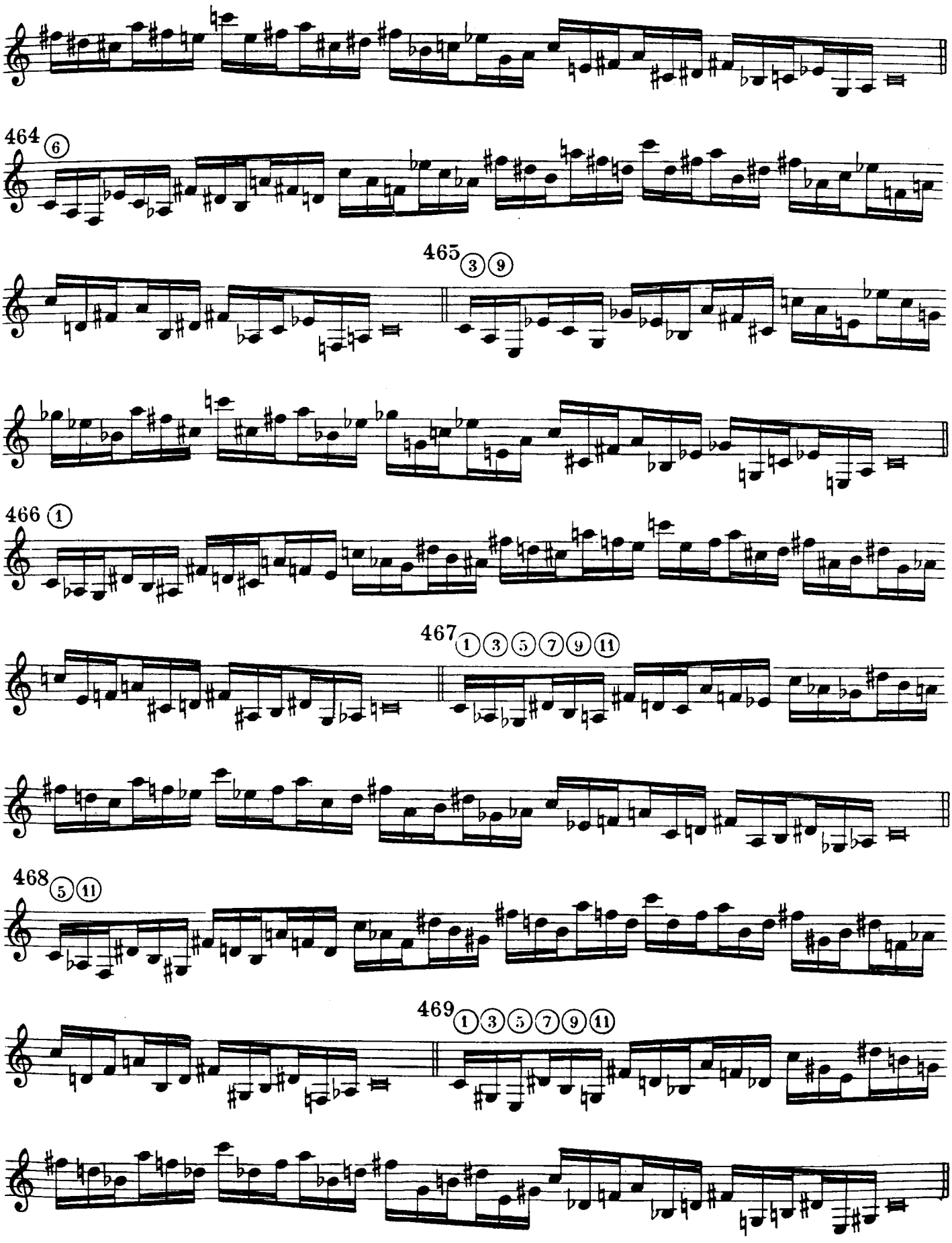
459 ① ③ ⑤ ⑦ ⑨ ⑪

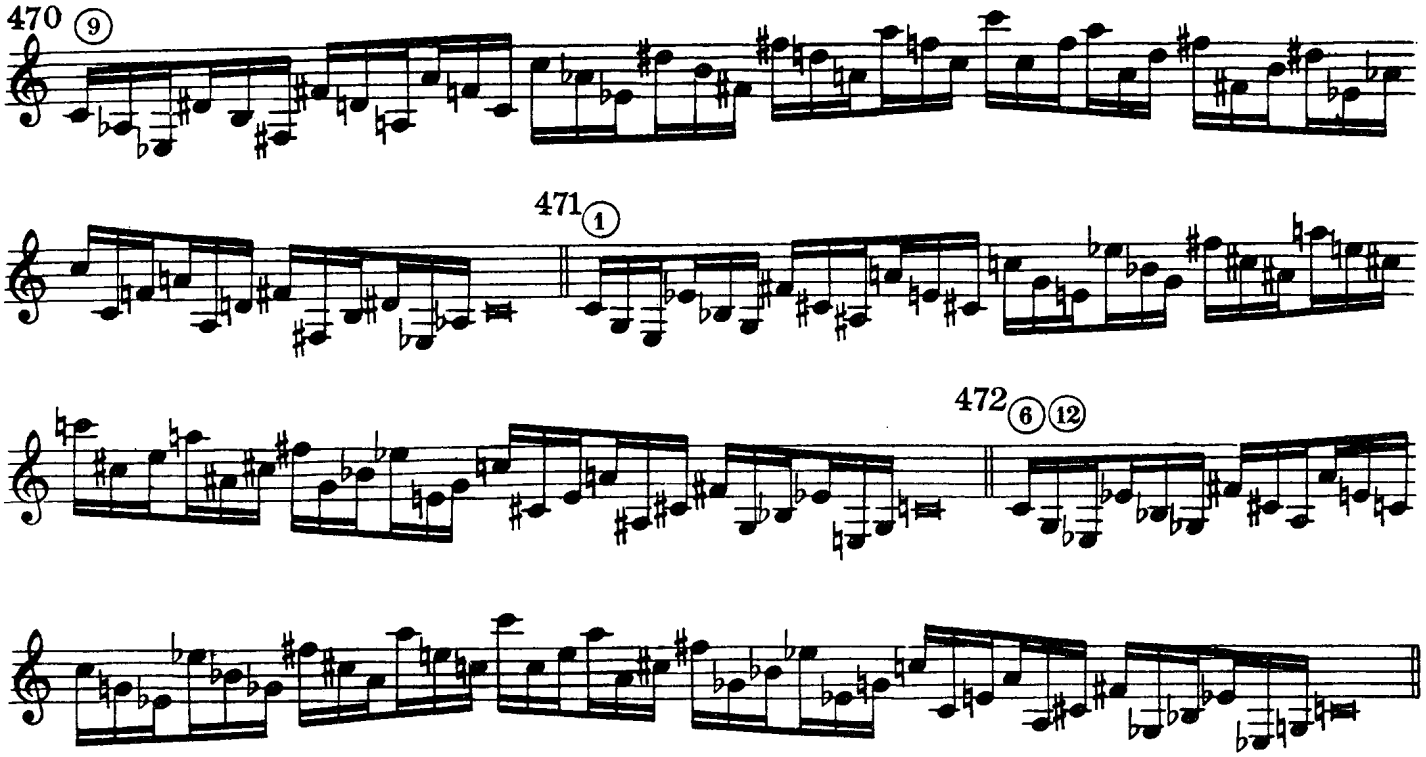
460 ① ⑦

461 ① ③ ⑤ ⑦ ⑨ ⑪

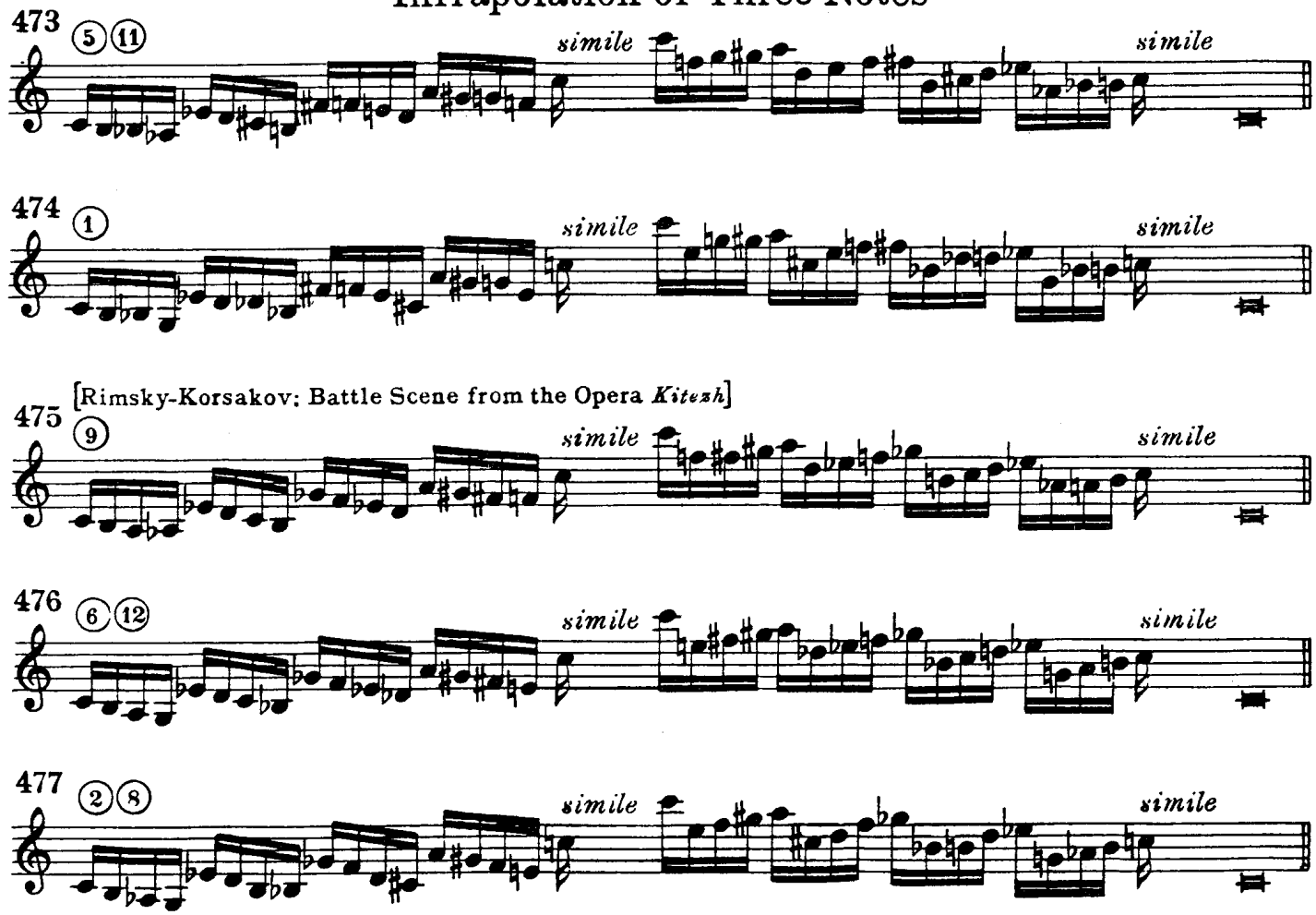
462 ③ ⑨

463 ⑥ ⑫


464 6
465 3 9
466 1
467 1 3 5 7 9 11
468 5 11
469 1 3 5 7 9 11



Infrapolation of Three Notes



[Rimsky-Korsakov: Battle Scene from the Opera *Kitezh*]

478 ③ ⑨ *simile* *simile*

479 ⑩ *simile* *simile*

480 ① *simile* *simile*

481 ① ③ ⑤ ⑦ ⑨ ⑪ *simile* *simile*

Infra-Interpolation

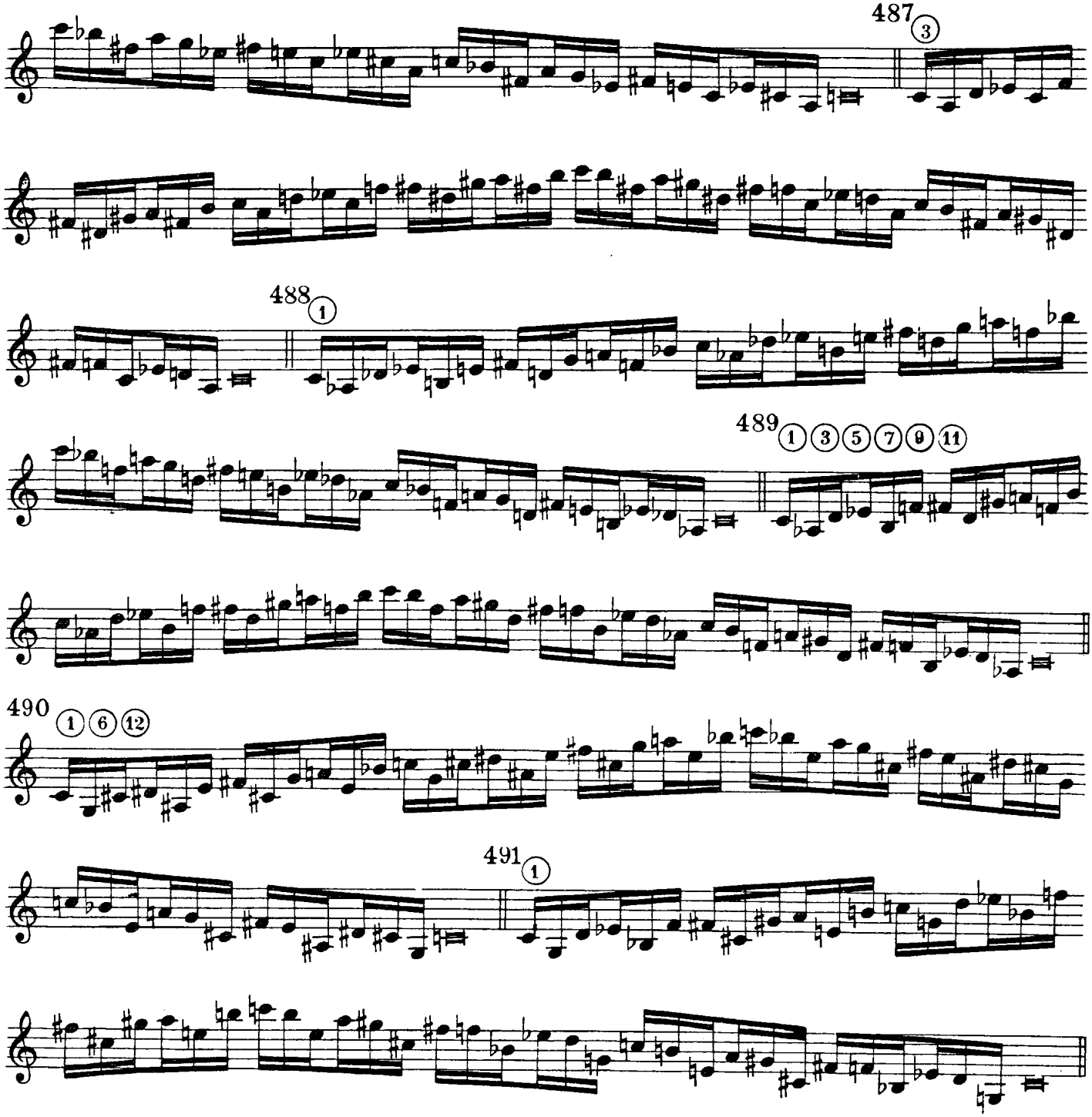
482 ⑥ ⑫

483 ⑤ ⑪

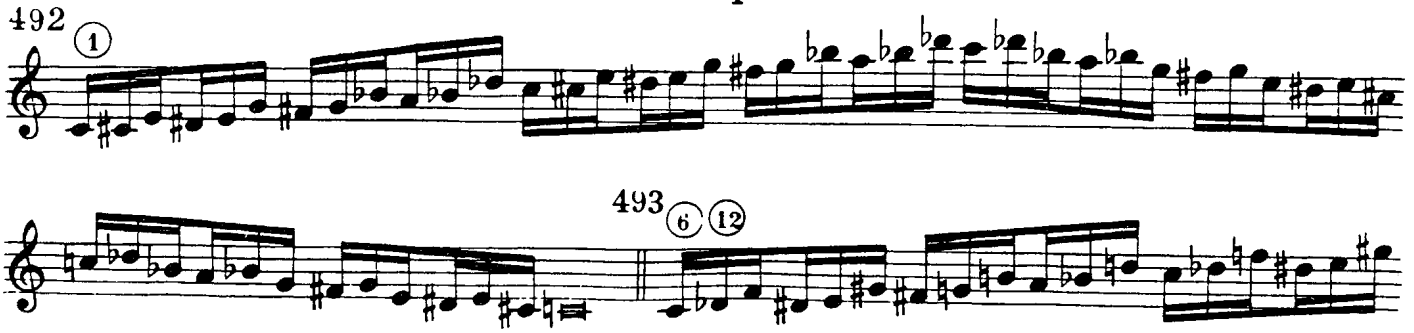
484 ①

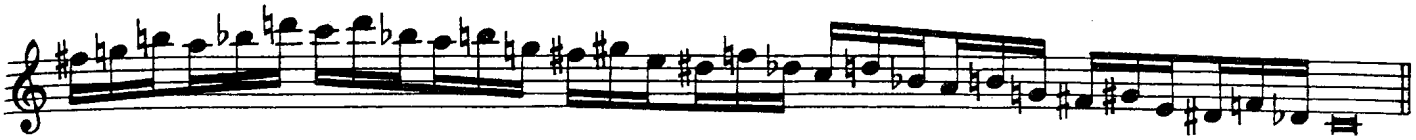
485 ① ③ ⑤ ⑦ ⑨ ⑪

486 ⑥ ⑫

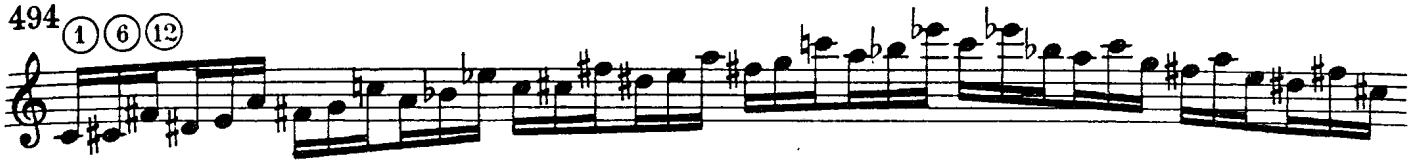


Inter-Ultrapolation

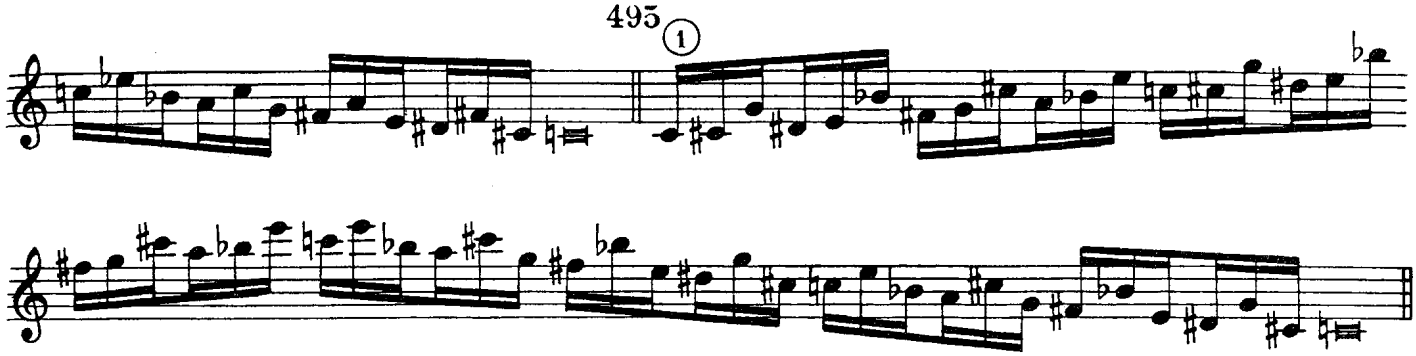




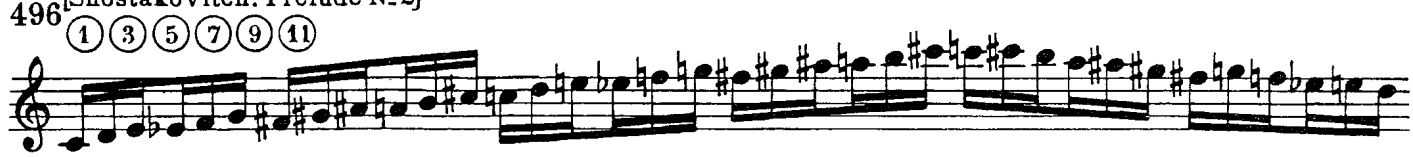
494 ① ⑥ ⑫



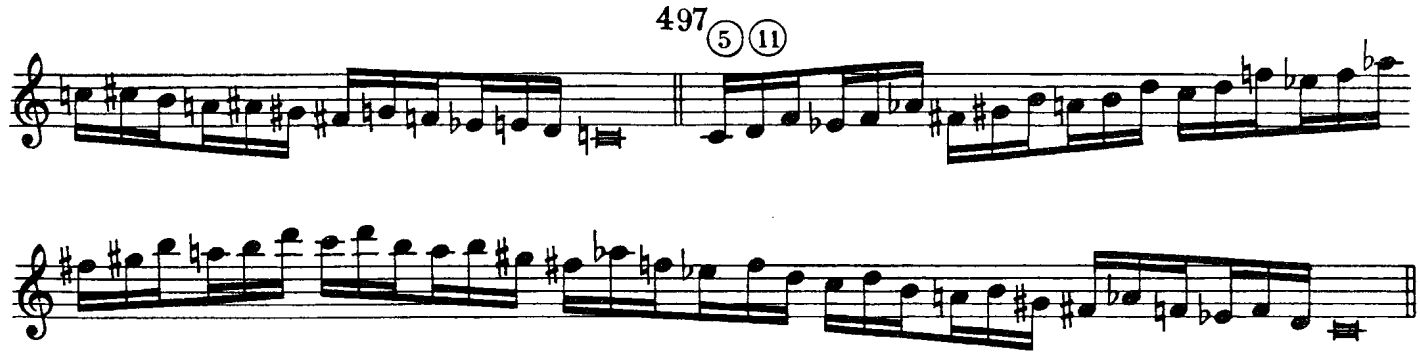
495 ①



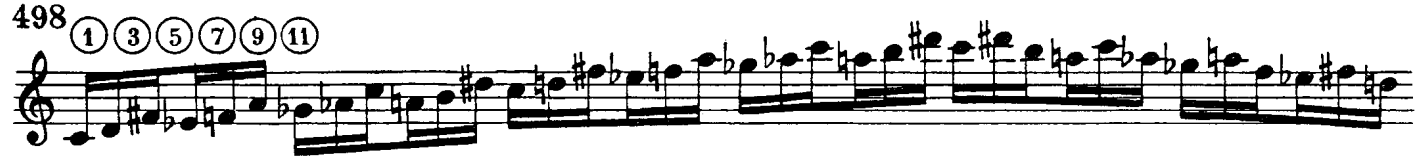
496 [Shostakovitch: Prelude №2]
① ③ ⑤ ⑦ ⑨ ⑪



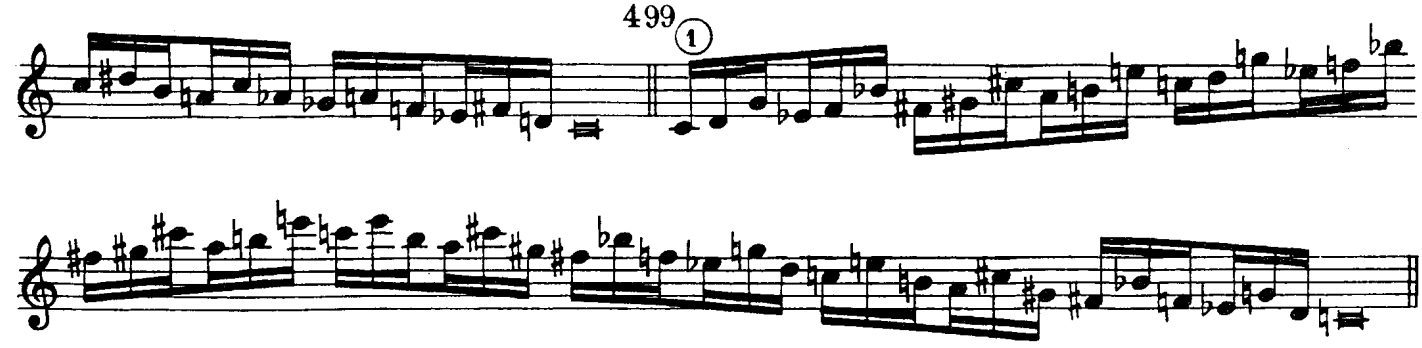
497 ⑤ ⑪



498 ① ③ ⑤ ⑦ ⑨ ⑪



499 ①



Infra-Ultrapolation

500 [12 Tones] ⑤

501 ⑤ ⑥ ⑪ ⑫

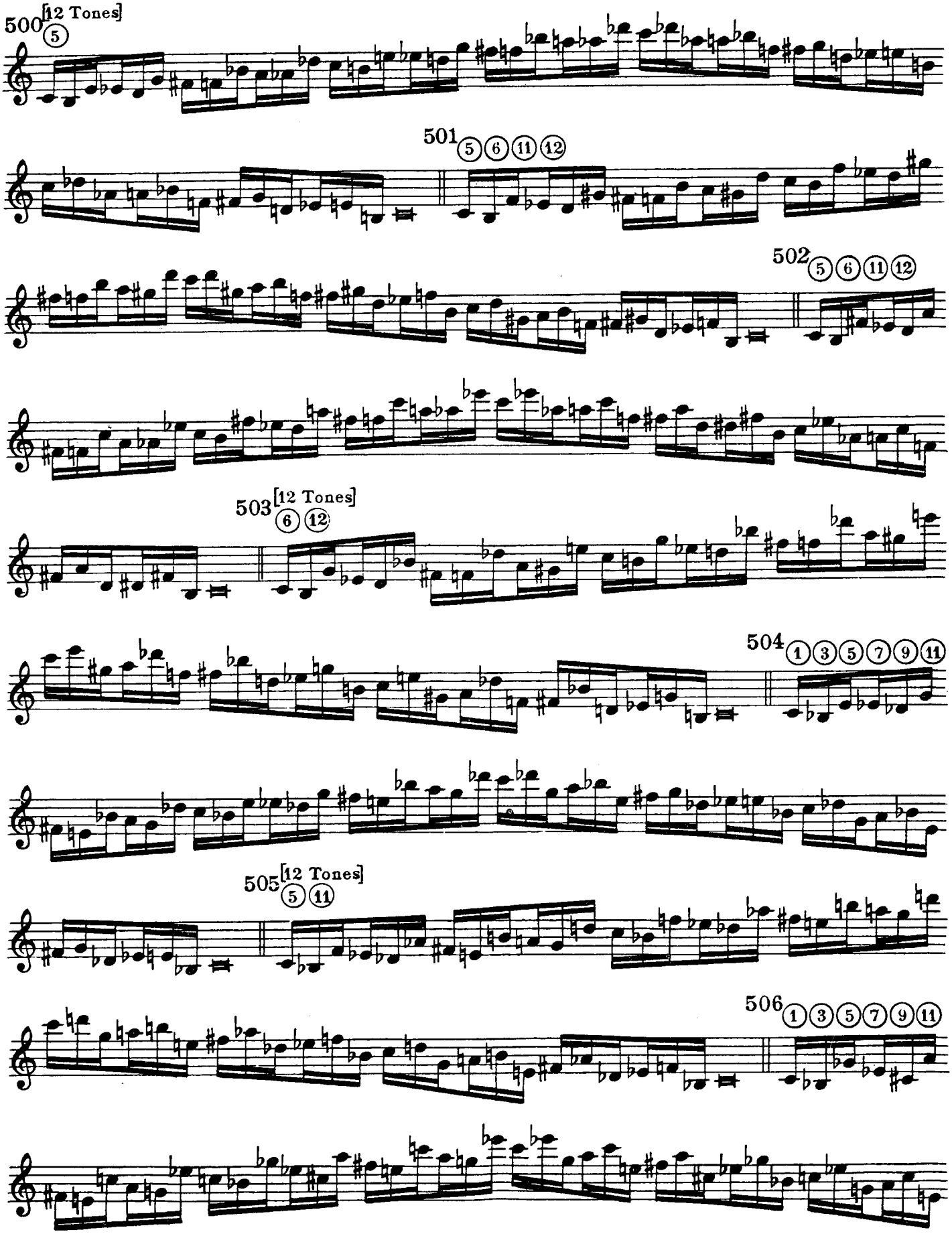
502 ⑤ ⑥ ⑪ ⑫

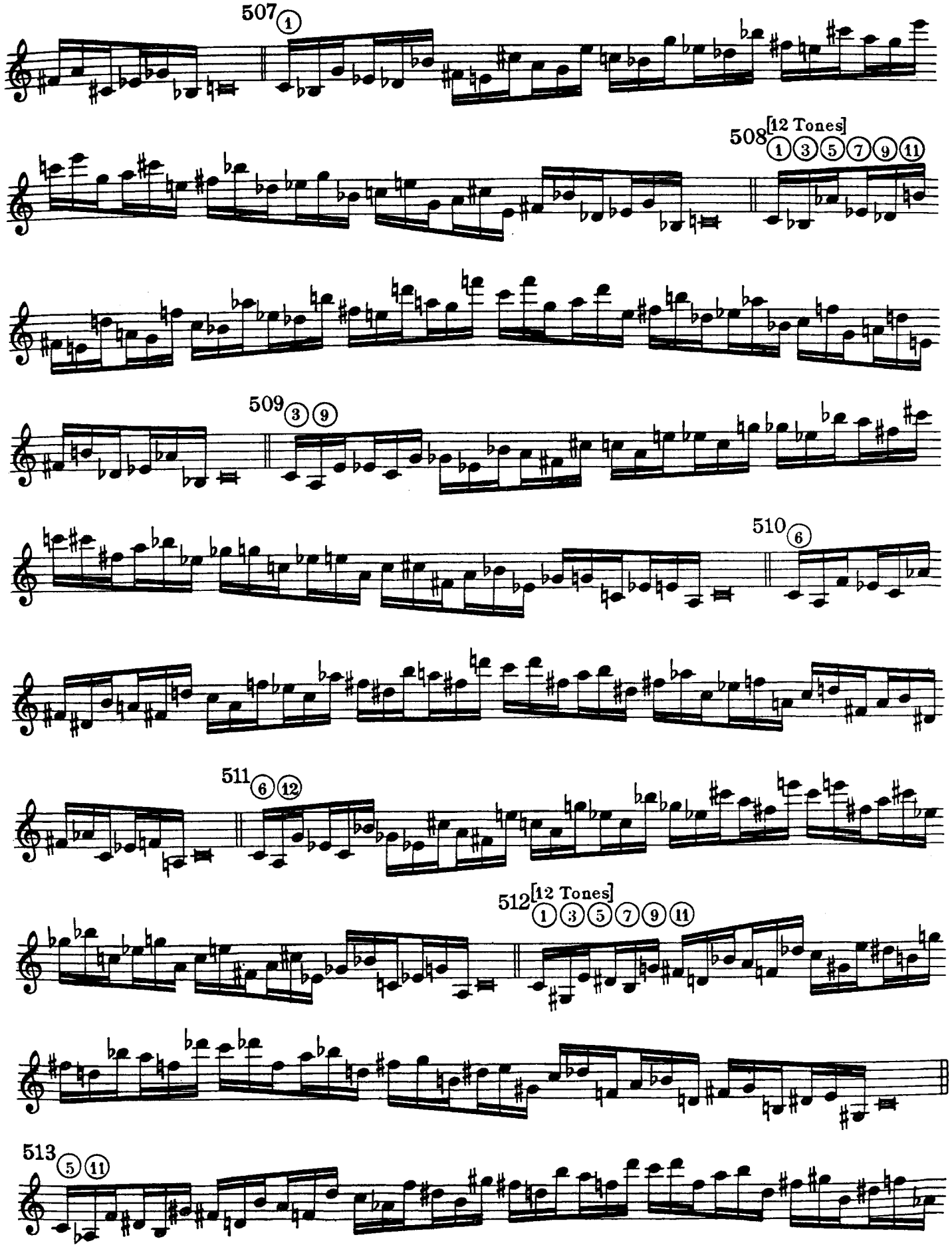
503 [12 Tones] ⑥ ⑫

504 ① ③ ⑤ ⑦ ⑨ ⑪

505 [12 Tones] ⑤ ⑪

506 ① ③ ⑤ ⑦ ⑨ ⑪




507 ①
508 [12 Tones] ① ③ ⑤ ⑦ ⑨ ⑪
509 ③ ⑨
510 ⑥
511 ⑥ ⑫
512 [12 Tones] ① ③ ⑤ ⑦ ⑨ ⑪
513 ⑤ ⑪

514 ① ③ ⑤ ⑦ ⑨ ⑪

515 ①

Infra-Inter-Ultrapolation

516 ⑩

517 ⑥ ⑫

518 ⑥ ⑫

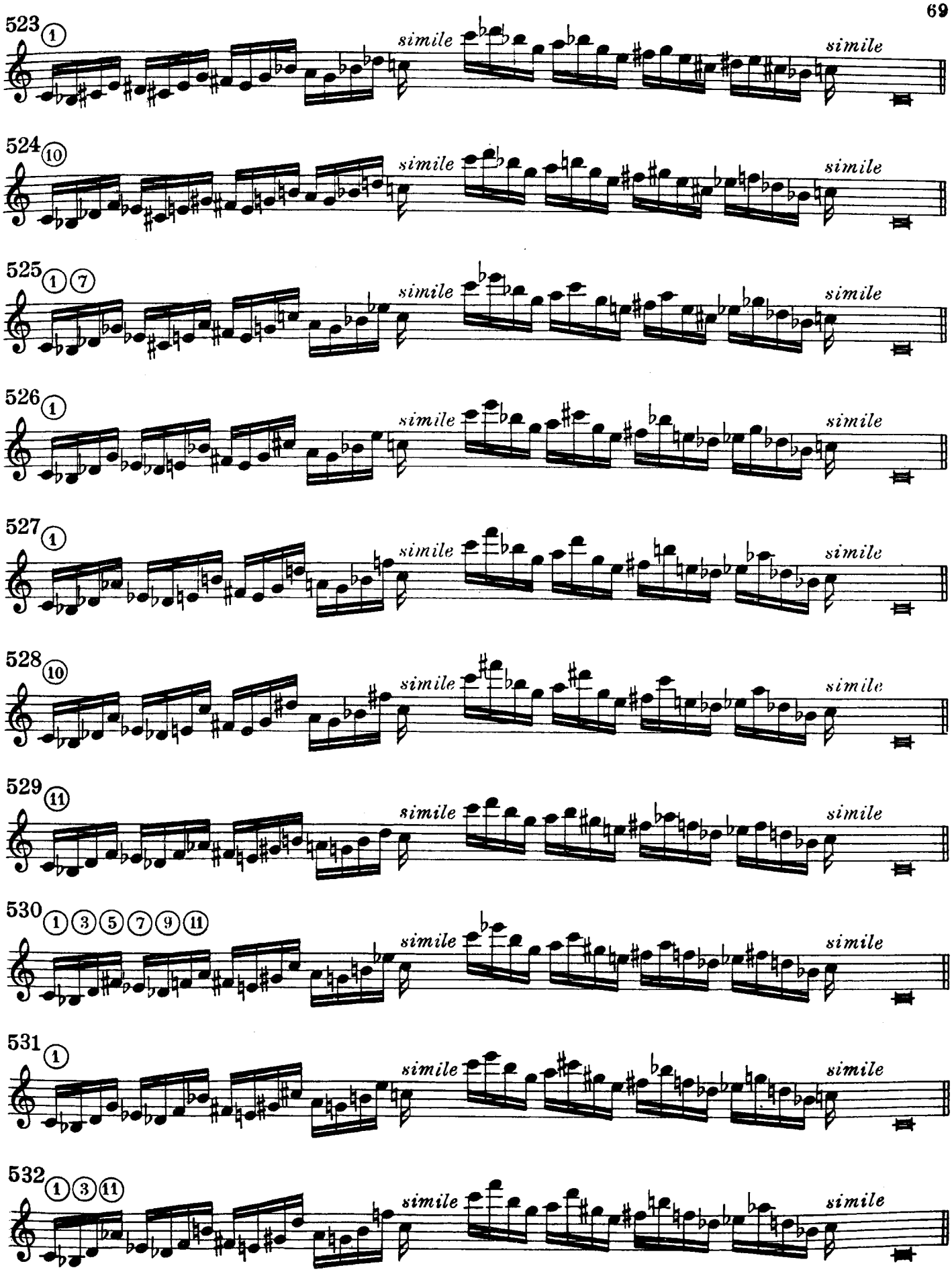
519 ⑤ ⑪

520 ⑤ ⑪

521 ⑤ ⑪

522 ② ⑧

simile *simile*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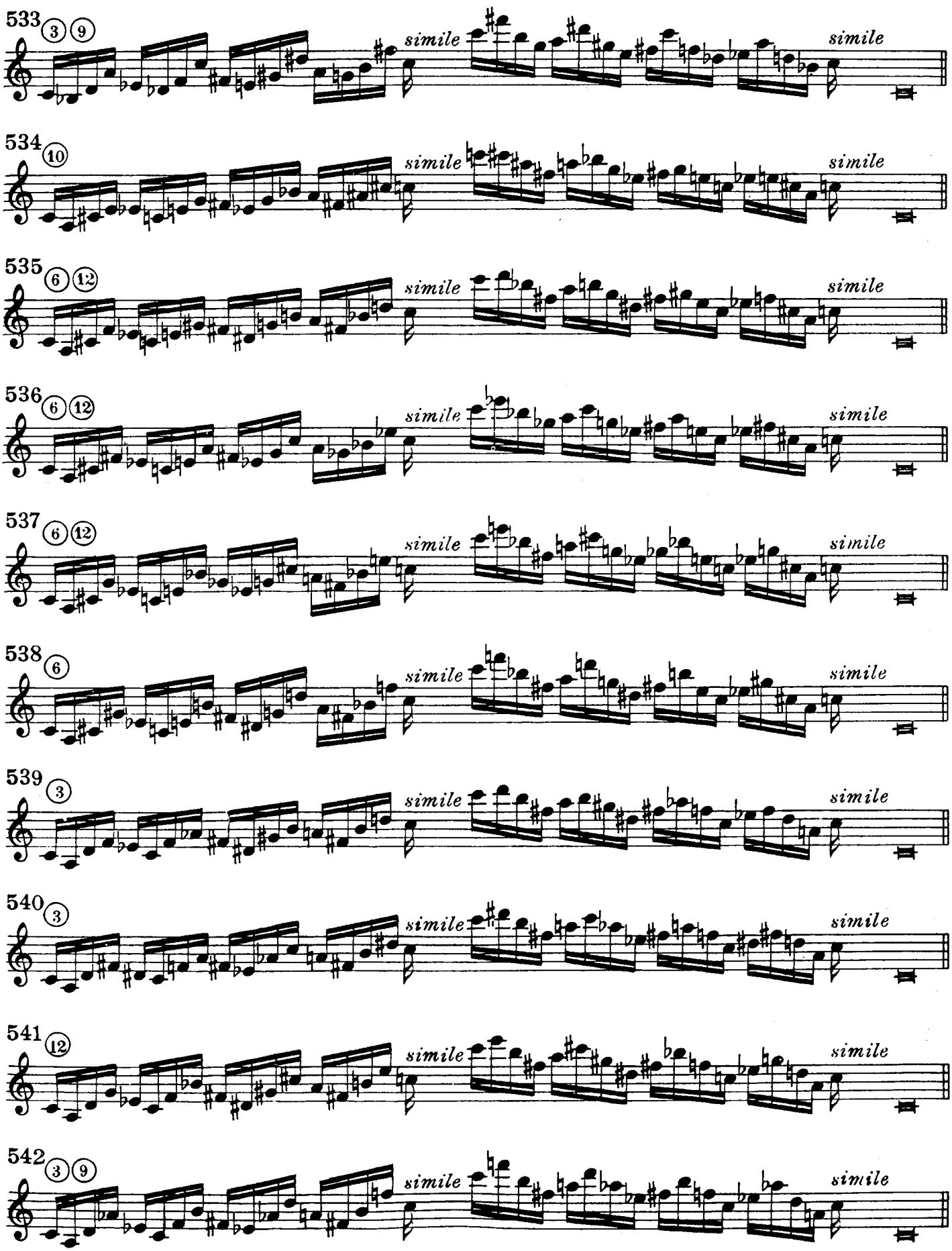
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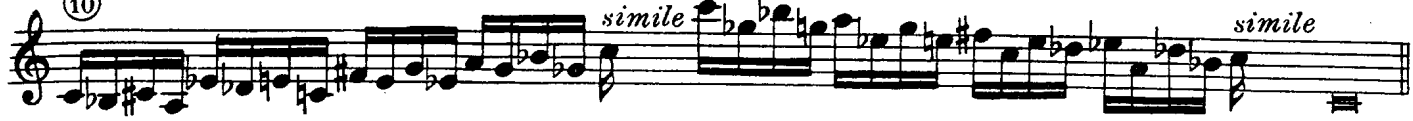
Miscellaneous Patterns

543 ⑩



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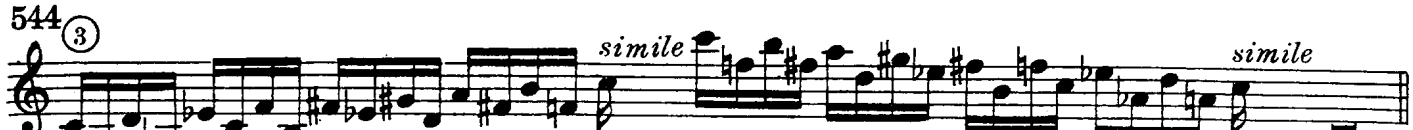

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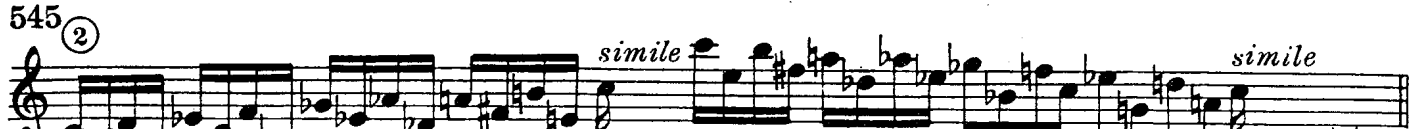
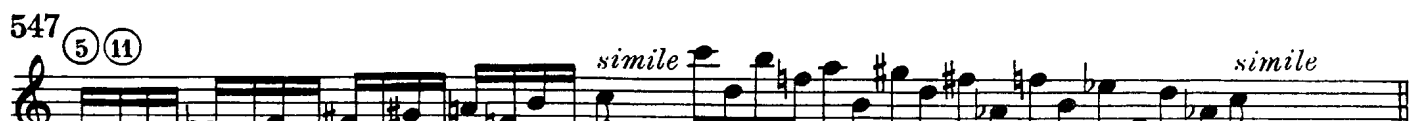


546 ① ③ ⑤ ⑦ ⑨ ⑪

547 ⑤ ⑪



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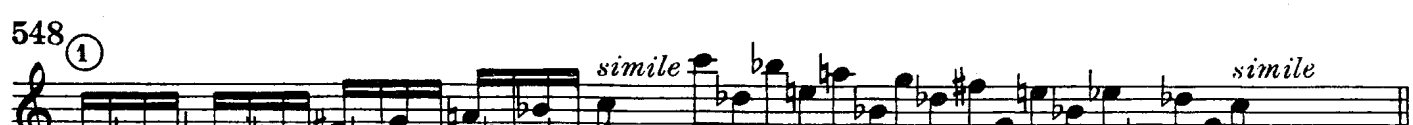

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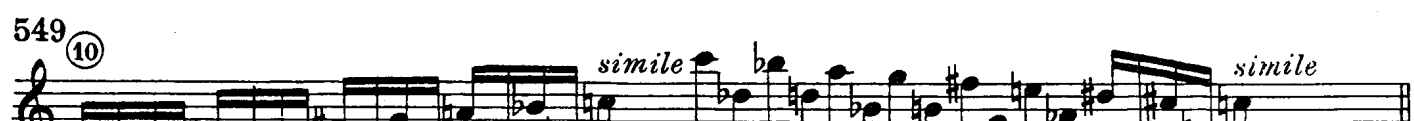
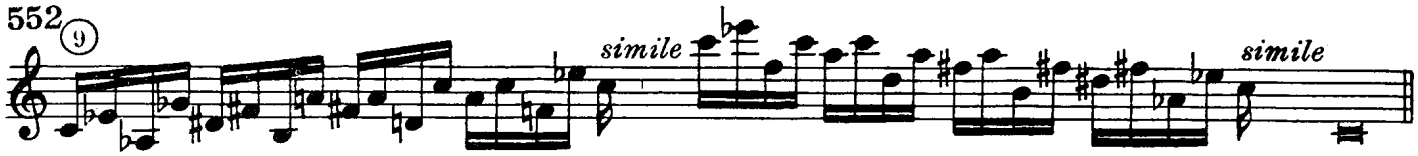


550 [Dominant seventh chords] ③

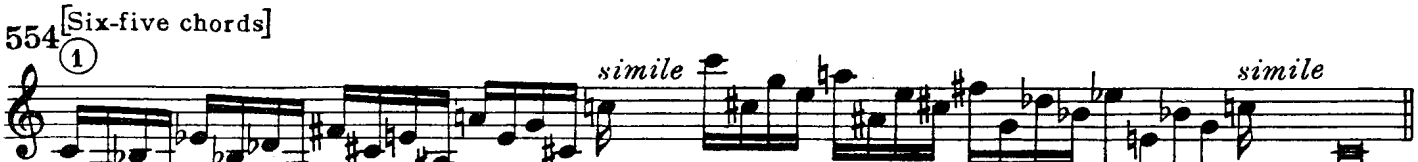
551 ⑥

552 (9)



553 (1)

554 [Six-five chords] (1)



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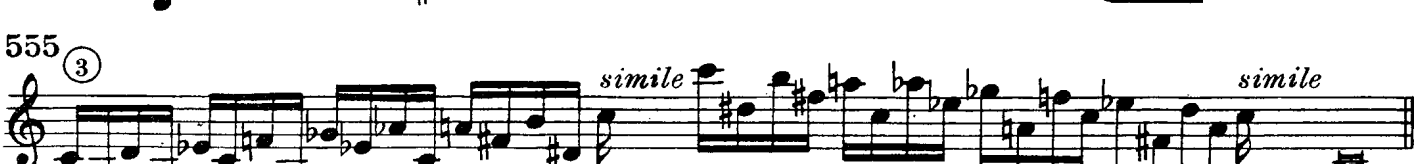

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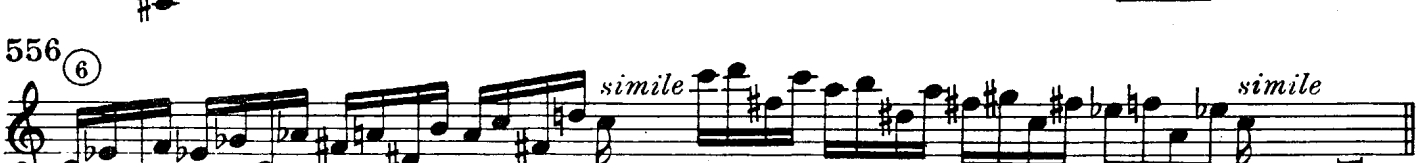

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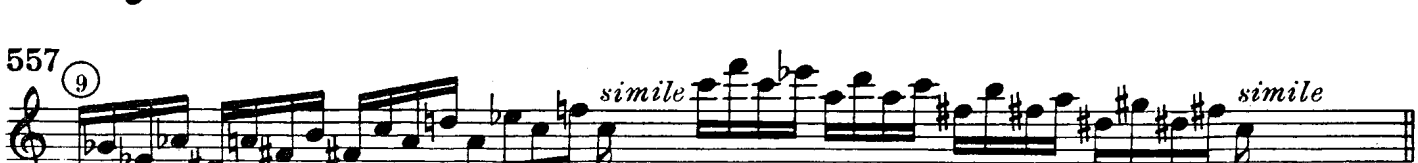
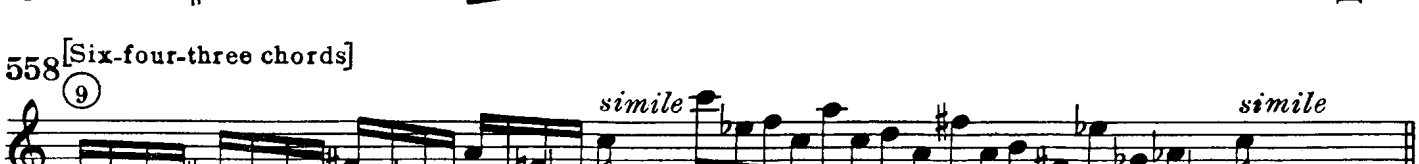


558 [Six-four-three chords] (9)



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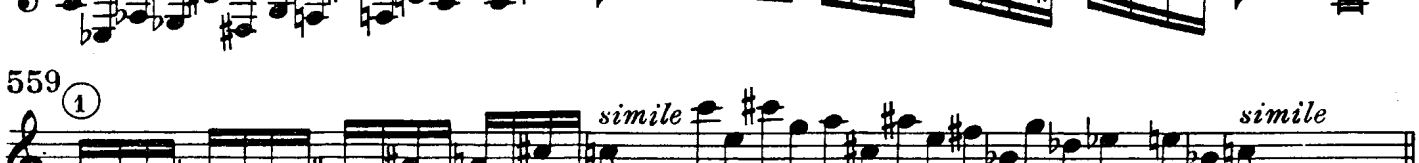

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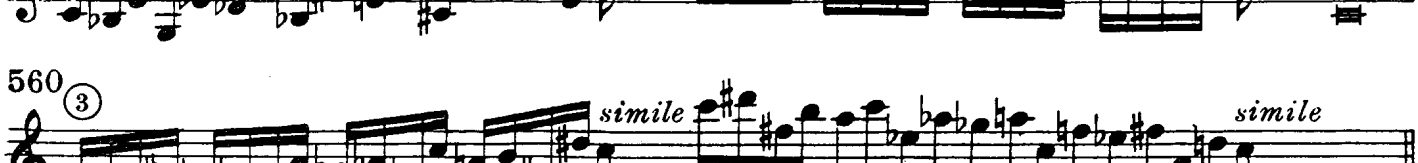
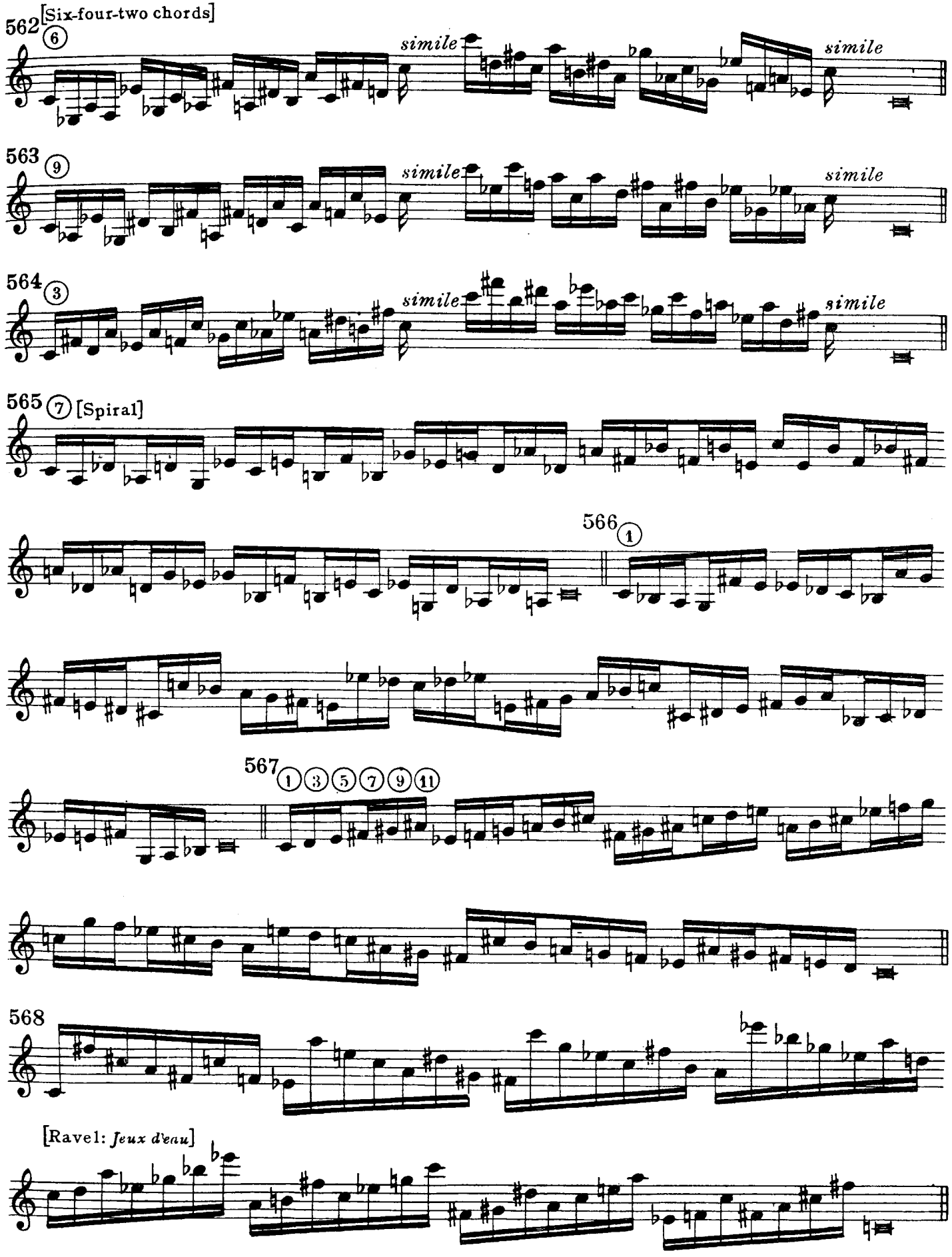
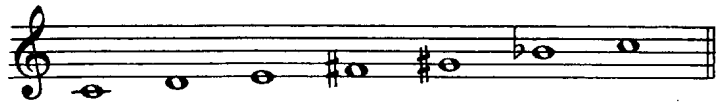


561 (6)


562 [Six-four-two chords]
6
simile
simile
563
9
simile
simile
564
3
simile
simile
565 7 [Spiral]
566
1
567
1 3 5 7 9 11
568
[Ravel: Jeux d'eau]

Whole-Tone Progression

Equal Division of One Octave into Six Parts



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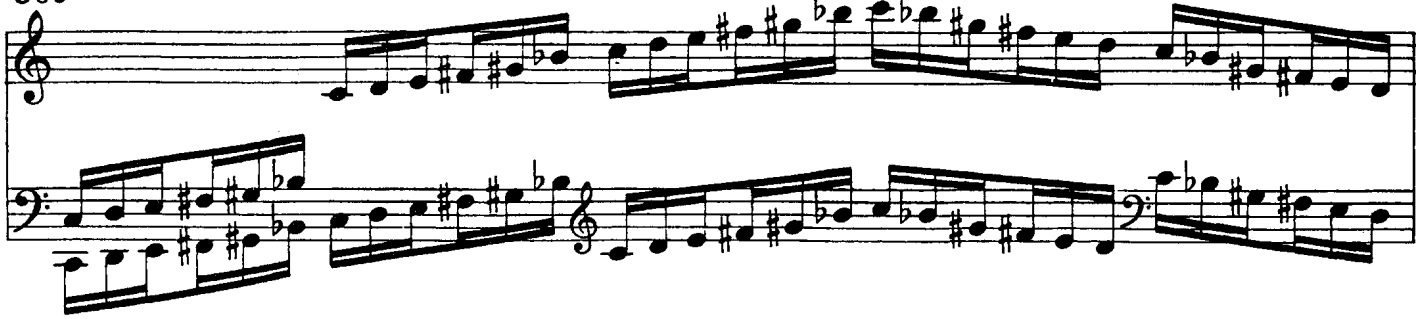
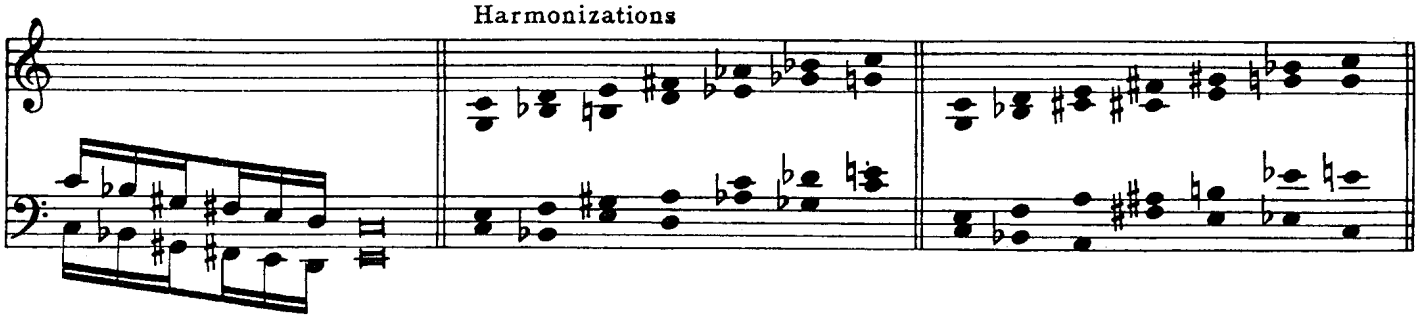


Harmonizations



Ultrapolation of One Note

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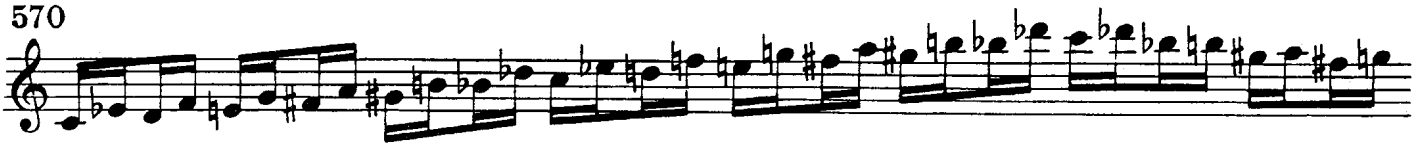

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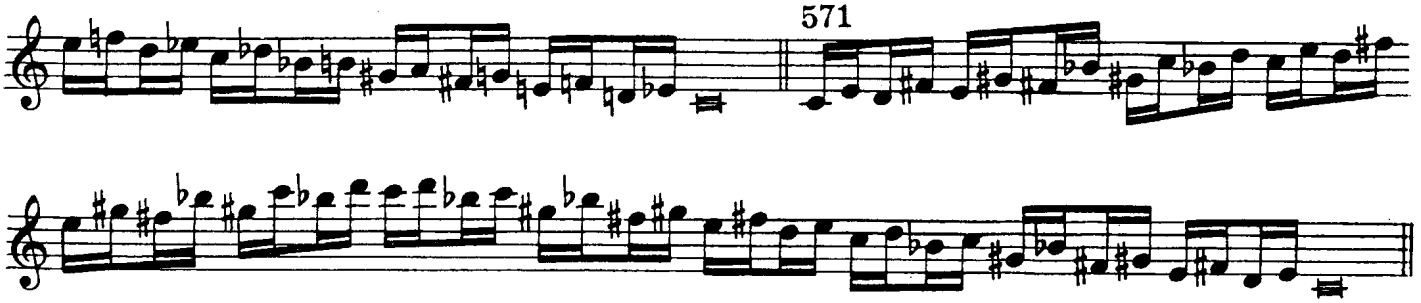

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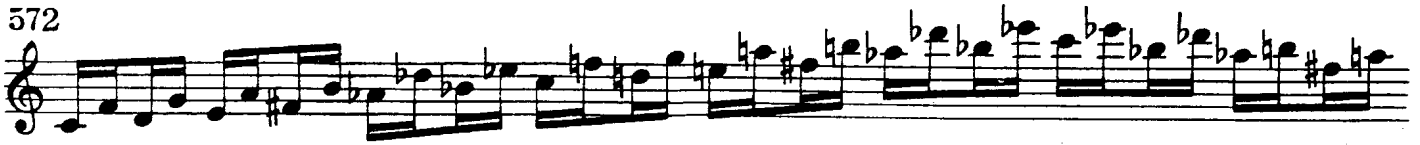

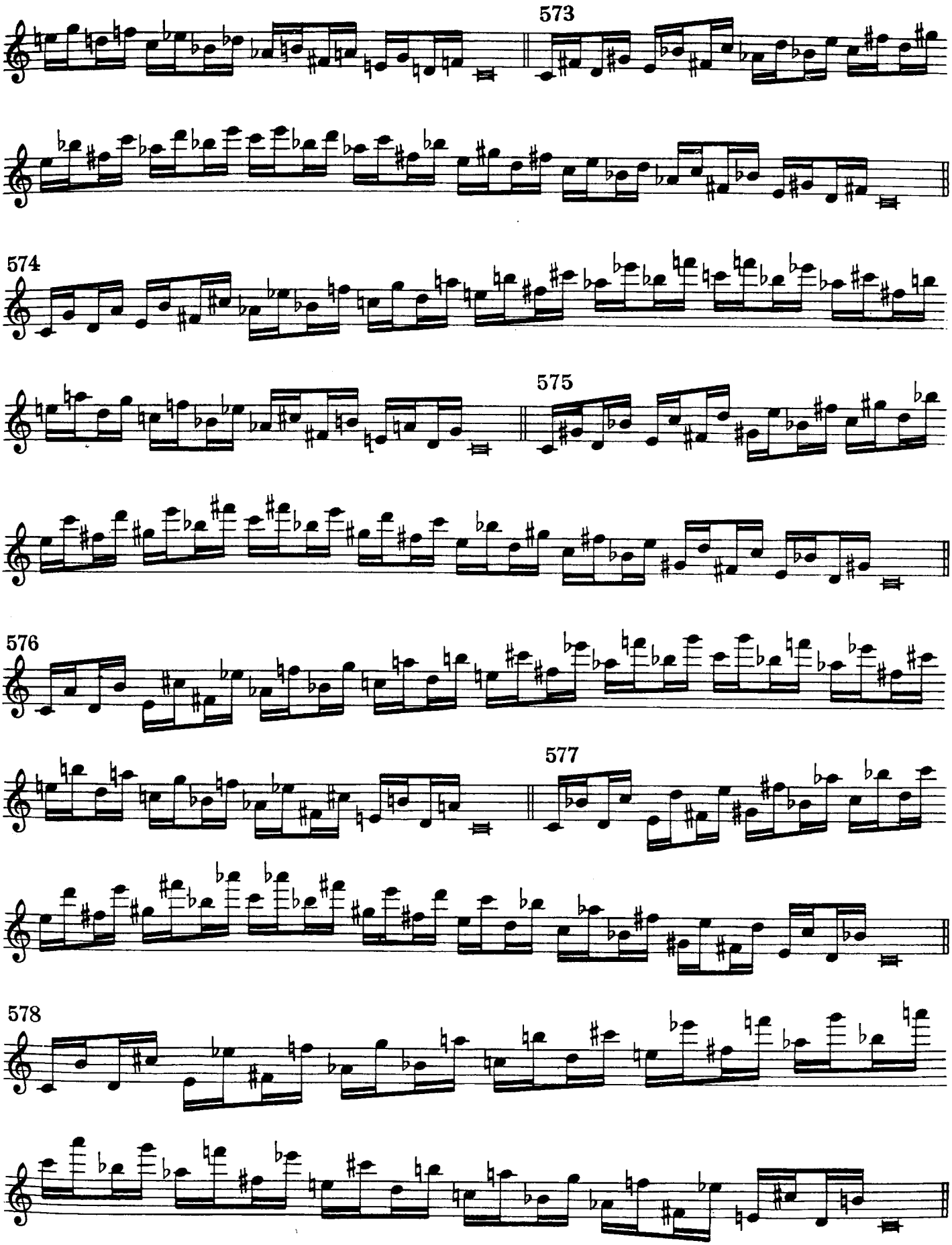
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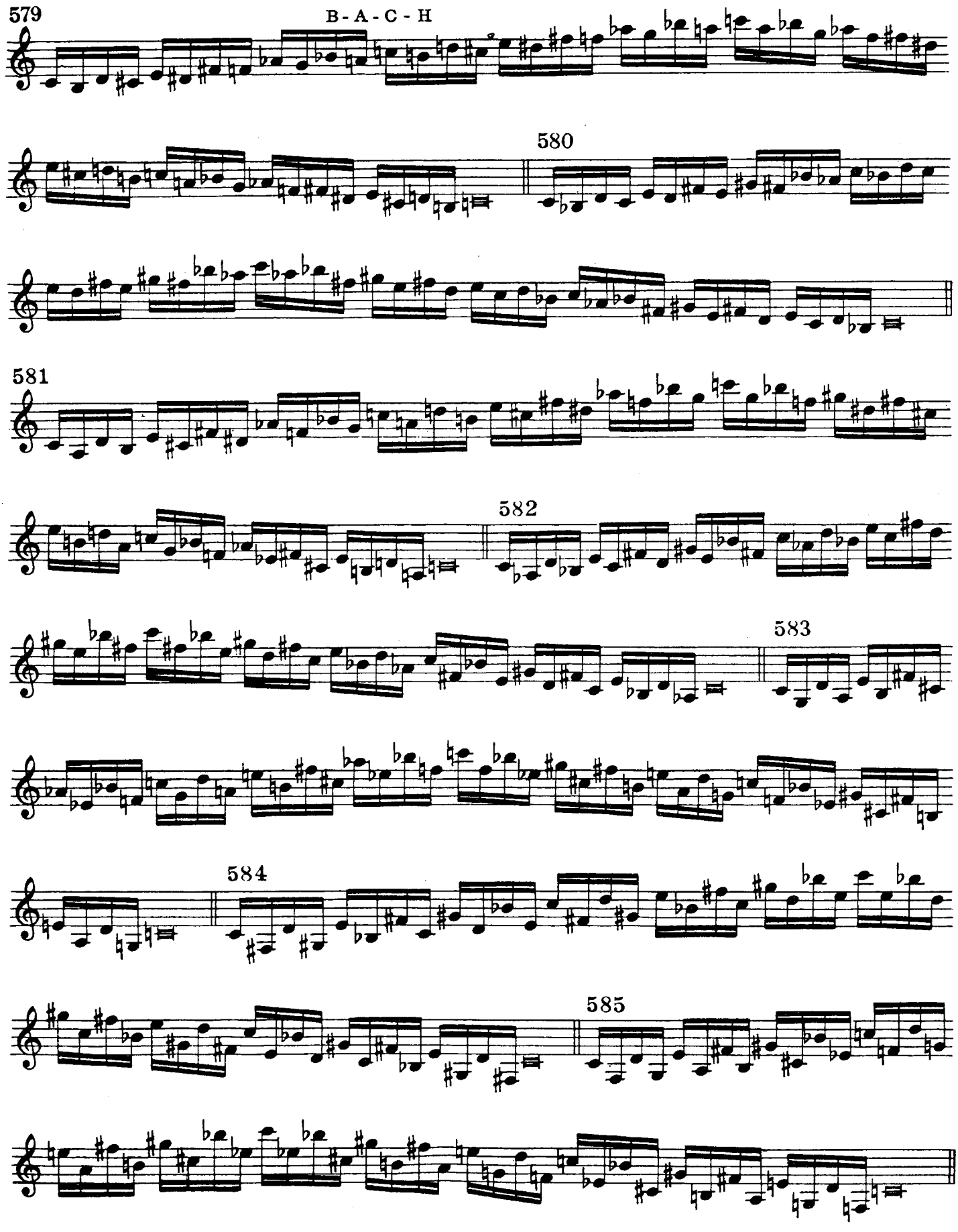
Infrapolation of One Note



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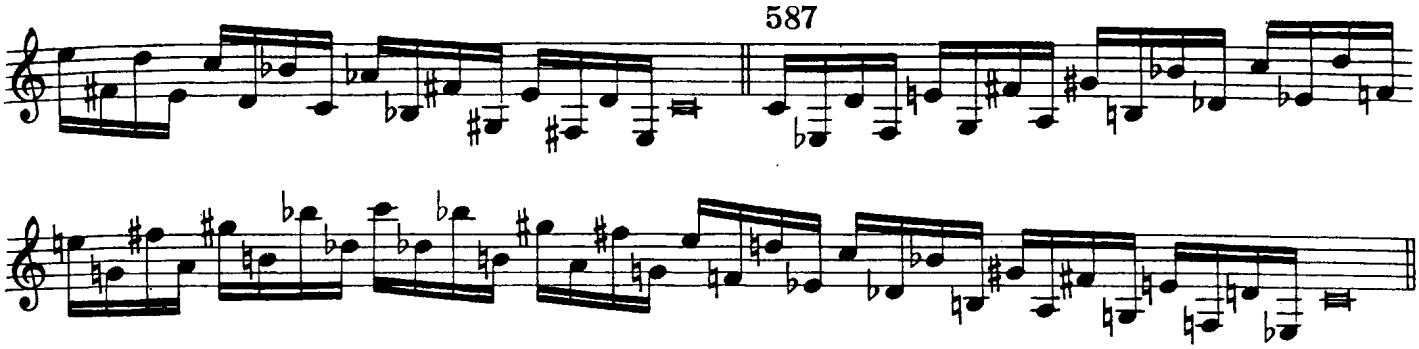

Infra-Interpolation

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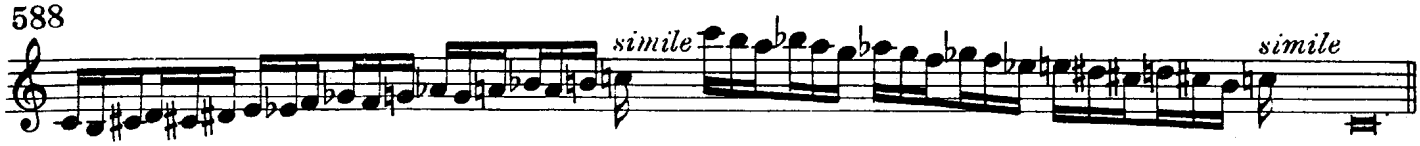

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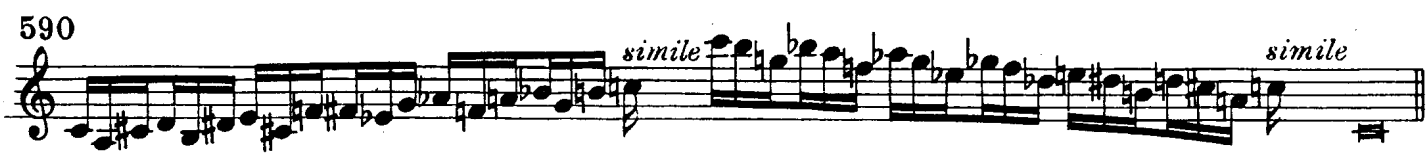

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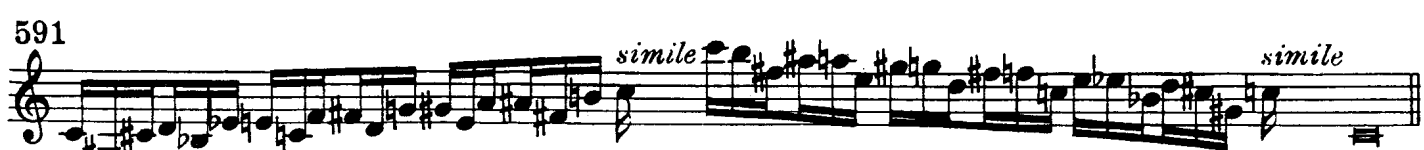

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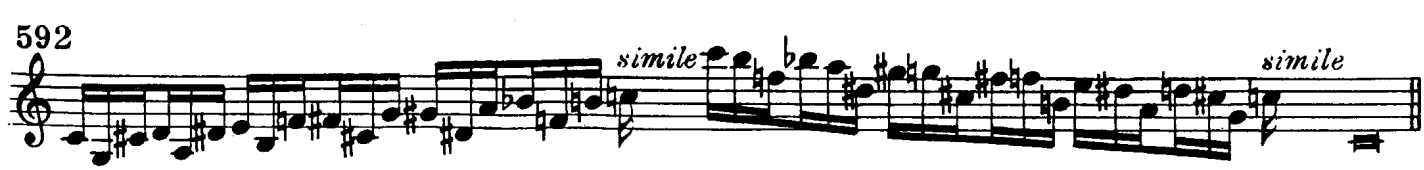

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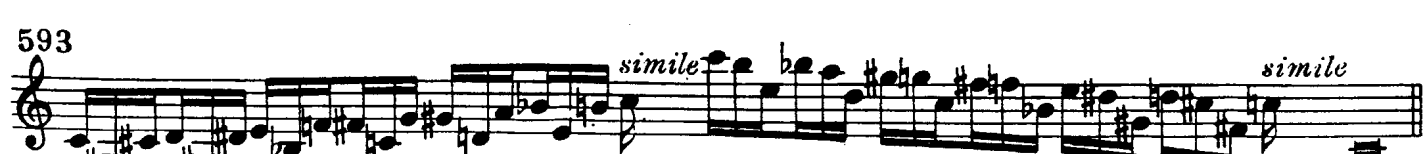

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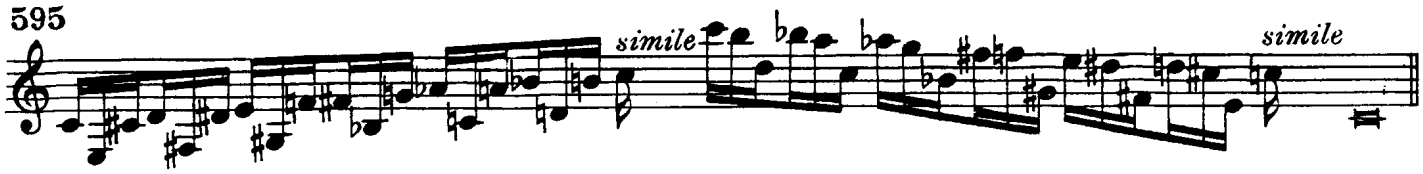

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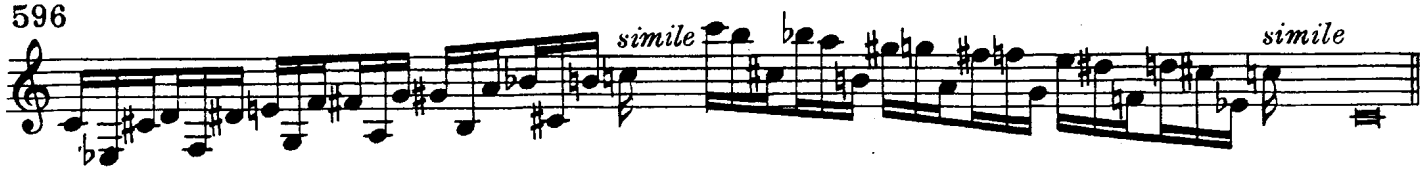

Infra-Ultrapolation

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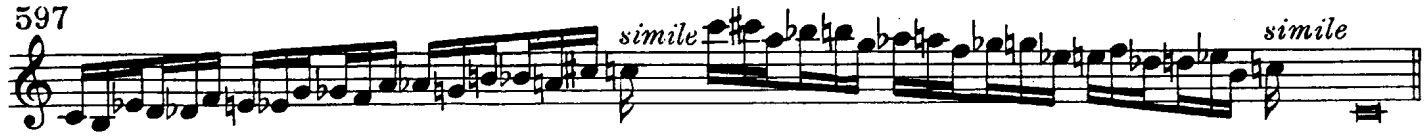

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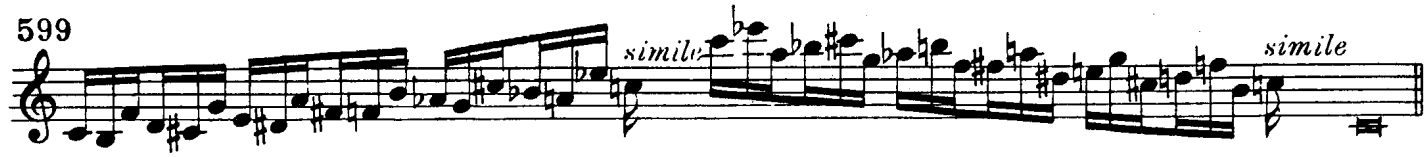

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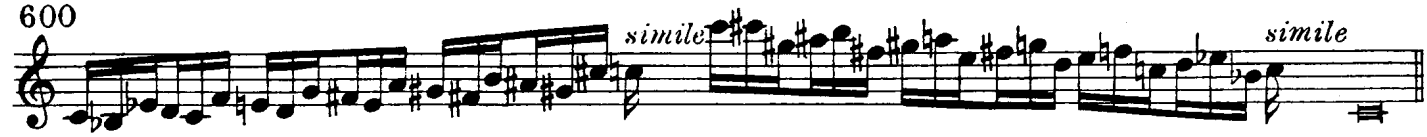

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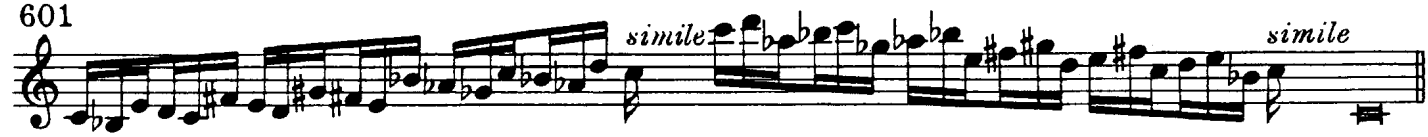

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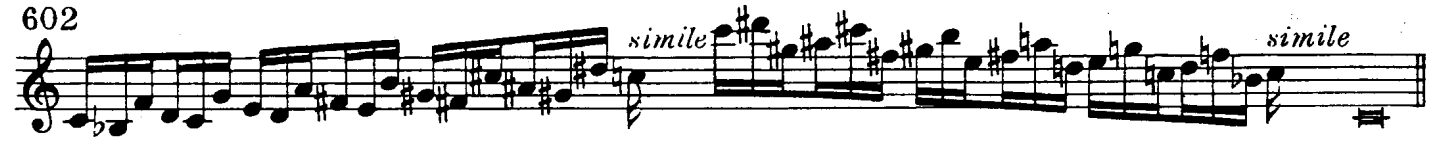

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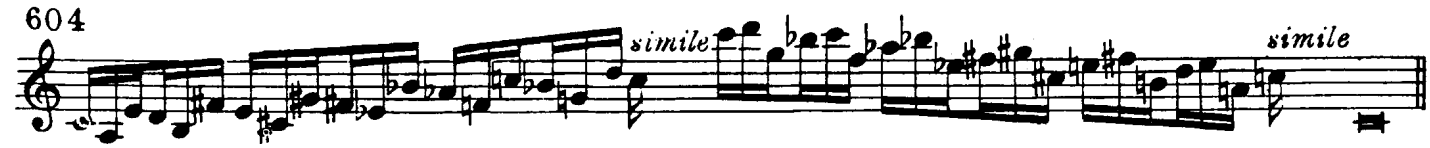

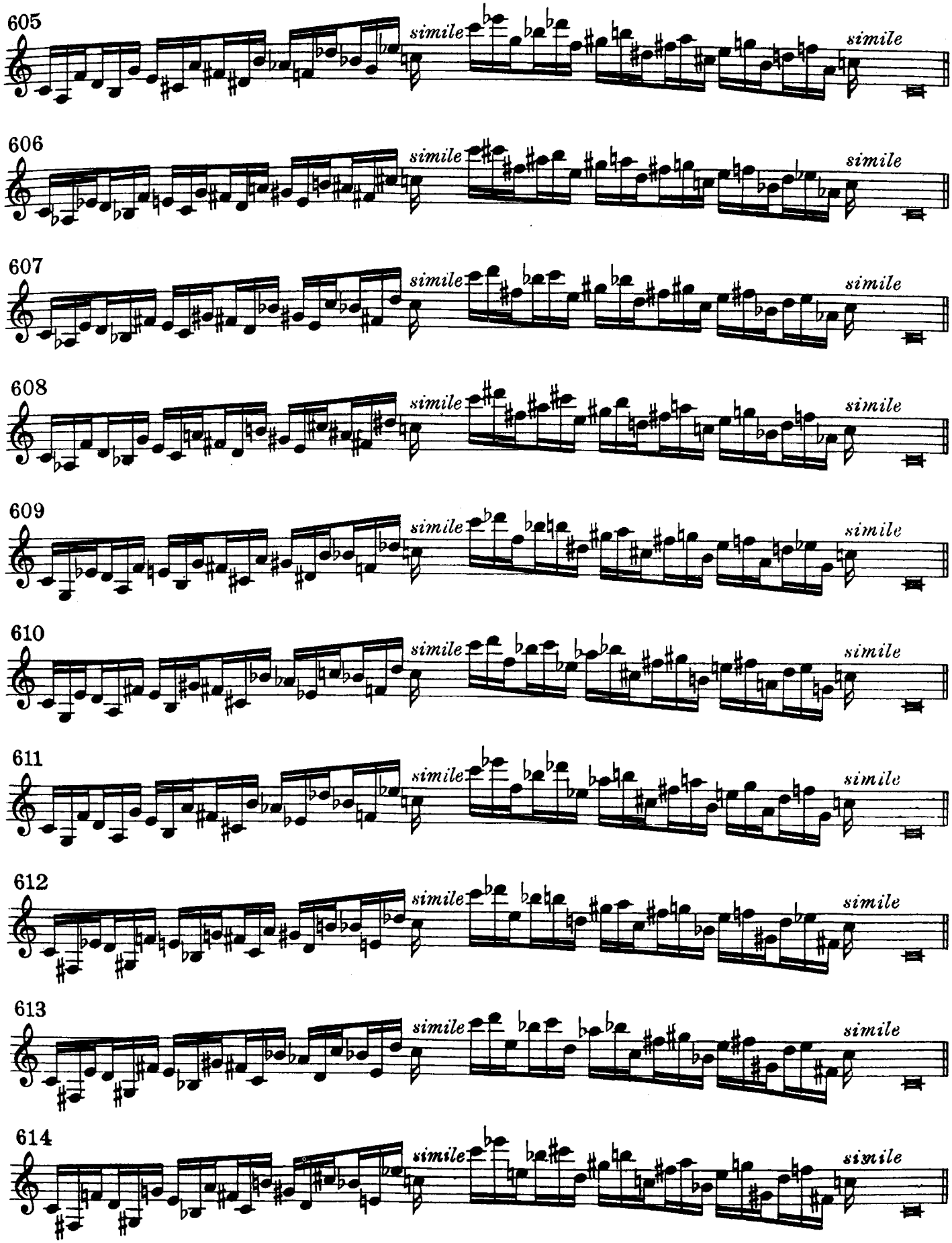
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Inter-Ultrapolation

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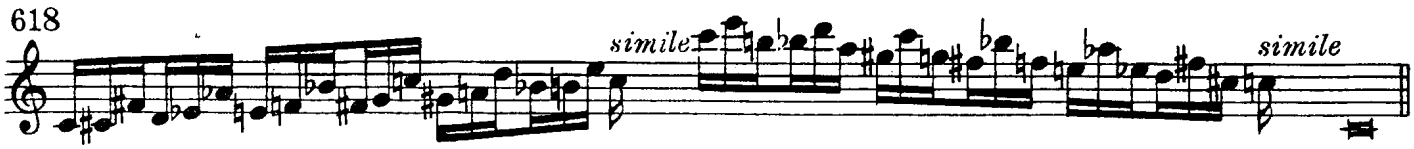

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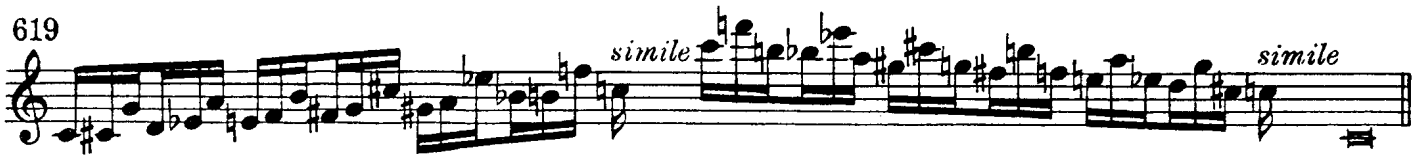

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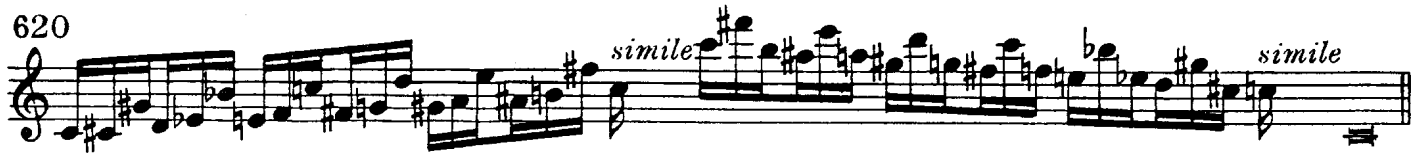

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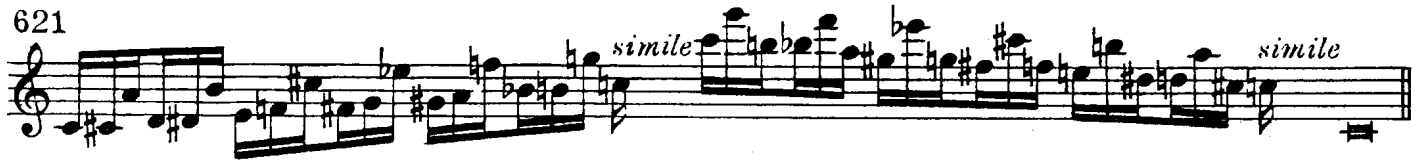

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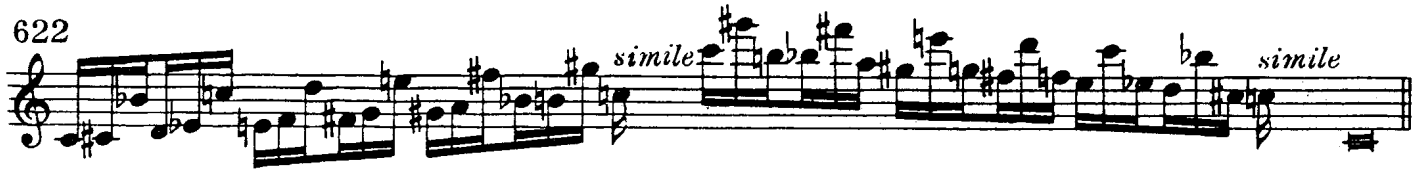

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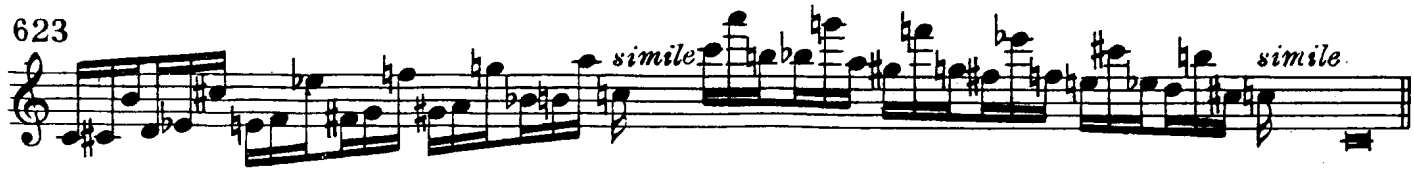

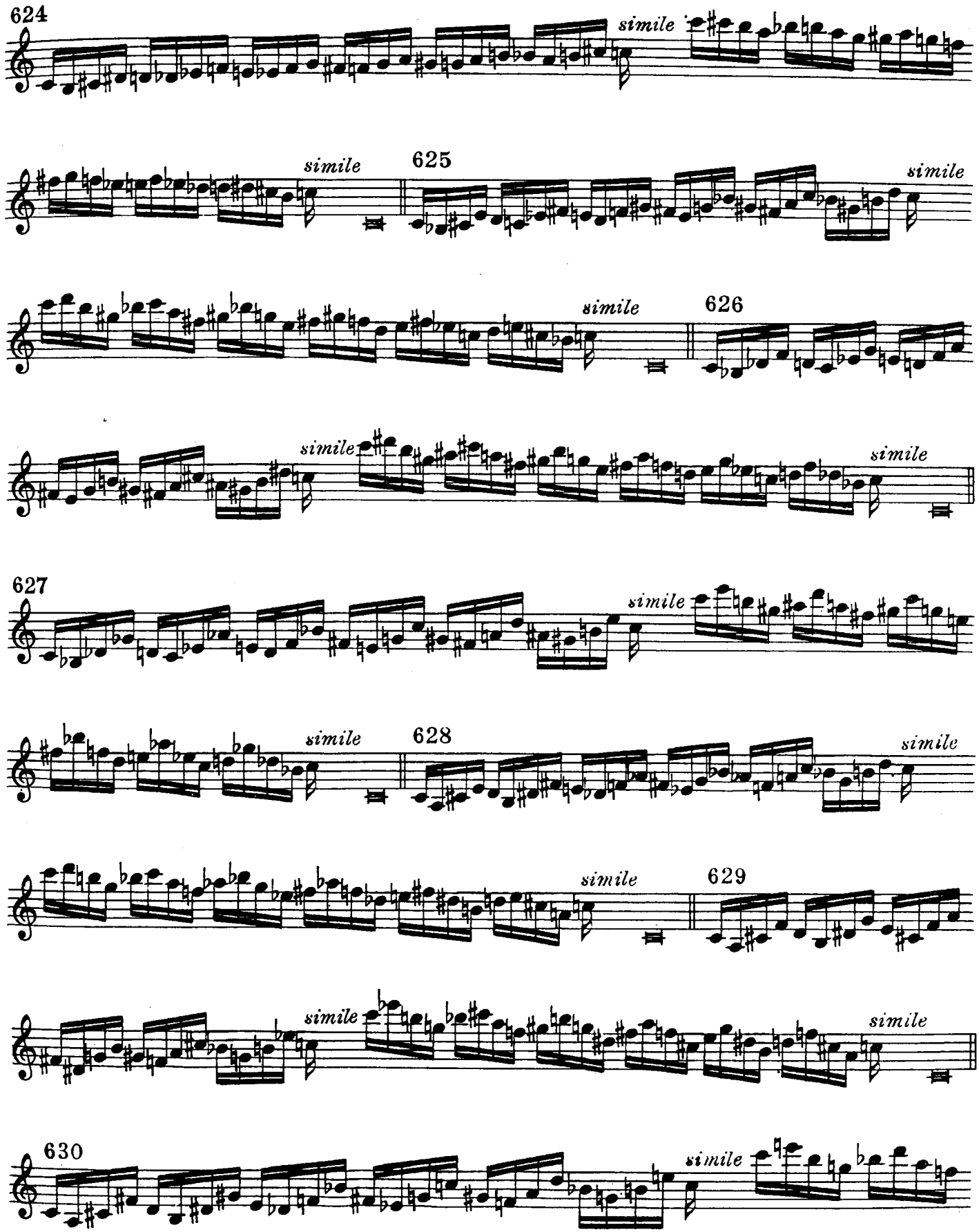
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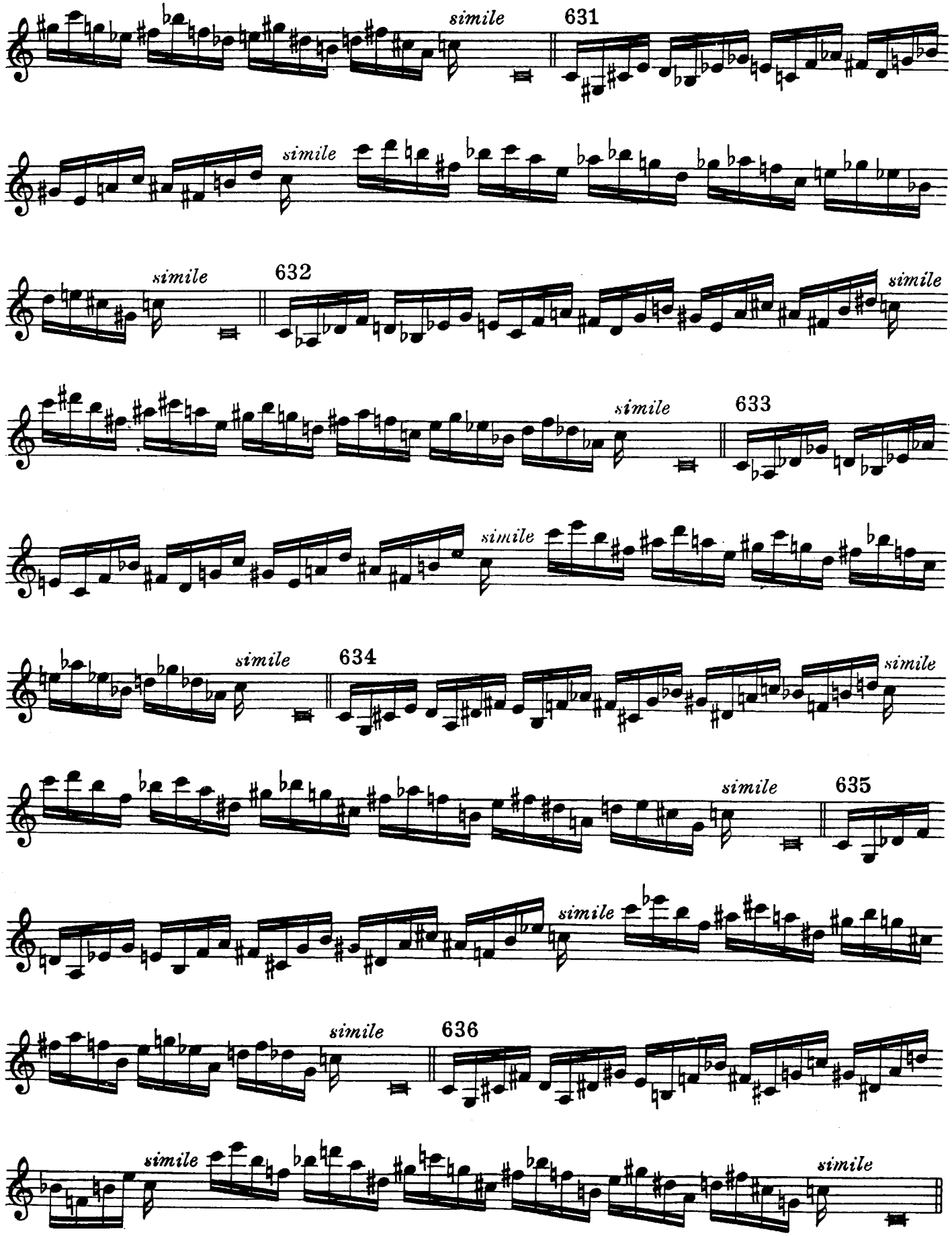
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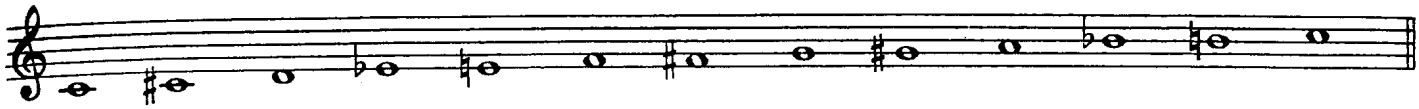
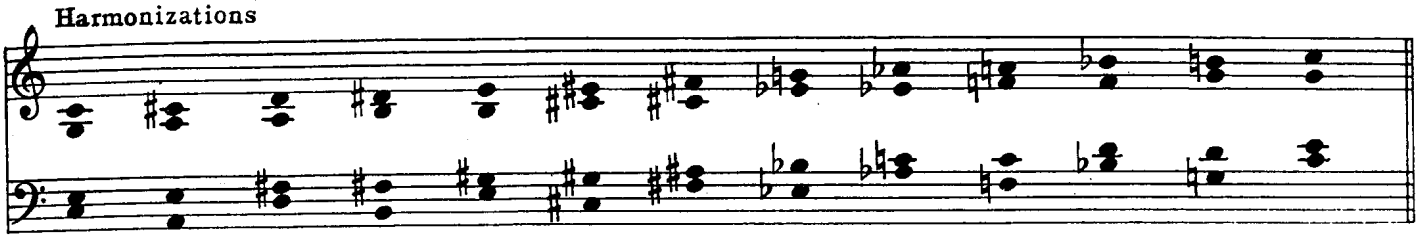
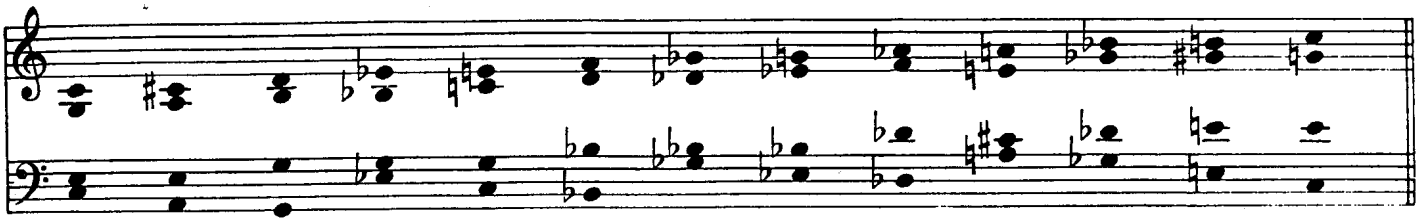
Semitone Progression

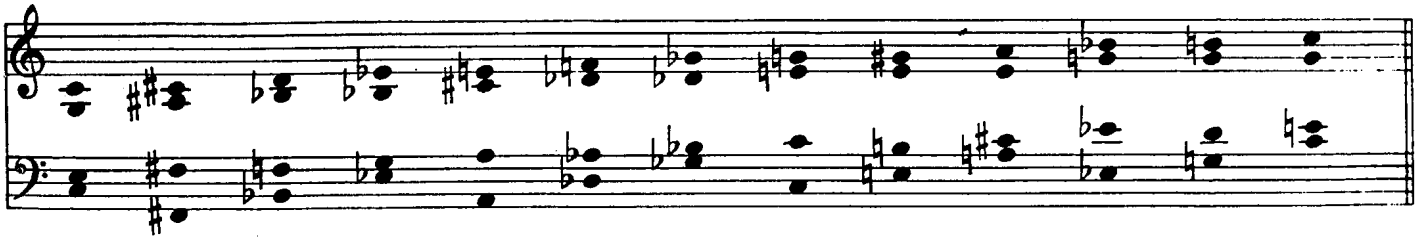
Equal Division of One Octave into Twelve Parts



Harmonizations







Permutations

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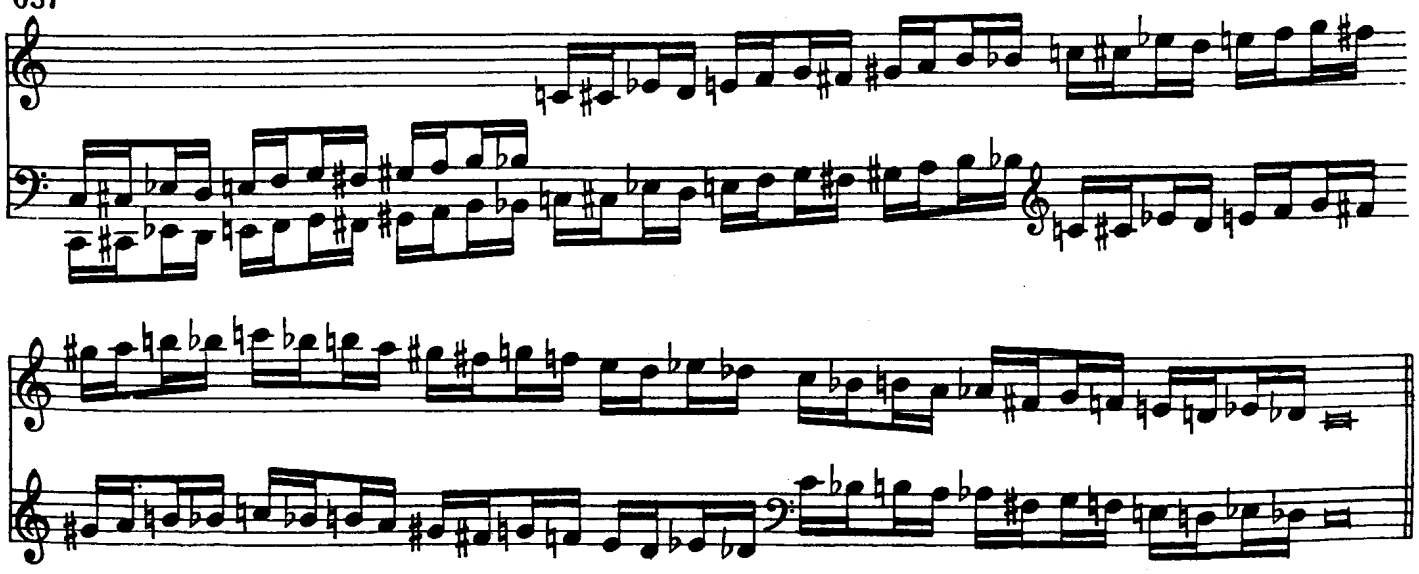

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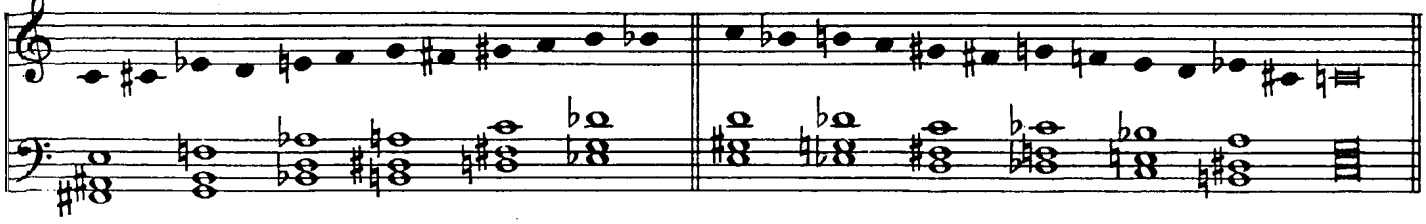

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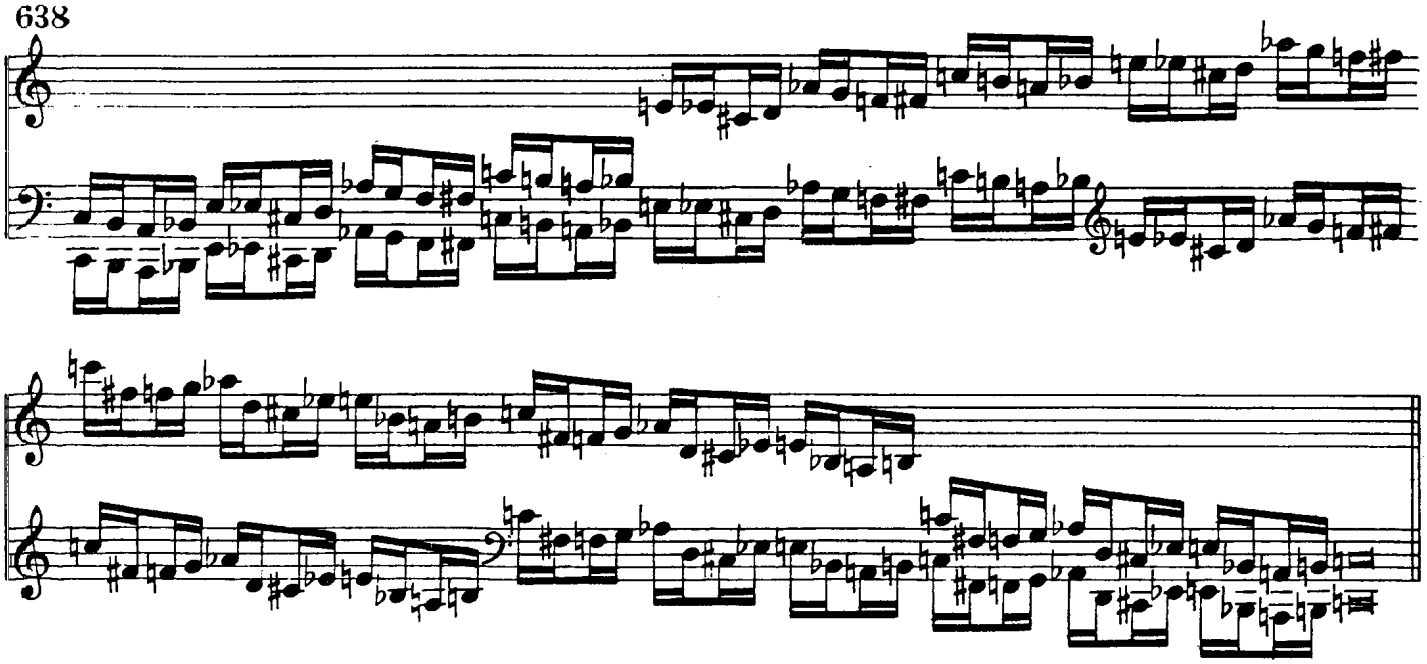

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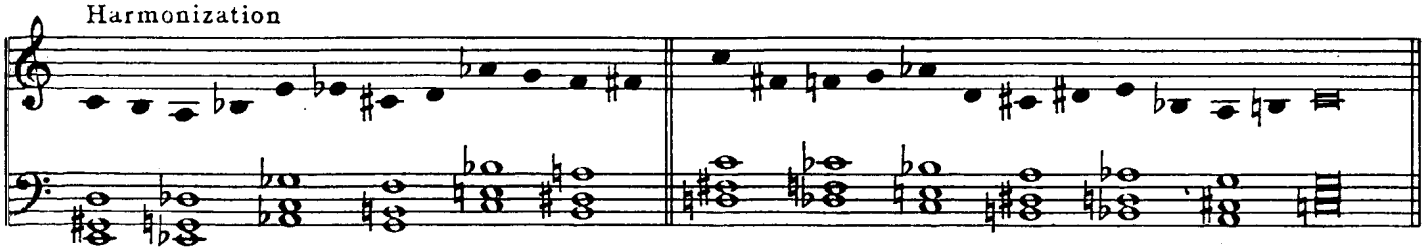

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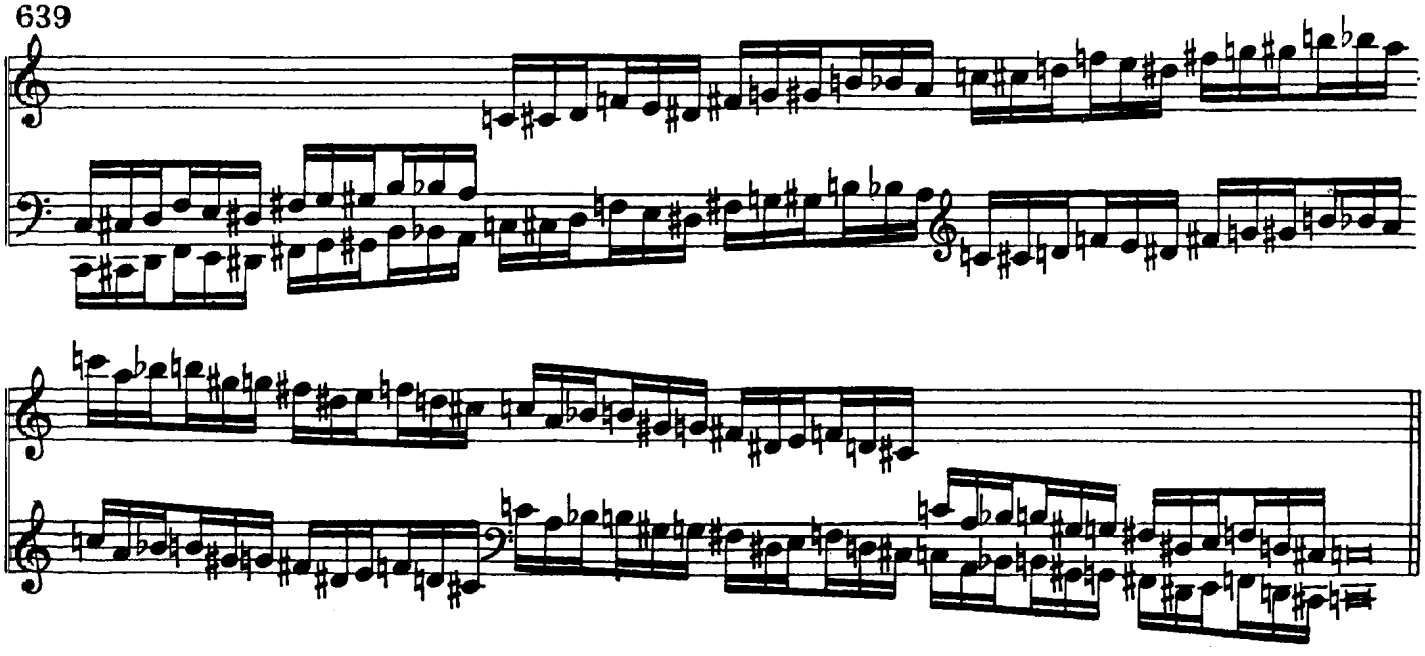

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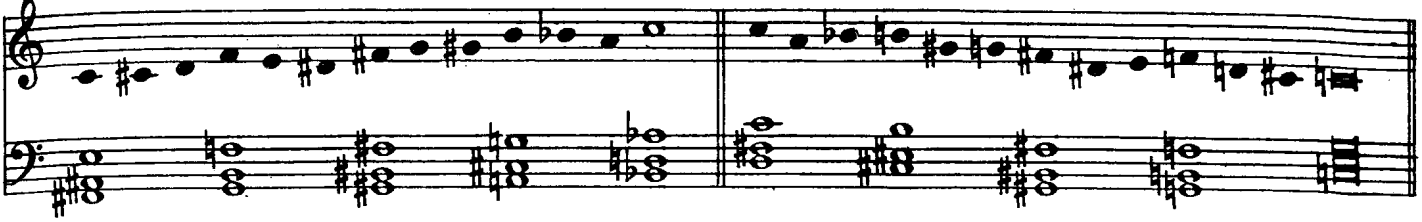

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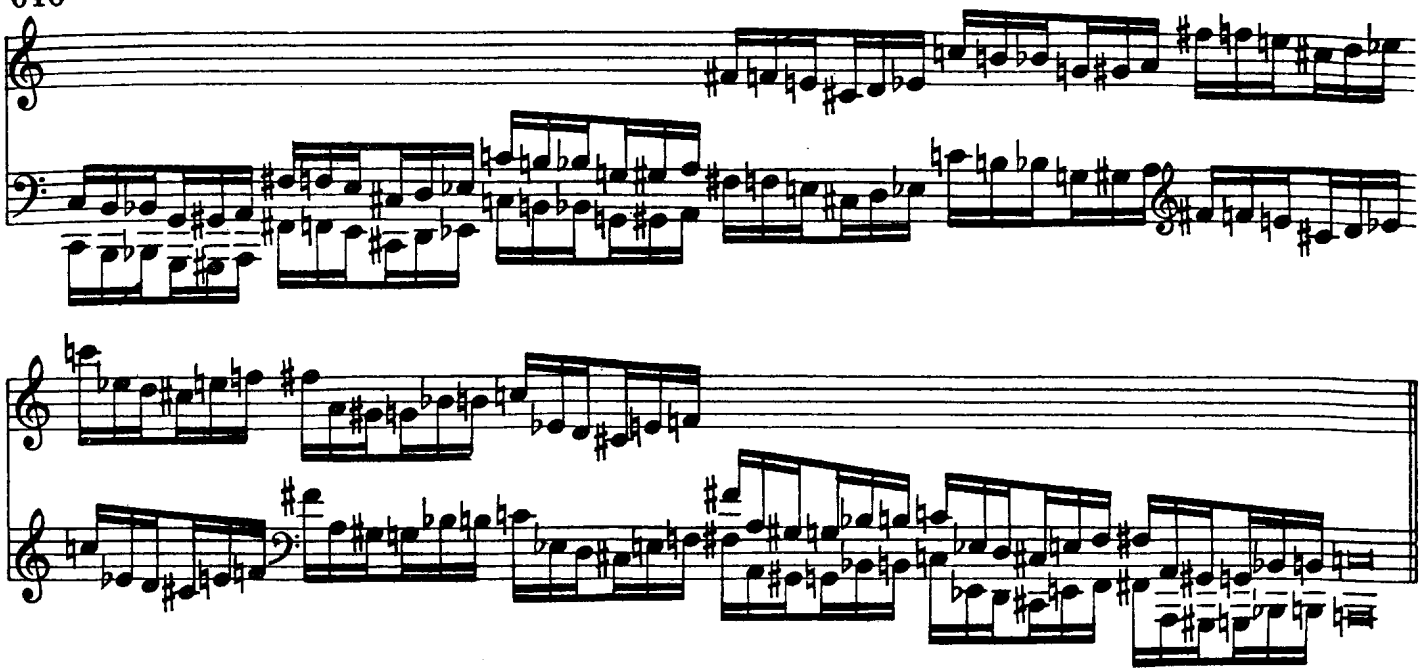

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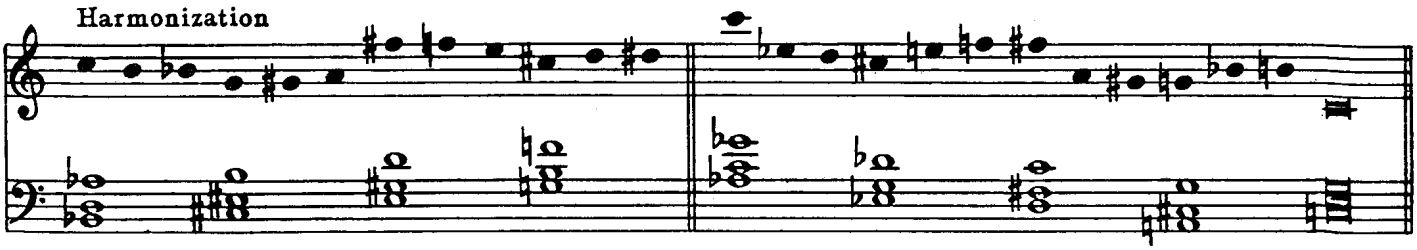

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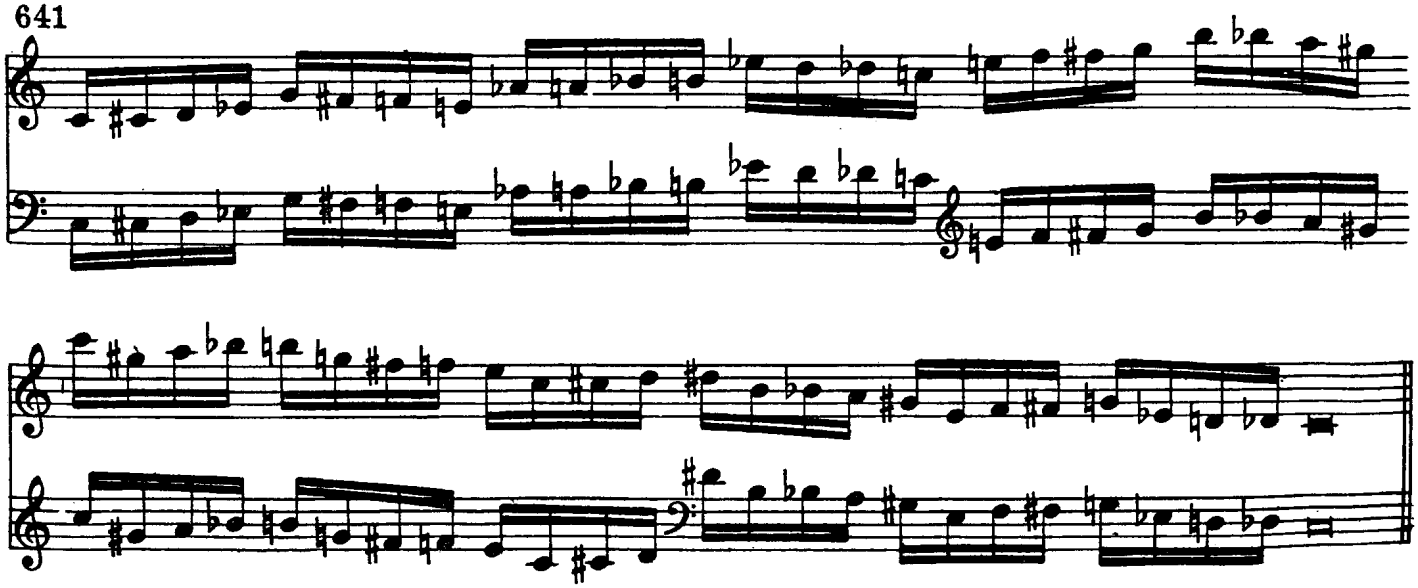

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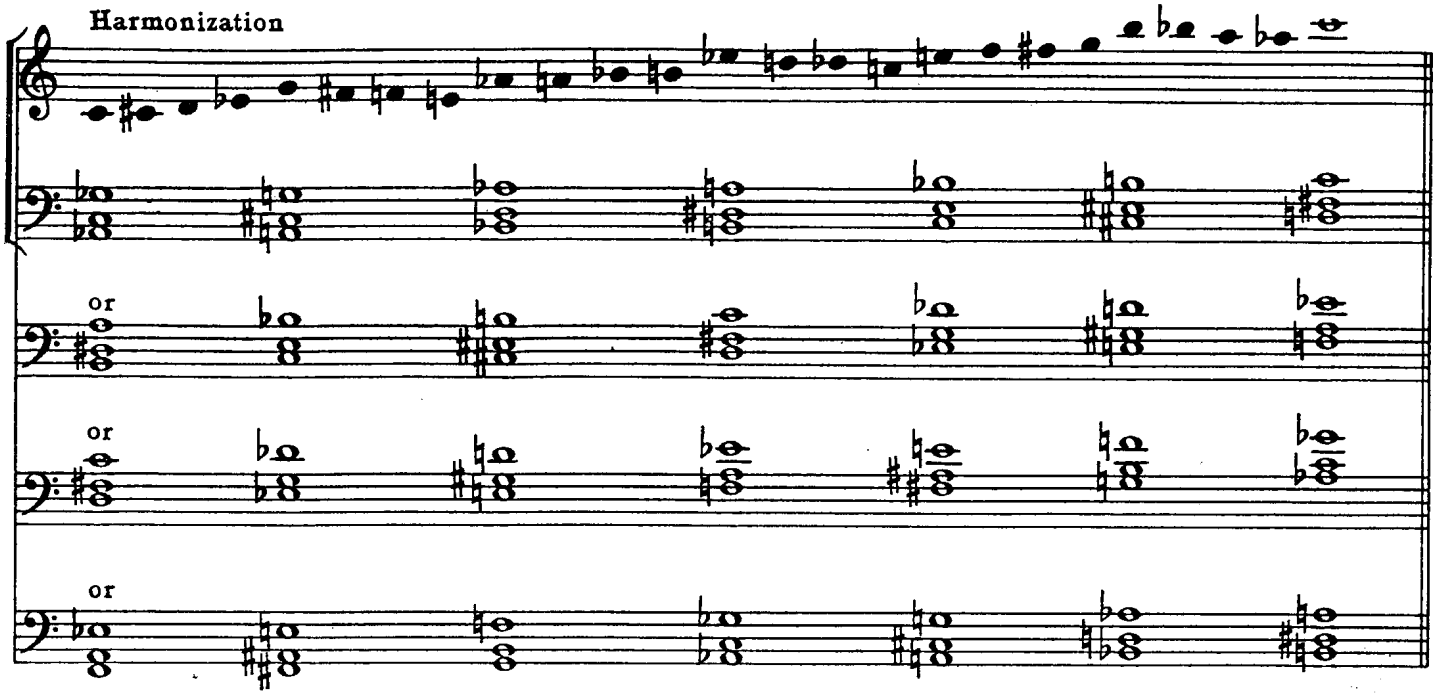

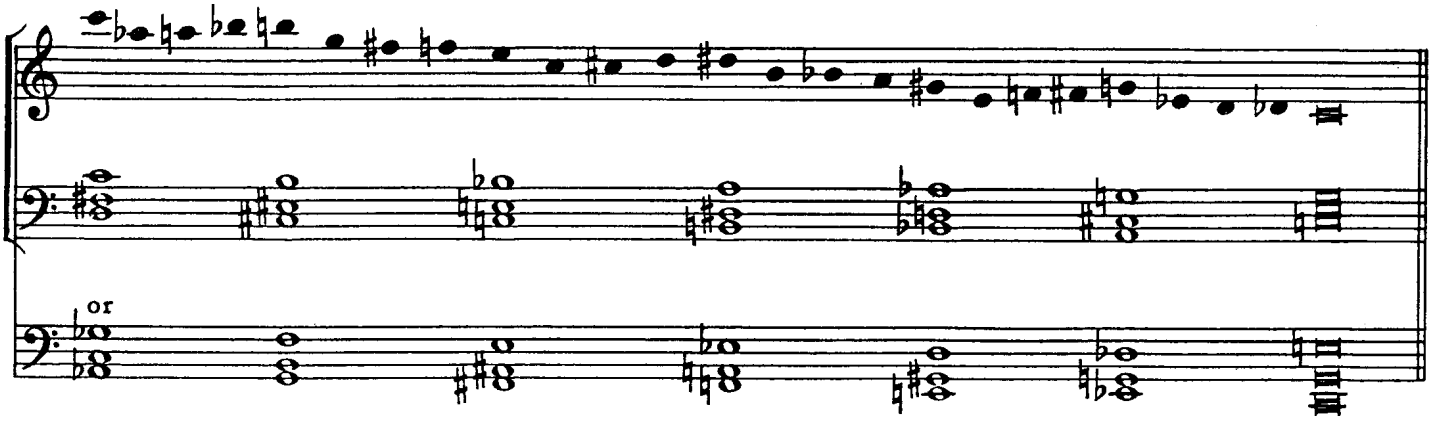

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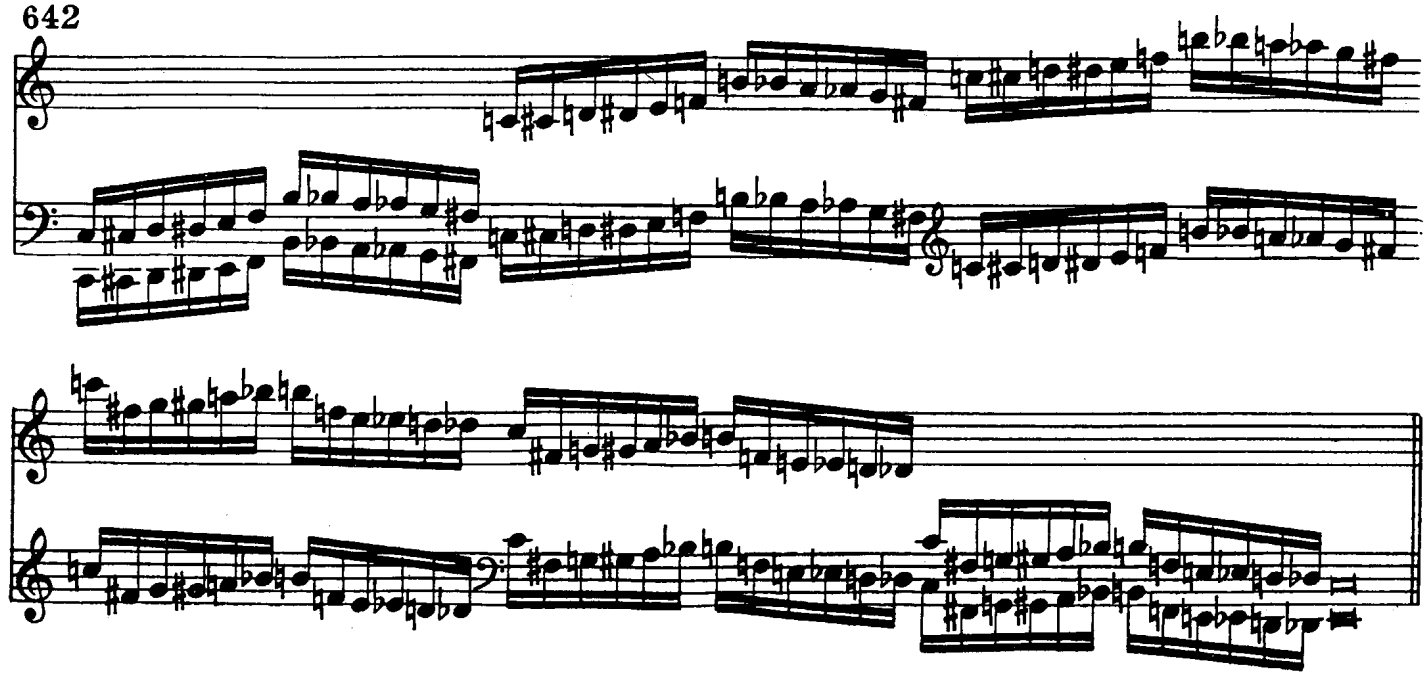

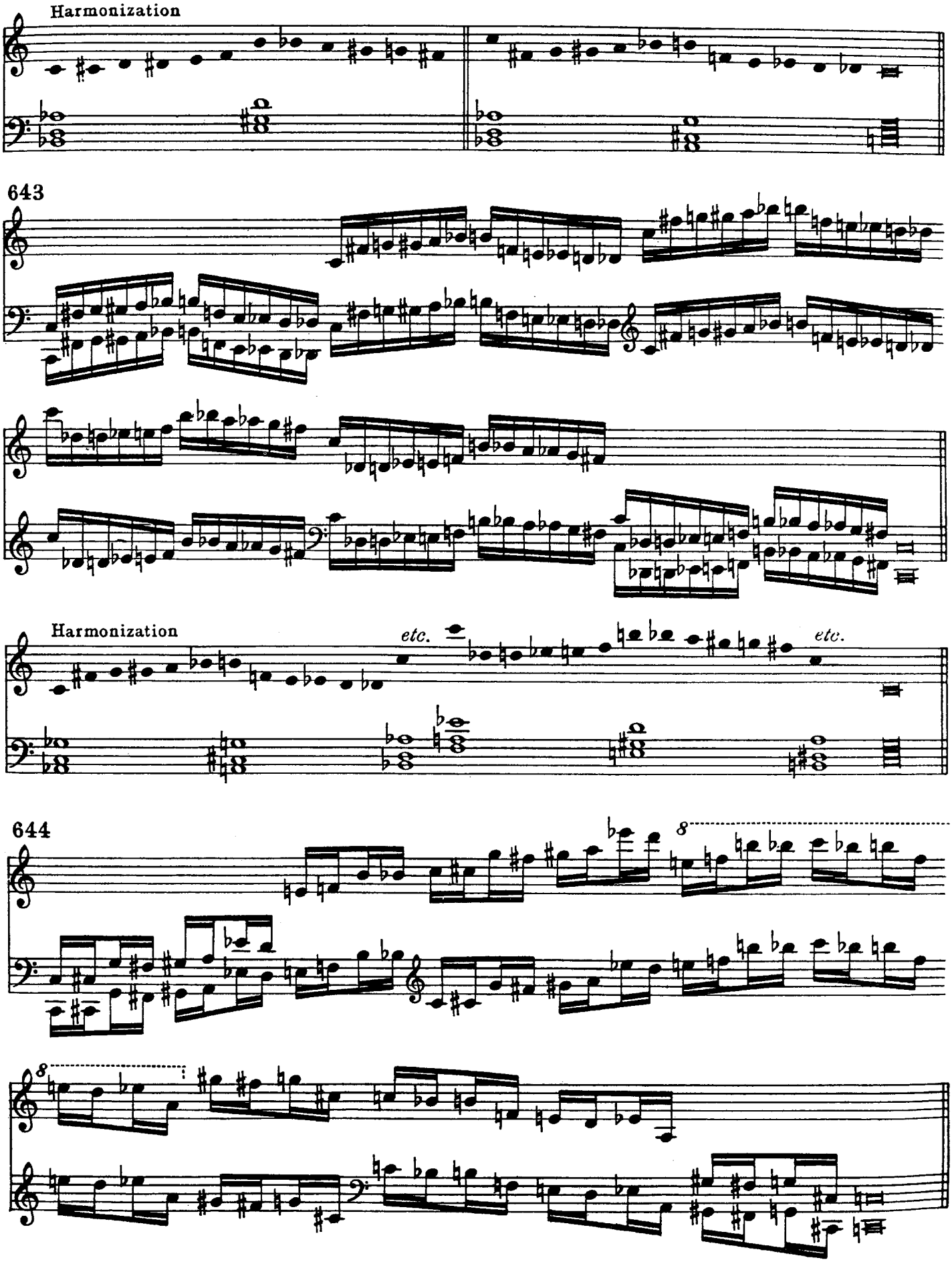
Harmonization
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Harmonization
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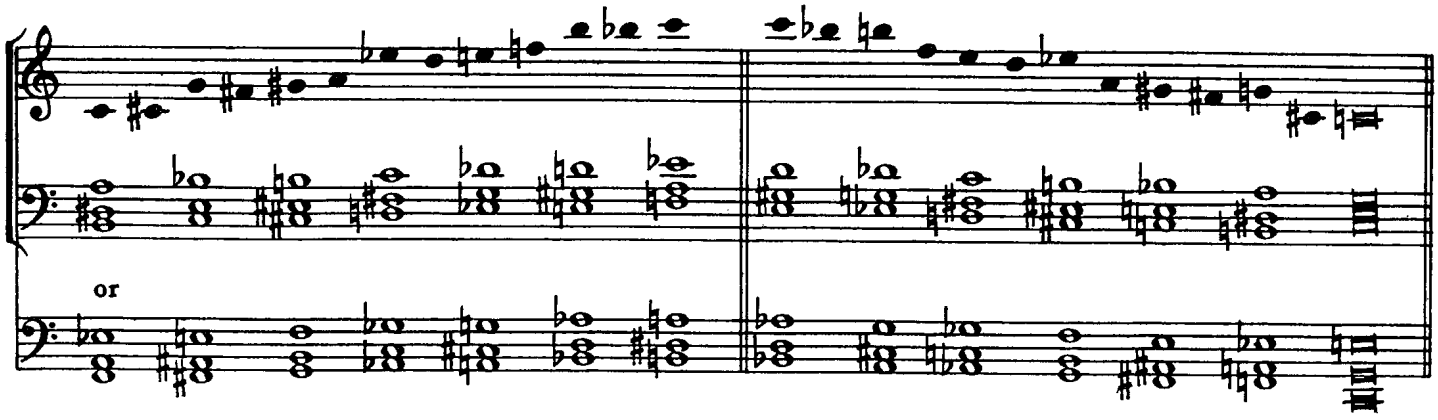

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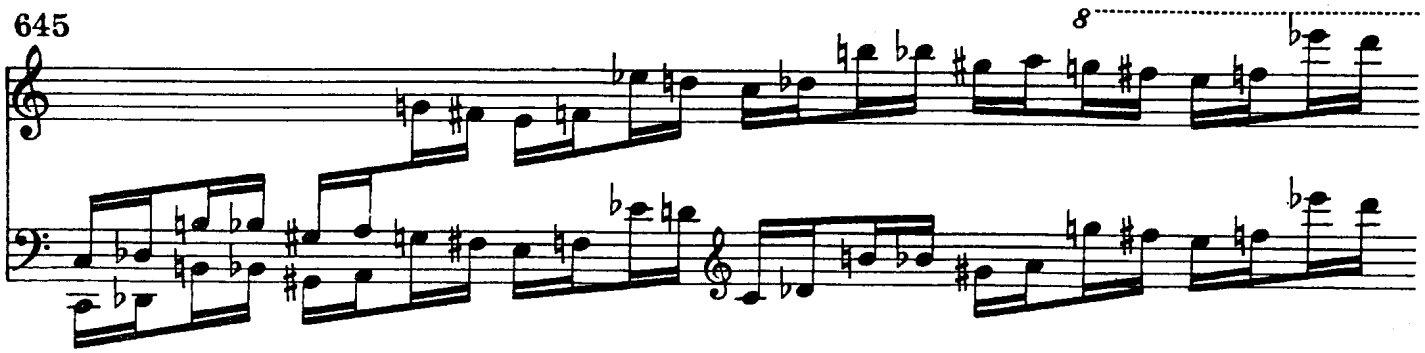

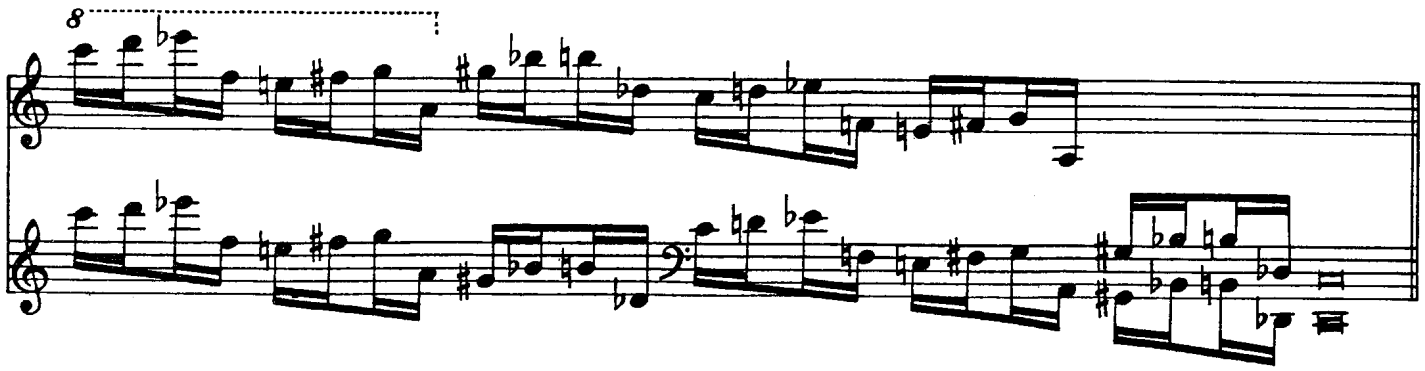

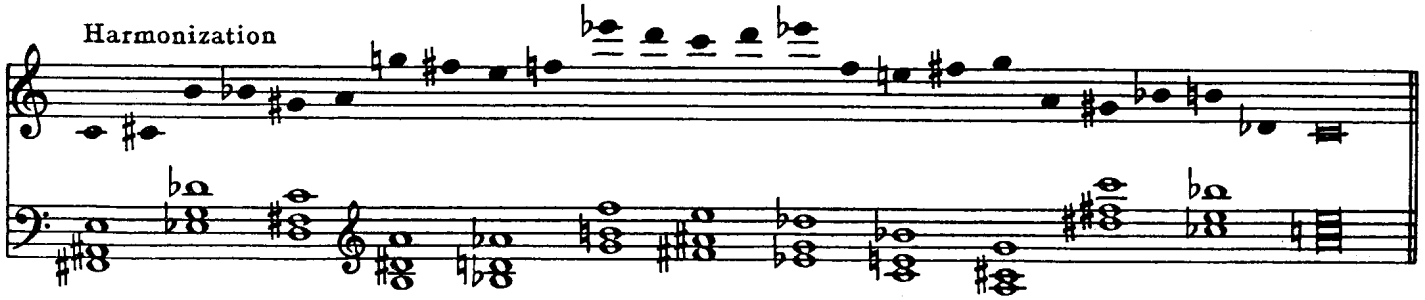

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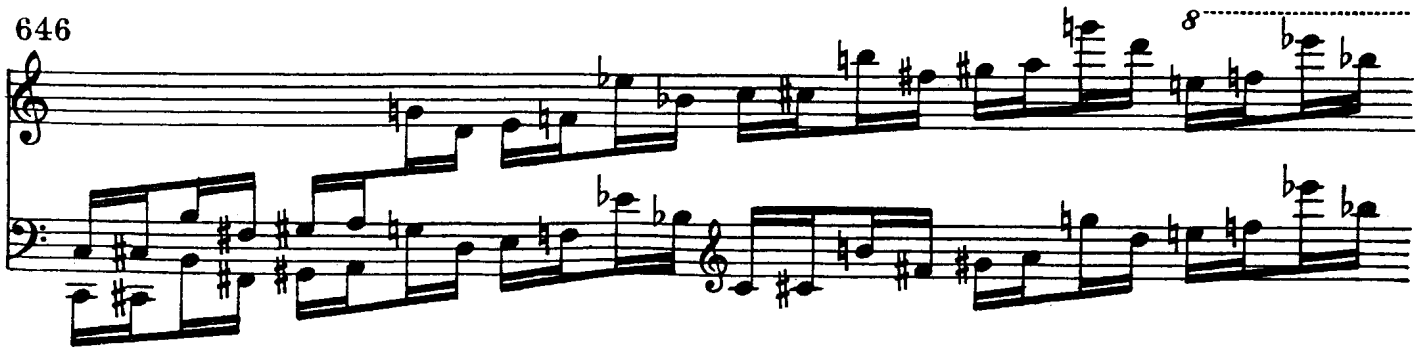

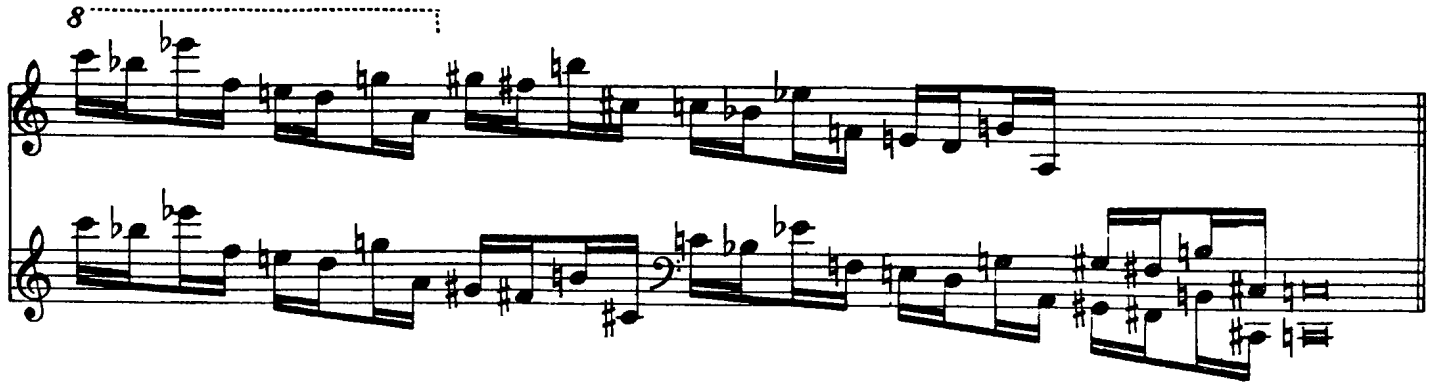
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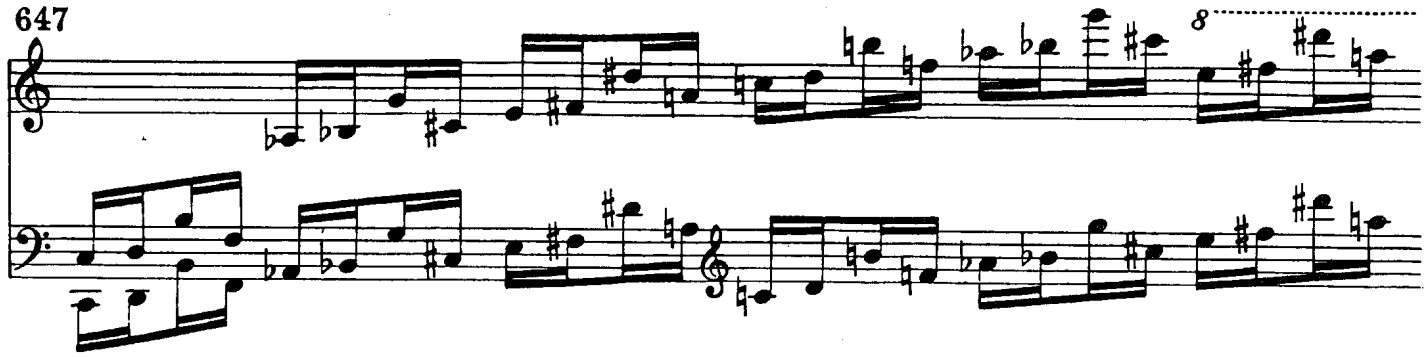
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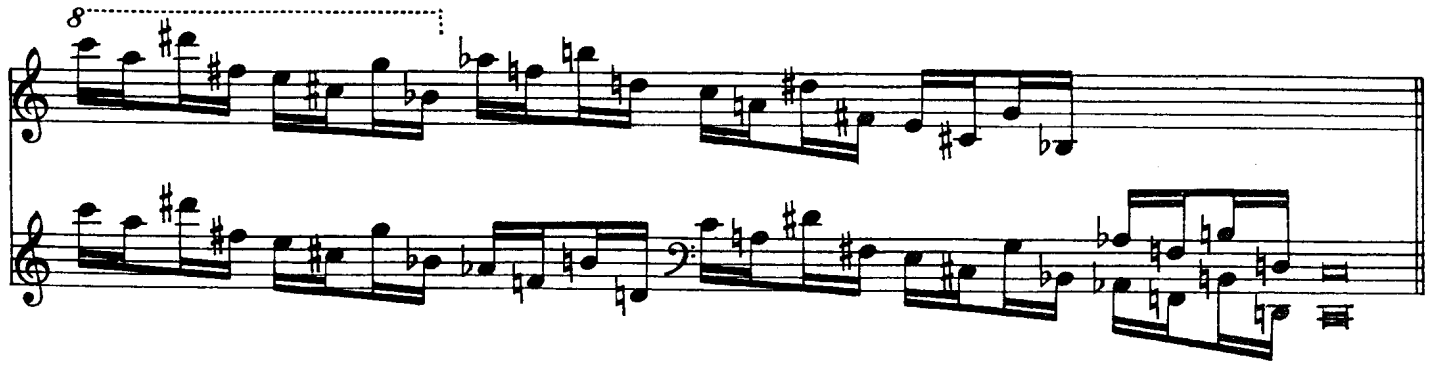
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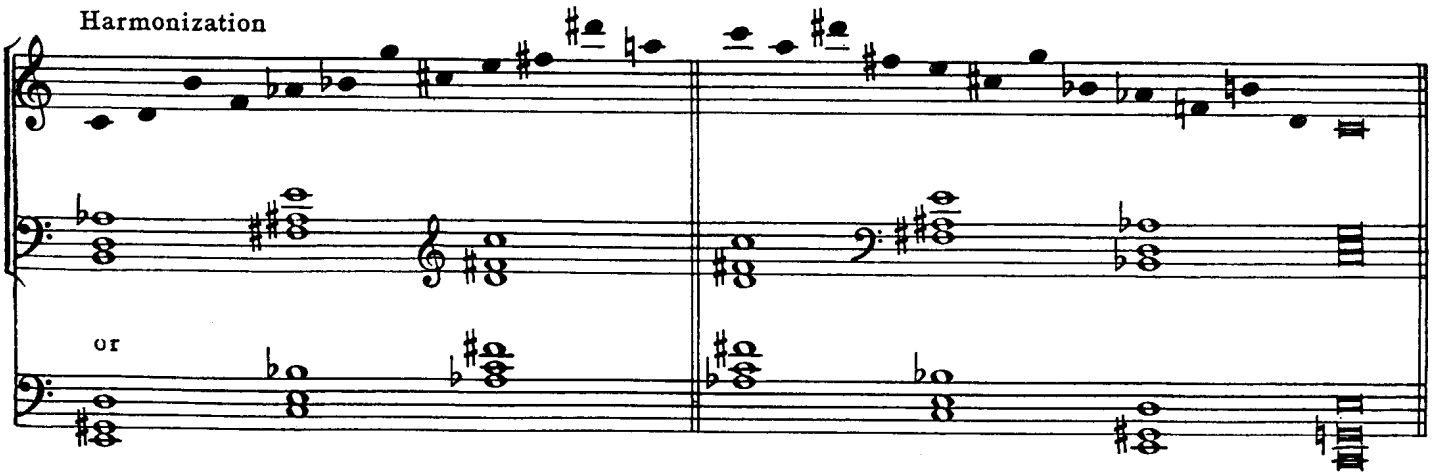
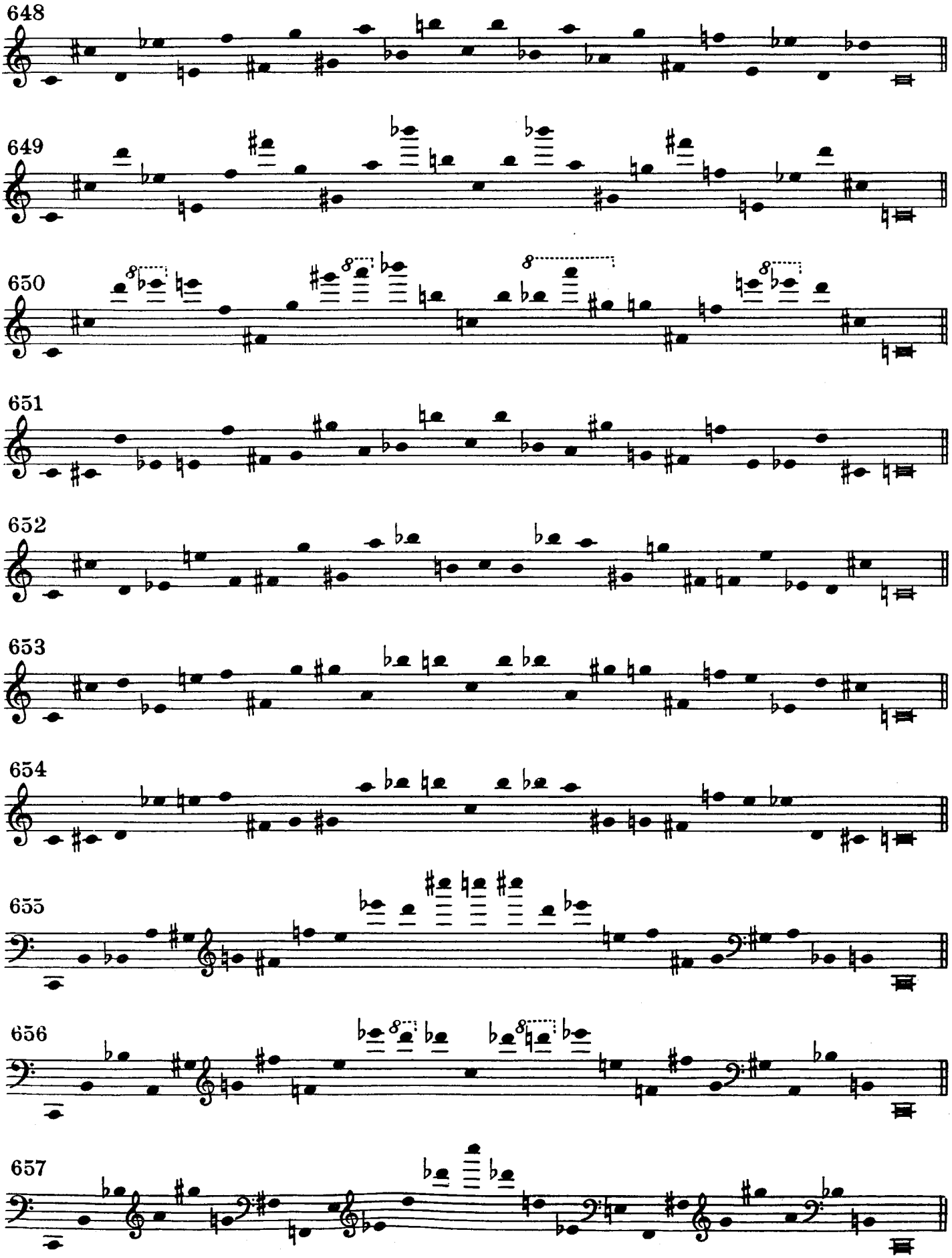

Harmonization
or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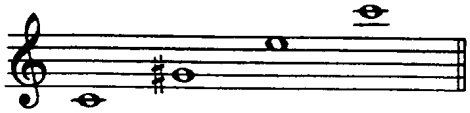
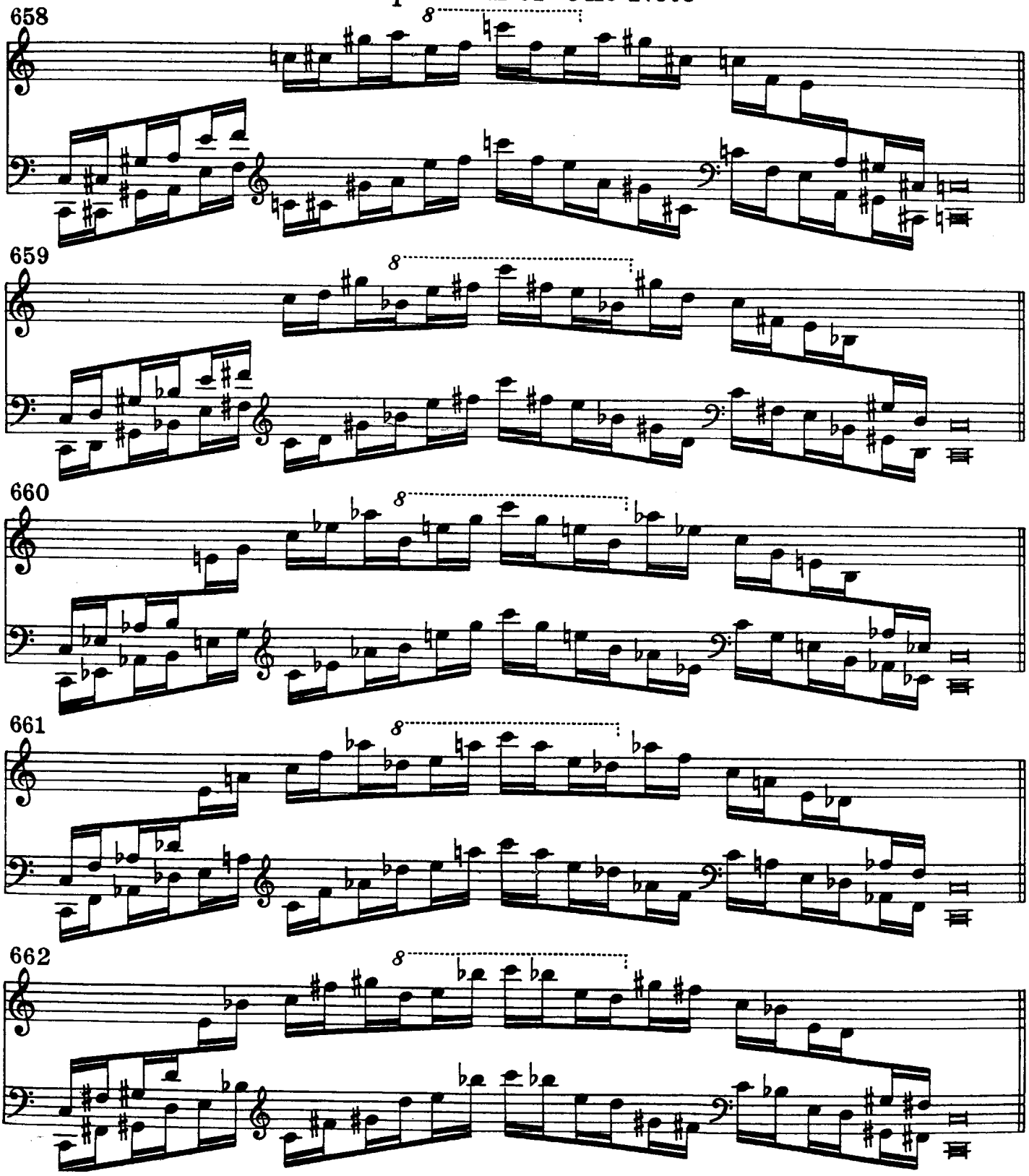
Quadritone Progression

Equal Division of Two Octaves into Three Parts



Interpolation of One Note



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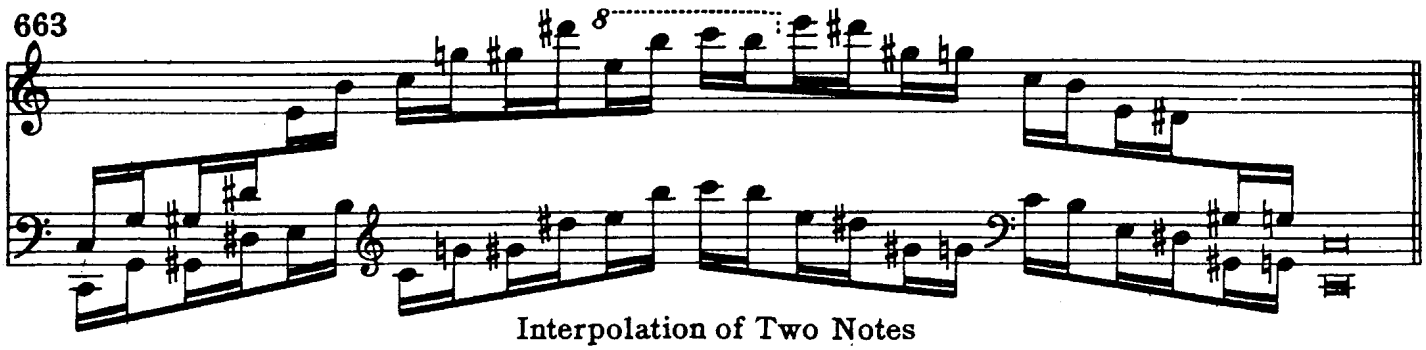

Interpolation of Two Notes

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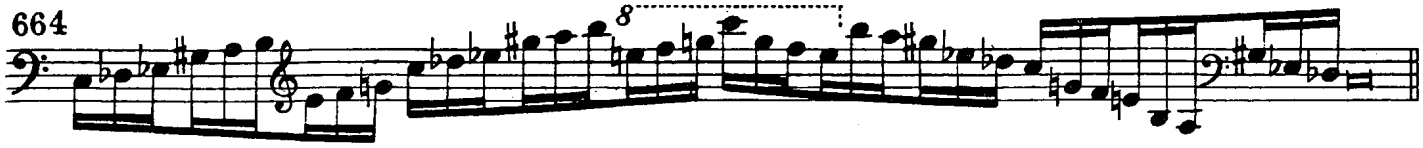

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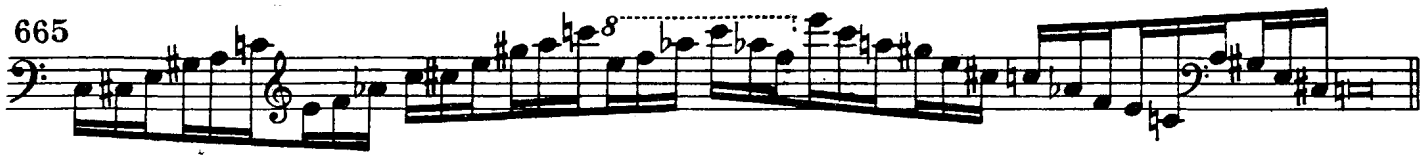

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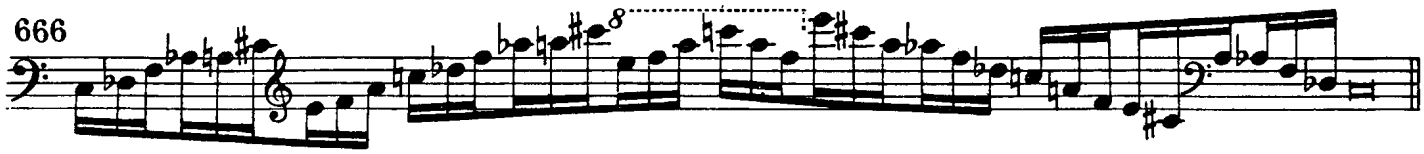

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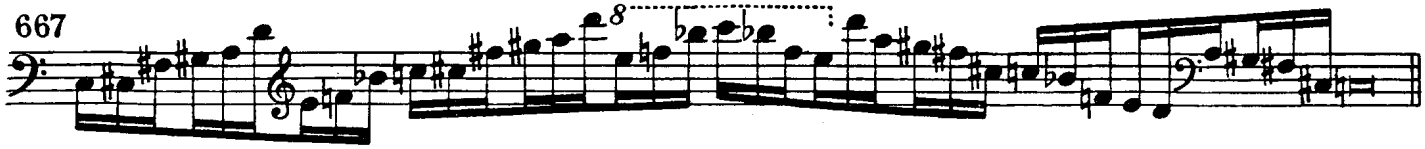

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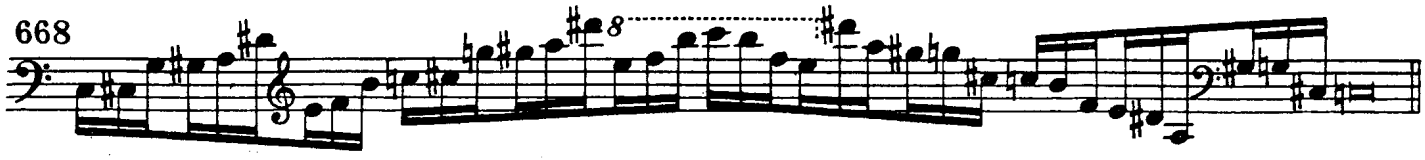

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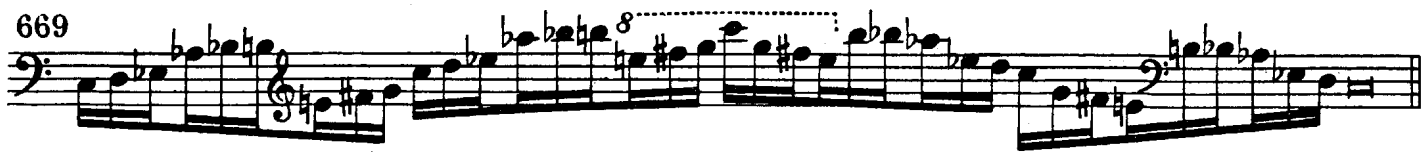

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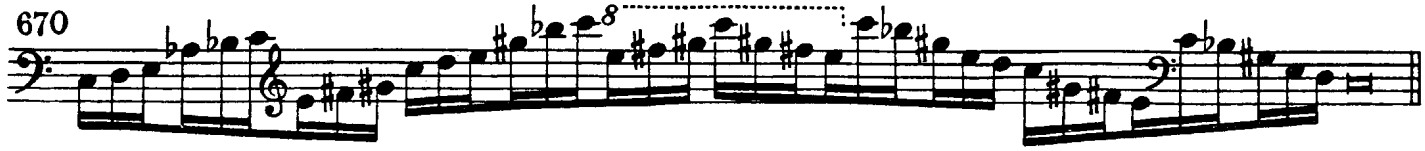

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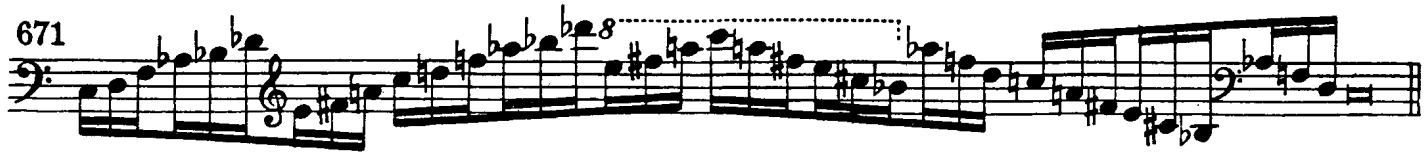

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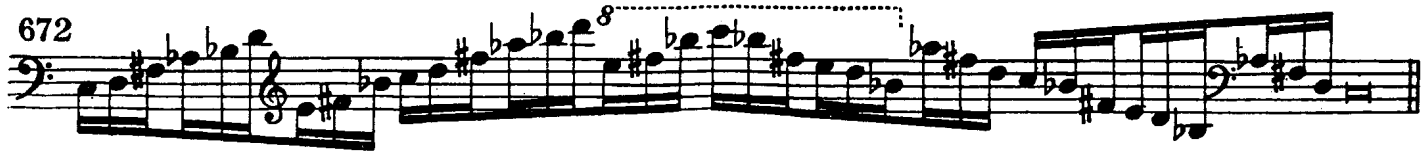

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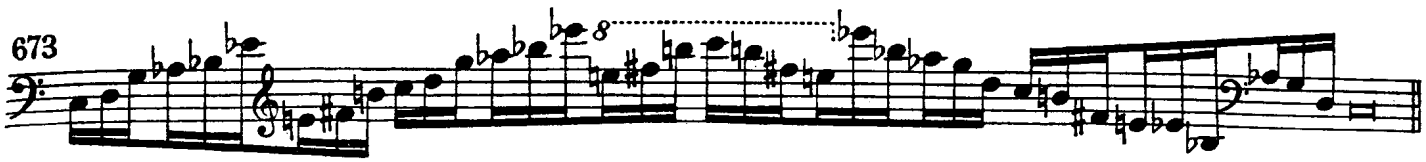

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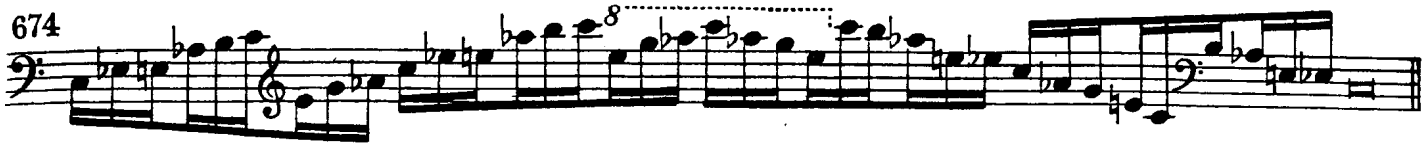

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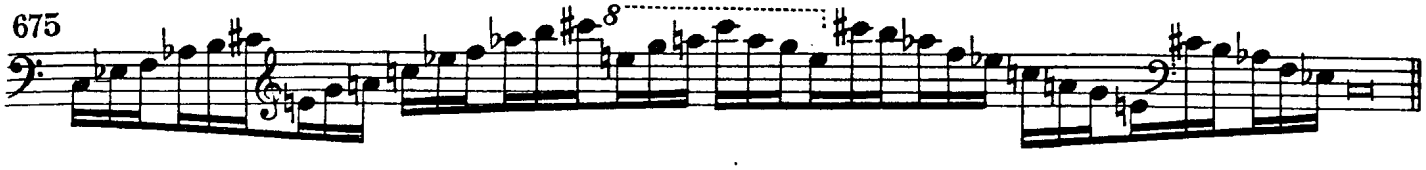

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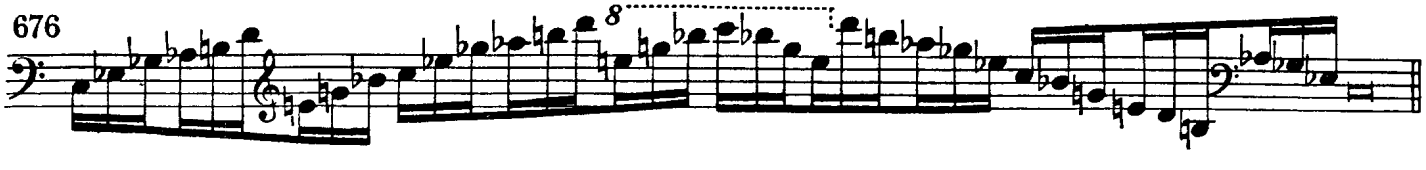

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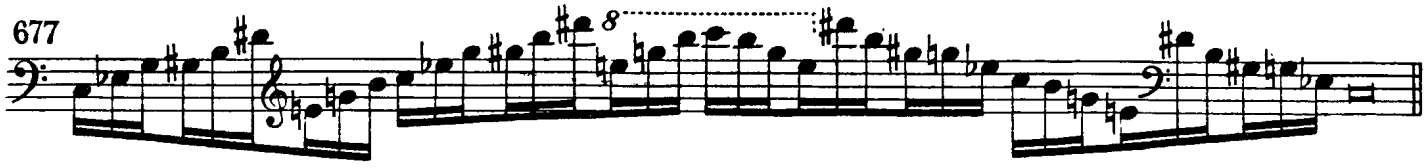

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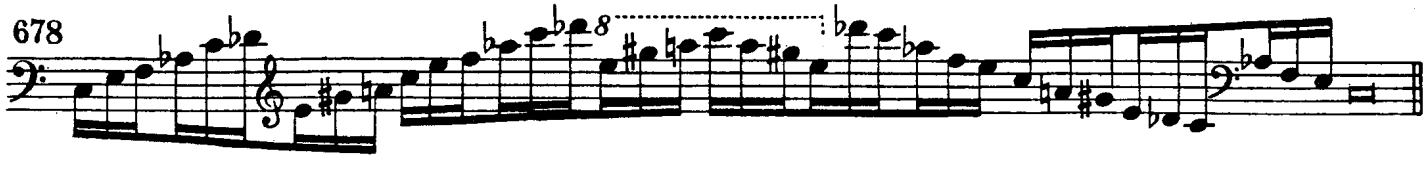

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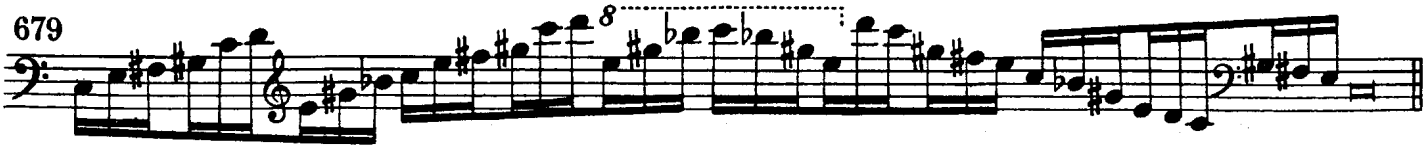

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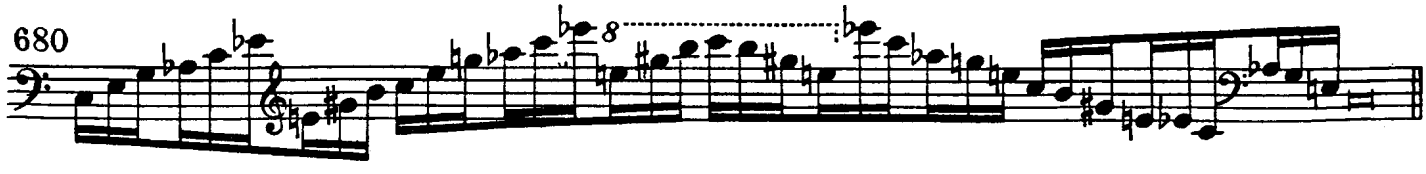

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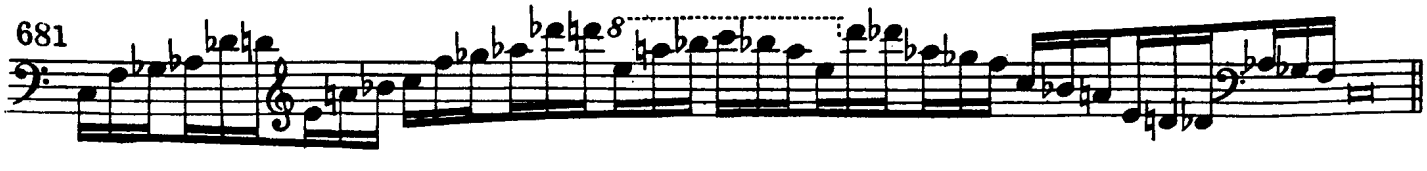

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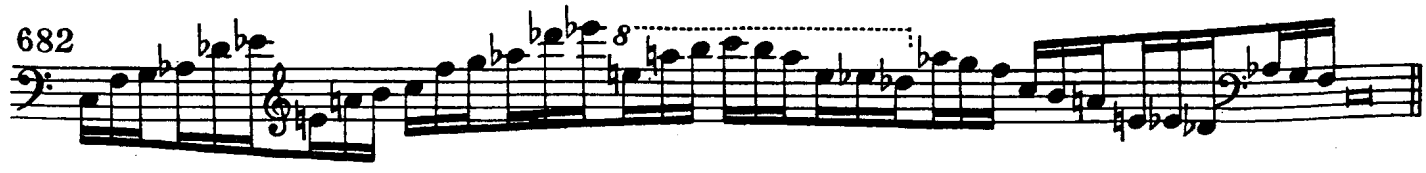
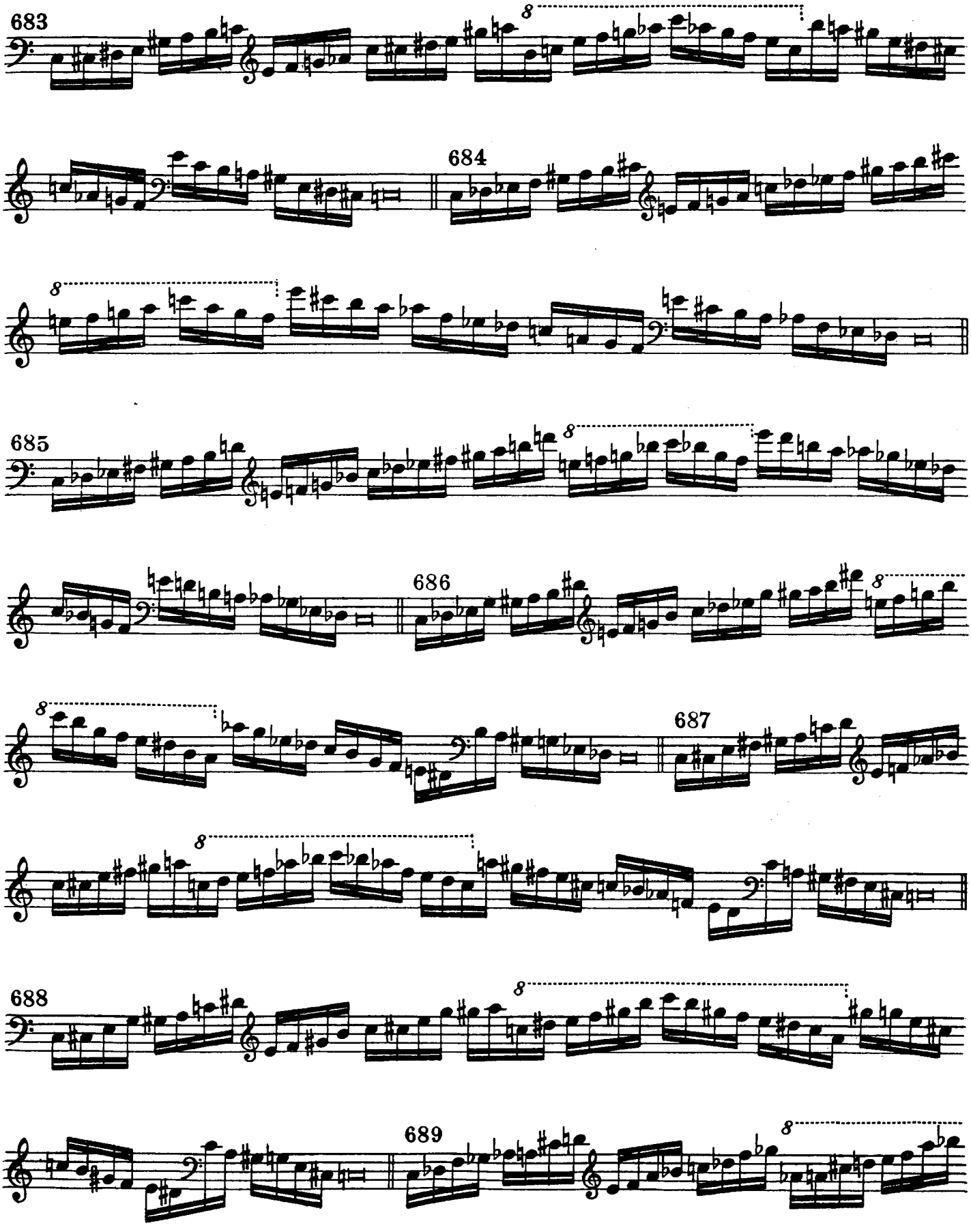
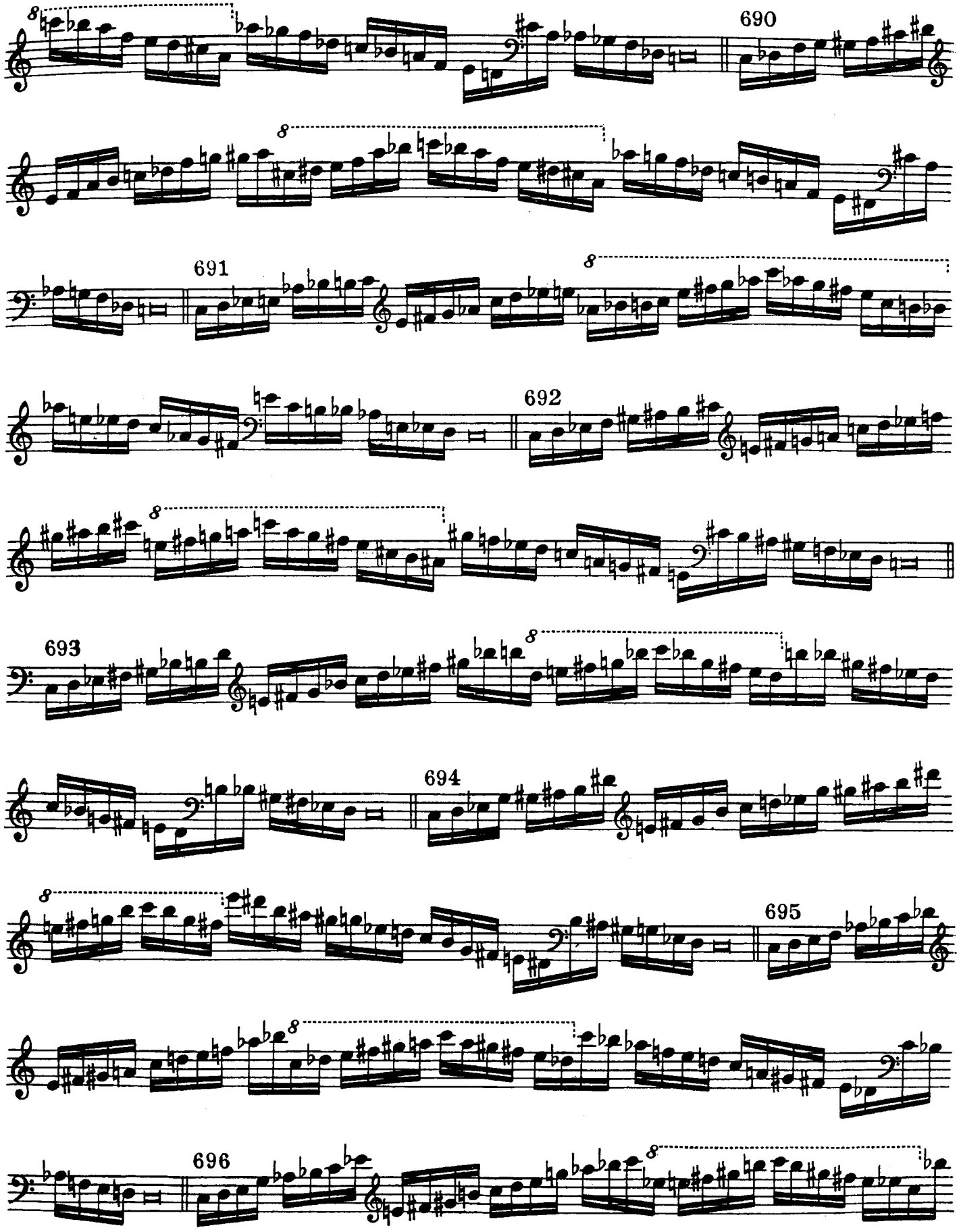


Interpolation of Three Notes

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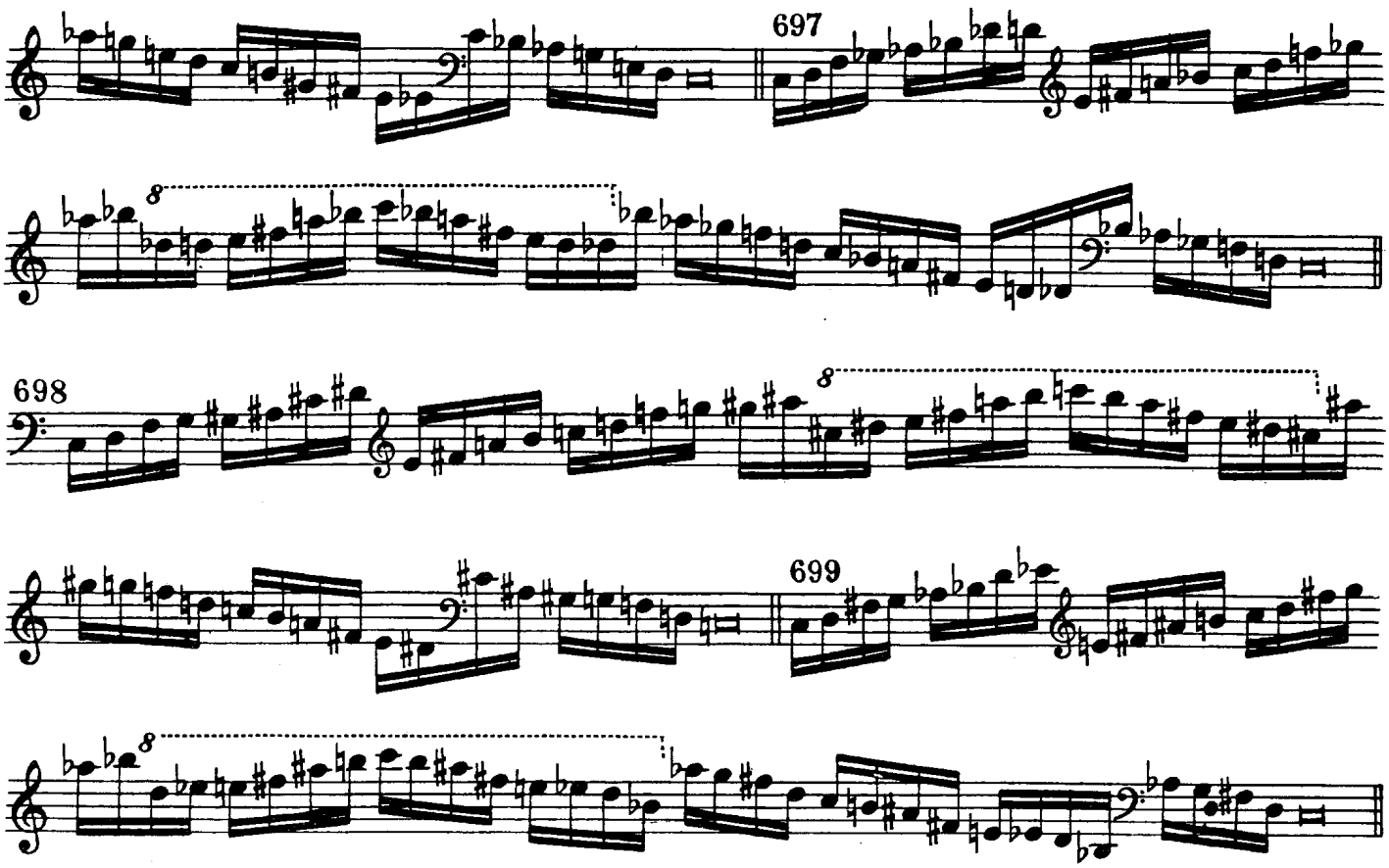
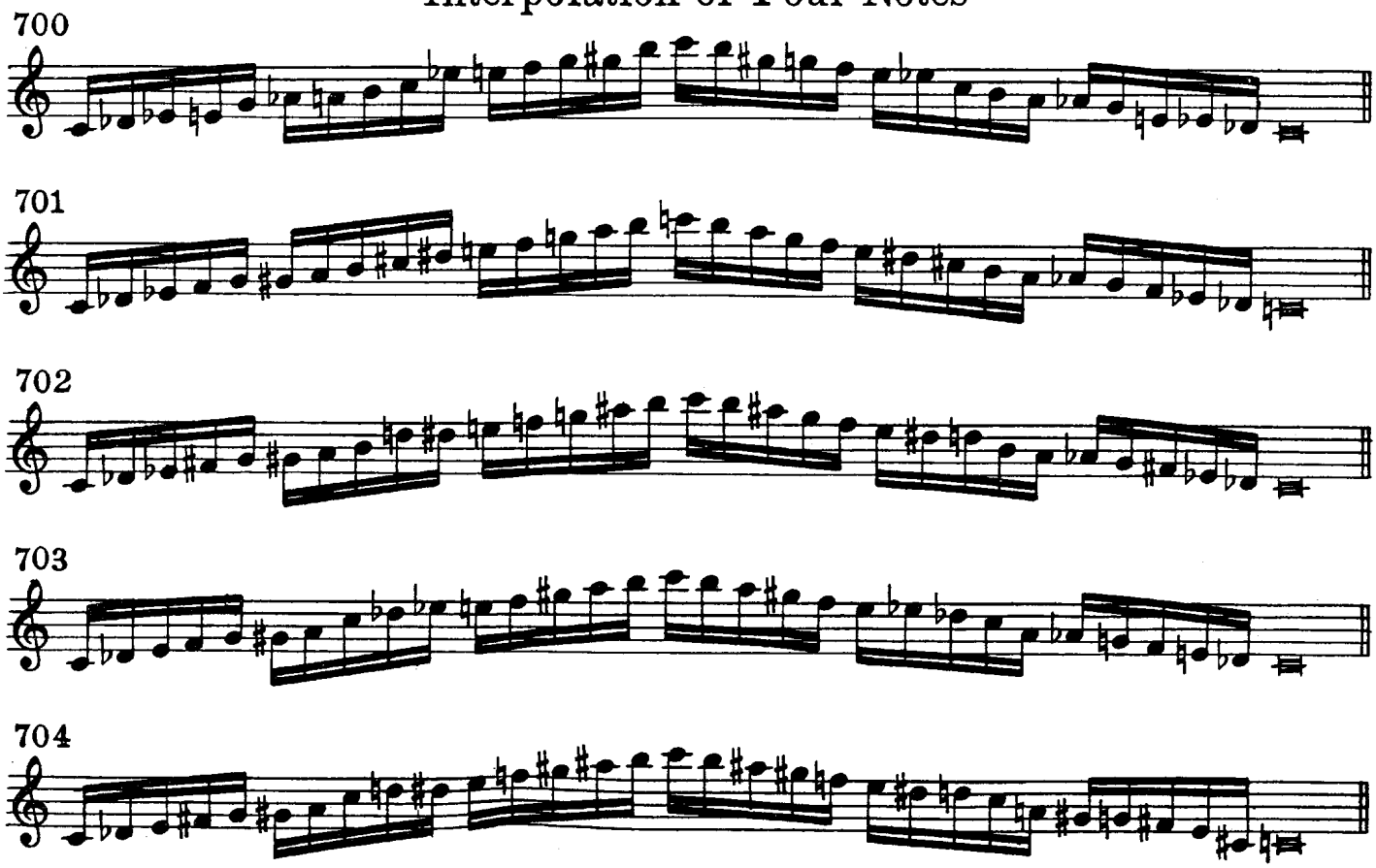


Interpolation of Four Notes



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Ultrapolation of One Note

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Infrapolation of One Note

[Rimsky-Korsakov: *Coq d'or*, Scene II]

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721 722

723

Inter-Infrapolation

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Ultra-Interpolation

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732

Inter-Infra-Ultrapolation

733

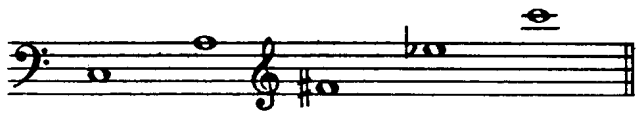
734 [12 tones]

735 [12 tones]

736 [12 tones]

Sesquiquadritone Progression

Equal Division of Three Octaves into Four Parts



Interpolation of One Note

737 738

739 740

741 742

743 744

Interpolation of Two Notes

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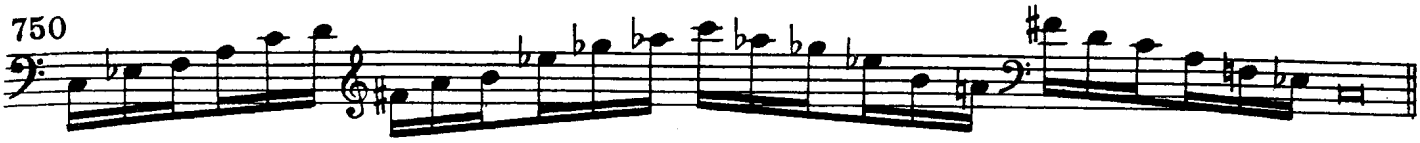
749 [12 tones]

750



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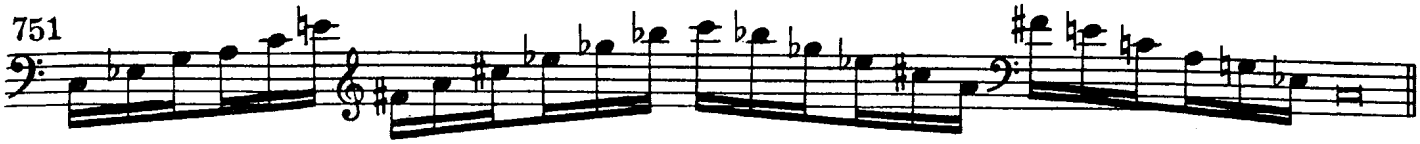

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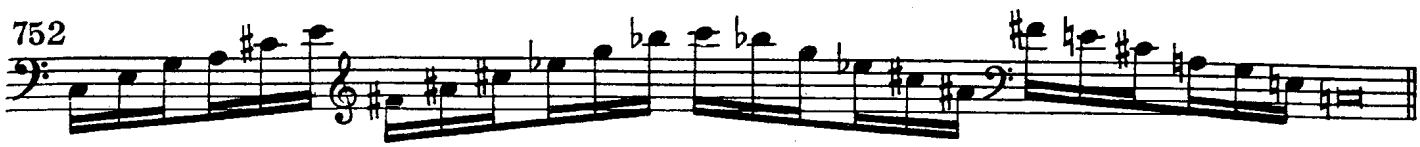
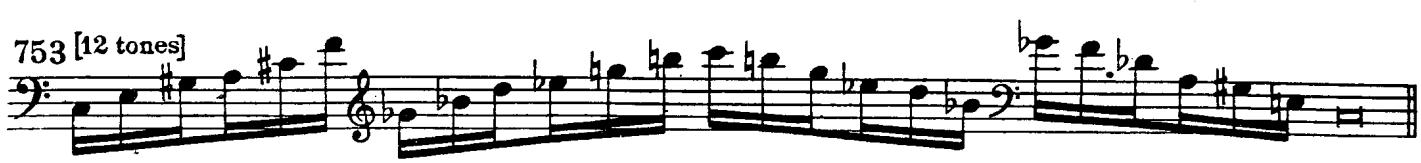


753 [12 tones]



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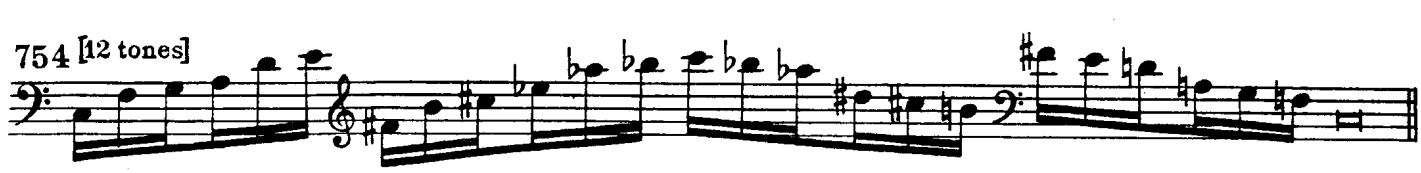

Interpolation of Three Notes

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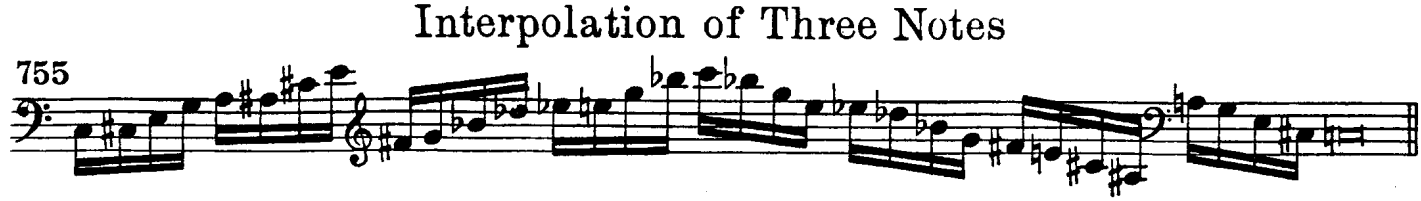

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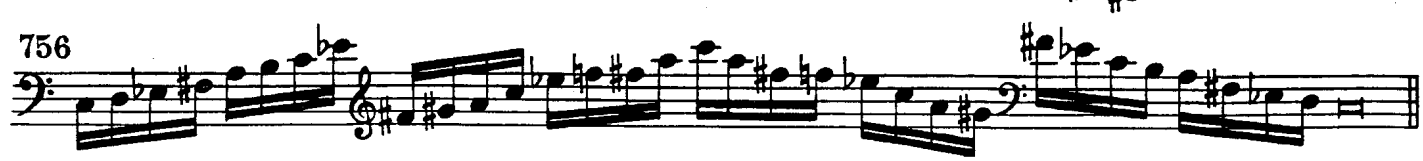

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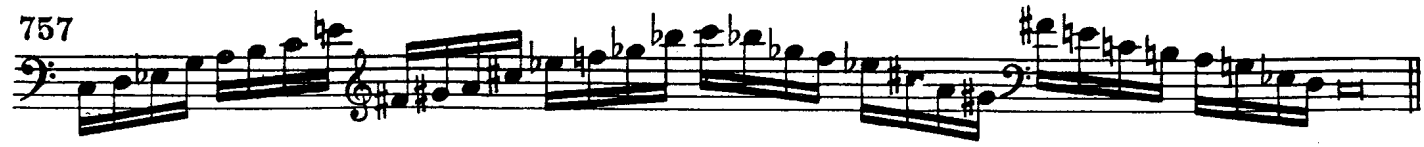

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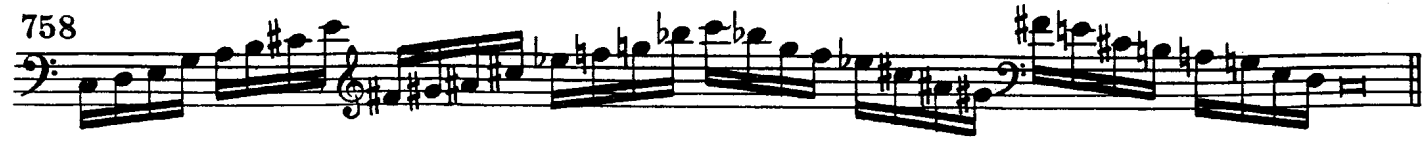

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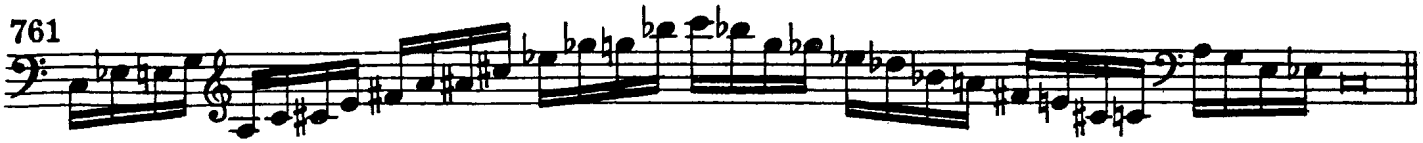

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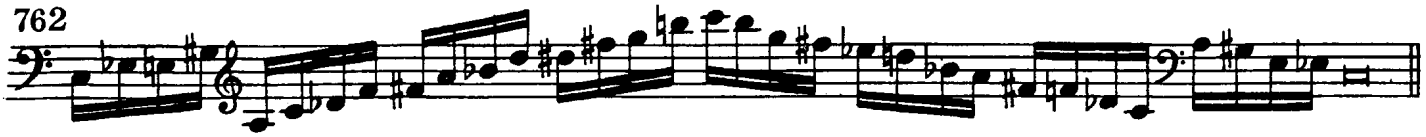

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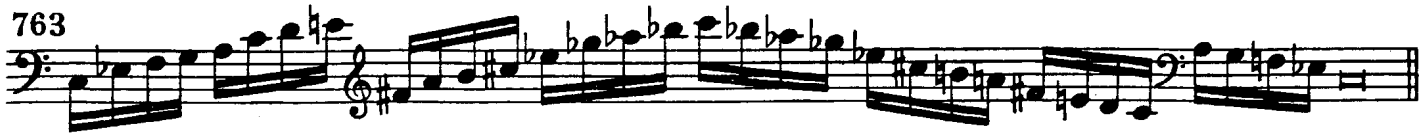

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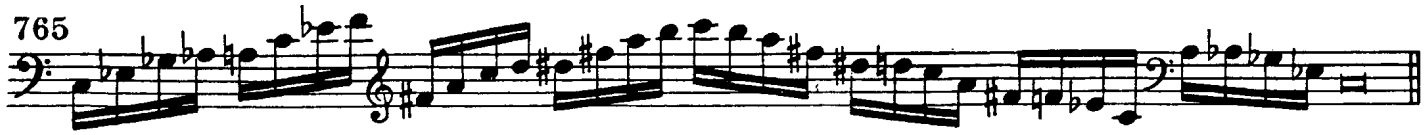

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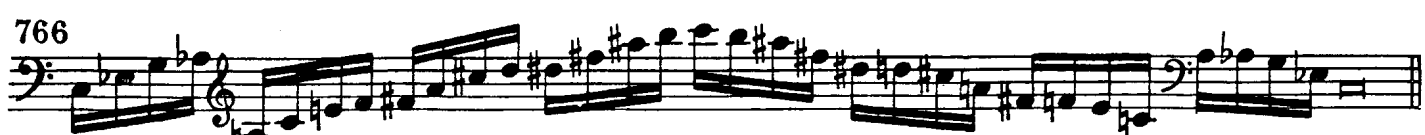

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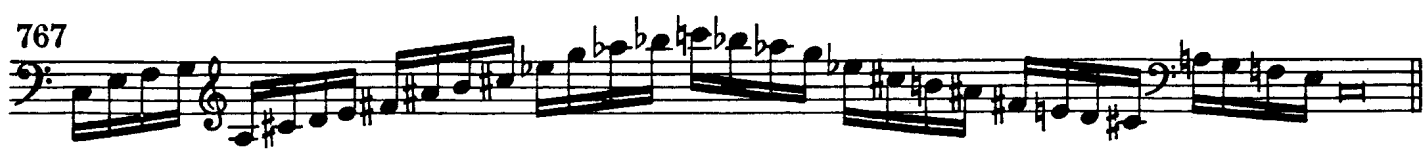

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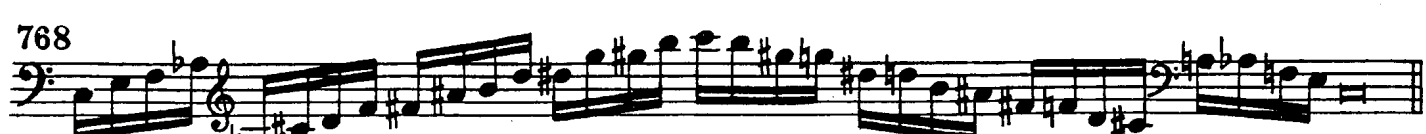

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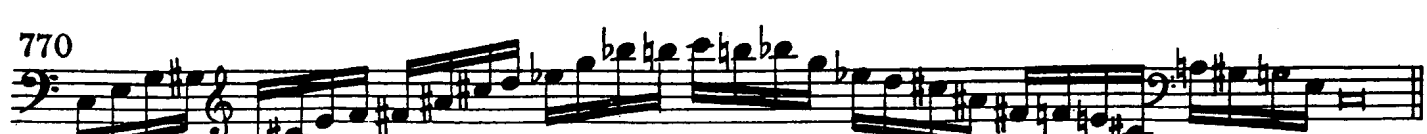

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Interpolation of Four Notes

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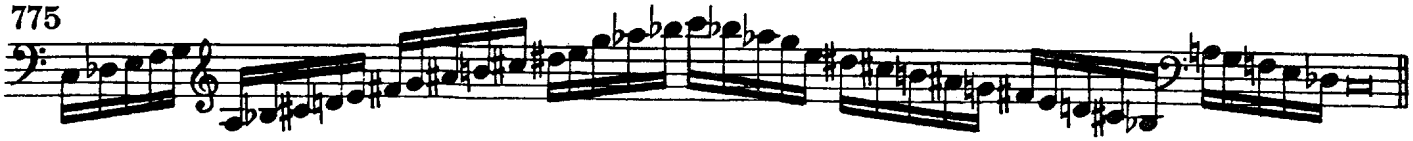

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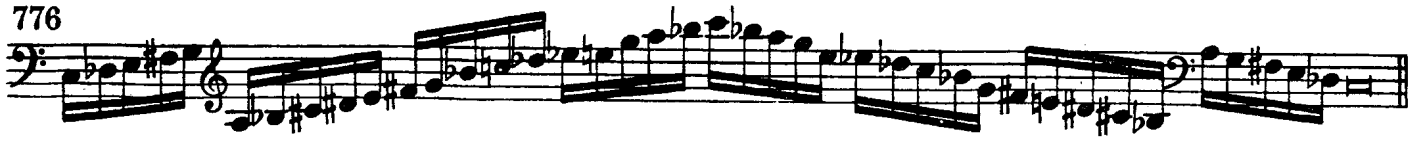

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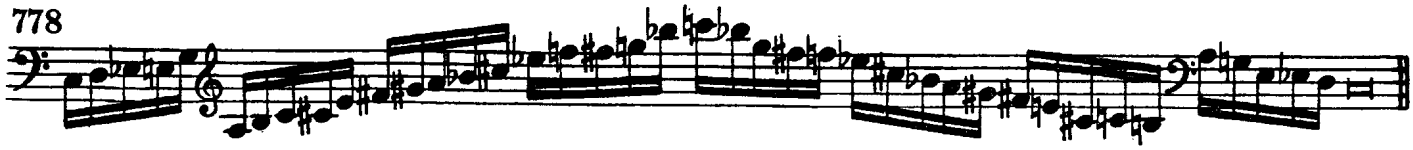

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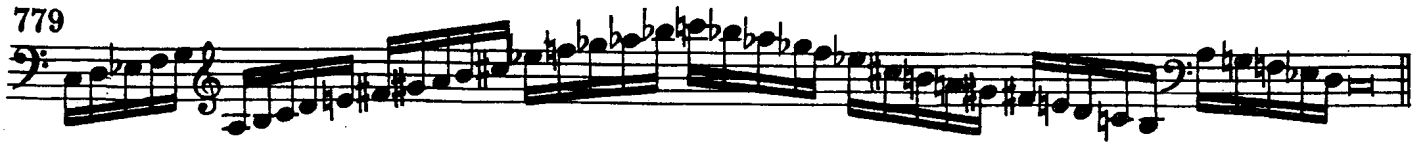

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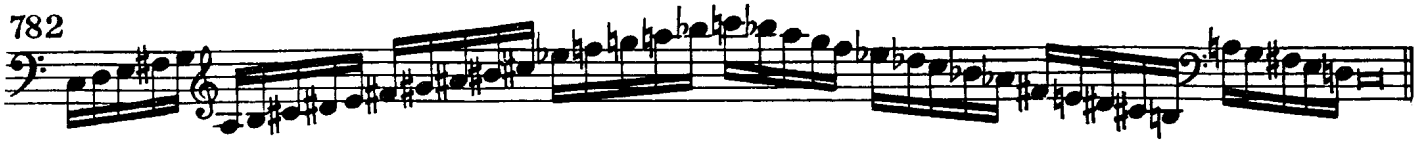

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Ultrapolation of One Note

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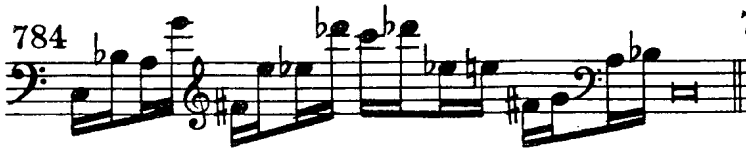

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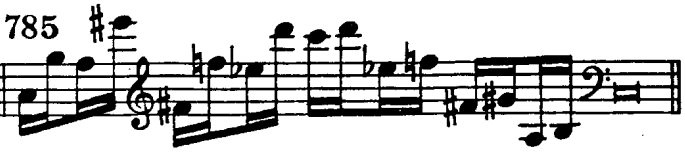

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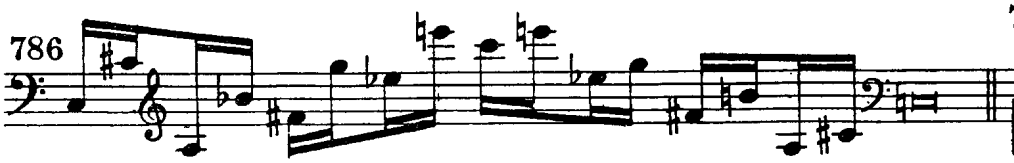

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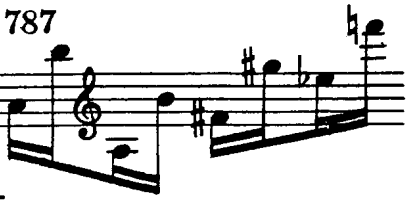

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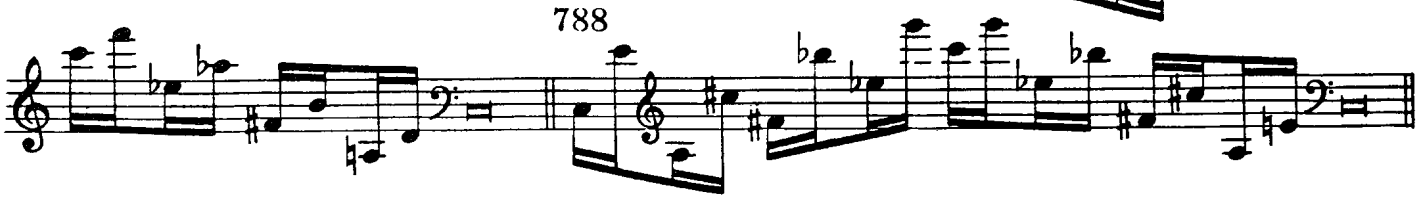

Infrapolation of One Note

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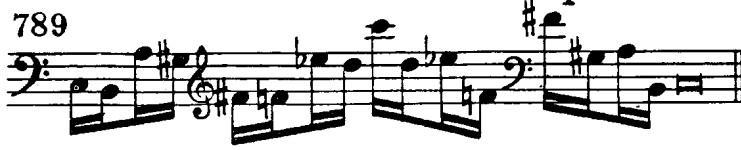

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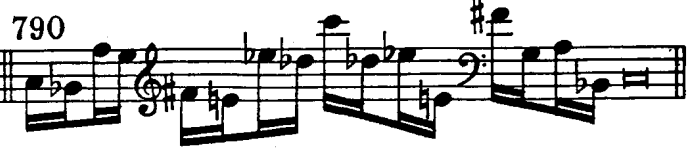

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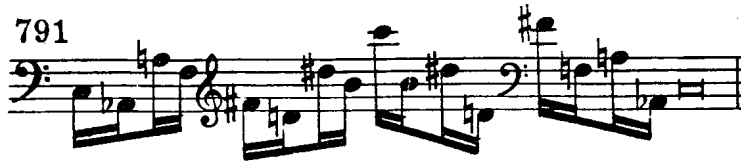

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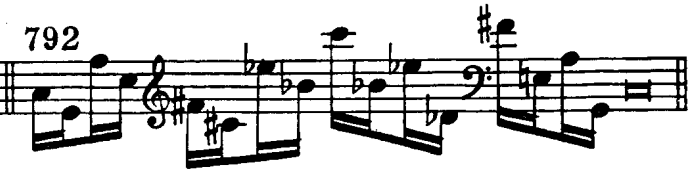

Infra-Ultrapolation

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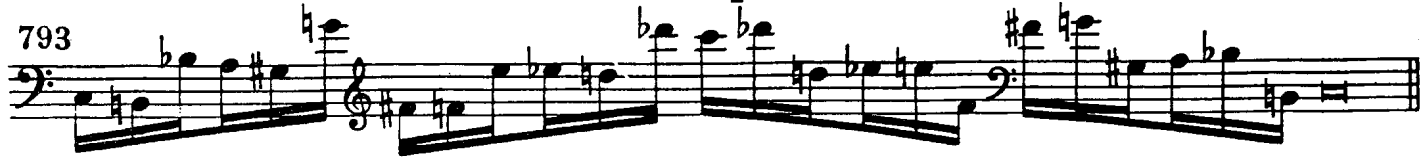

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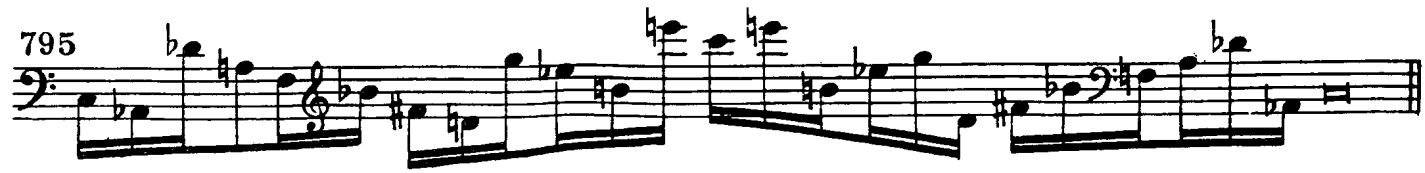

Inter-Infrapolation

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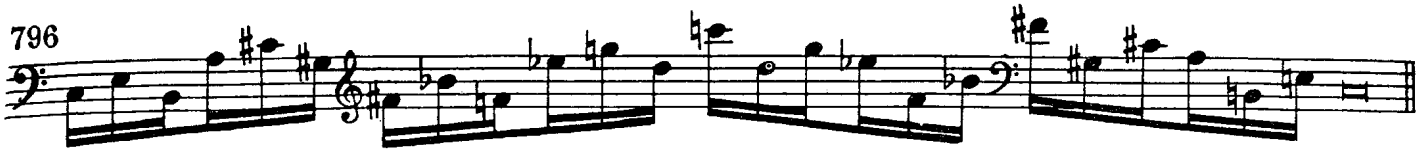

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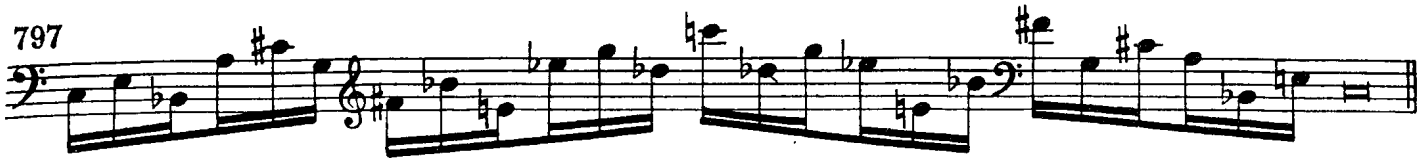

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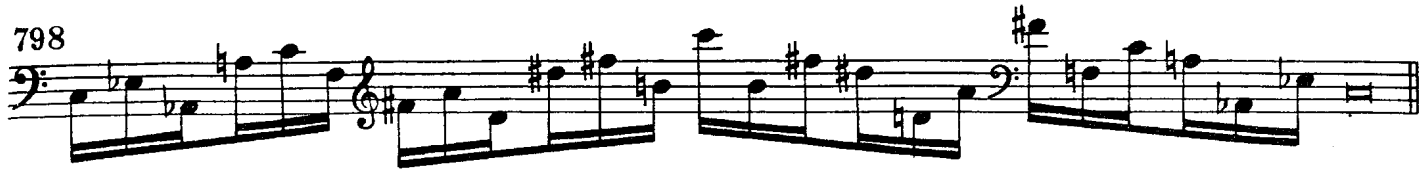

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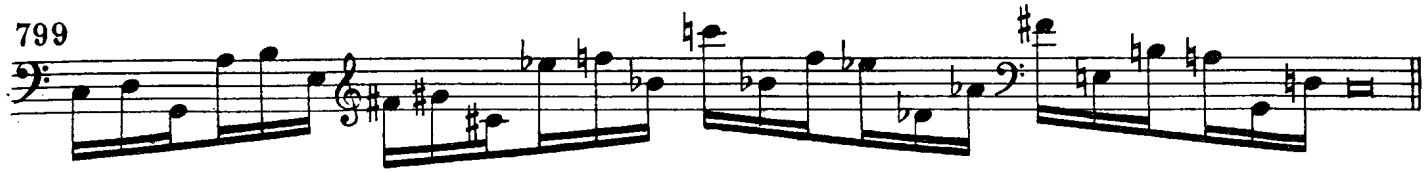

Inter-Infra-Interpolation

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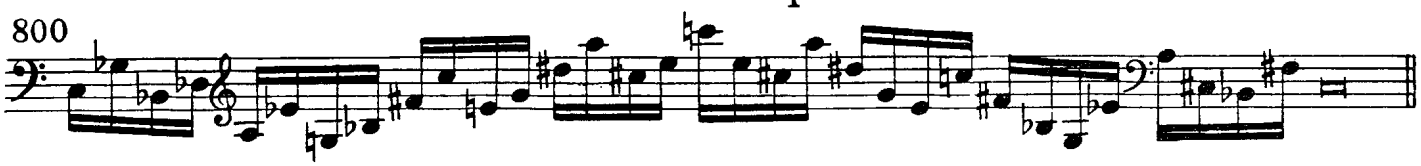

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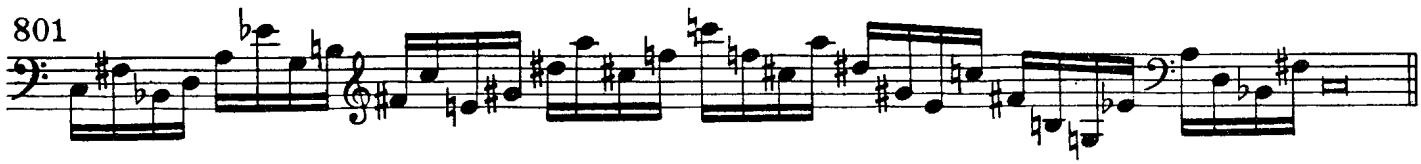

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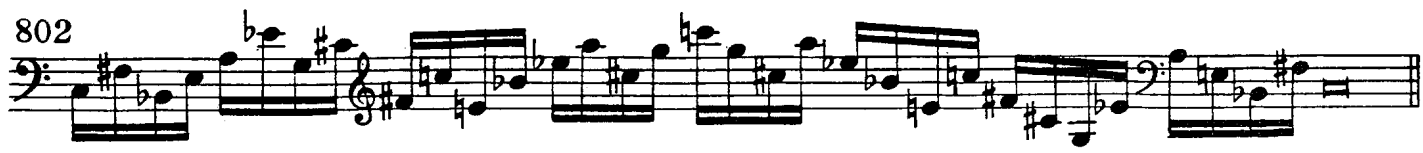

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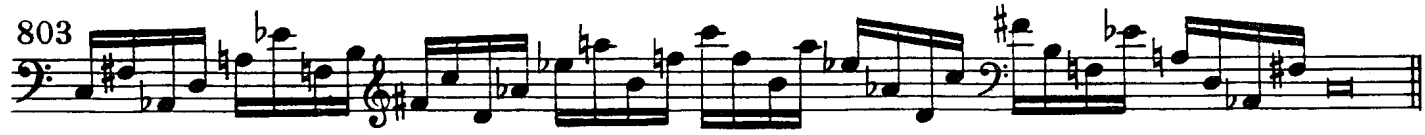

Ultra-Infra-Interpolation

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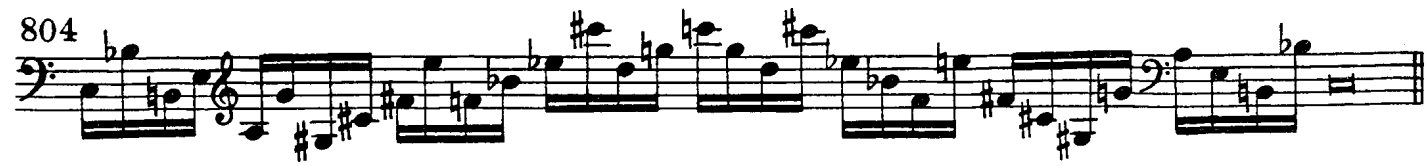

Inter-Ultrapolation

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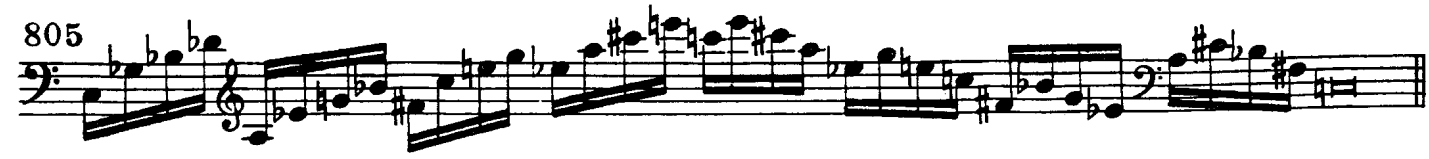
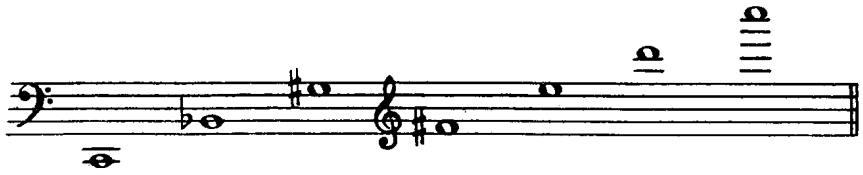
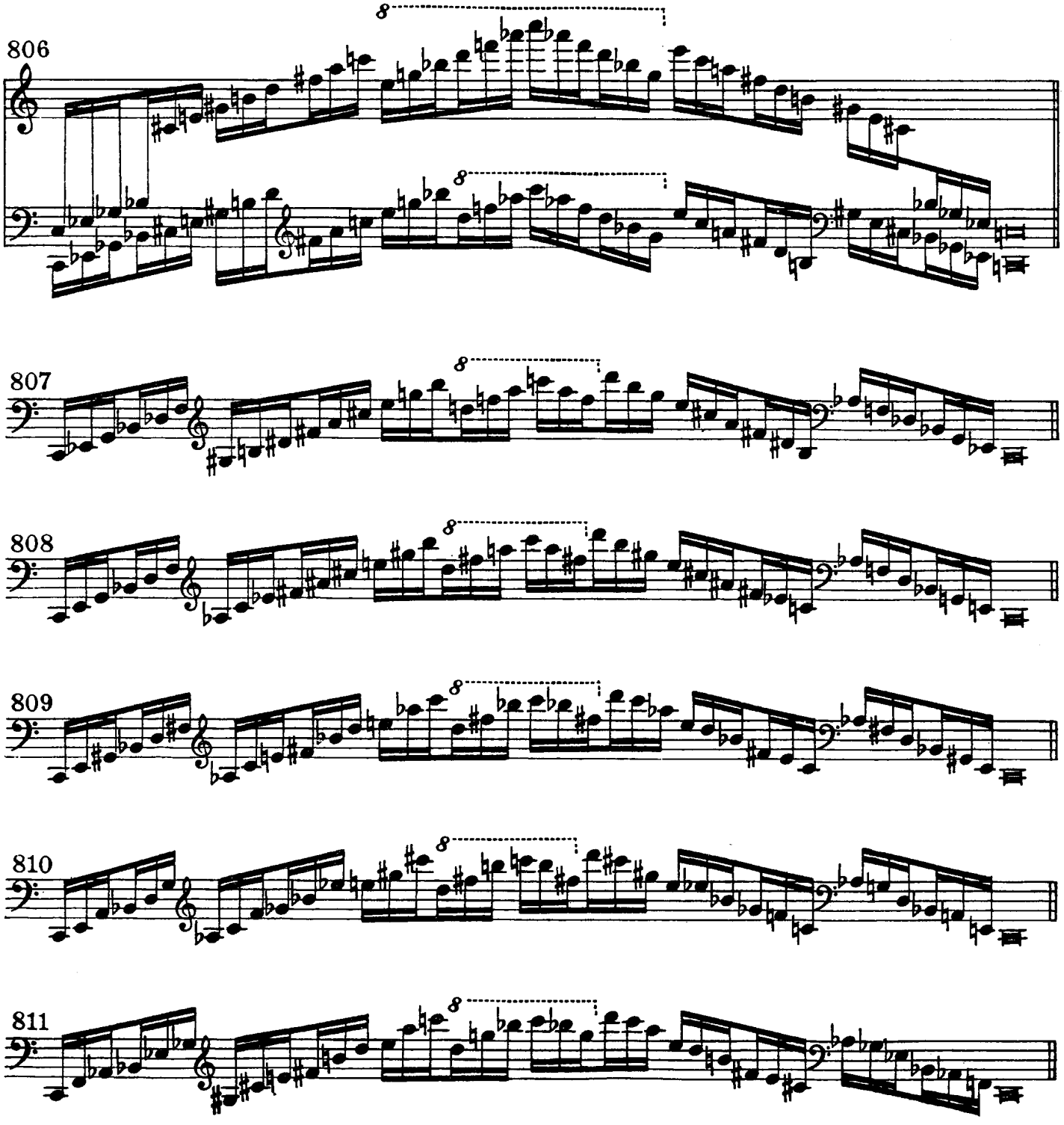


Quinquetone Progression

Equal Division of Five Octaves into Six Parts



Interpolation of Two Notes



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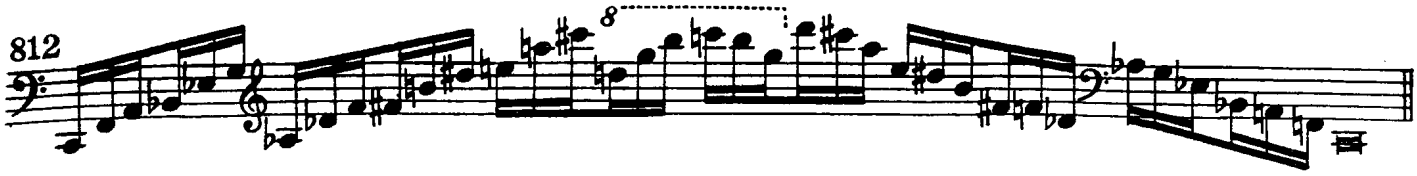

Interpolation of Three Notes

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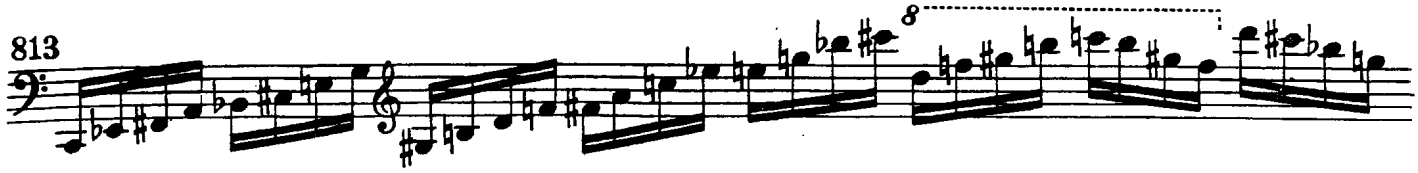

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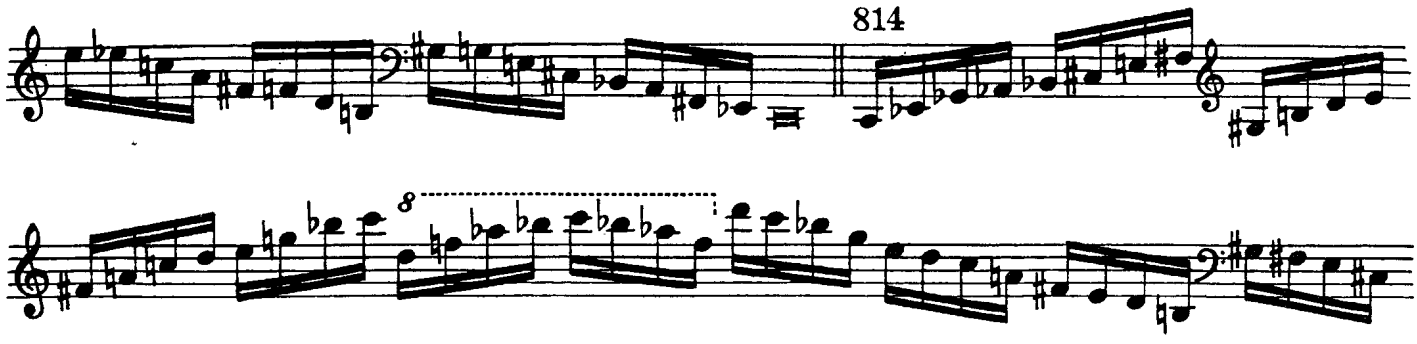

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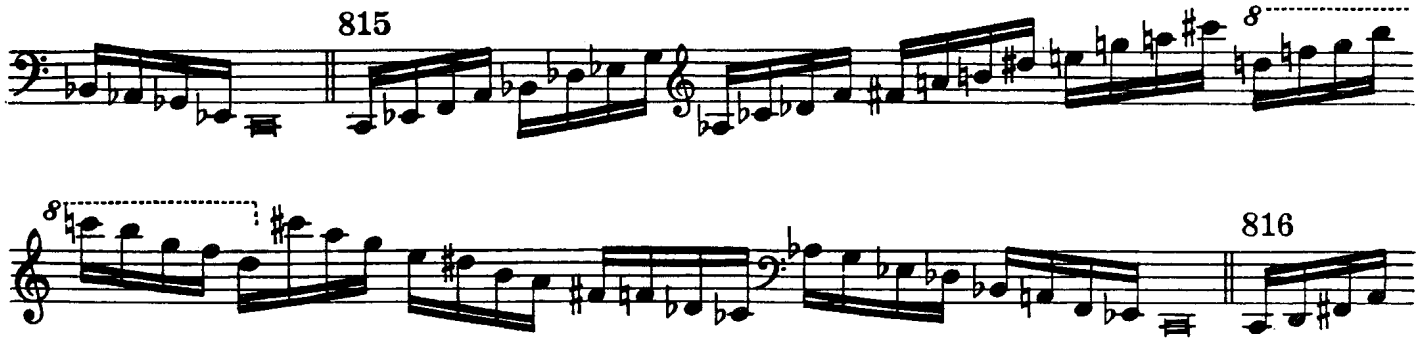

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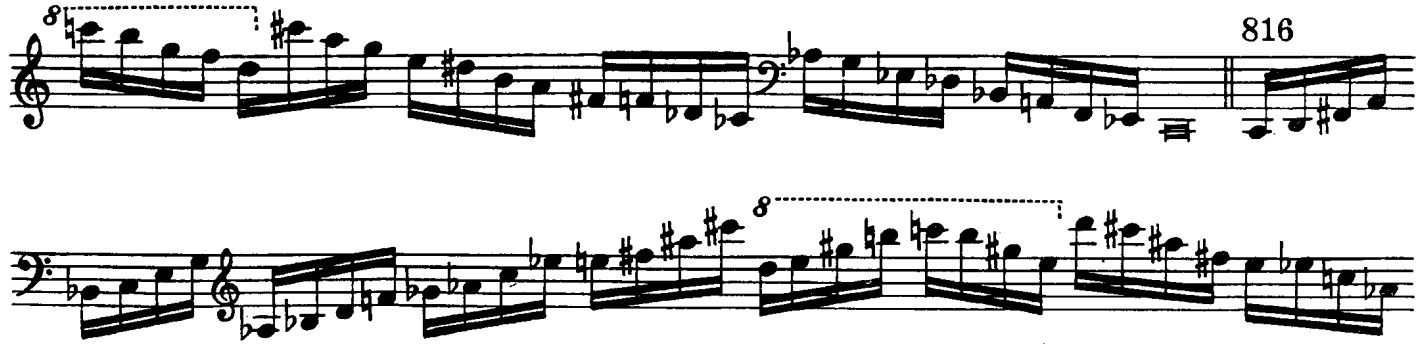

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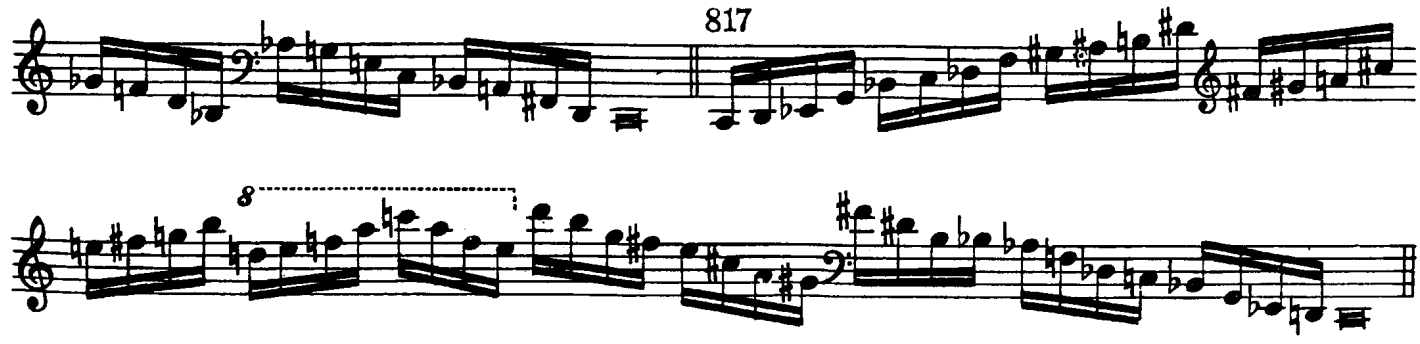
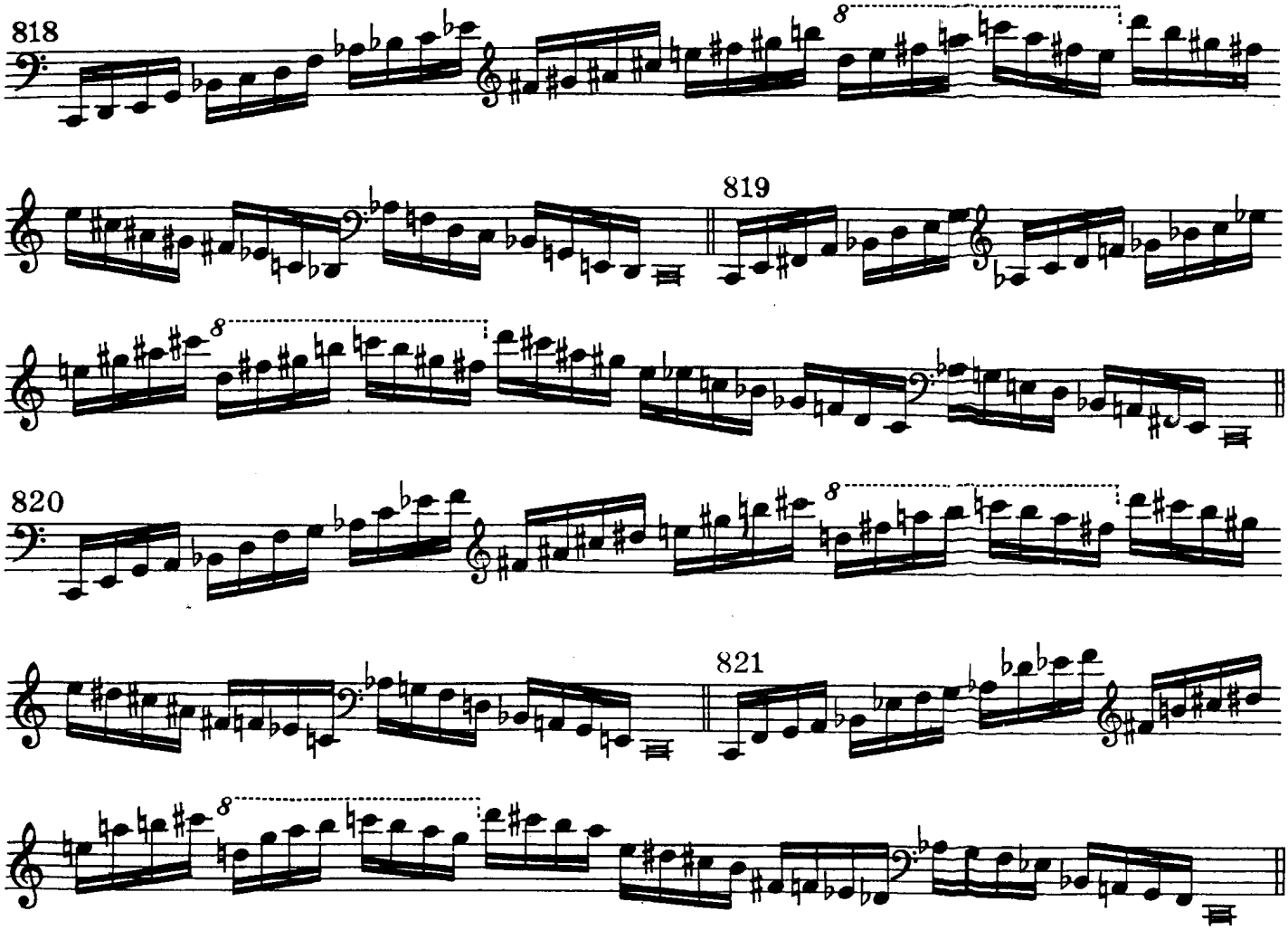
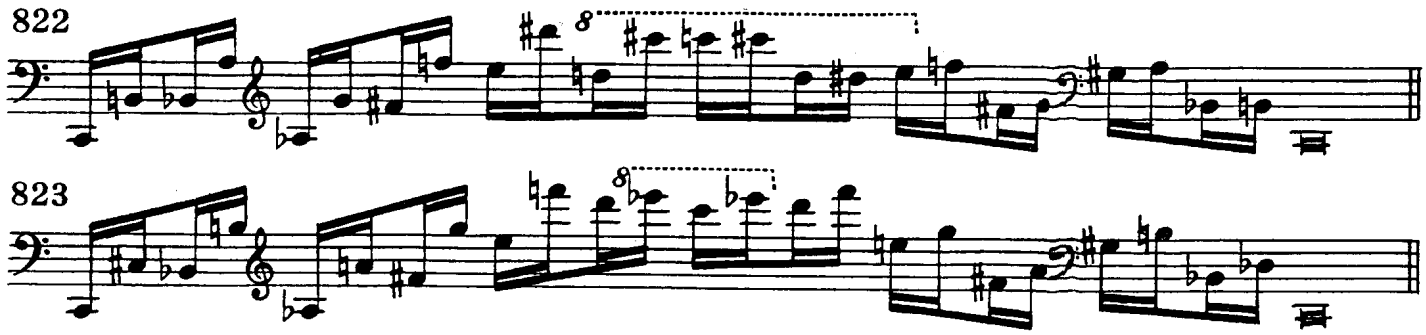
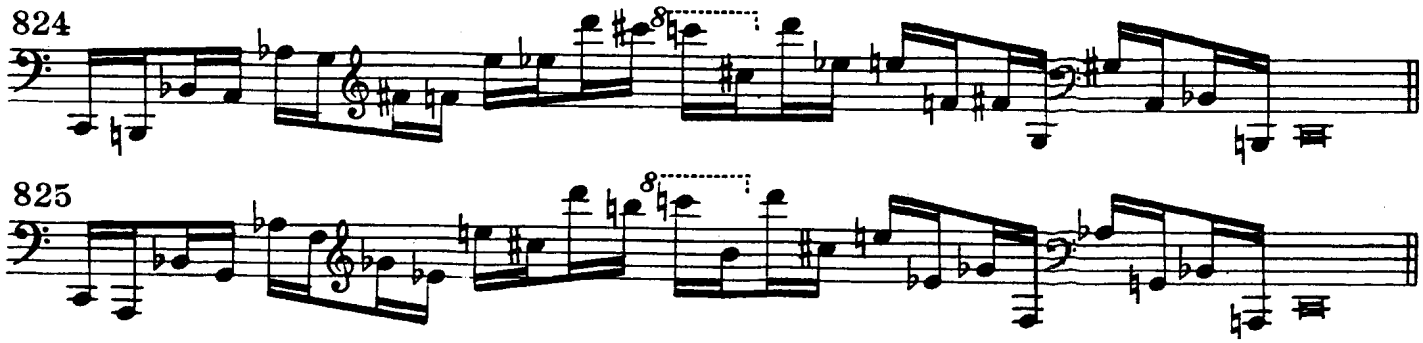




Ultrapolation of One Note

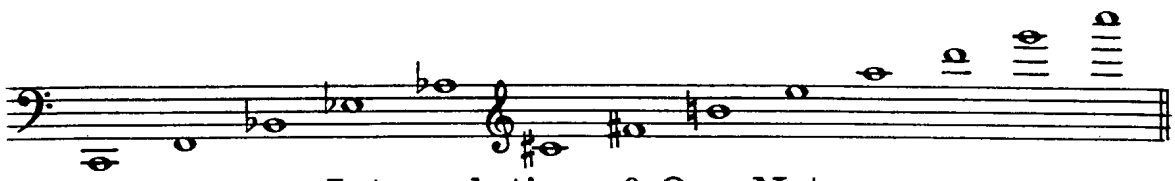


Infrapolation of One Note



Diatessaron Progression

Equal Division of Five Octaves into Twelve Parts



Interpolation of One Note

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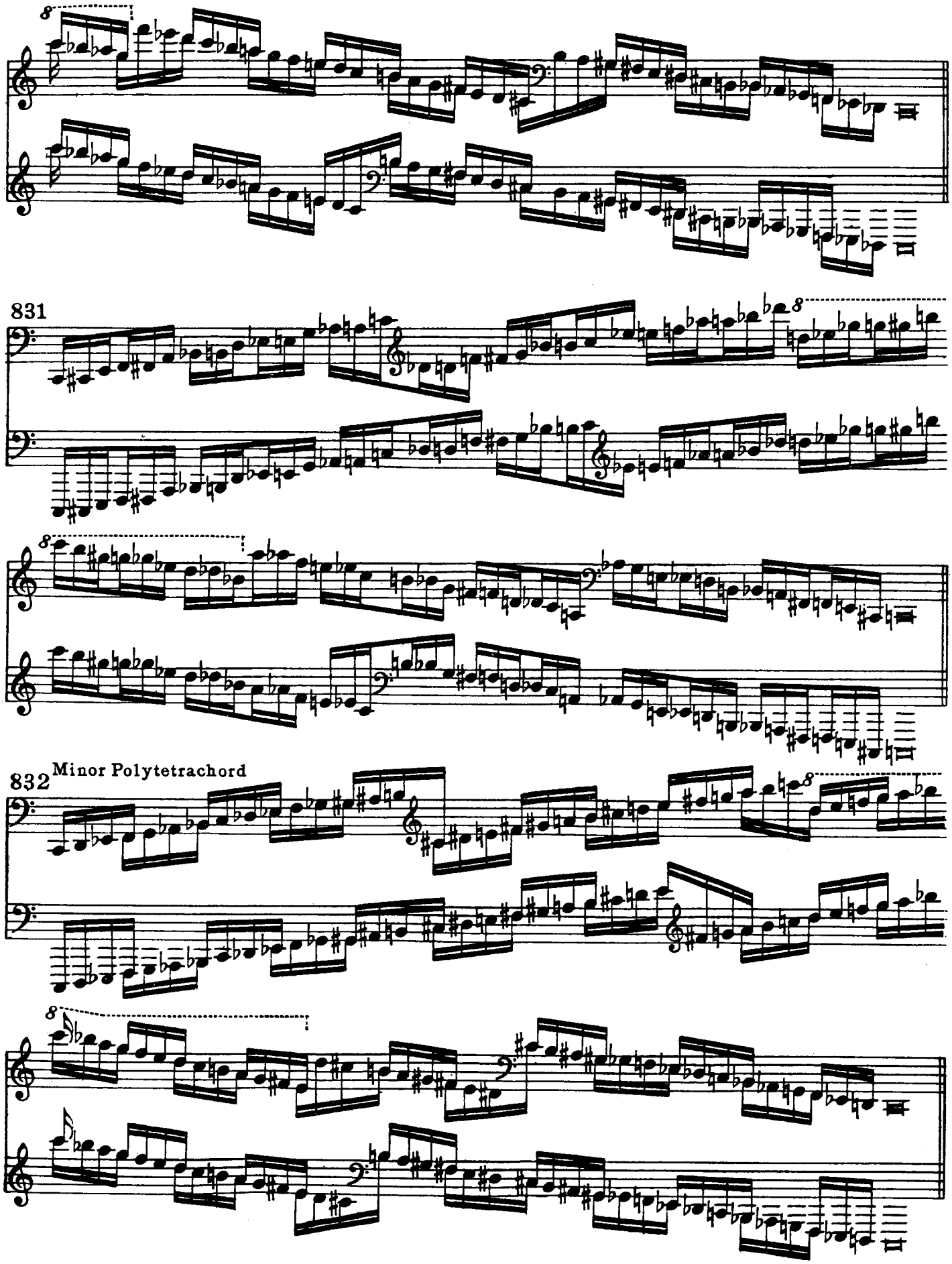
Interpolation of Two Notes

830 Phrygian Polytetrachord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Minor Polytetrachord

Major Polytetrachord

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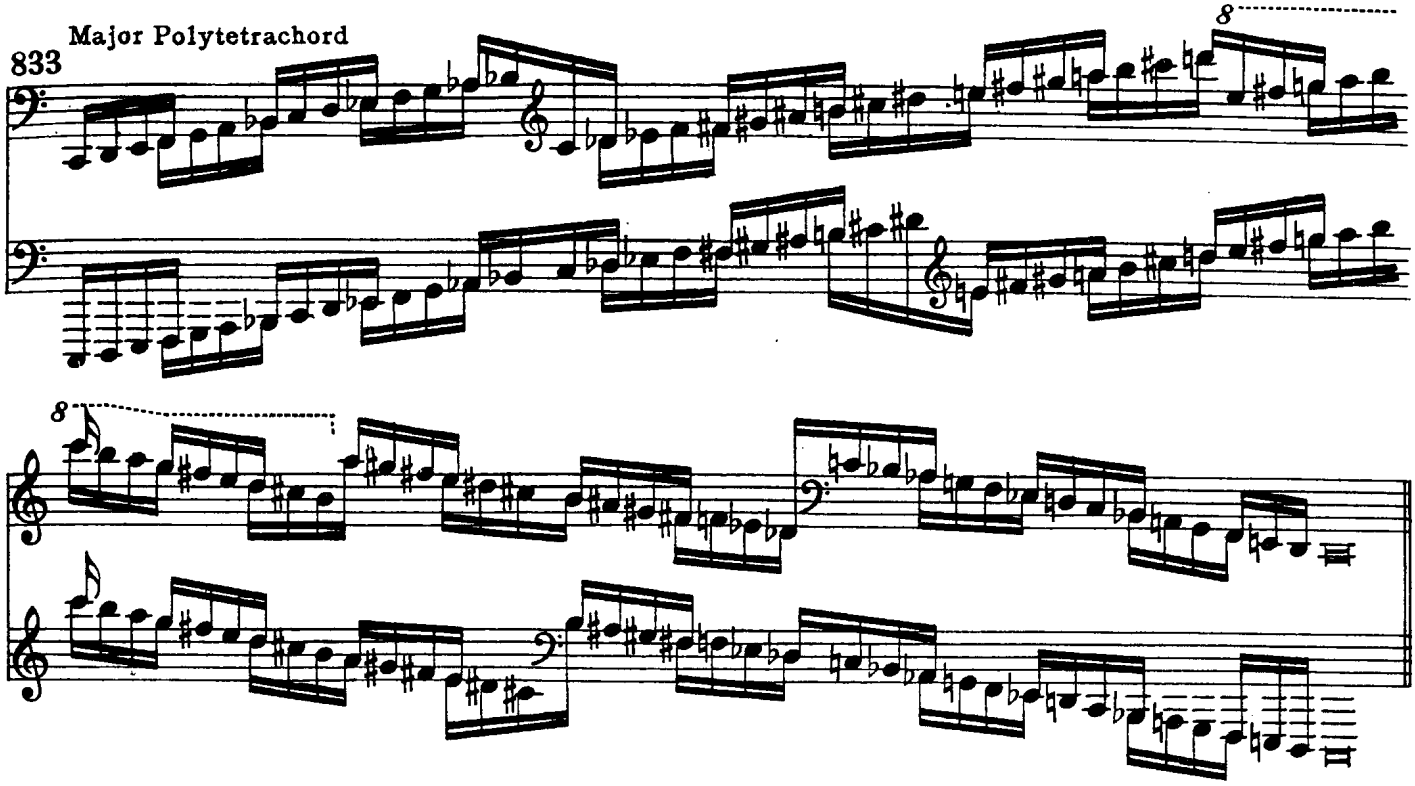

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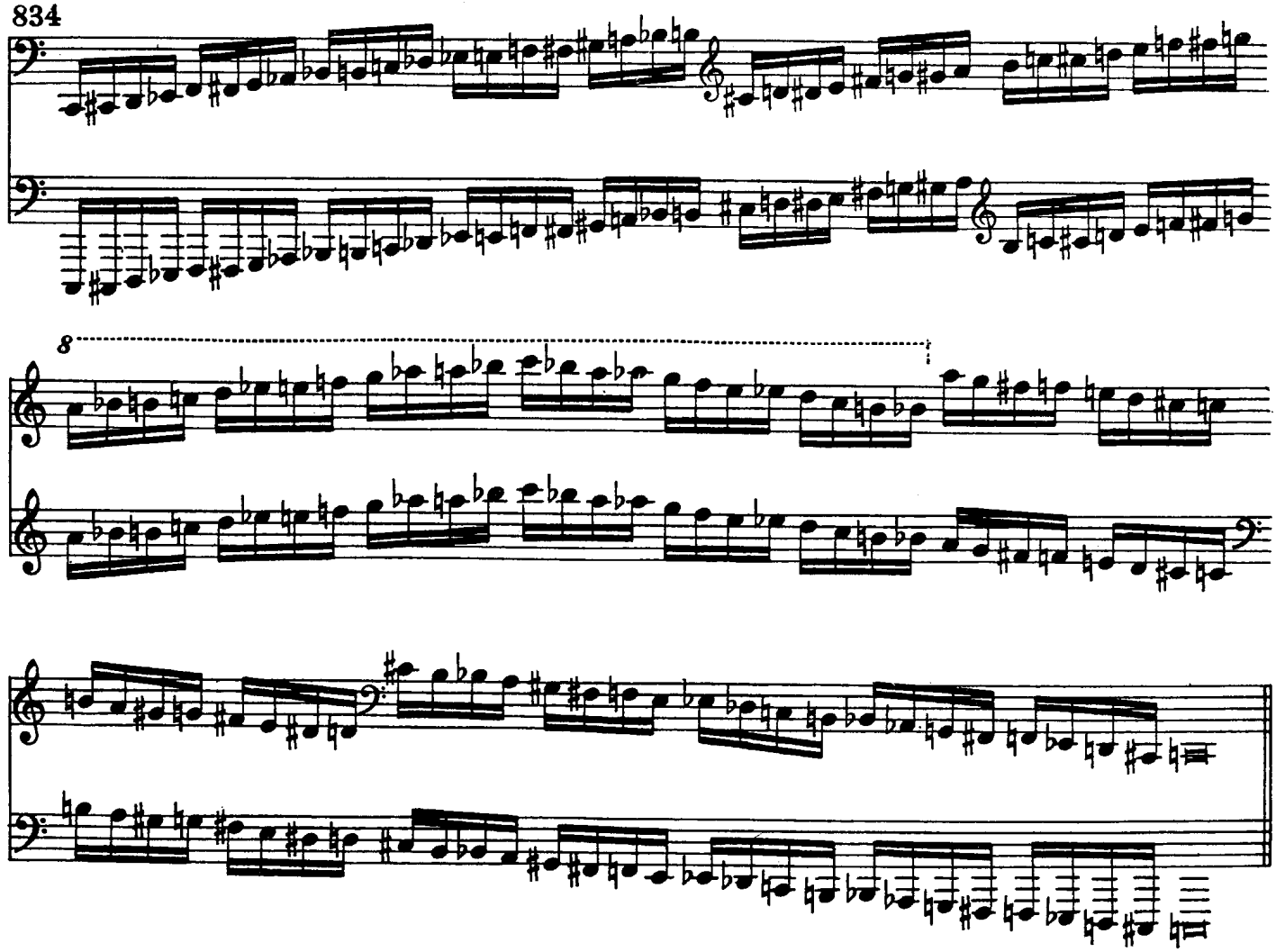

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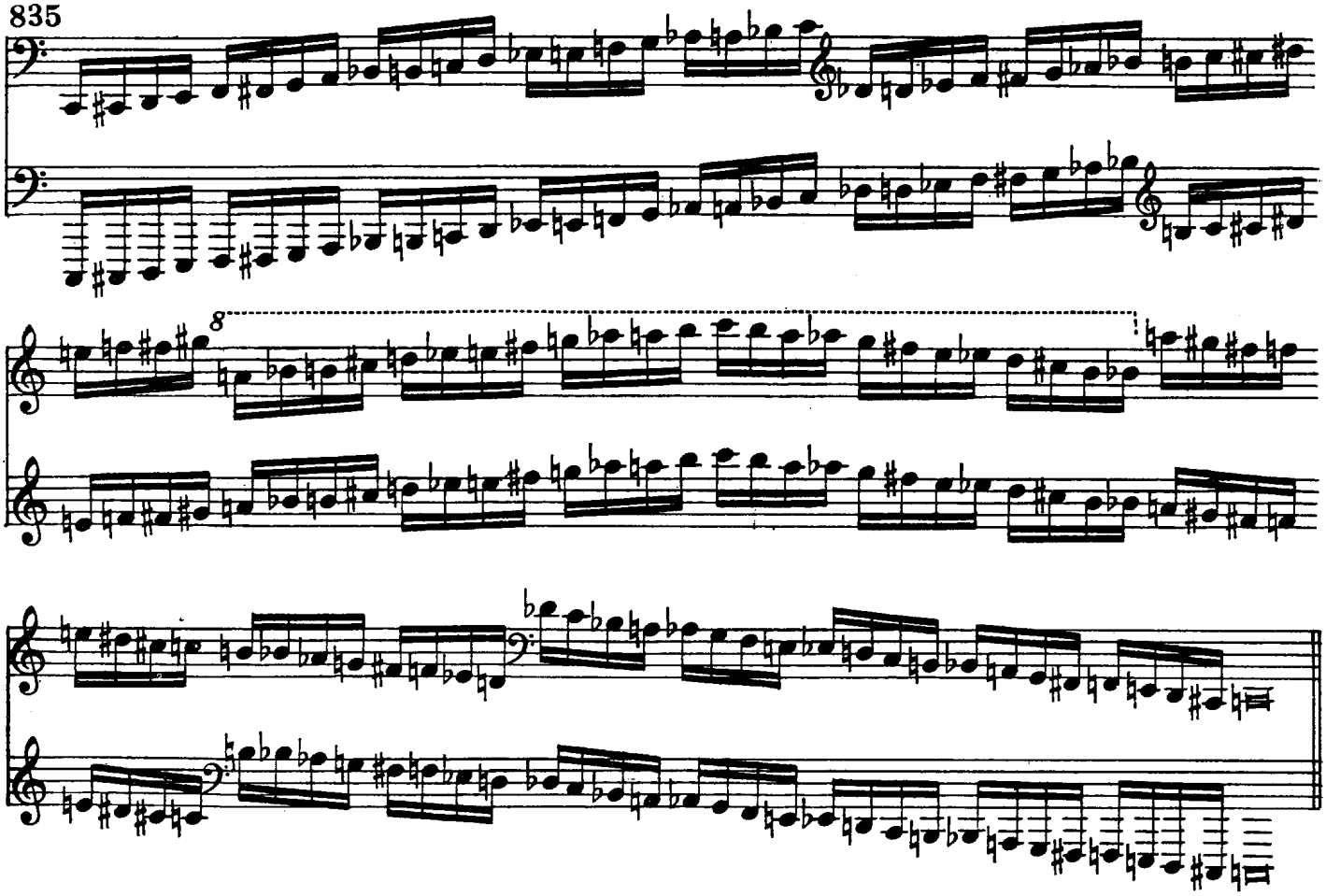

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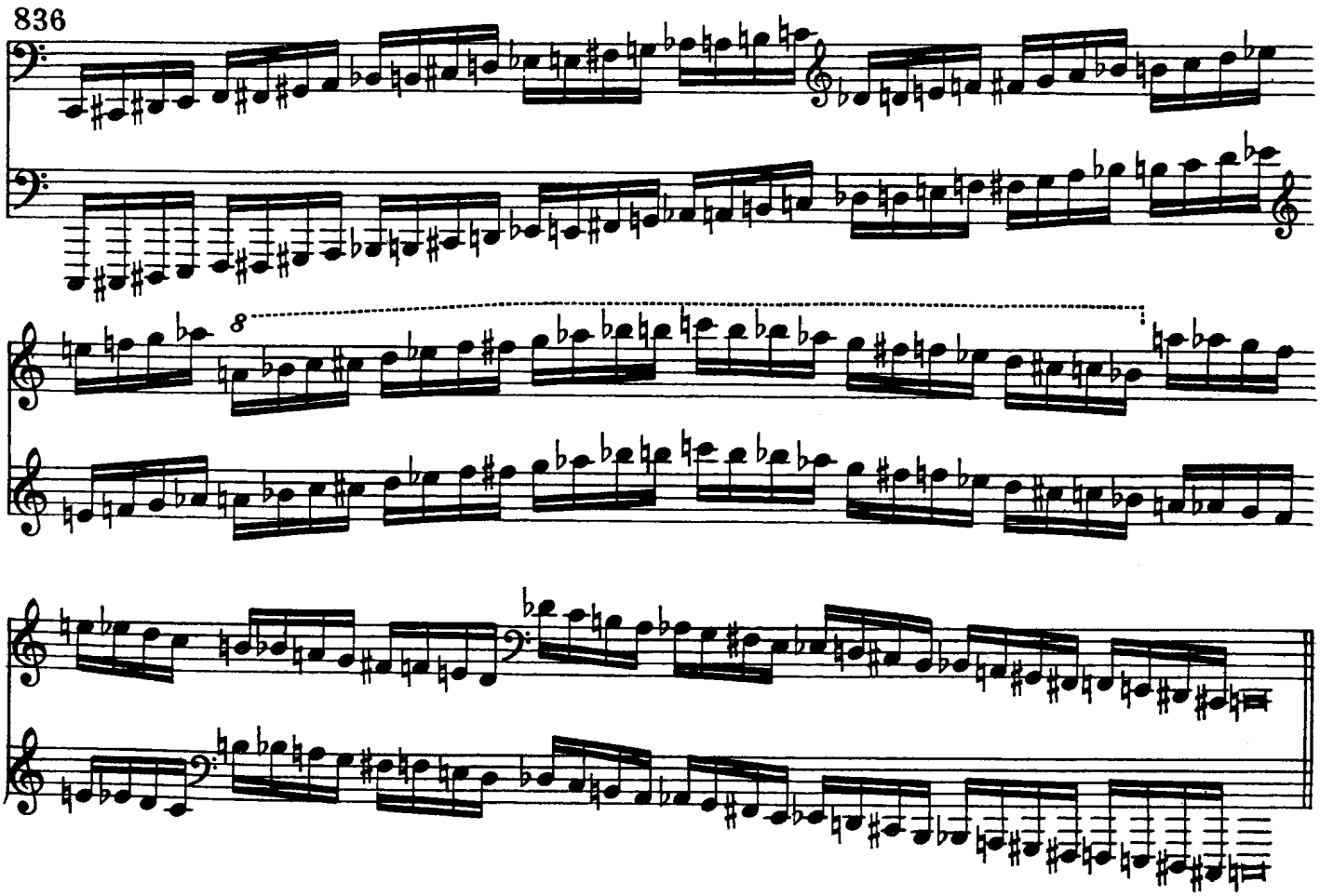

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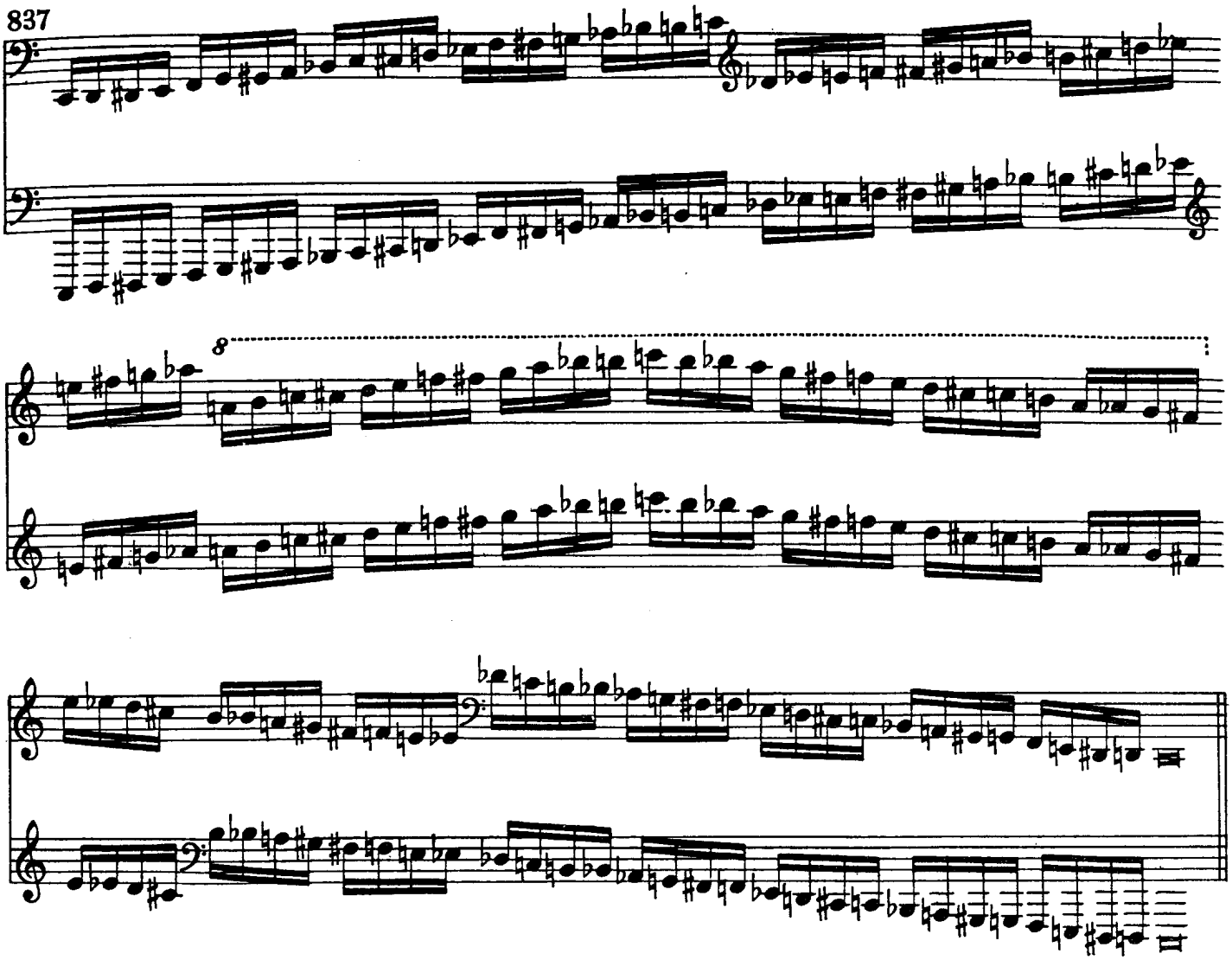

Ultrapolation of One Note

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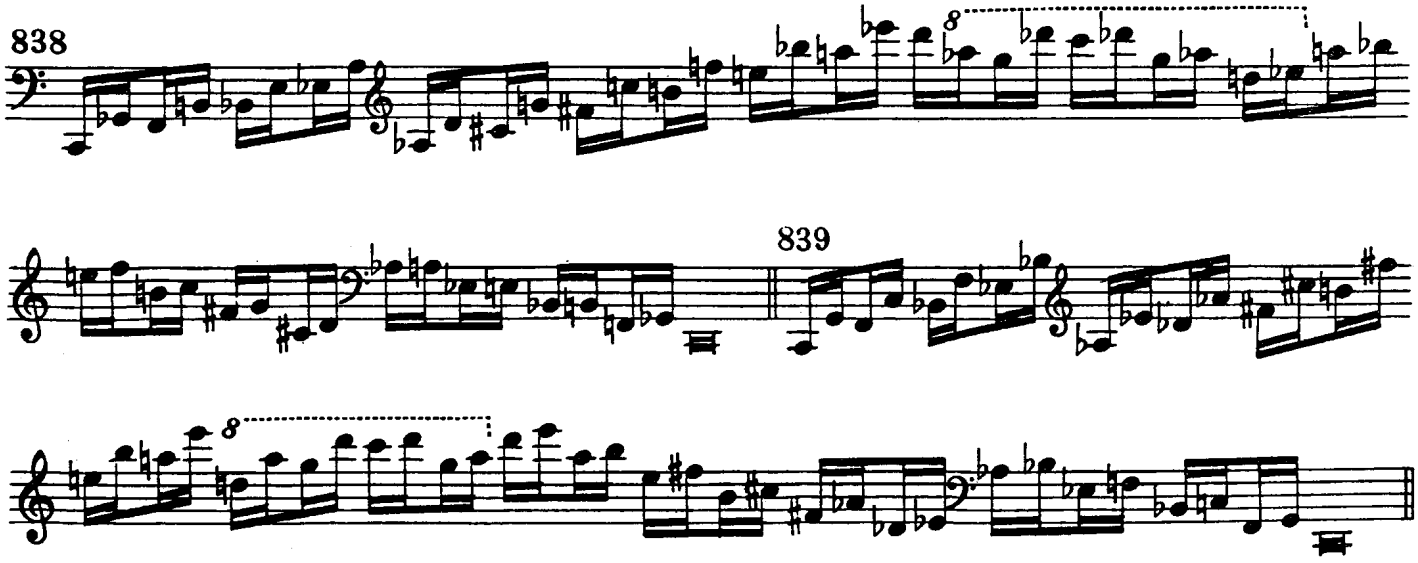

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Ultrapolation of Two Notes

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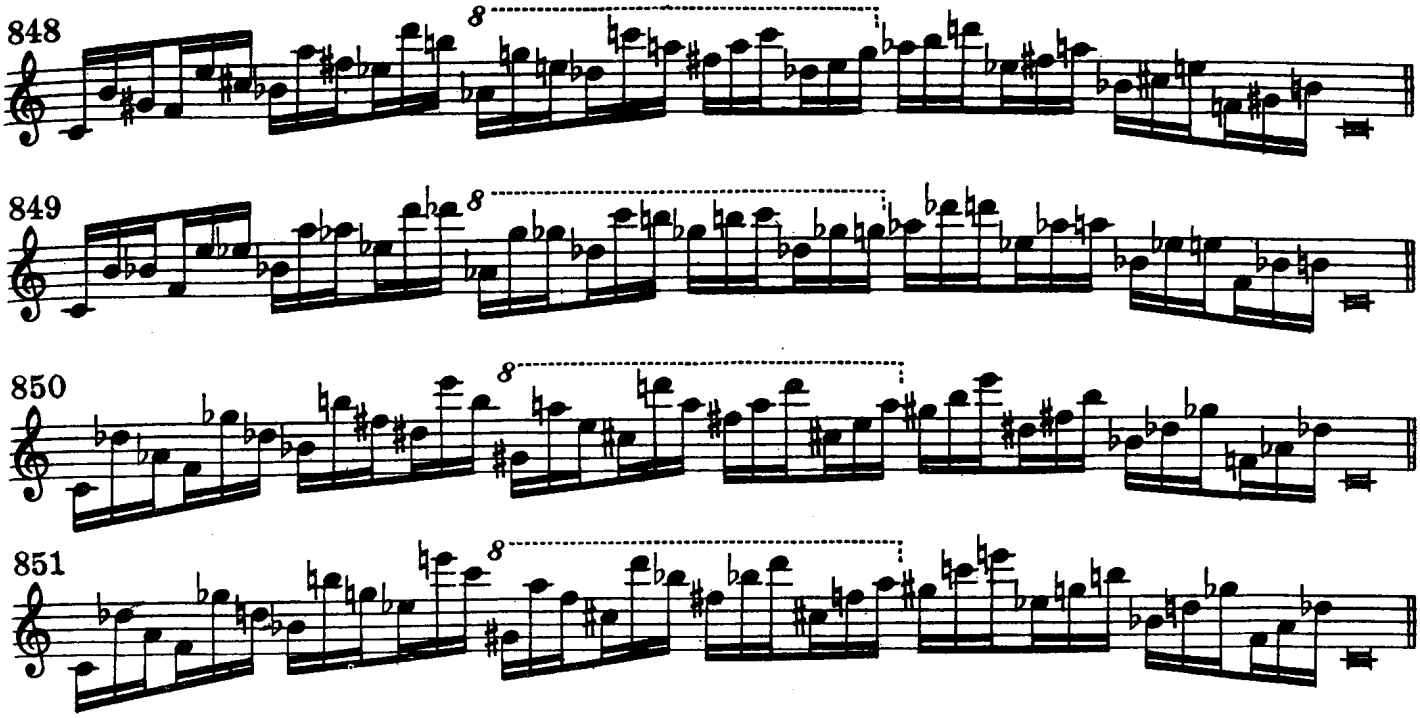
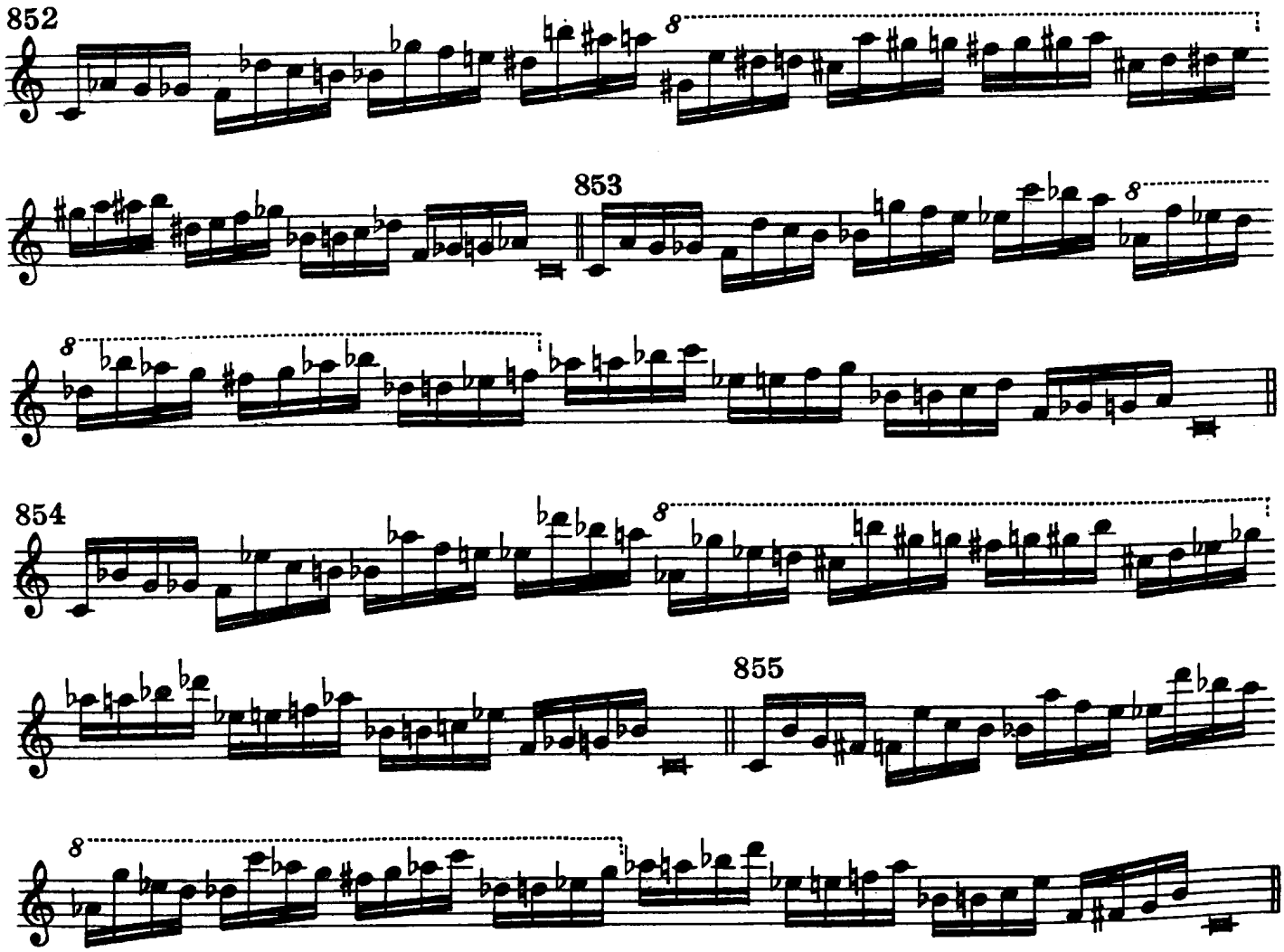
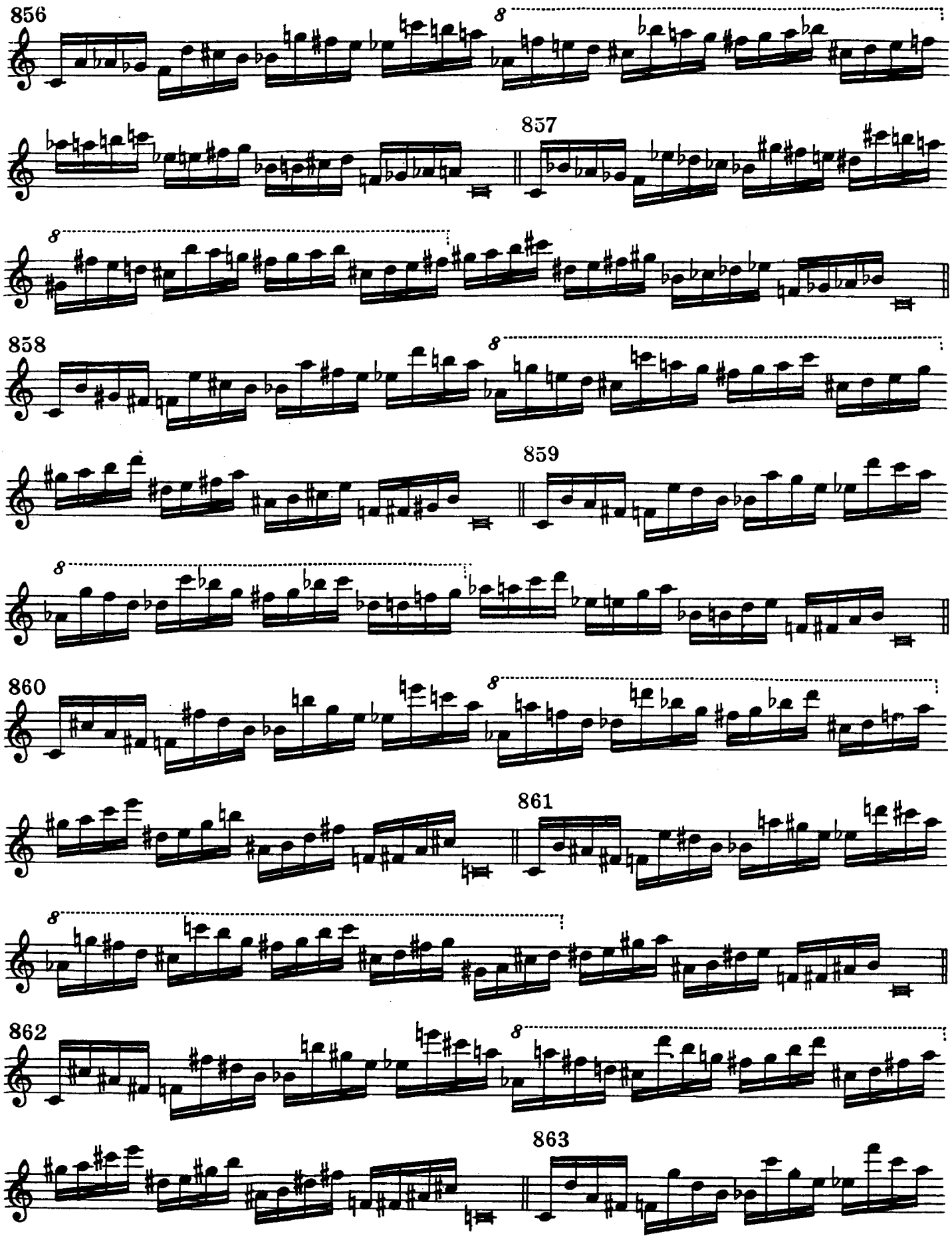


Ultrapolation of Three Notes

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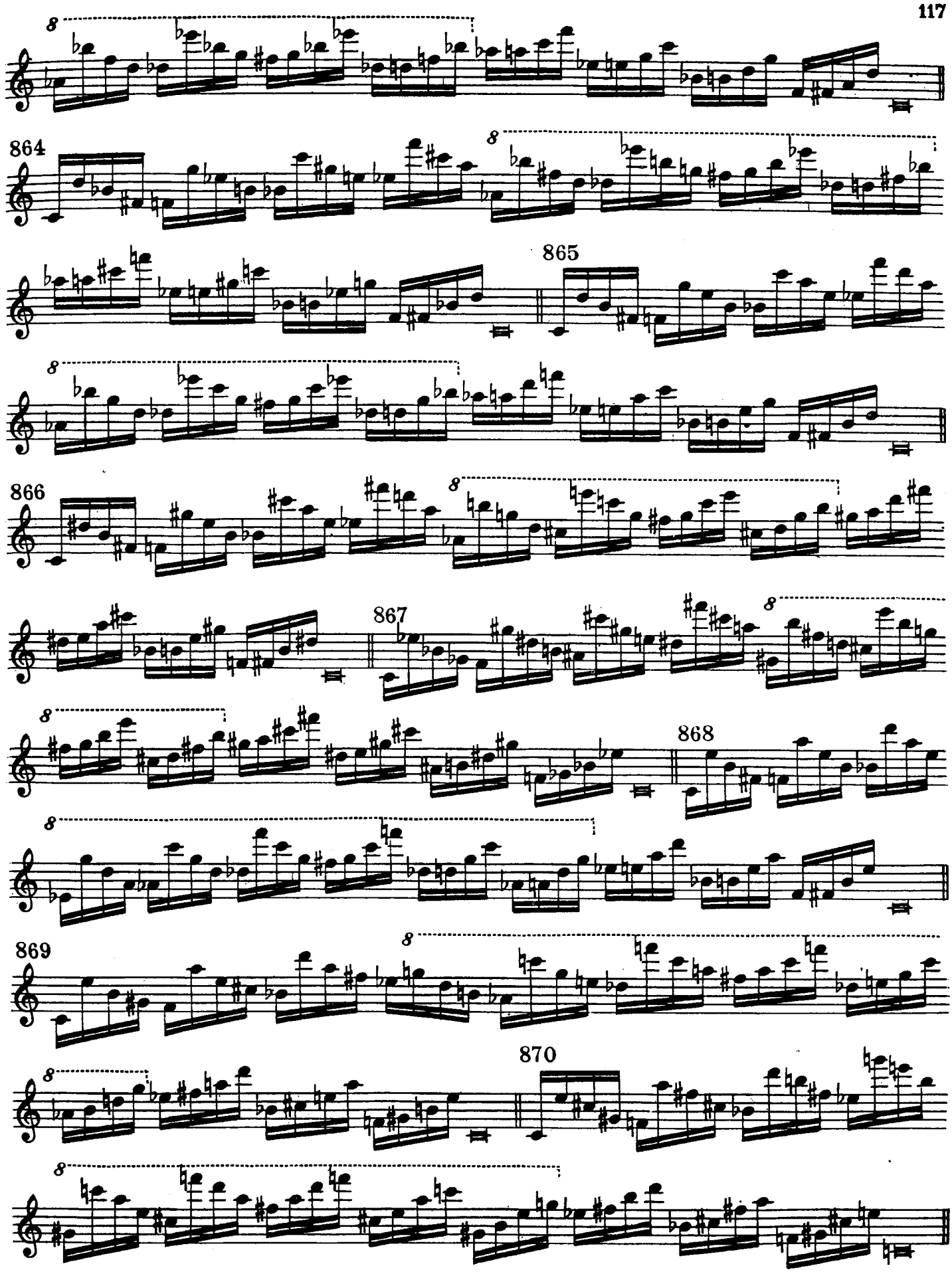
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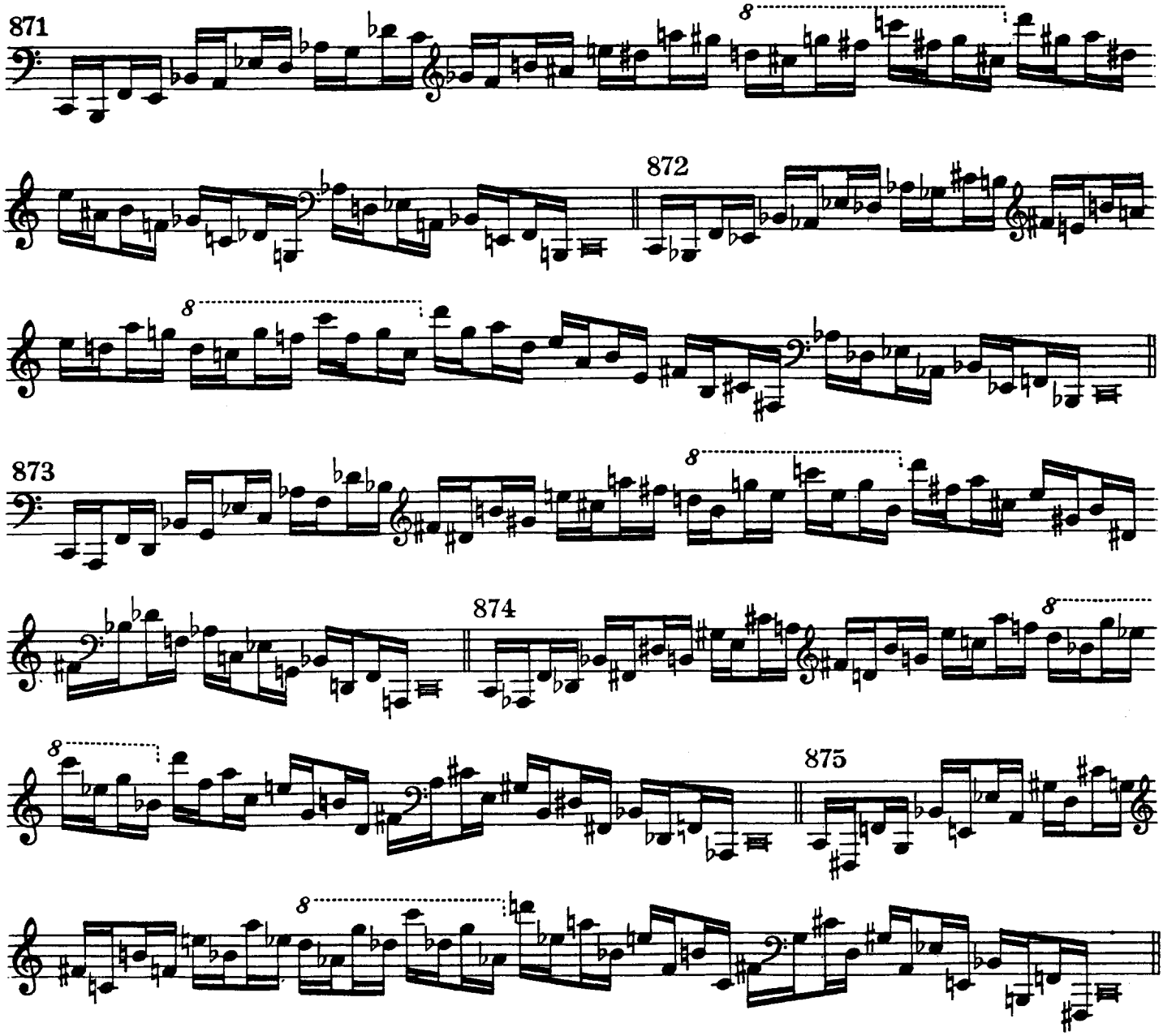
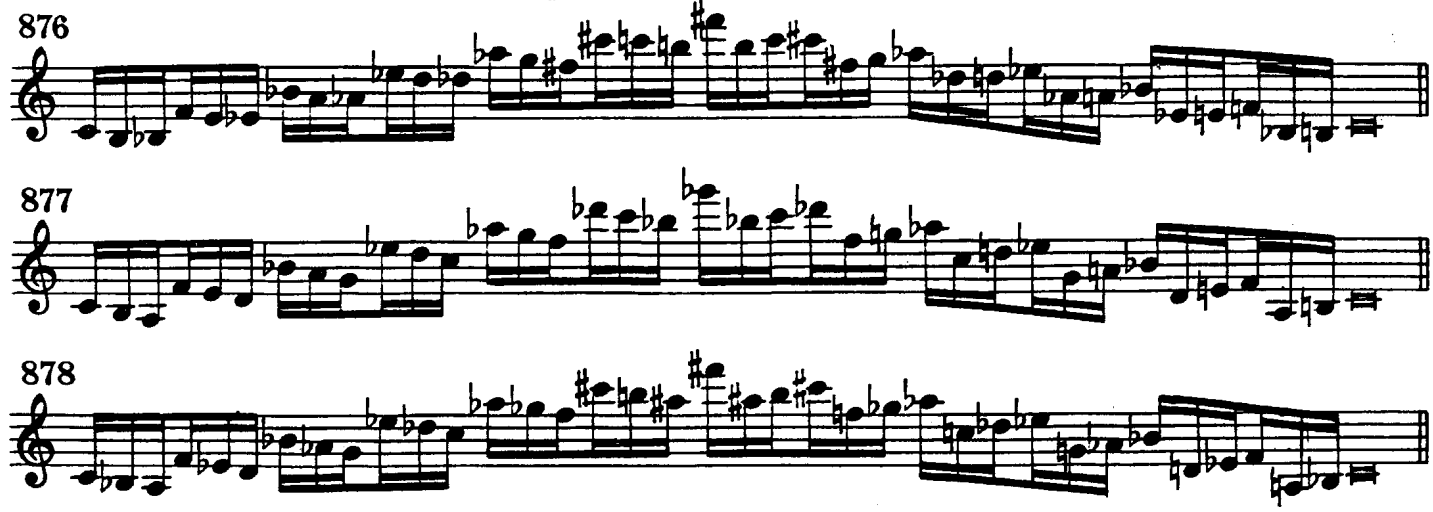
Infrapolation of One Note



Infrapolation of Two Notes



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Infrapolation of Three Notes

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Infra-Interpolation

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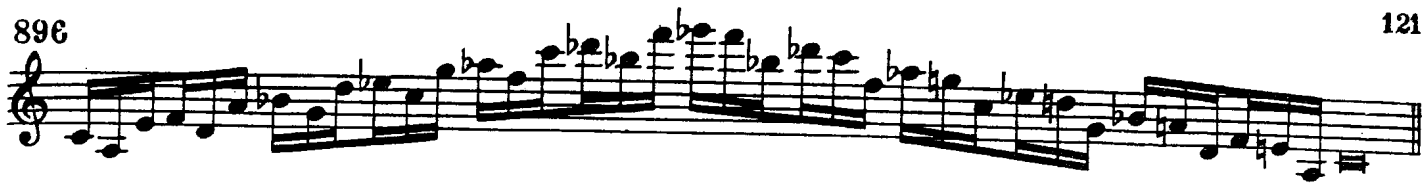

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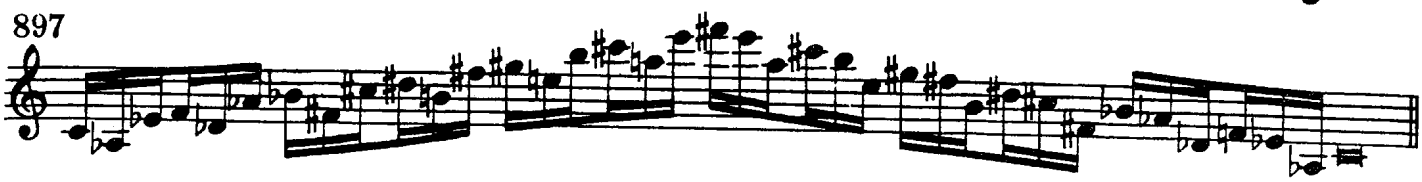

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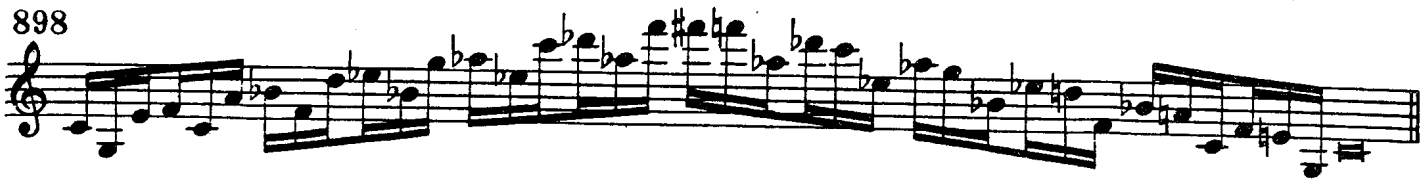

Infra-Ultrapolation

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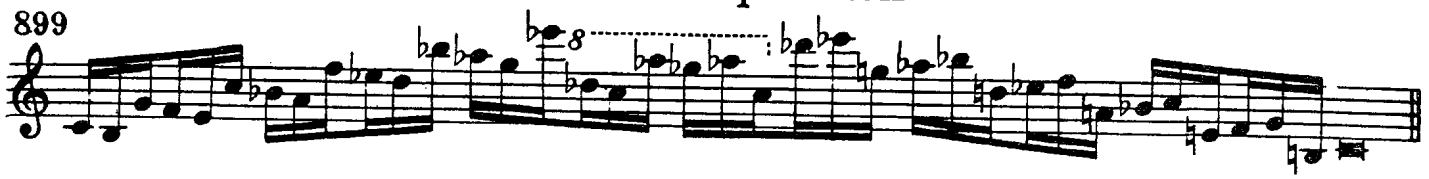

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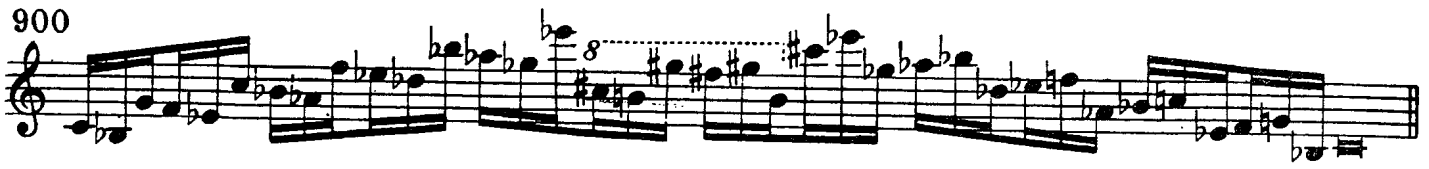

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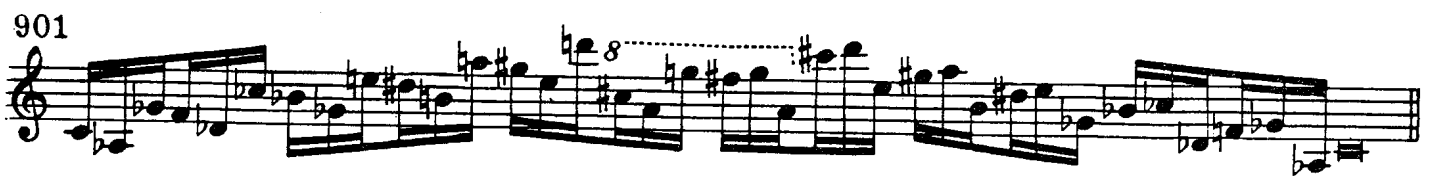

Inter-Ultrapolation

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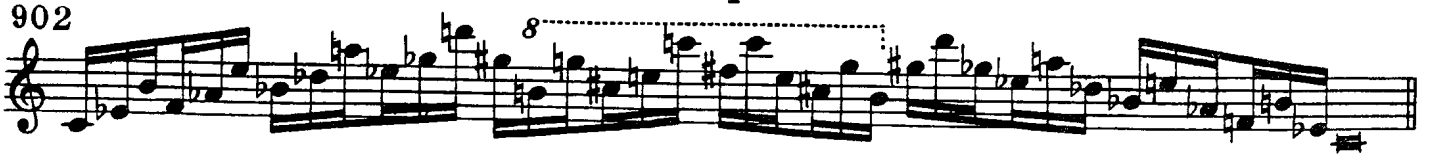

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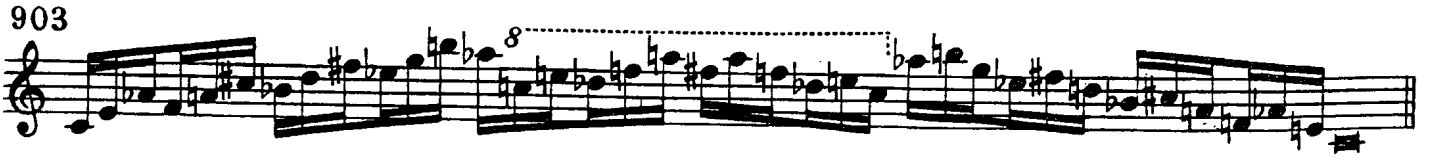

Infra-Inter-Ultrapolation

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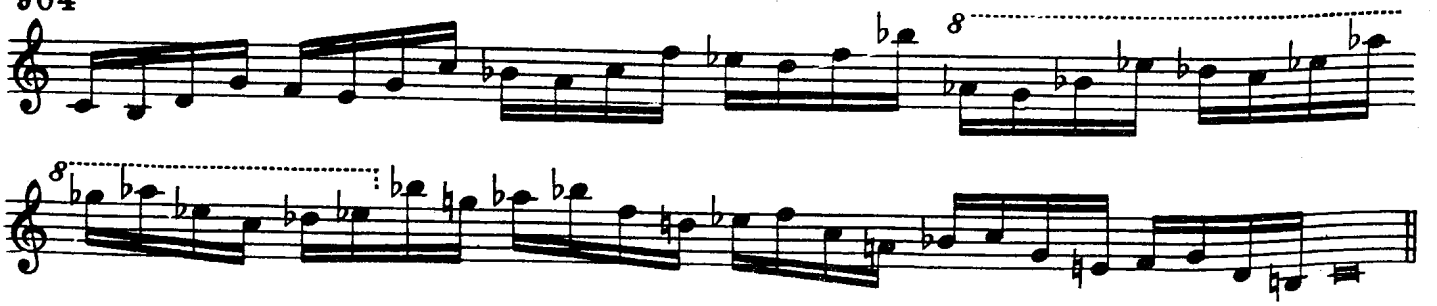

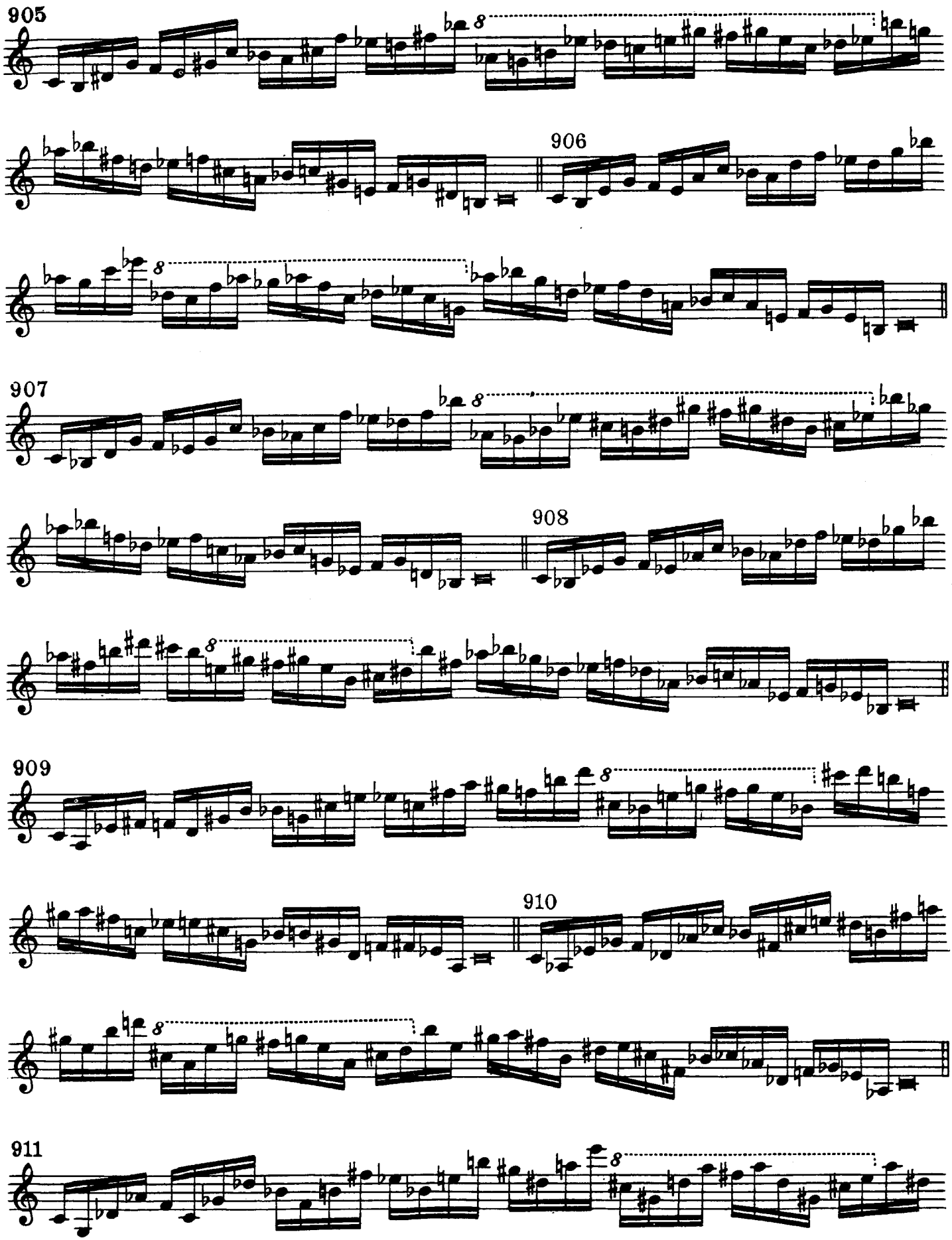
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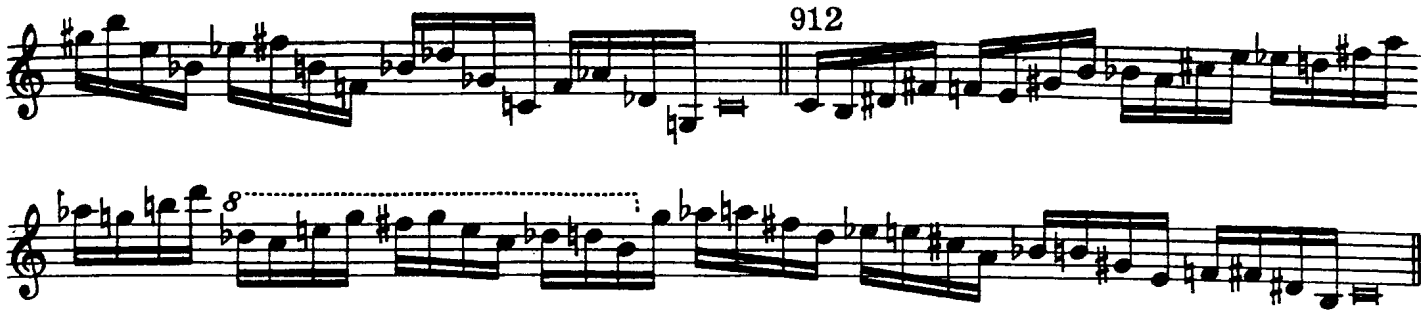

Miscellaneous Patterns

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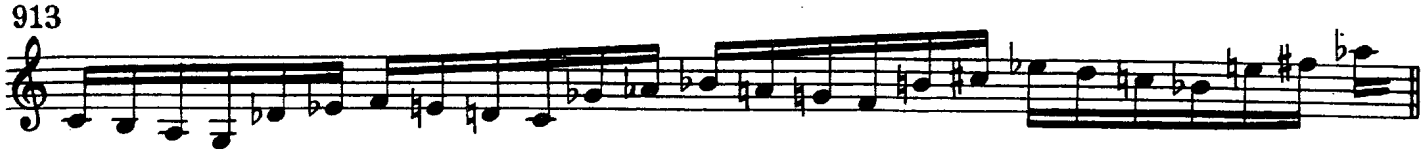

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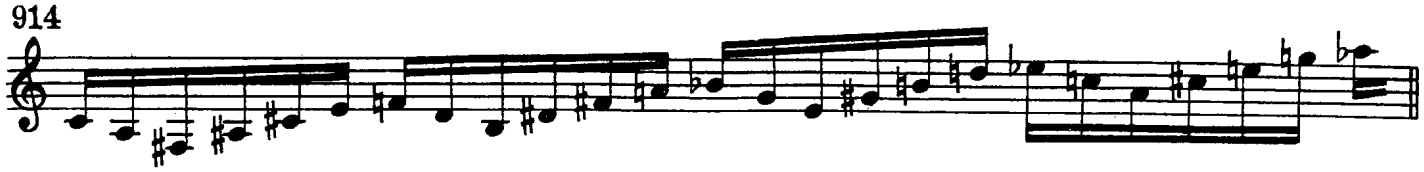

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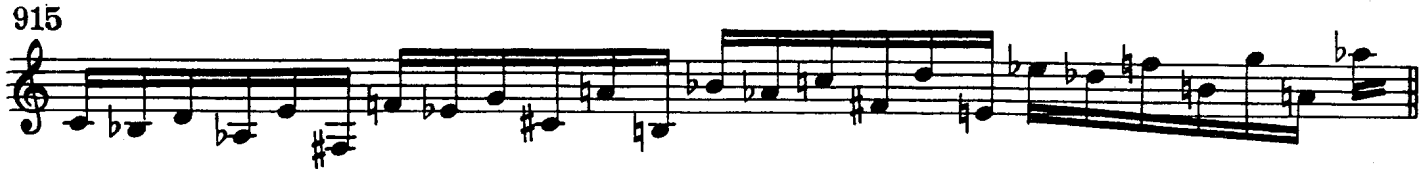

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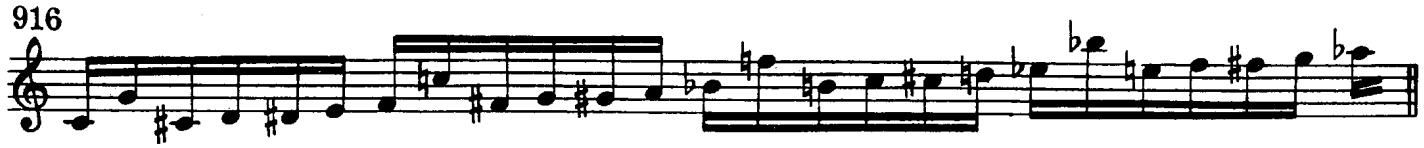

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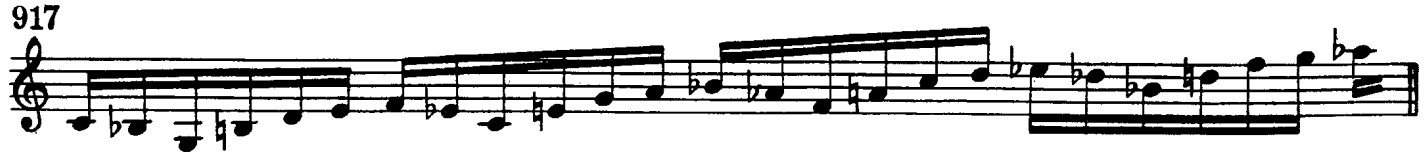

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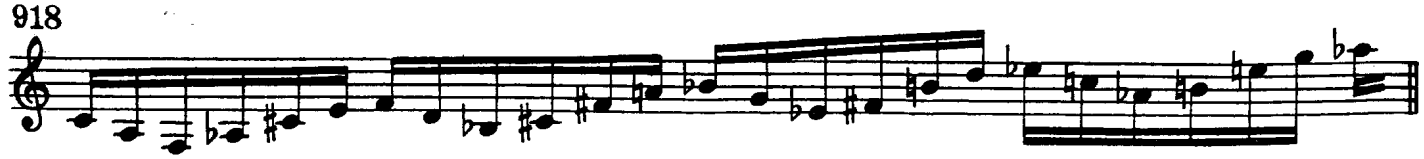

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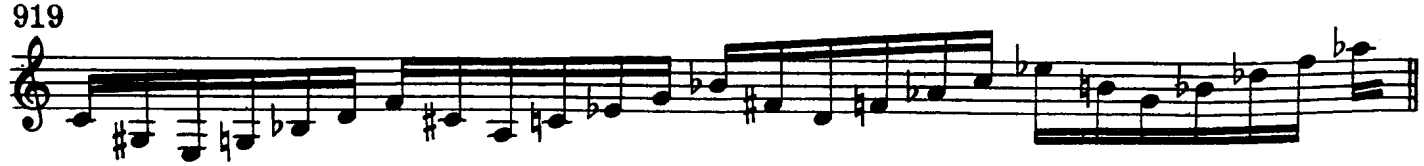

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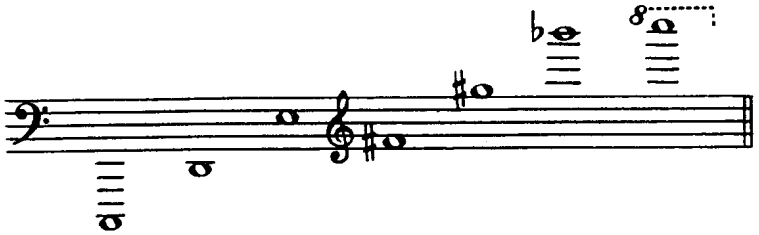
Septitone Progression

Equal Division of Seven Octaves into Six Parts



Interpolation of Two Notes

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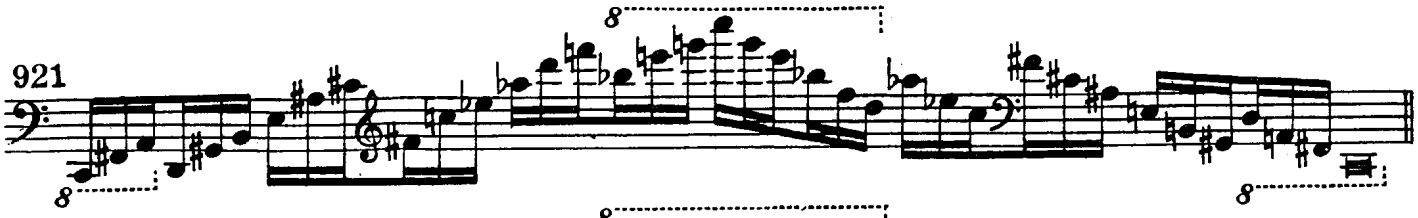

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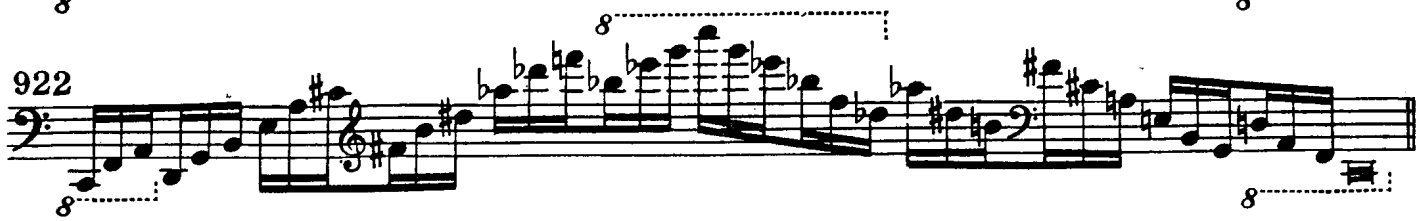

Interpolation of Three Notes

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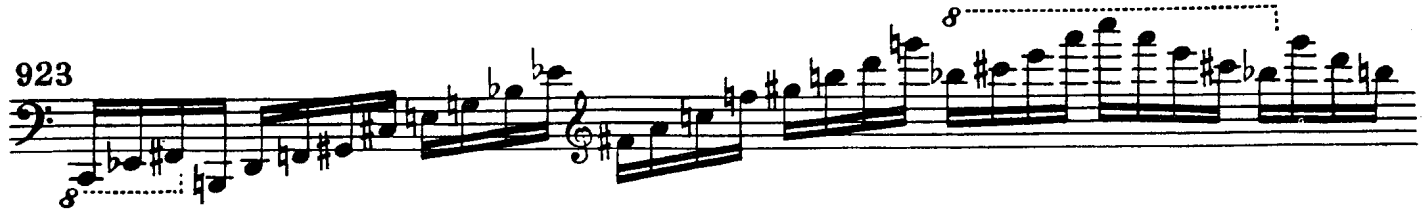

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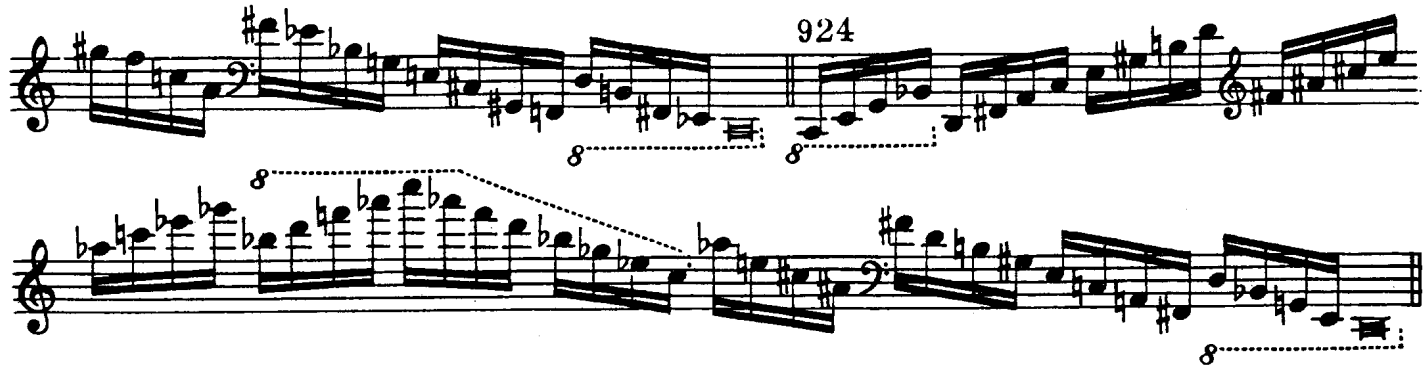

[Béla Bartók: Mikrokosmos, №143]

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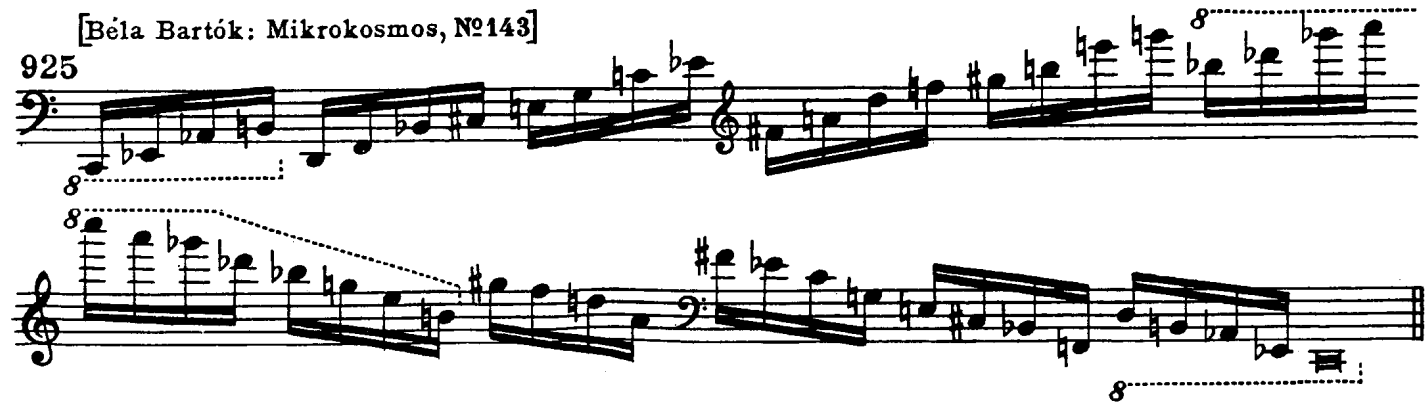
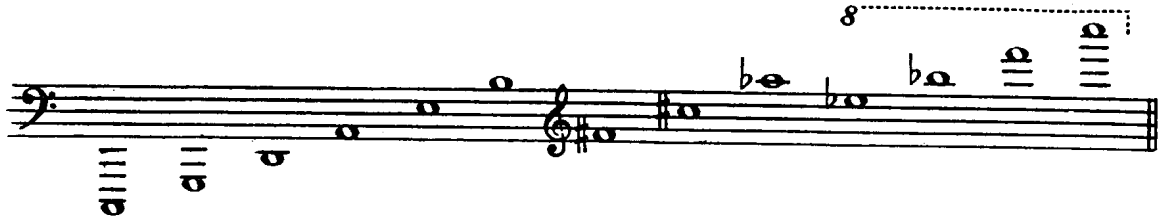


Diapente Progression

Equal Division of Seven Octaves into Twelve Parts



Interpolation of One Note

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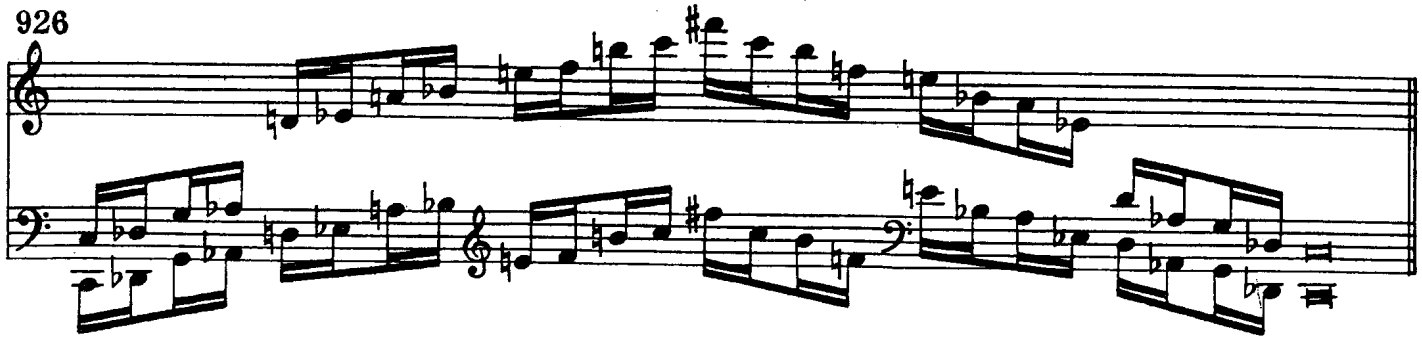

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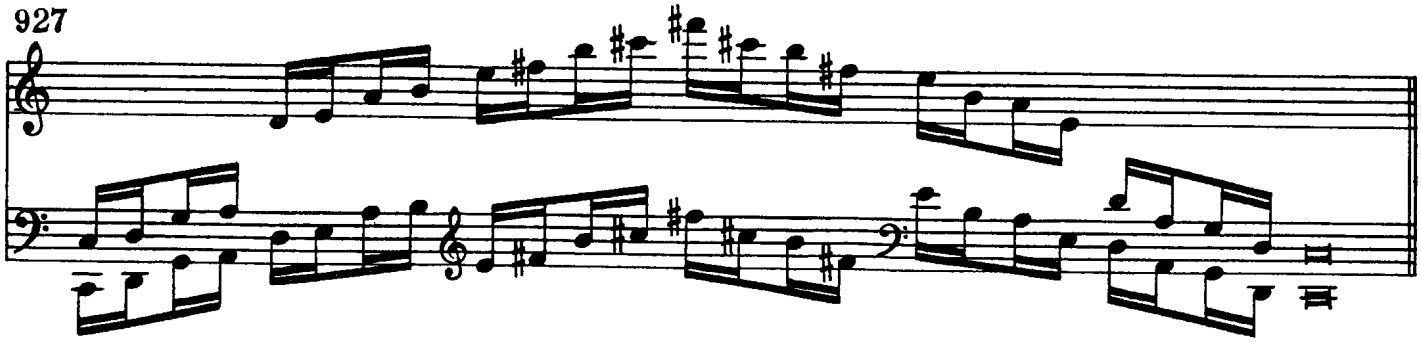

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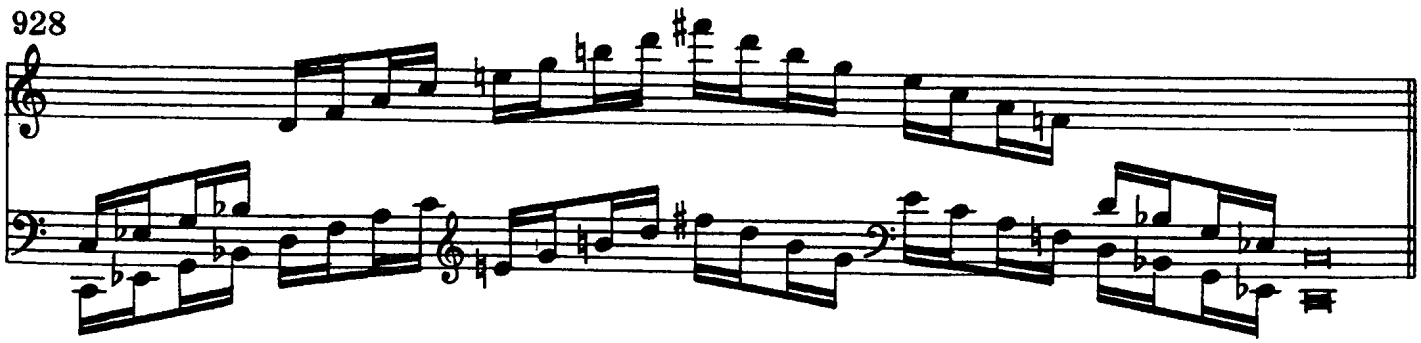

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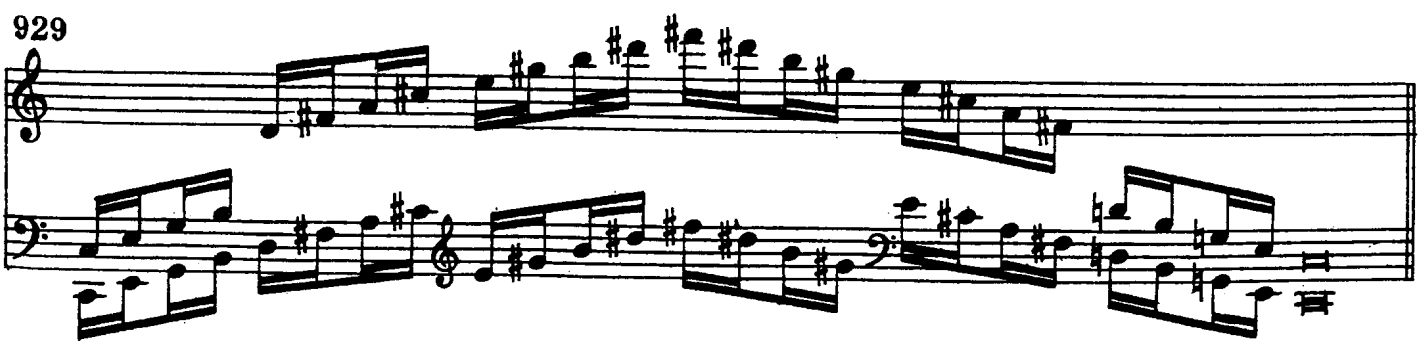

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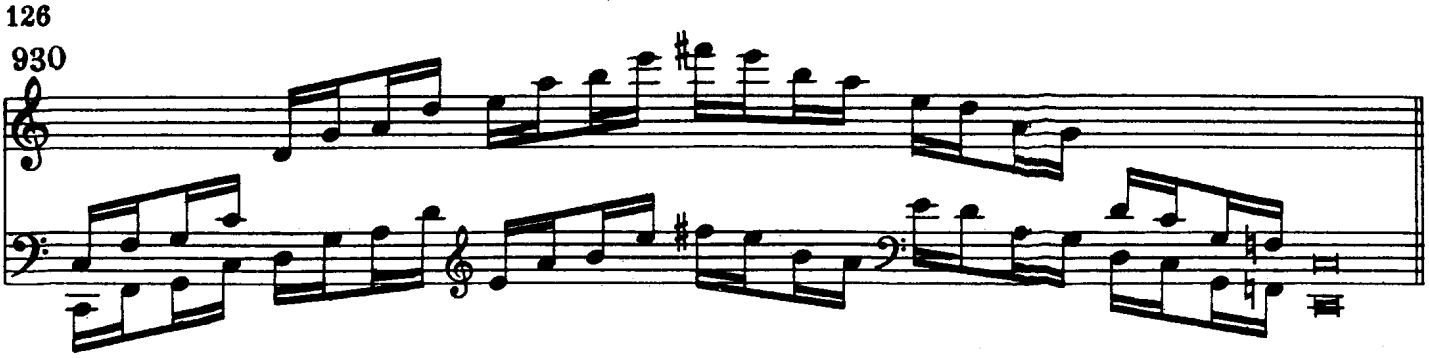

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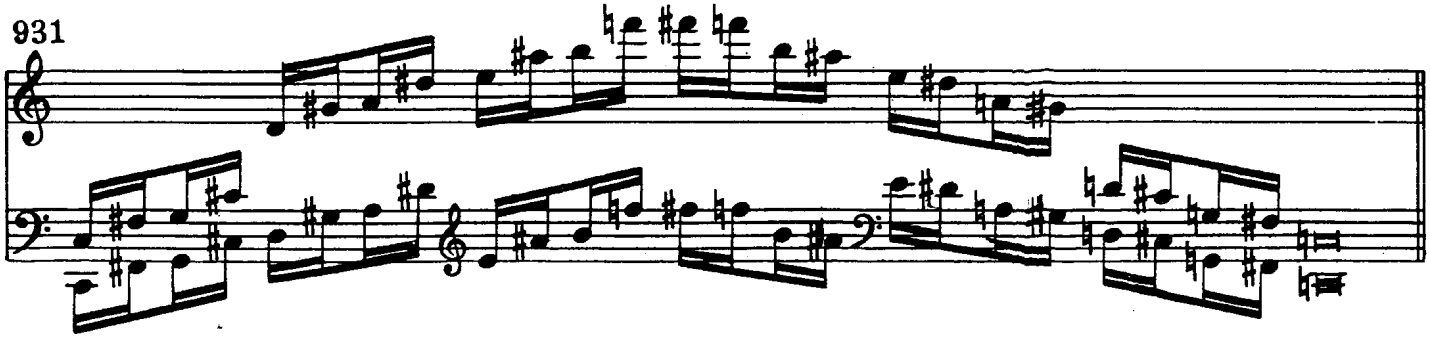

Interpolation of Two Notes

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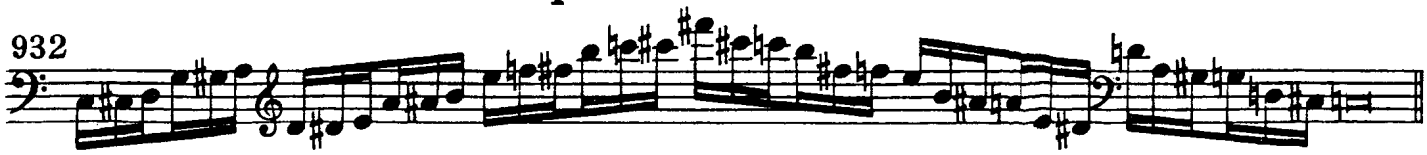

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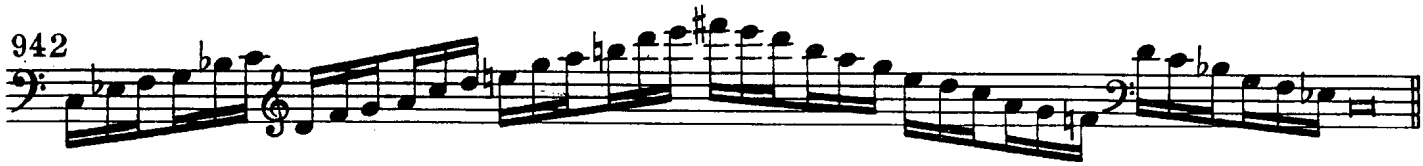

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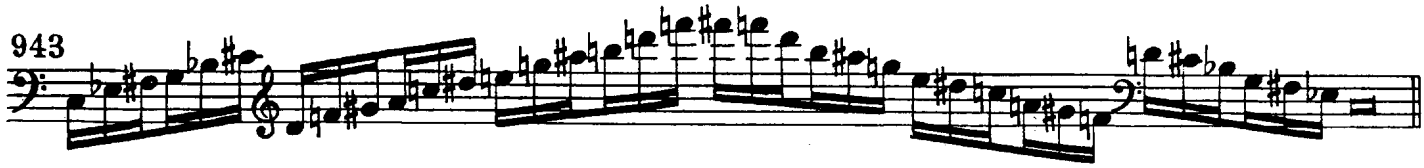

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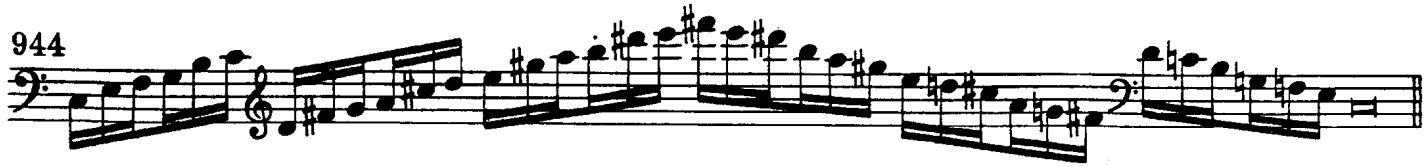

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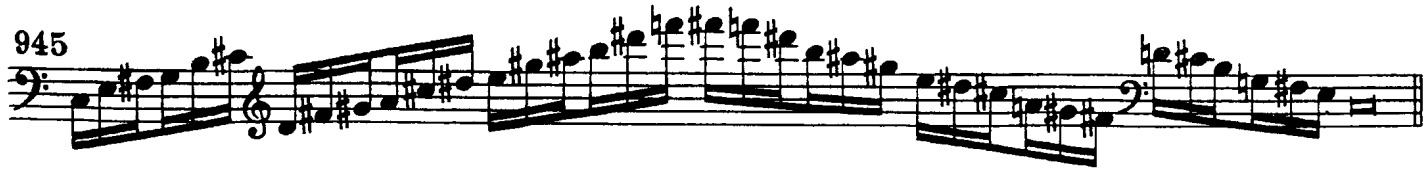

Interpolation of Three Notes

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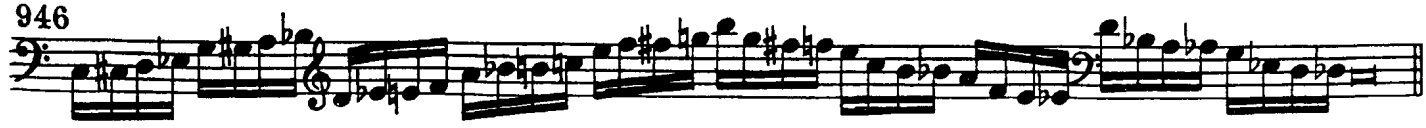

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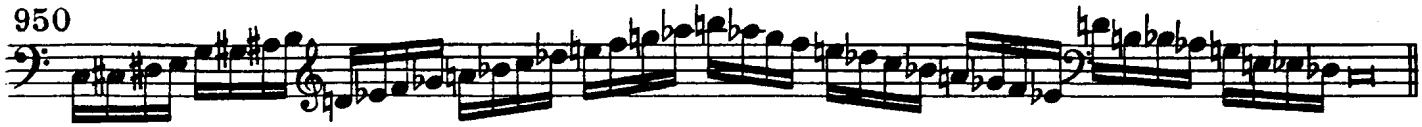

Disjunct Phrygian Polytetrachord

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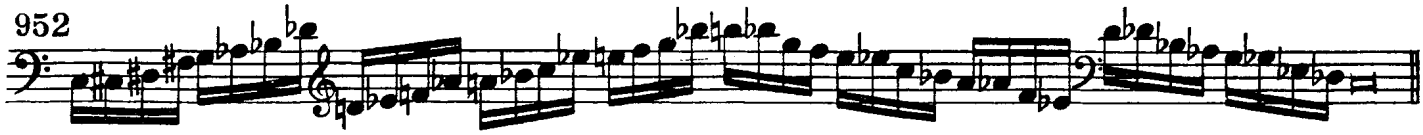

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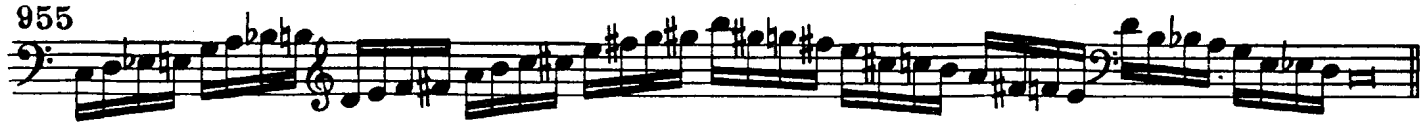

Disjunct Minor Polytetrachord

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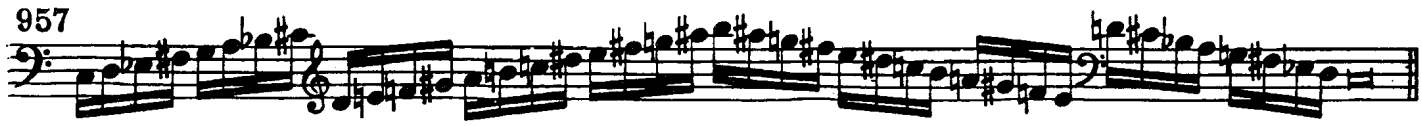


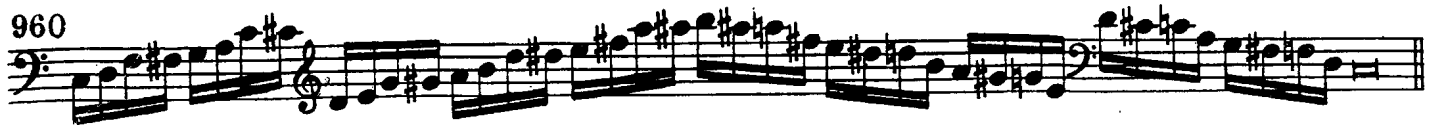
Disjunct Major Polytetrachord

958

Disjunct Lydian Polytetrachord

959

960



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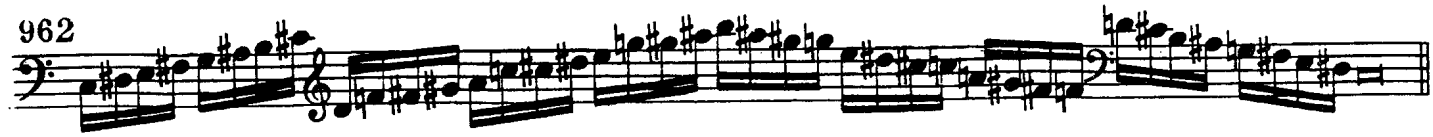

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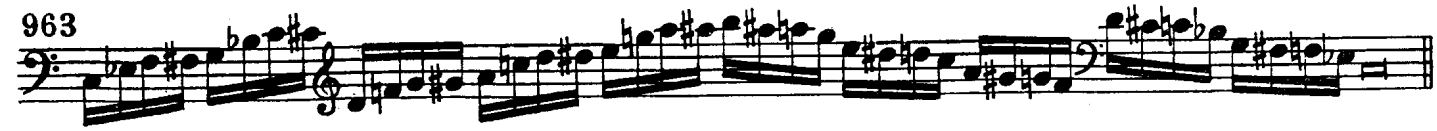

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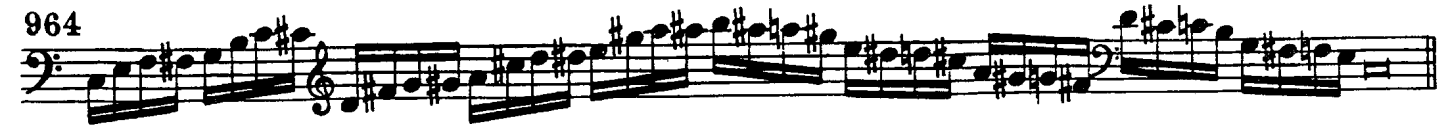

Ultrapolation of One Note

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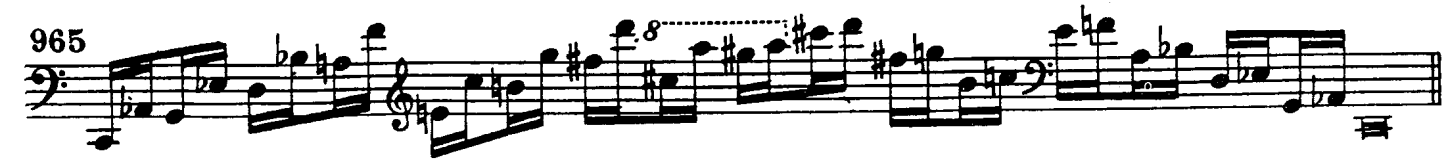

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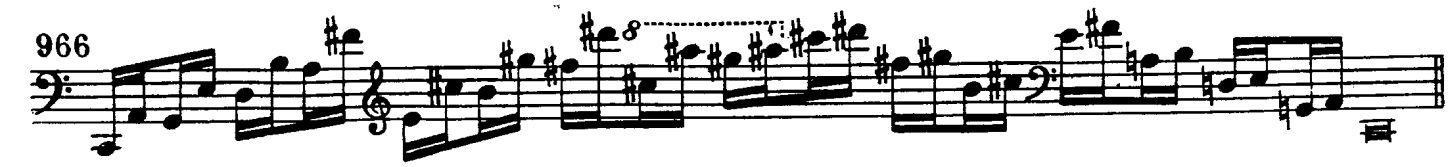

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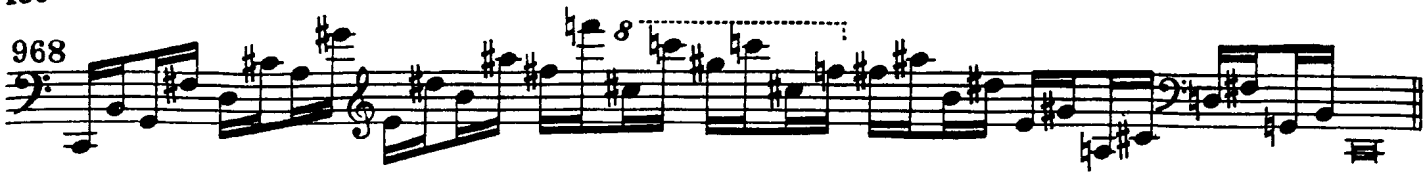

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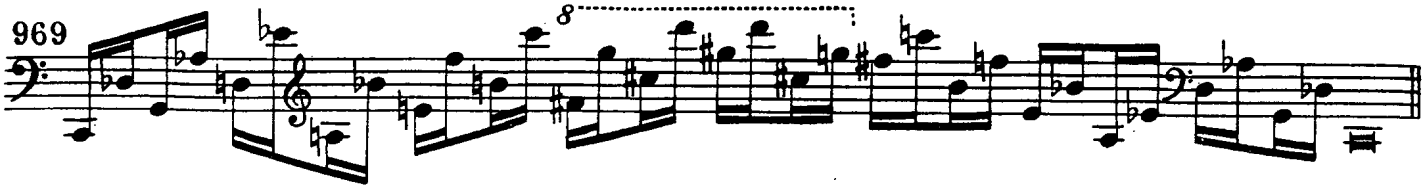

Ultrapolation of Two Notes

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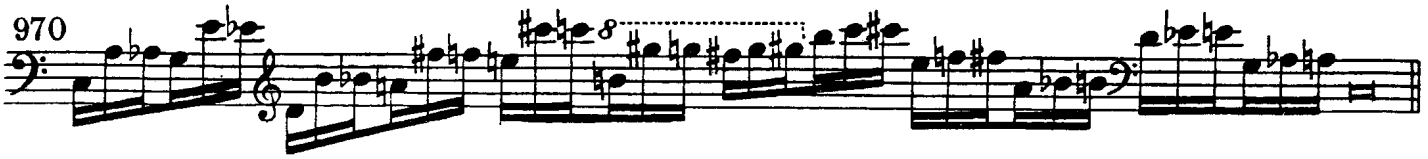

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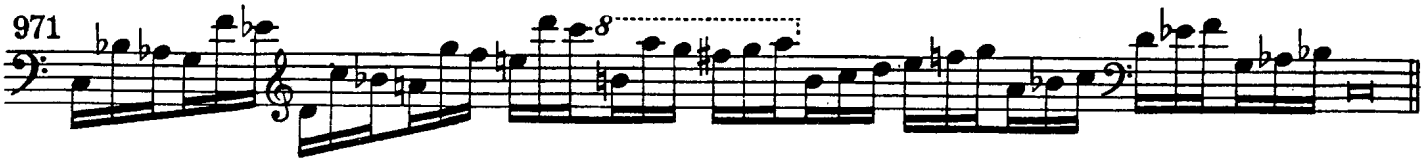

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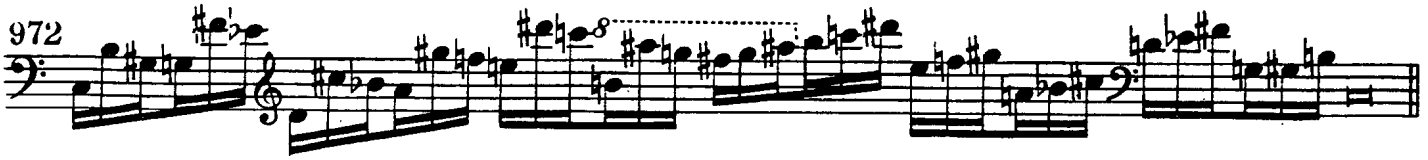

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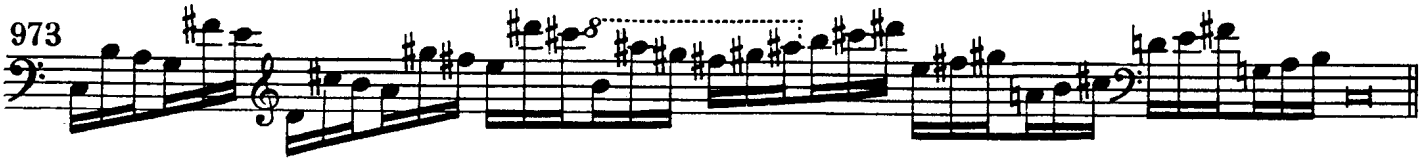

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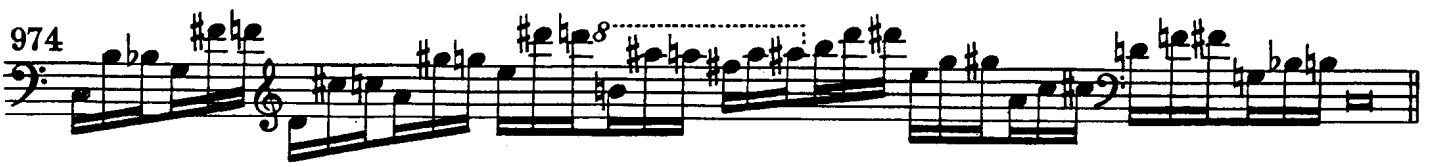

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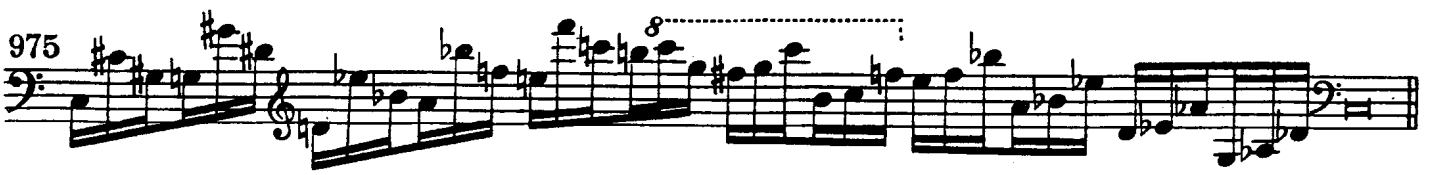

Infrapolation of One Note

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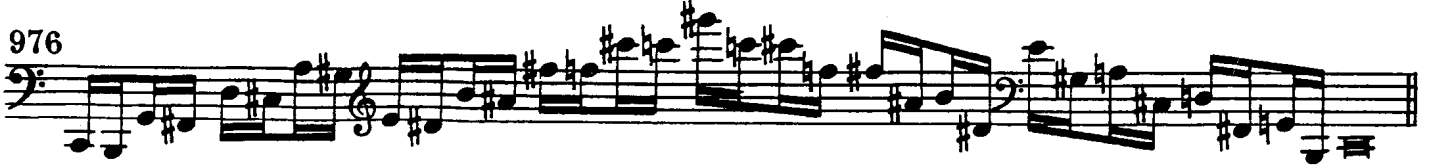

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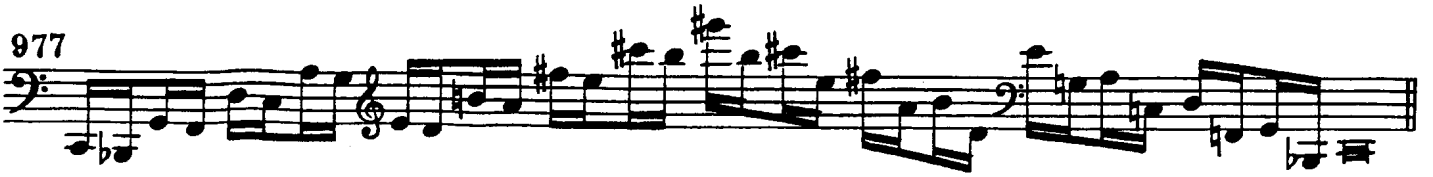

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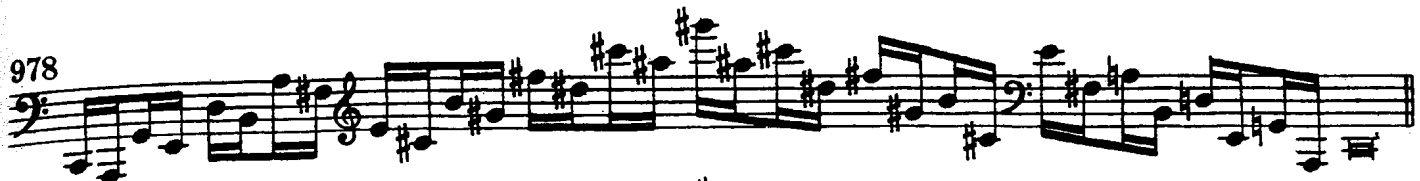

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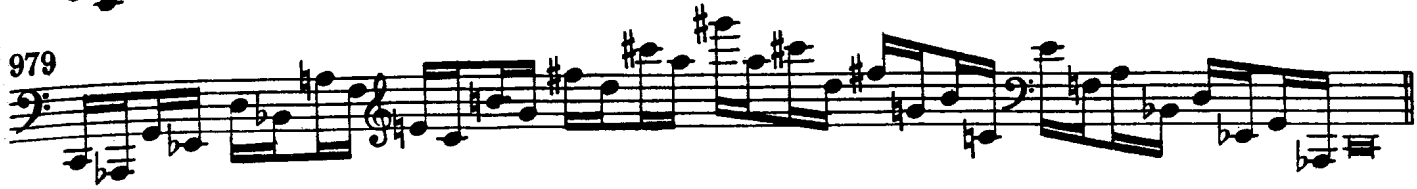

Infrapolation of Two Notes

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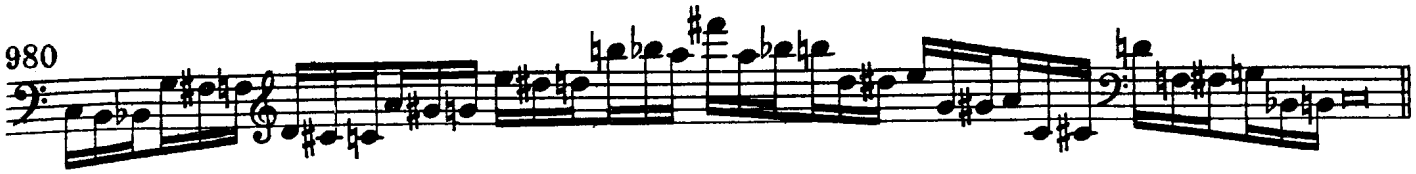

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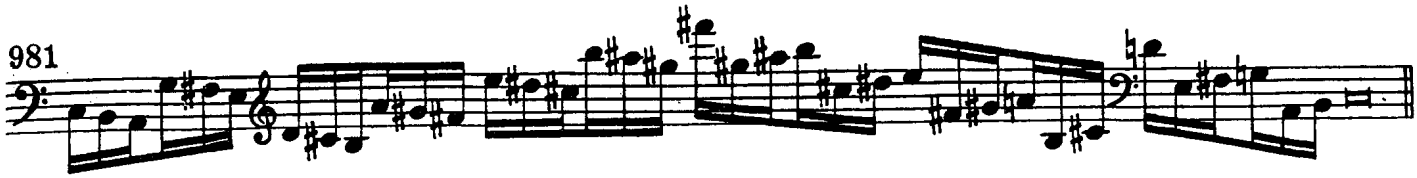

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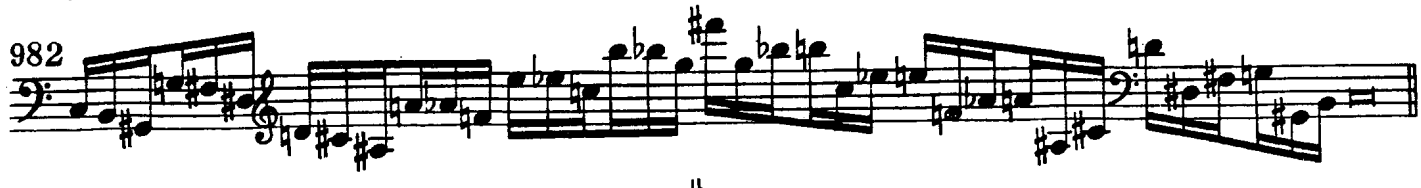

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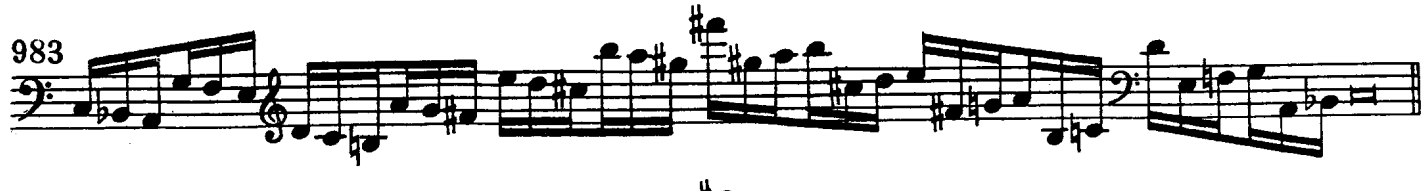

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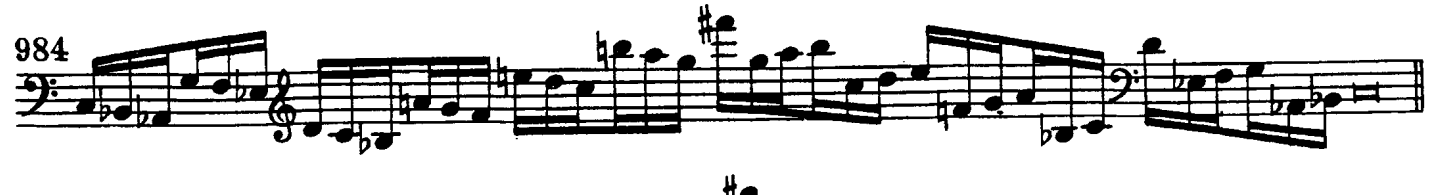

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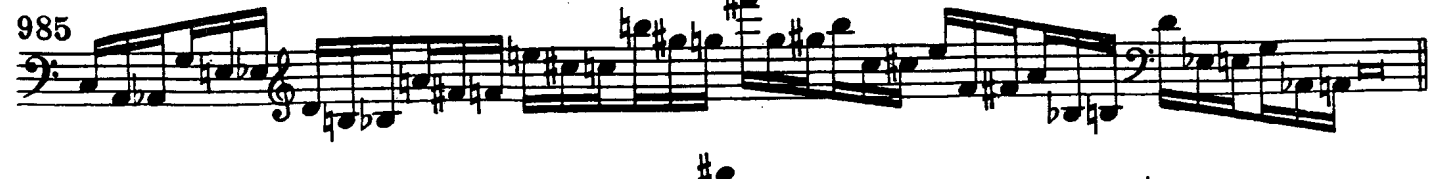

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Infra-Interpolation

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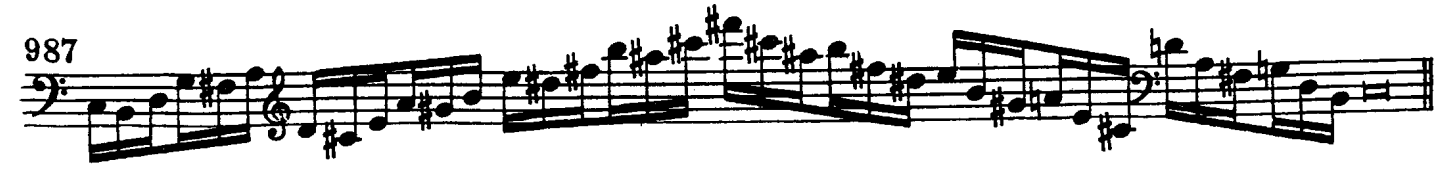

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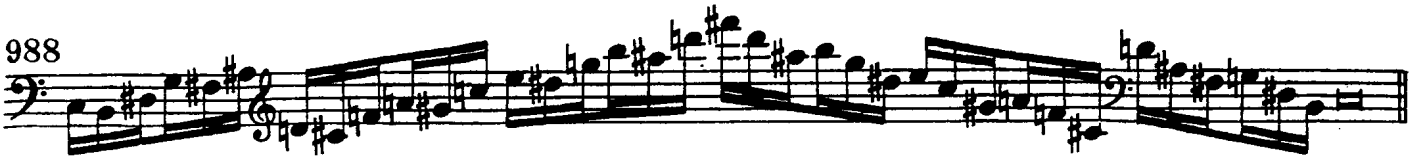

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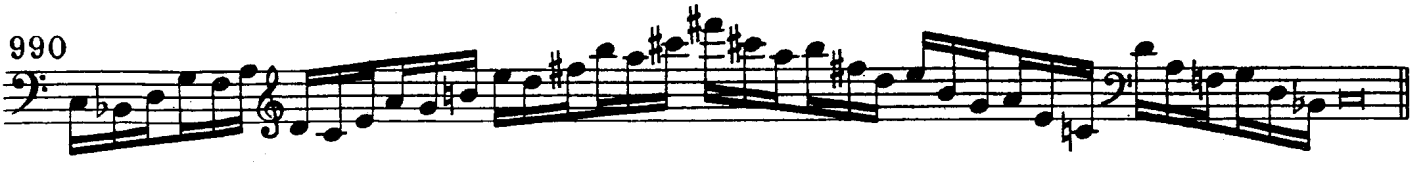

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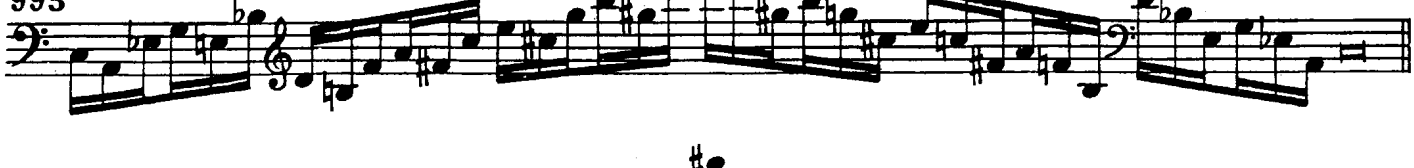

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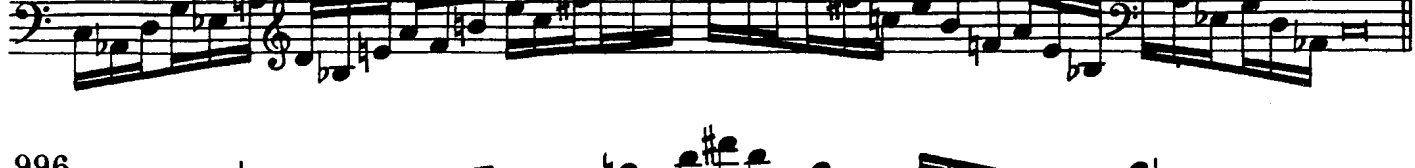

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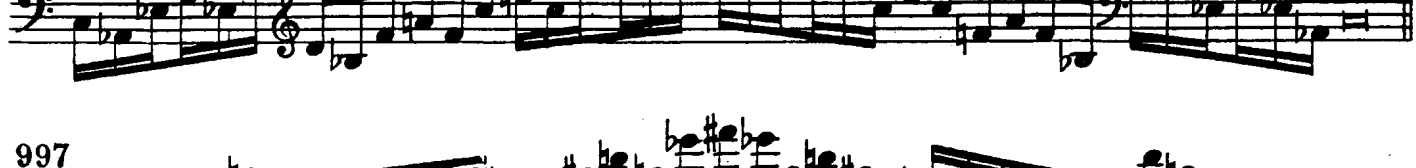

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Infra-Ultrapolation

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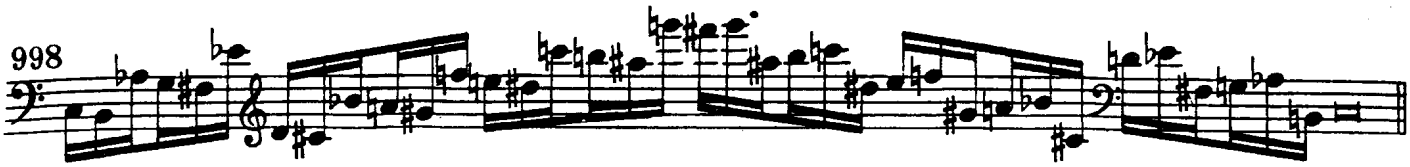

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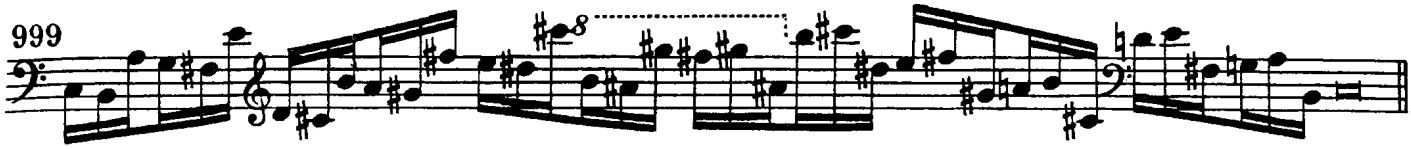

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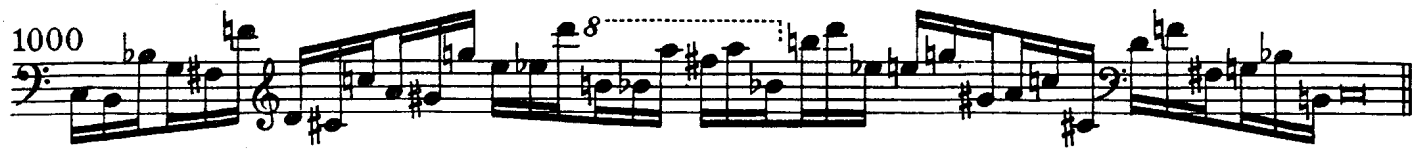

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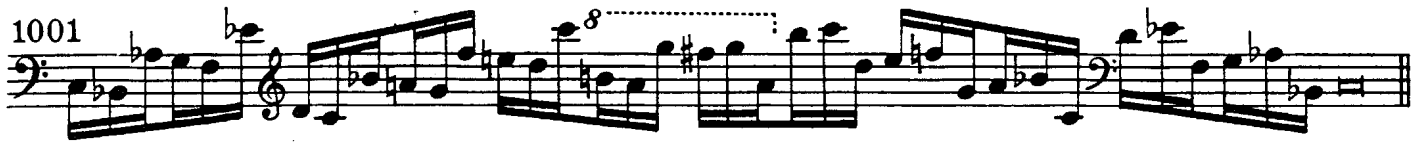

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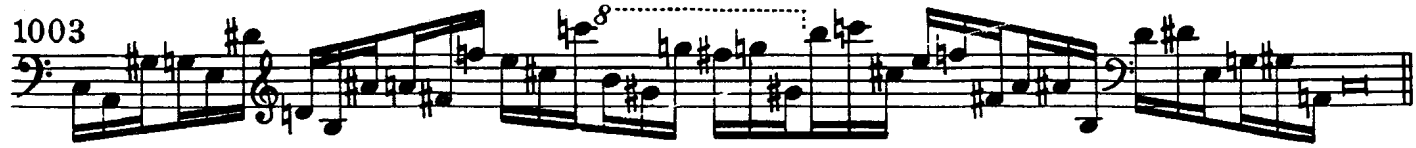

Inter-Ultrapolation

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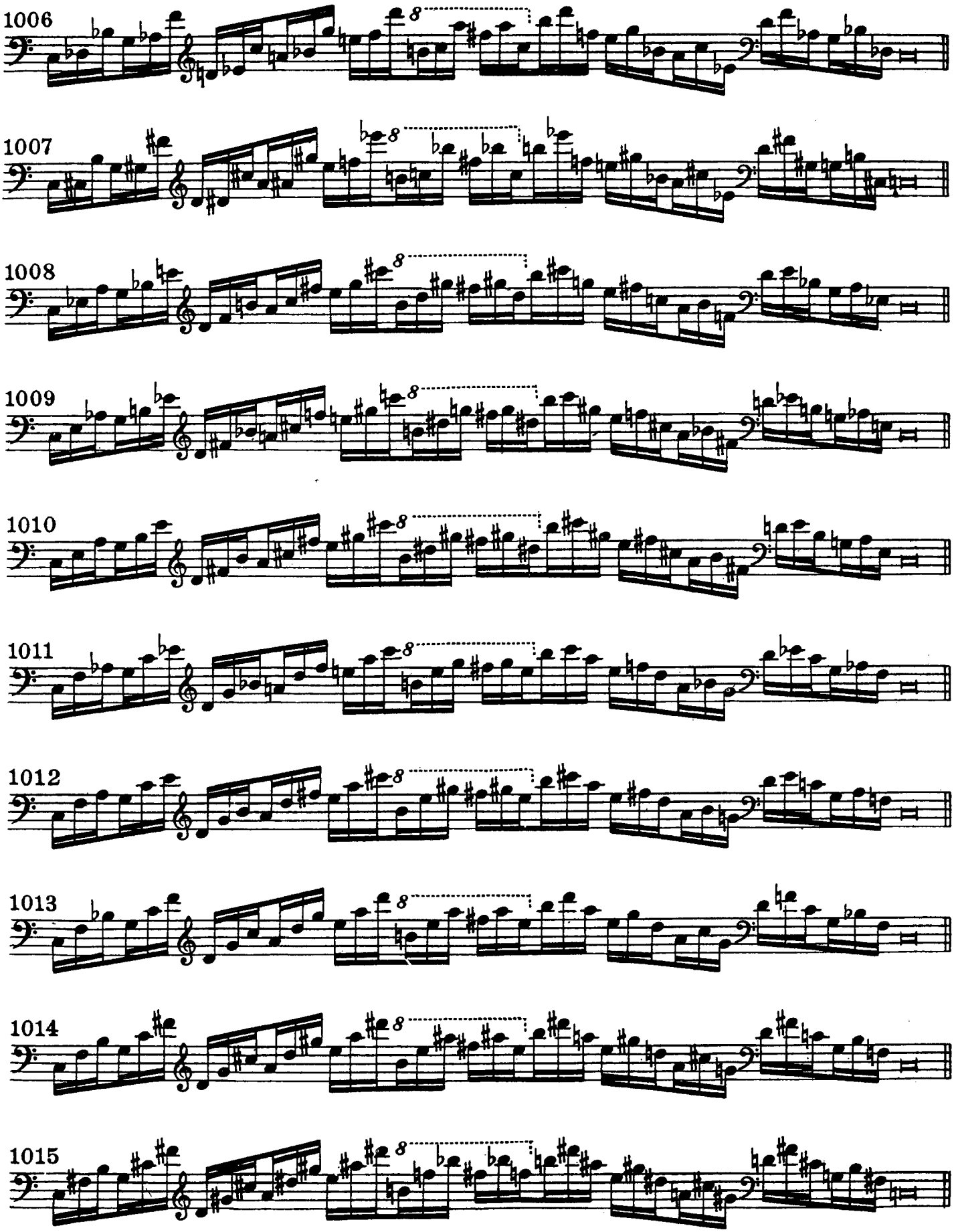
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Infra-Inter-Ultrapolation

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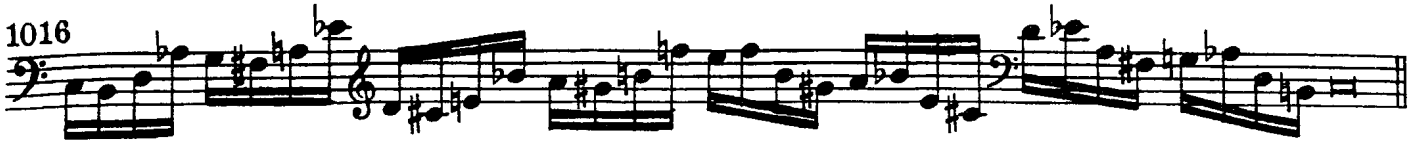

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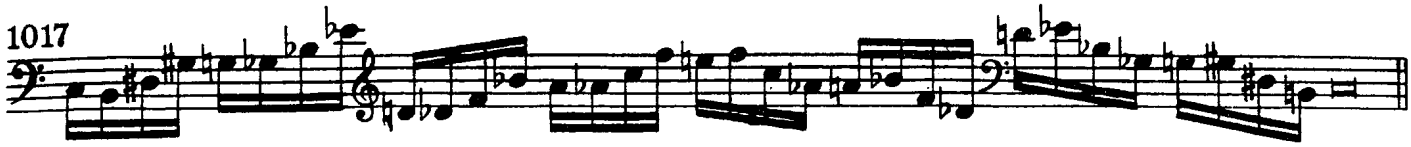

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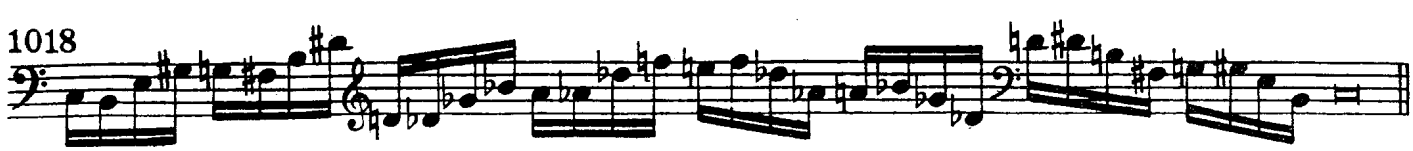

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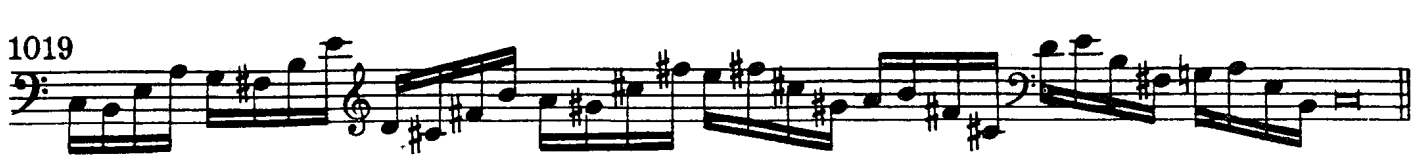

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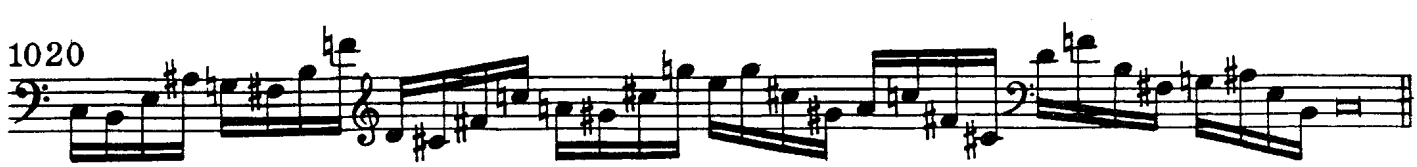

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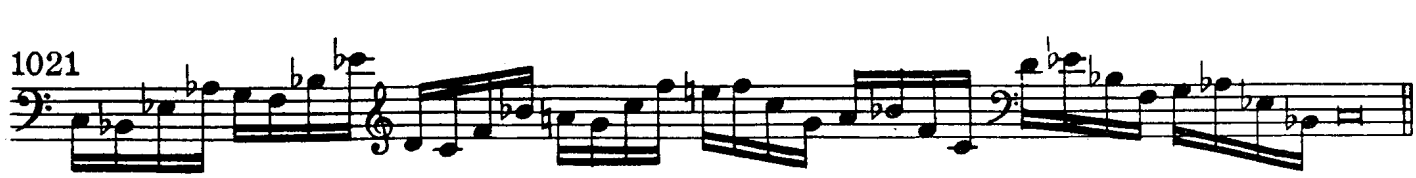

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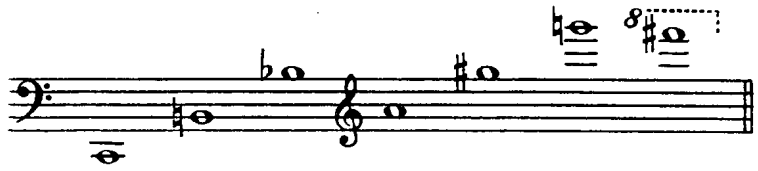
1025

Sesquiquinquetone Progression

Equal Division of Eleven Octaves into Twelve Parts



Interpolation of One Note

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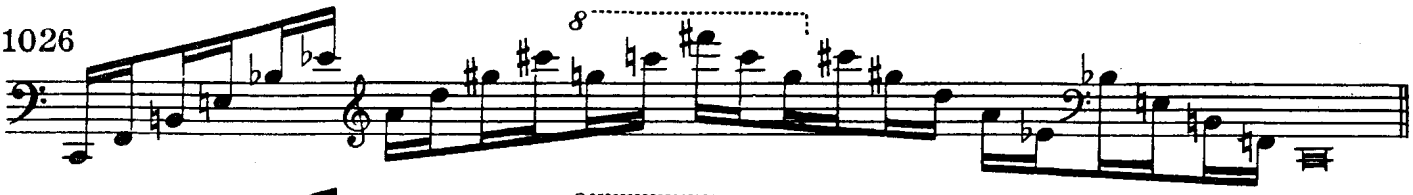

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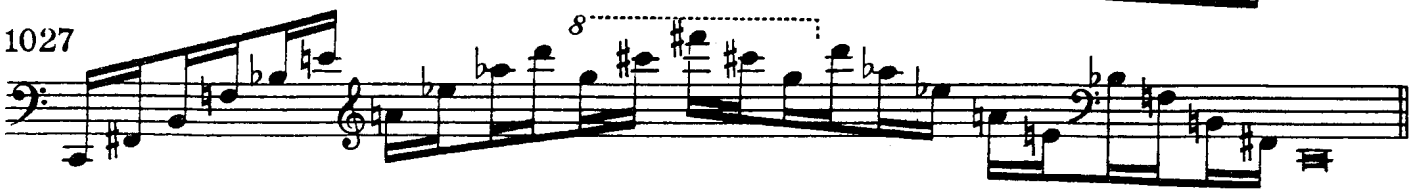

Interpolation of Two Notes

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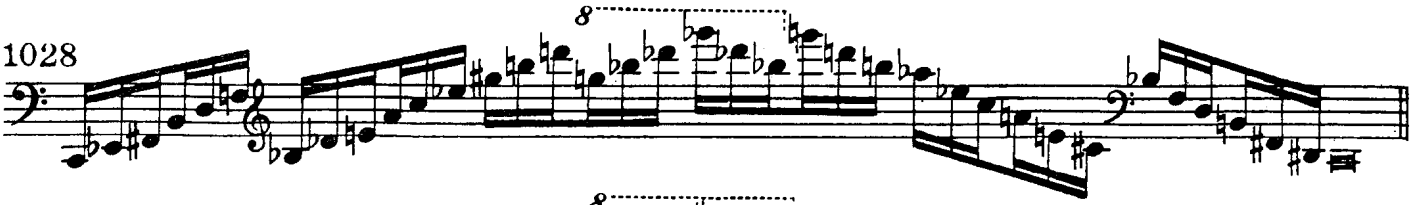

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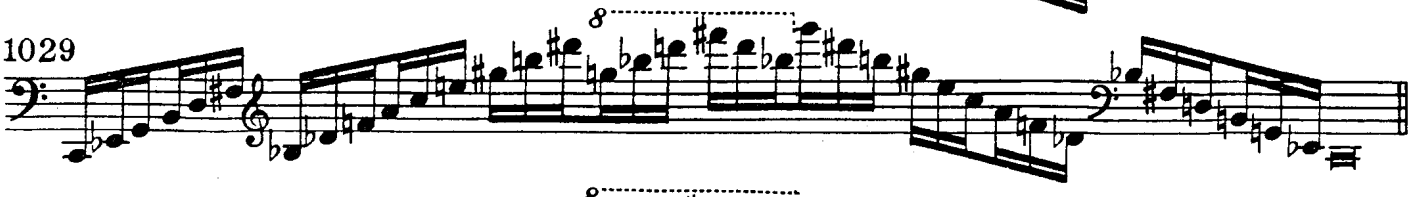

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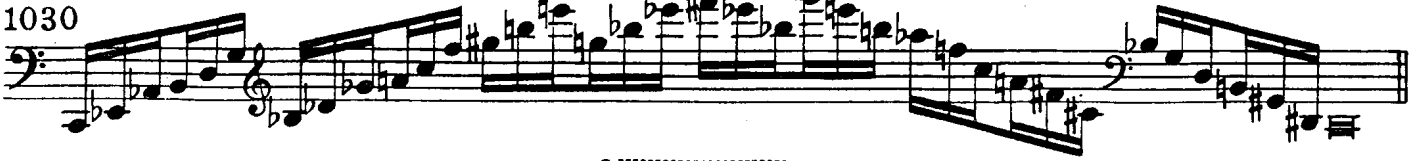

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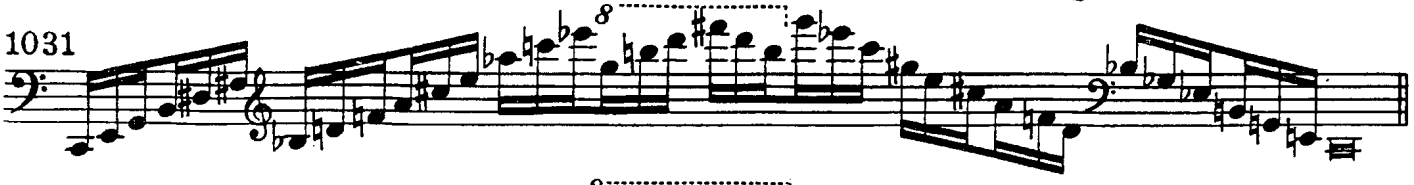

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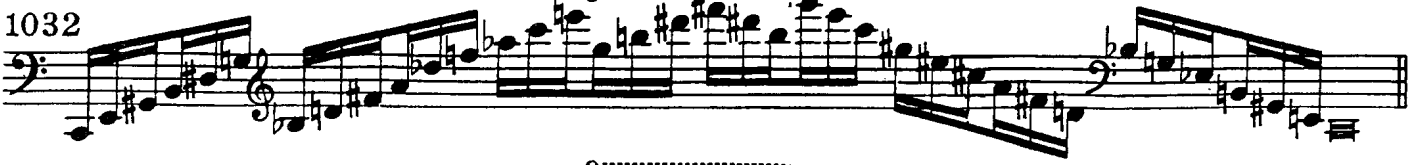

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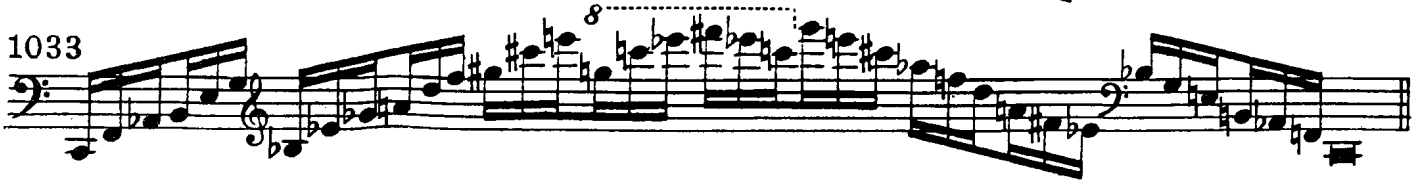

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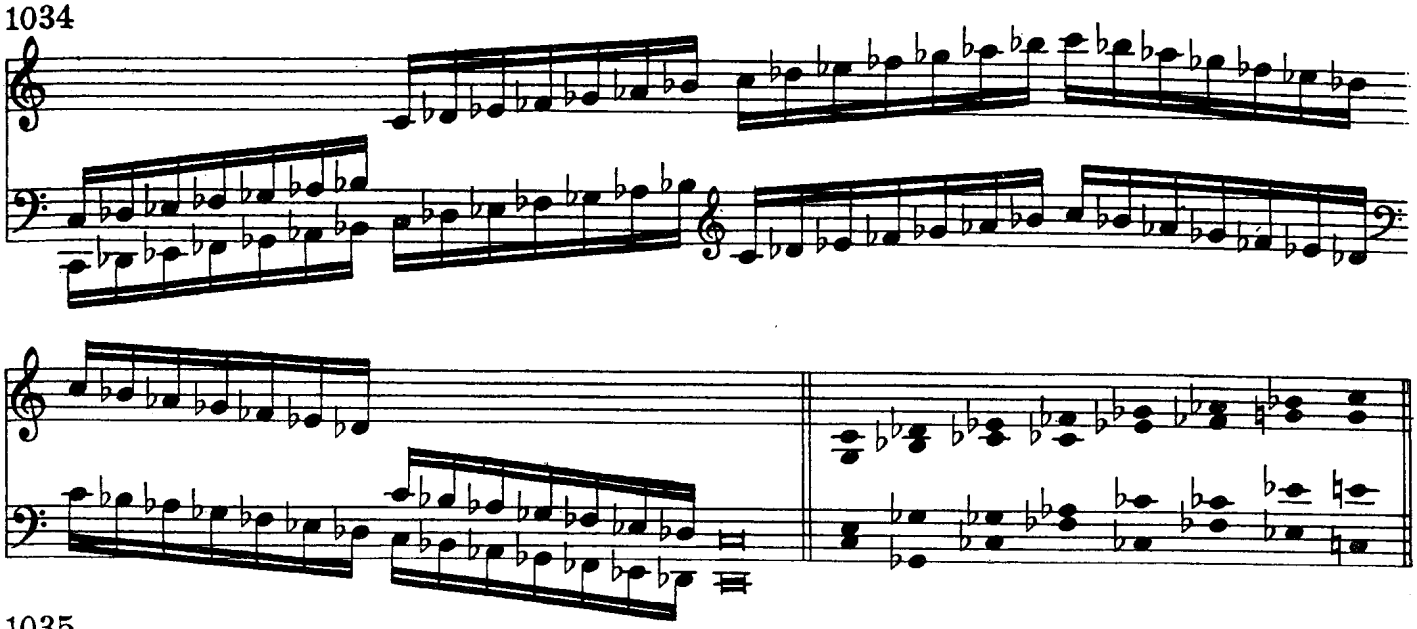

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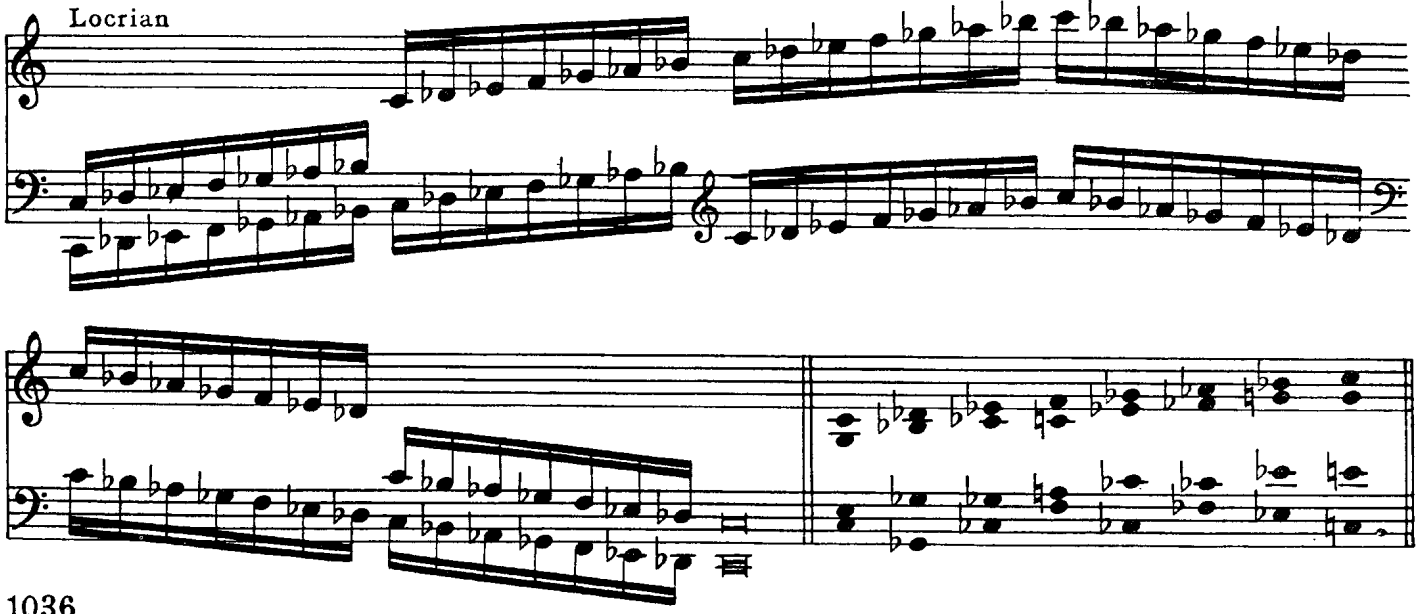
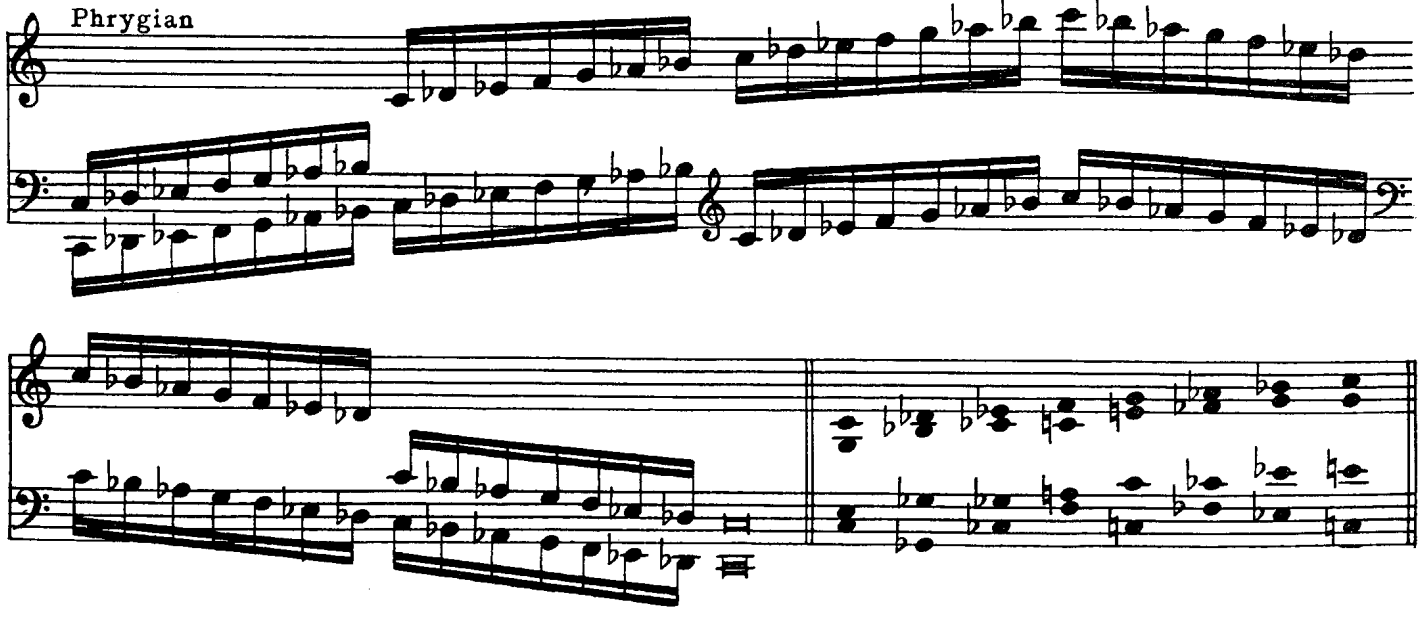
Locrian



1036

Phrygian



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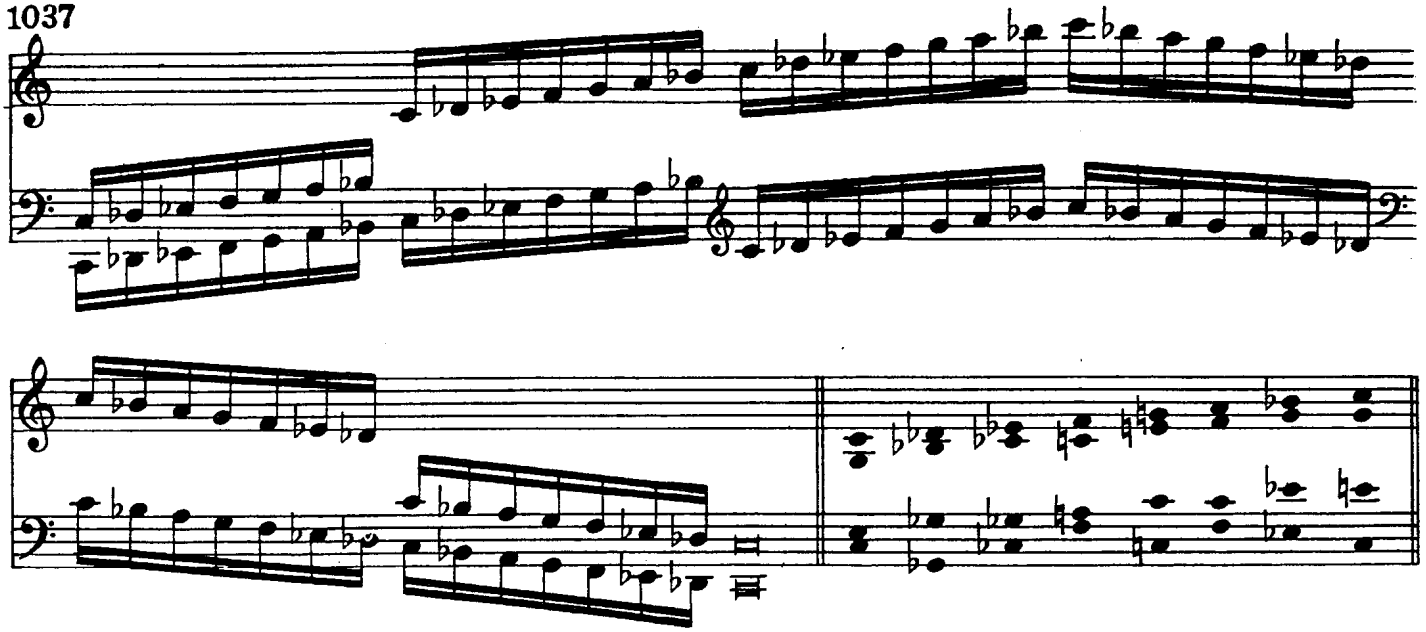

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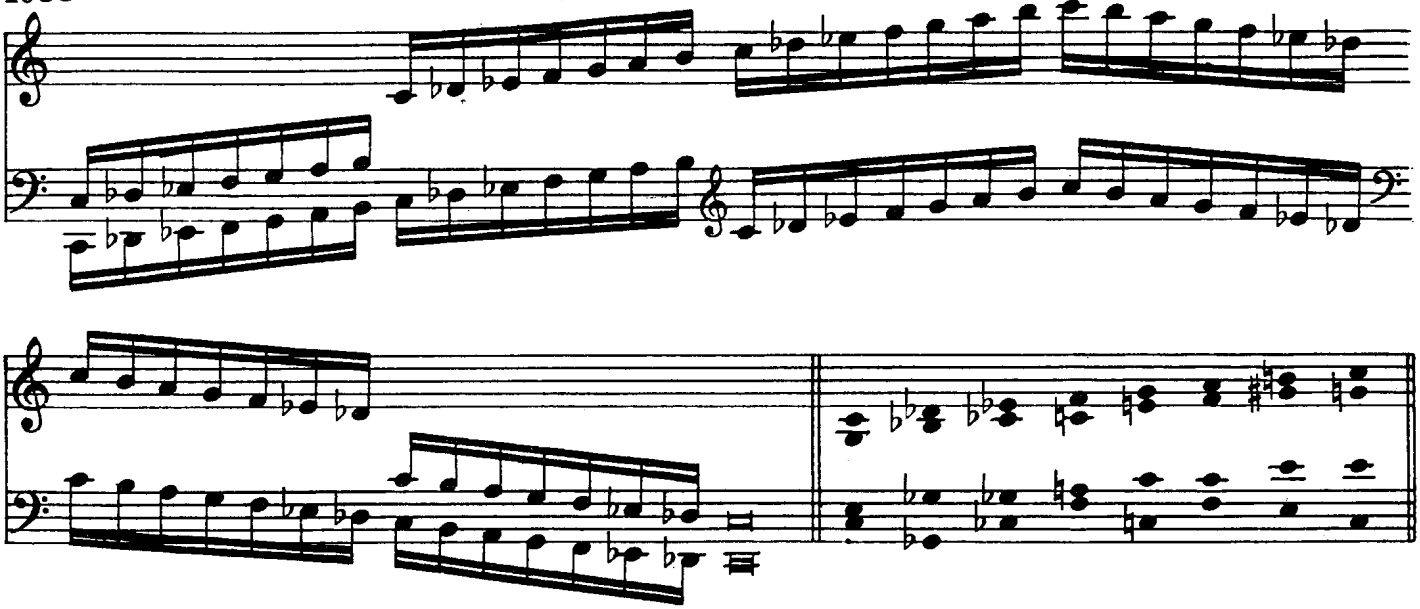

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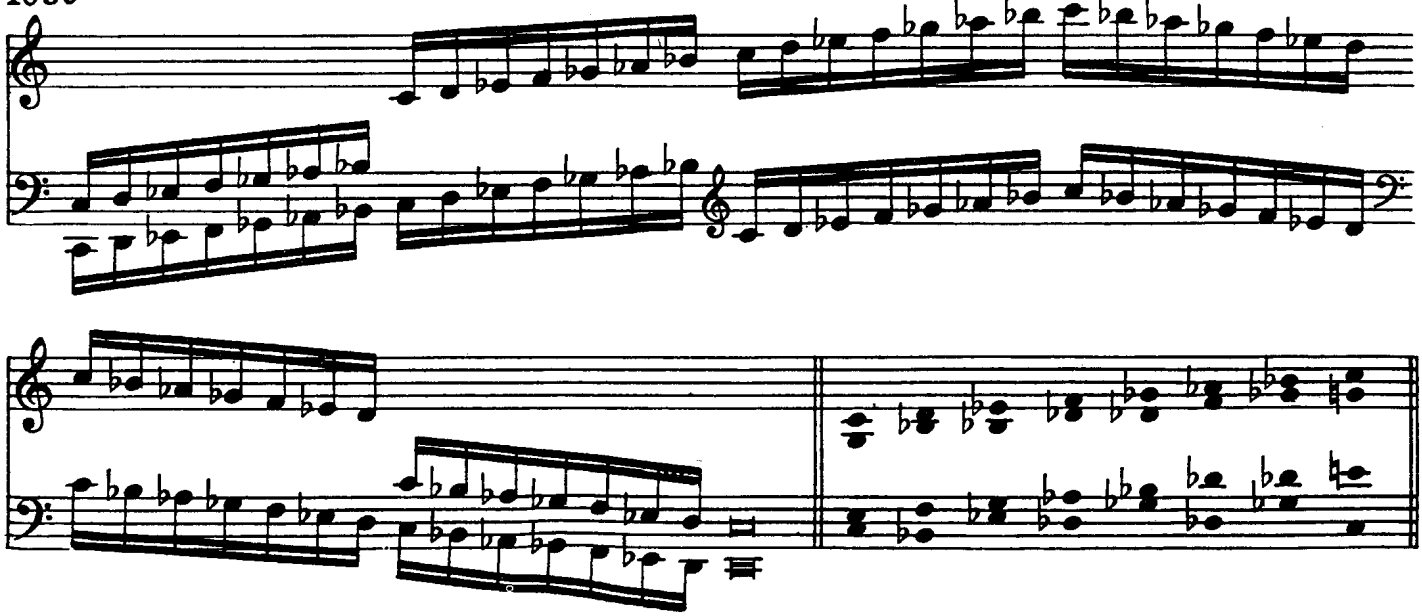

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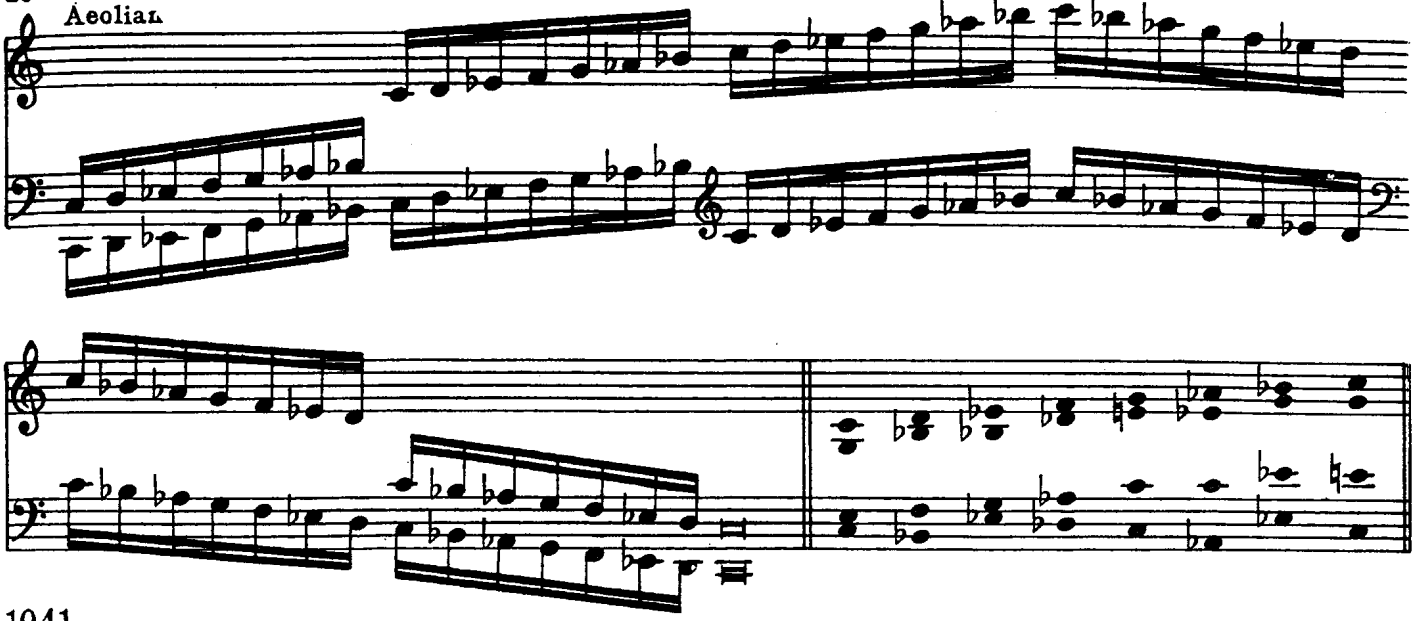

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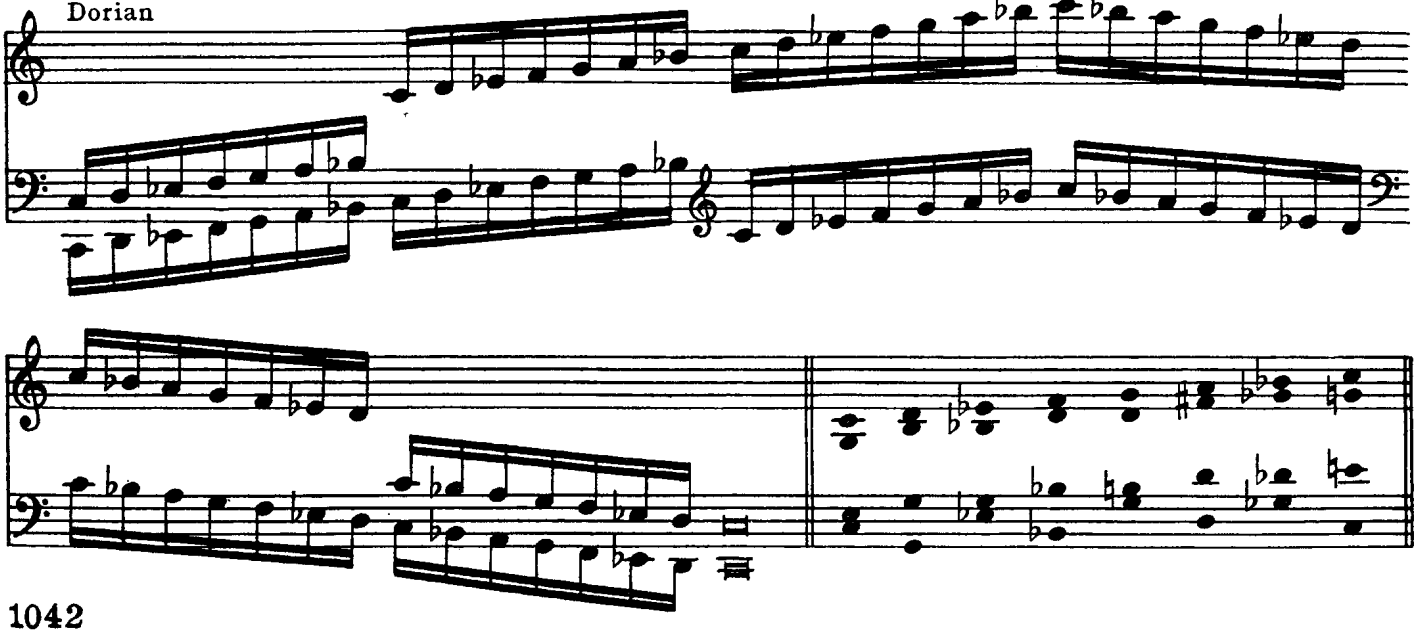

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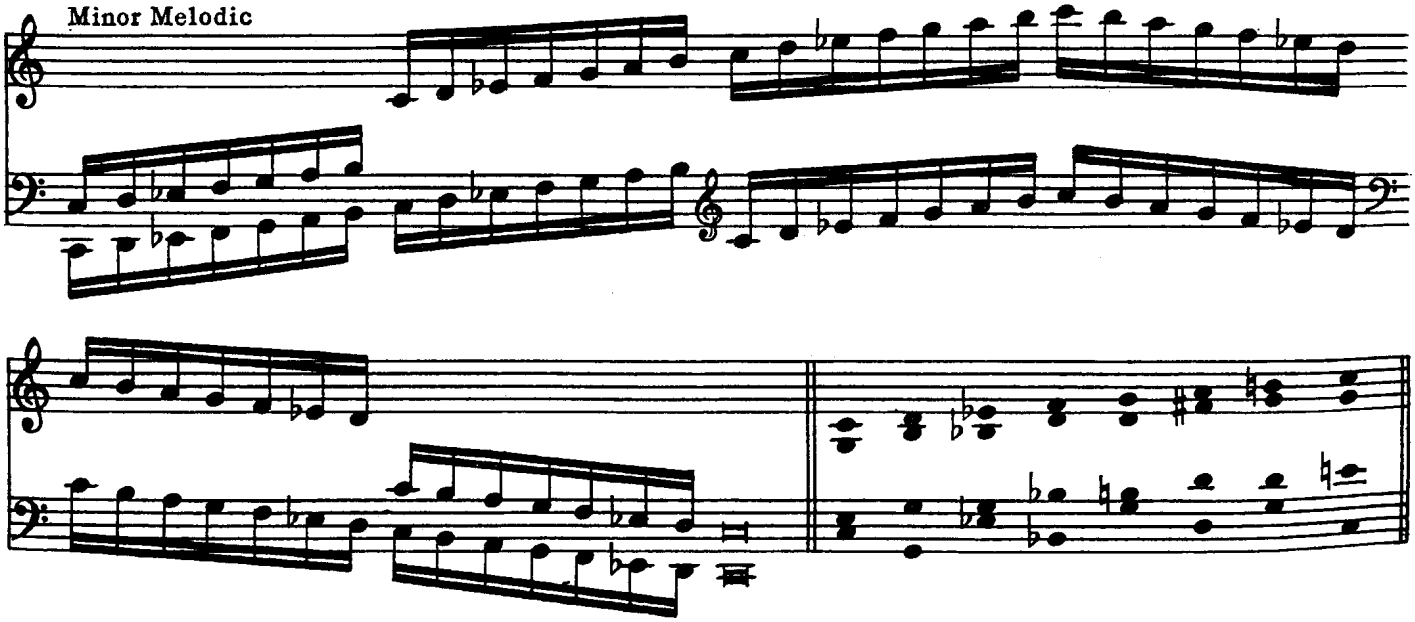

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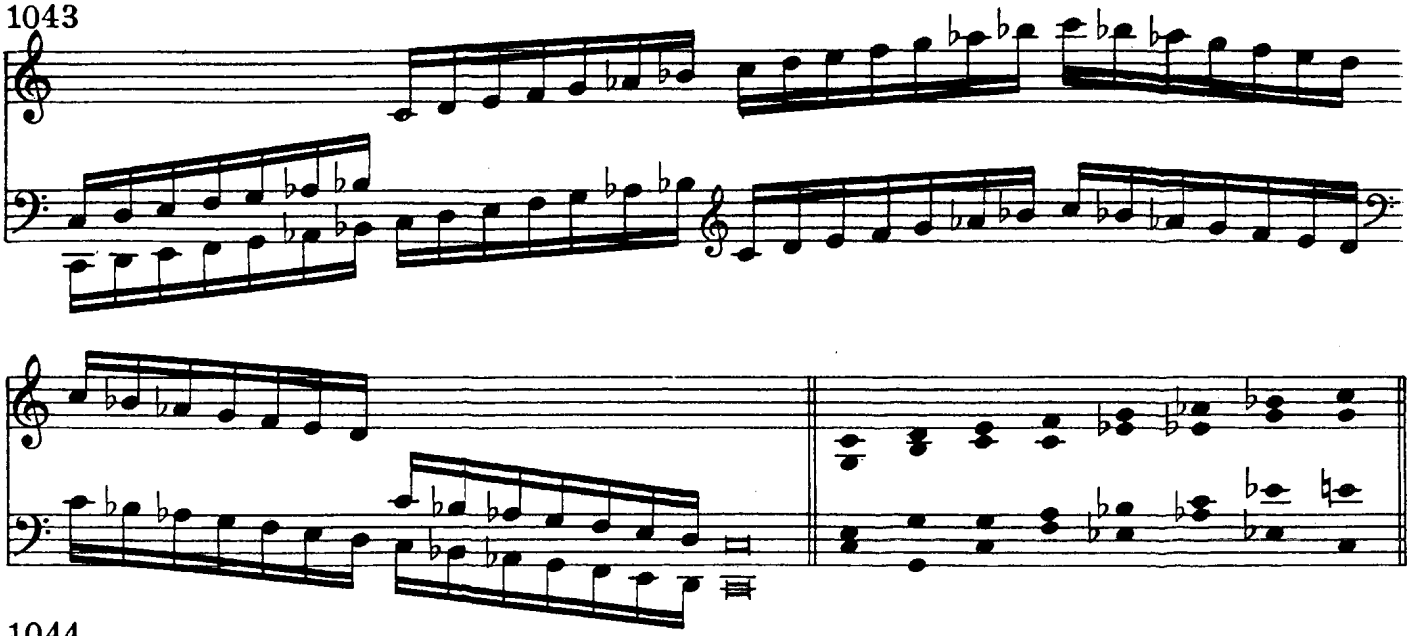

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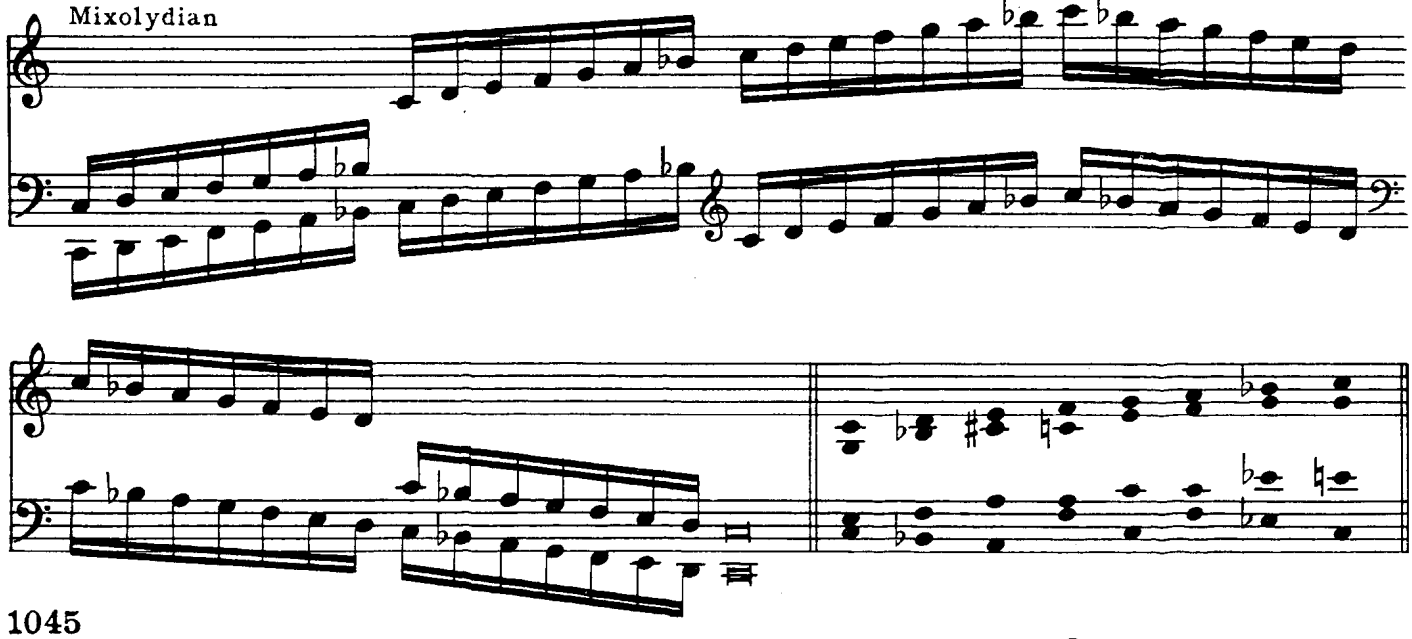

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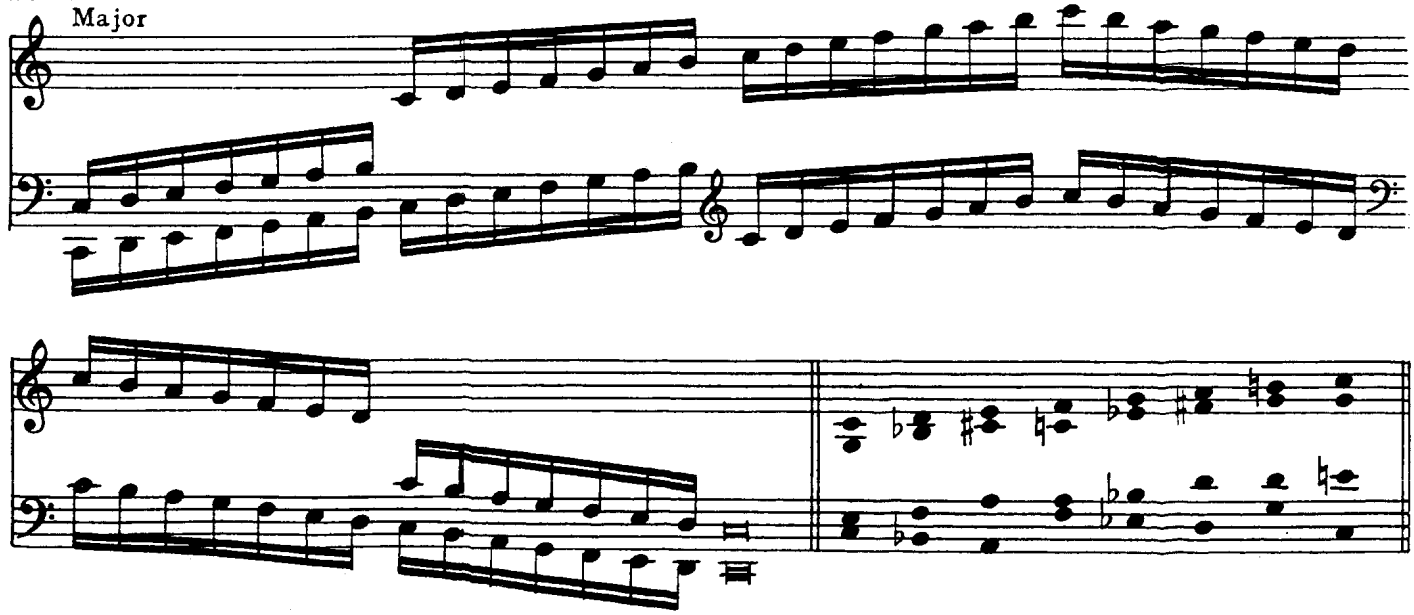

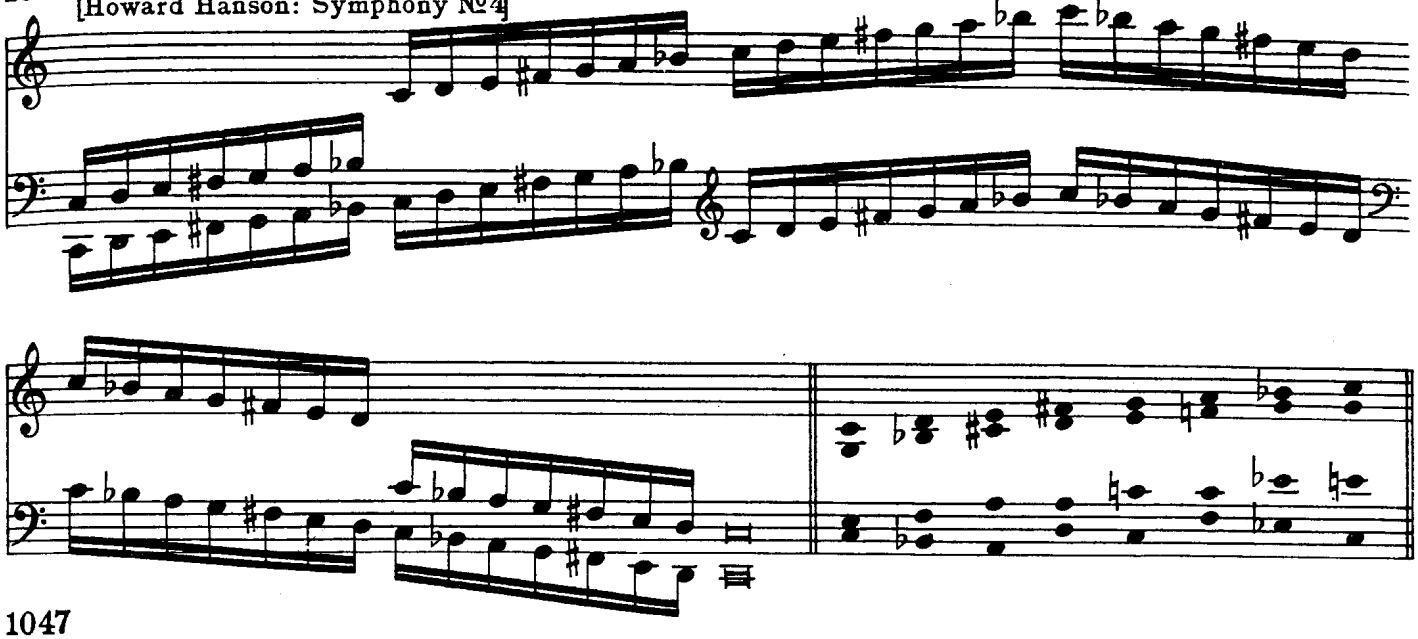

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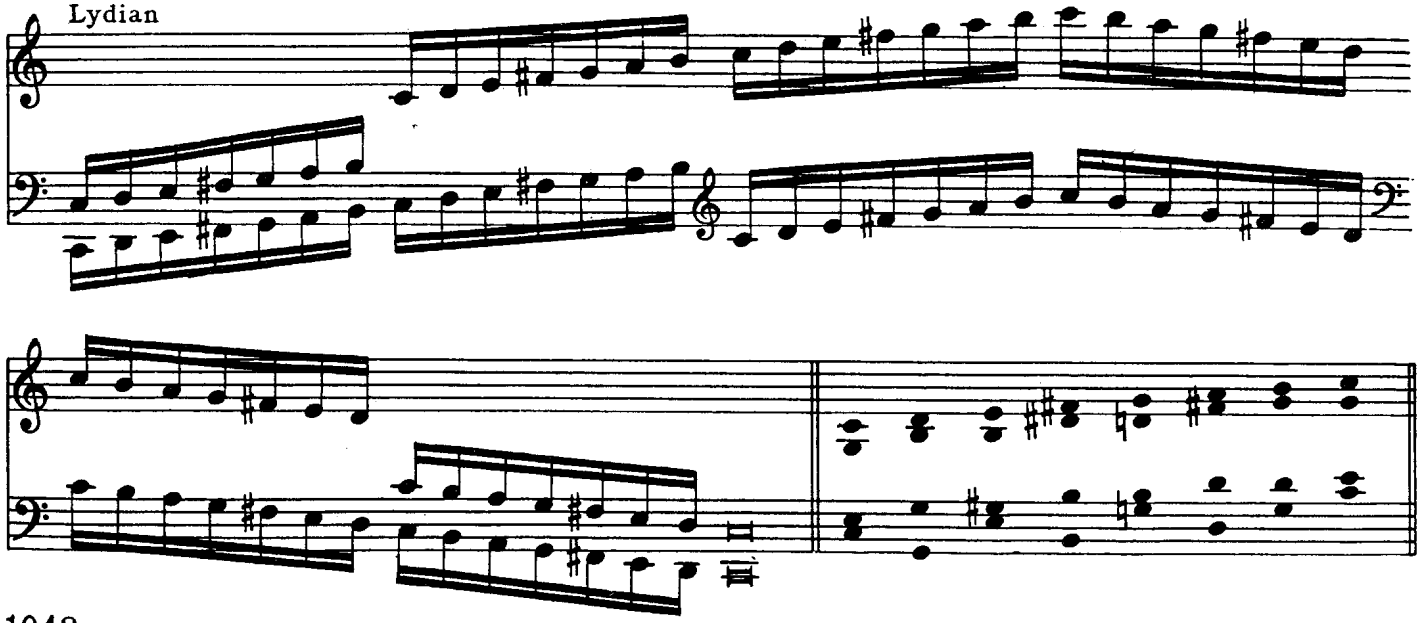

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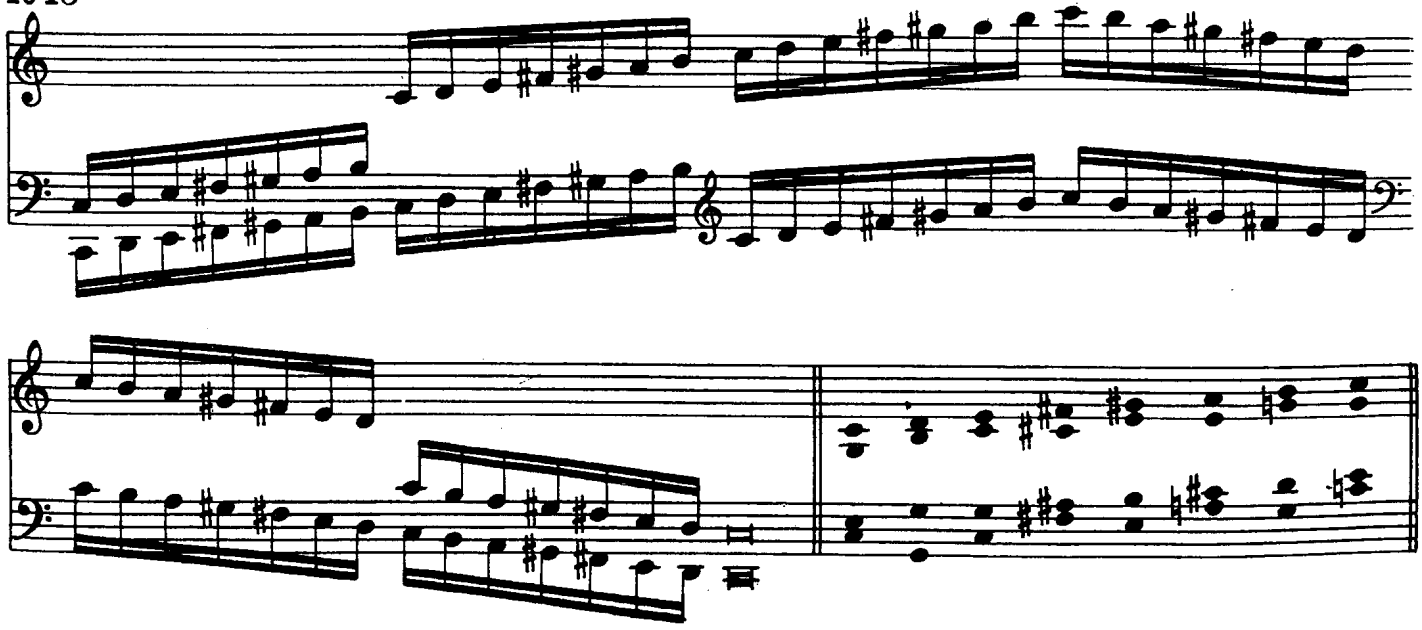

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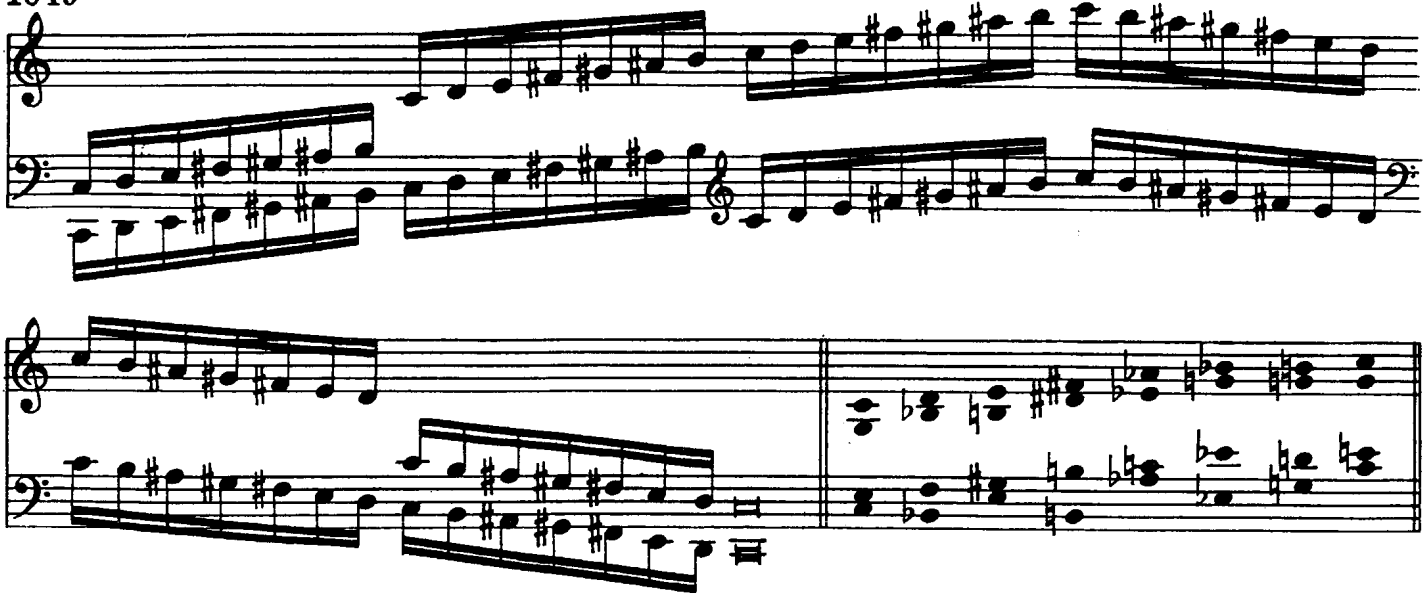

Heptatonic Scales with an Augmented Second

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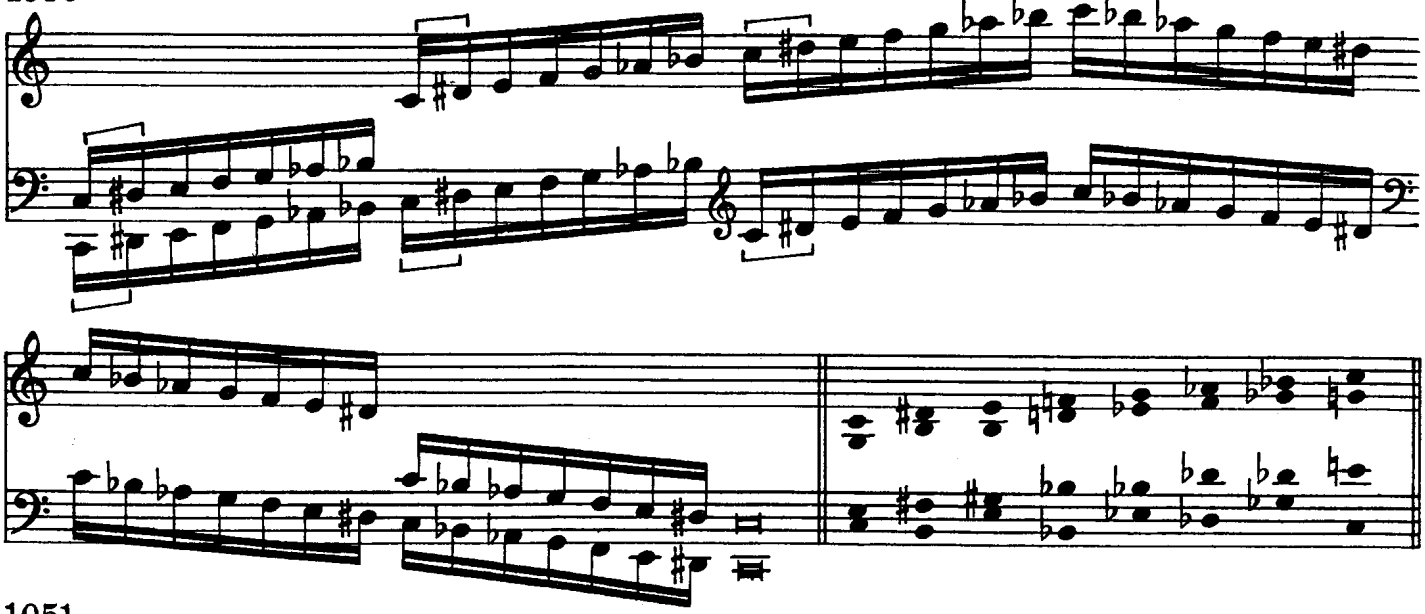

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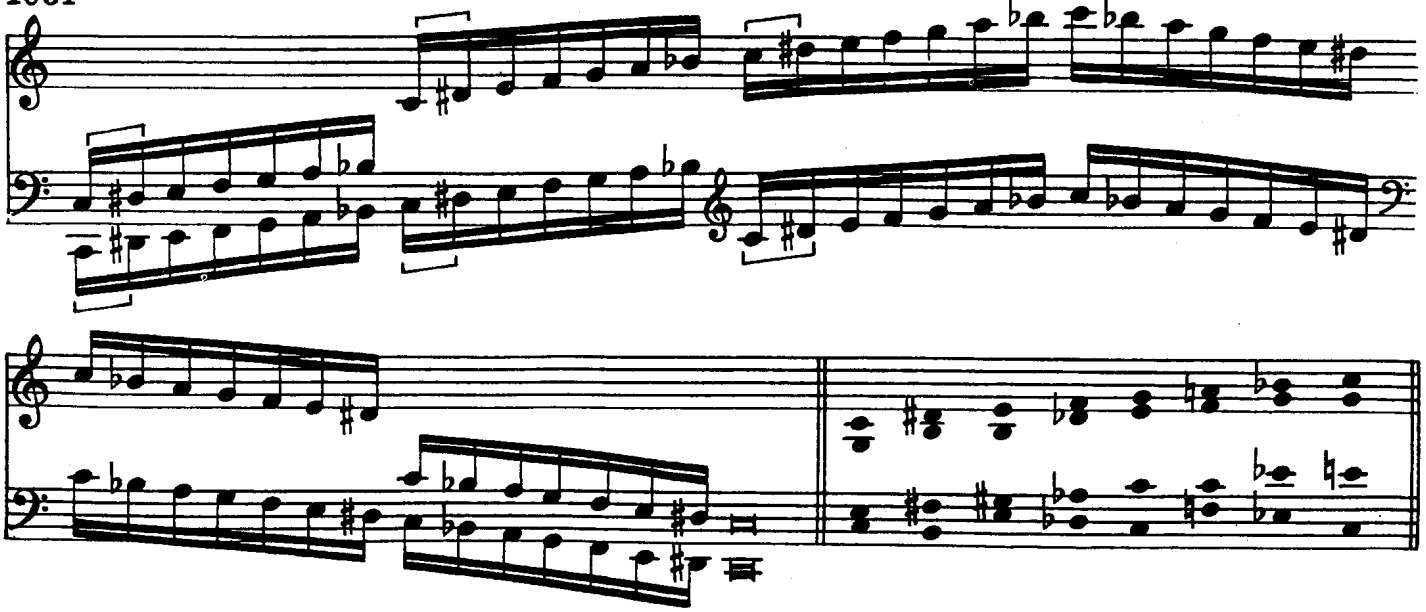

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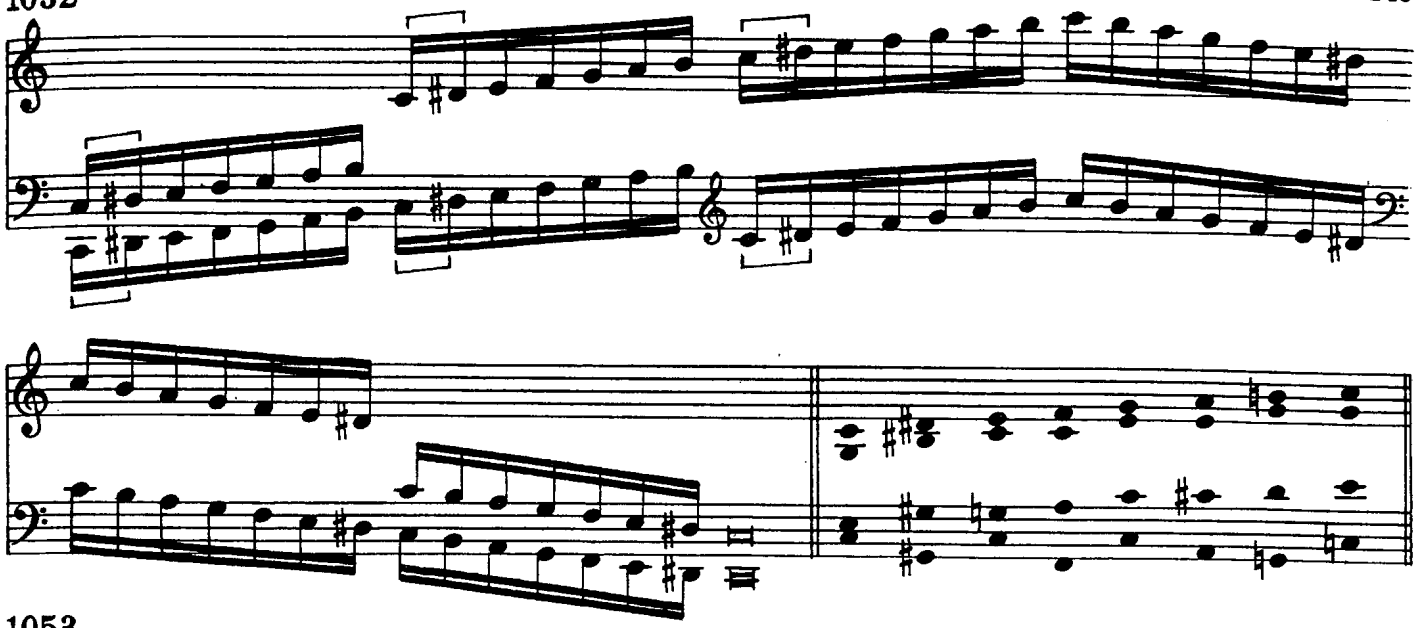

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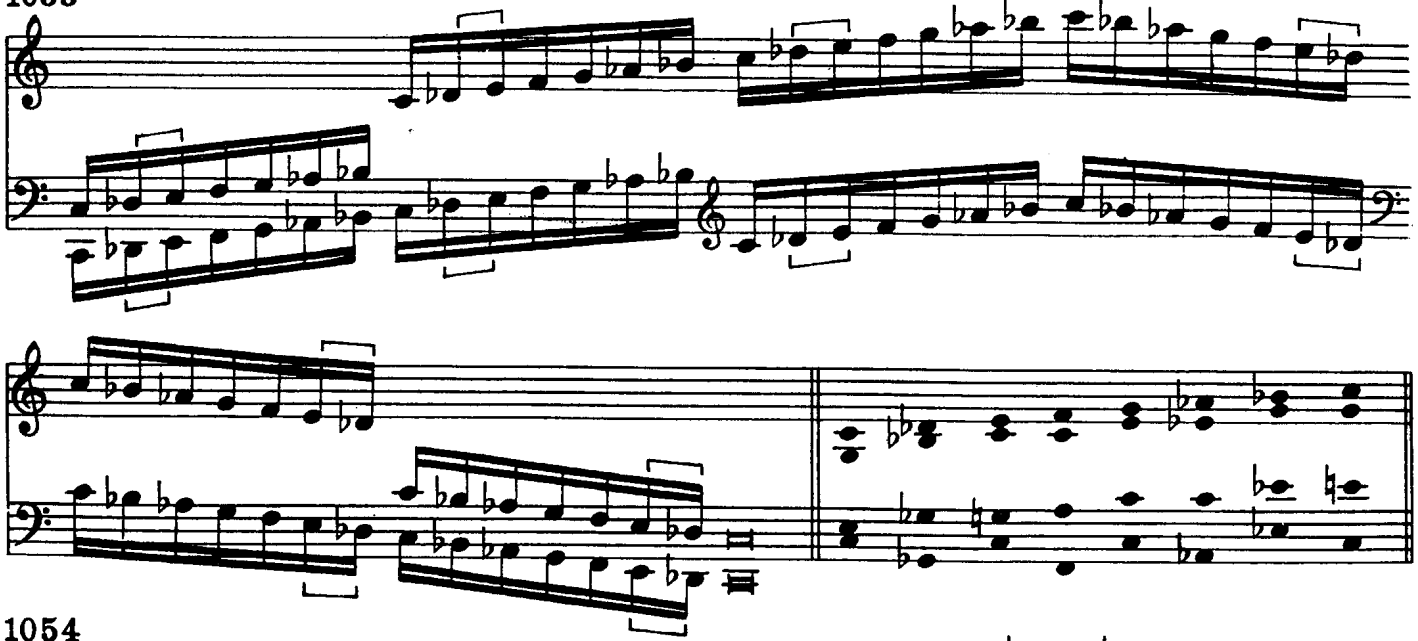

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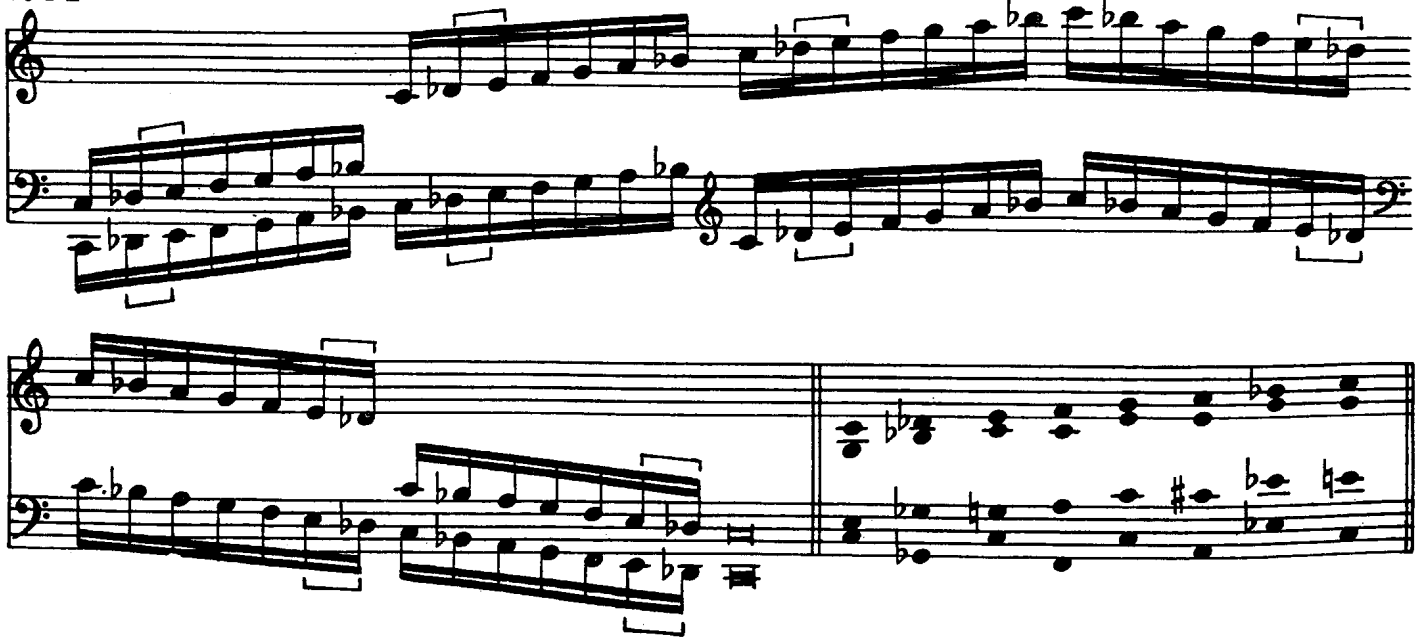

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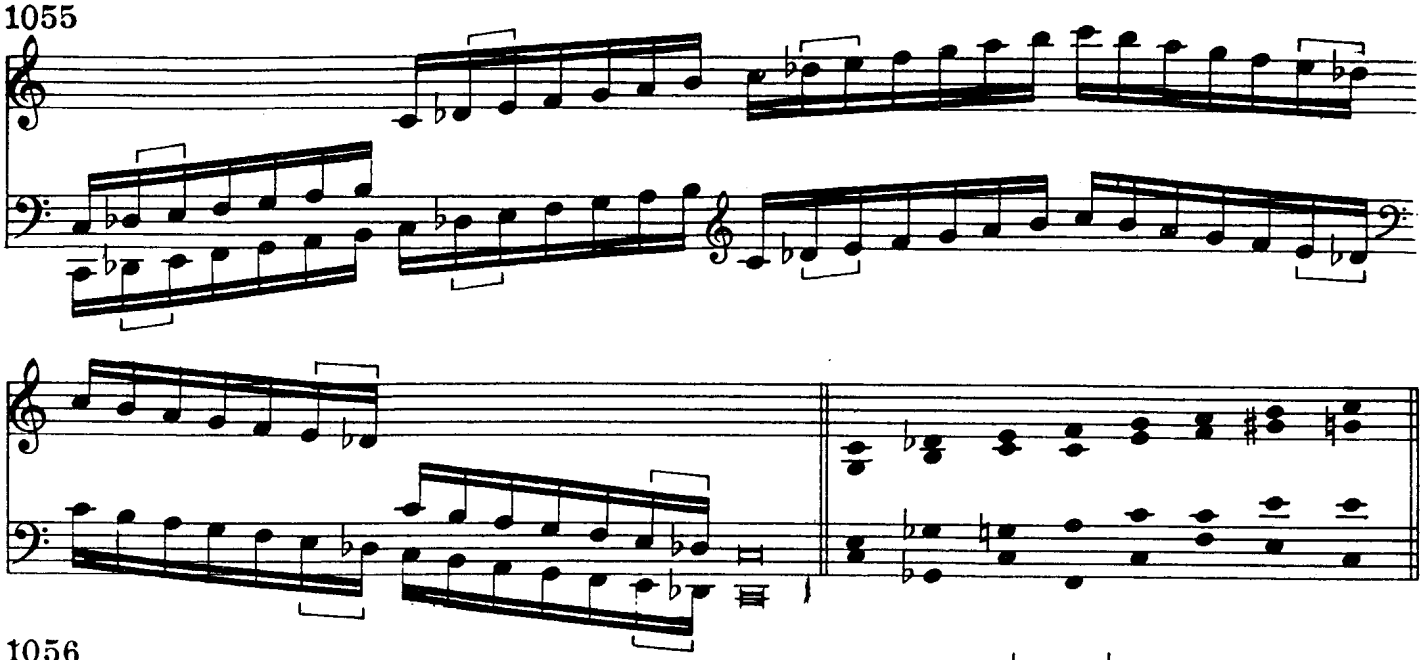

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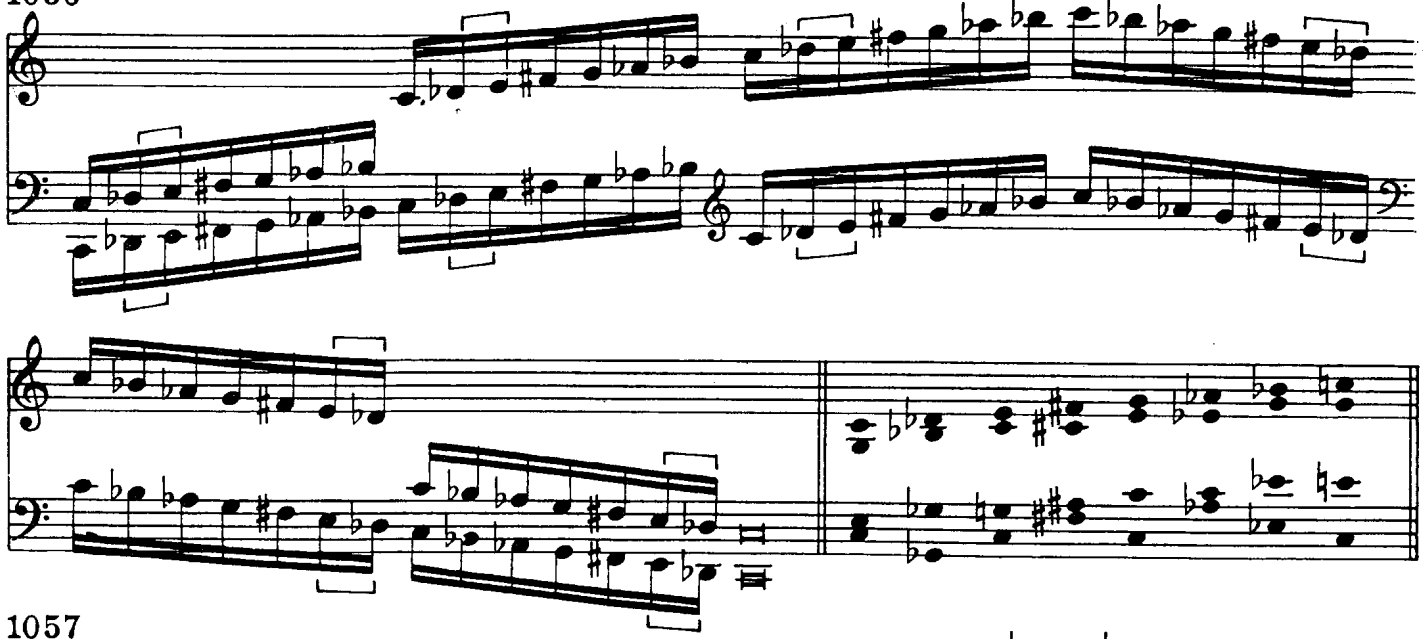

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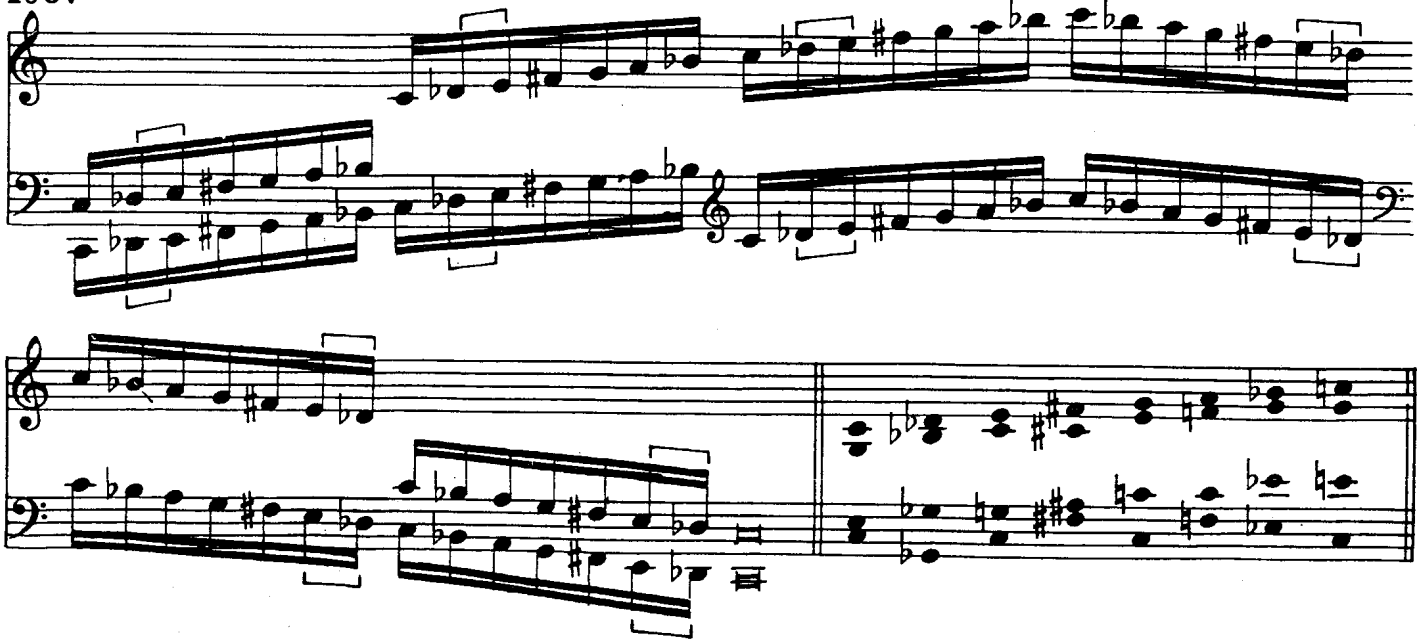

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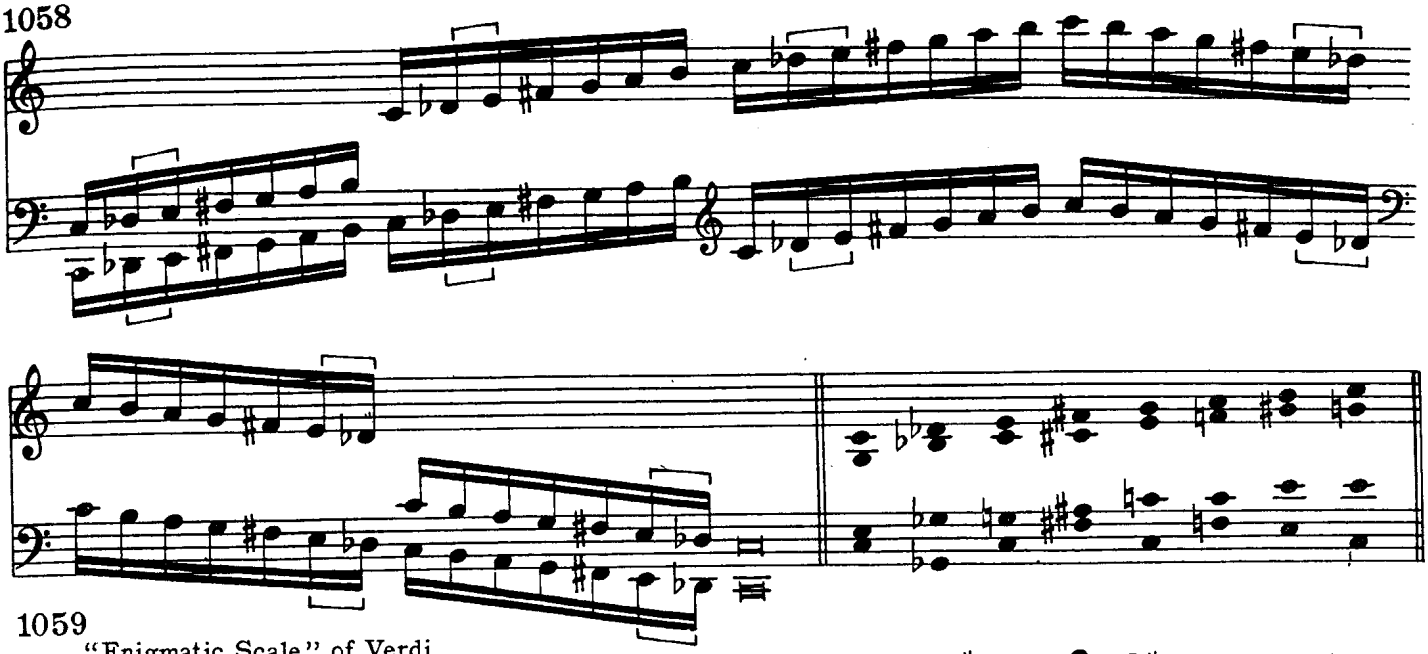

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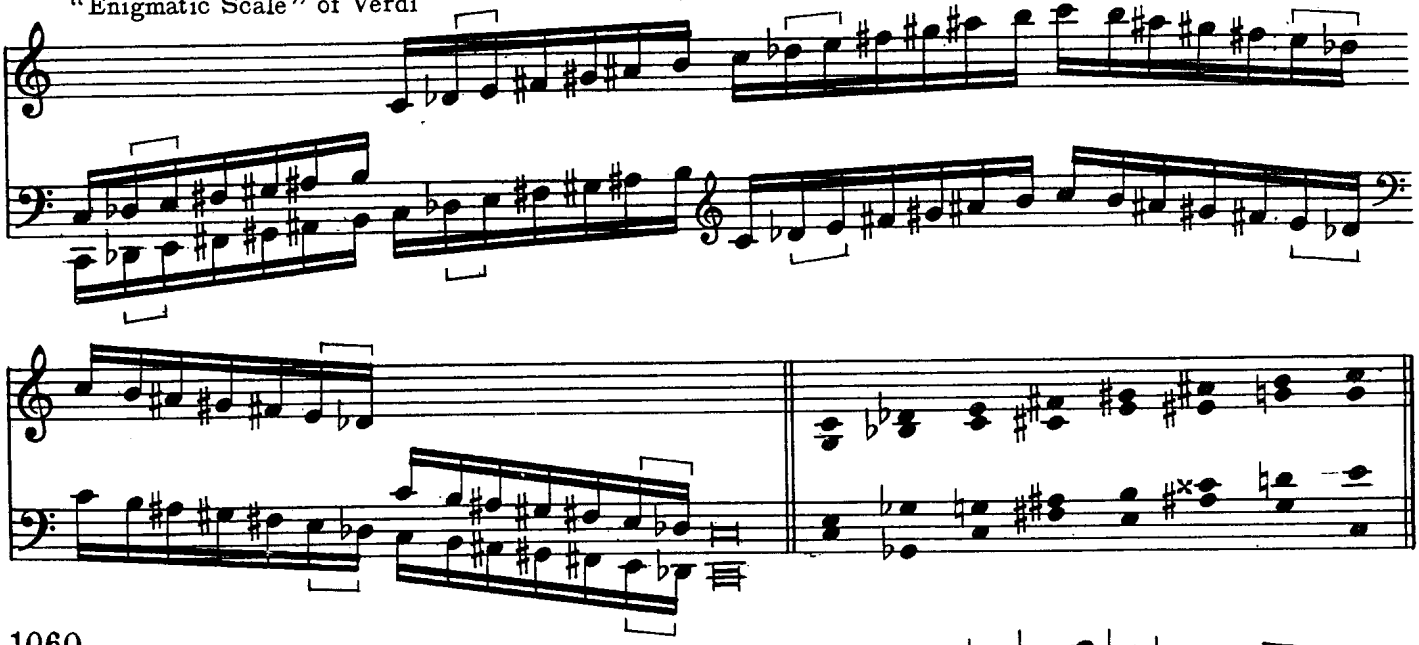
"Enigmatic Scale" of Verdi



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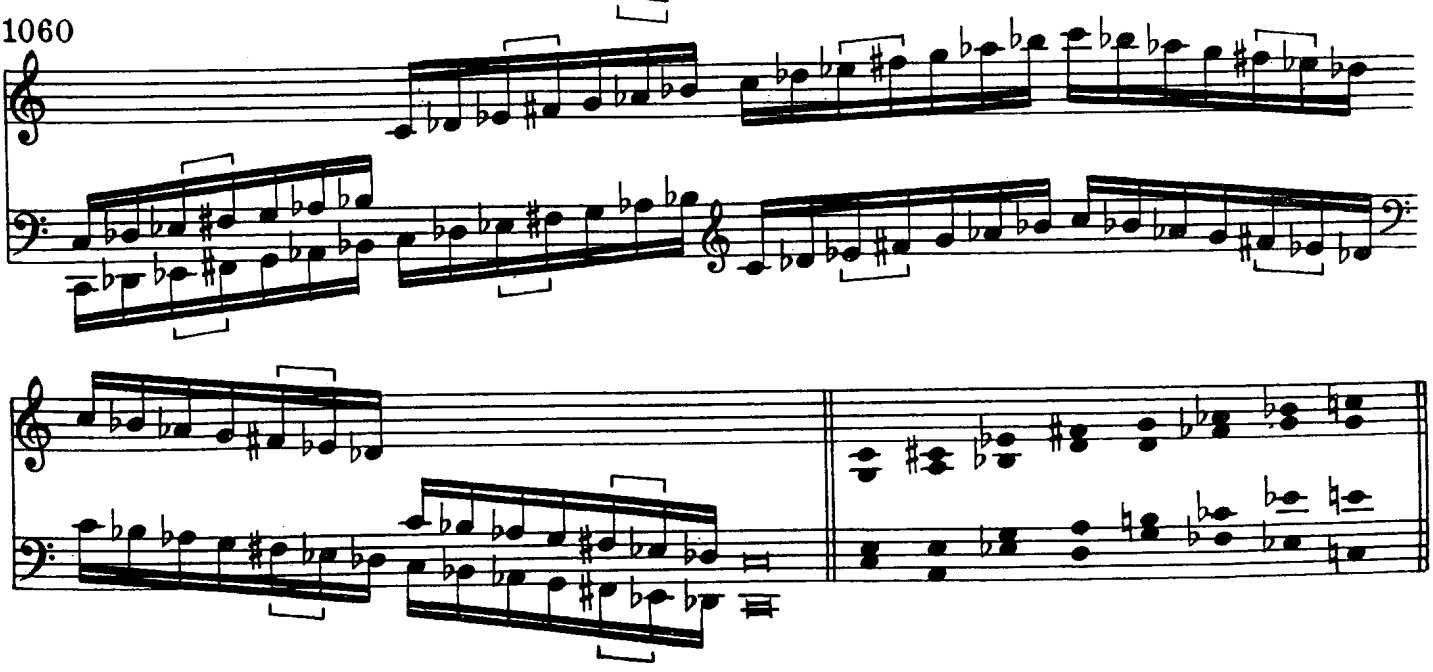

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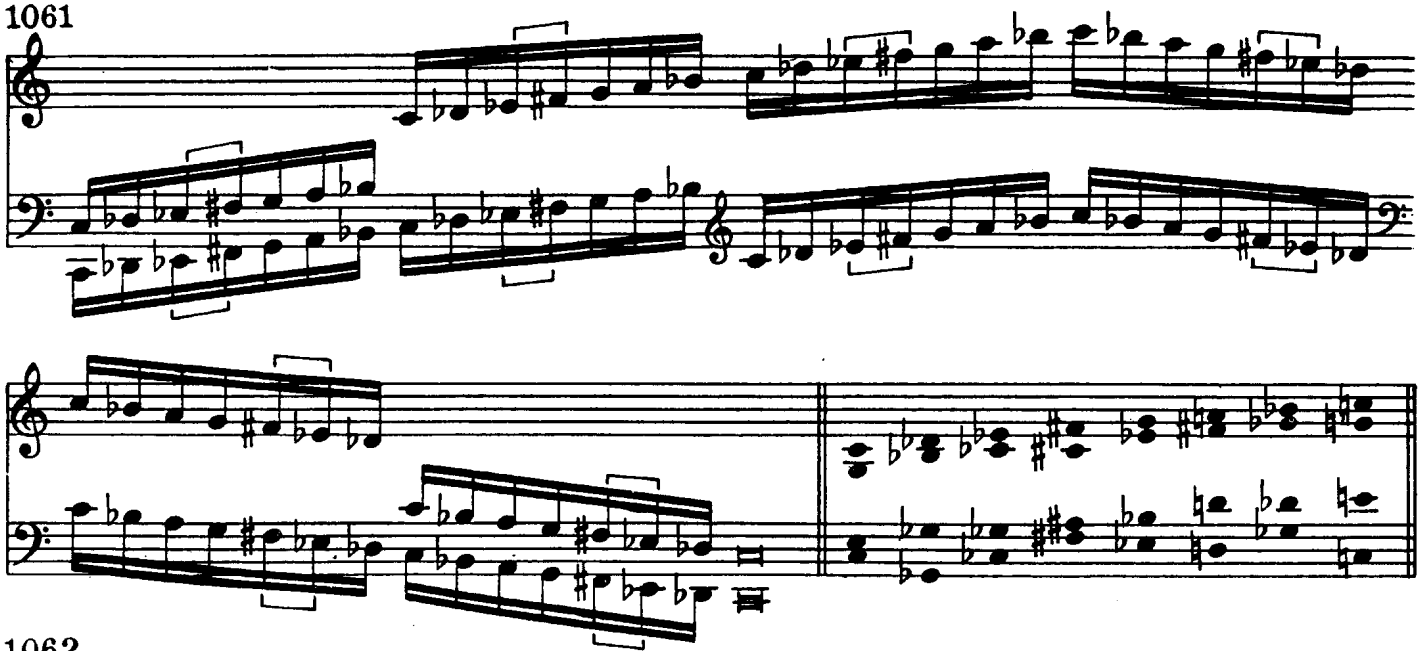

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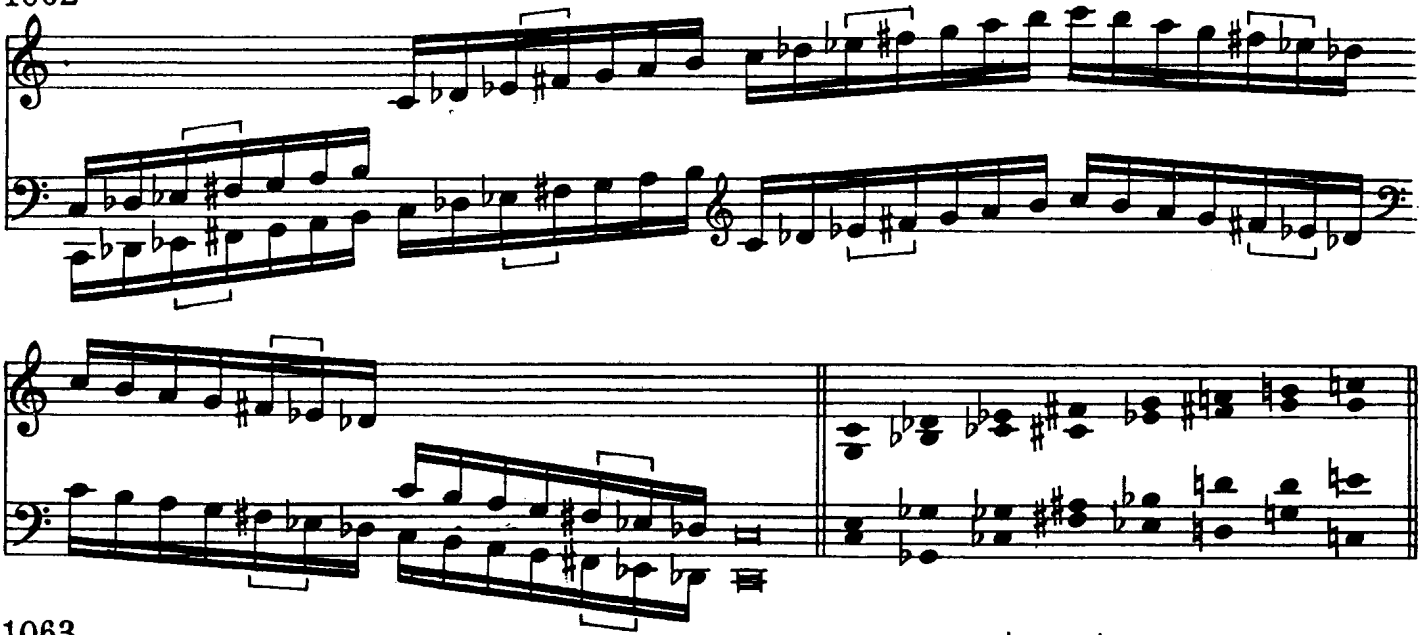

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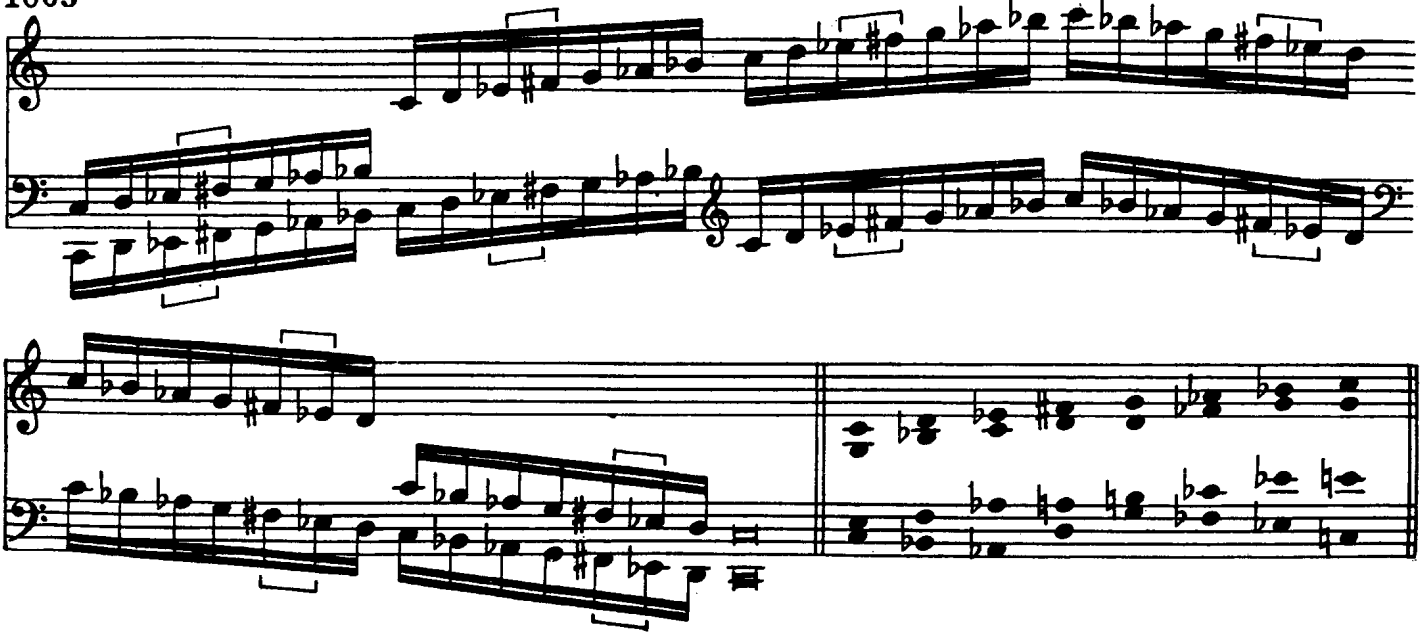

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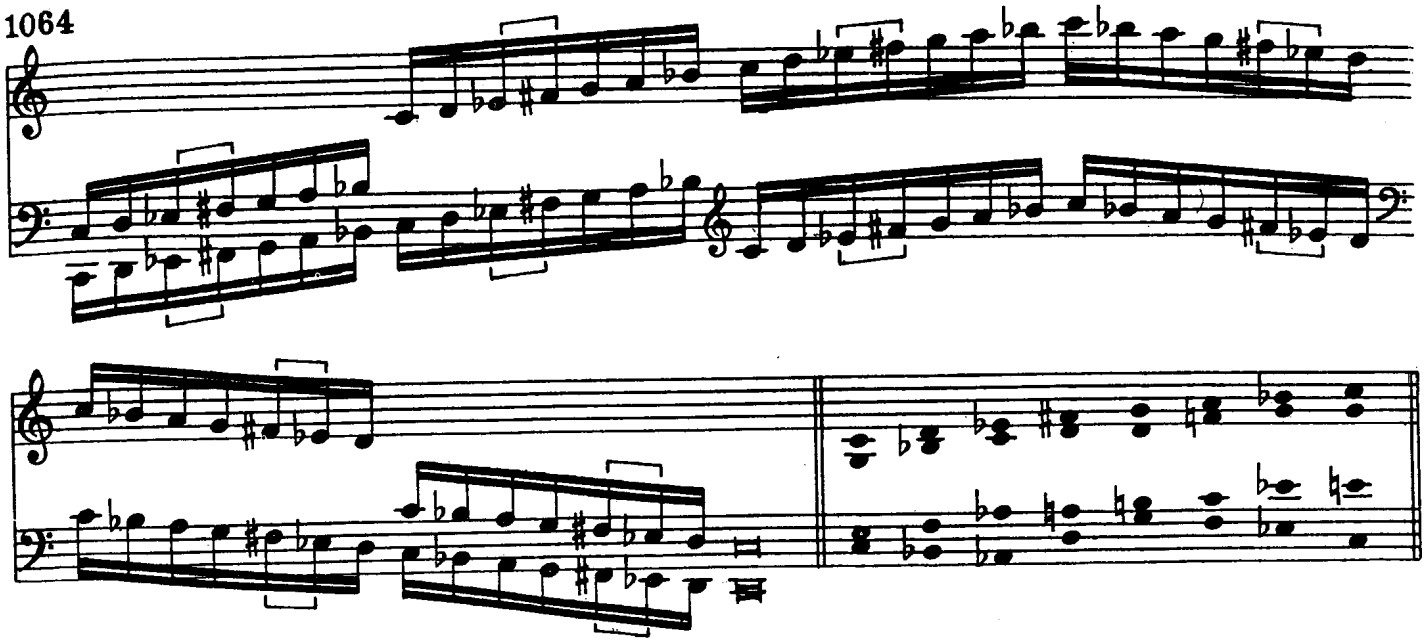

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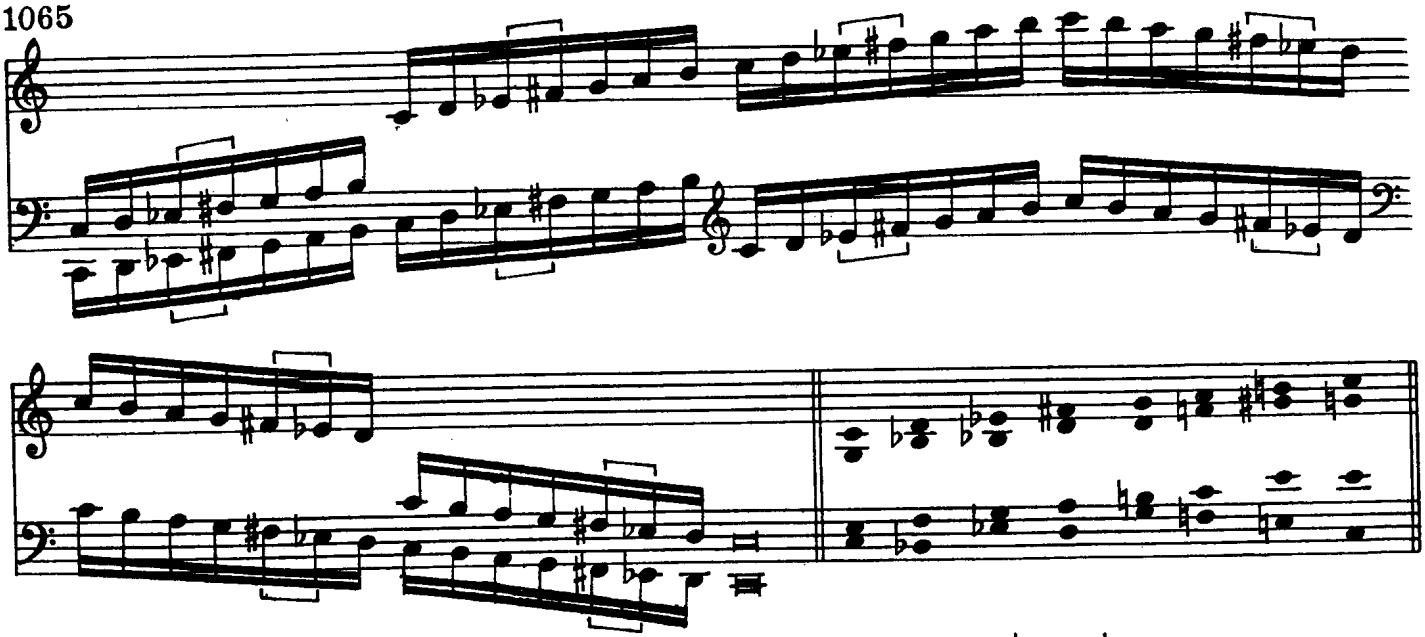

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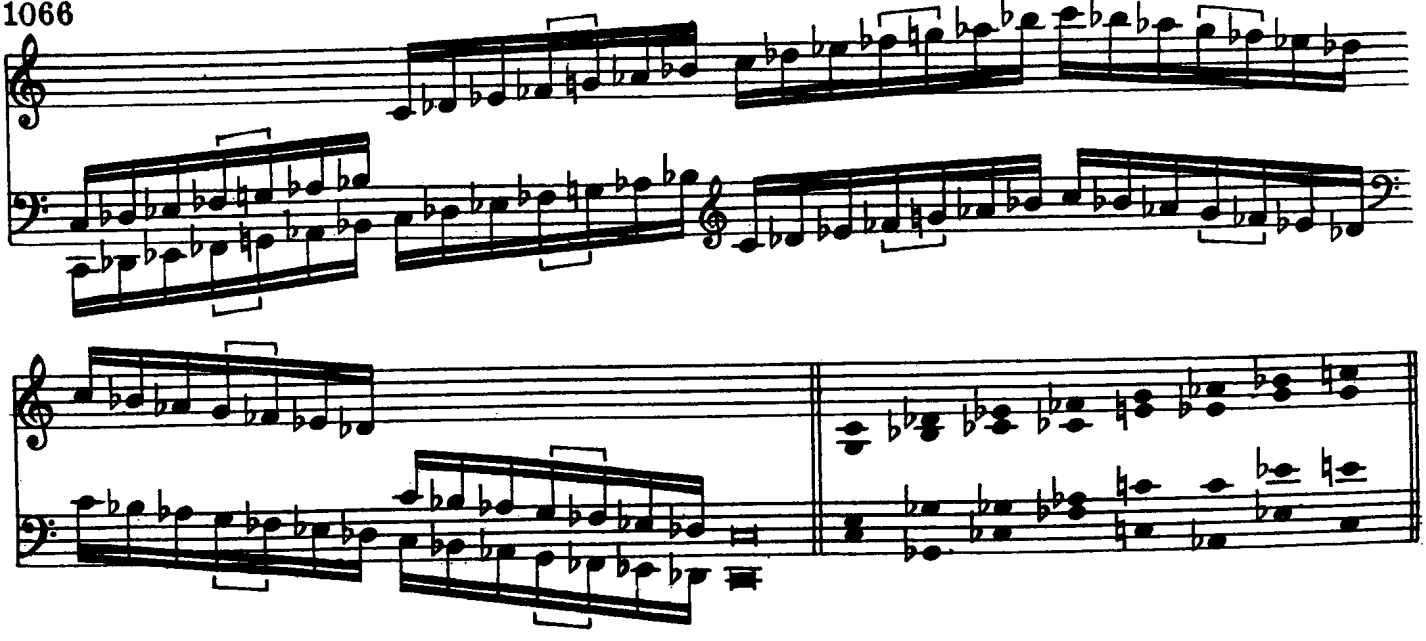

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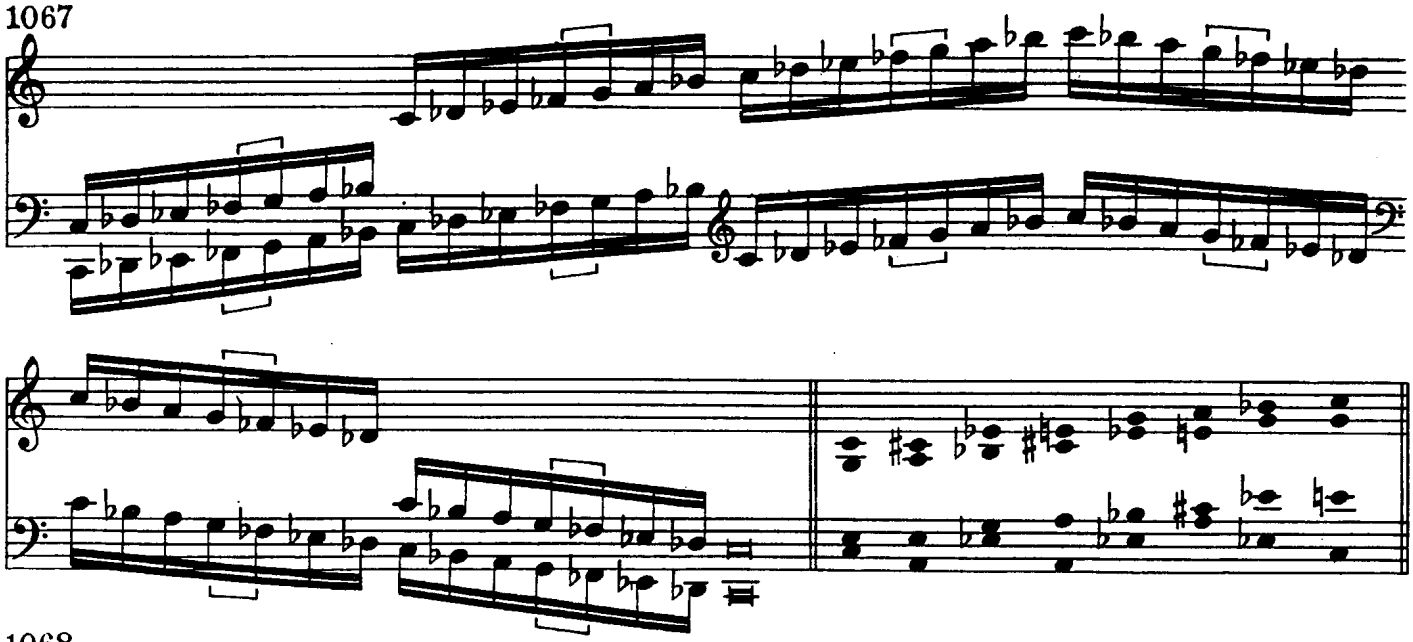

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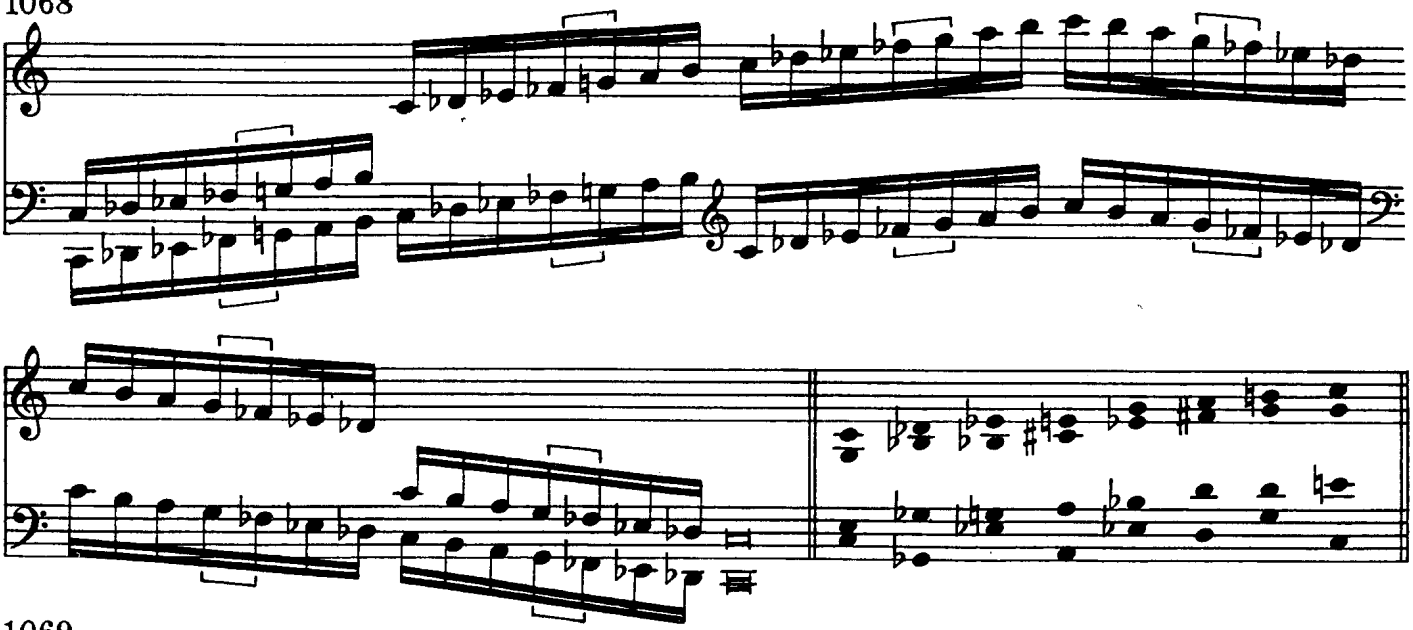

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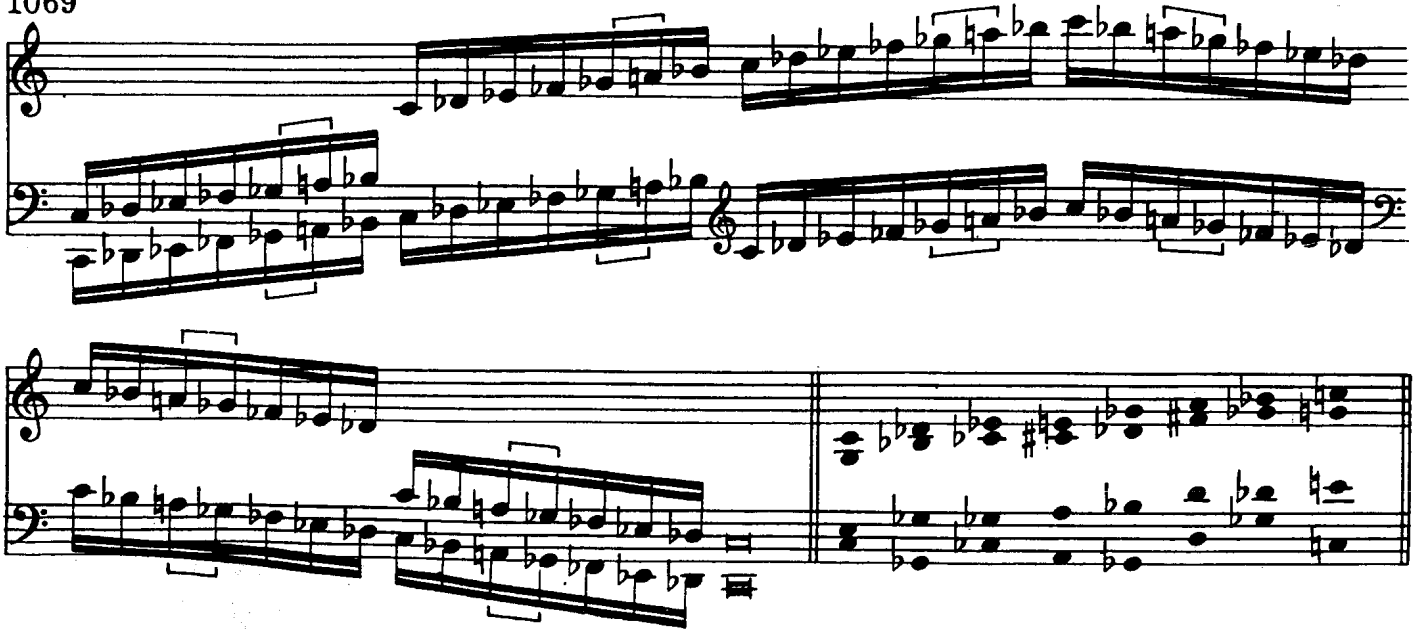

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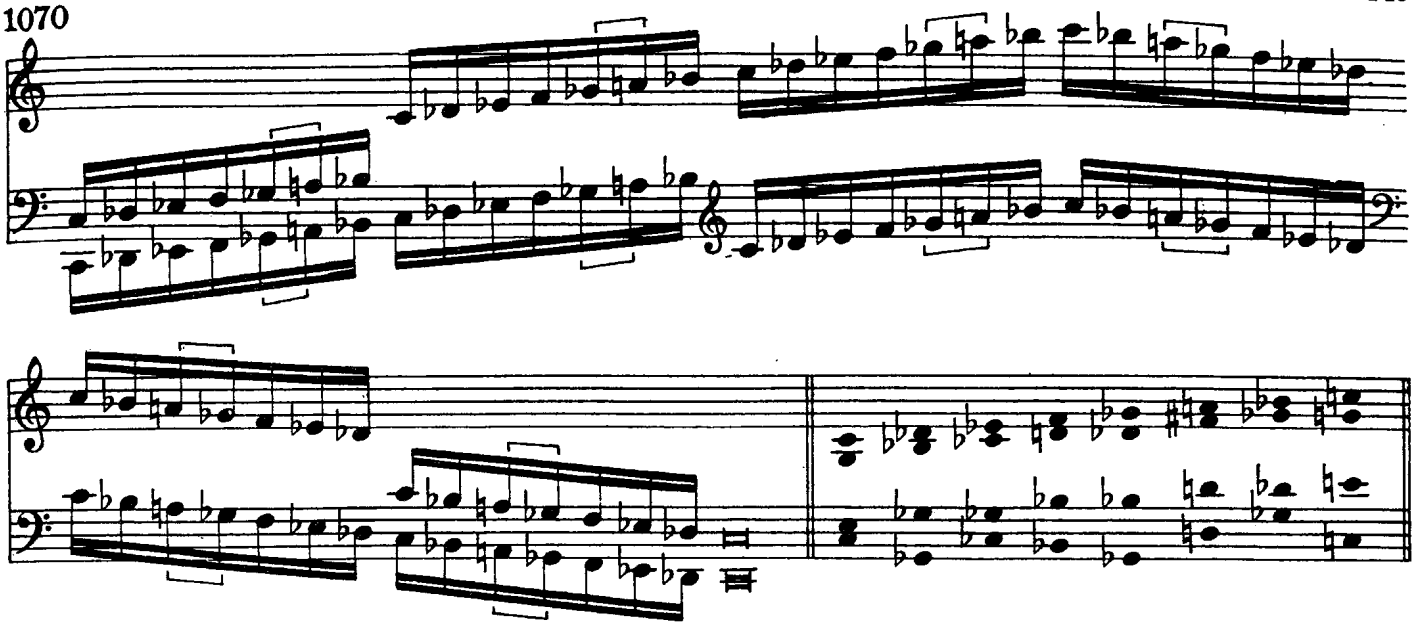

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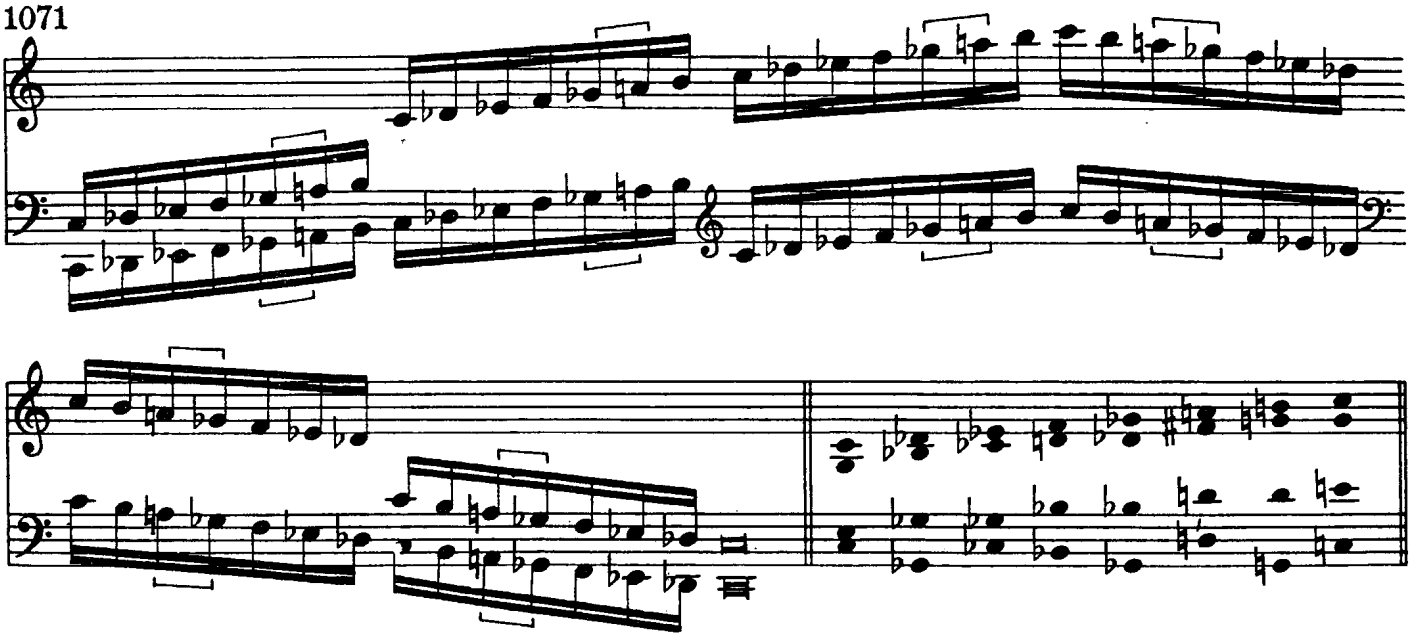

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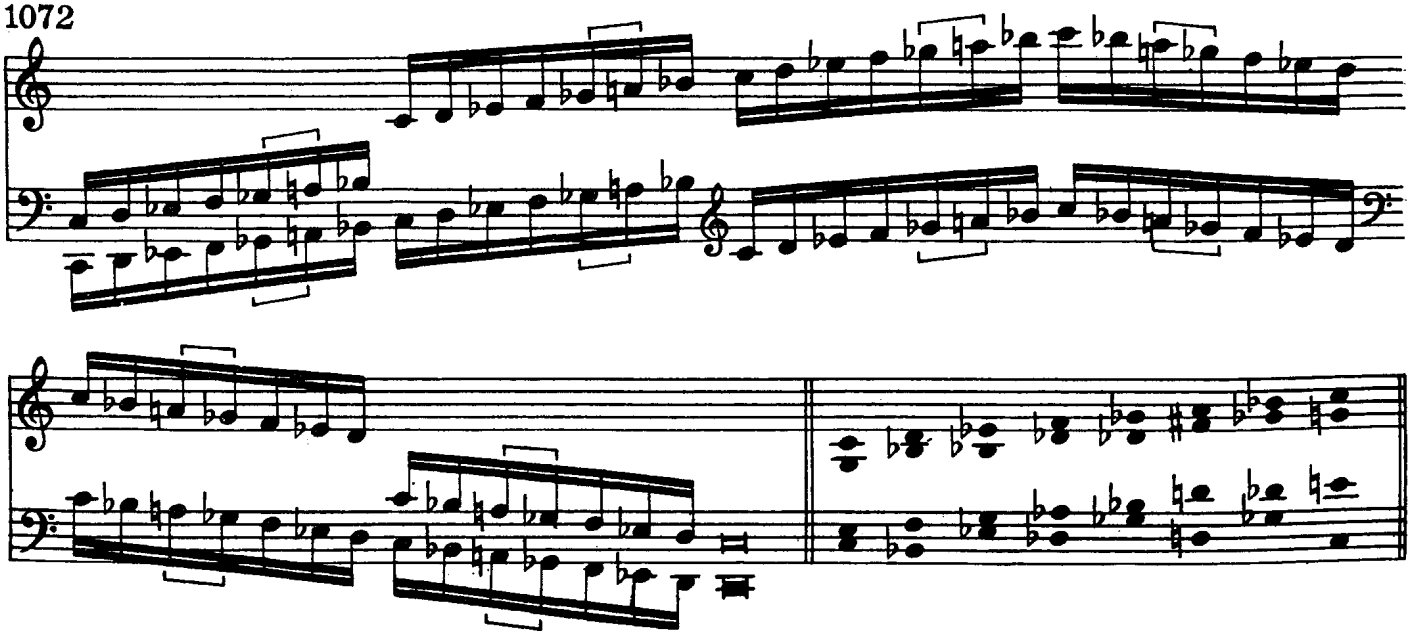

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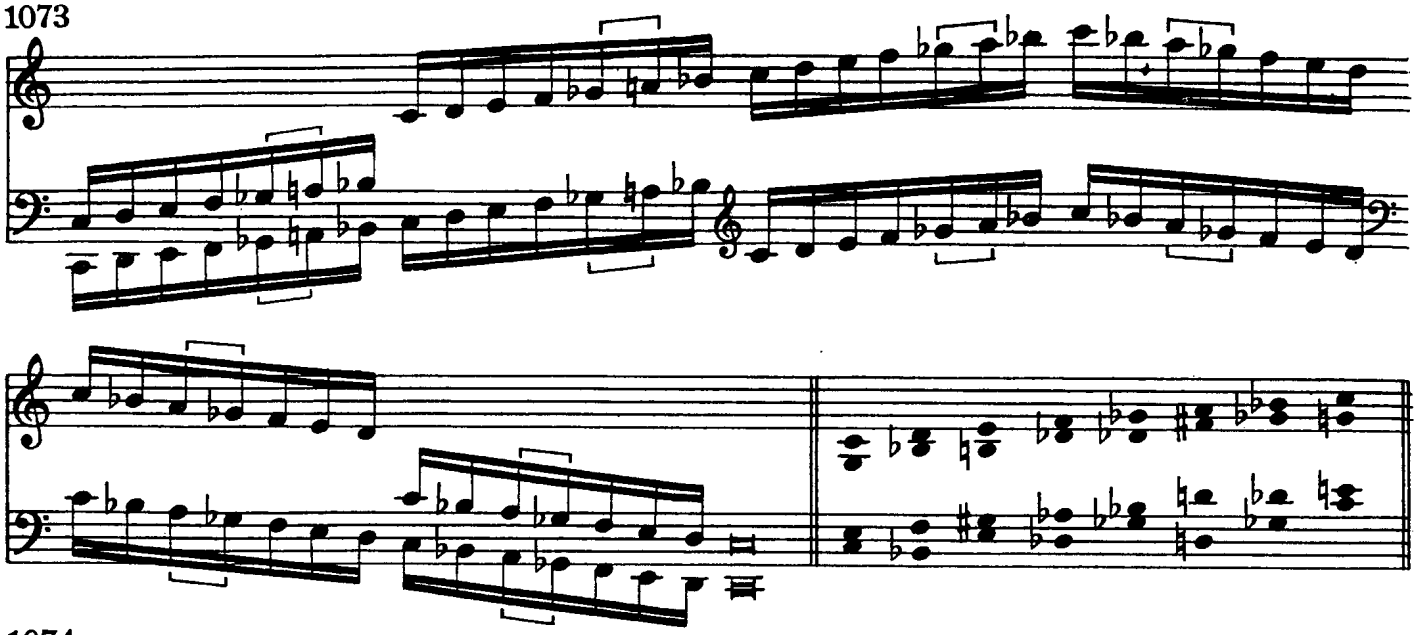

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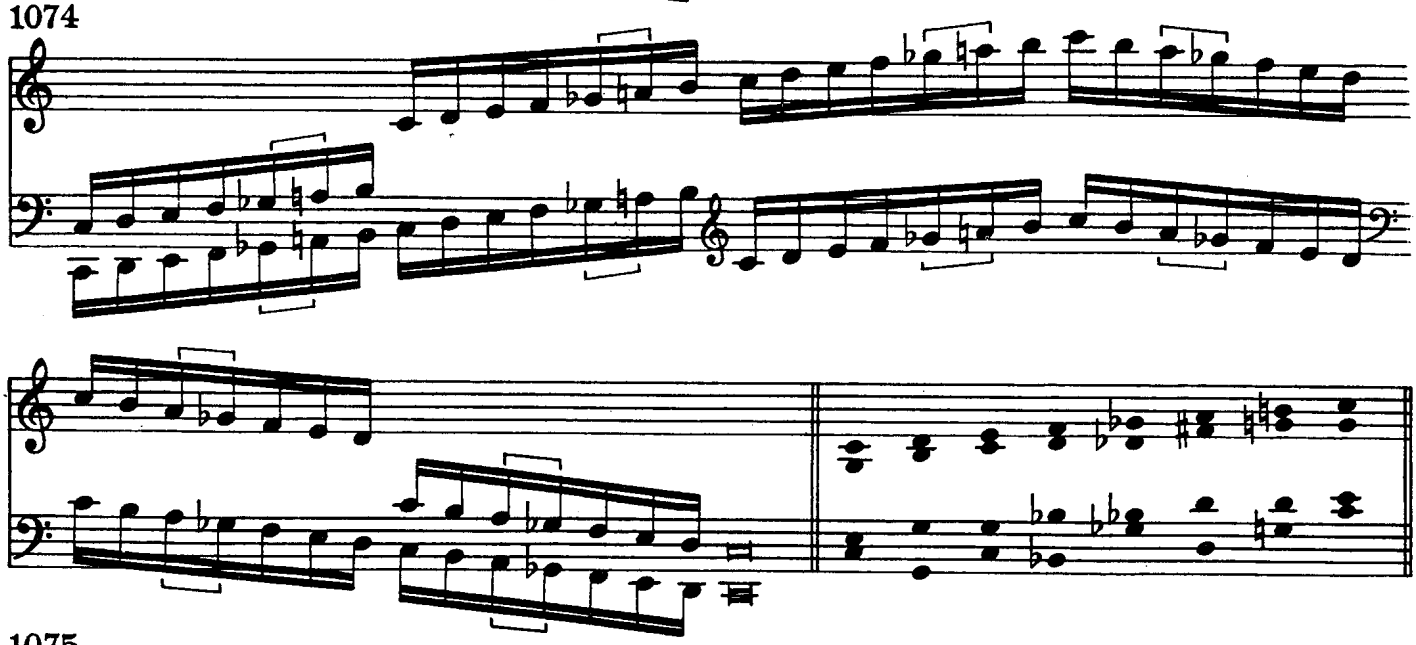

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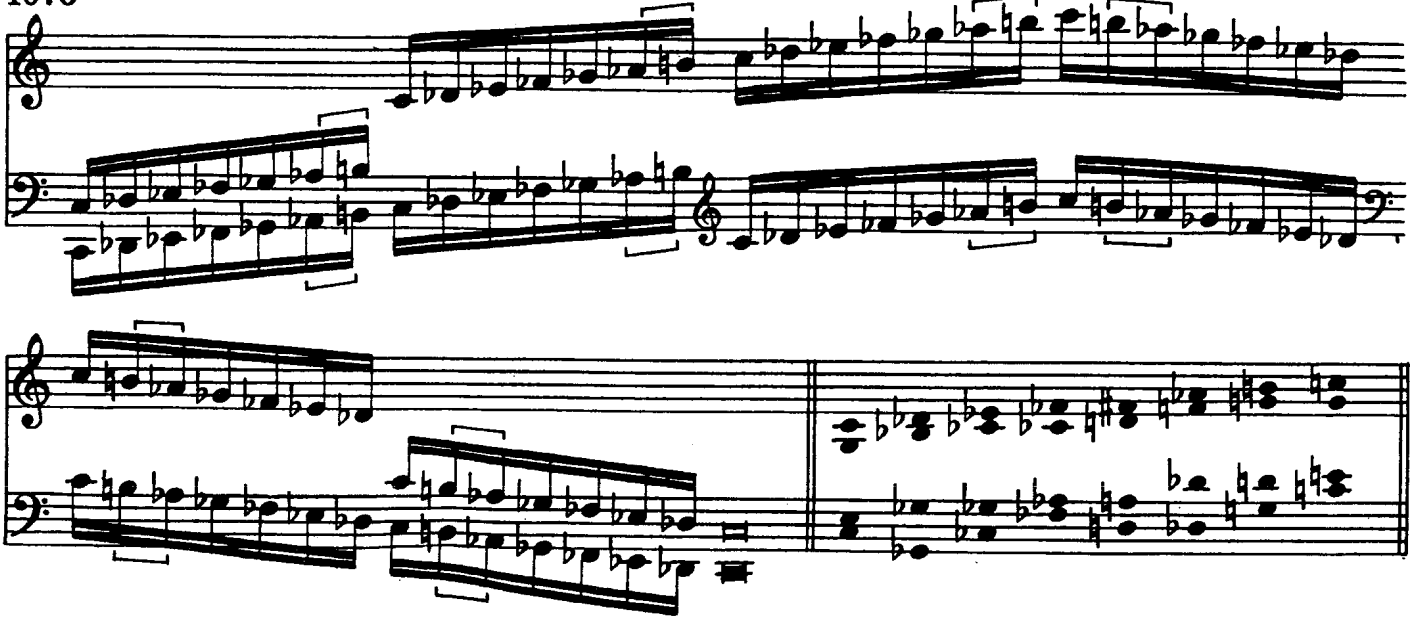

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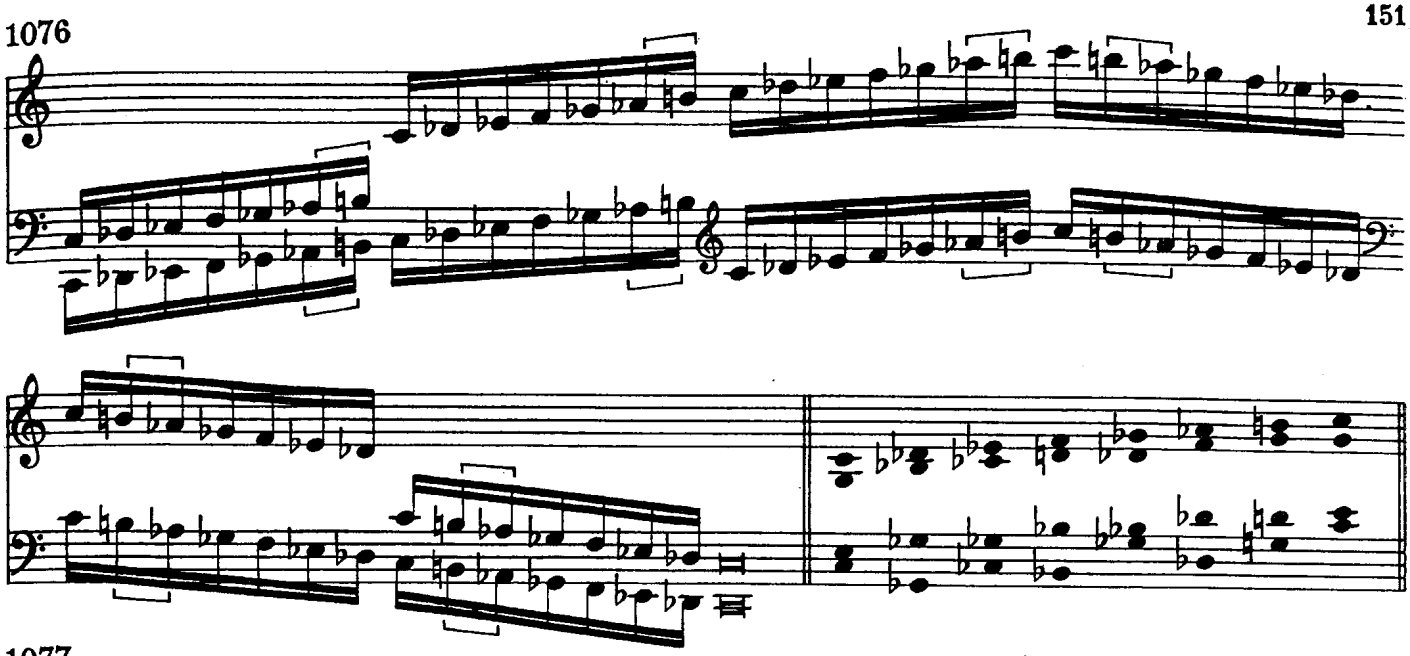

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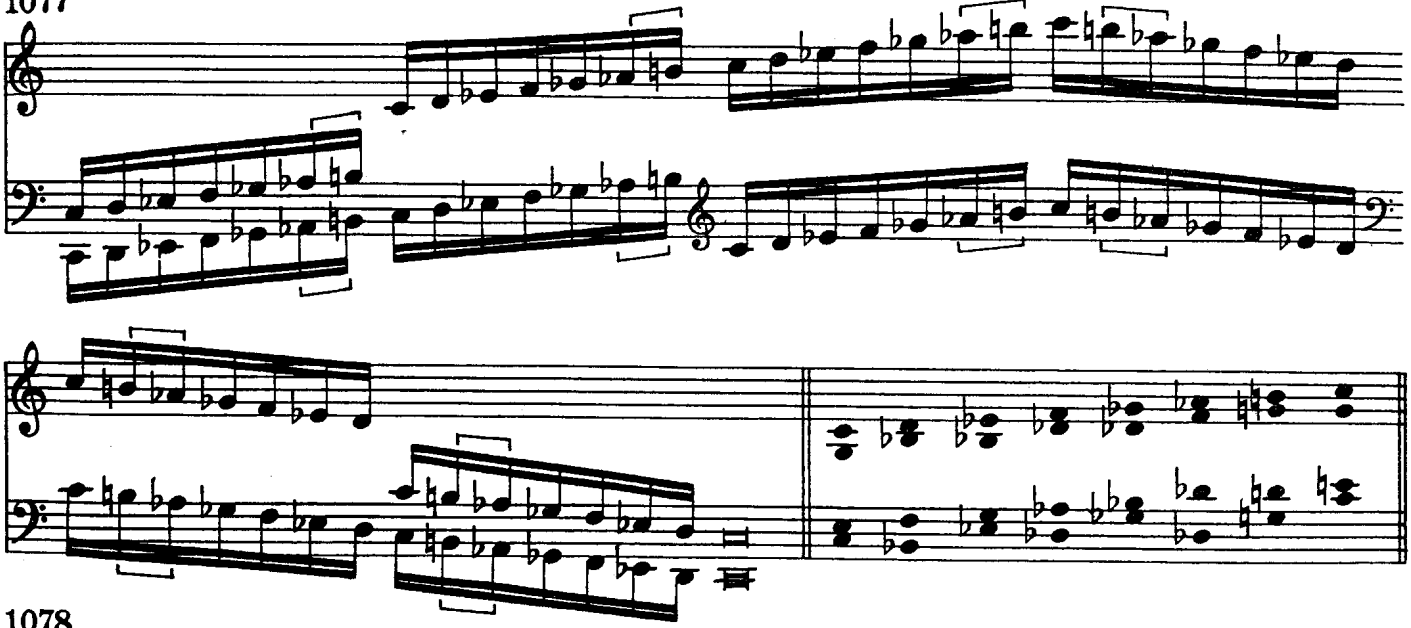

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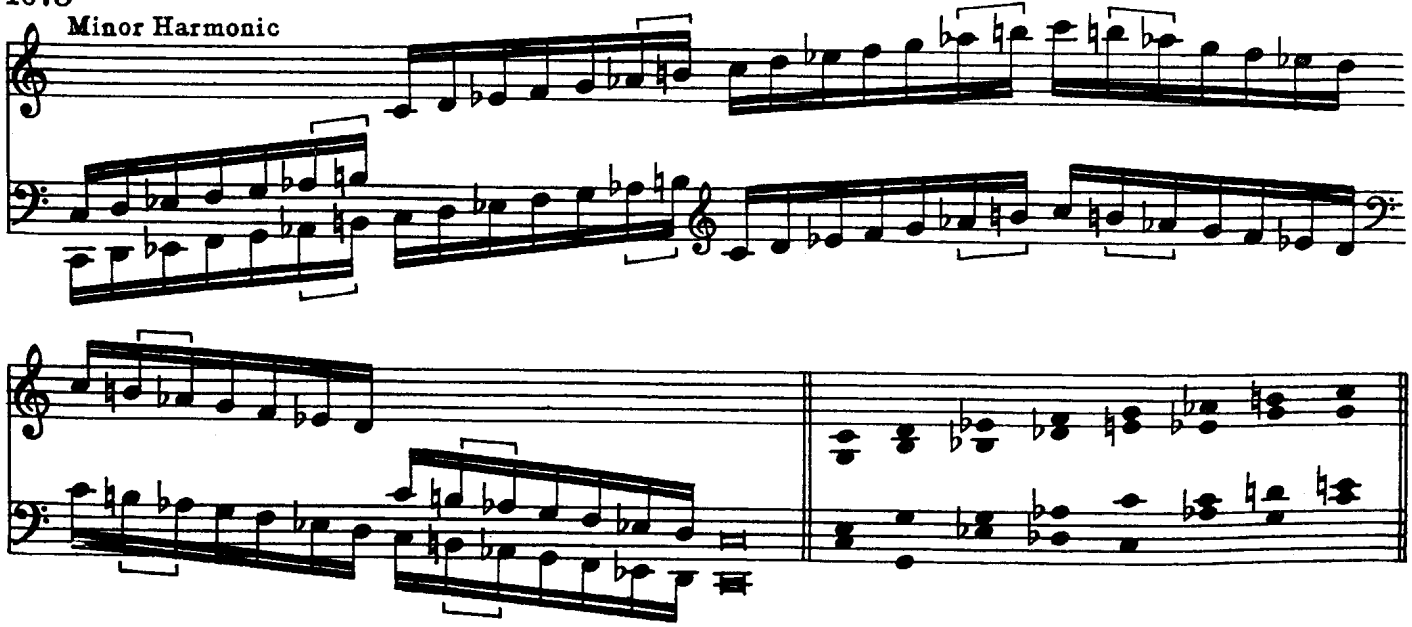
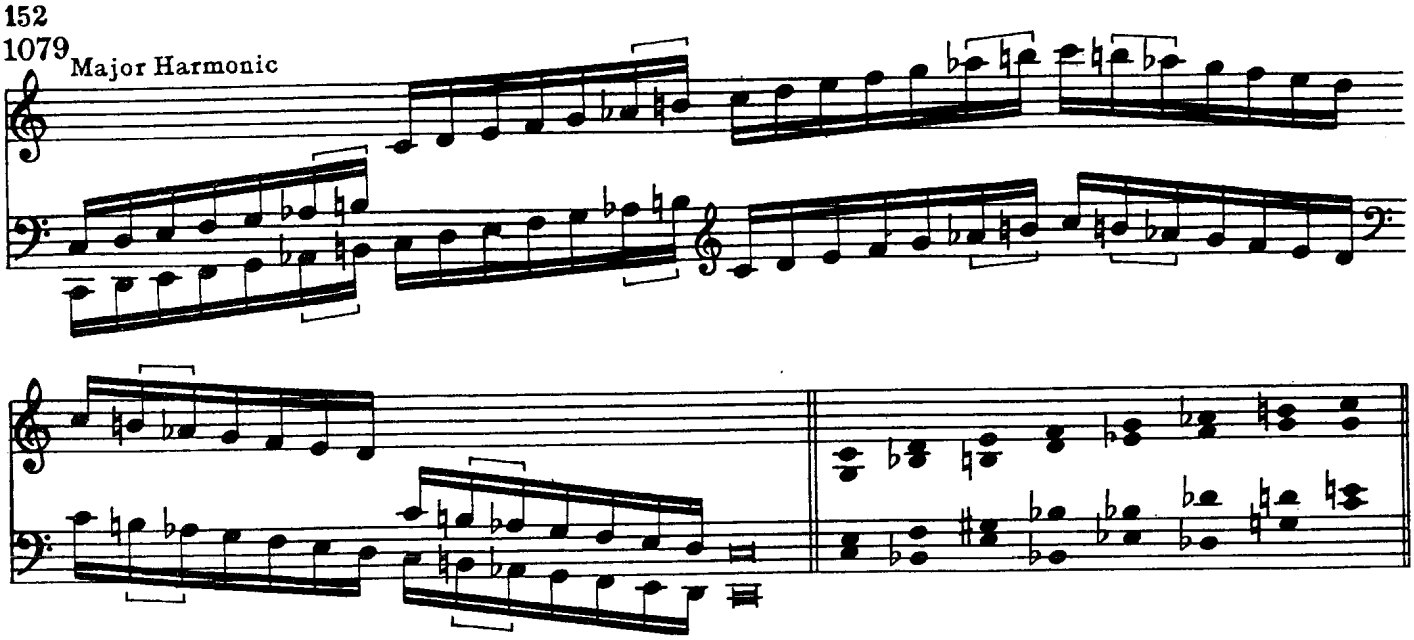
Minor Harmonic



1079 Major Harmonic



Heptatonic Scales with Two Augmented Seconds

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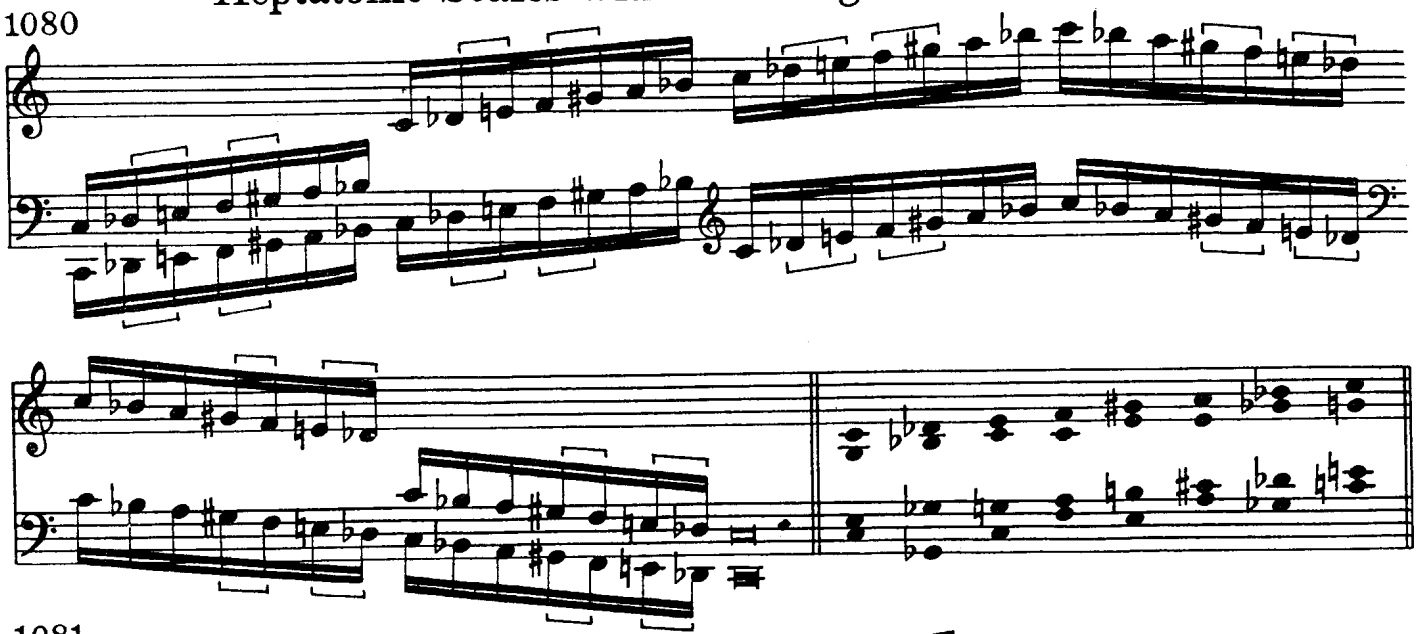

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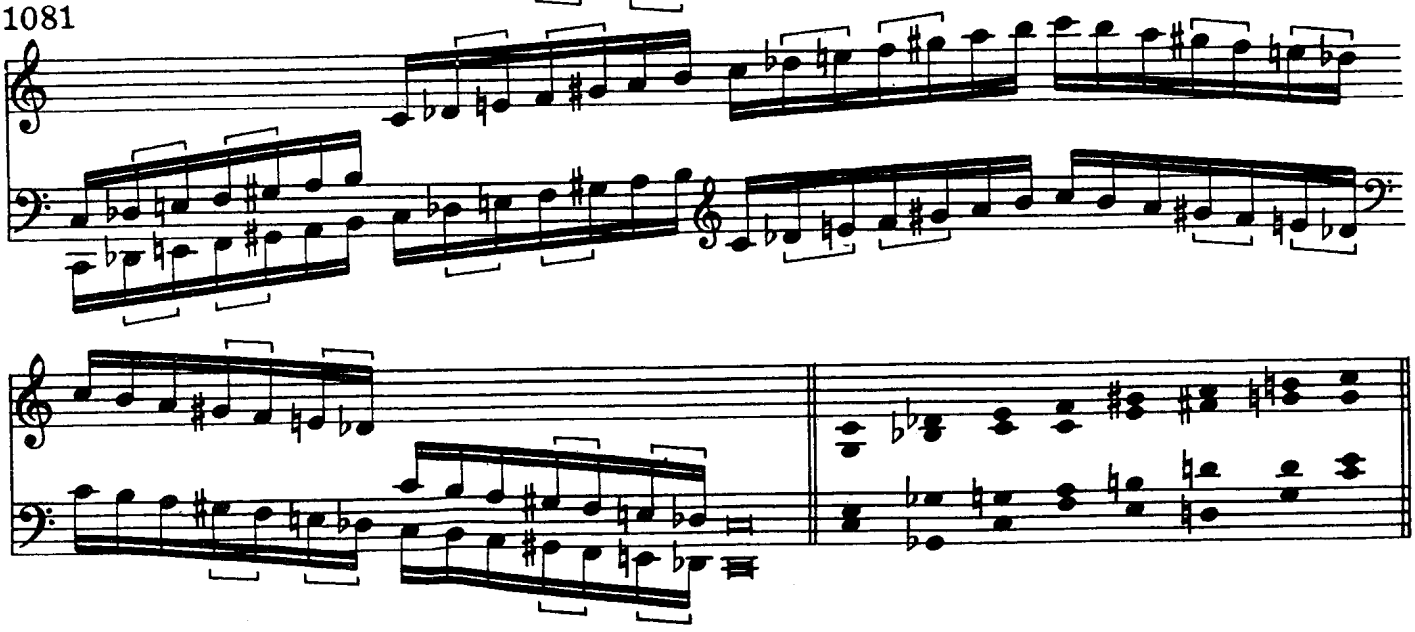

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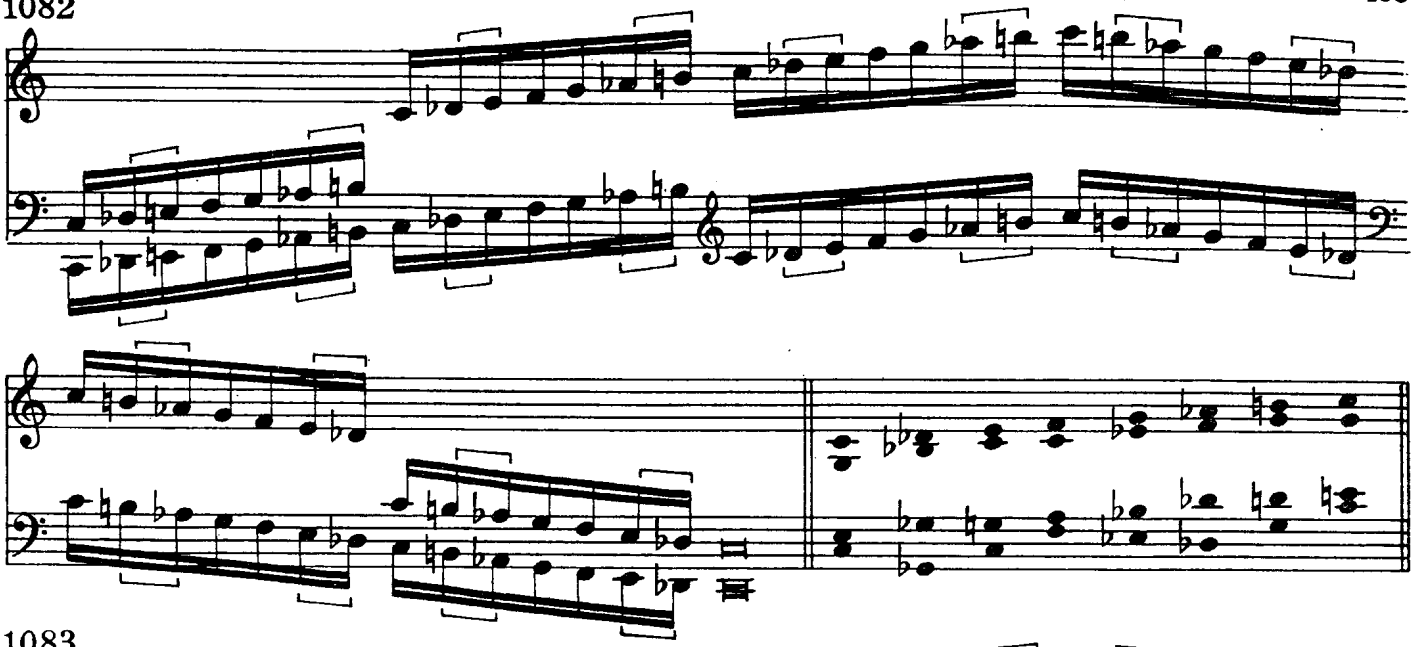

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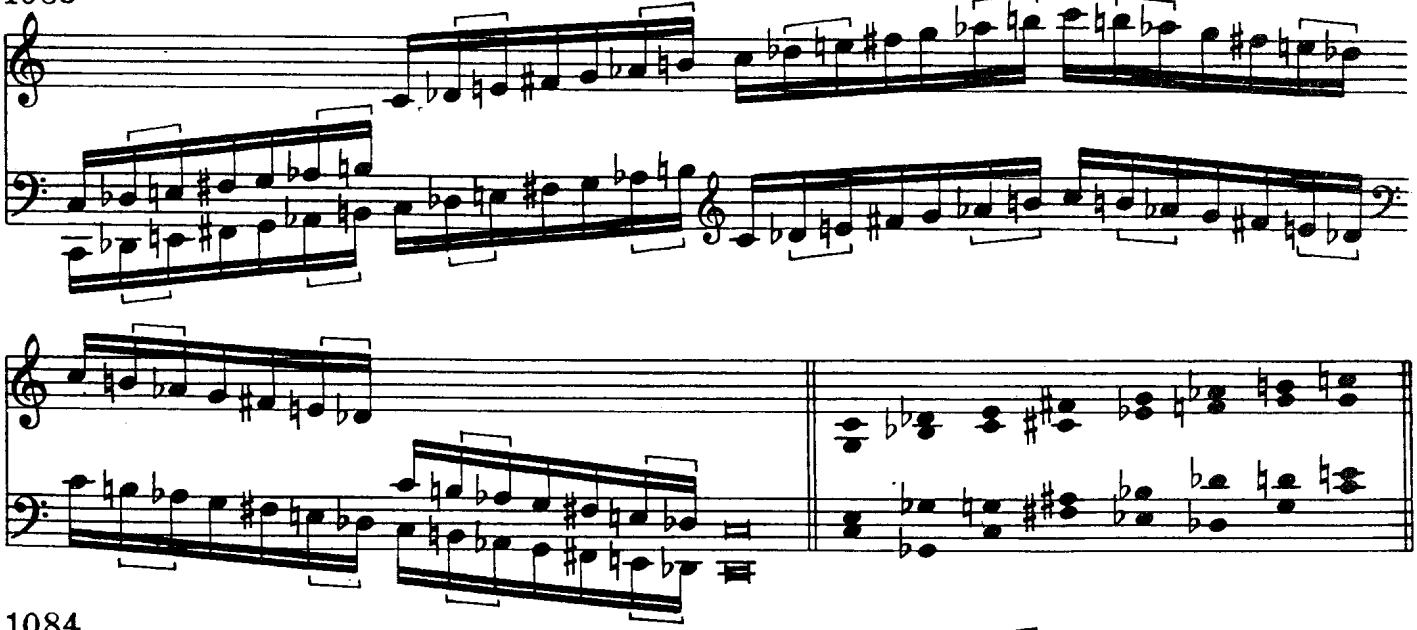

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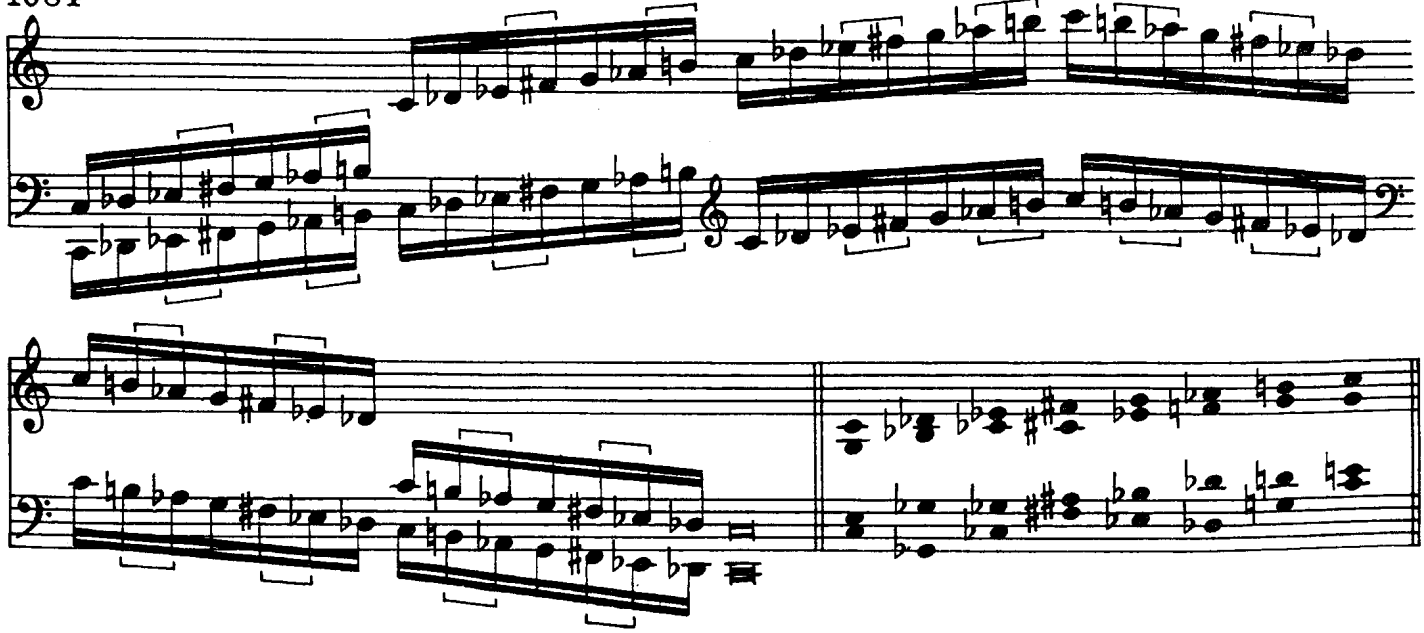

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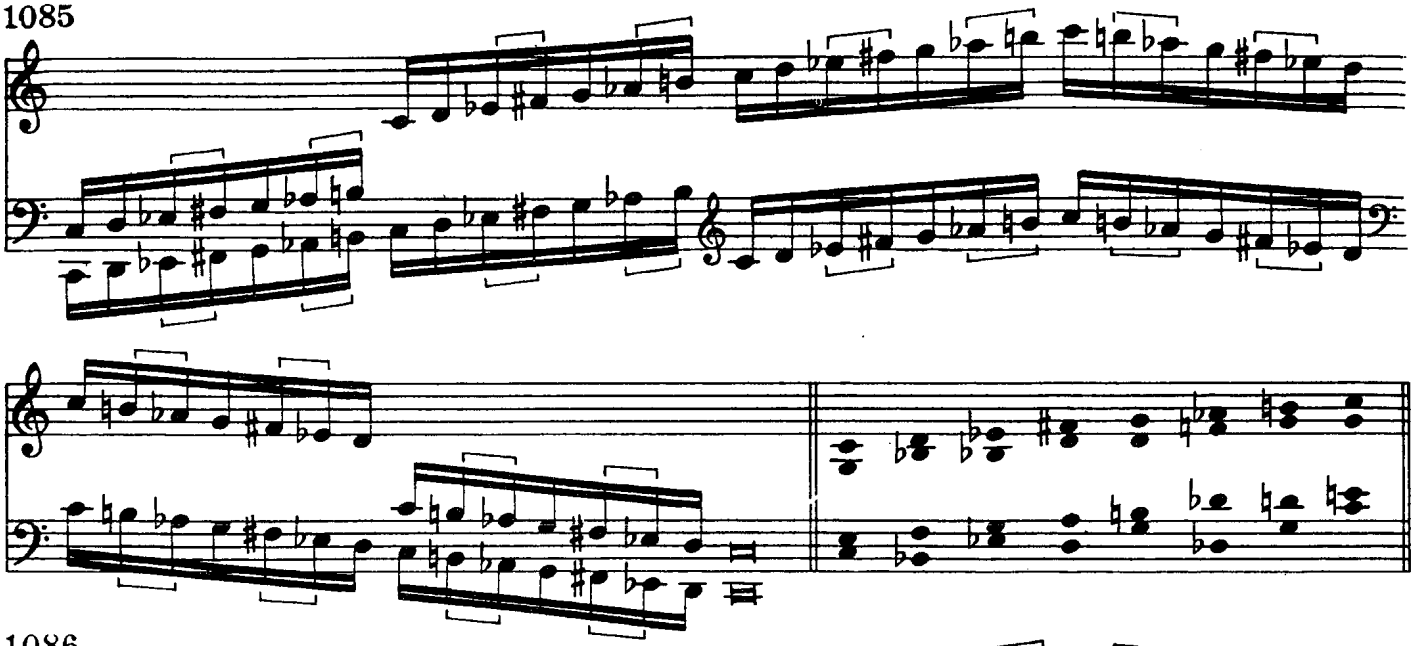

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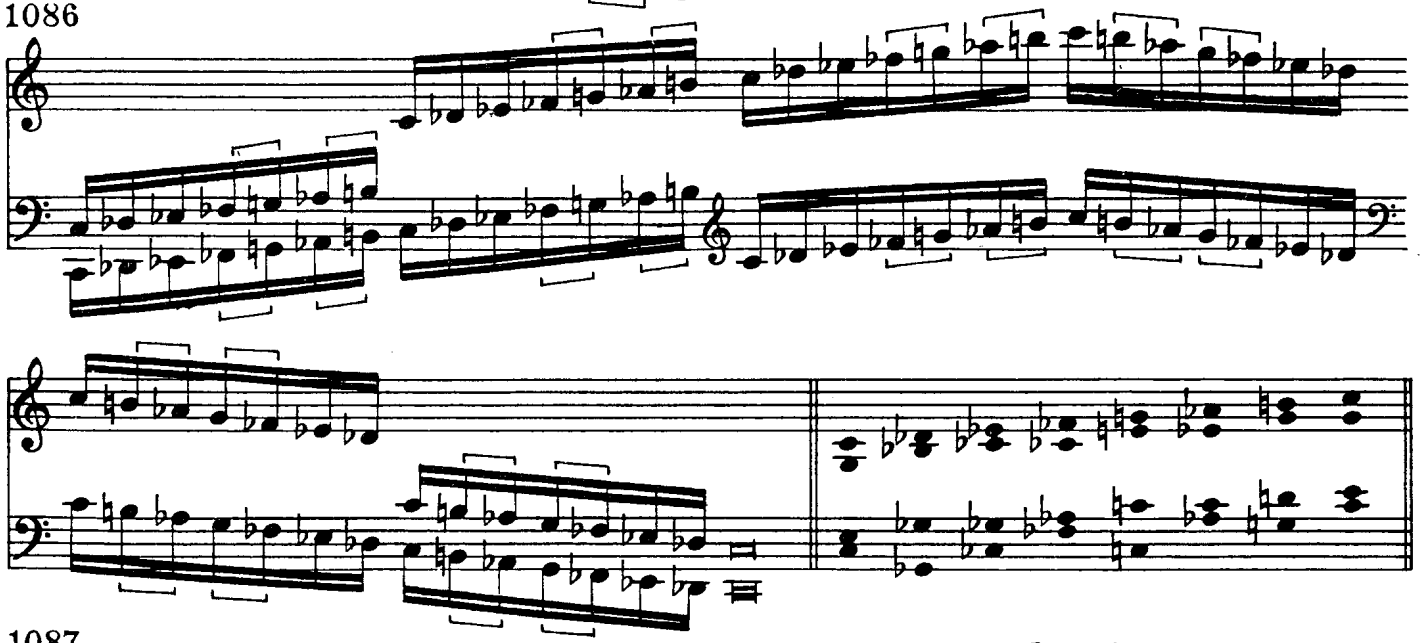

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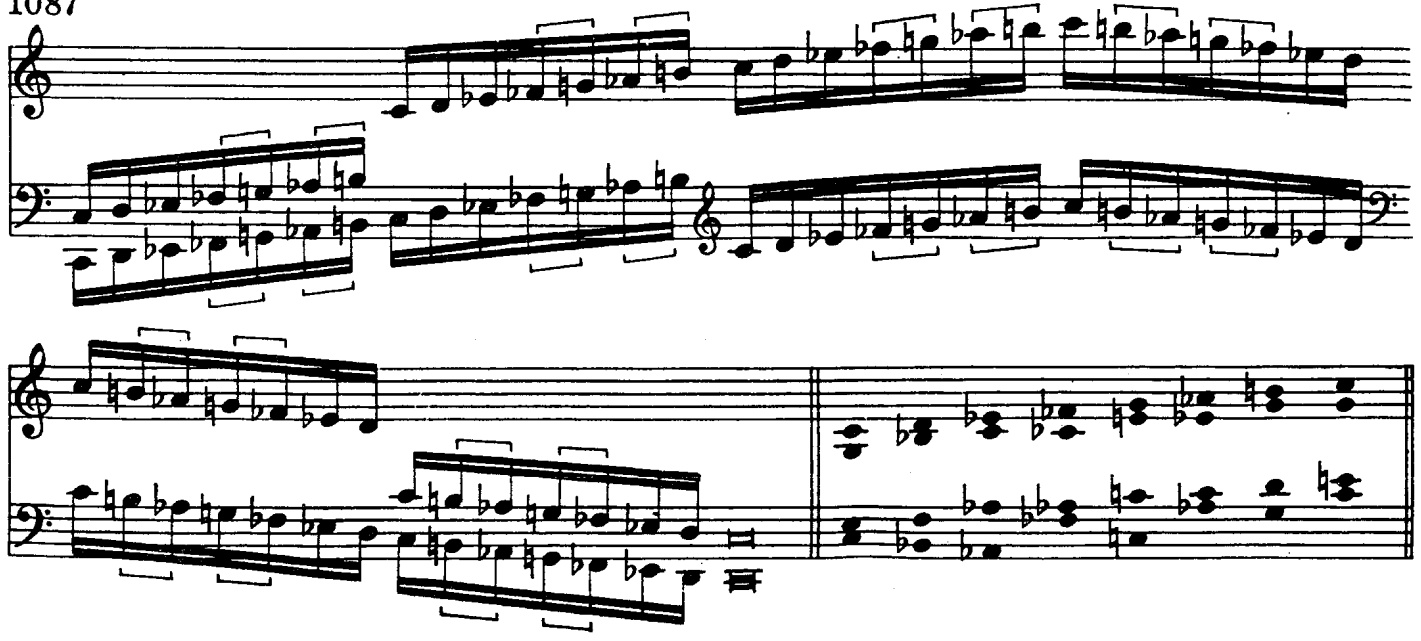
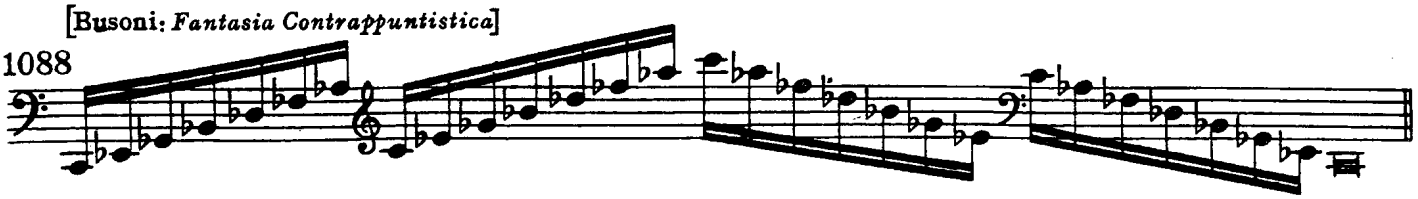


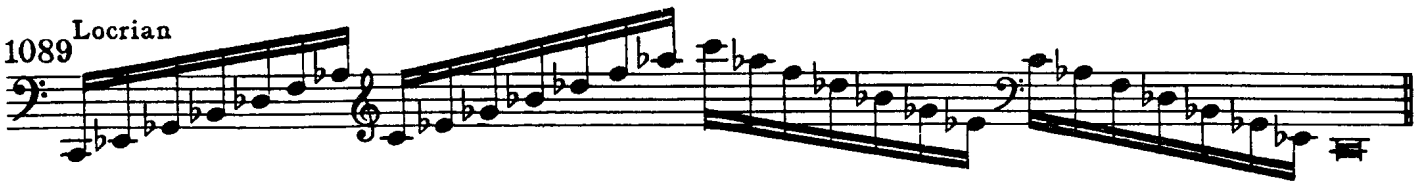
Heptatonic Arpeggios

[Busoni: *Fantasia Contrappuntistica*]

1088



1089 Locrian



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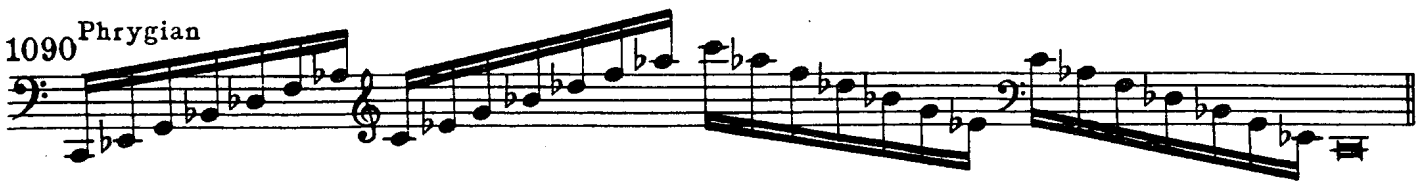

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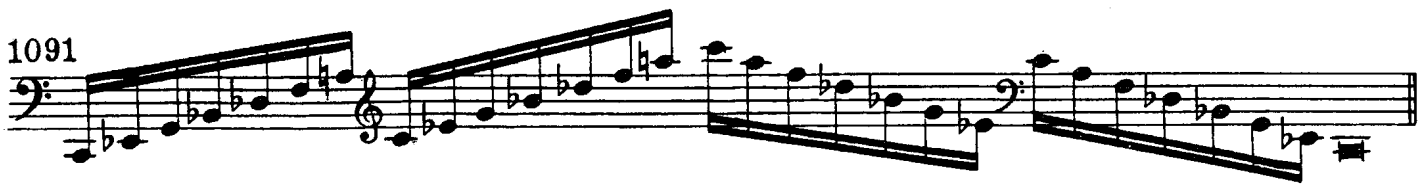

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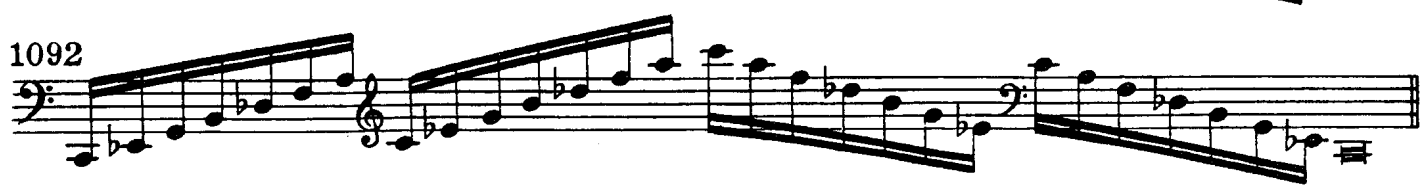

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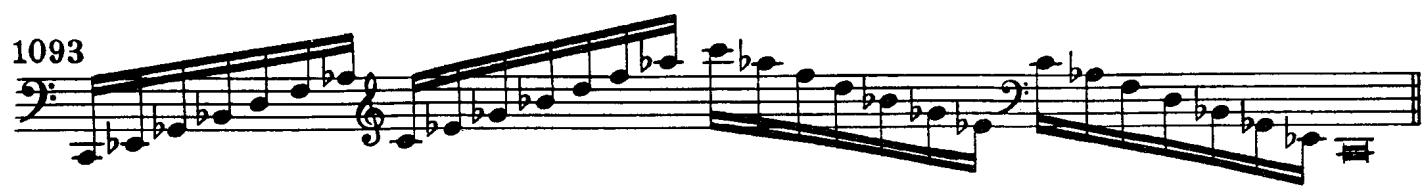

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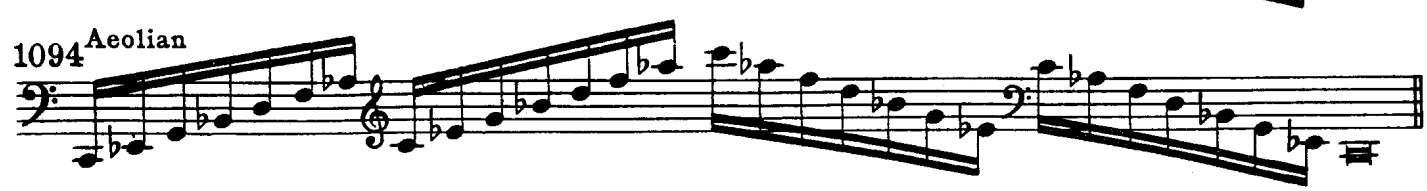

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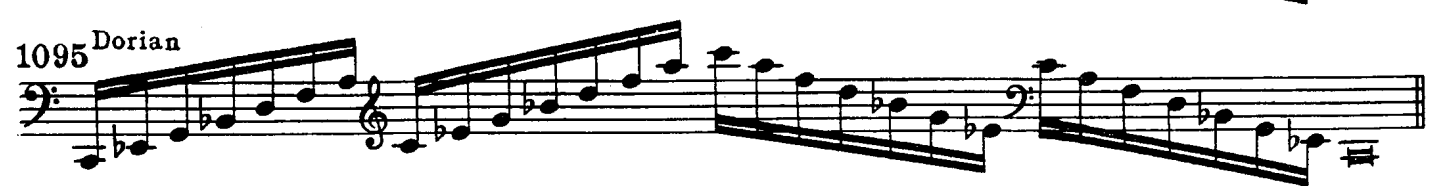

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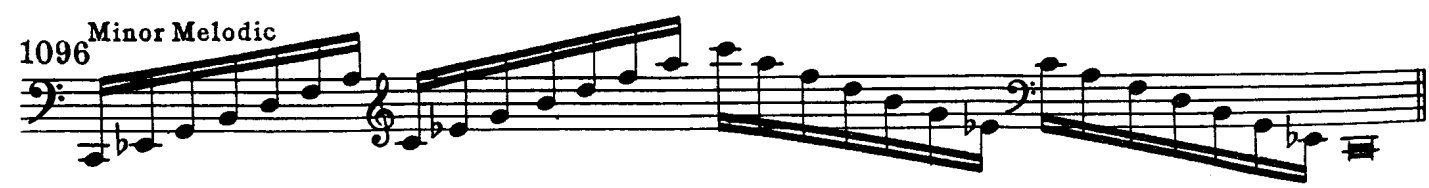

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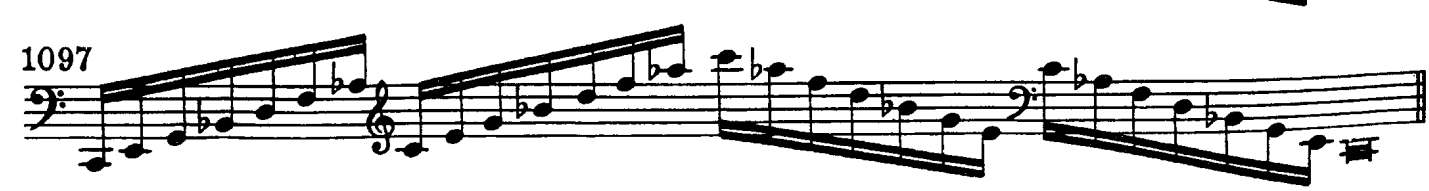

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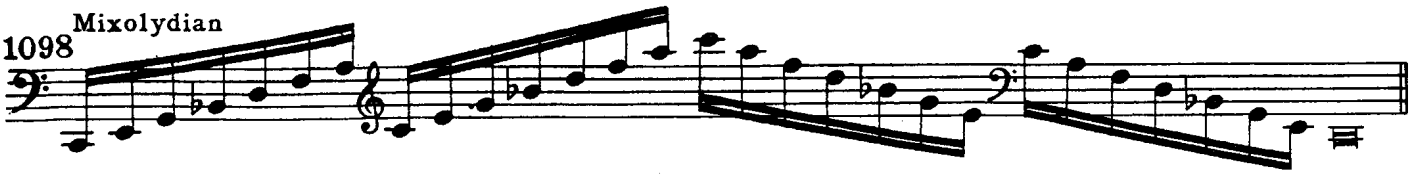

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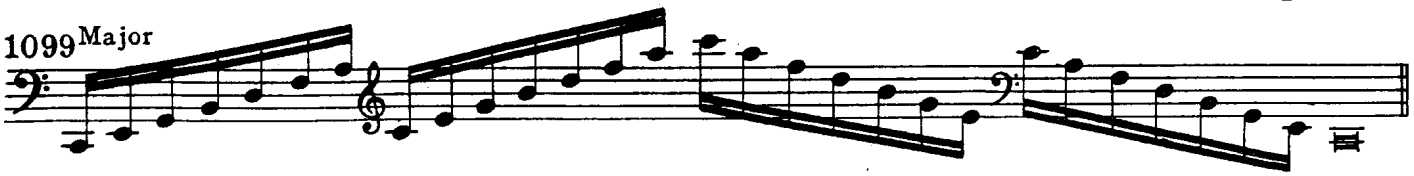

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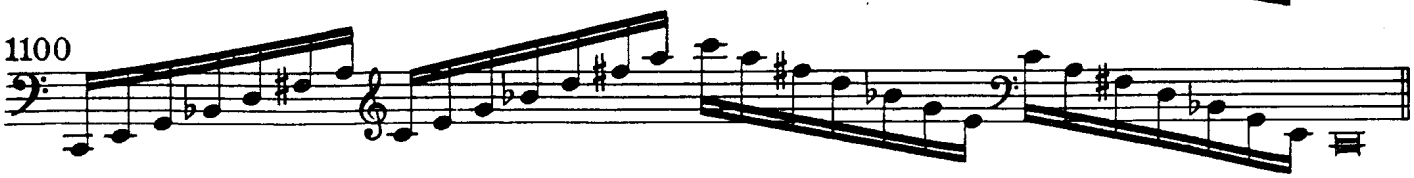

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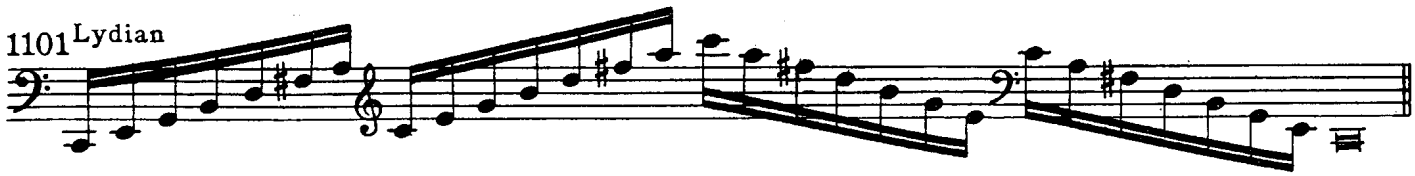

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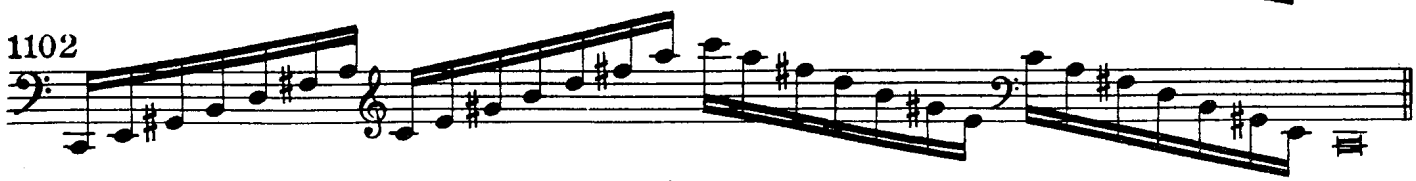

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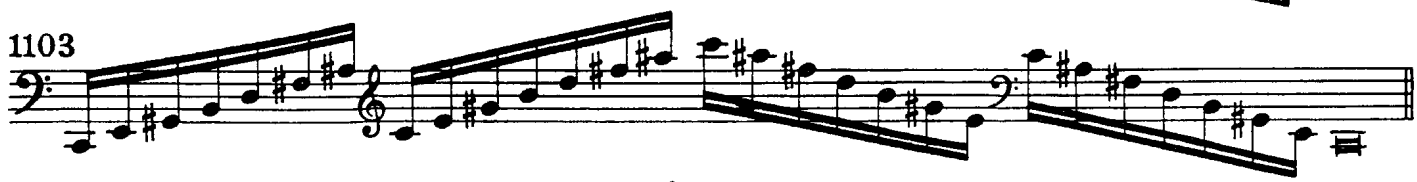

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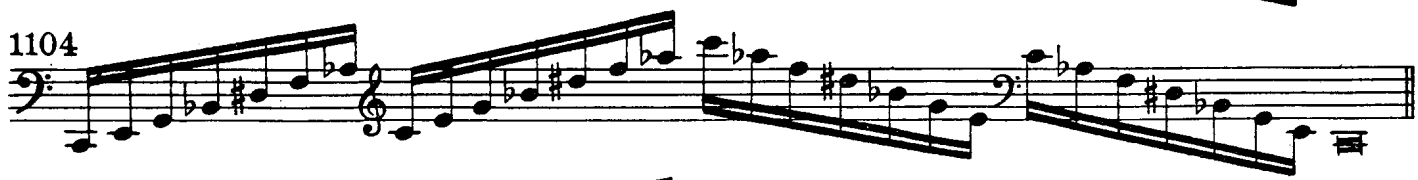

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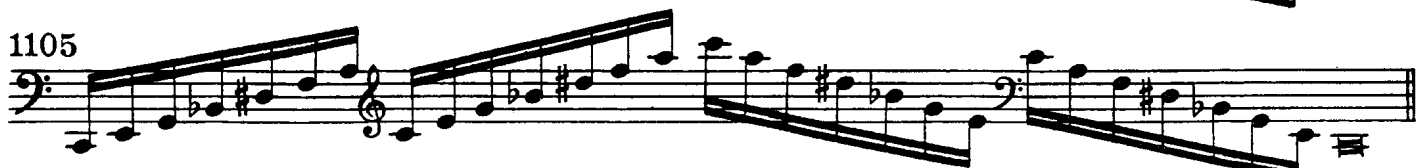

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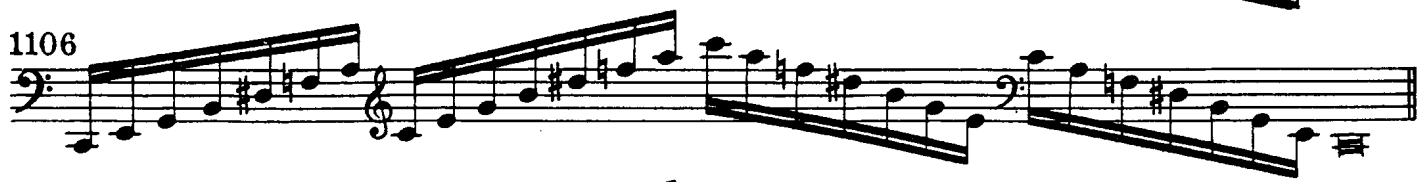

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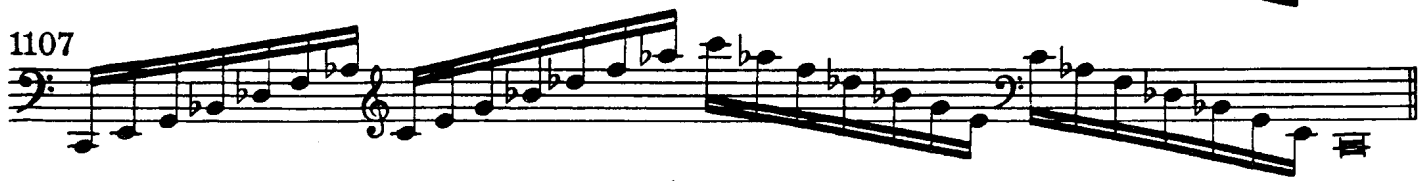

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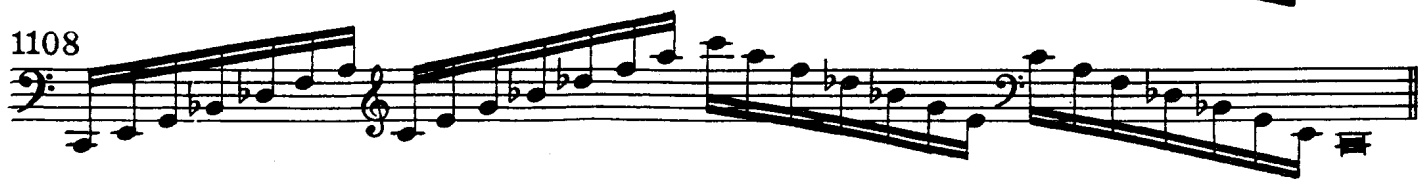

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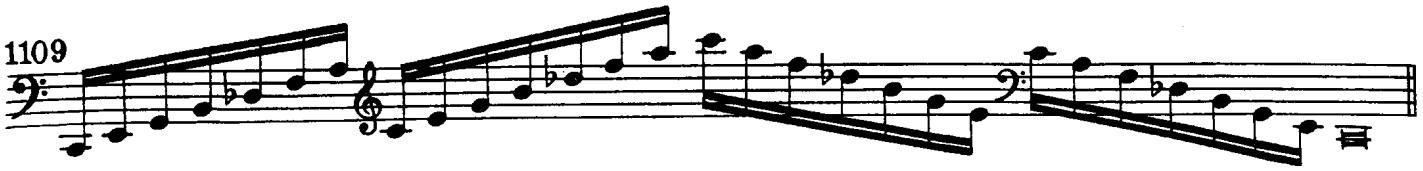

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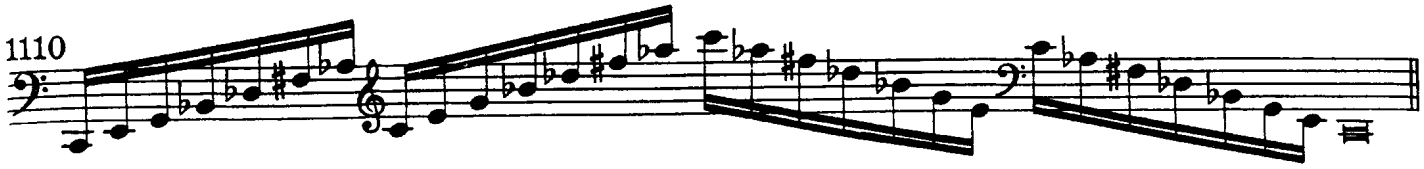

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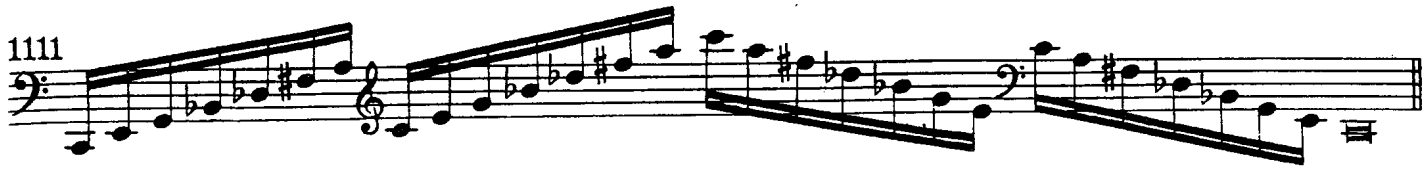

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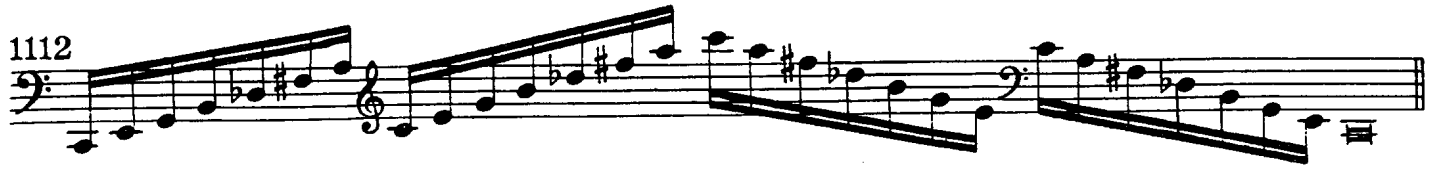

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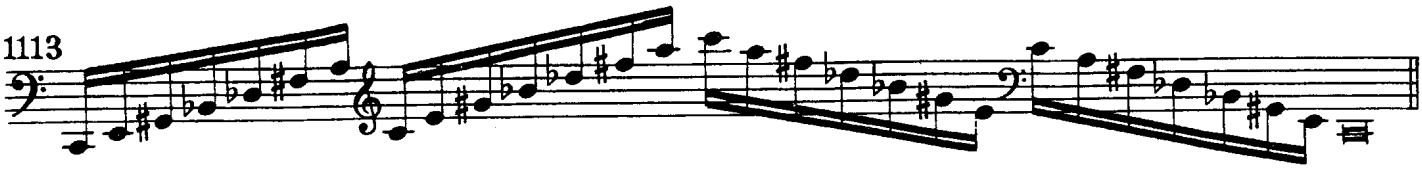

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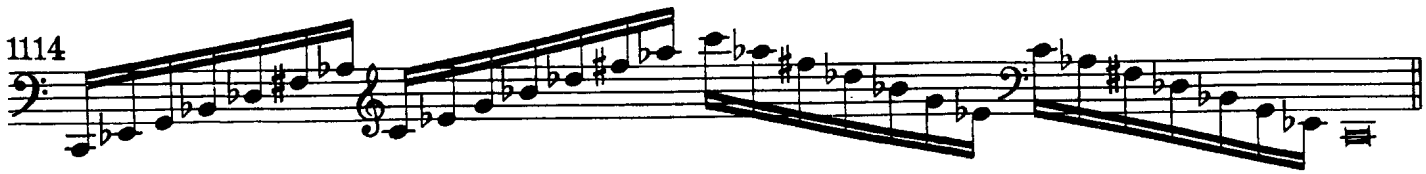

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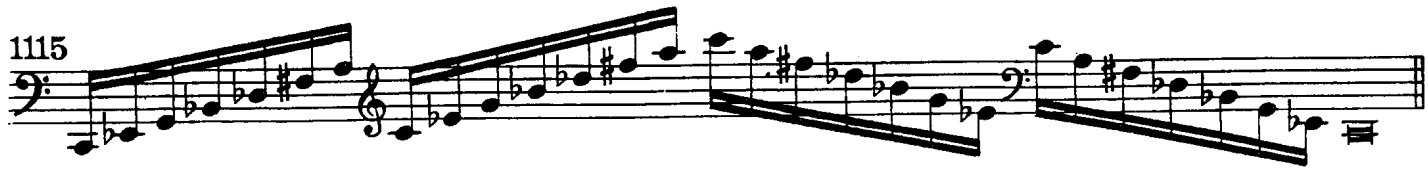

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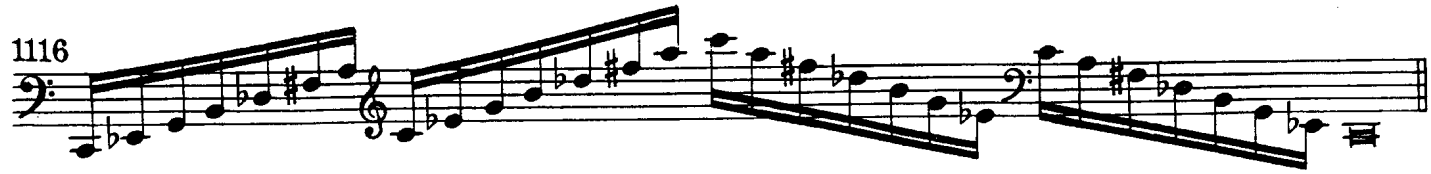

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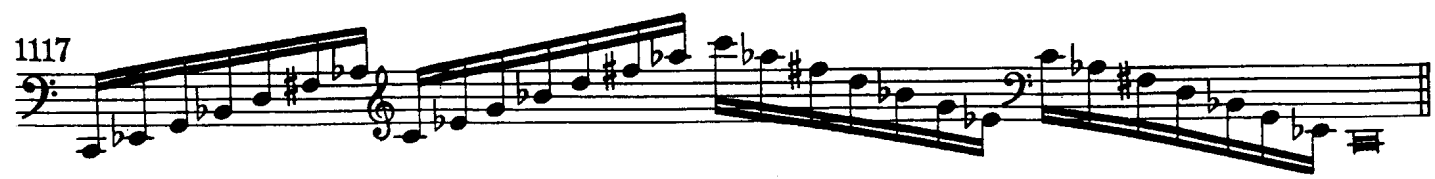

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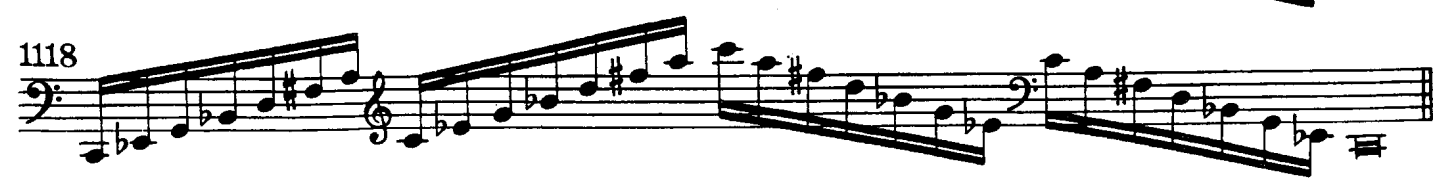

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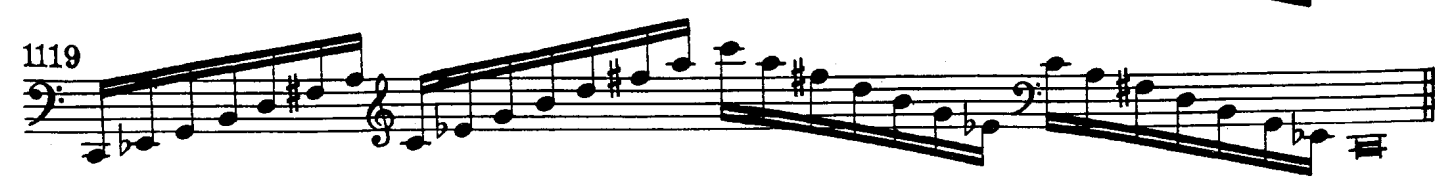

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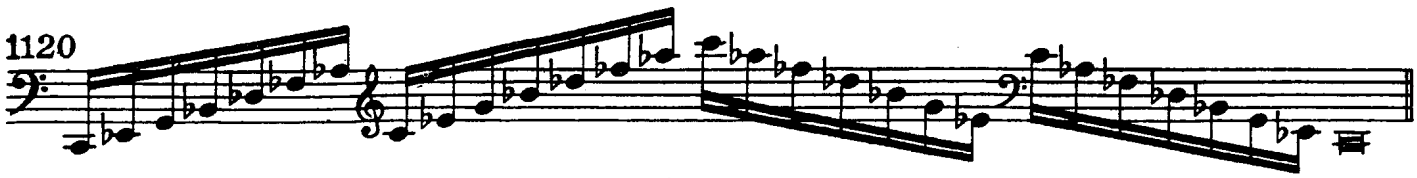

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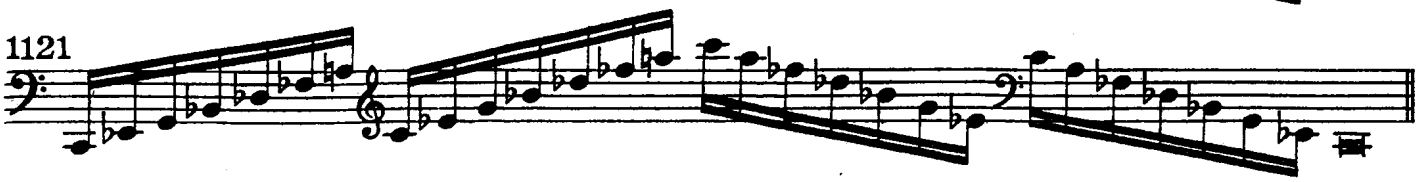

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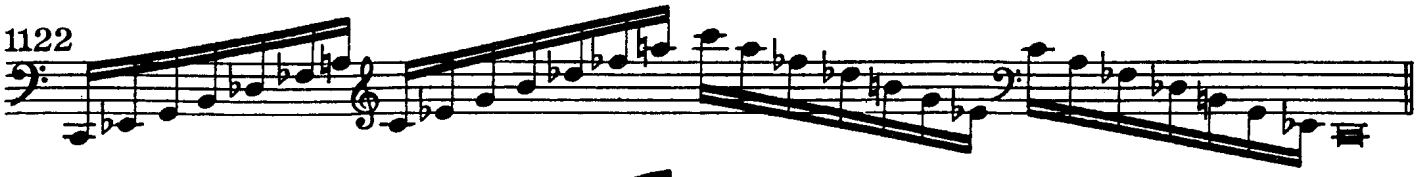

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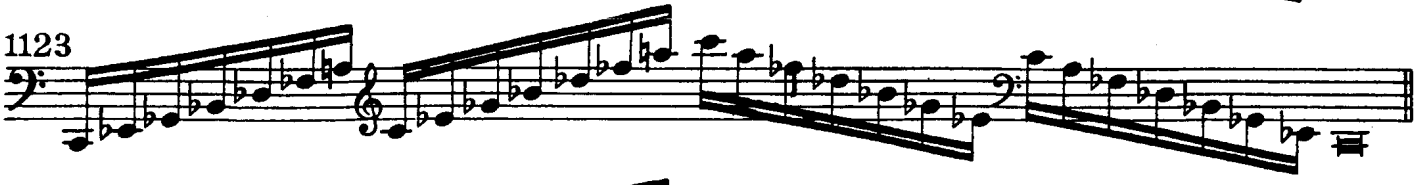

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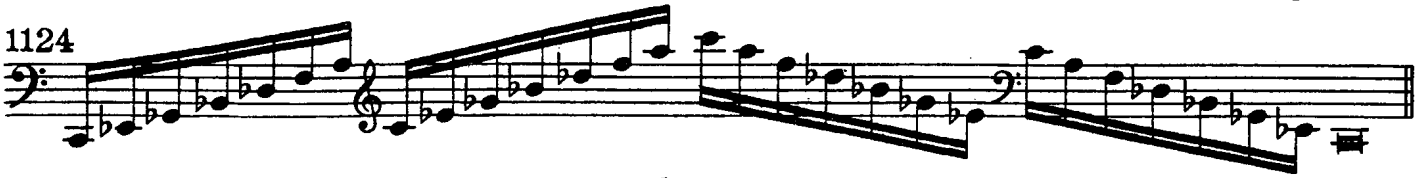

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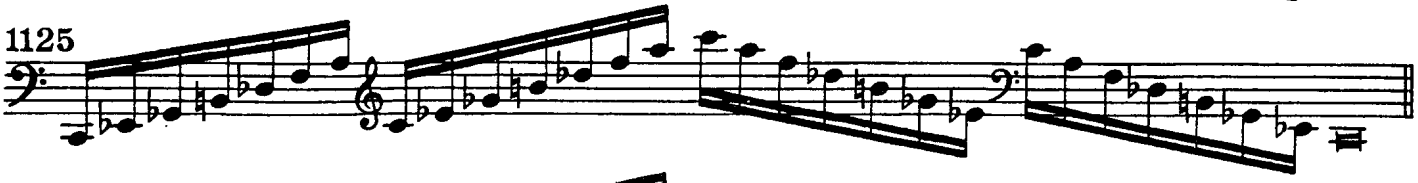

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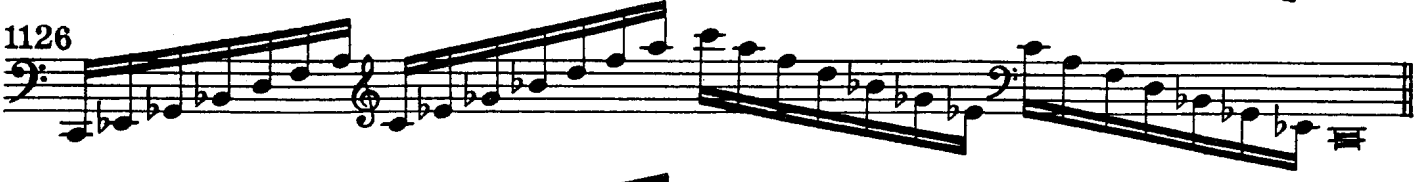

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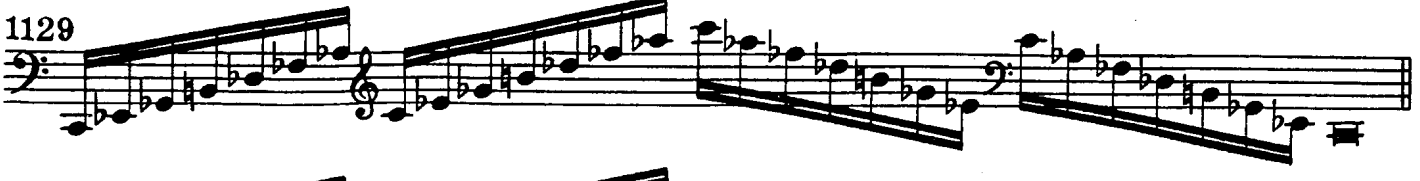

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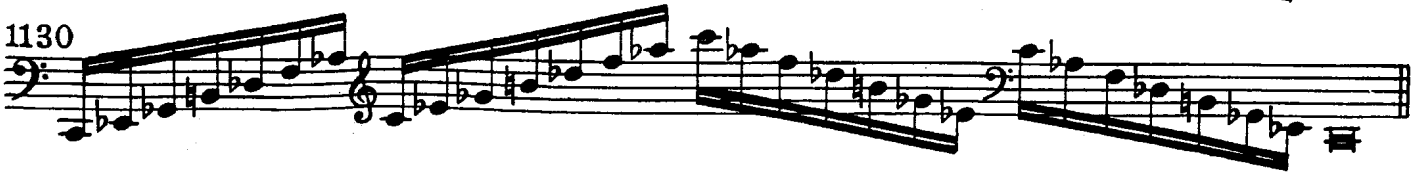

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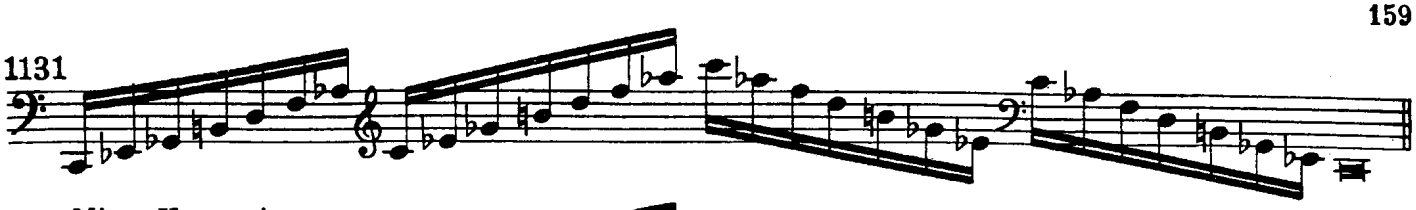

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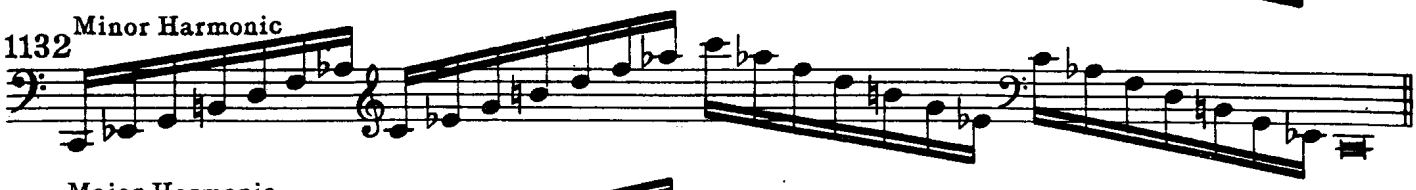

1133 Major Harmonic

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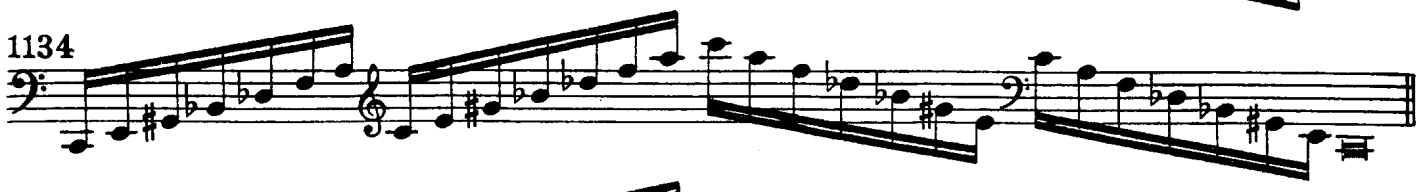

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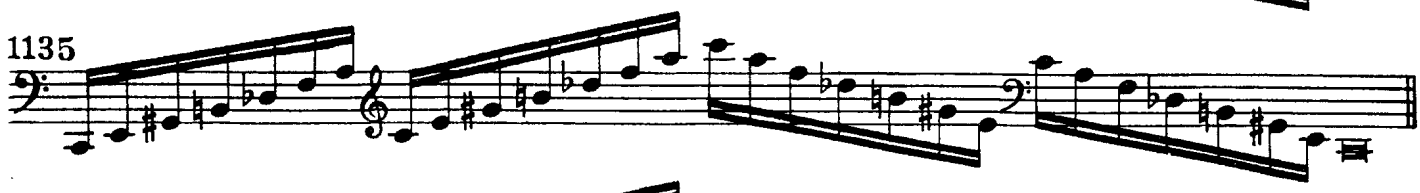

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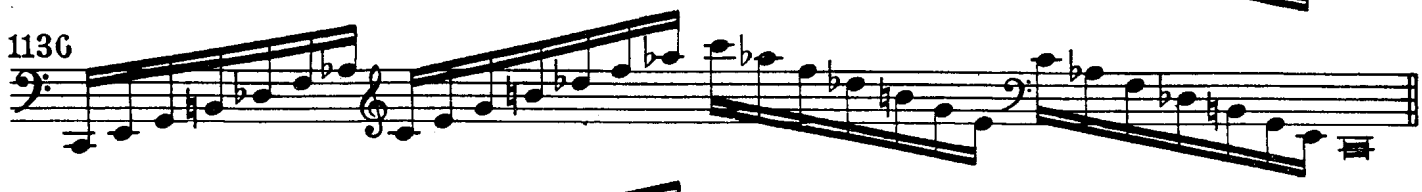

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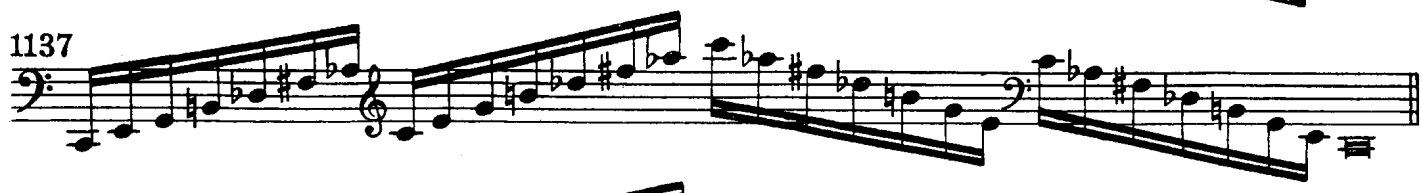

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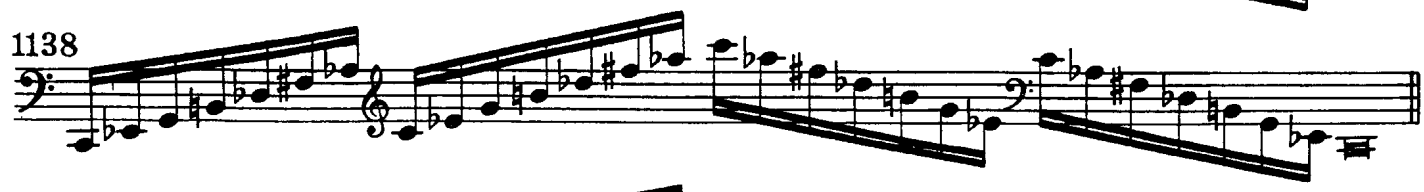

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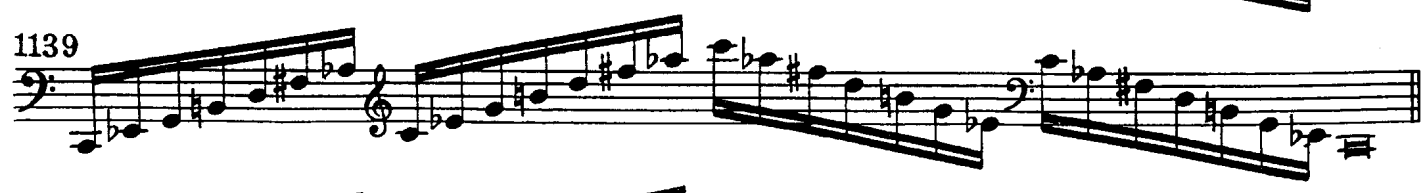

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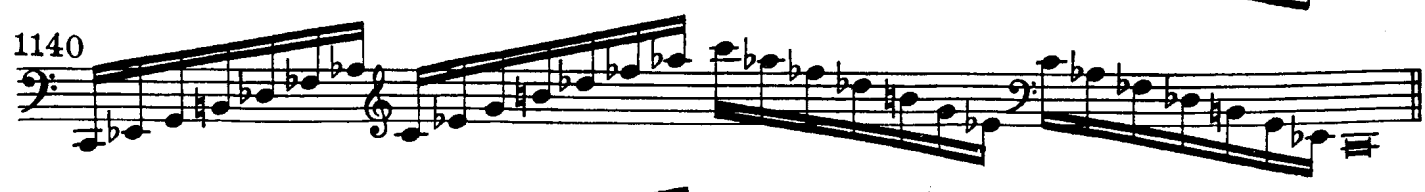

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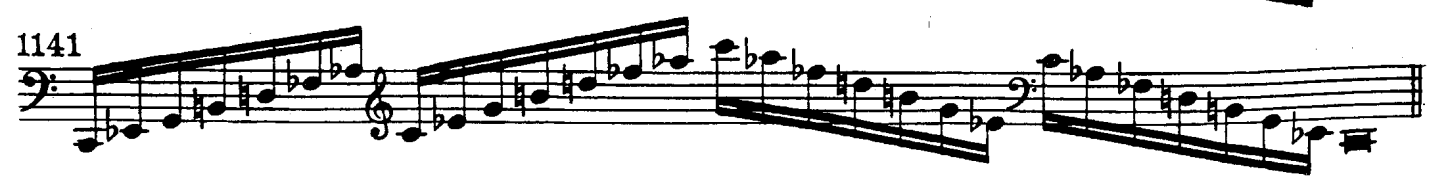

Pentatonic Scales

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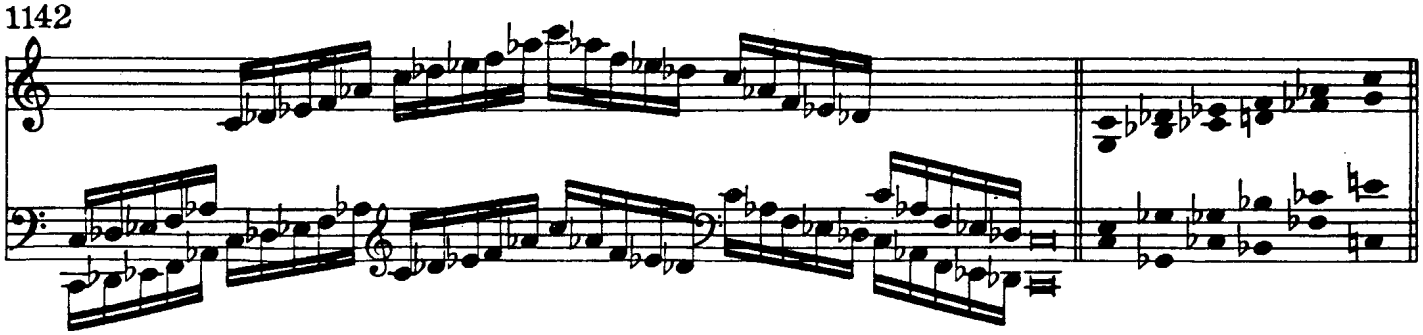

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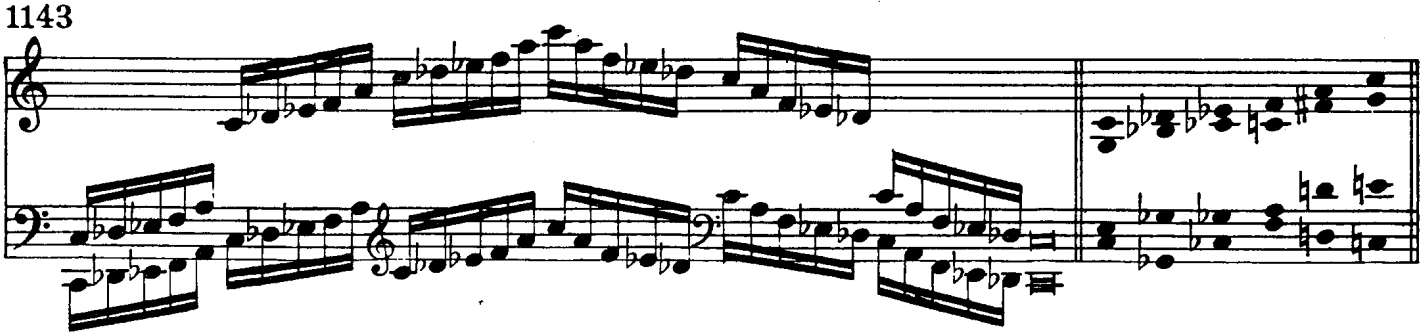

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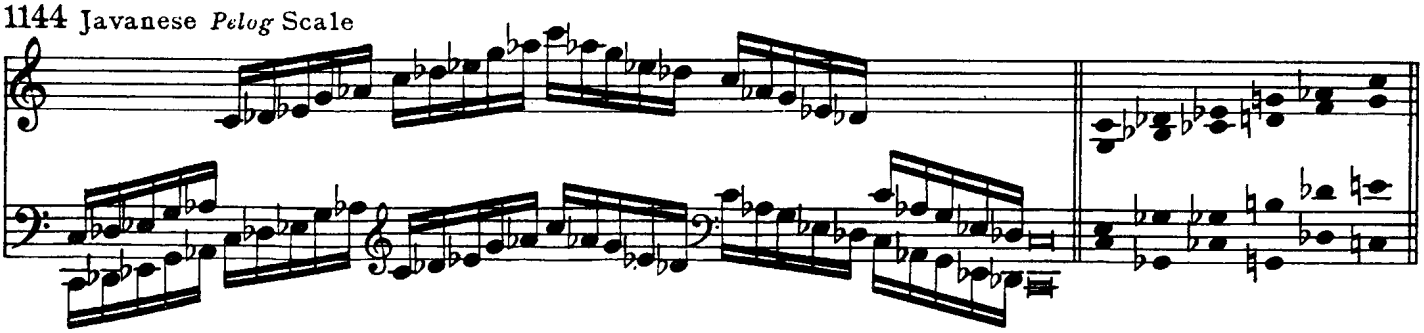

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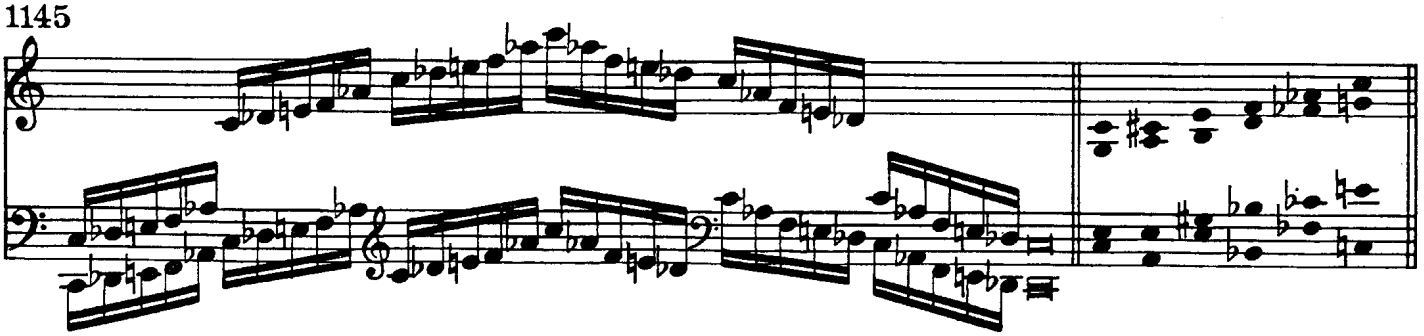

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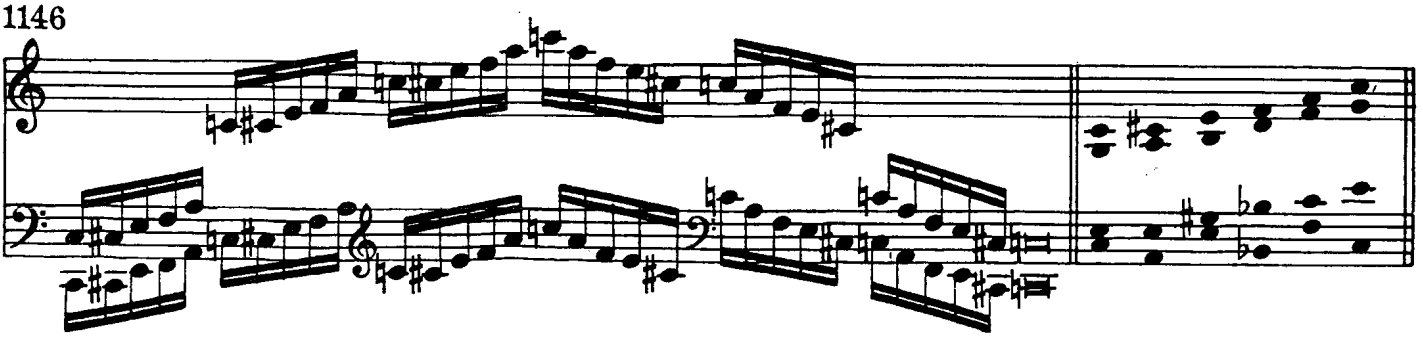

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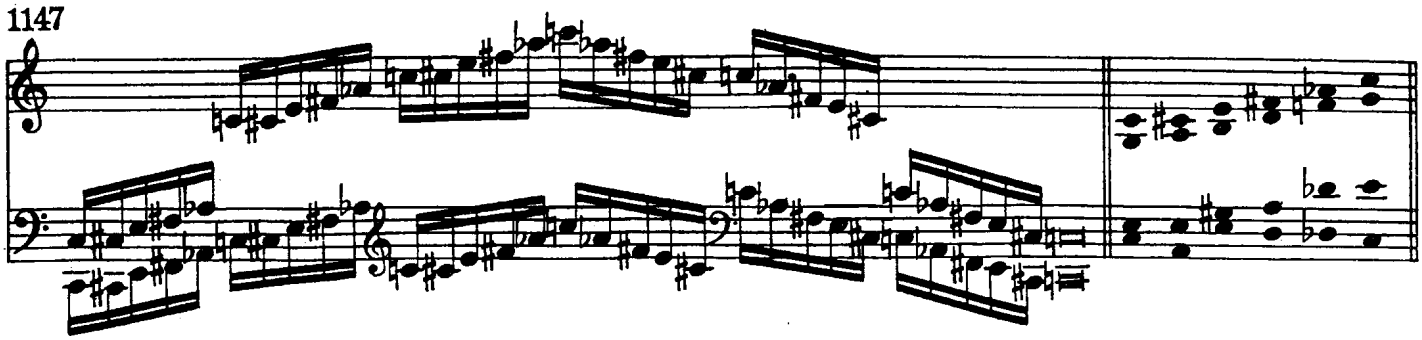

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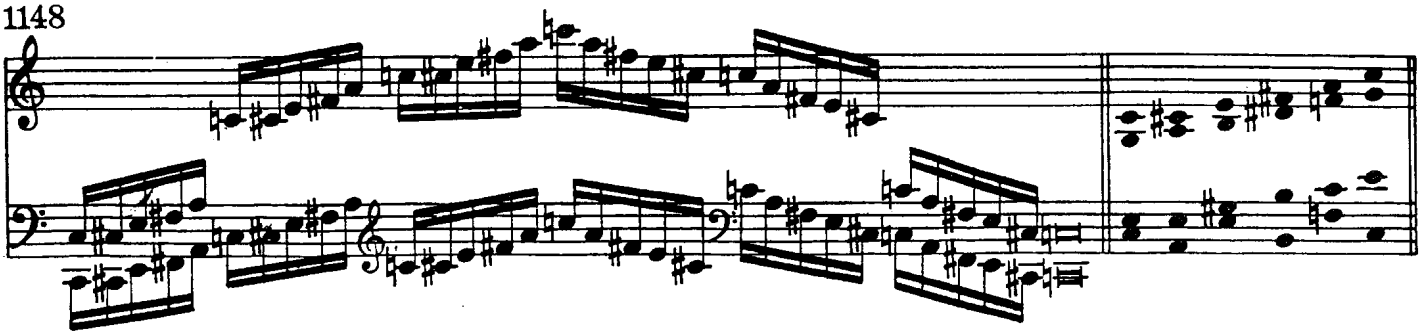

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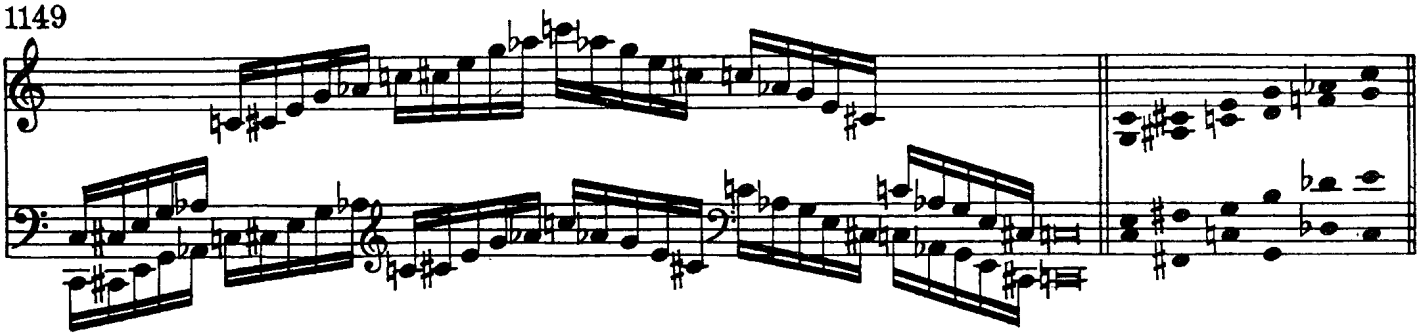
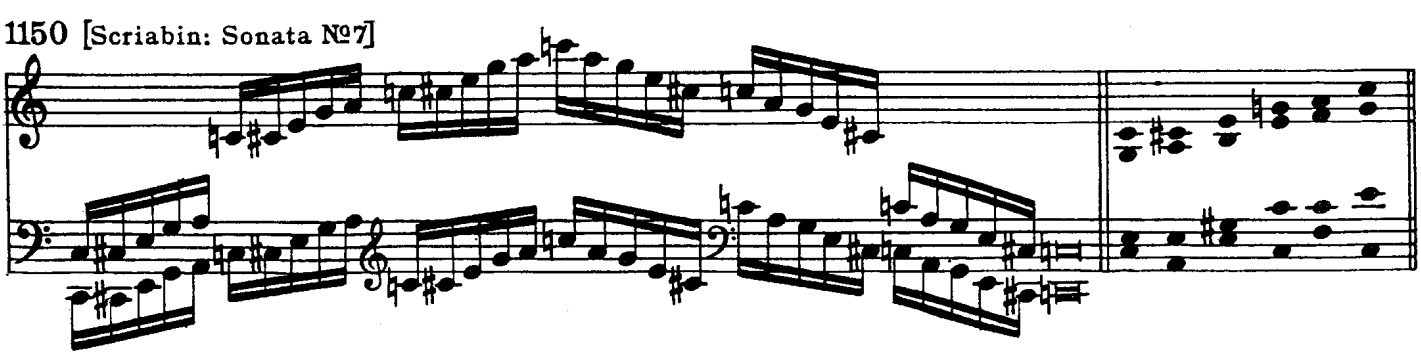


1150 [Scriabin: Sonata №7]



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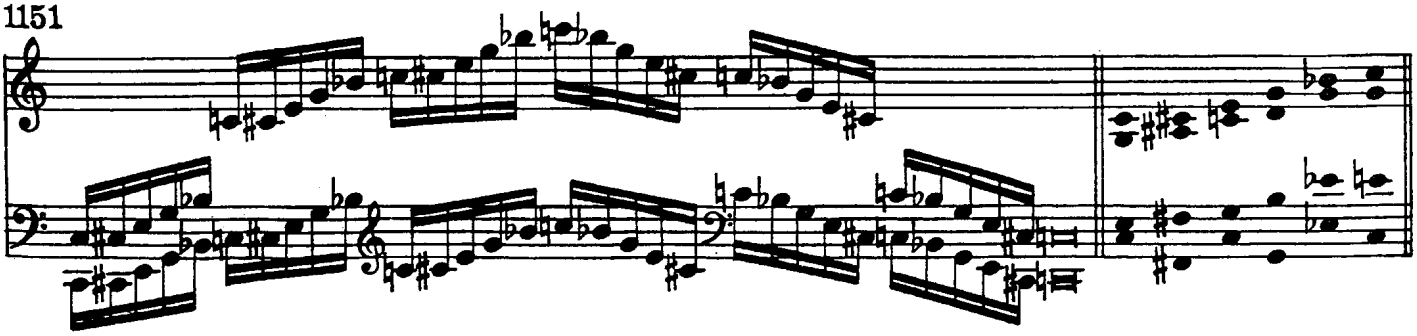

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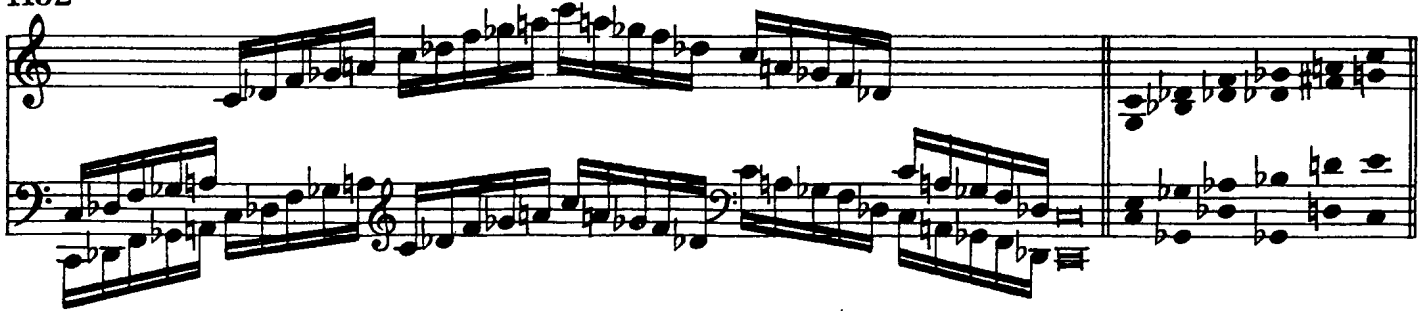
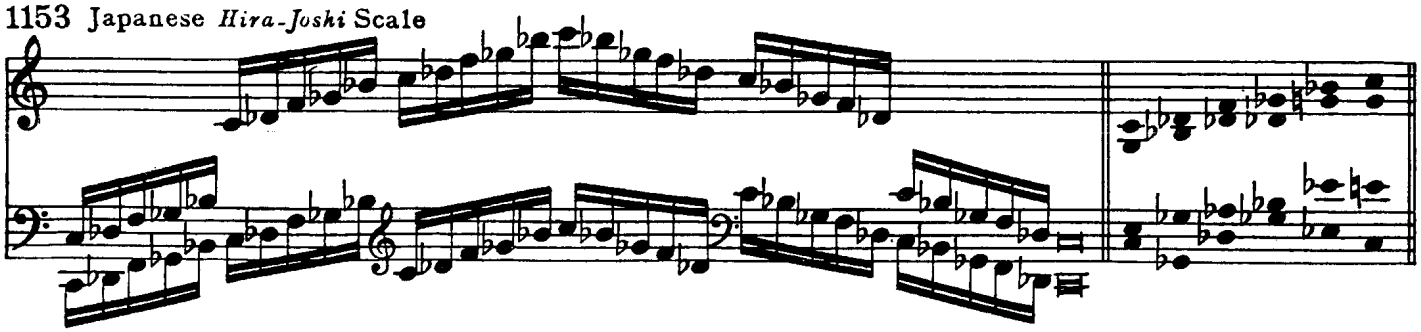


1153 Japanese *Hira-Joshi* Scale



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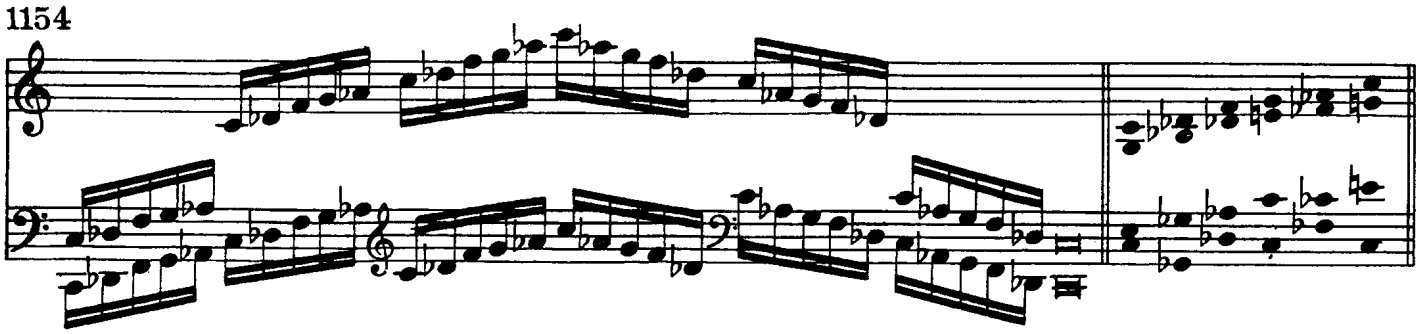

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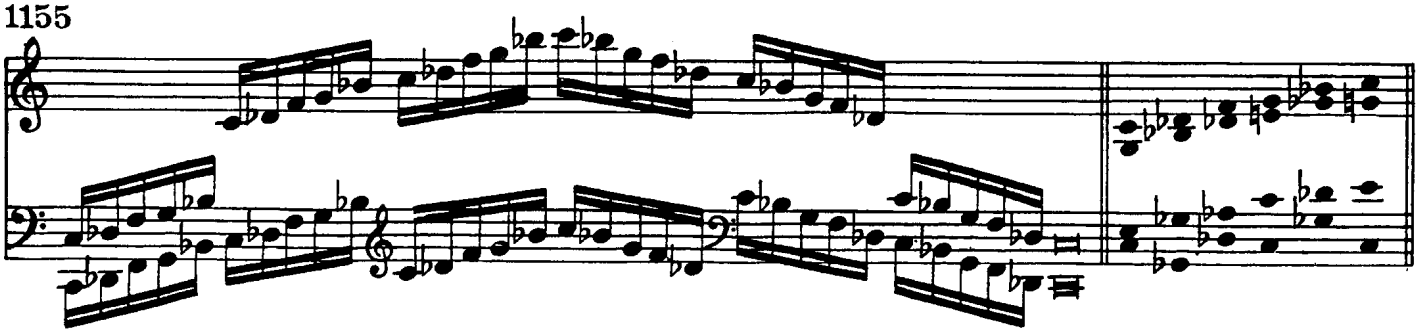

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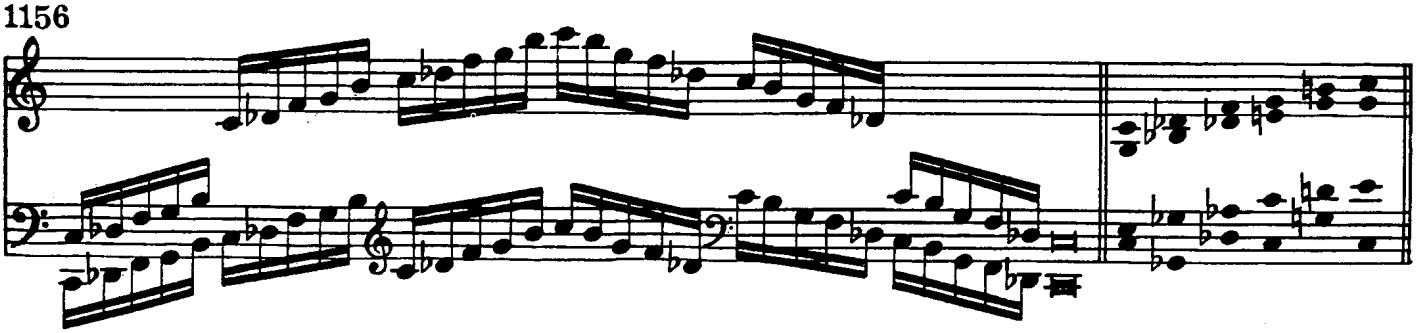

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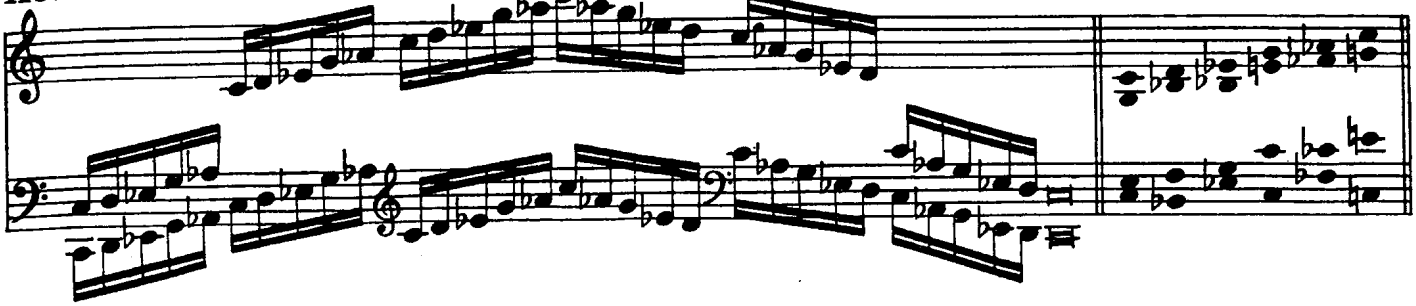

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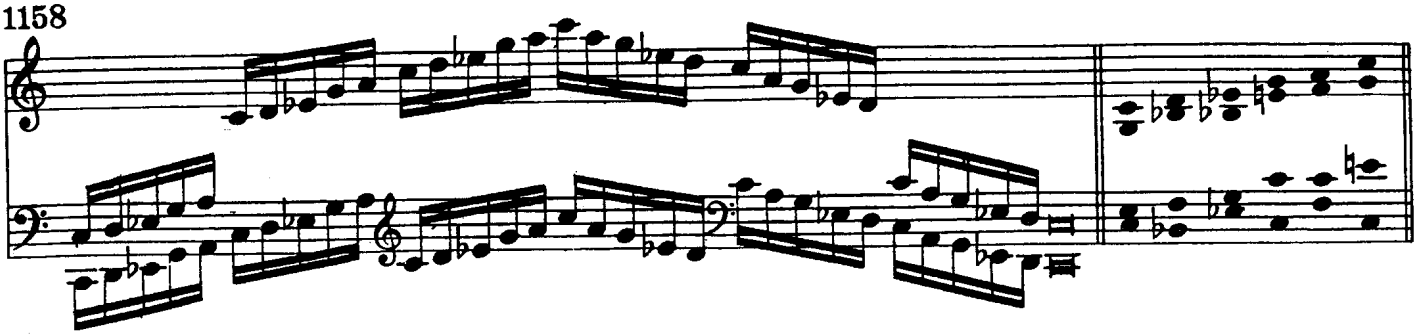

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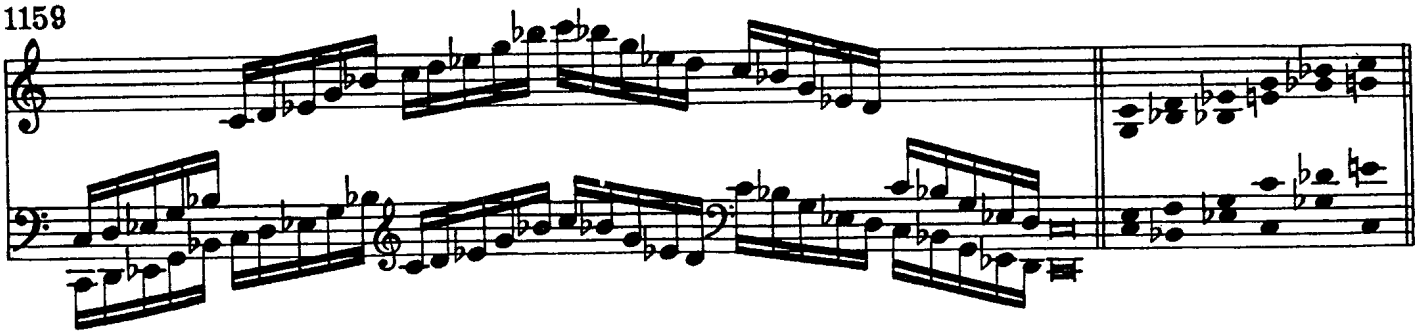

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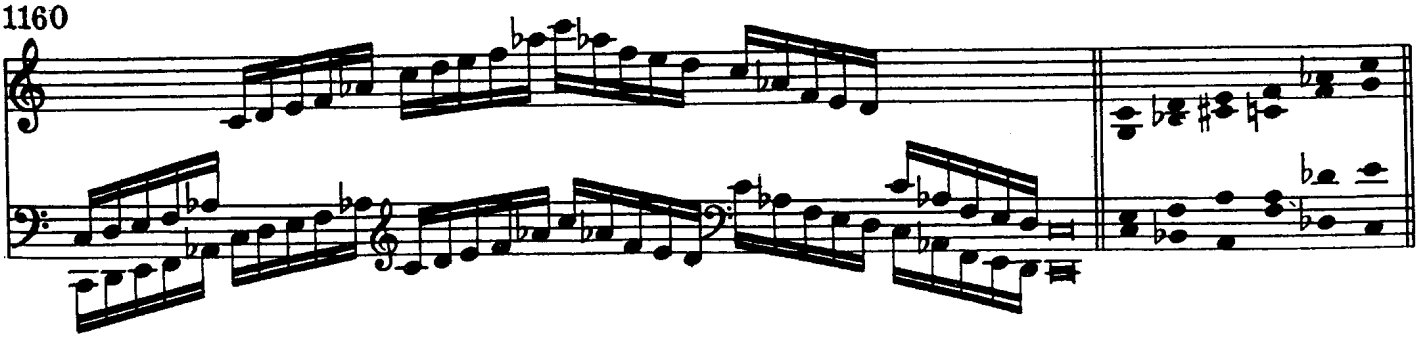

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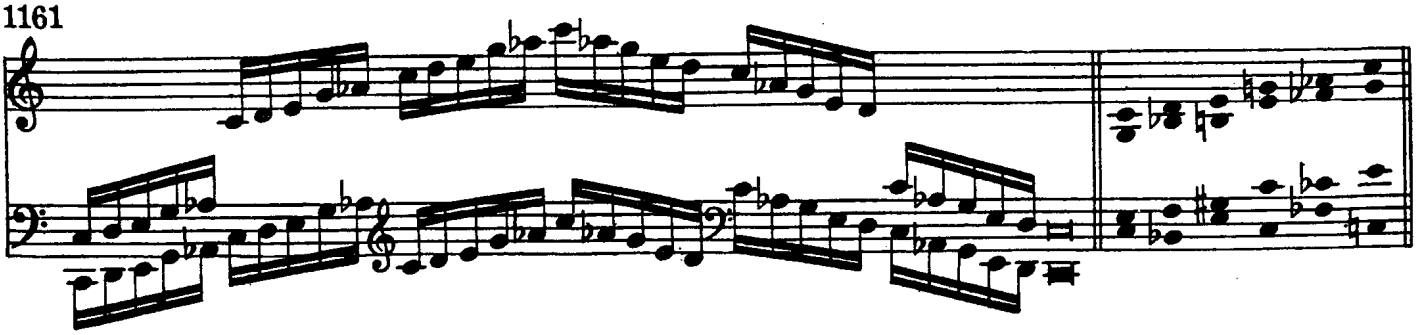

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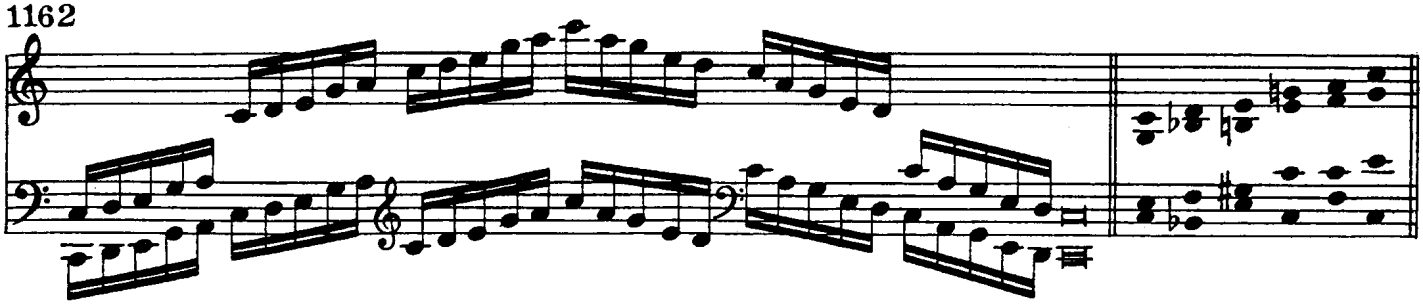

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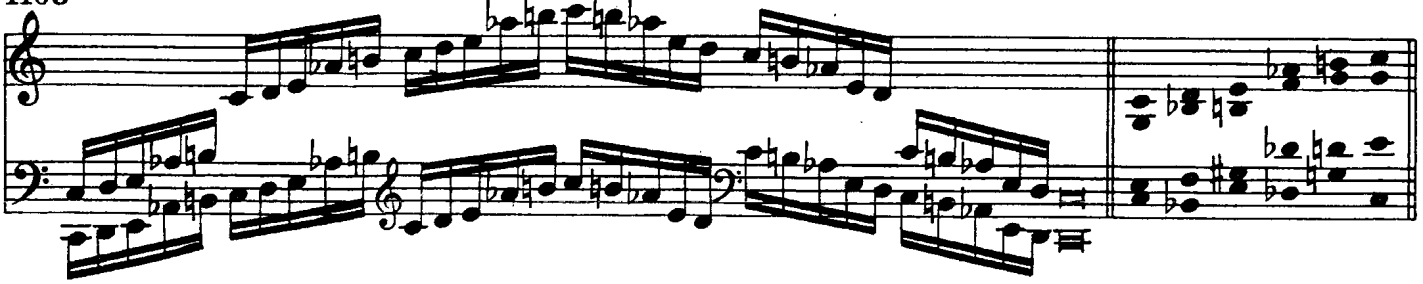

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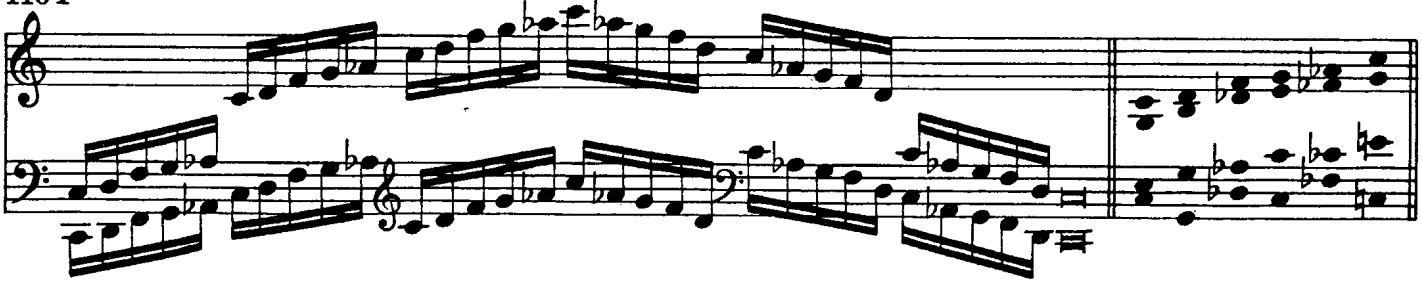

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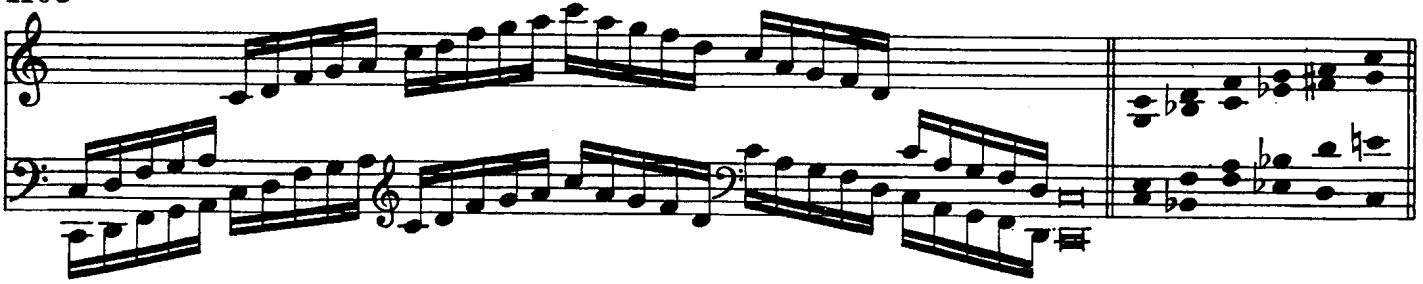

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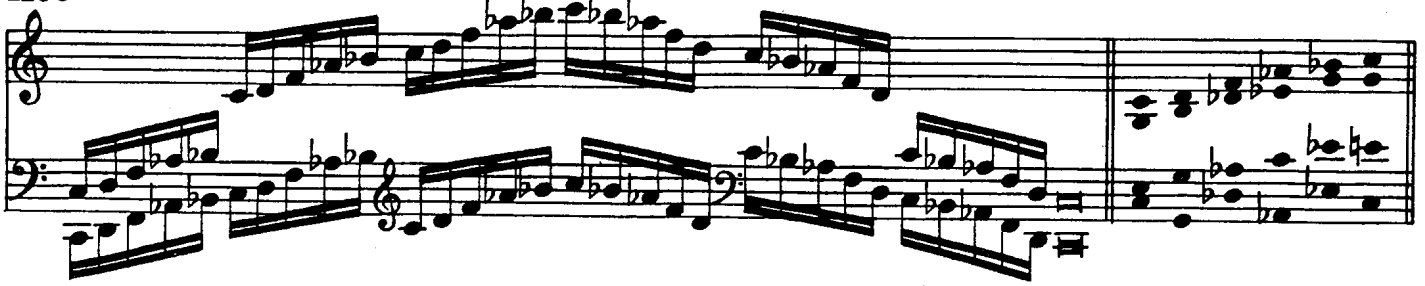

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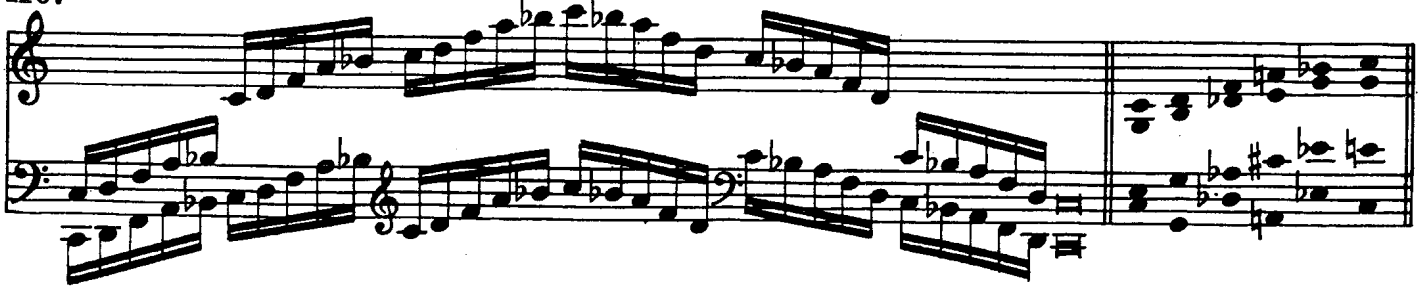

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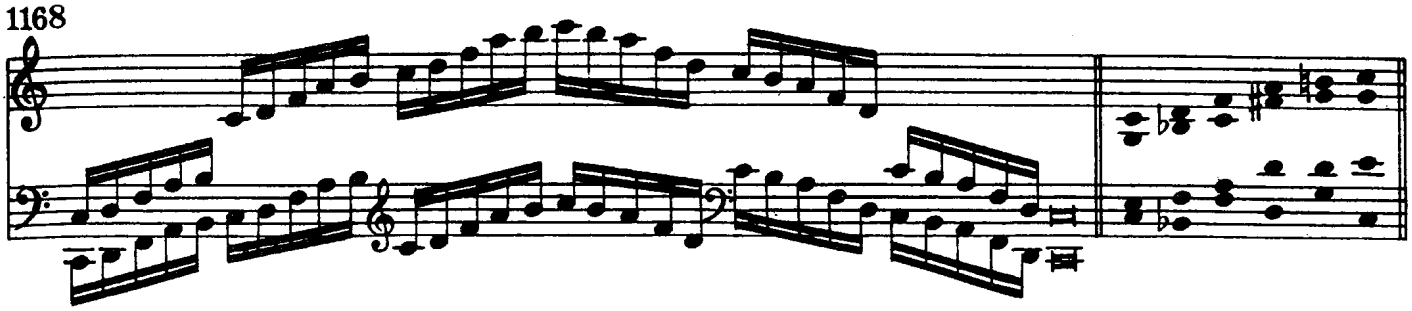

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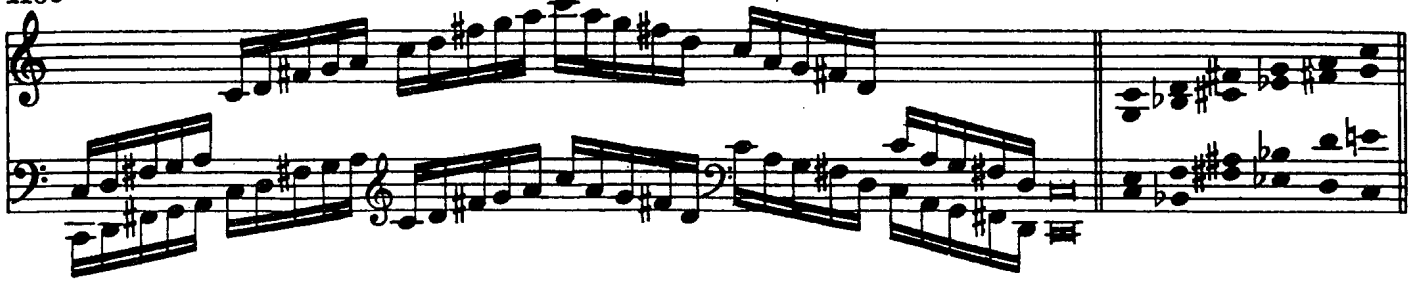

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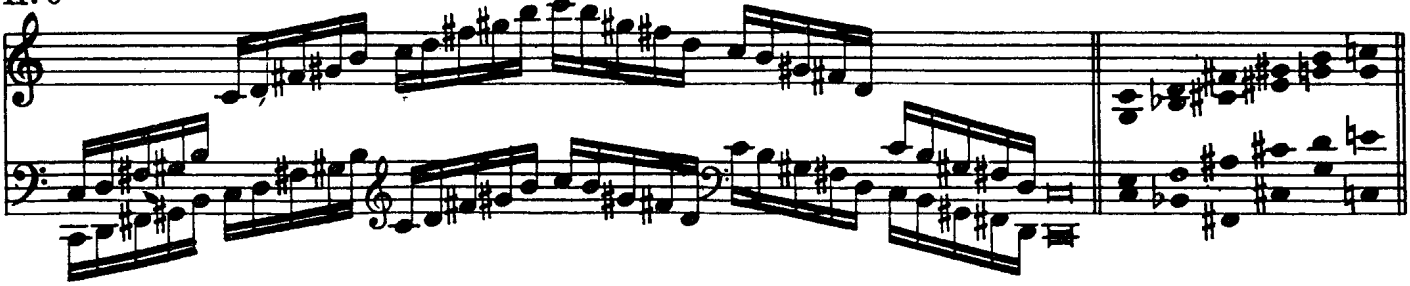

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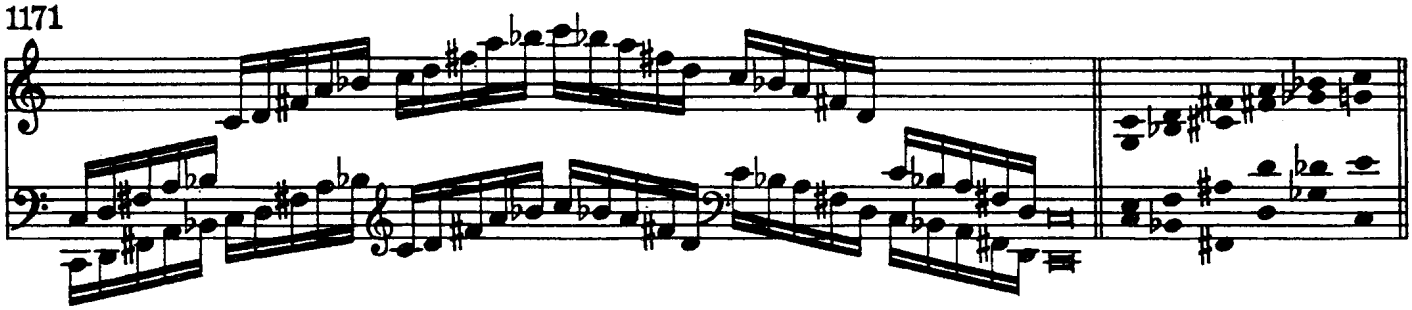

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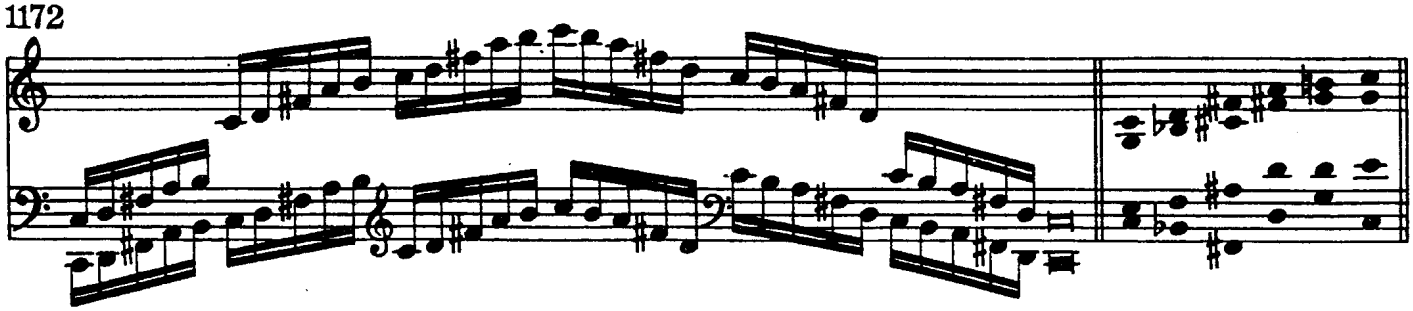

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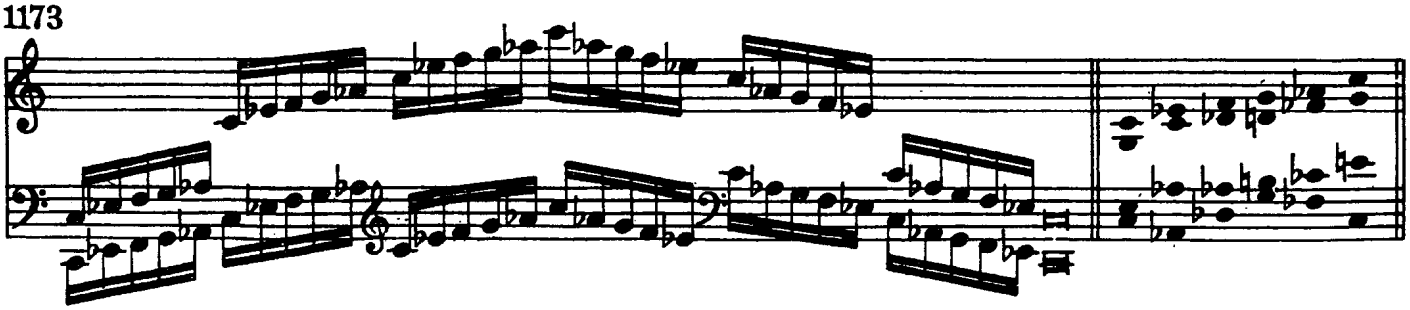

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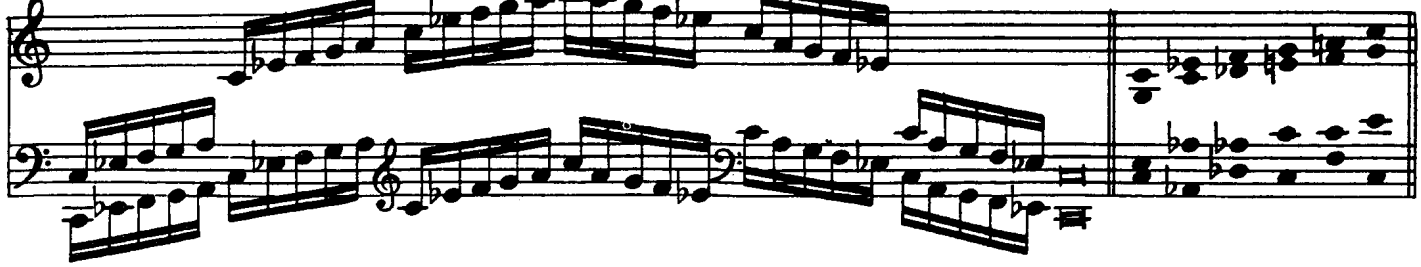

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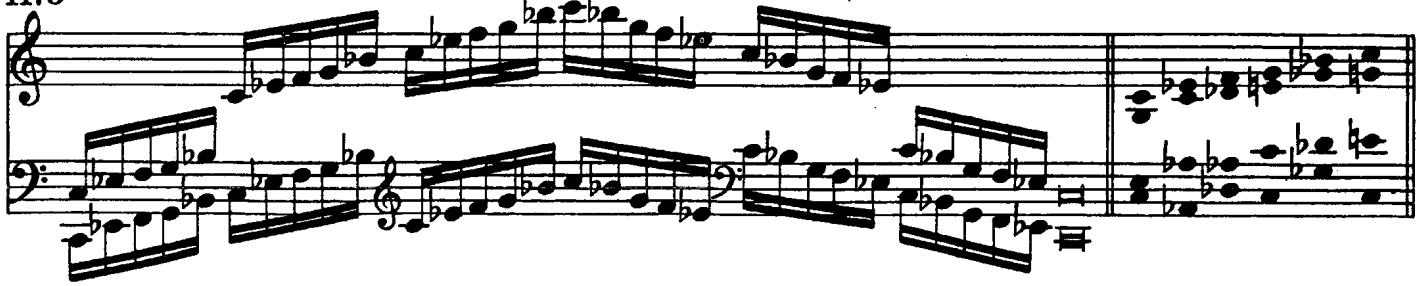

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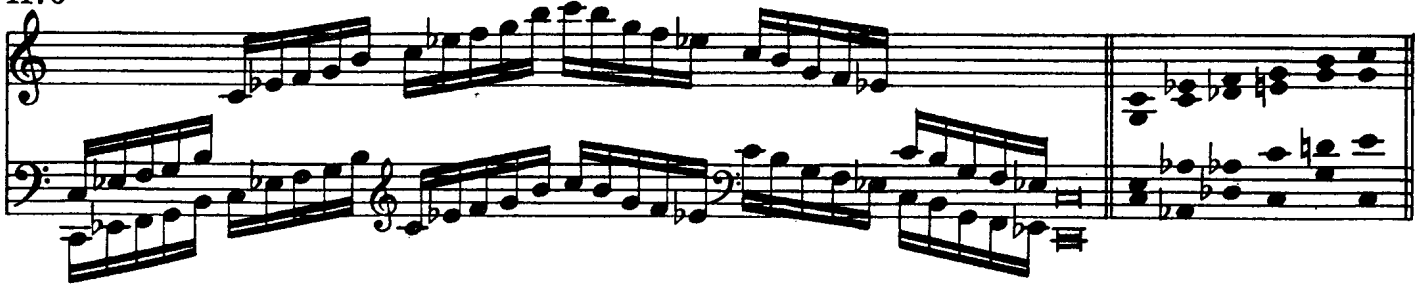

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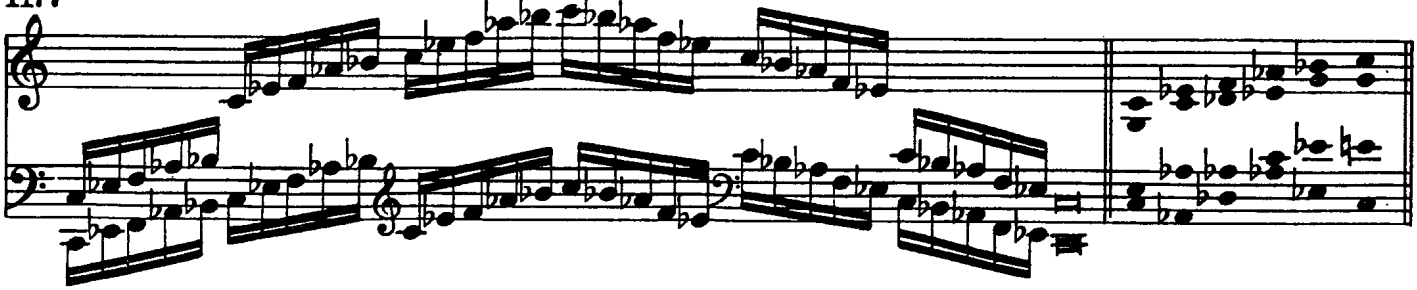

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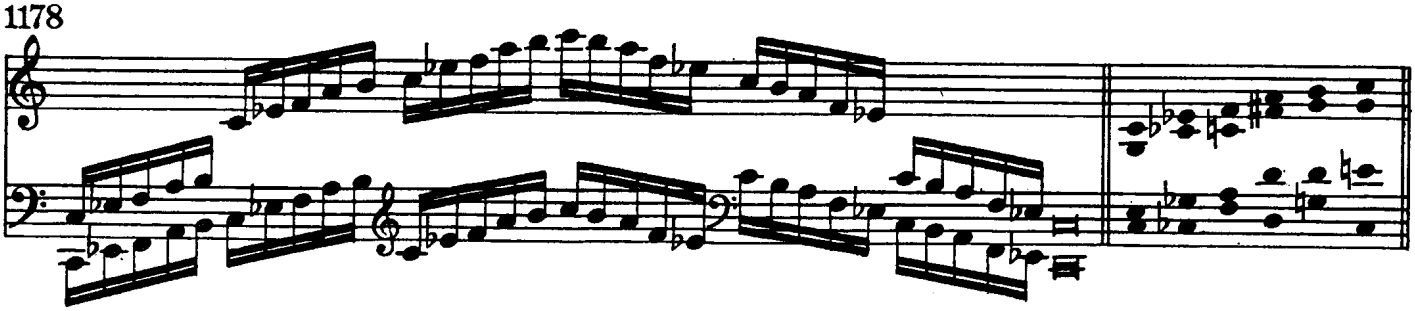

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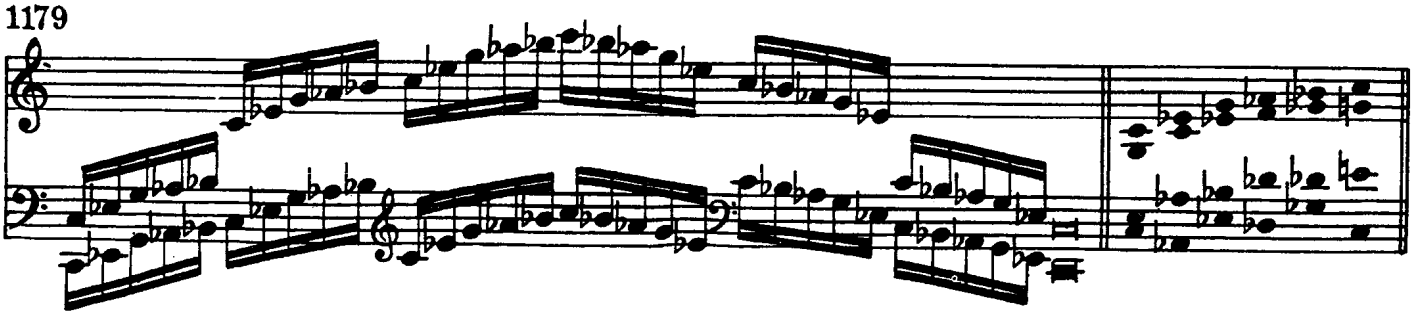

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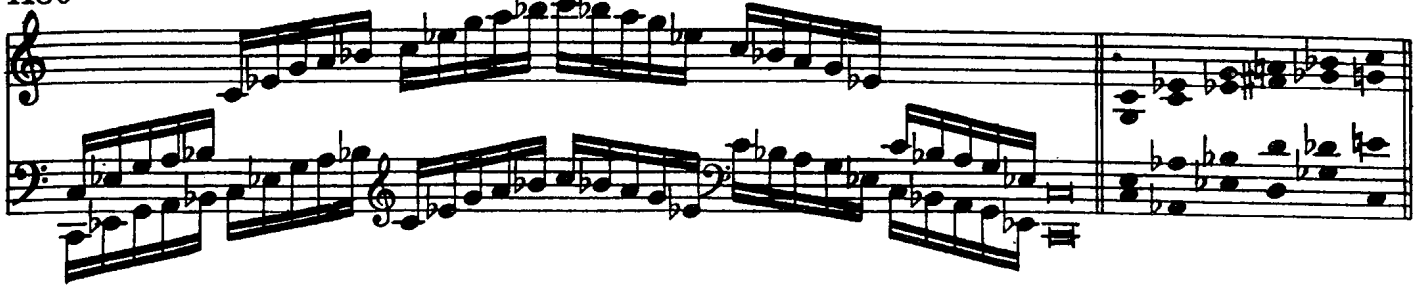

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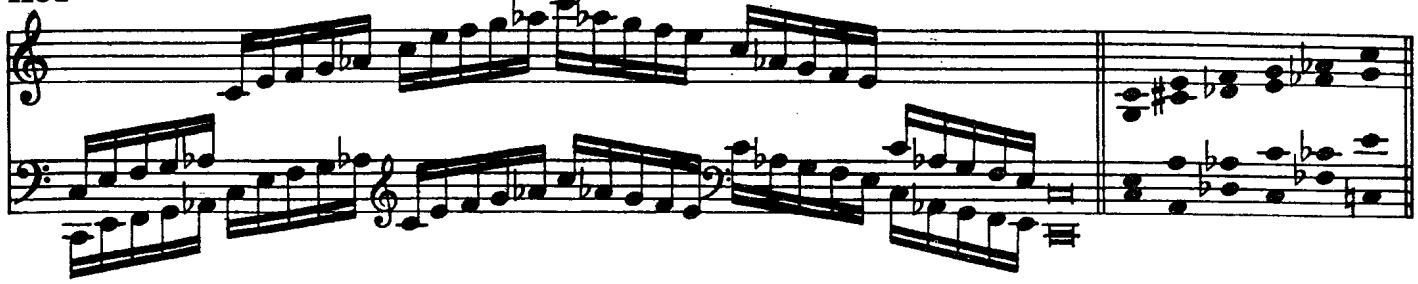

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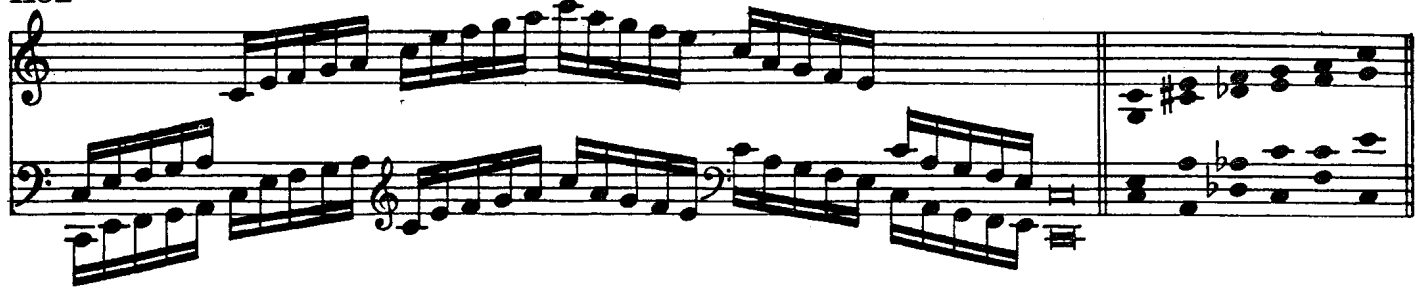

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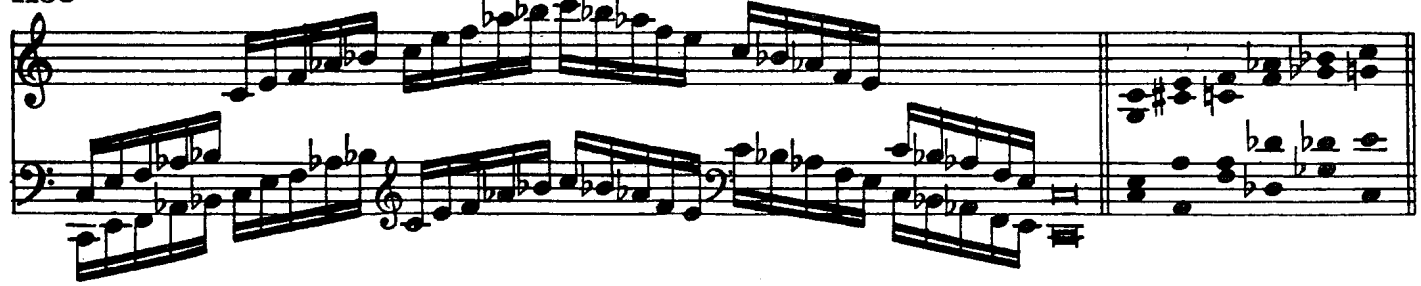

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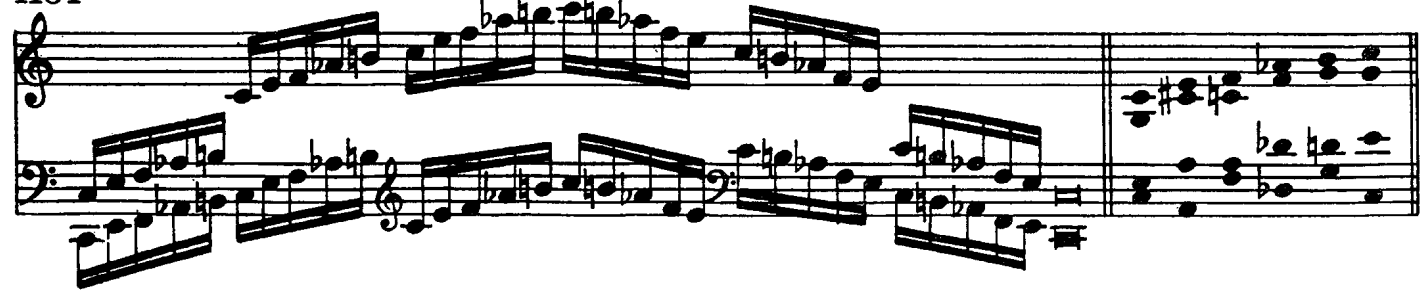

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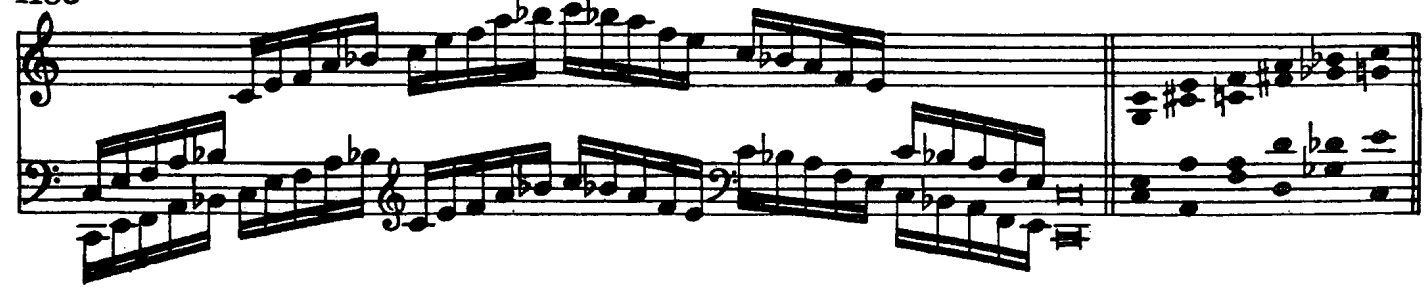

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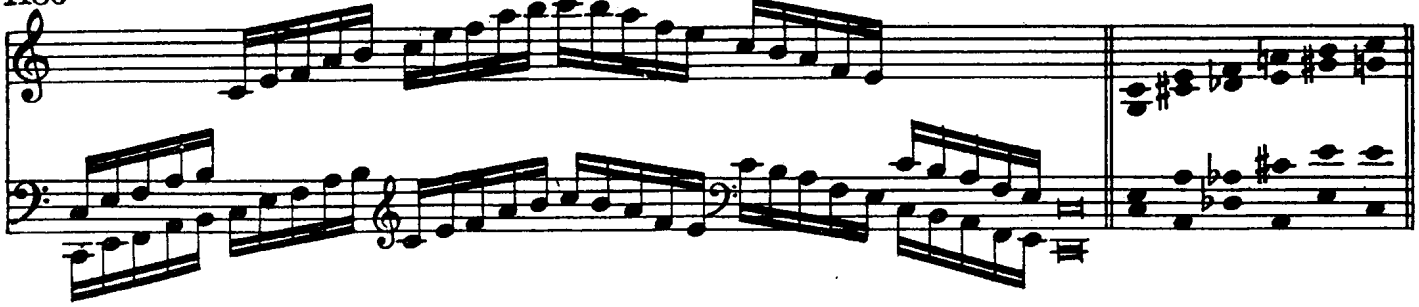

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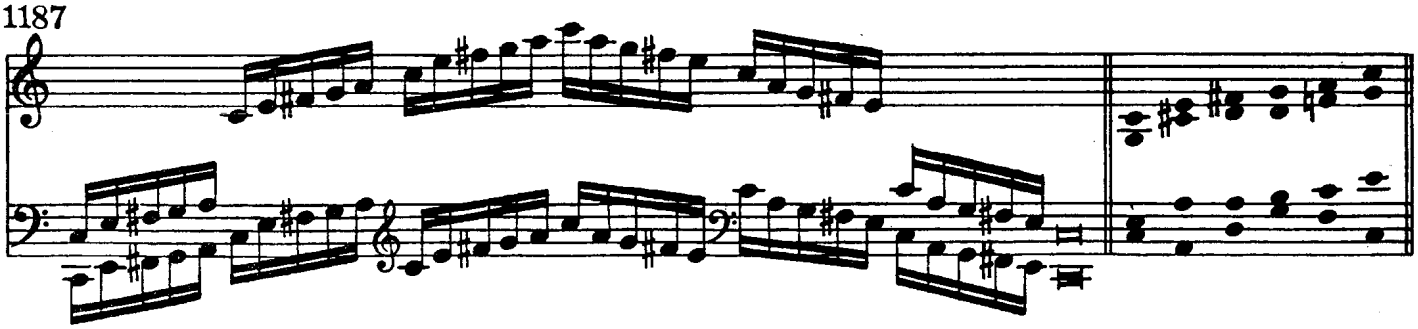

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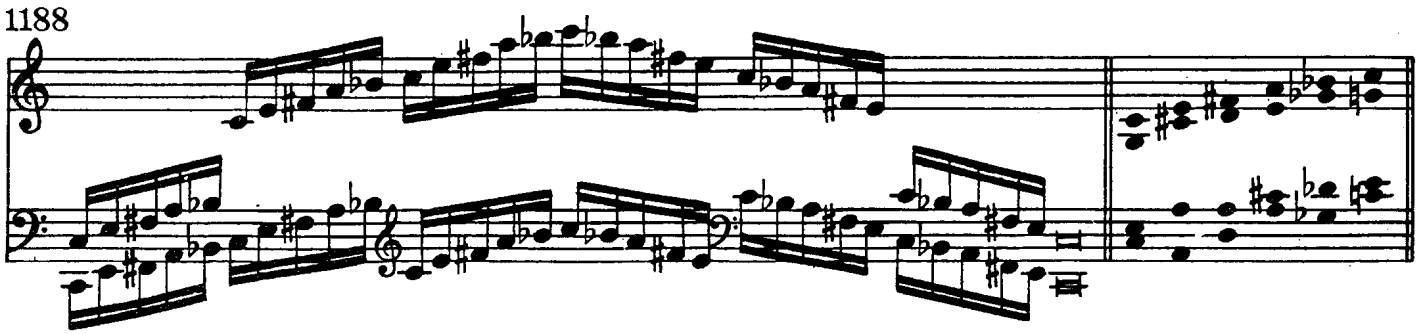

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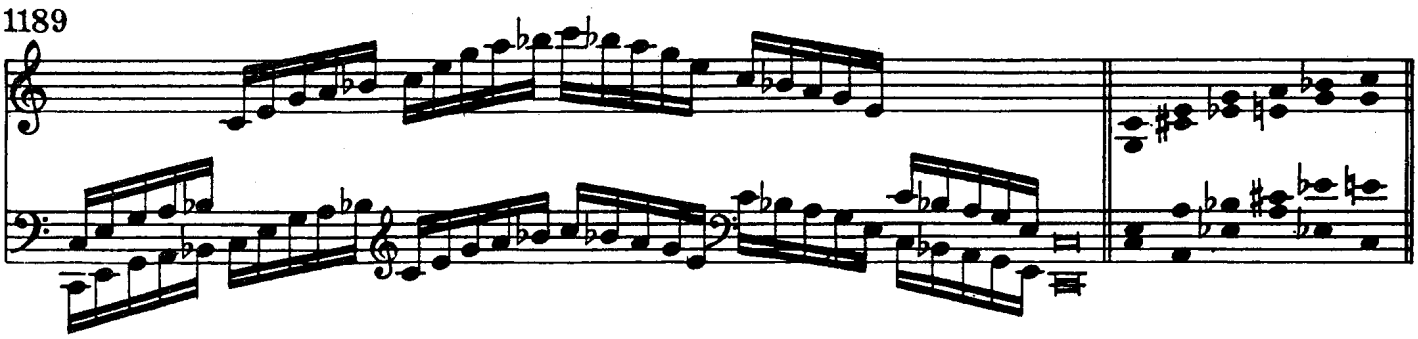

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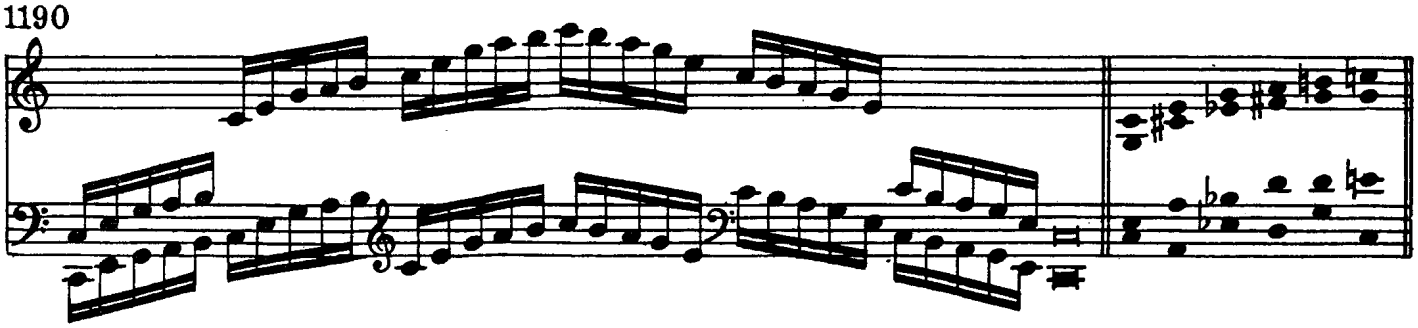
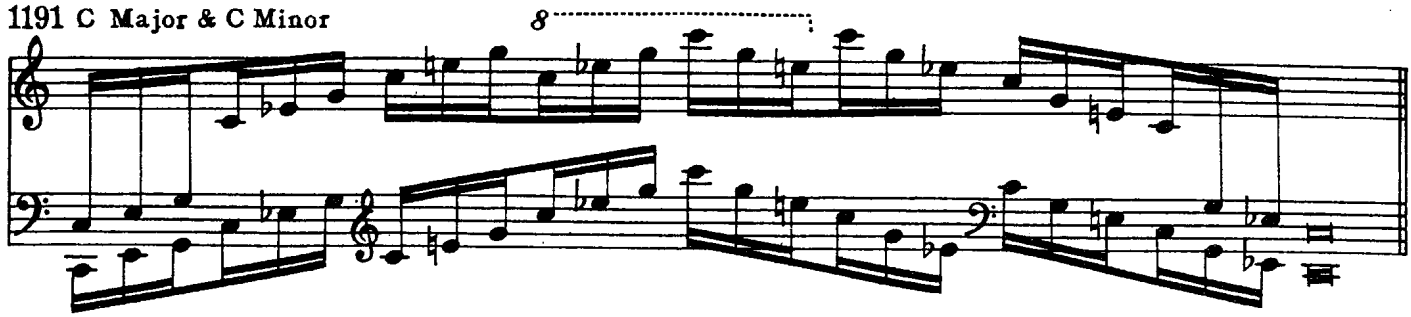
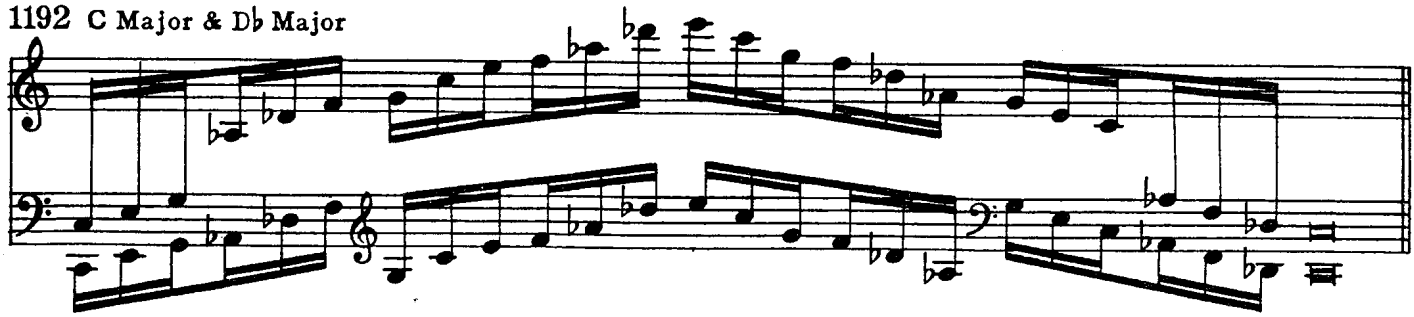


Bitonal Arpeggios

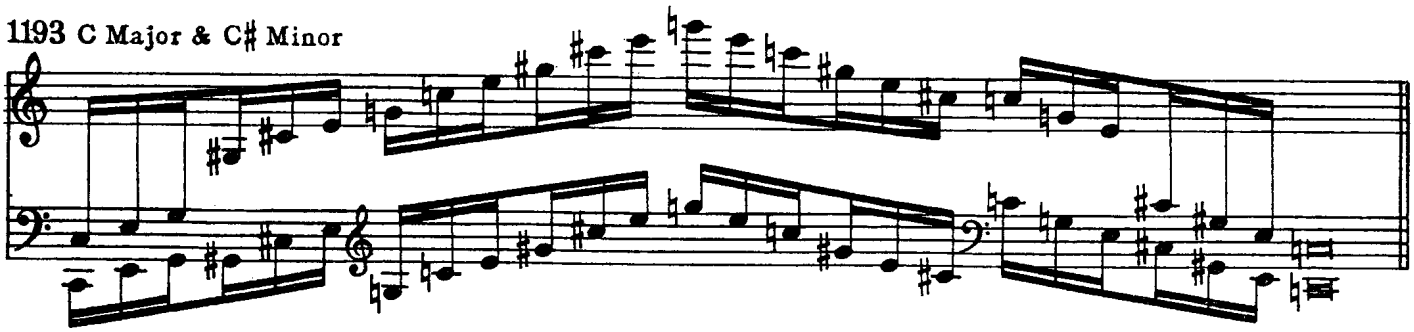
1191 C Major & C Minor



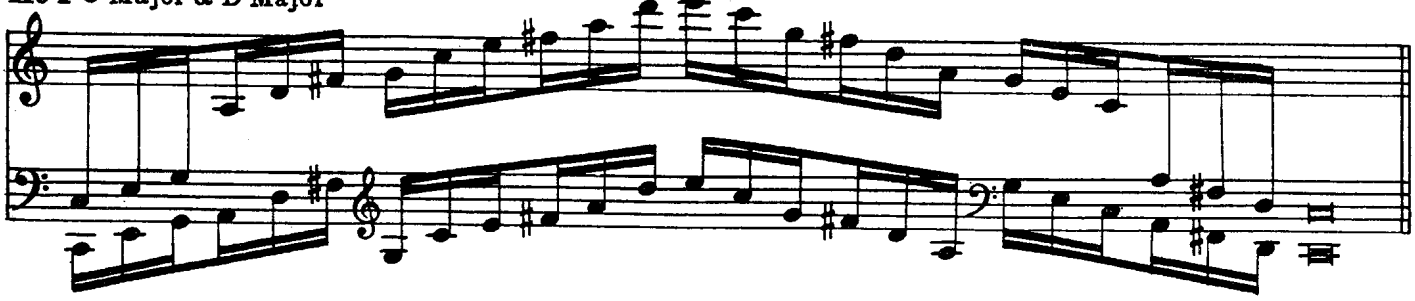
1192 C Major & D♭ Major



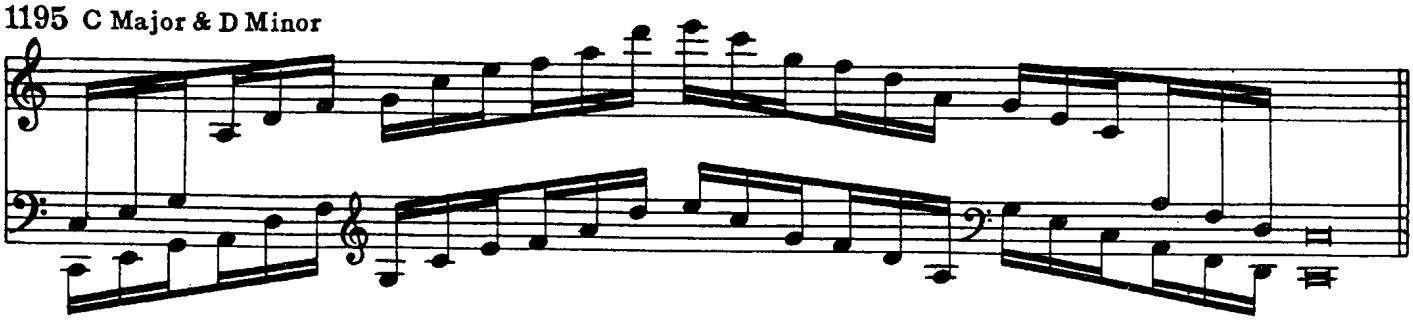
1193 C Major & C♯ Minor



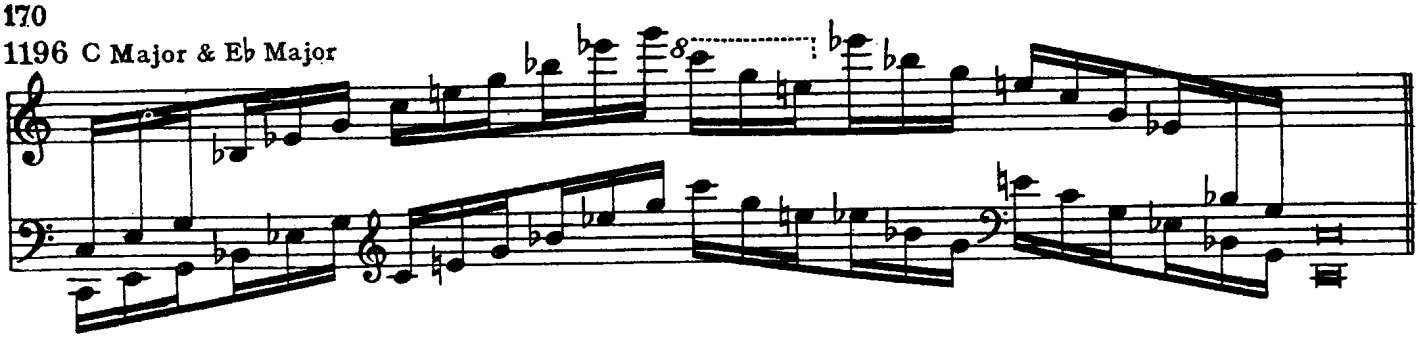
1194 C Major & D Major



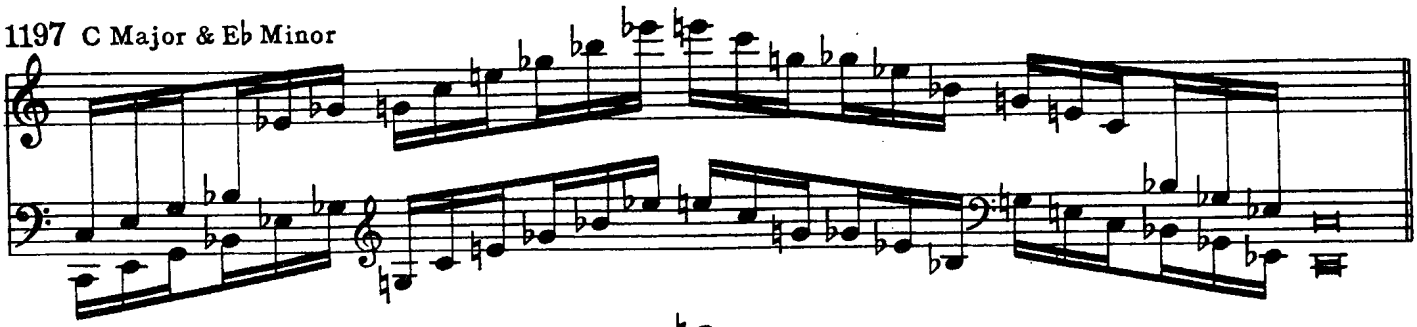
1195 C Major & D Minor



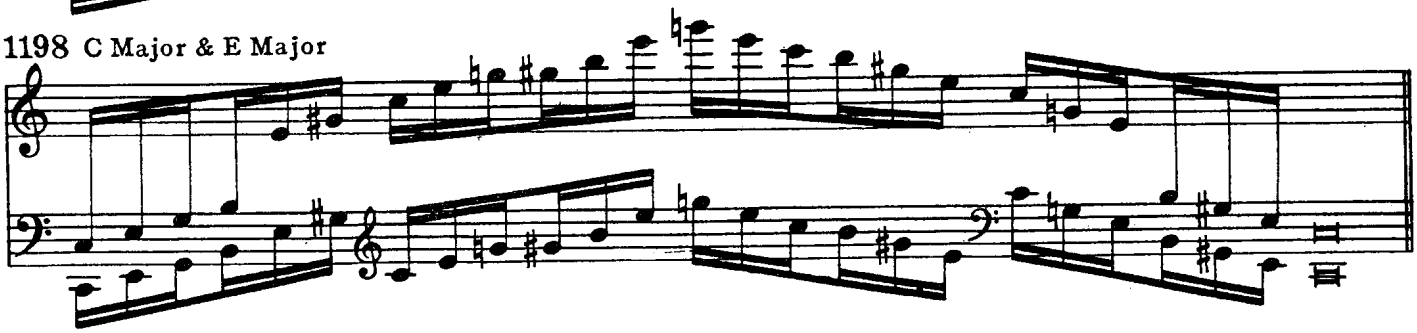
1196 C Major & E♭ Major



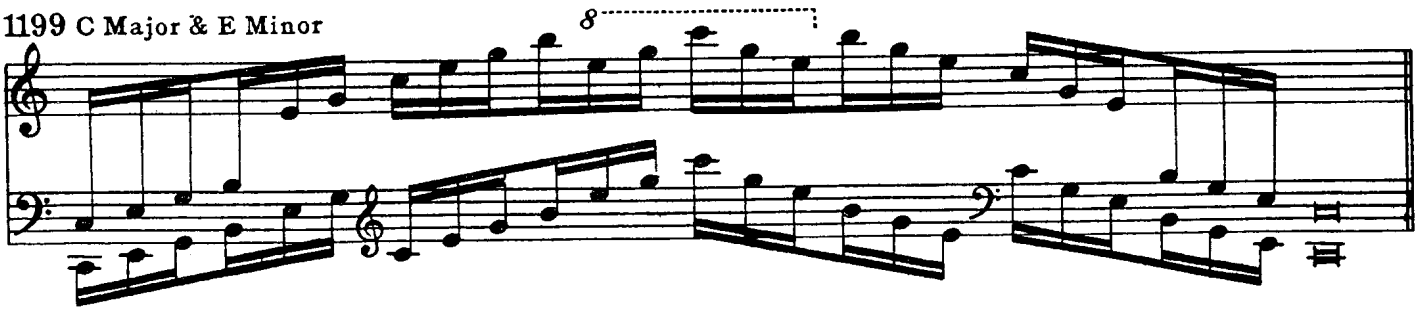
1197 C Major & E♭ Minor



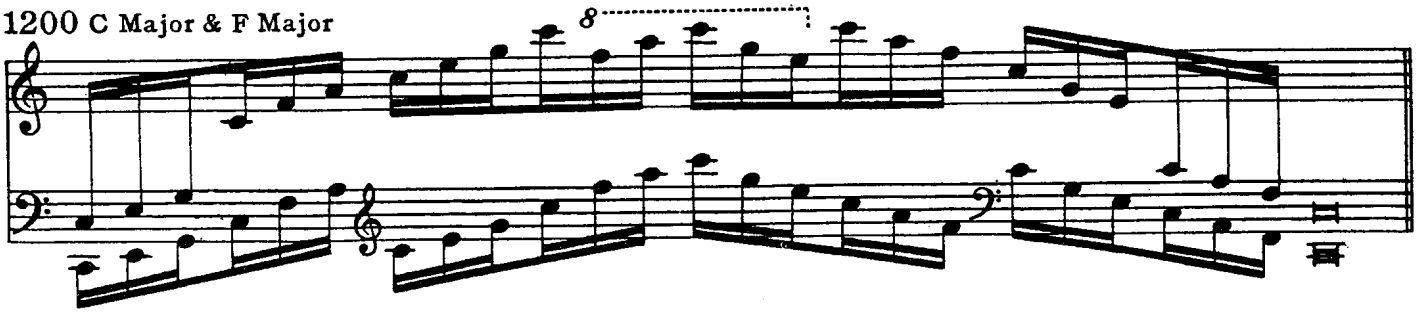
1198 C Major & E Major



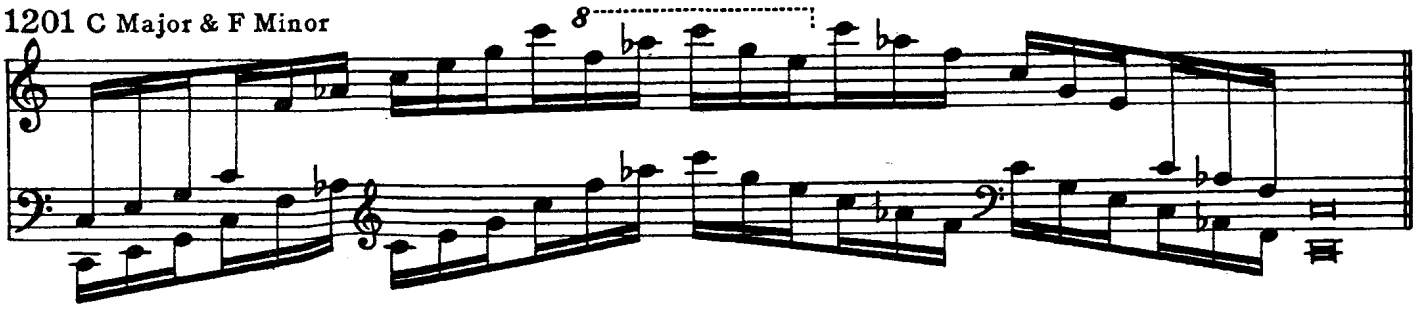
1199 C Major & E Minor



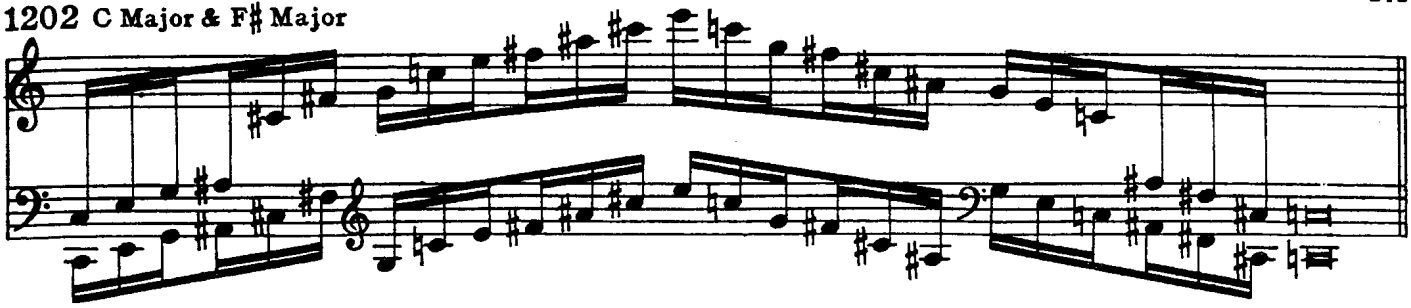
1200 C Major & F Major



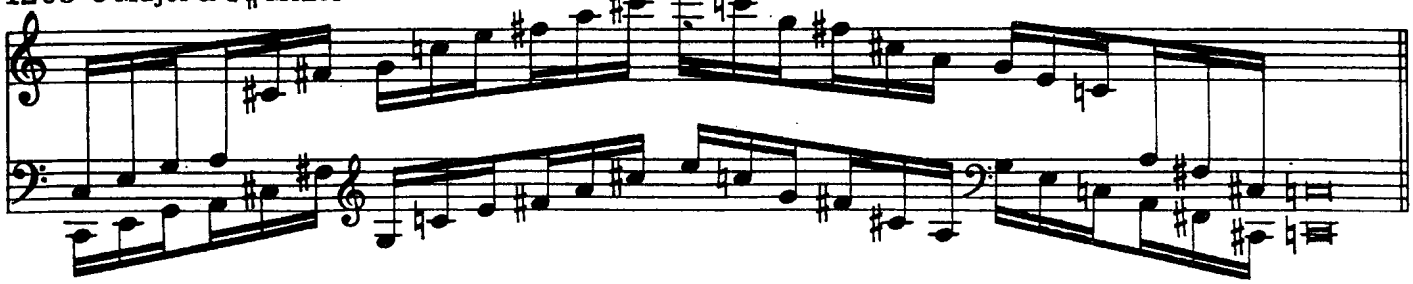
1201 C Major & F Minor



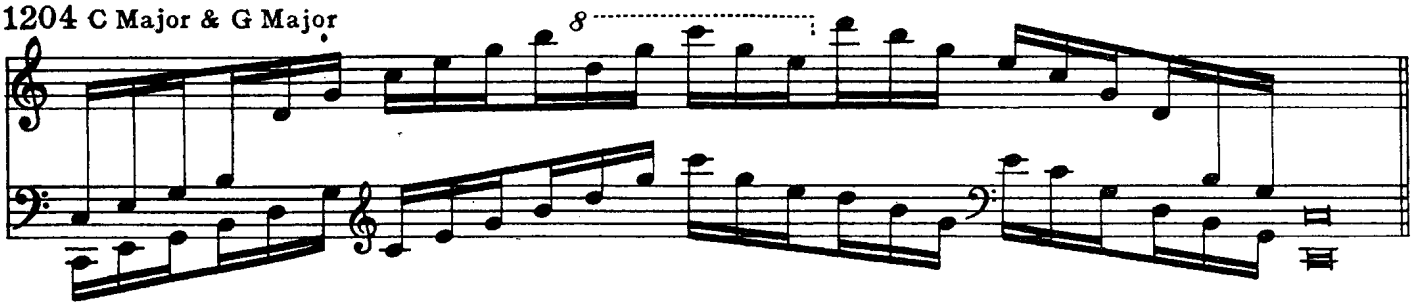
1202 C Major & F♯ Major



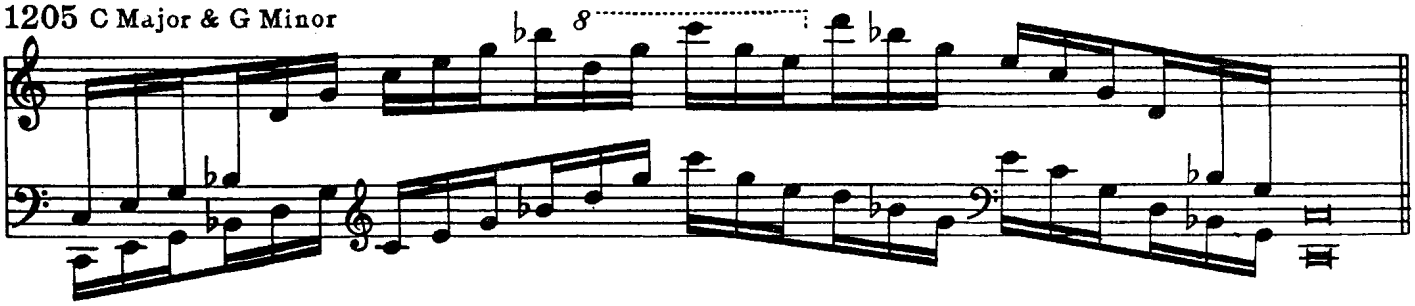
1203 C Major & F♯ Minor



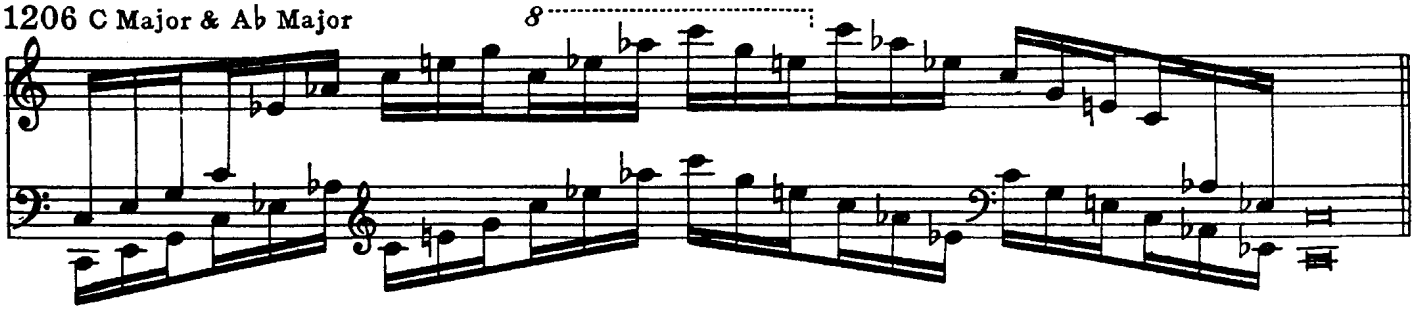
1204 C Major & G Major



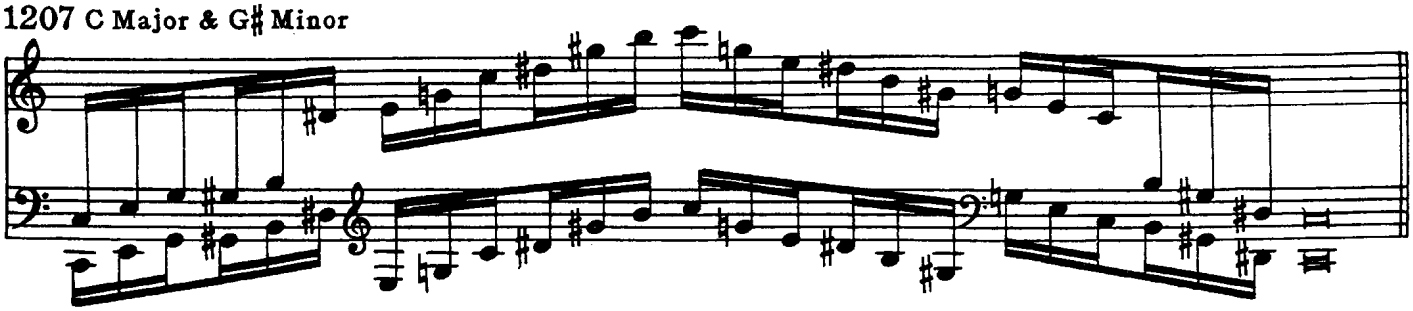
1205 C Major & G Minor



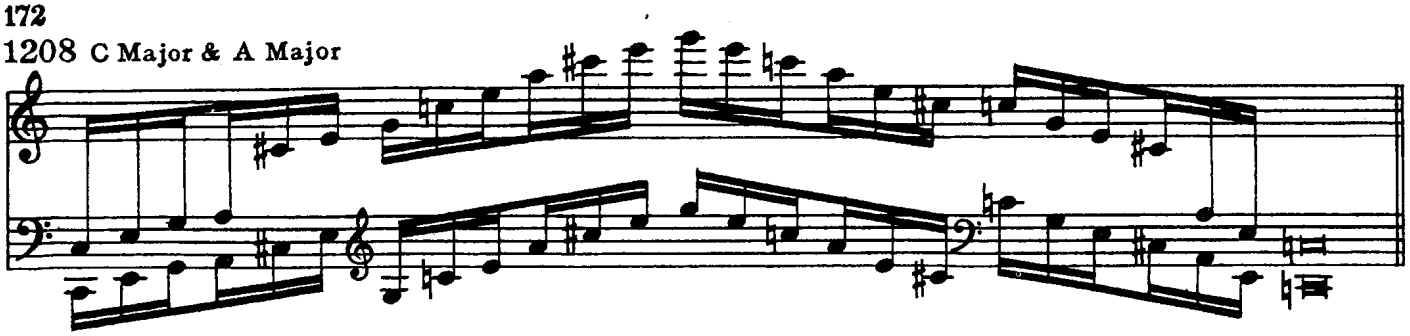
1206 C Major & Ab Major



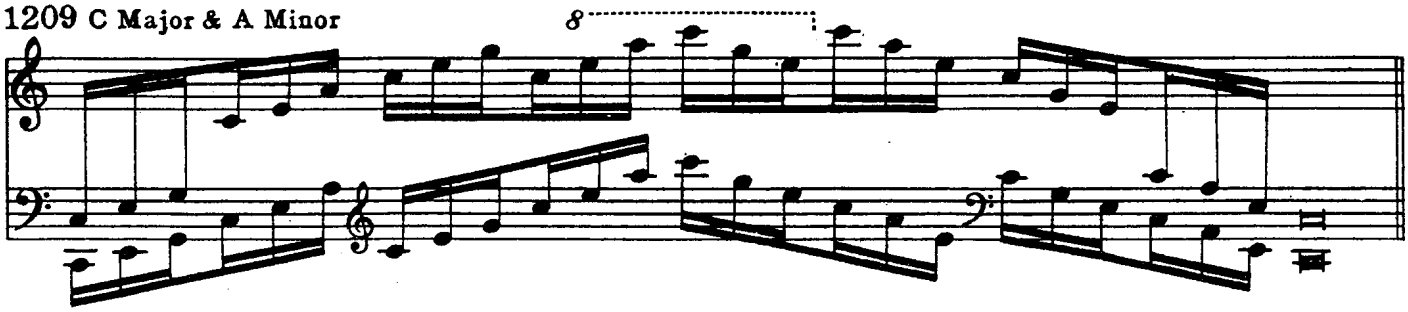
1207 C Major & G♯ Minor



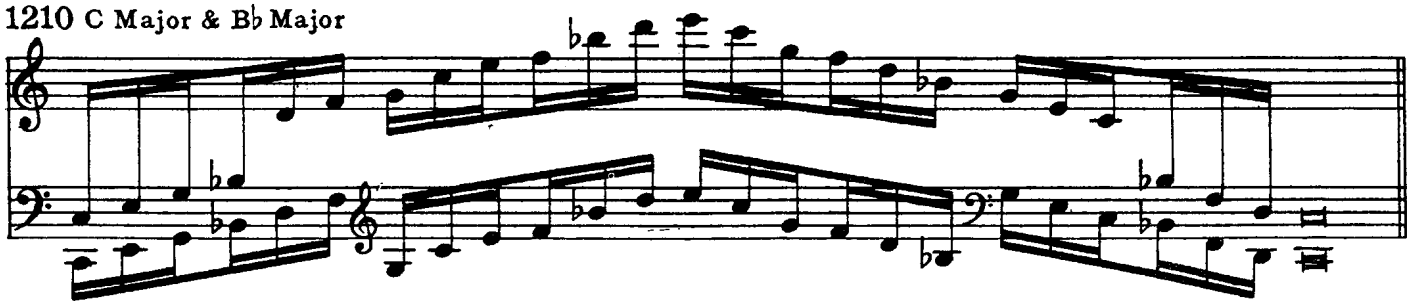
1208 C Major & A Major



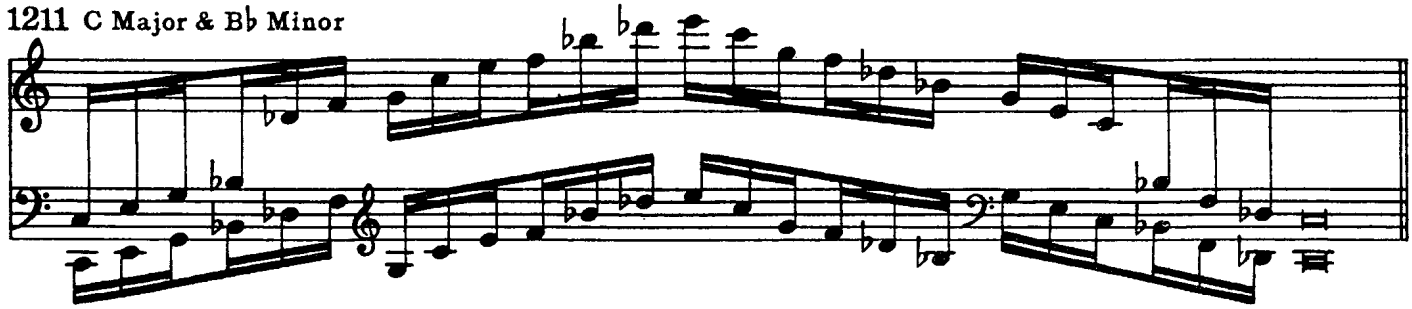
1209 C Major & A Minor



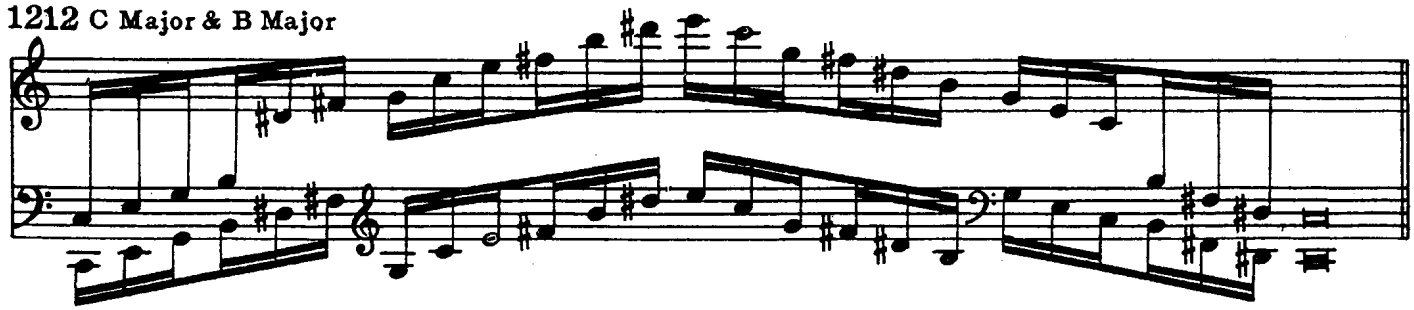
1210 C Major & B♭ Major



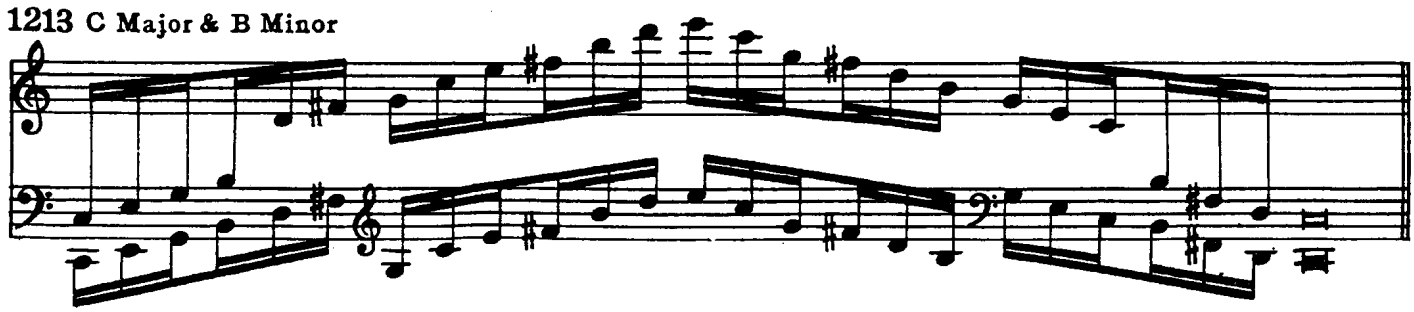
1211 C Major & B♭ Minor



1212 C Major & B Major



1213 C Major & B Minor

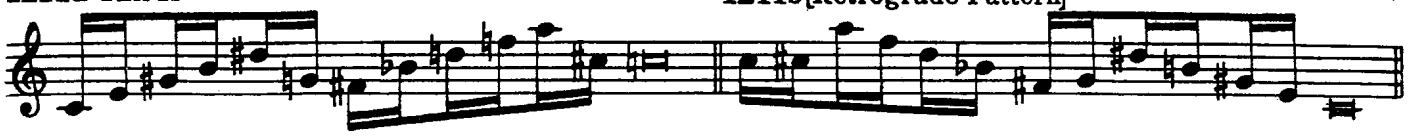


Twelve-Tone Patterns

Dodecaphonic

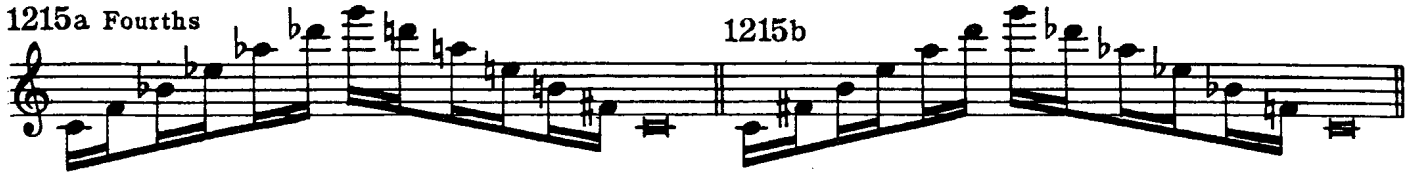
1214a Thirds

1214b [Retrograde Pattern]



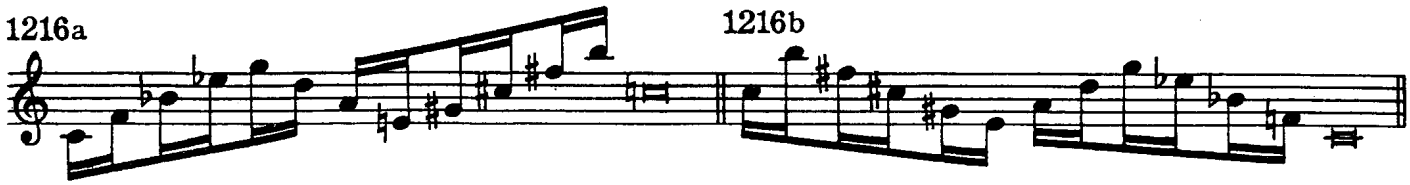
1215a Fourths

1215b



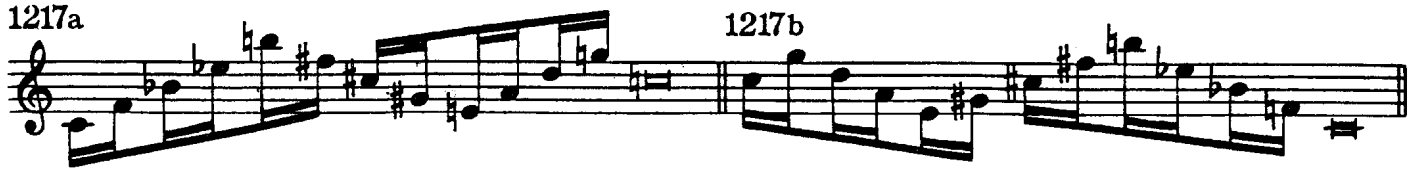
1216a

1216b



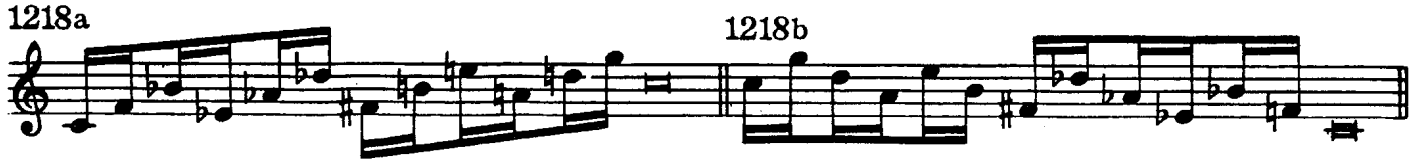
1217a

1217b



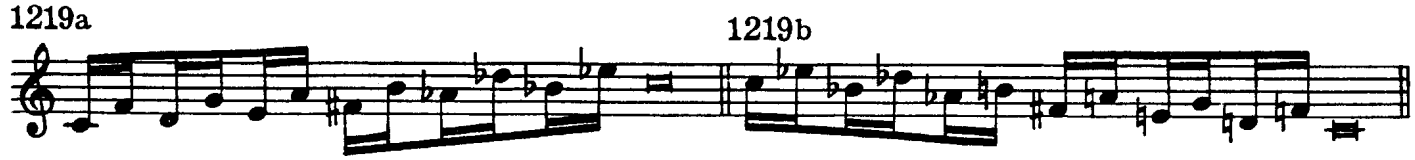
1218a

1218b



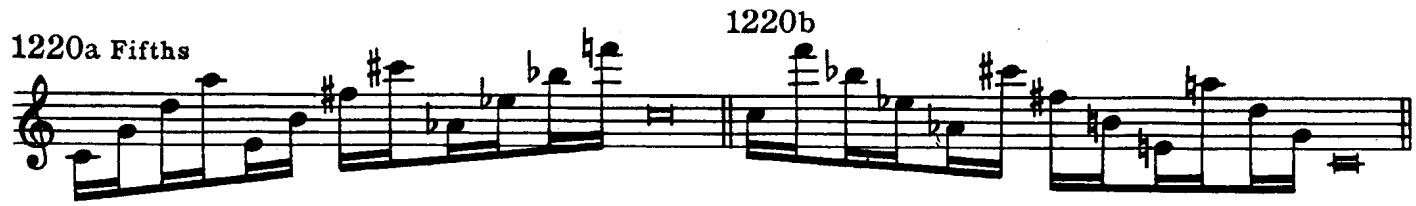
1219a

1219b



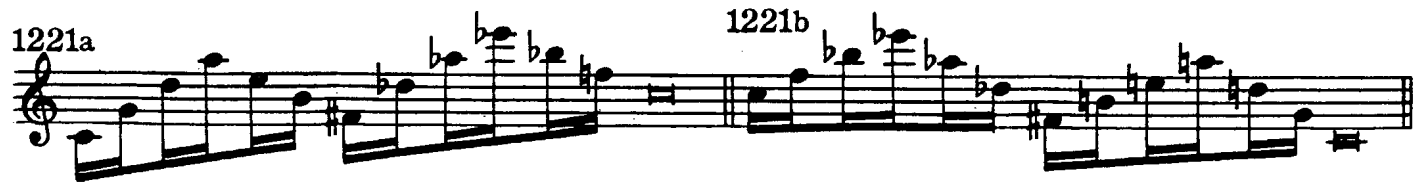
1220a Fifths

1220b



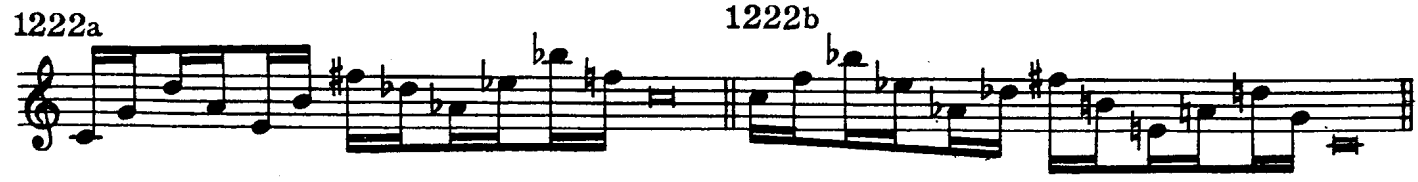
1221a

1221b

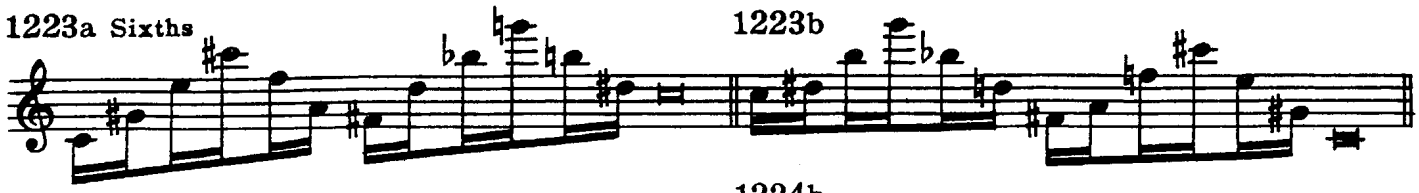


1222a

1222b

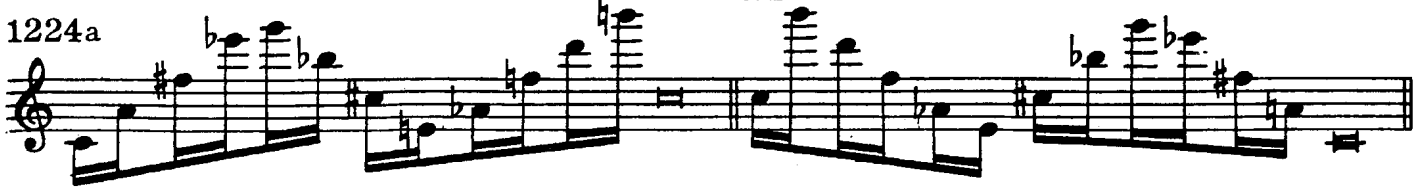


1223a Sixths



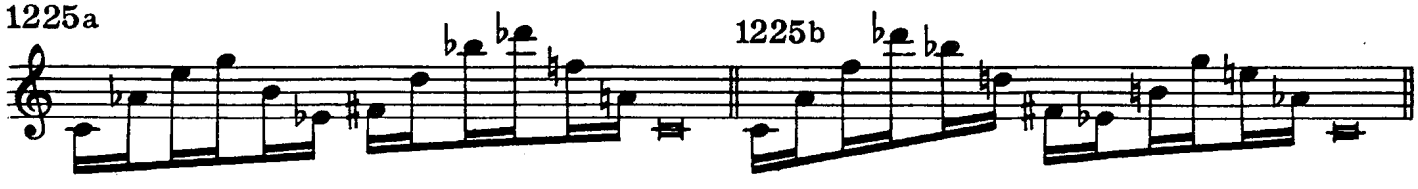
1223b

1224a



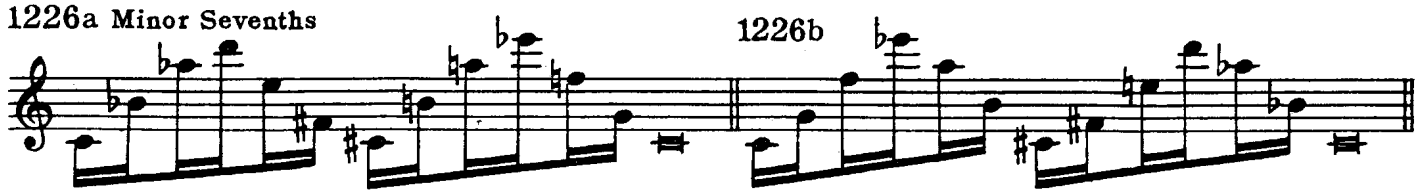
1224b

1225a



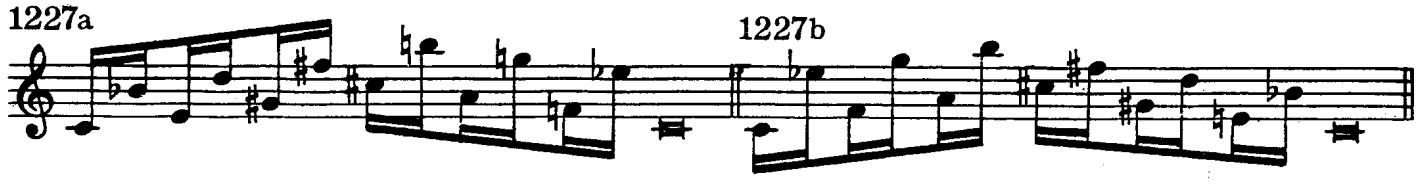
1225b

1226a Minor Sevenths



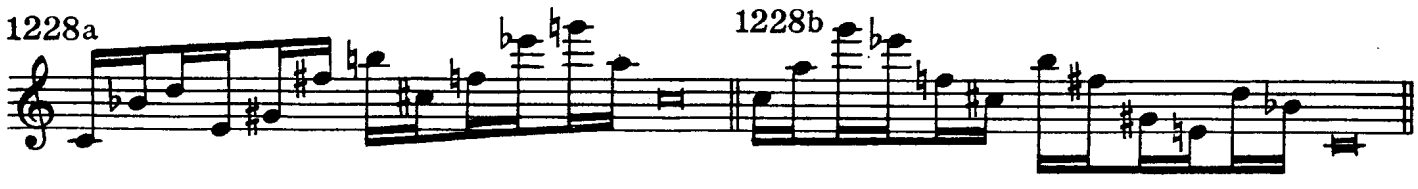
1226b

1227a



1227b

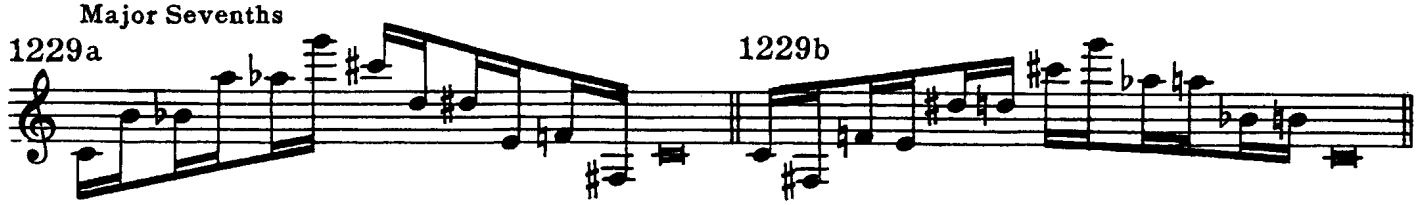
1228a



1228b

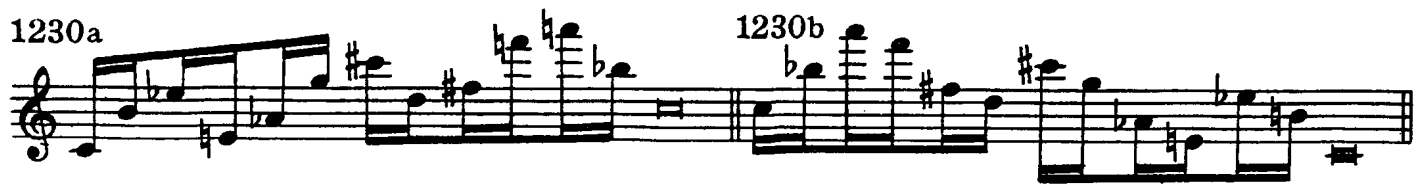
Major Sevenths

1229a



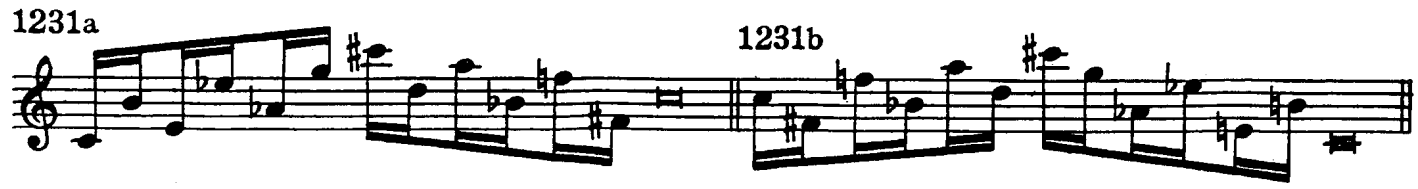
1229b

1230a



1230b

1231a

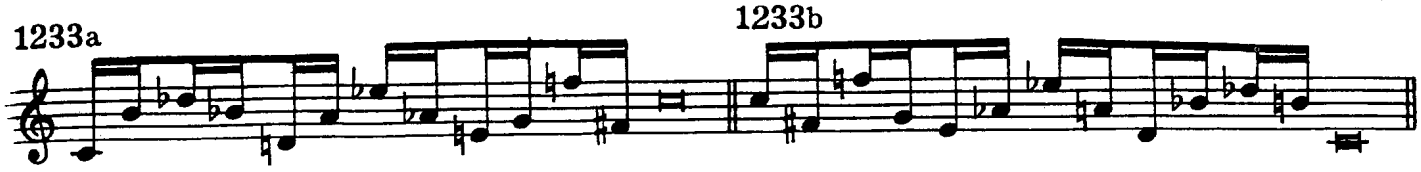


1231b

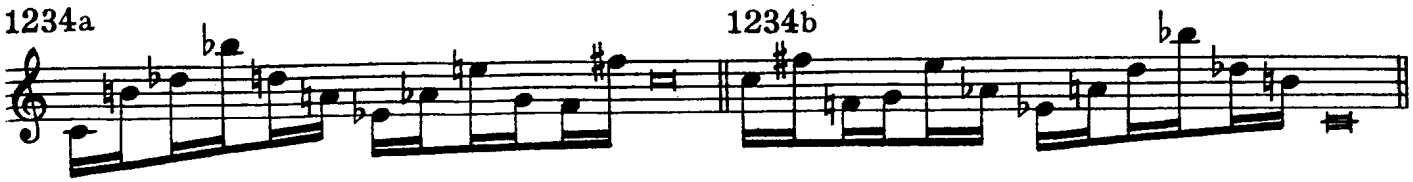
Twelve-Tone Spirals

1232a 1232b

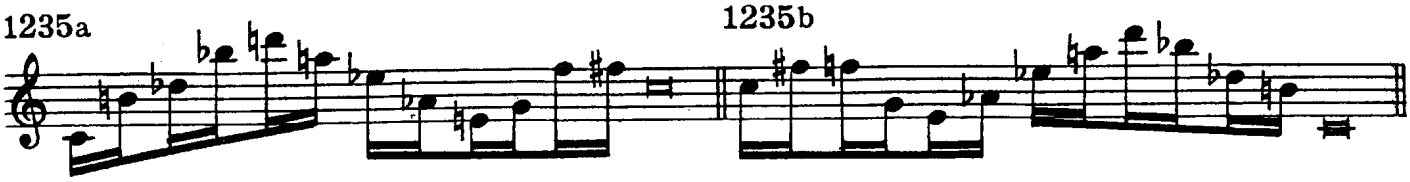
1233a 1233b



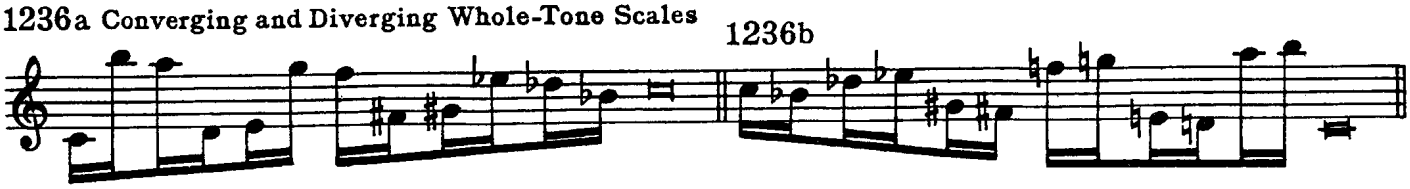
1234a 1234b



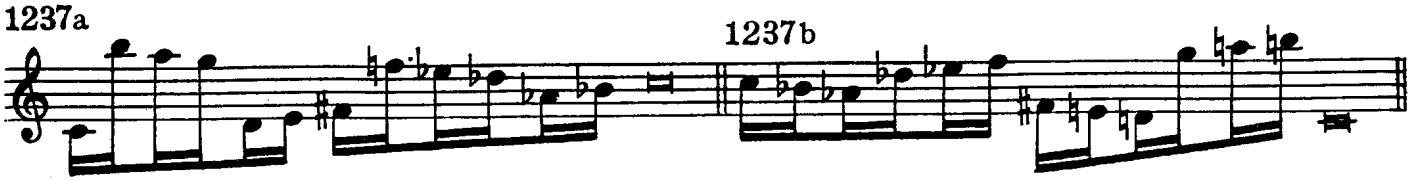
1235a 1235b



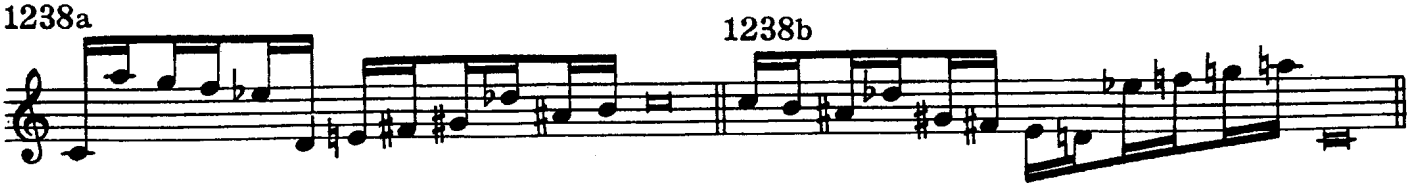
1236a Converging and Diverging Whole-Tone Scales 1236b



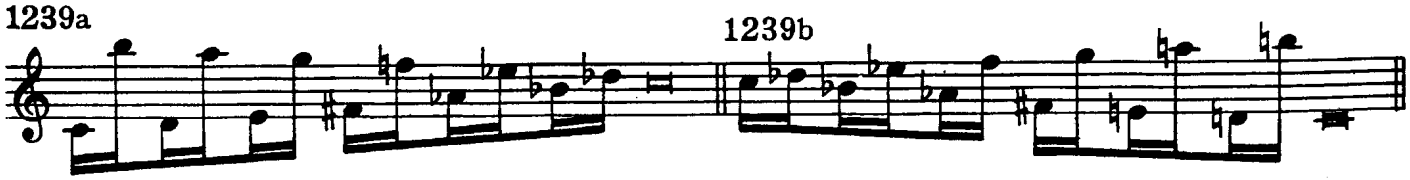
1237a 1237b



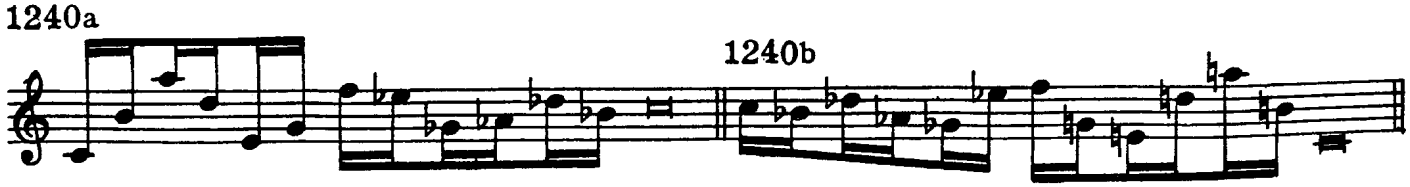
1238a 1238b



1239a 1239b

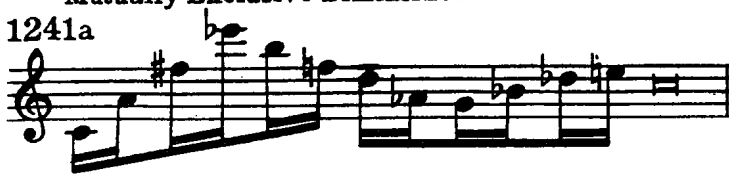


1240a 1240b

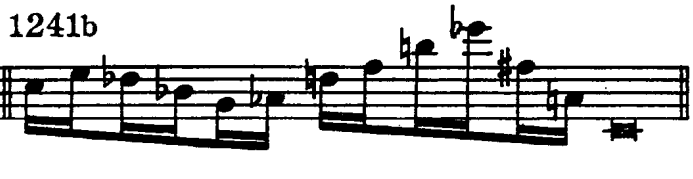


Mutually Exclusive Diminished-Seventh Chords

1241a

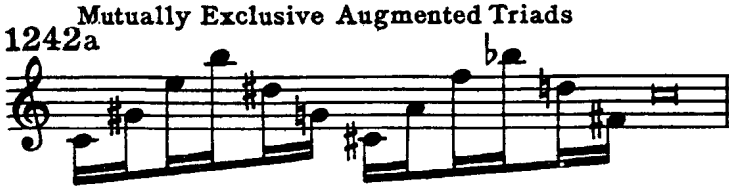


1241b



Mutually Exclusive Augmented Triads

1242a



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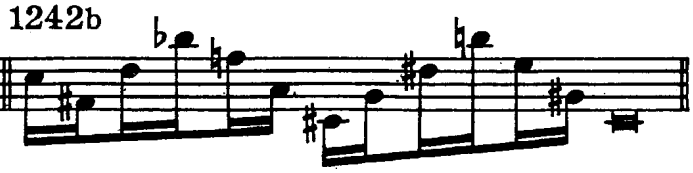
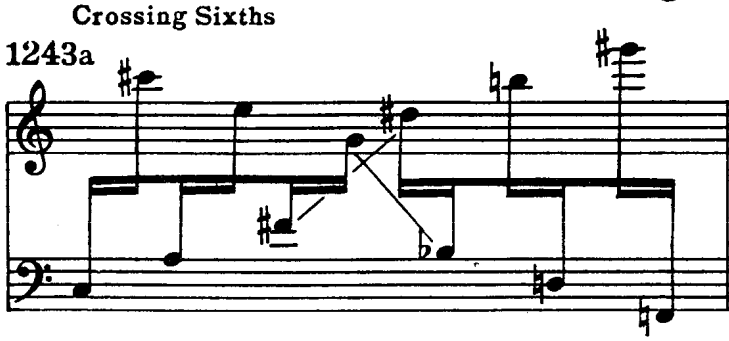


Crossing Intervals

Crossing Sixths

1243a



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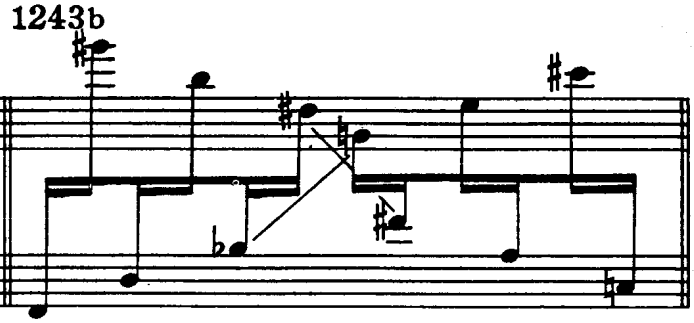
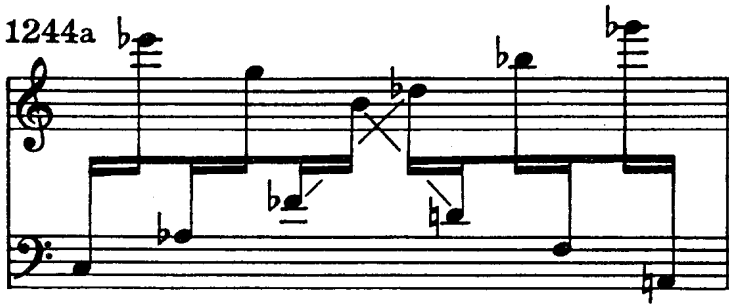


1244a



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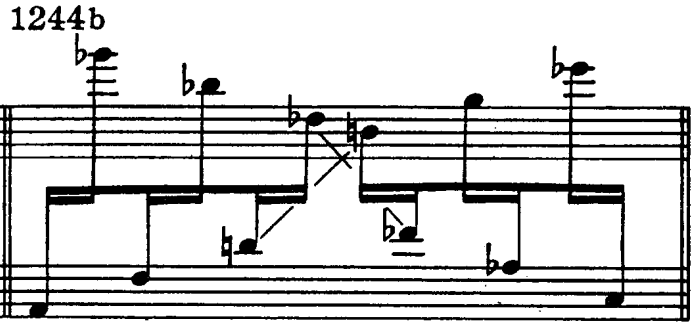
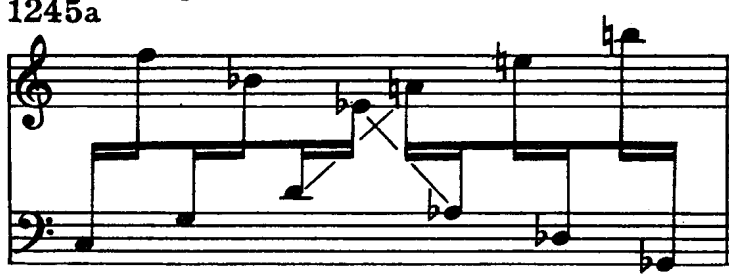
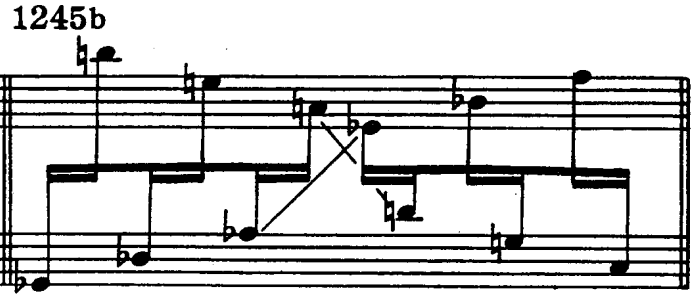


Crossing Fifths

1245a

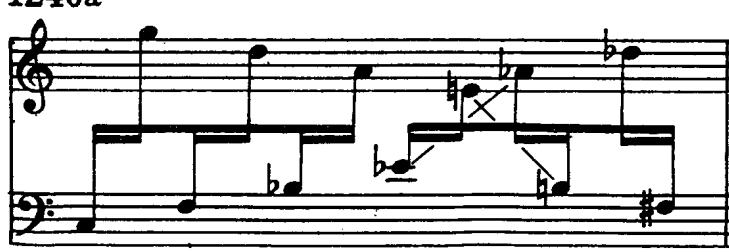


1245b

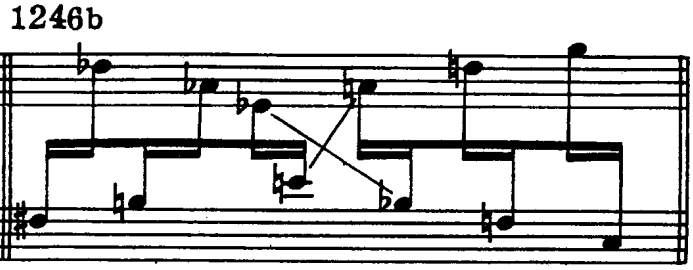


Crossing Fourths

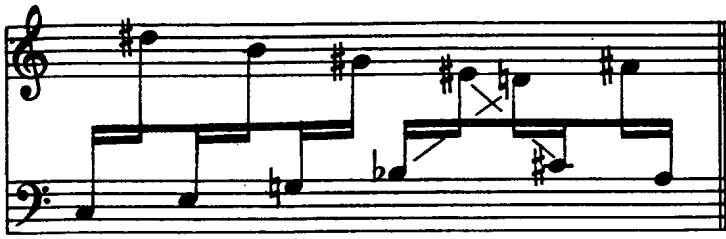
1246a



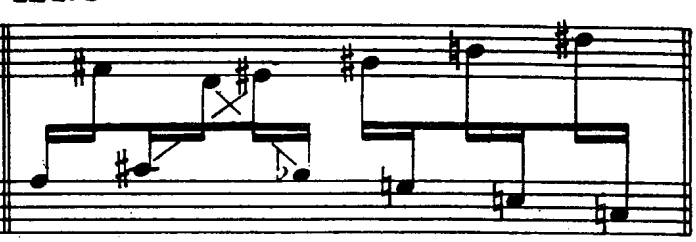
1246b



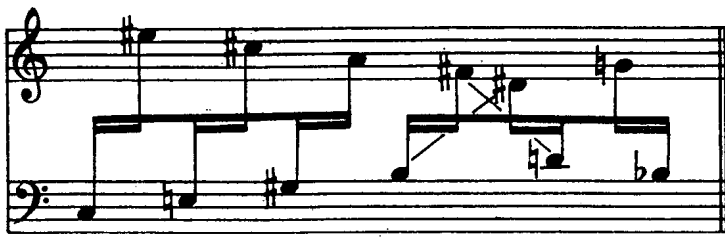
1247a Crossing Thirds



1247b



1248a



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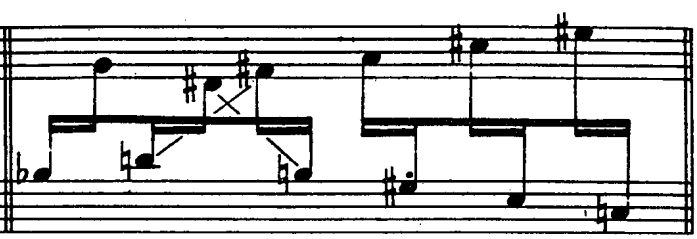

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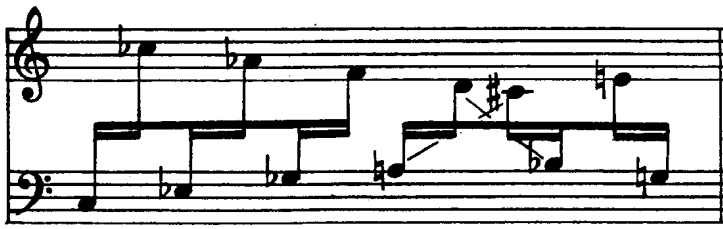

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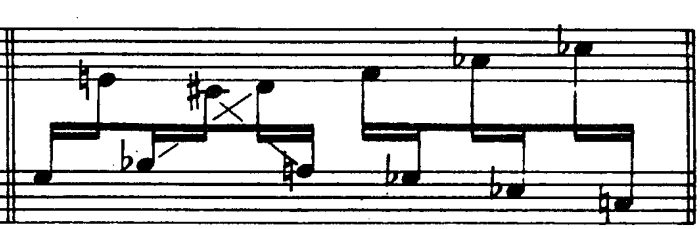
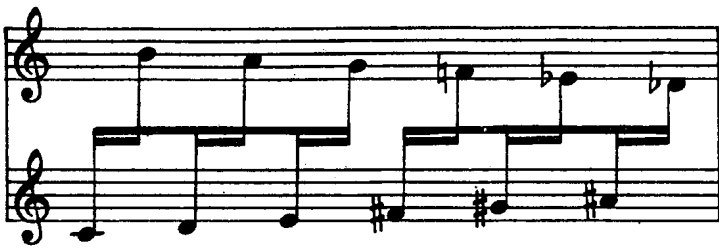


1250a Crossing Seconds



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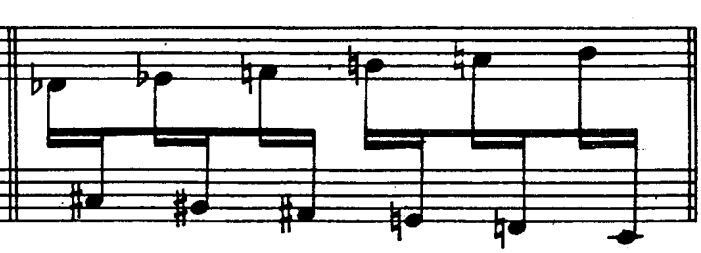
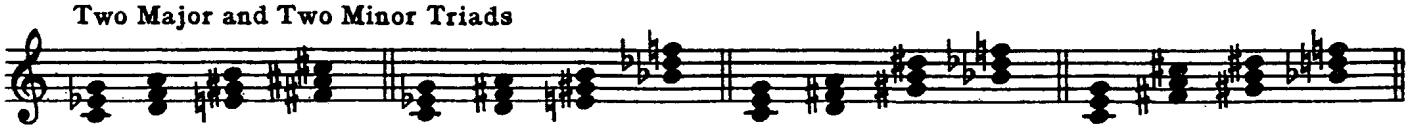
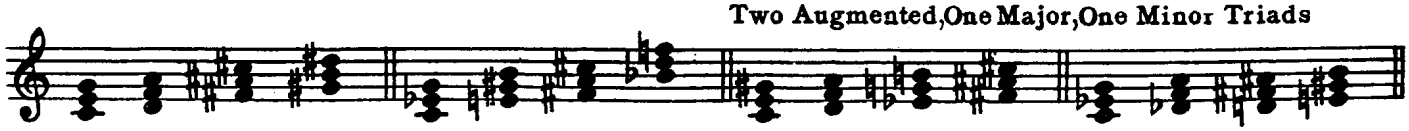


Division of Twelve Tones into Four Mutually Exclusive Triads

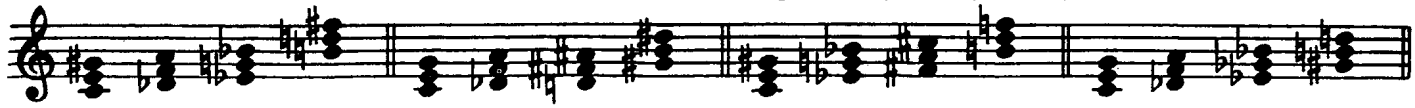
Two Major and Two Minor Triads



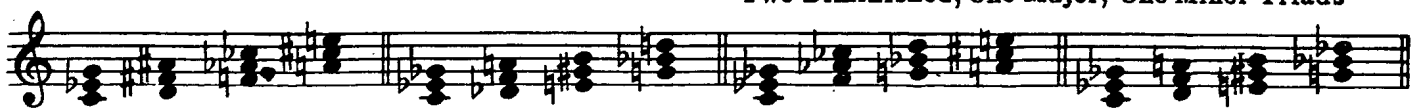
Two Augmented,One Major,One Minor Triads



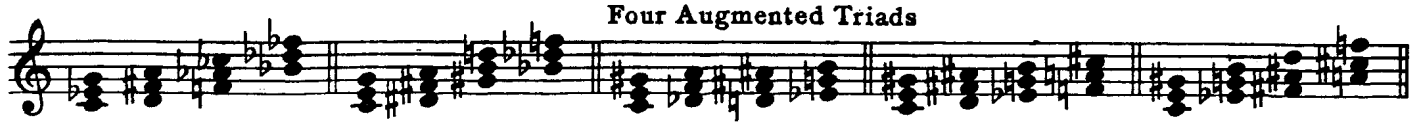
Augmented, Major, Minor, Diminished Triads



Two Diminished, One Major, One Minor Triads



Four Augmented Triads



Quadritonal Arpeggios

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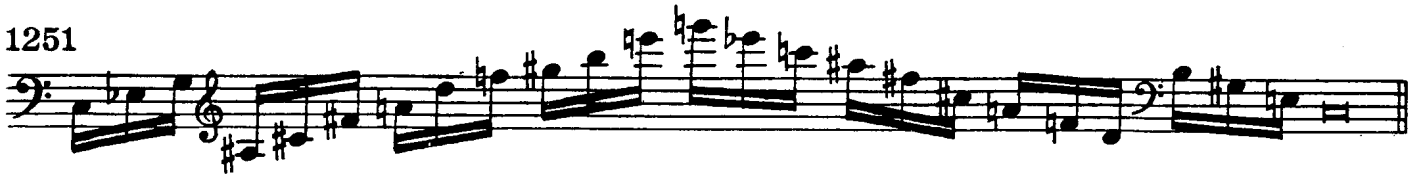

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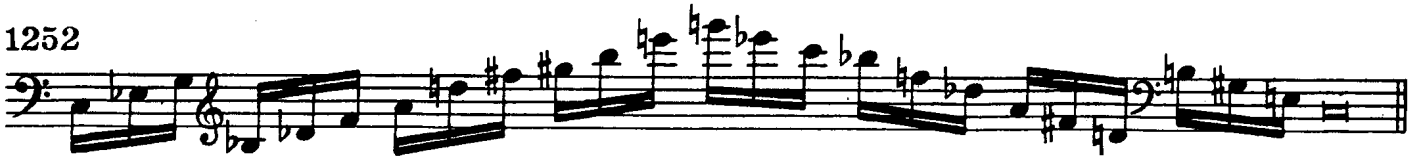

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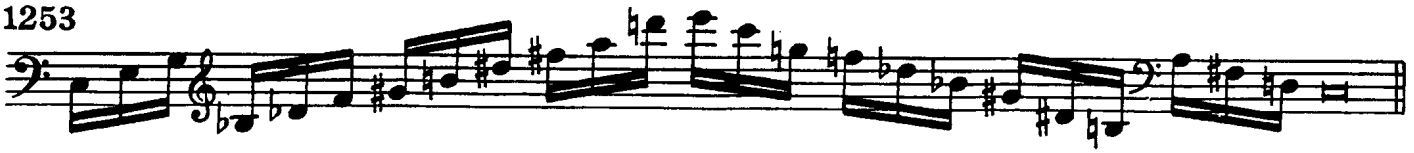

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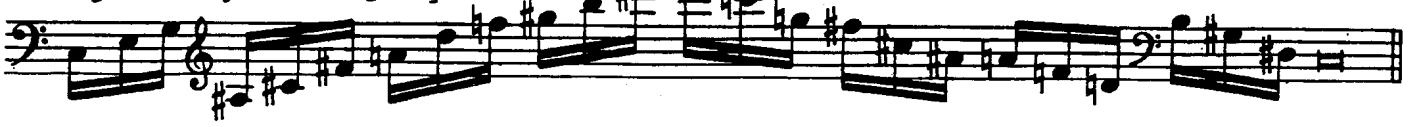
1255 [Slonimsky: *Moto Perpetuo*]



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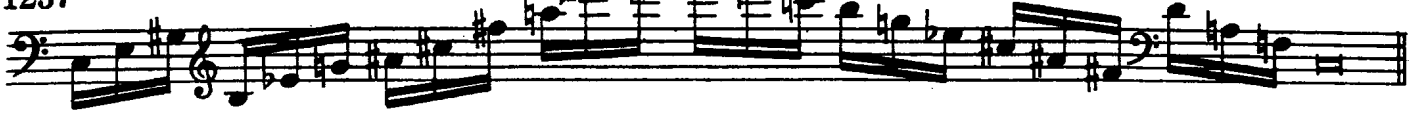

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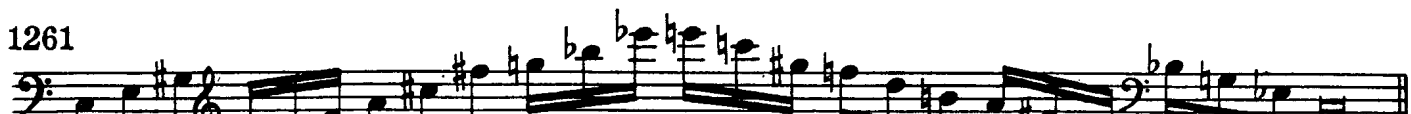

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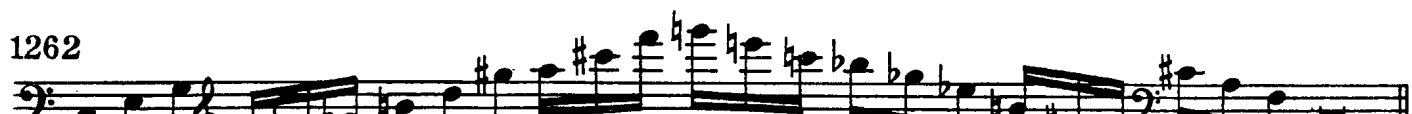

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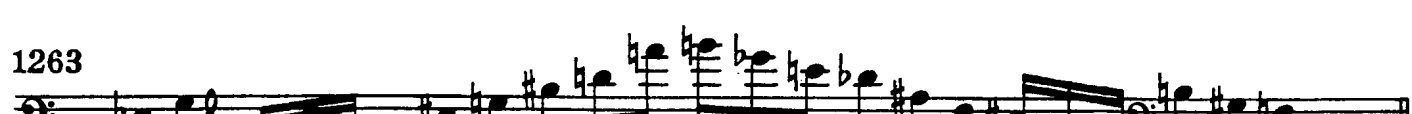

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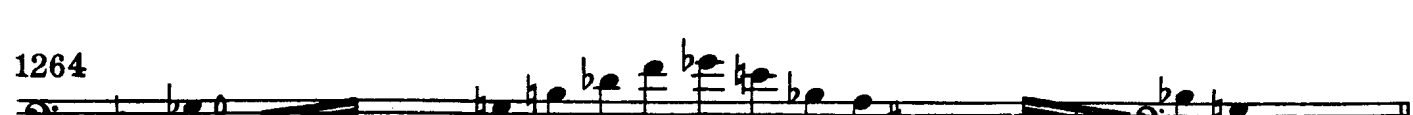

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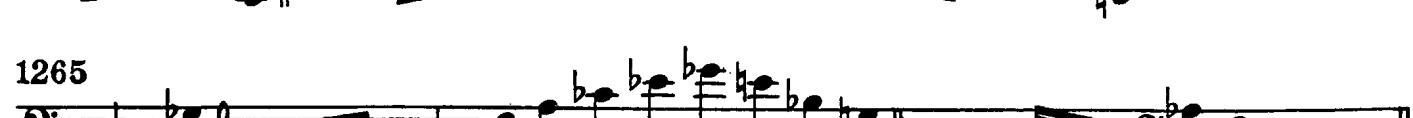

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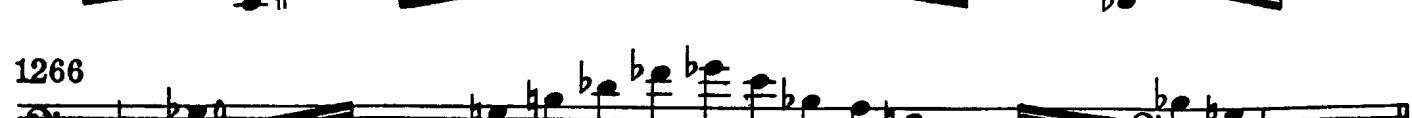

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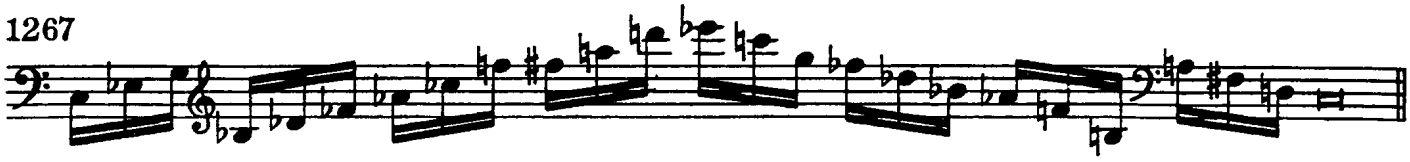

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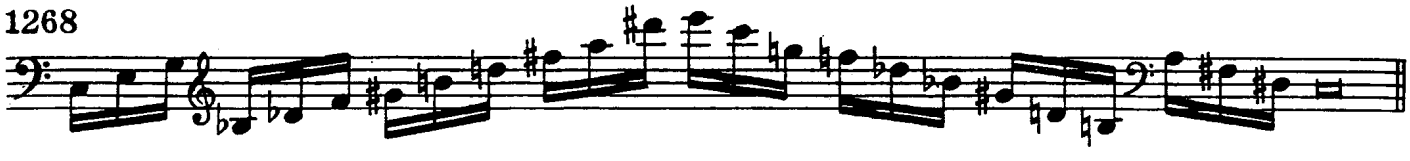

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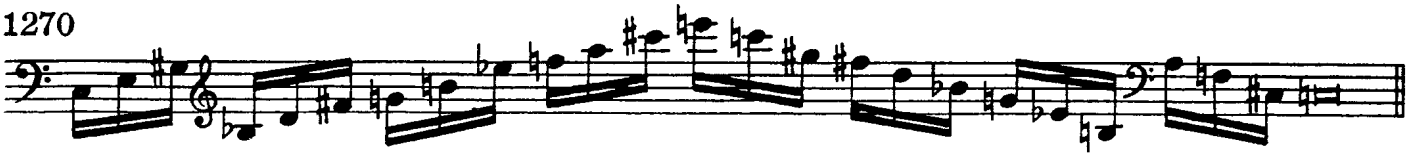

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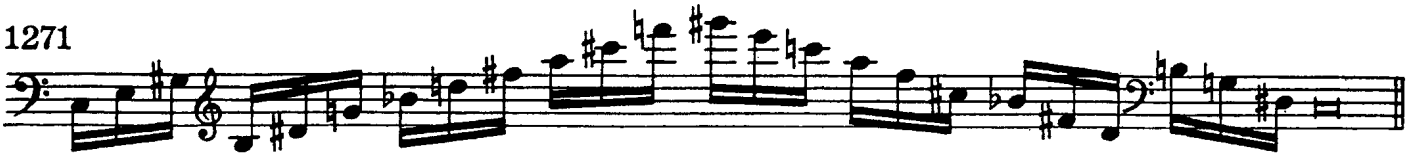

Inversions

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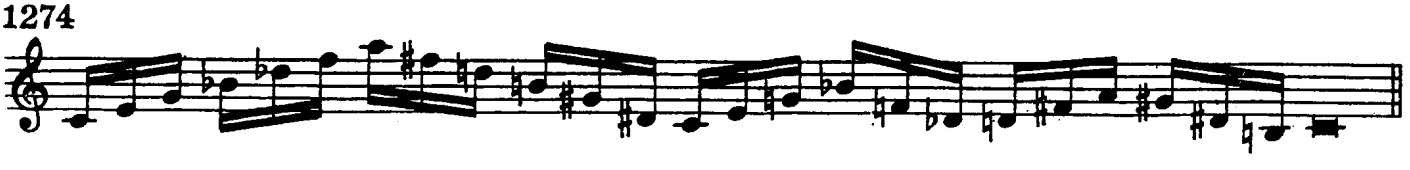

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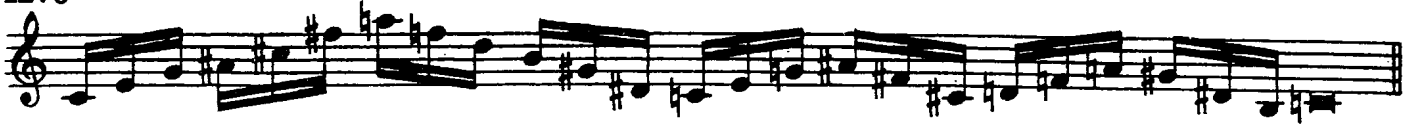

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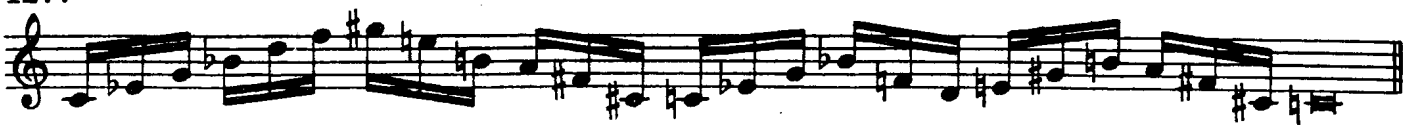

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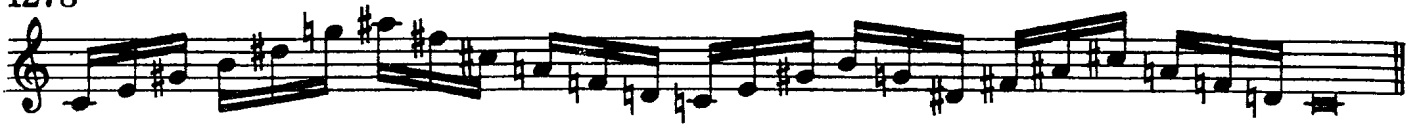

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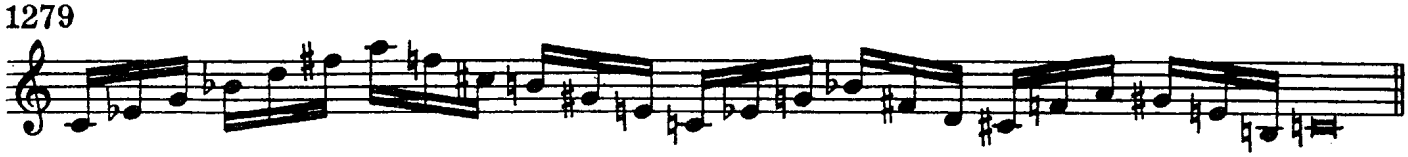

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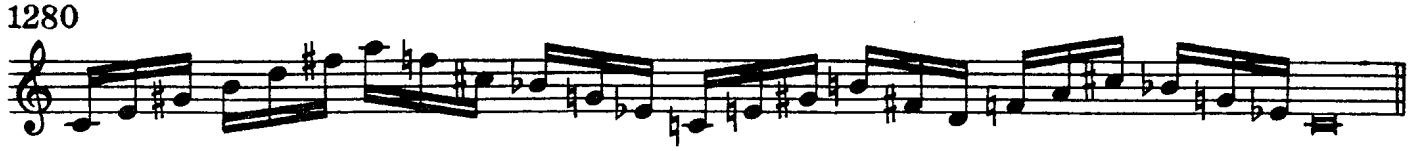

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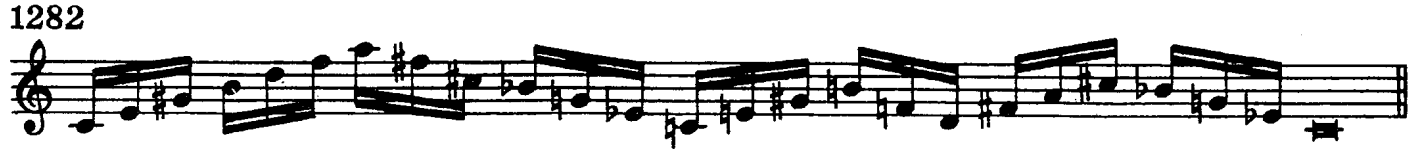

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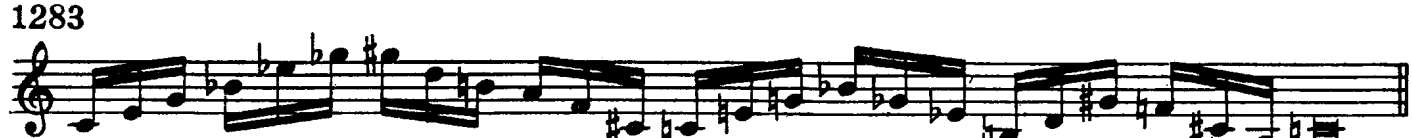

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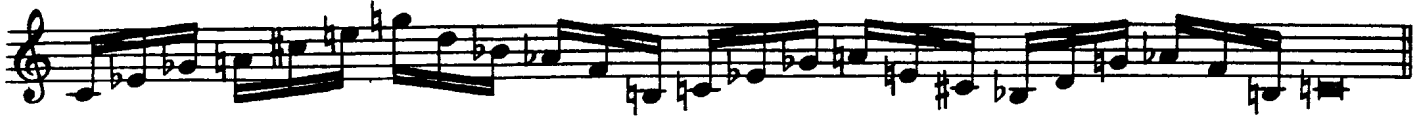

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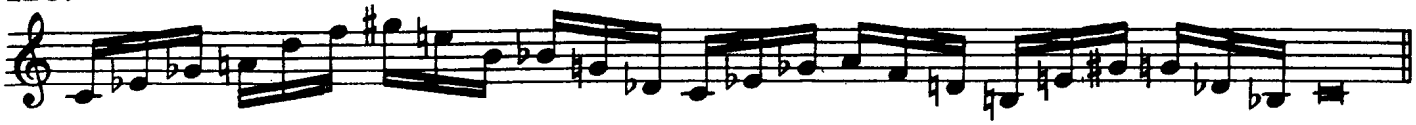

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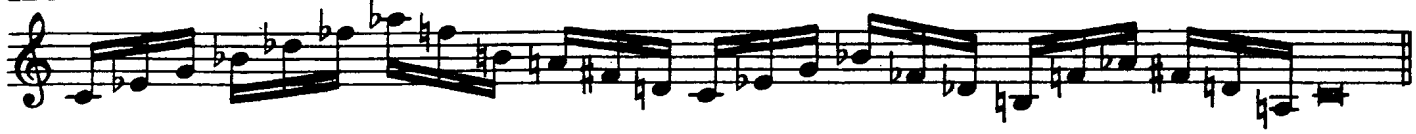

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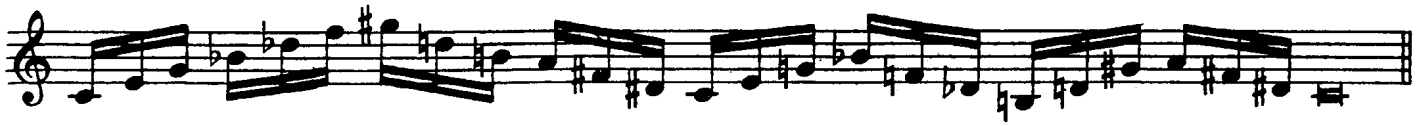

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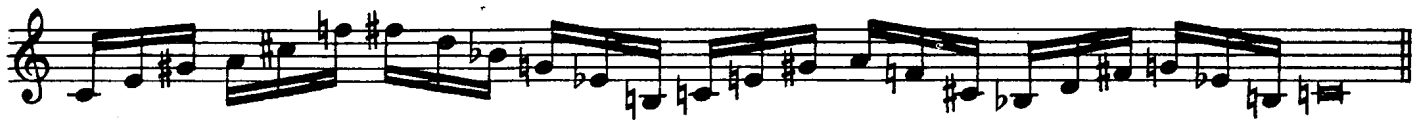

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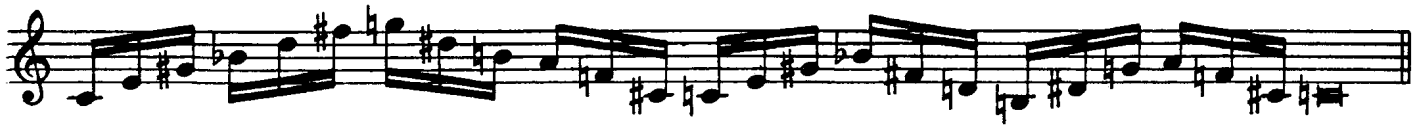

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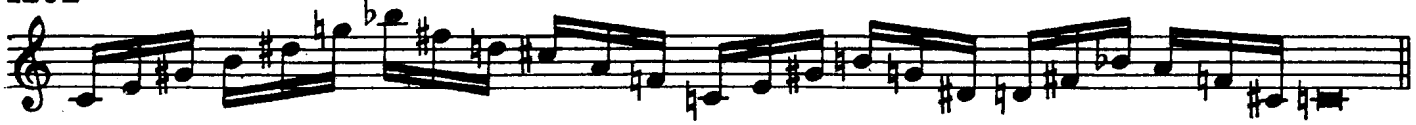
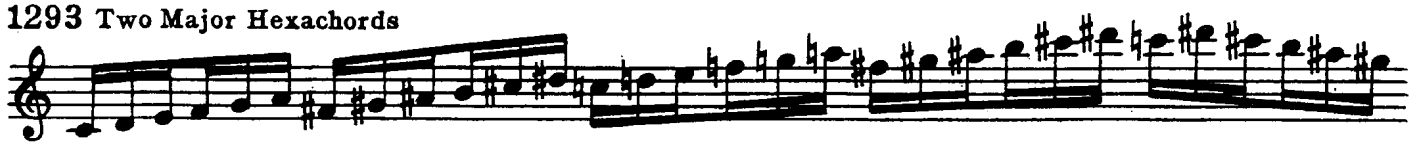


Miscellaneous Dodecaphonic Patterns

1293 **Two Major Hexachords**



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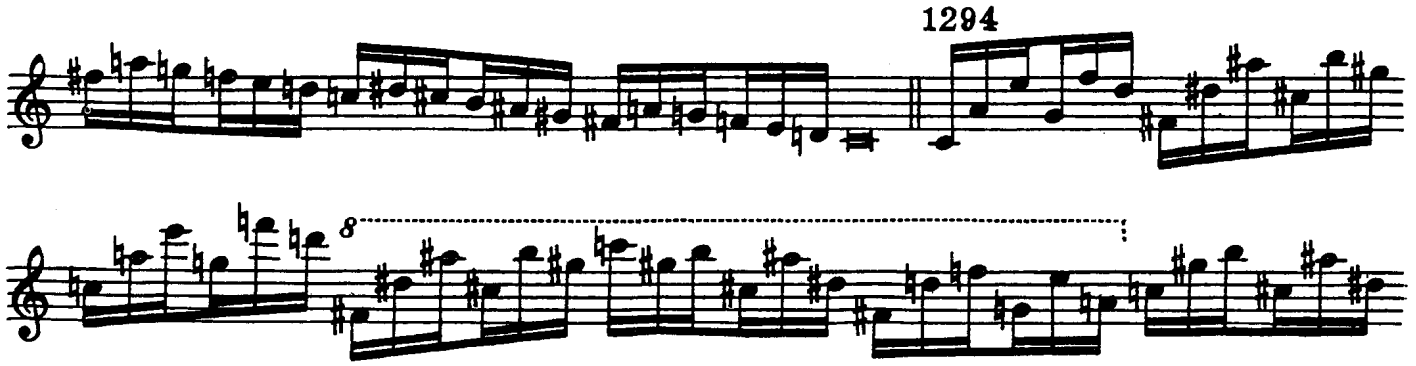
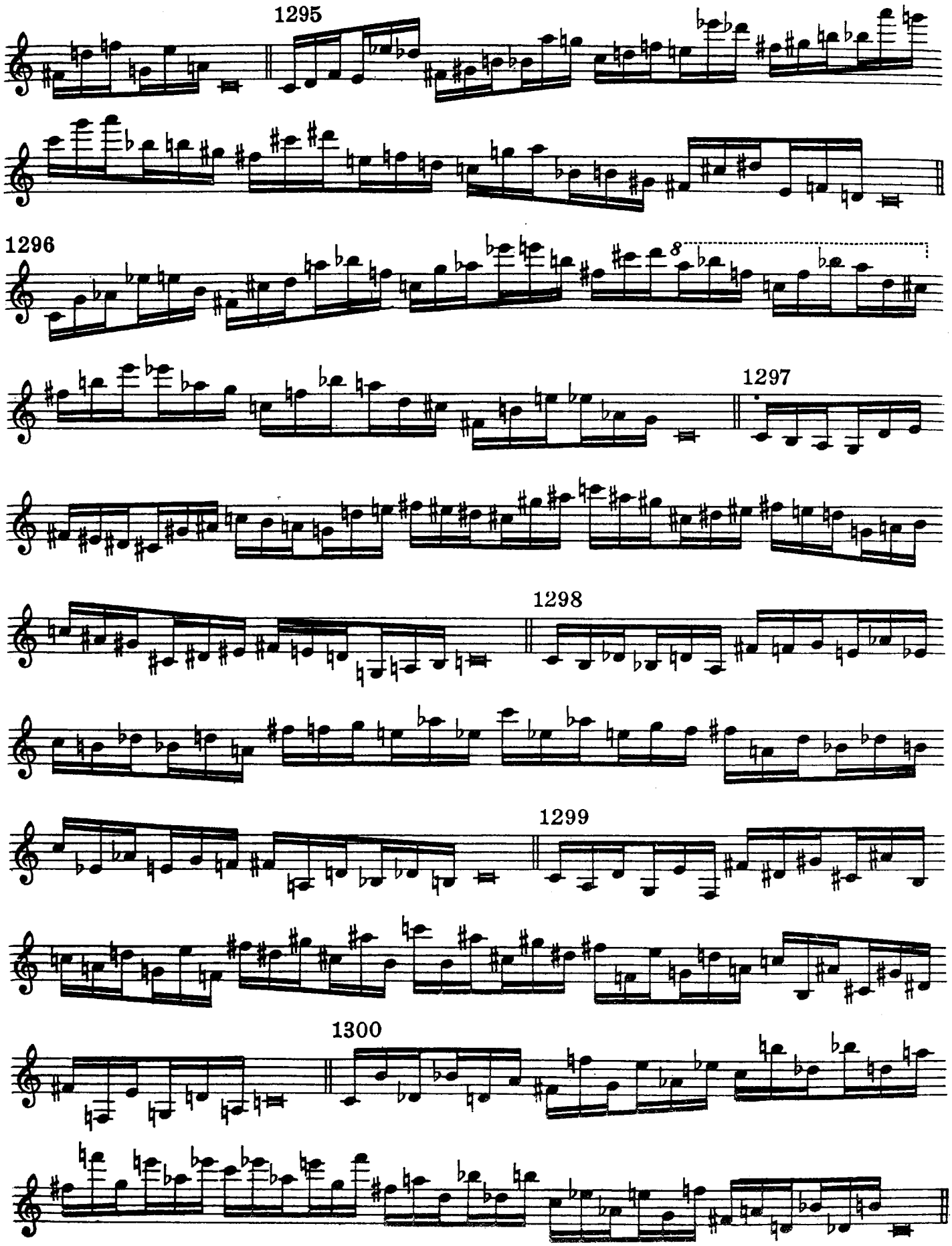


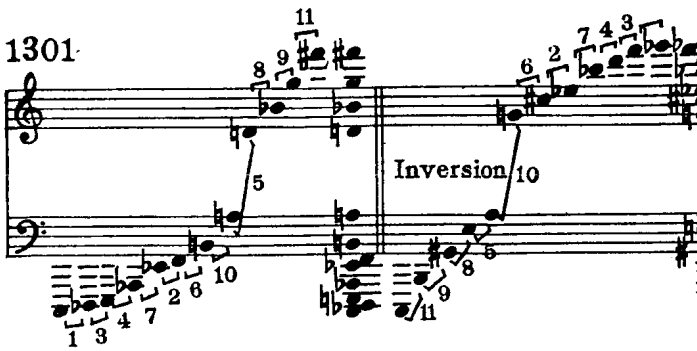

1295
1296
8
1297
1298
1299
1300

Invertible Dodecaphonic Progressions

With All Different Intervals

(Figures indicate number of semitones)

1301



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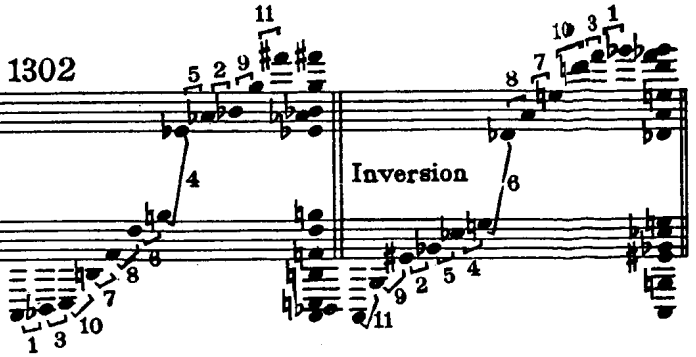

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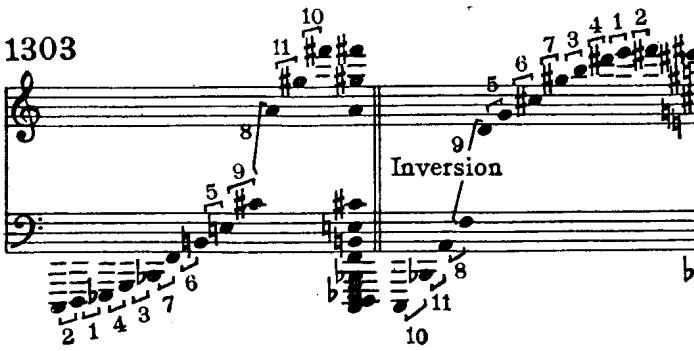

On a Minor Triad

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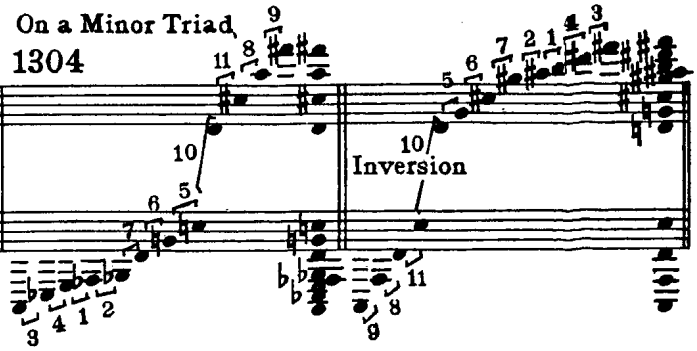
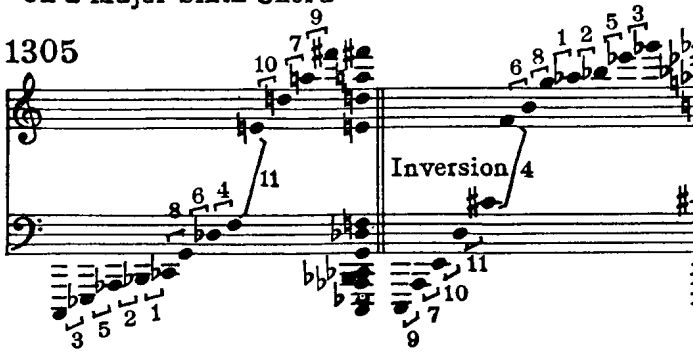


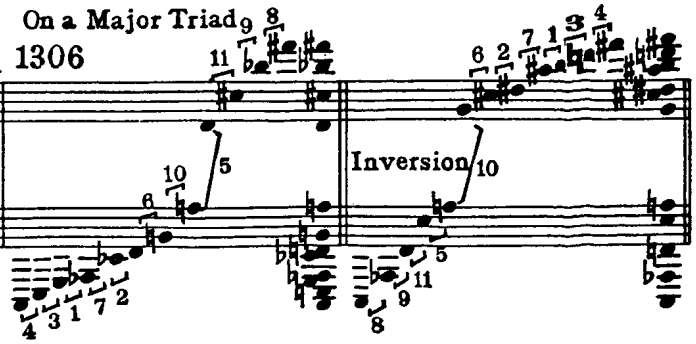
On a Major Sixth-Chord

1305



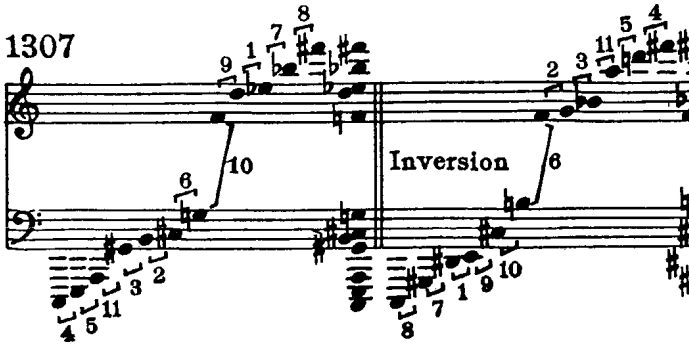
On a Major Triad

1306



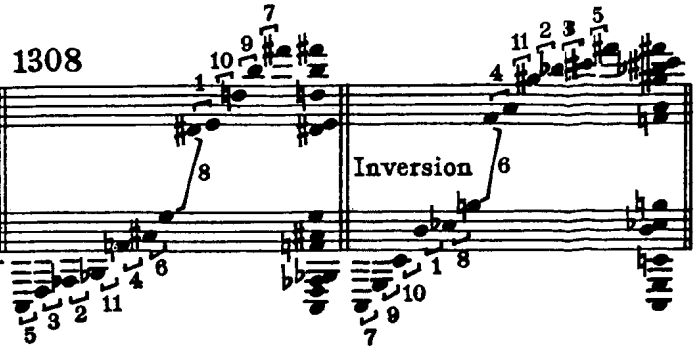
On a Minor Sixth-Chord

1307



On a Minor Six-Four Chord

1308



On a Major Six-Four Chord

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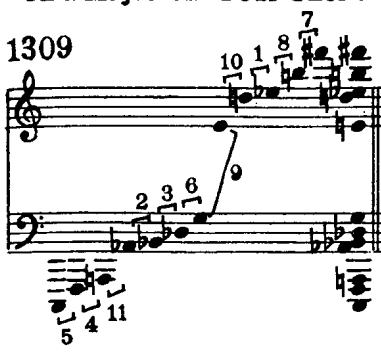
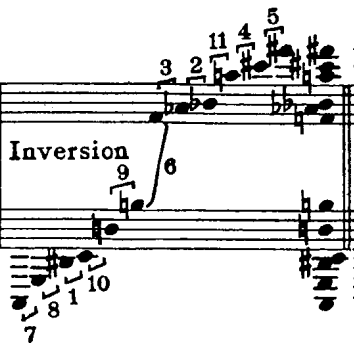


Inversion



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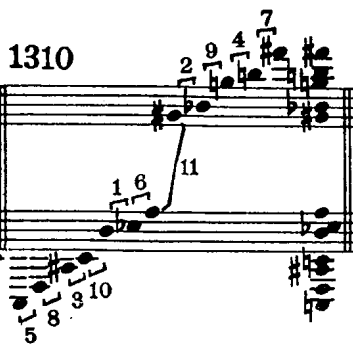

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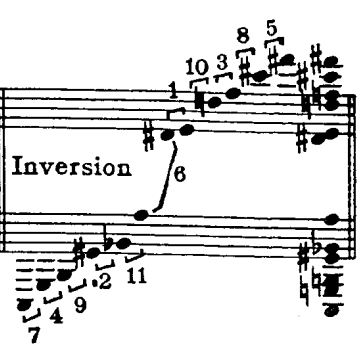

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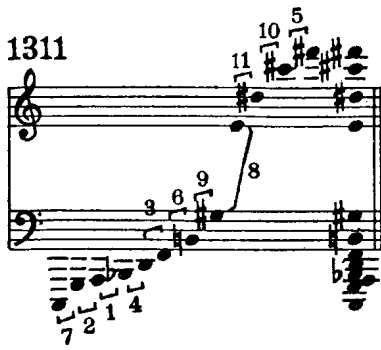

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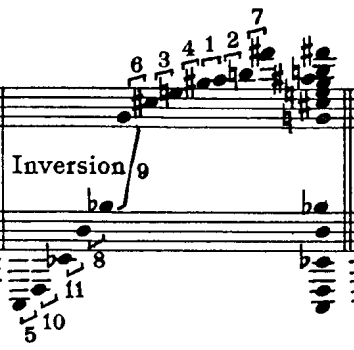

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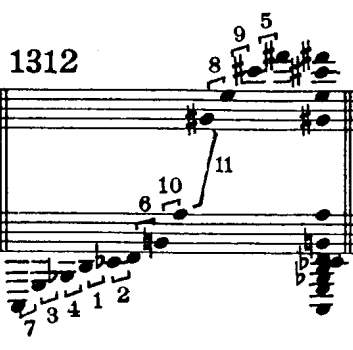

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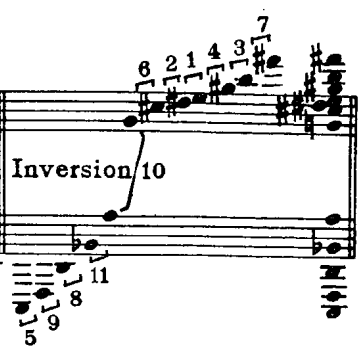

White-Key Row of Six Notes

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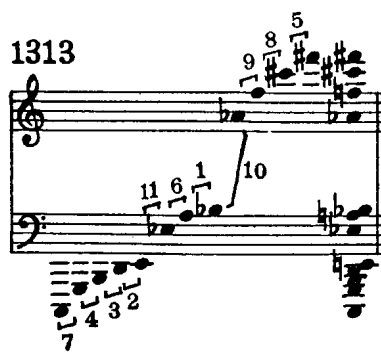

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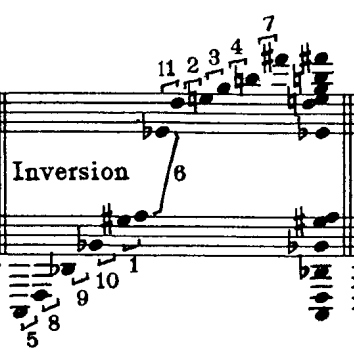

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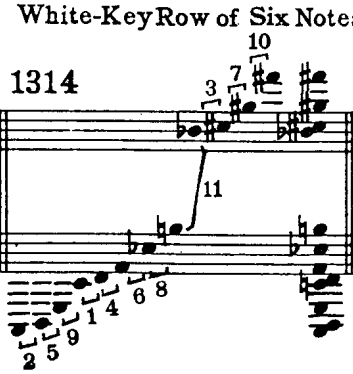

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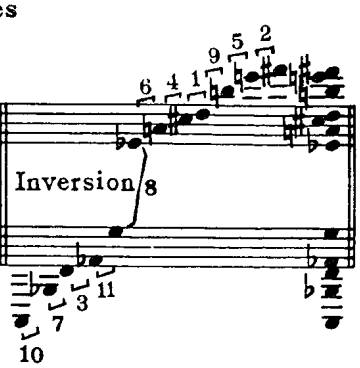

White-Key Row of Six Notes

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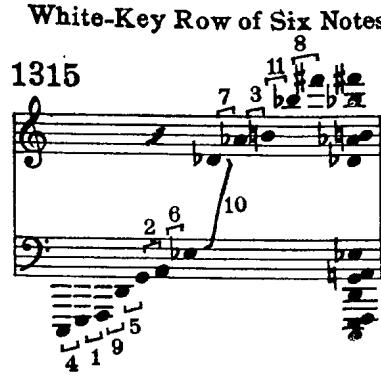

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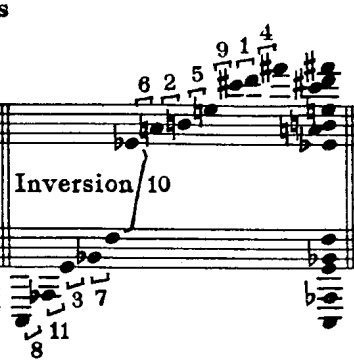

White-Key Row of Six Notes

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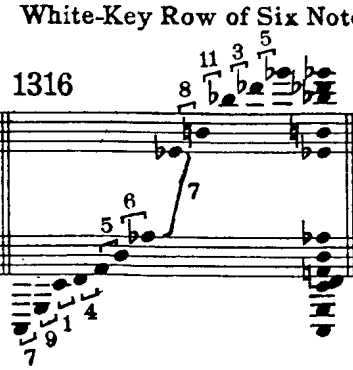

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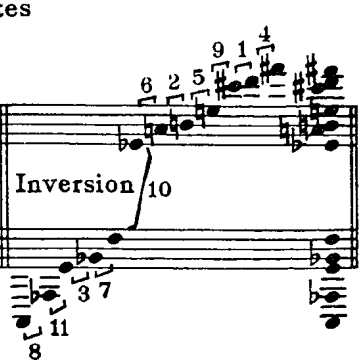
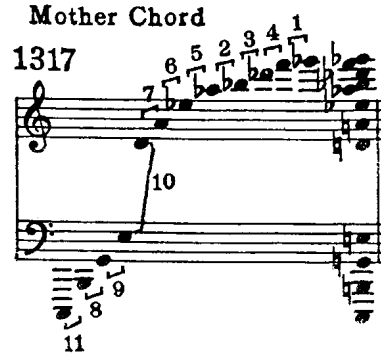


Mother Chord

1317



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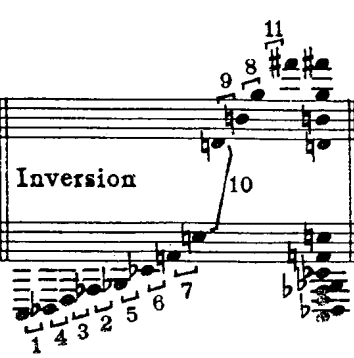

Grandmother Chord

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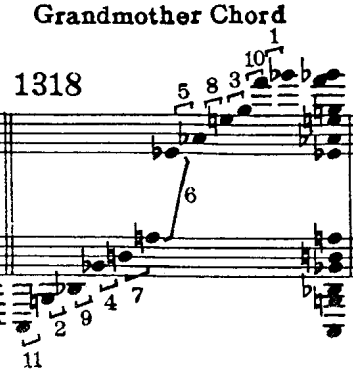

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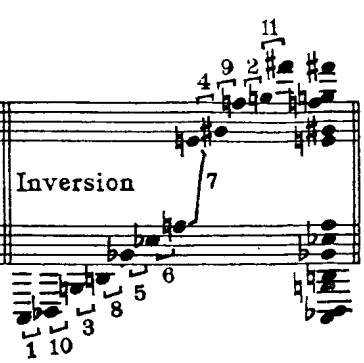
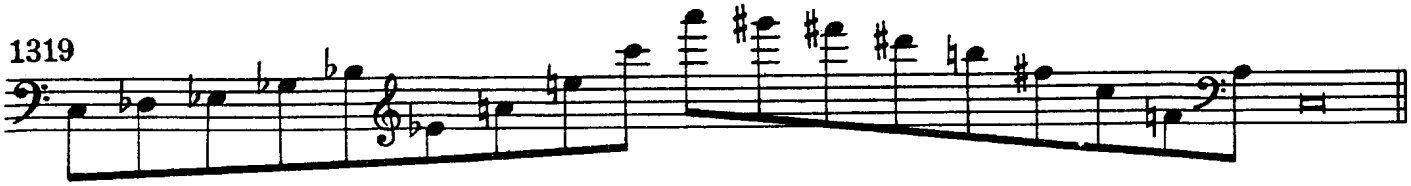


Intervallic Series

Increasing and Diminishing Intervals

1319



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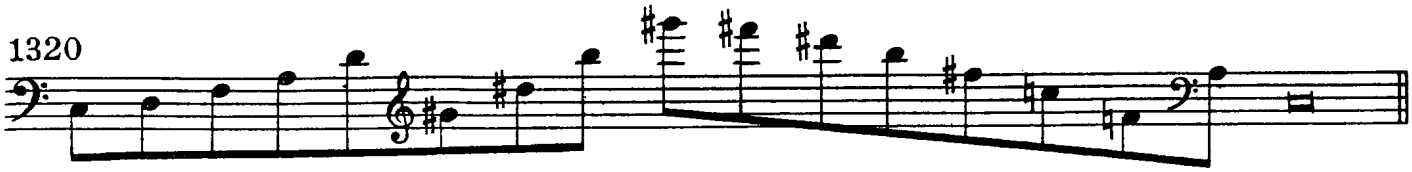

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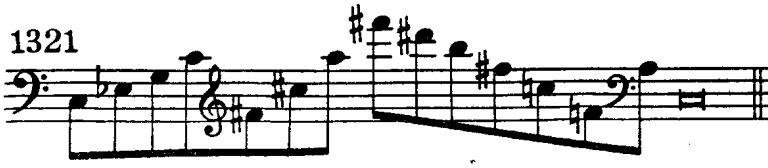

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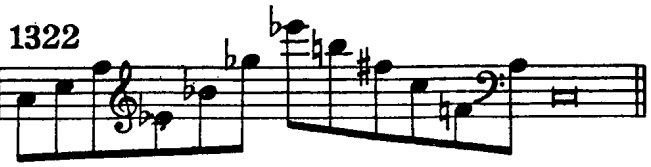

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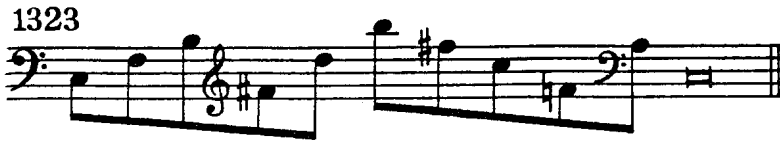

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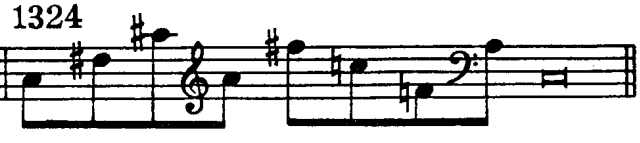

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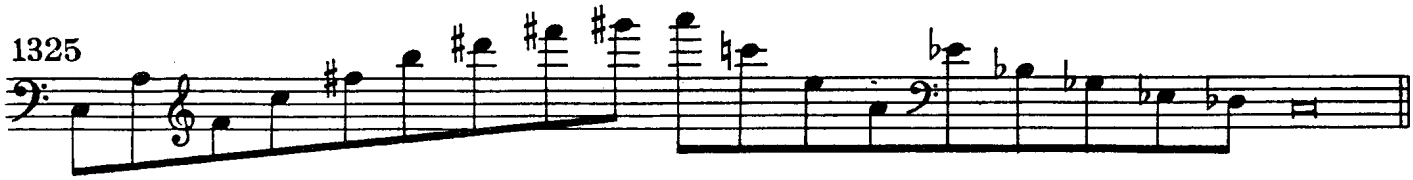

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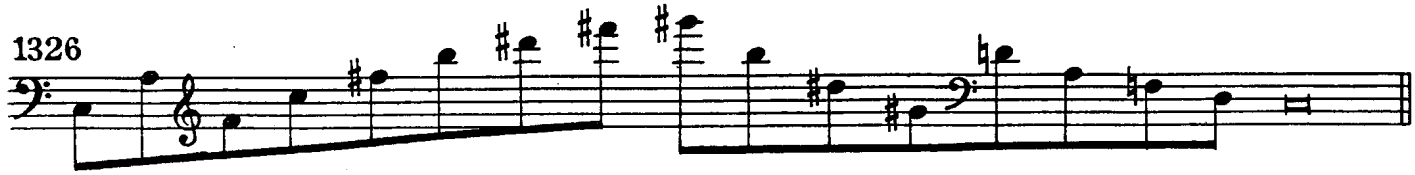

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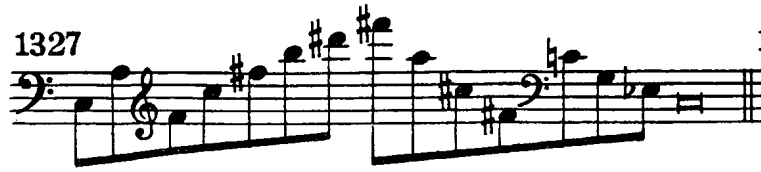

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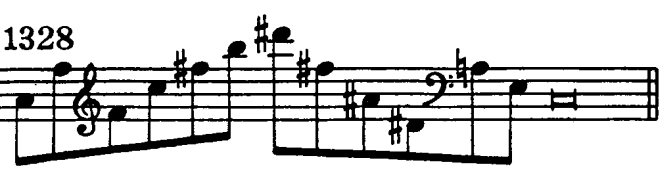

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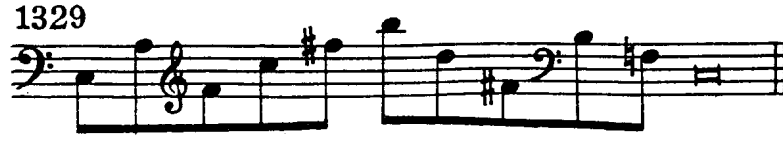

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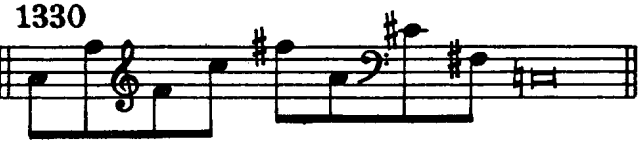
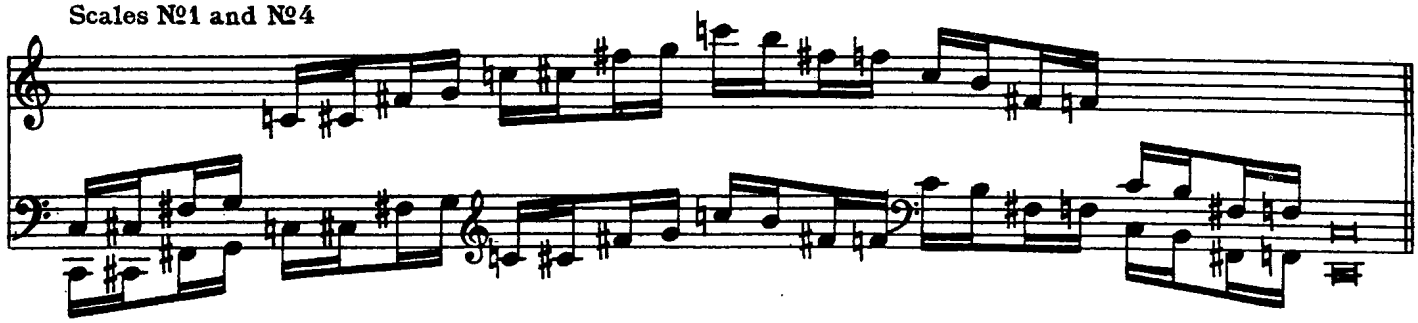
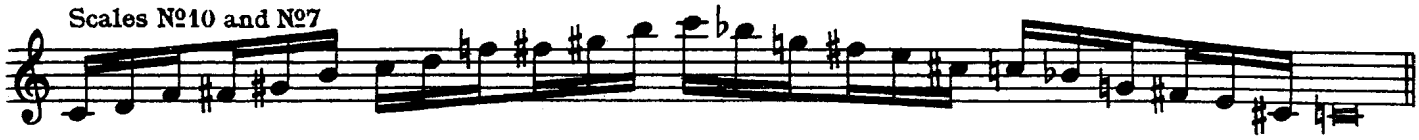


Mirror Interval Progressions

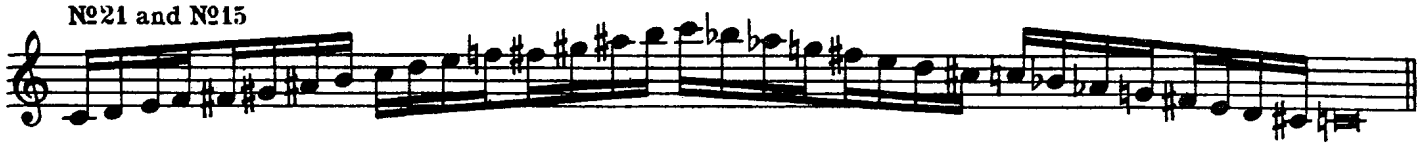
Scales №1 and №4



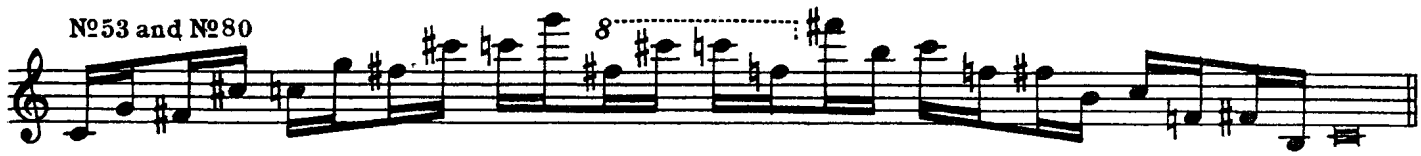
Scales №10 and №7



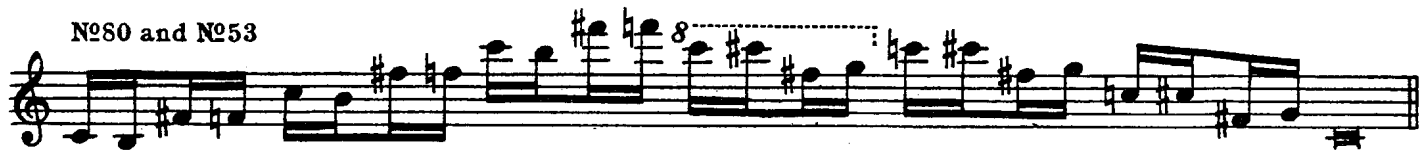
№21 and №15



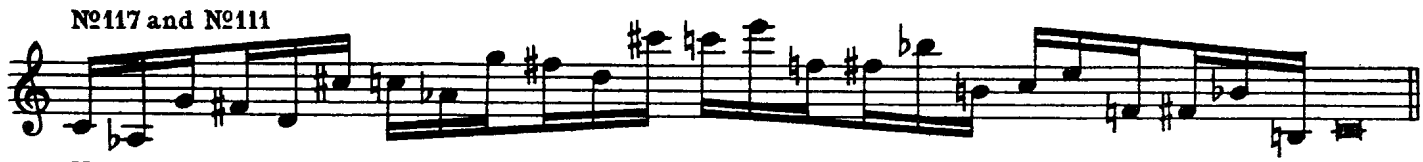
№53 and №80



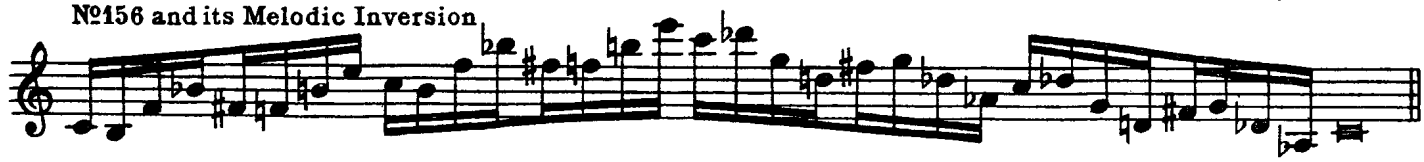
№80 and №53



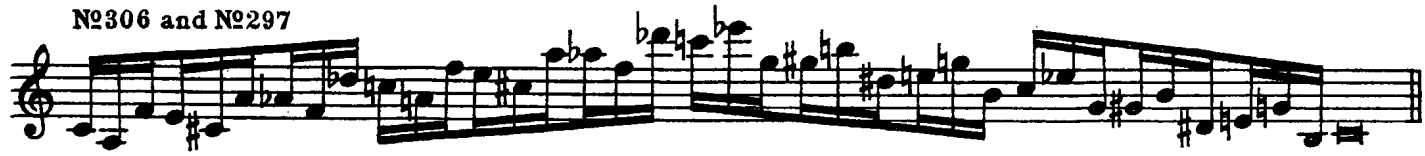
№117 and №111



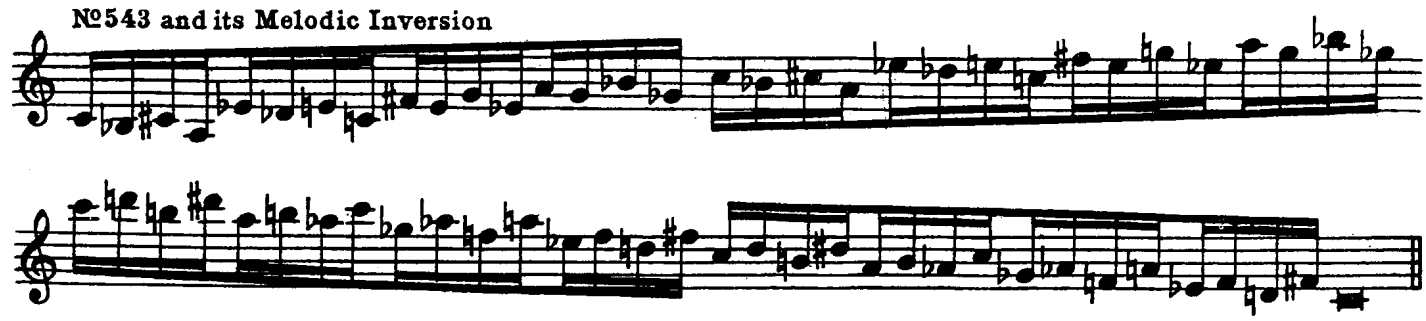
№156 and its Melodic Inversion



№306 and №297

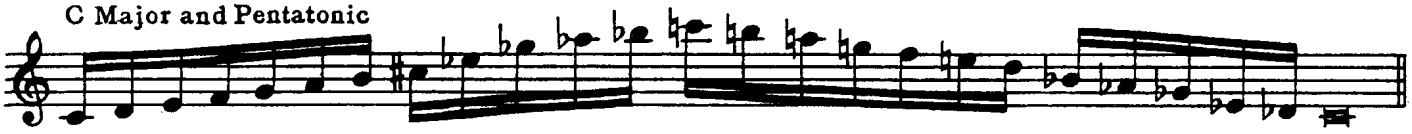


№543 and its Melodic Inversion

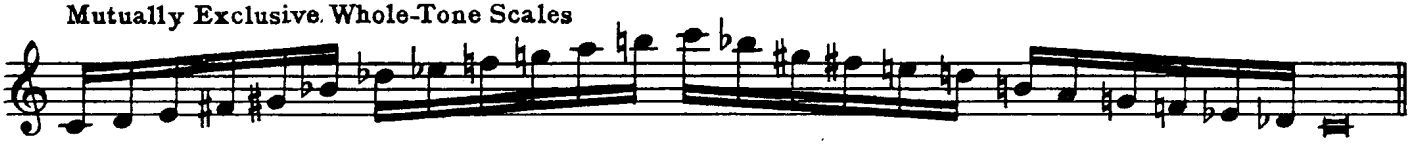


Complementary Scales

C Major and Pentatonic



Mutually Exclusive Whole-Tone Scales



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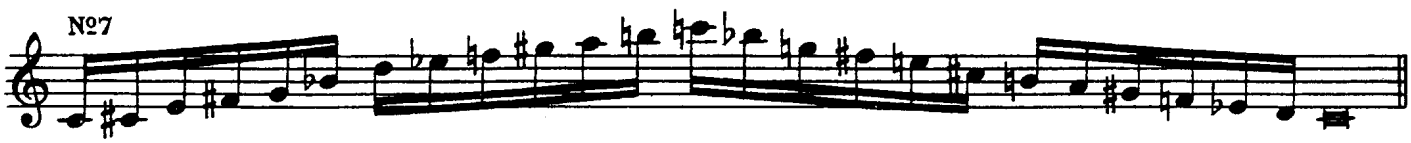

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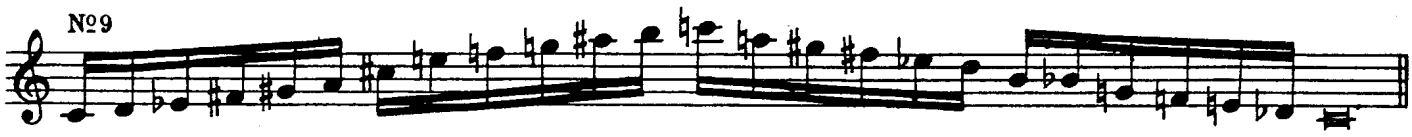

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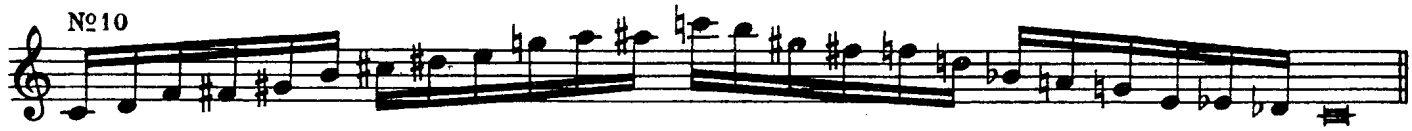

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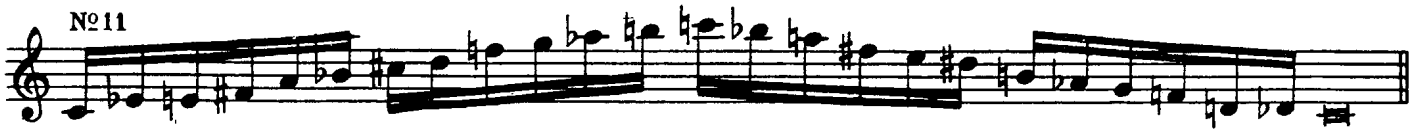

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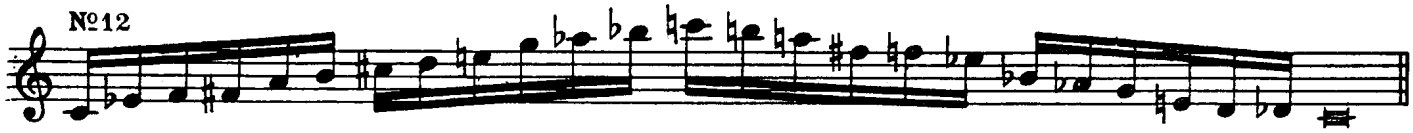
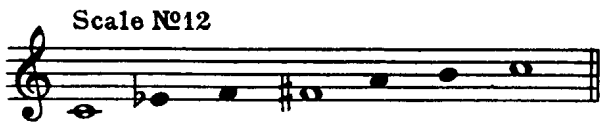
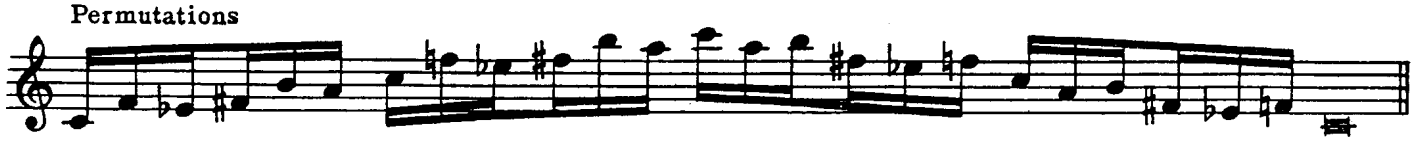


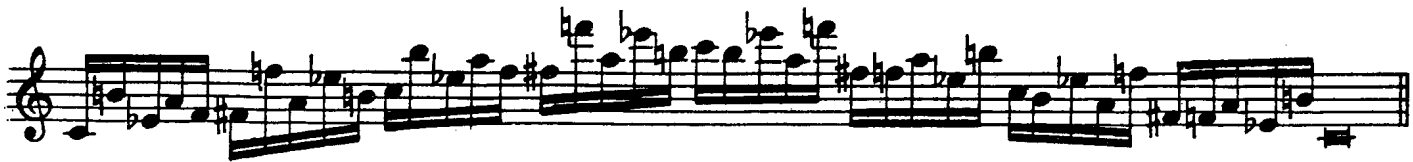
Permutations

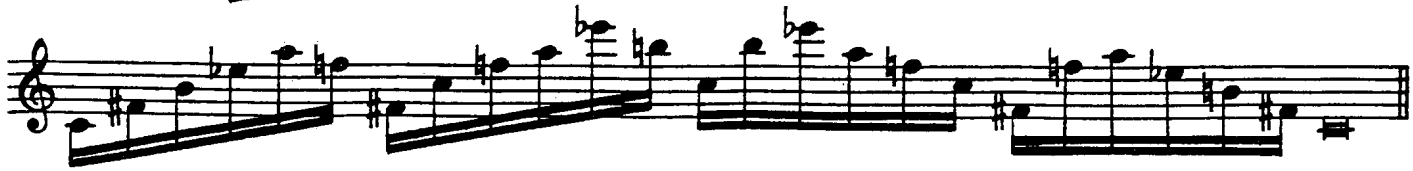
Scale №12

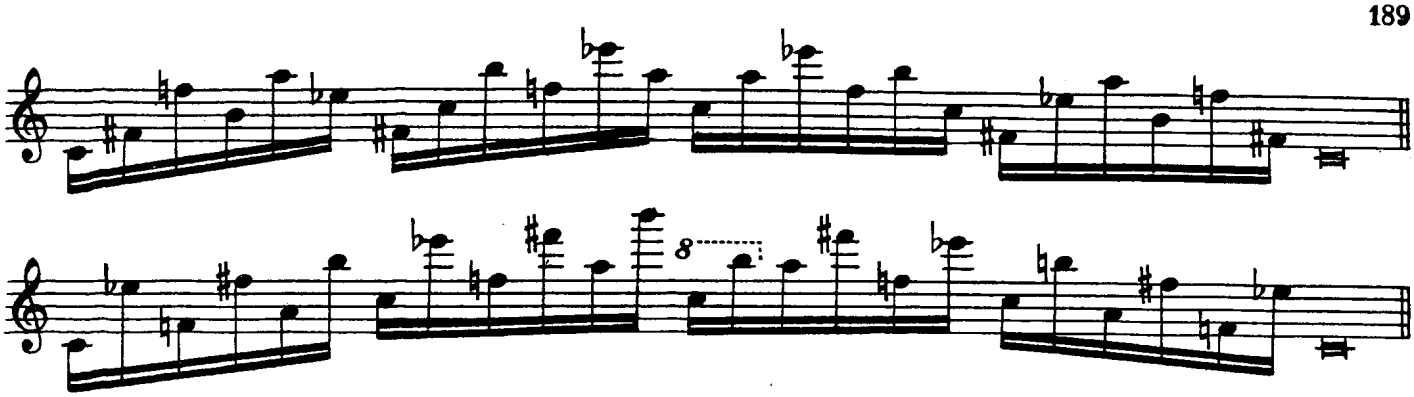


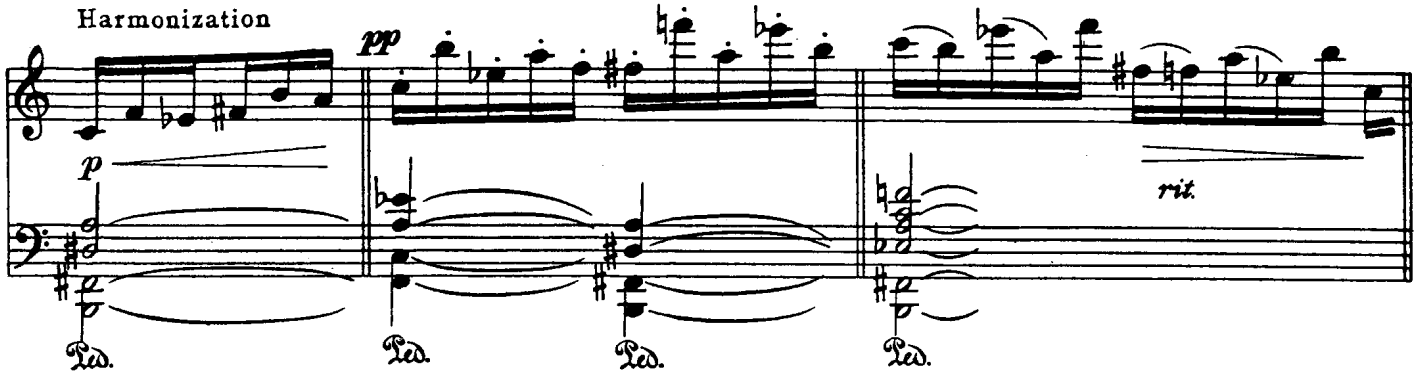
Permutations










Harmonization
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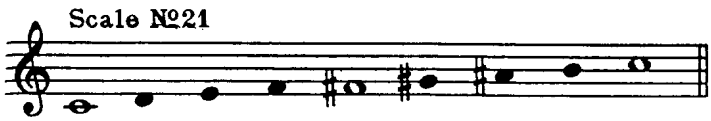
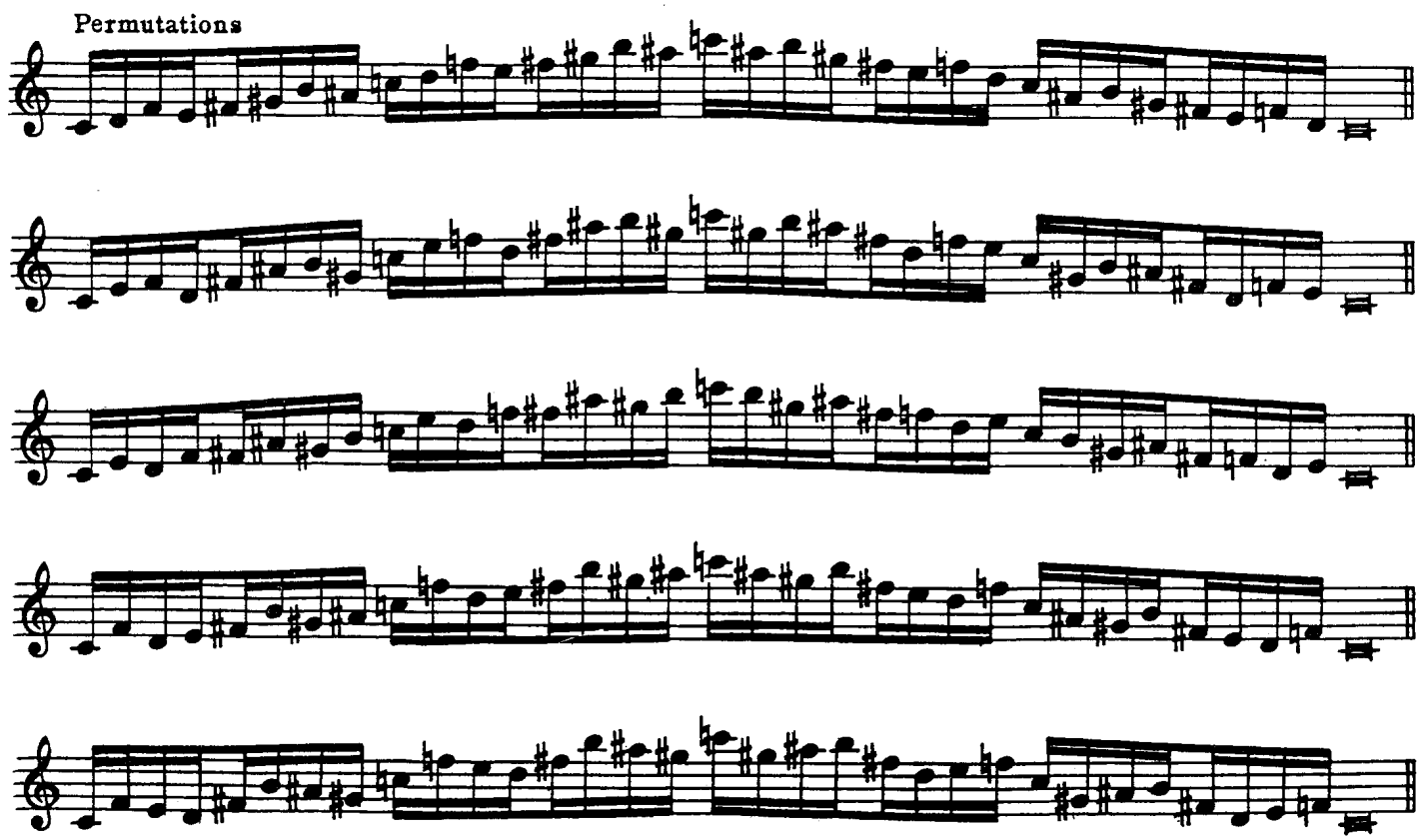
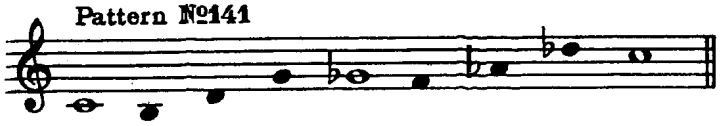
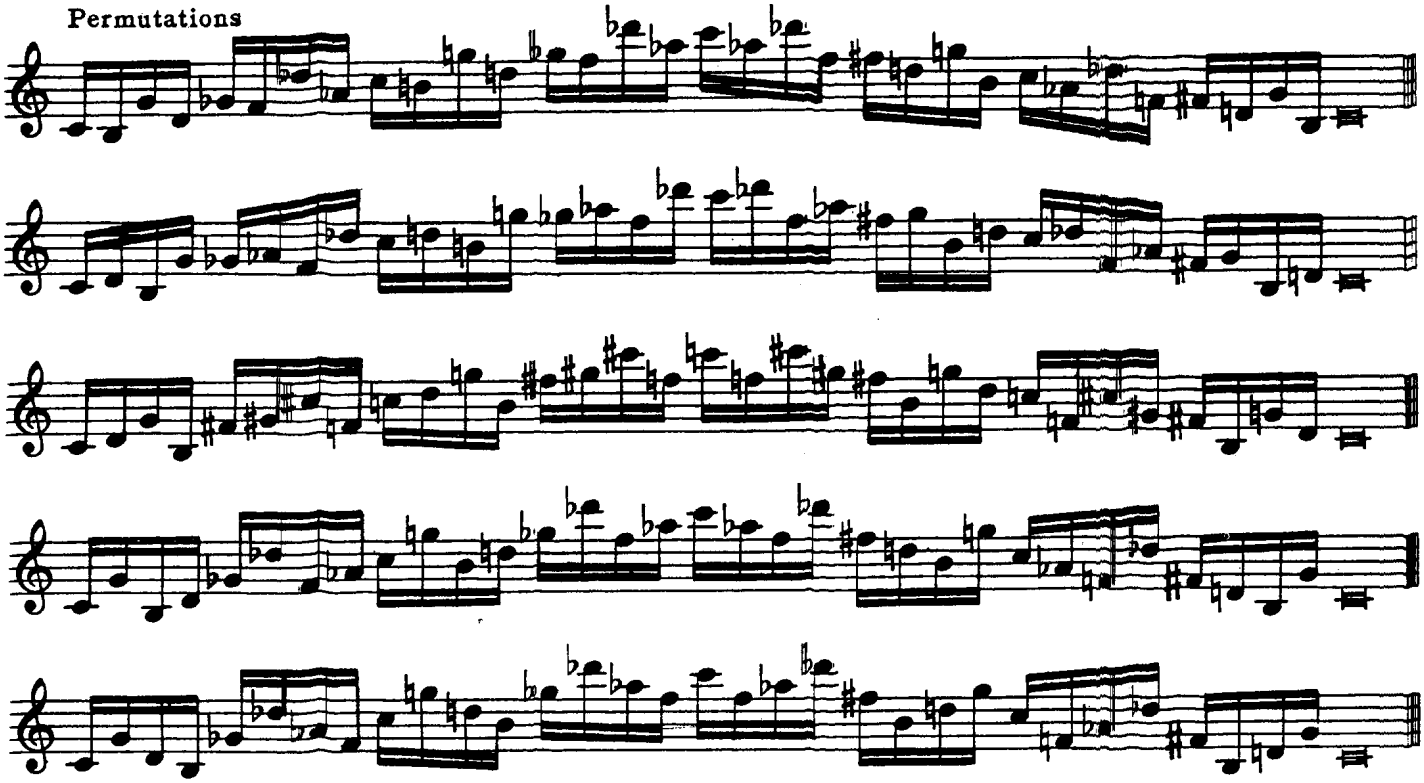

Scale №21


Permutations

Pattern №141



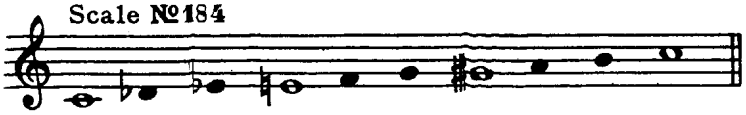
Permutations



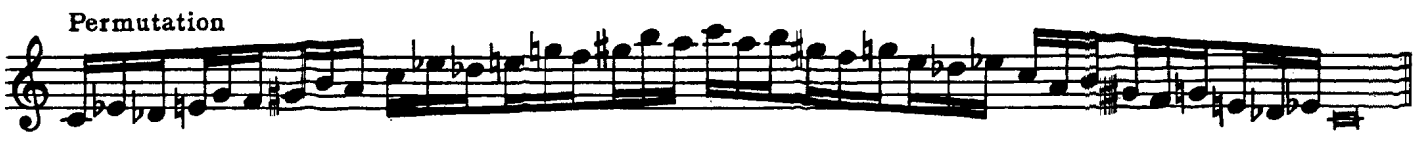
Scale №183

Permutation

Scale №184



Permutation



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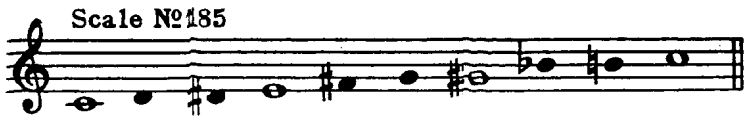
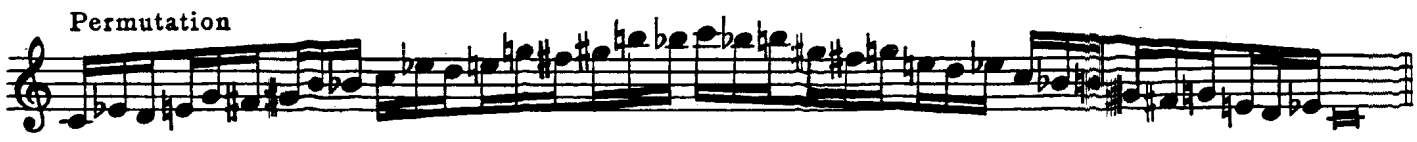
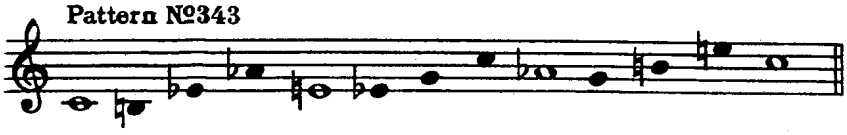


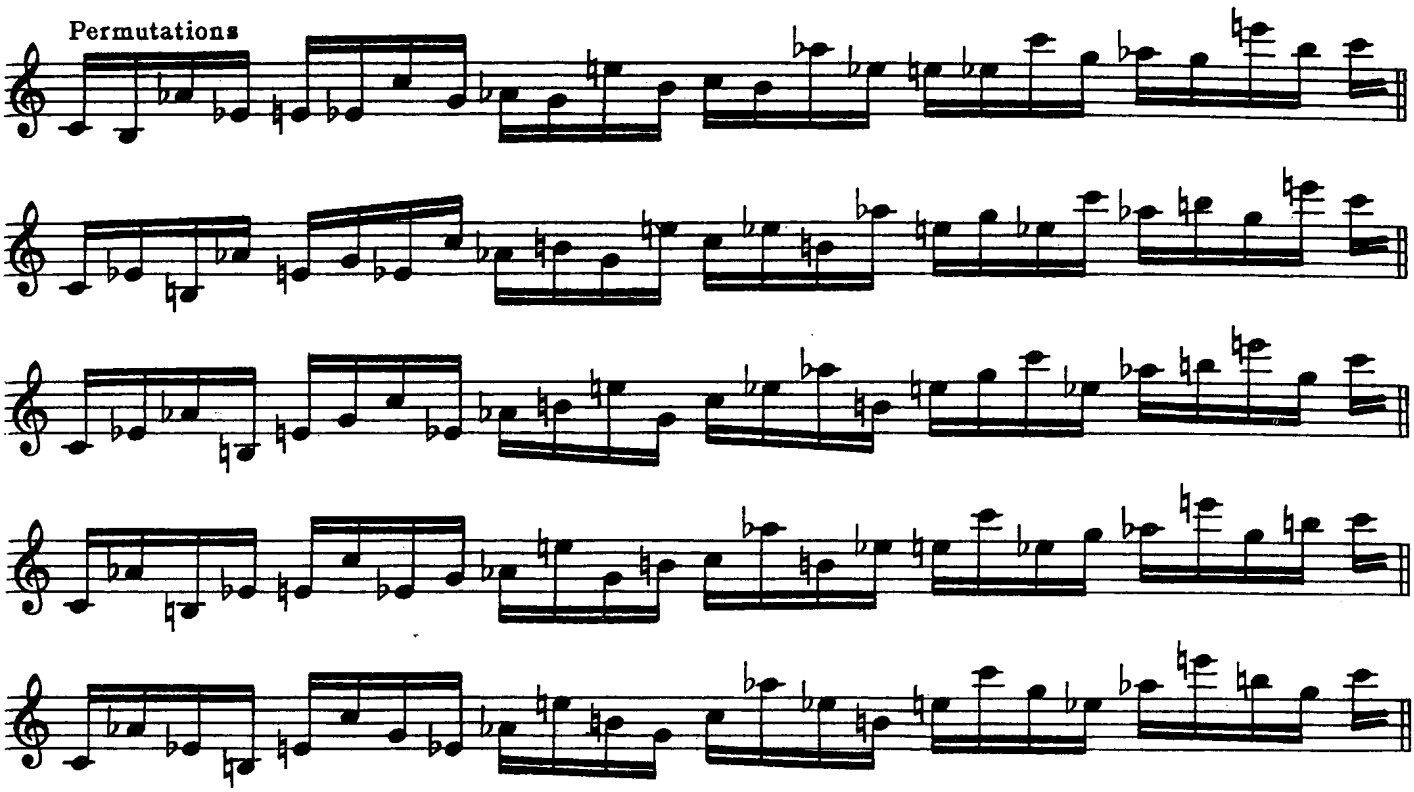
Permutation



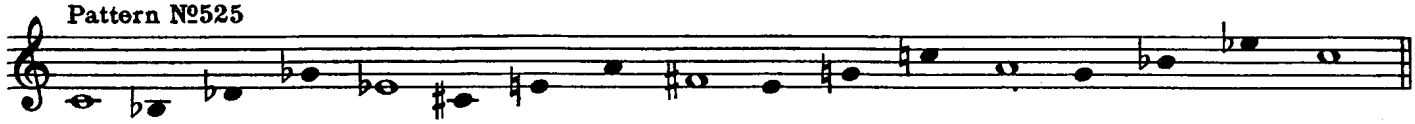
Pattern №343



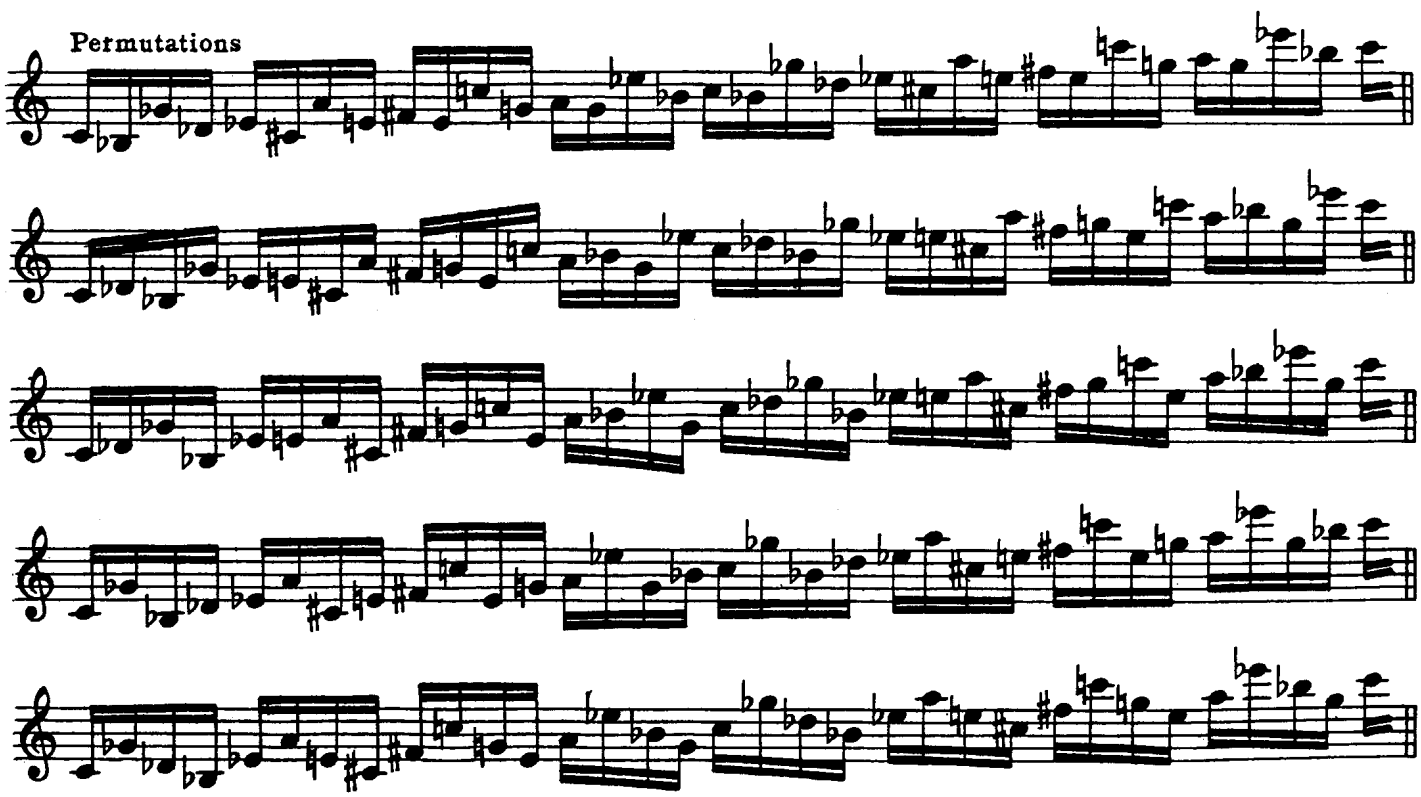
Permutations



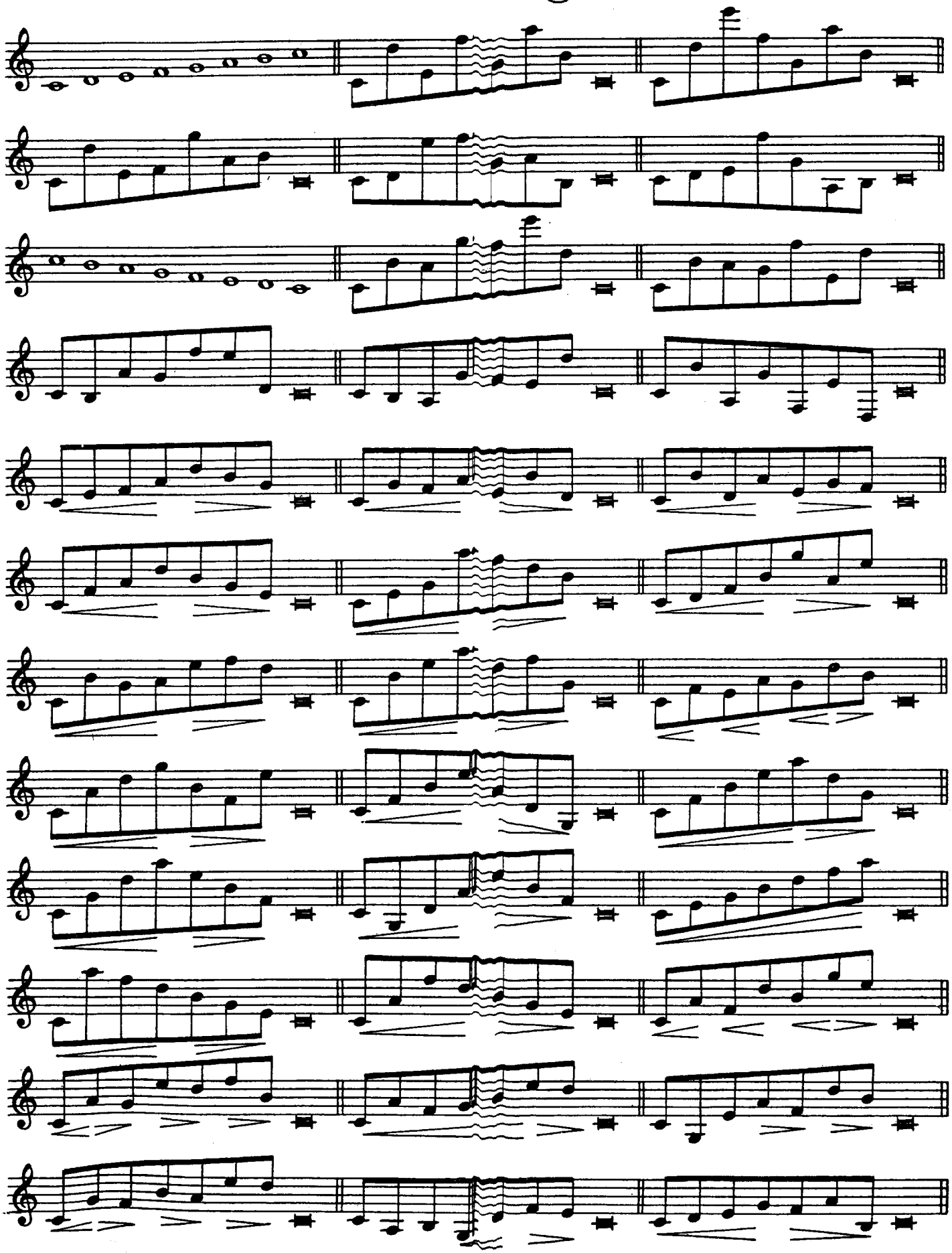
Pattern №525

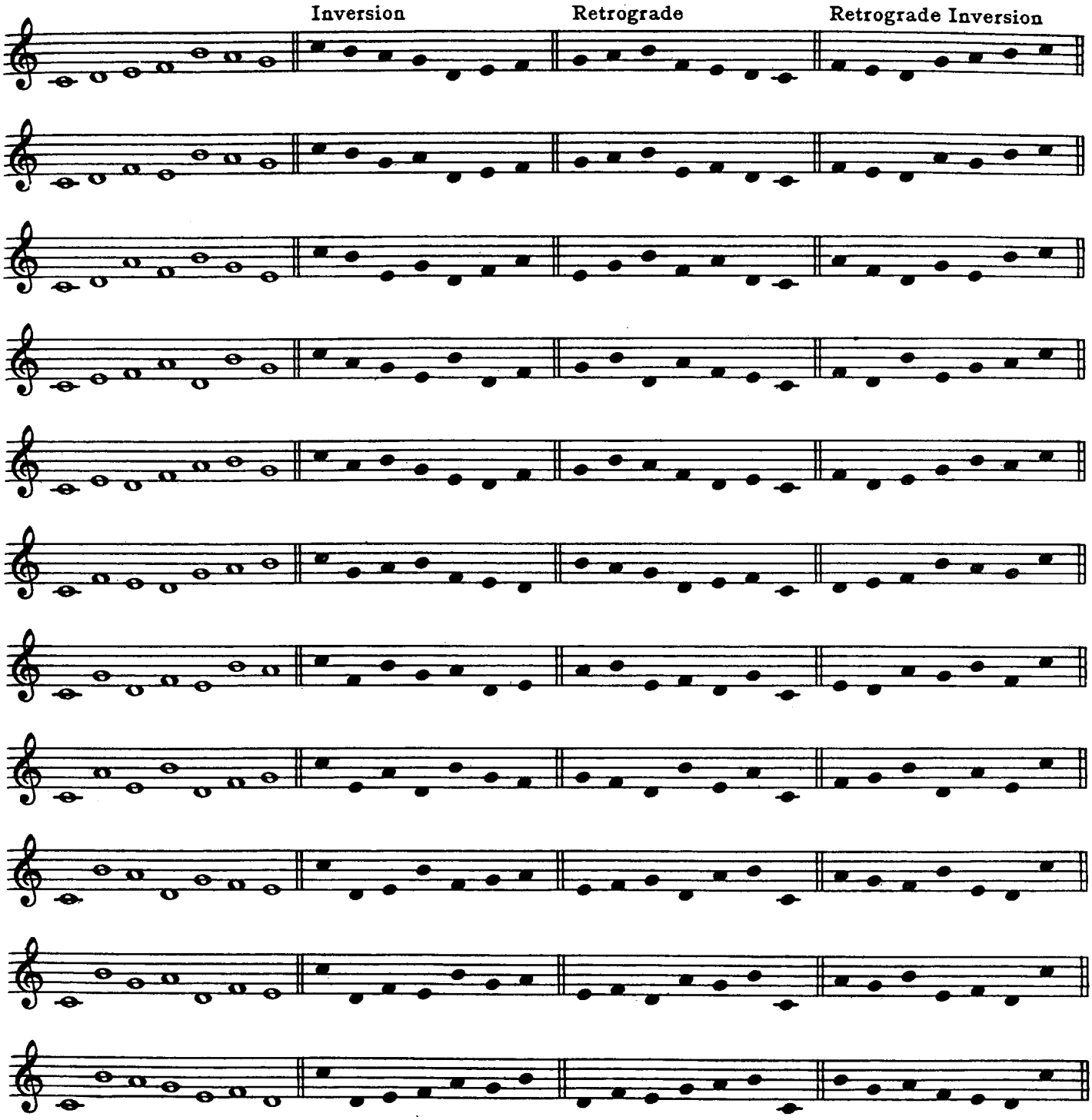


Permutations

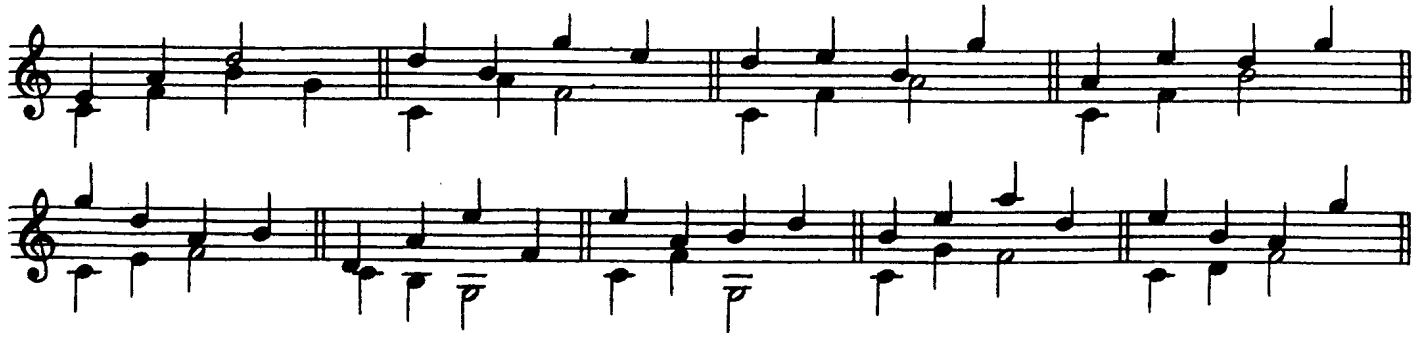


Pandiatonic Progressions

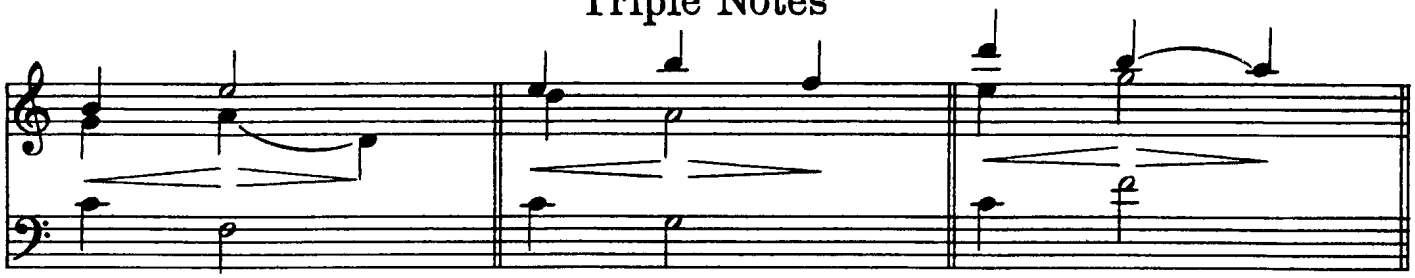




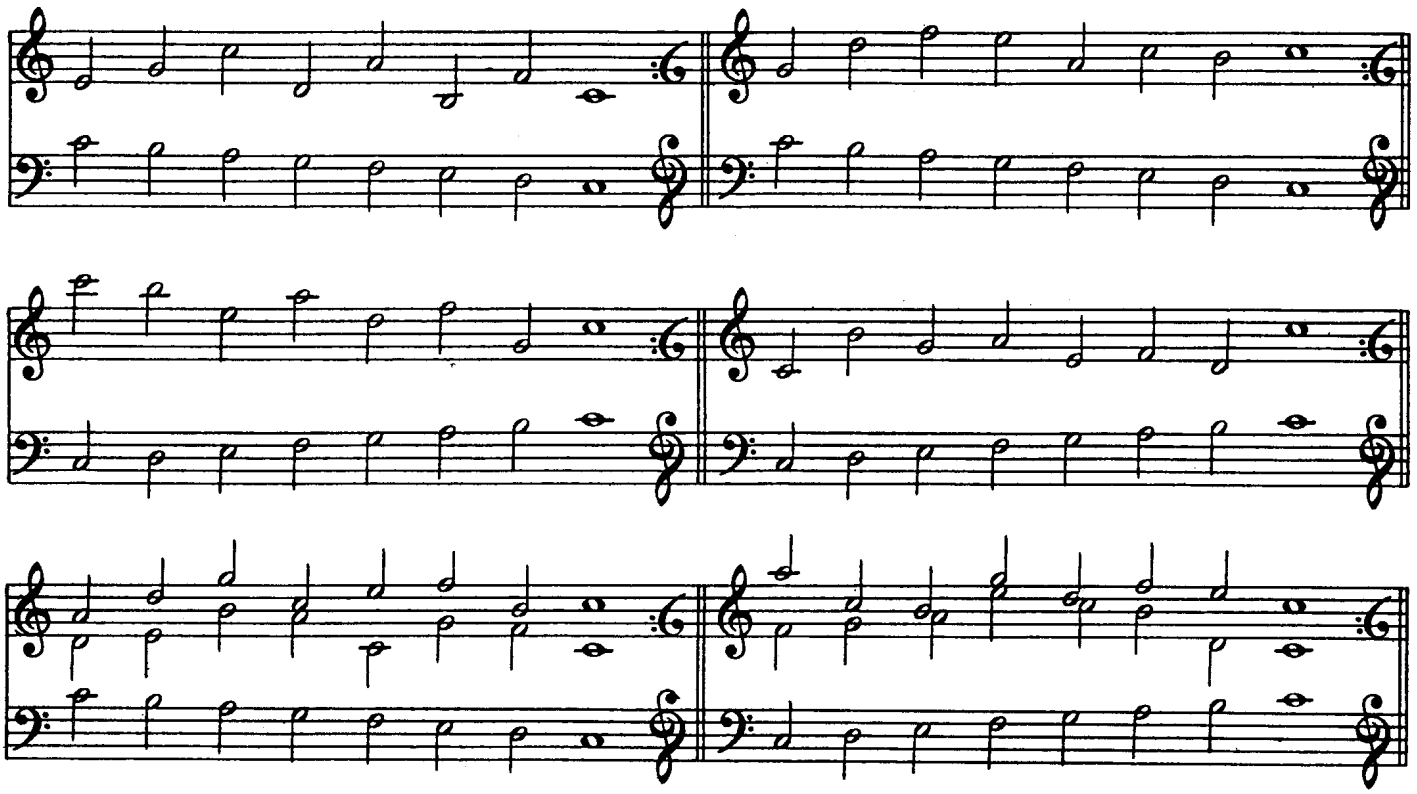
Double Notes



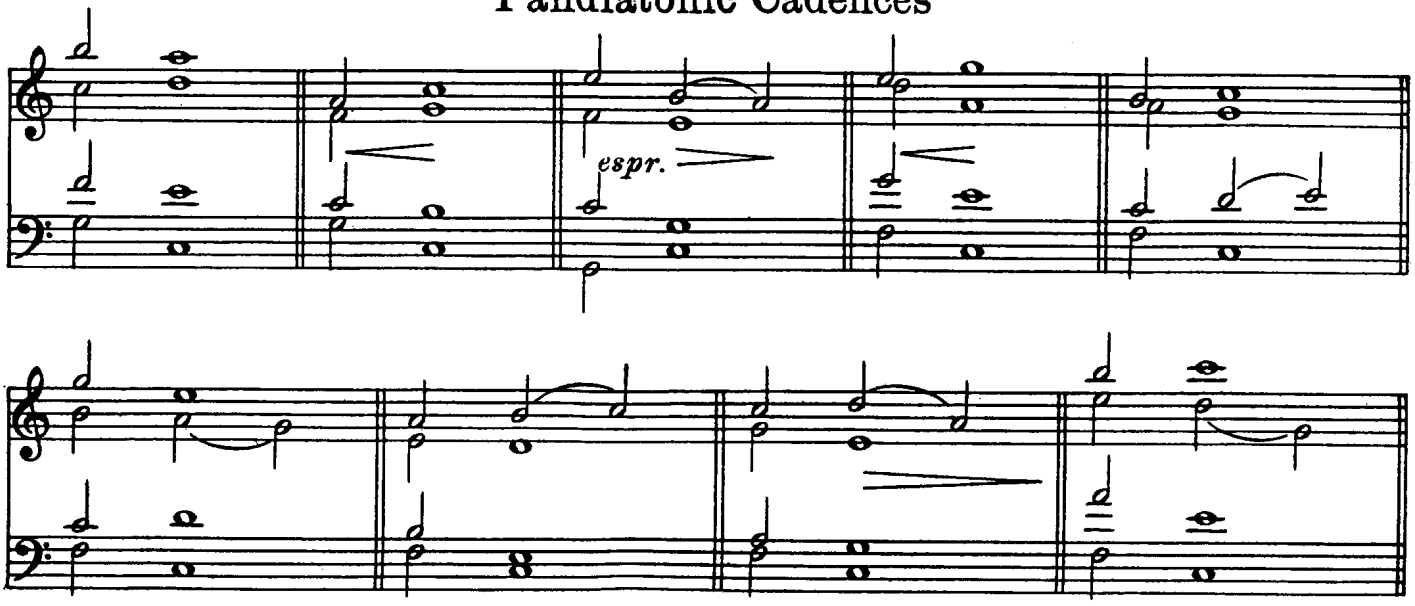
Triple Notes



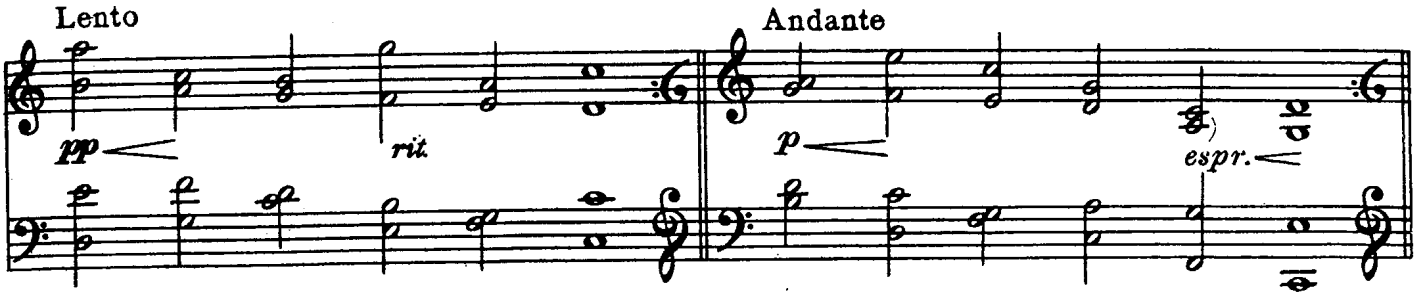
Pandiatonic Counterpoint

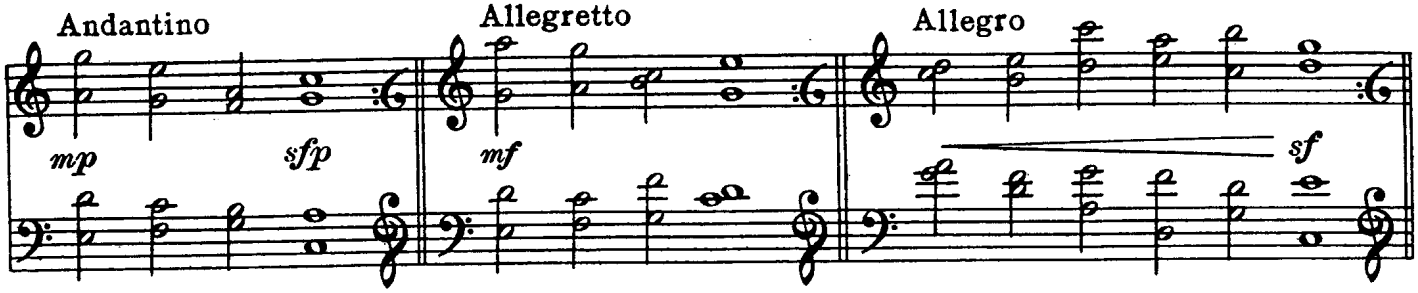


Pandiatonic Cadences

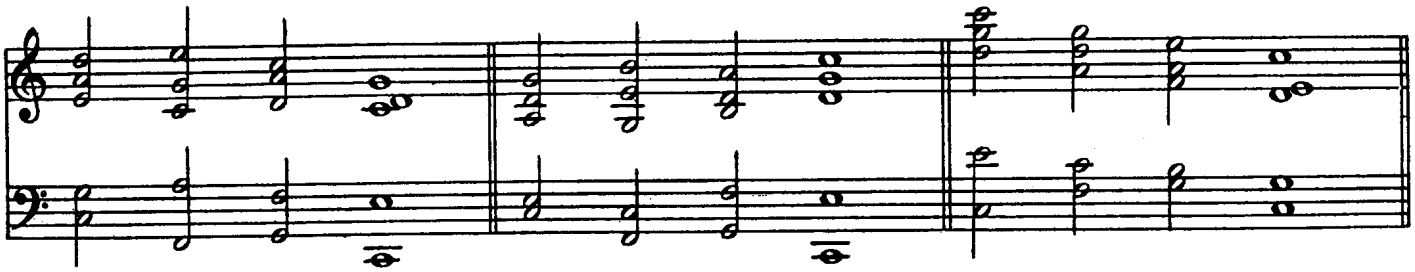


Pandiatonic Harmony in Four Parts

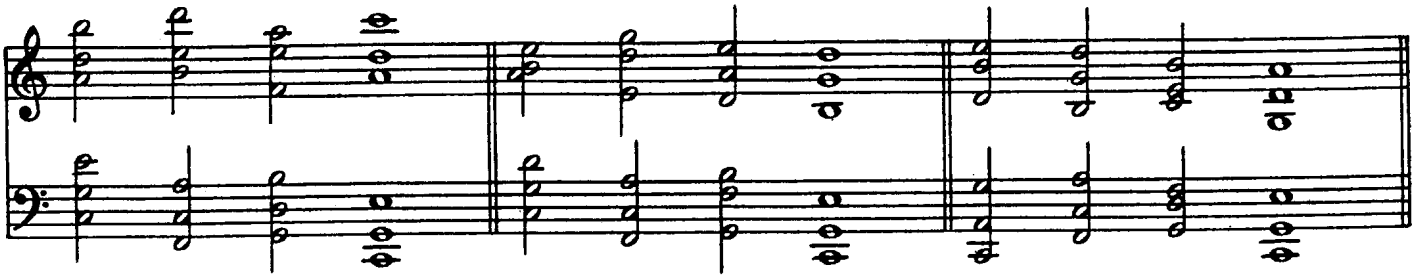




Pandiatonic Harmony in Five Parts

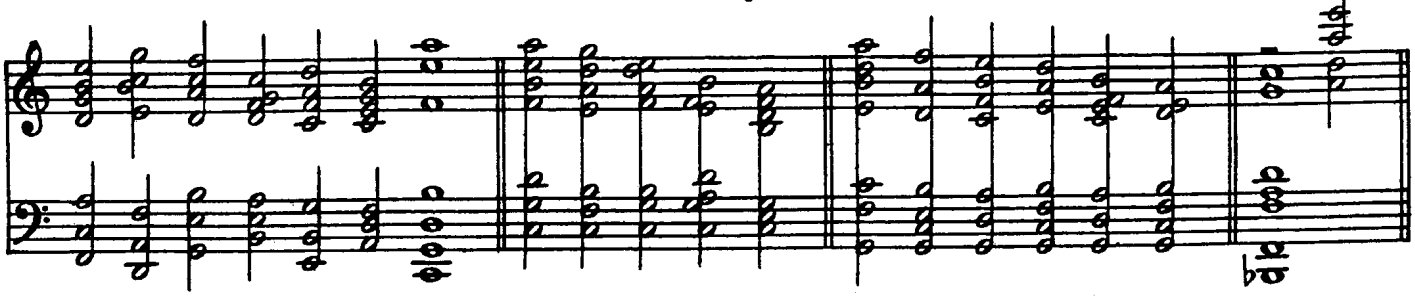


Pandiatonic Harmony in Six Parts



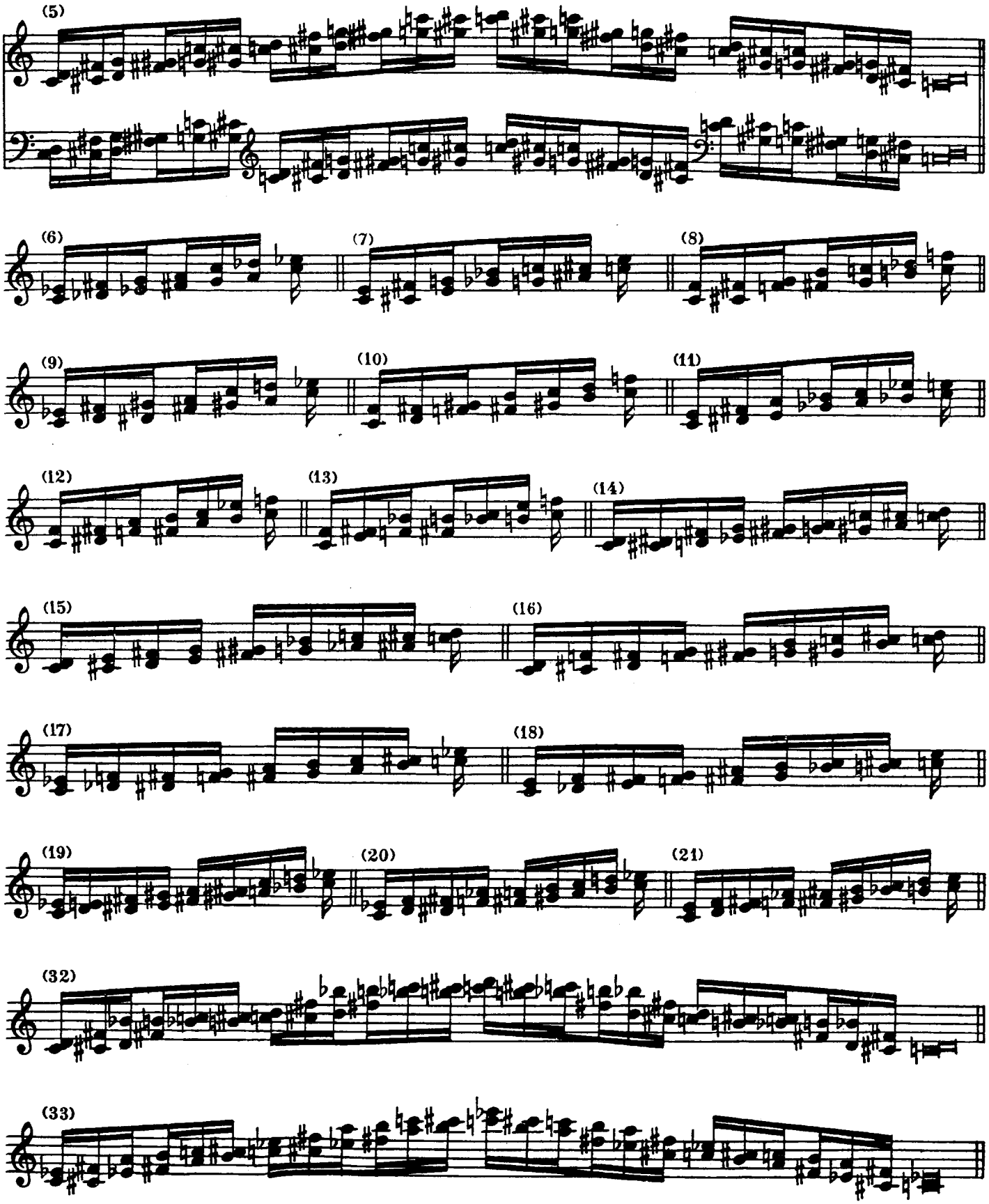
Pandiatonic Harmony in Seven Parts

[Roy Harris: *Slumber*]

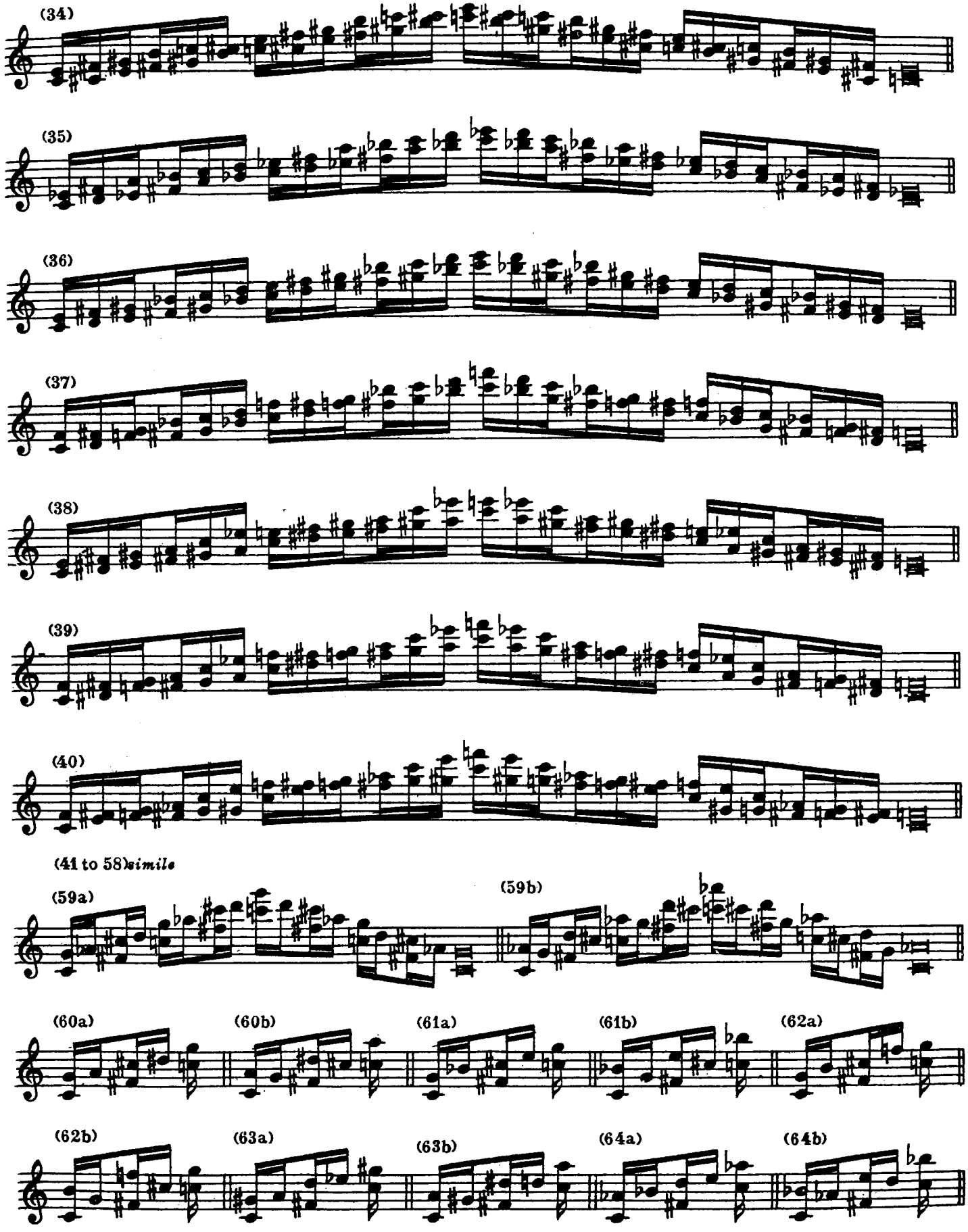


Double Notes

Tritone Progression



Numbers in parentheses refer to patterns from which the double notes are derived.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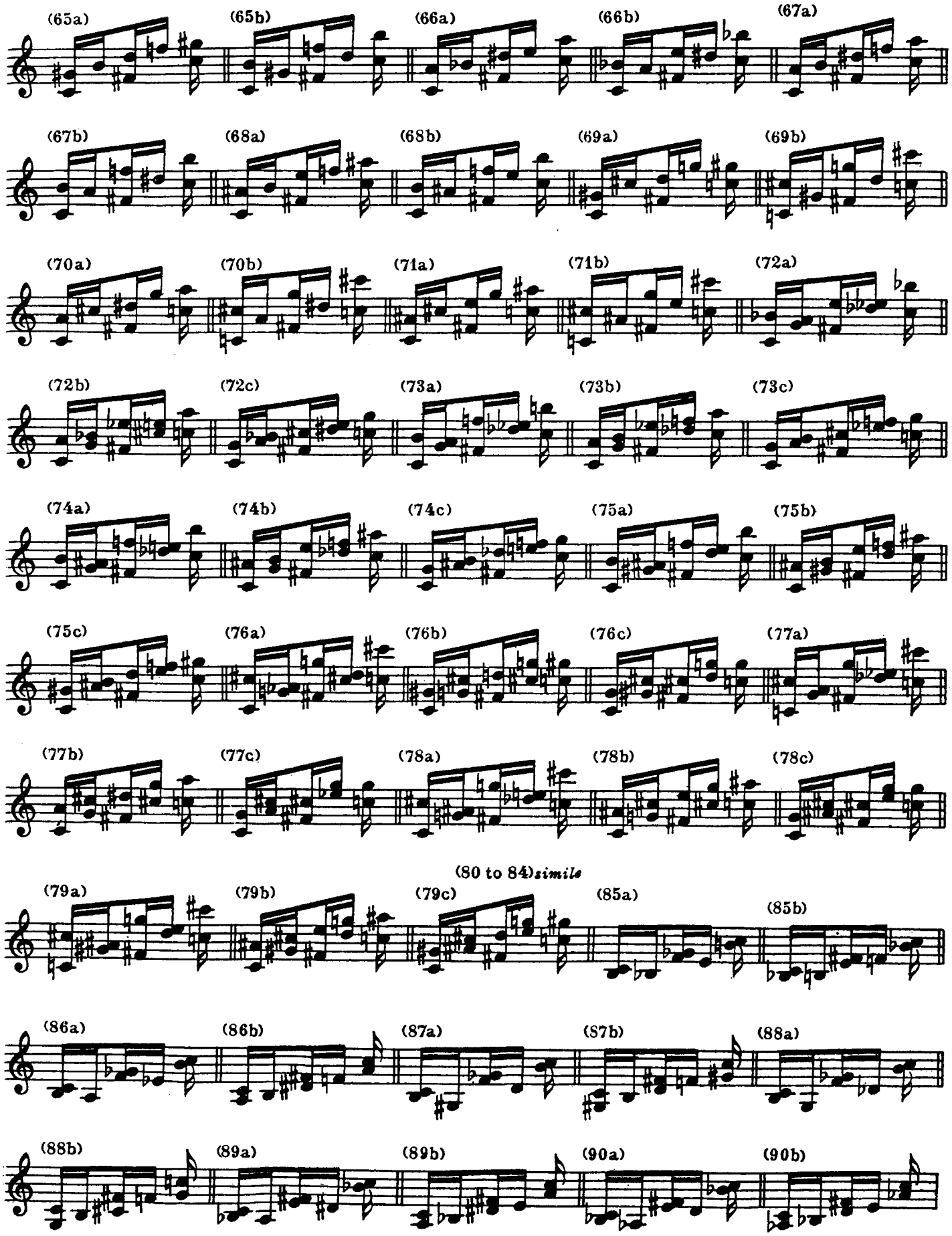
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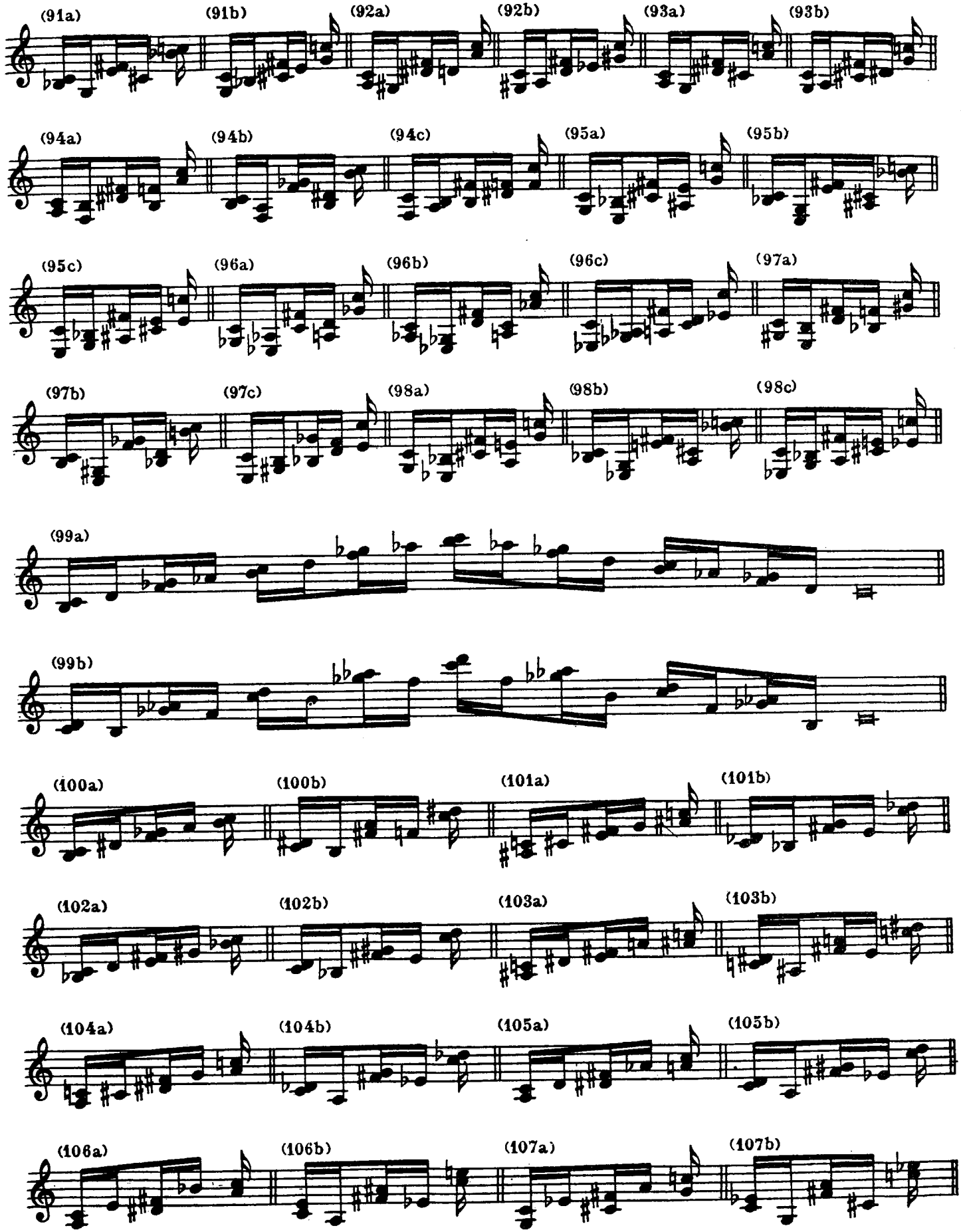
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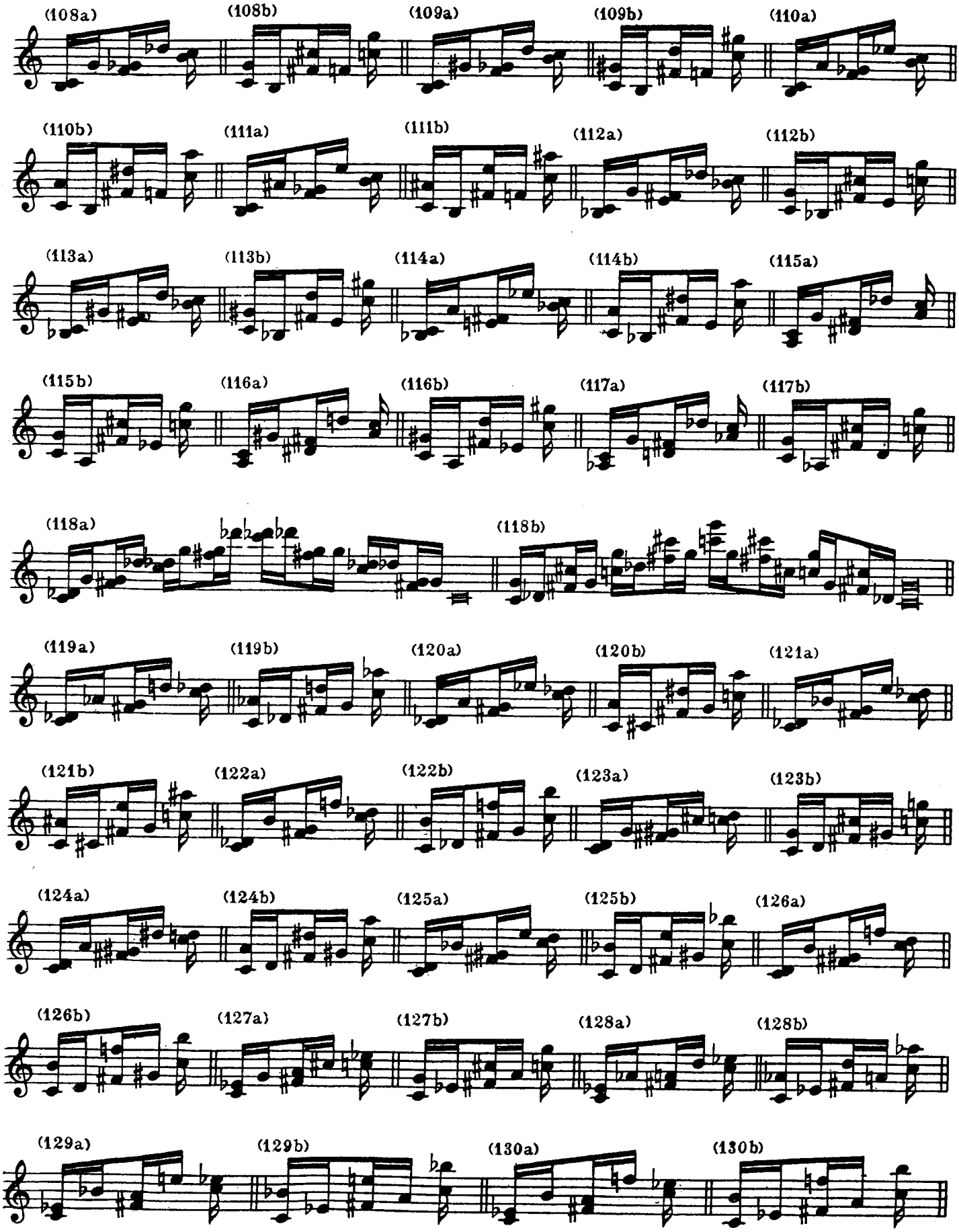
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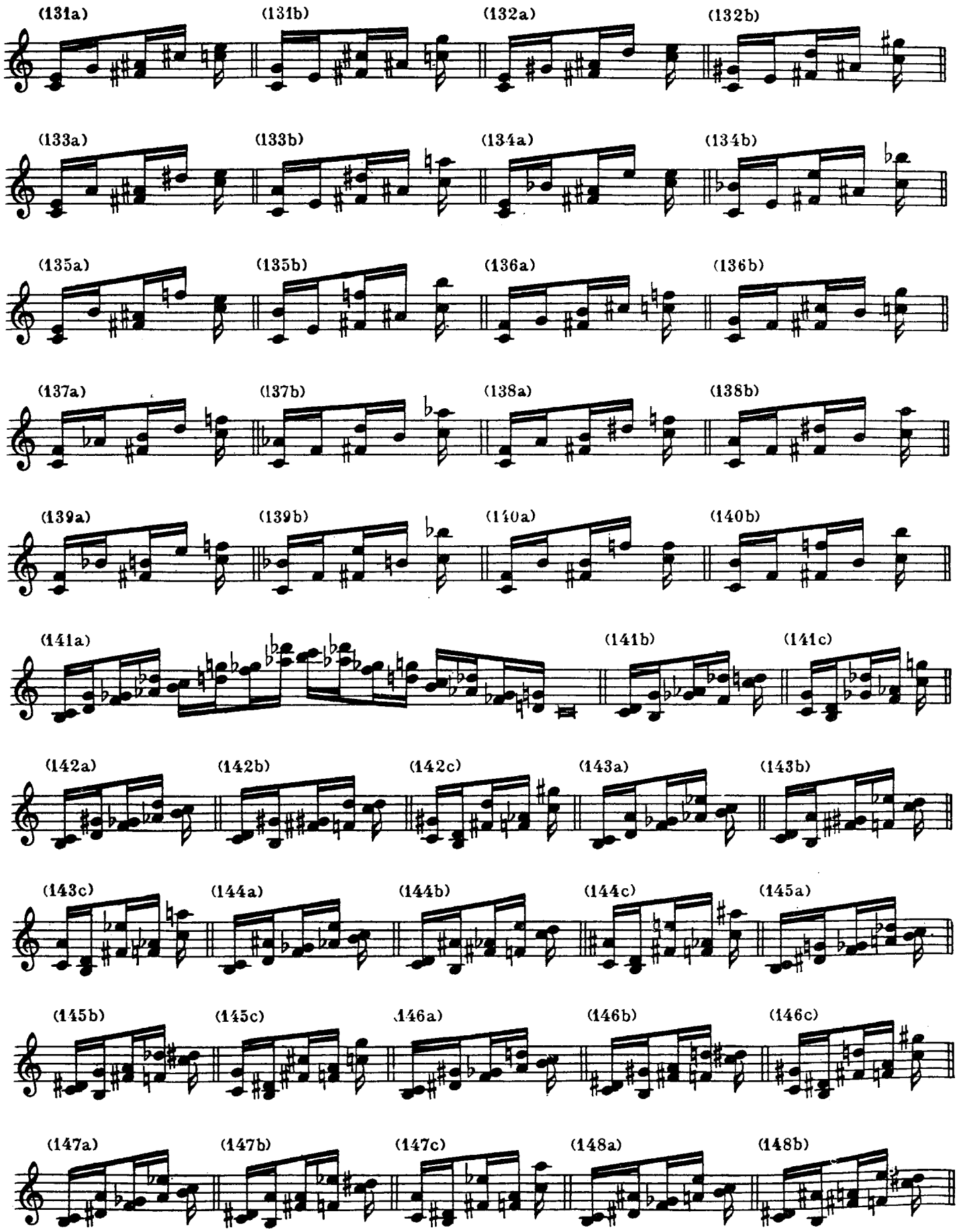
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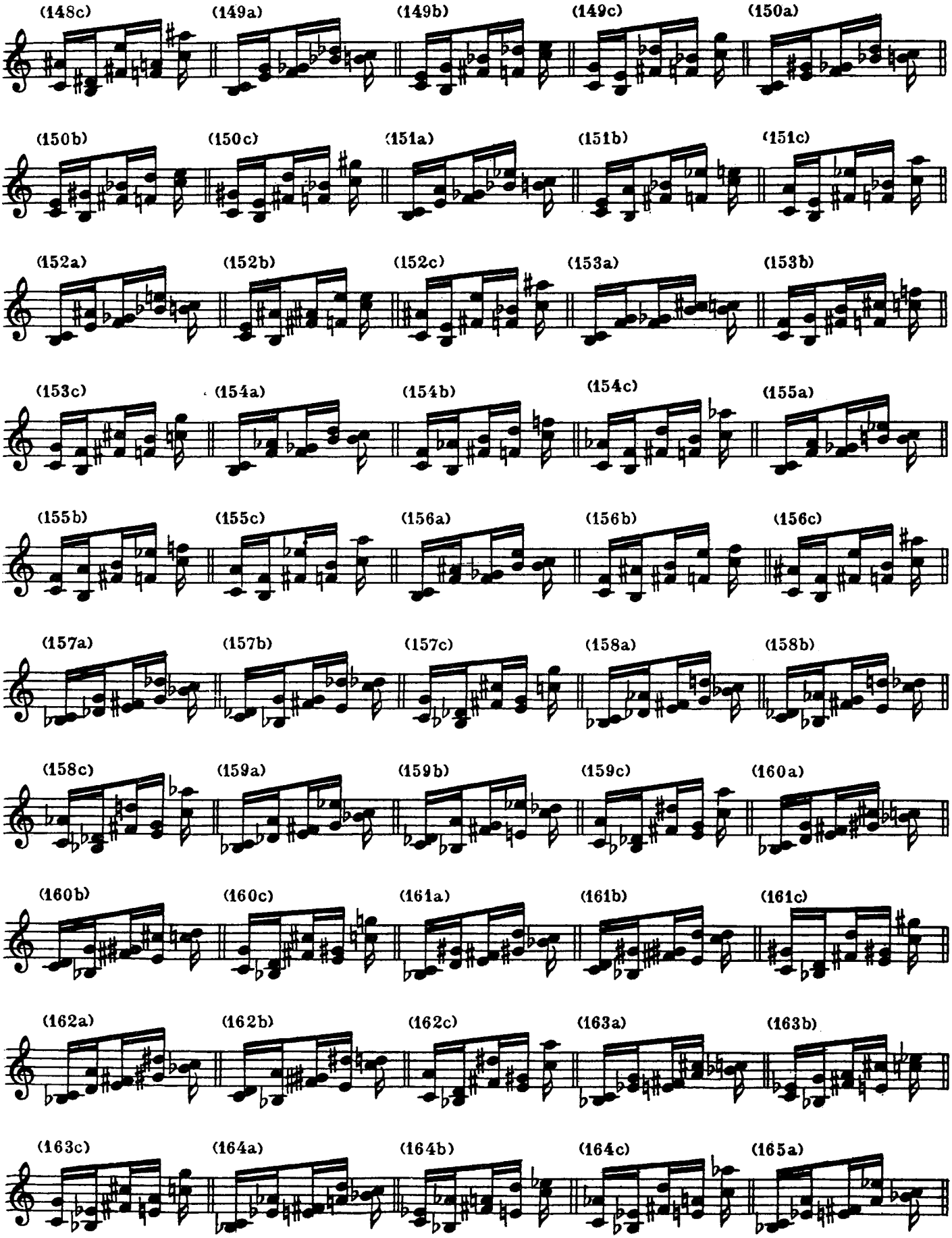
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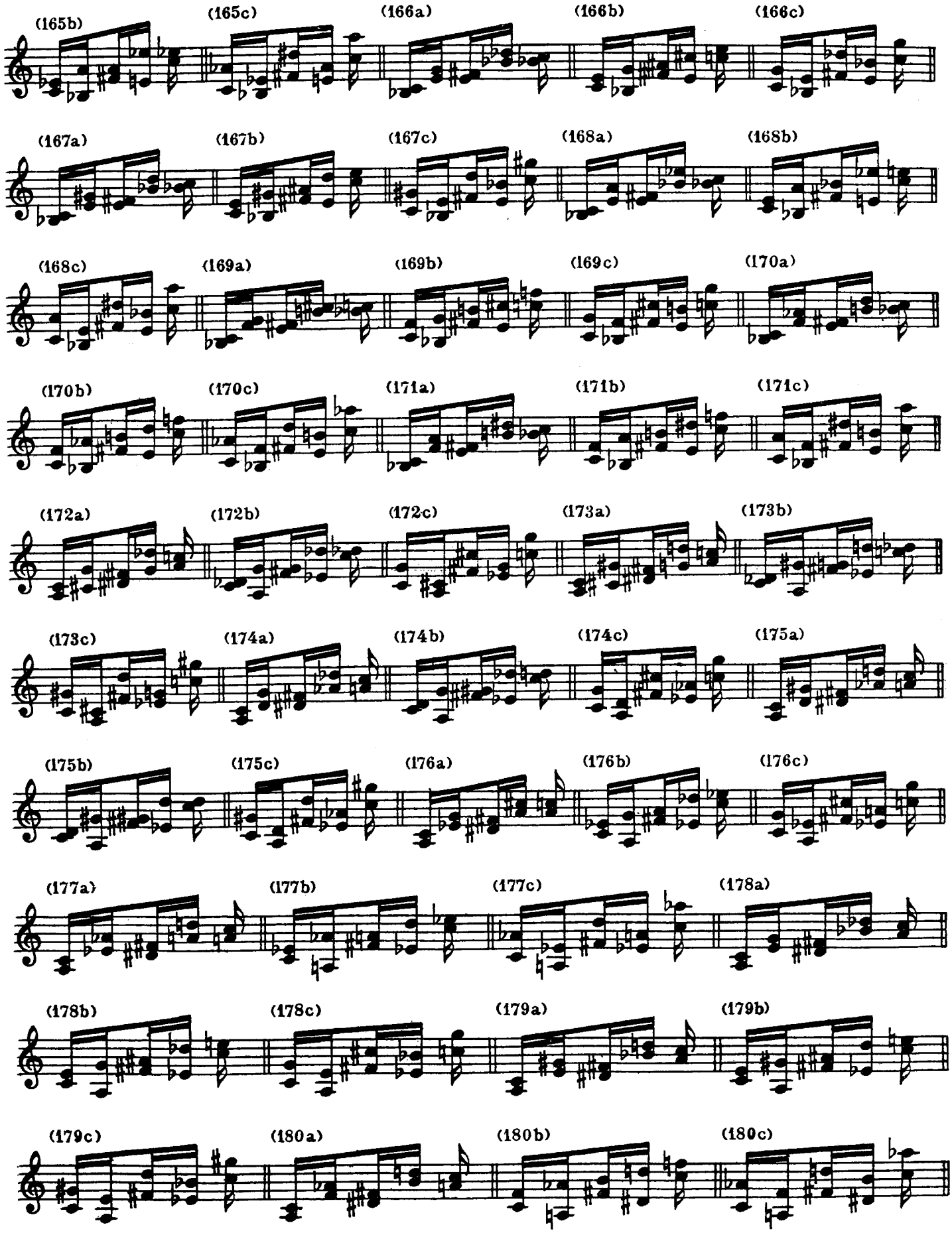
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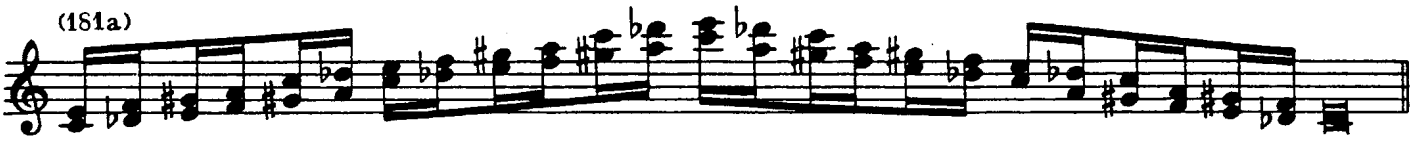
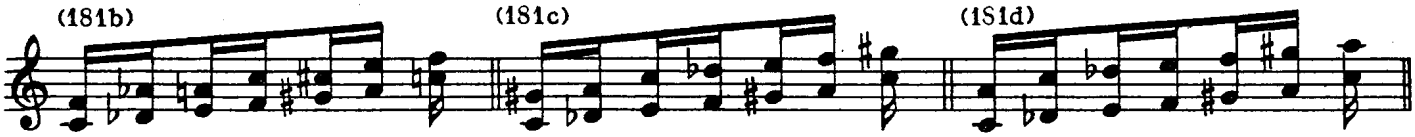
Ditone Progression

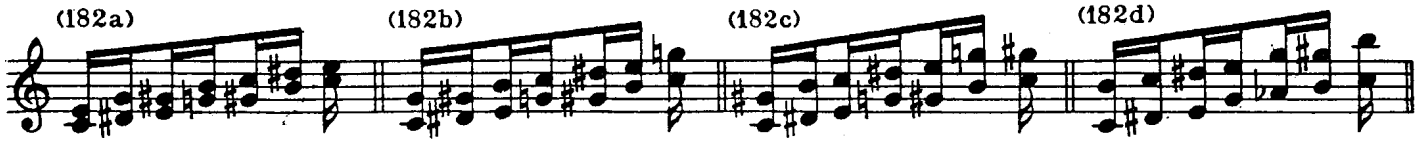
(181a)



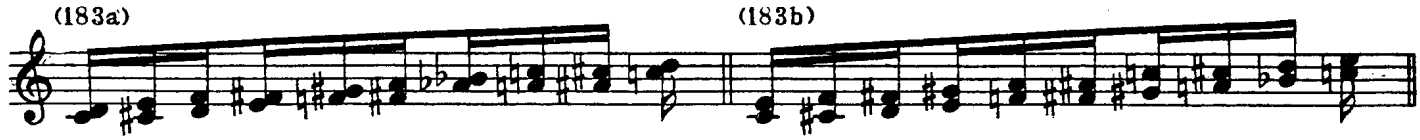
(181b) (181c) (181d)



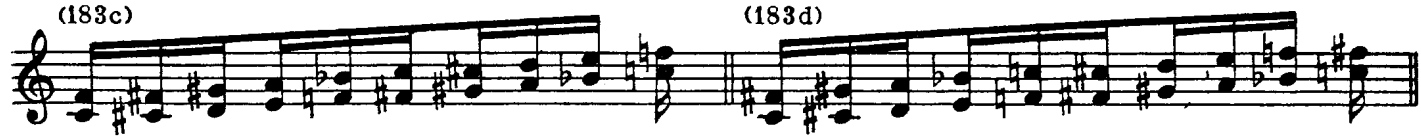
(182a) (182b) (182c) (182d)



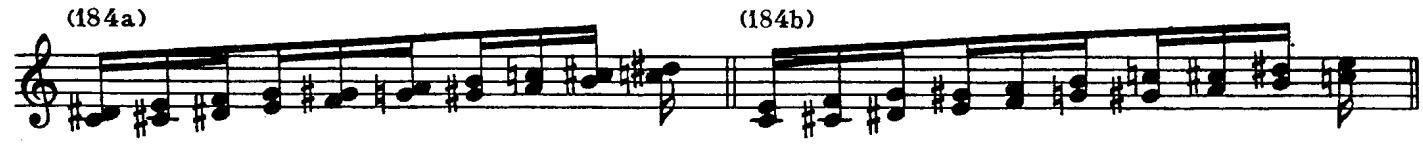
(183a) (183b)



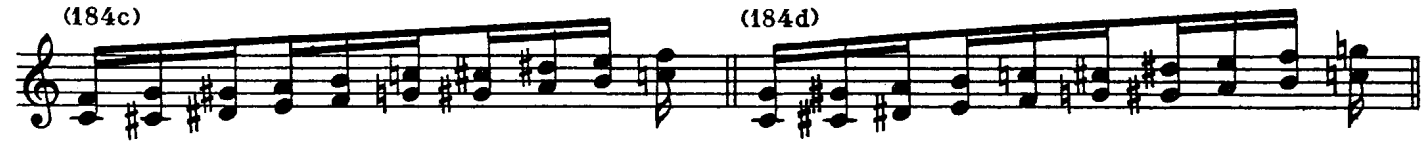
(183c) (183d)



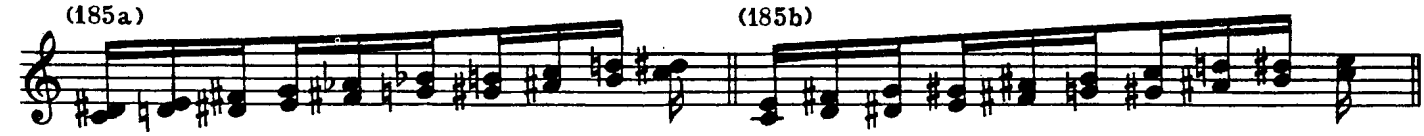
(184a) (184b)



(184c) (184d)



(185a) (185b)



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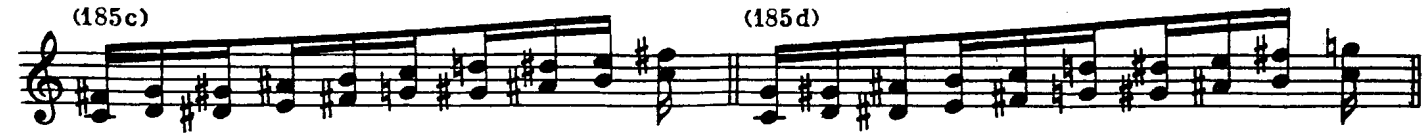

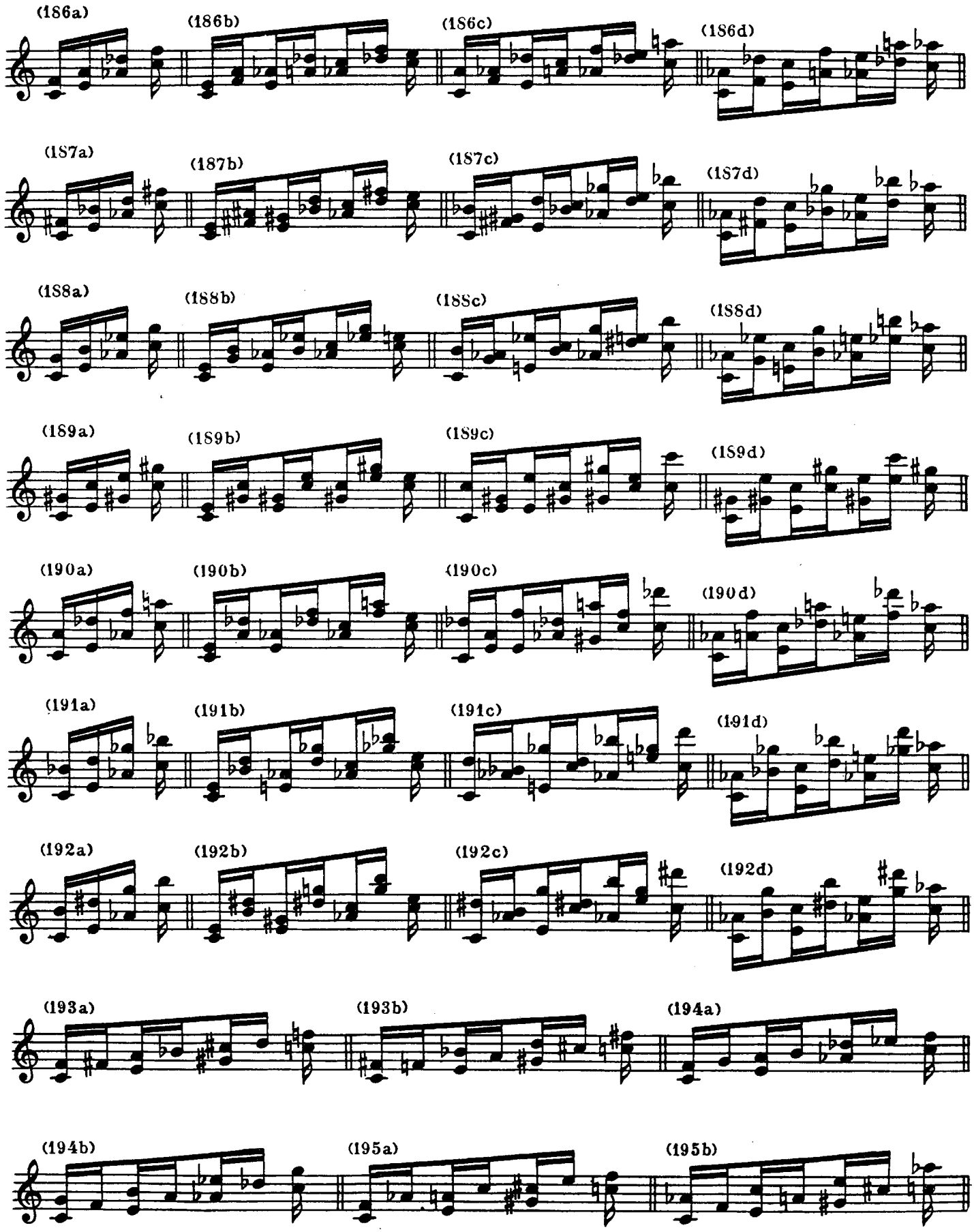
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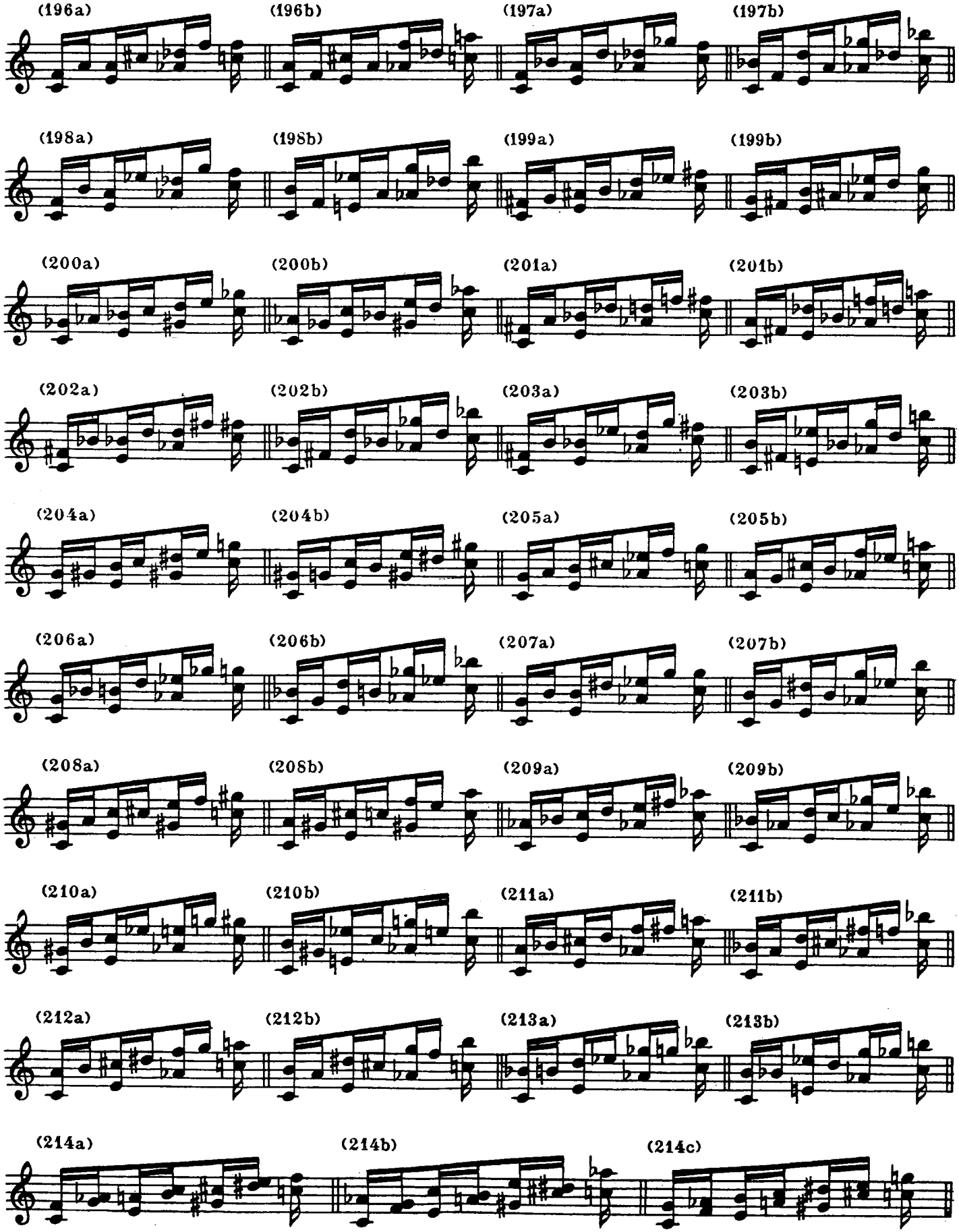
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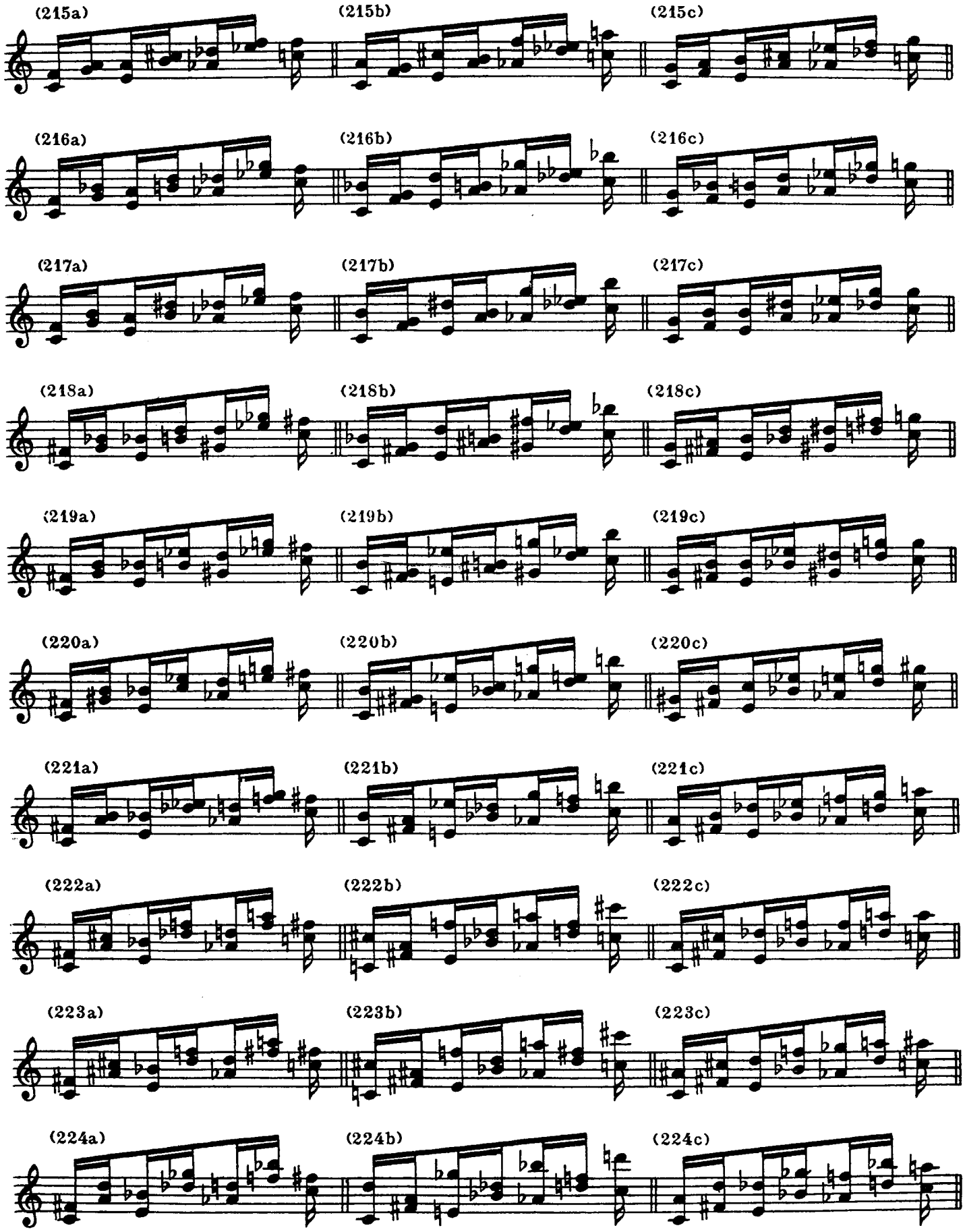
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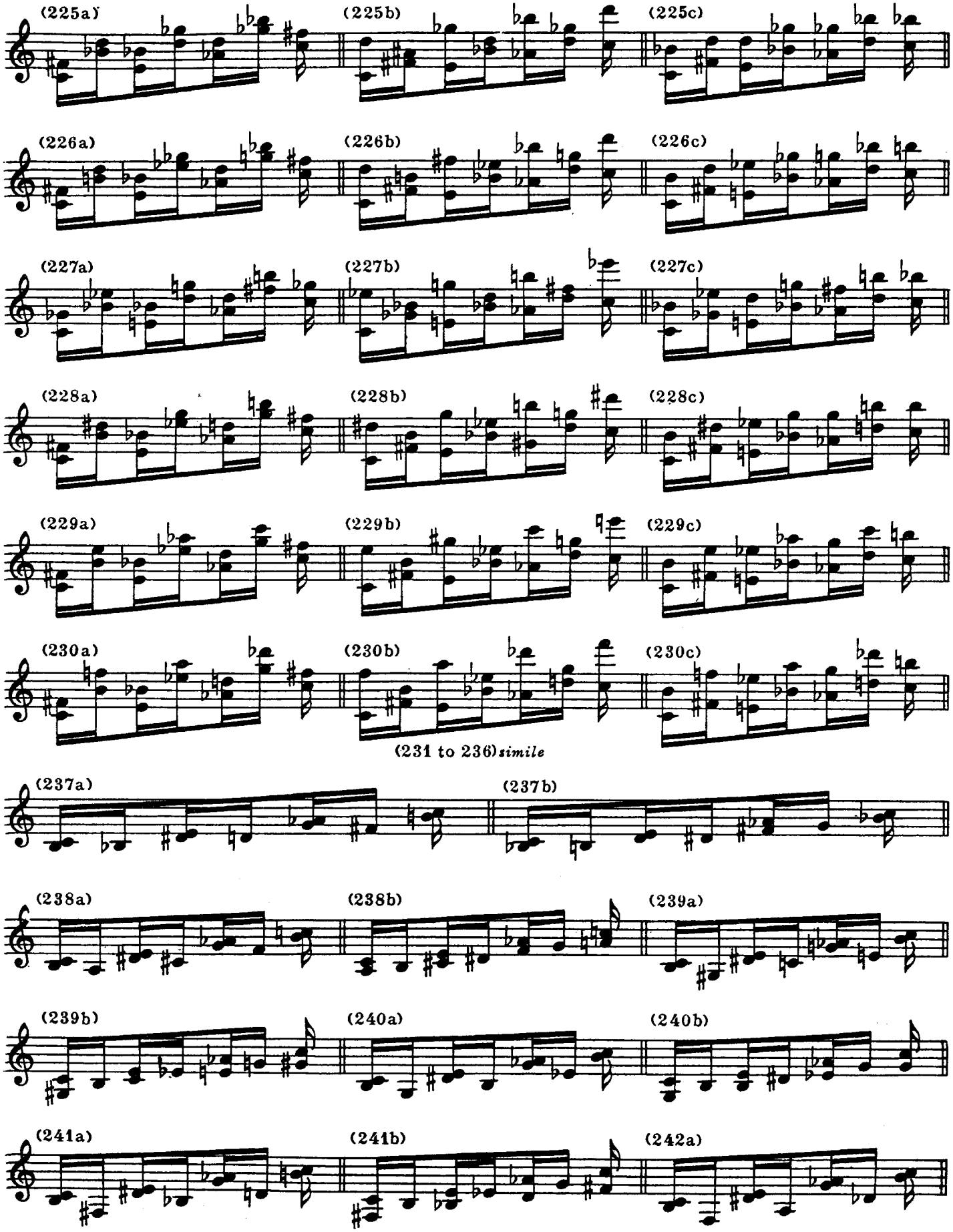
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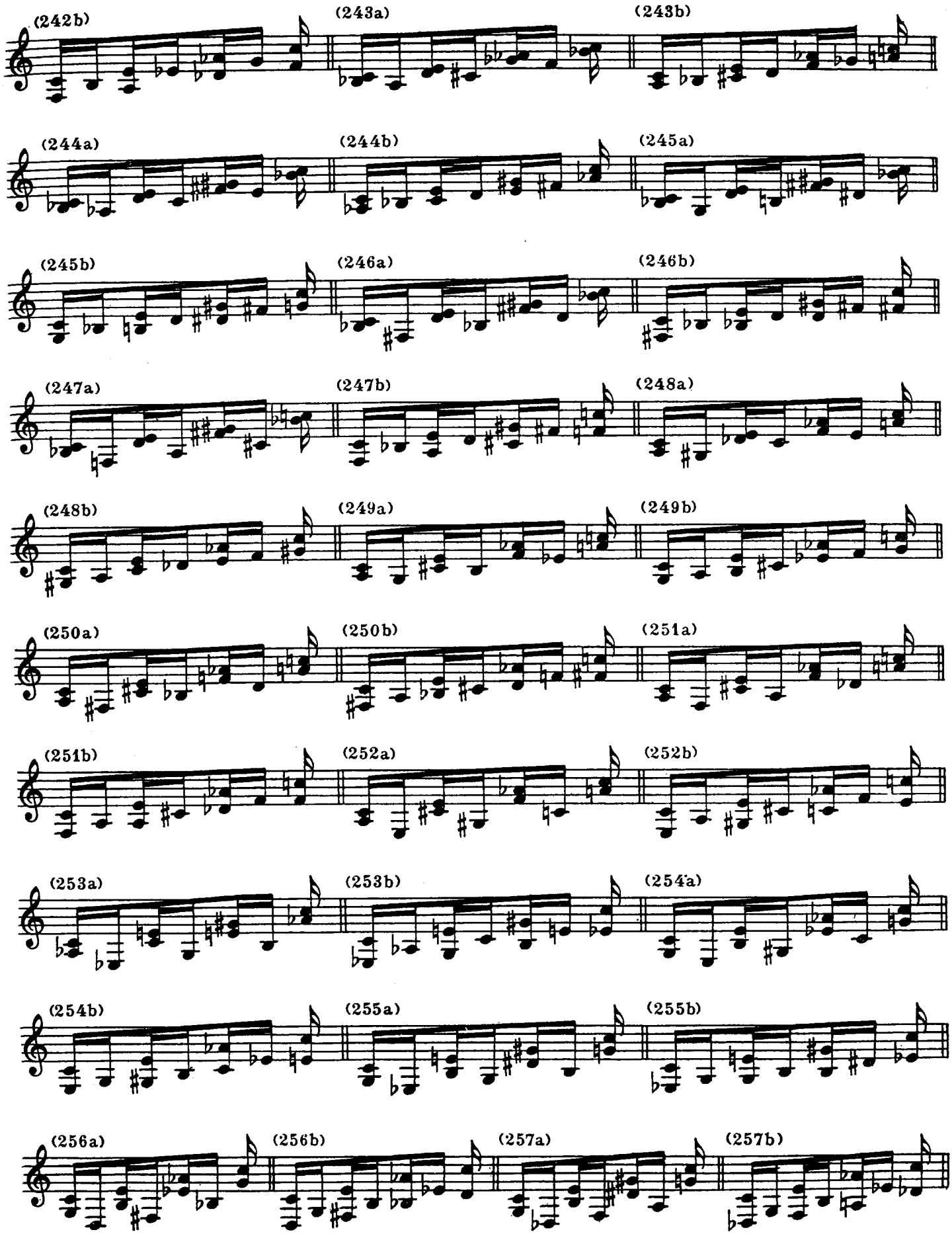
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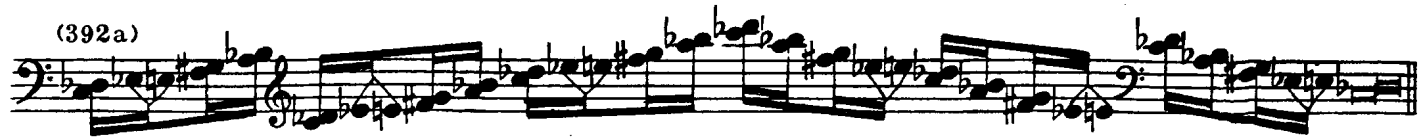
Sesquitone Progression

(392a)



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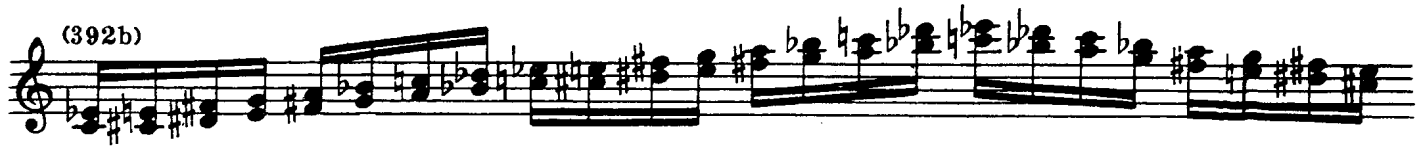

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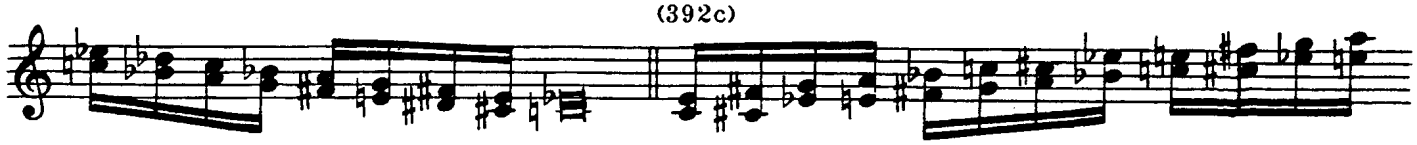

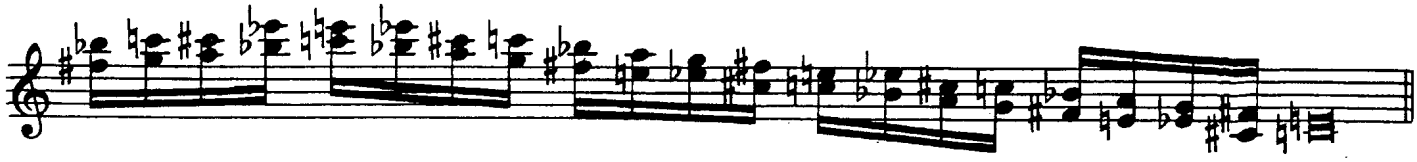

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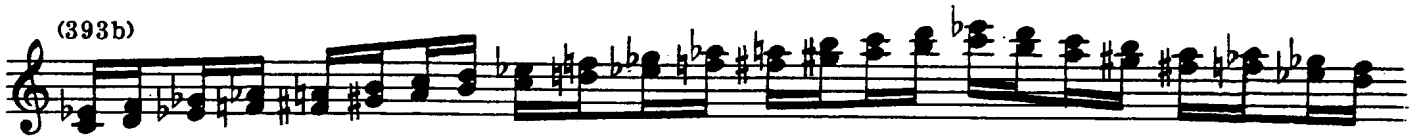

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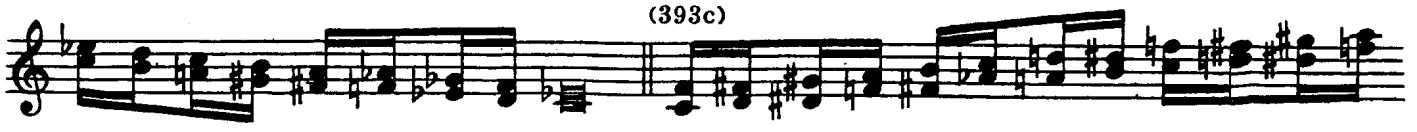

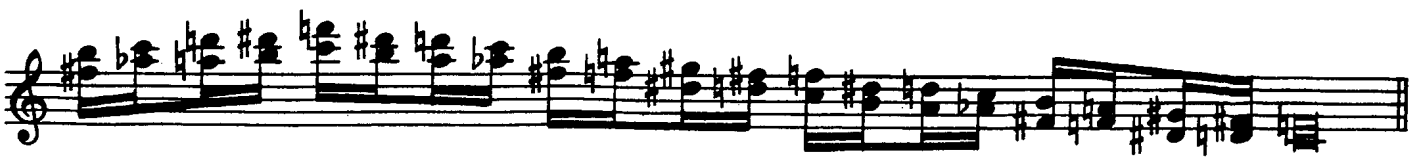

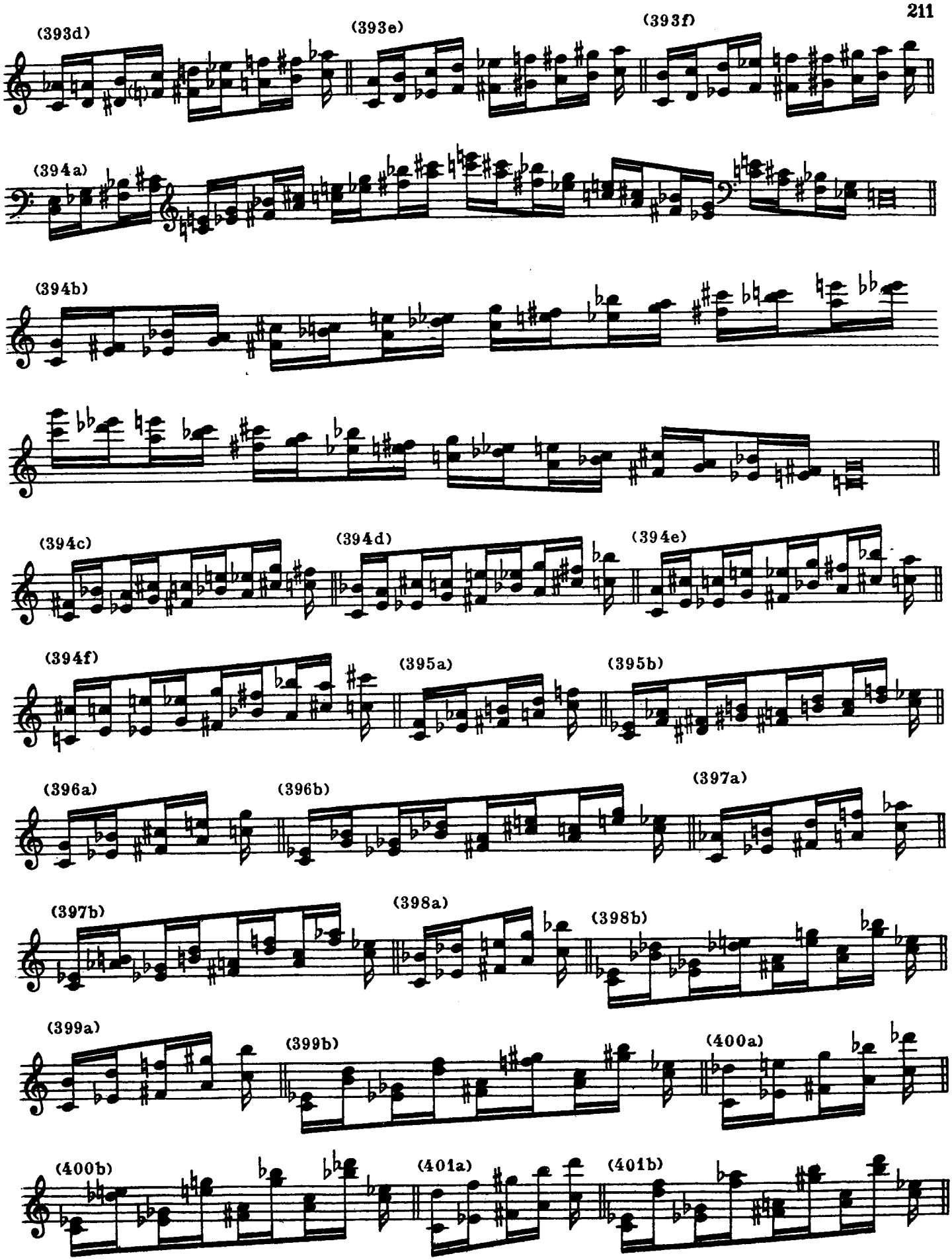
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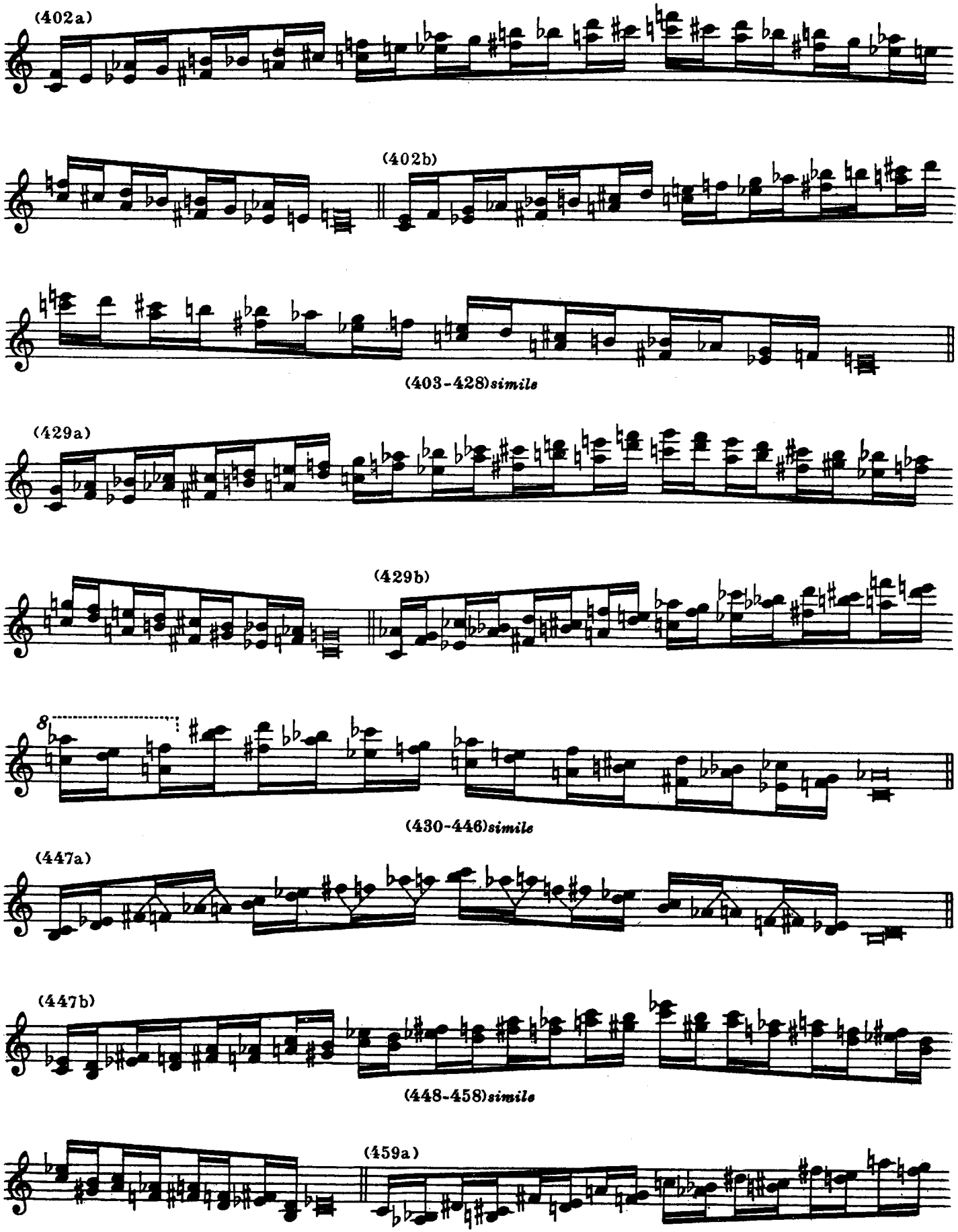
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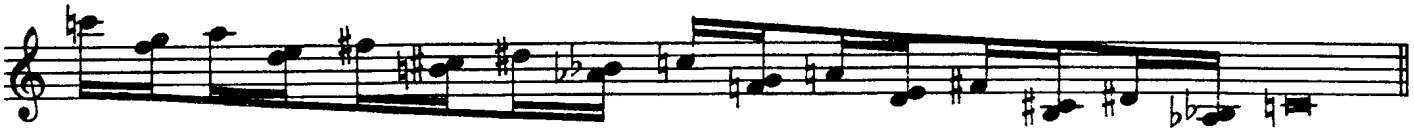

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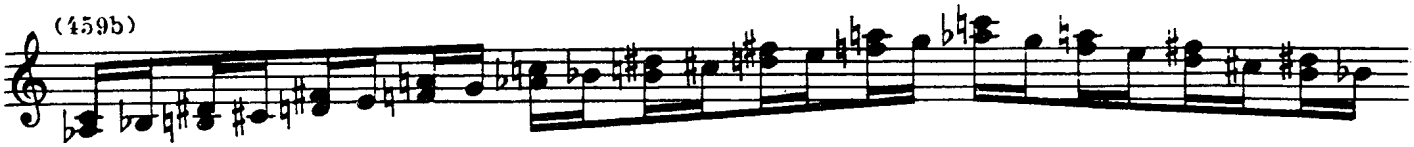

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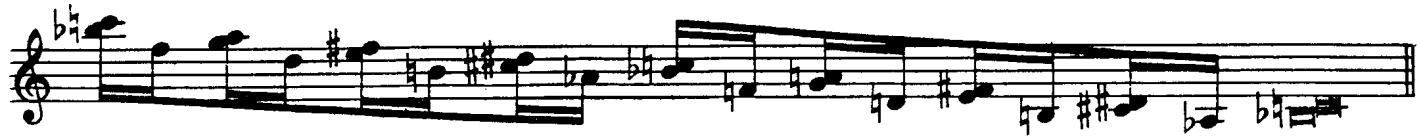

(460-484) *simile*

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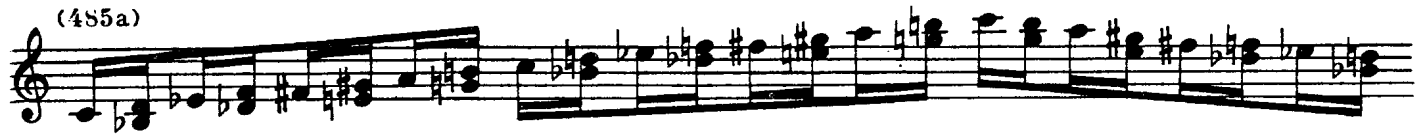

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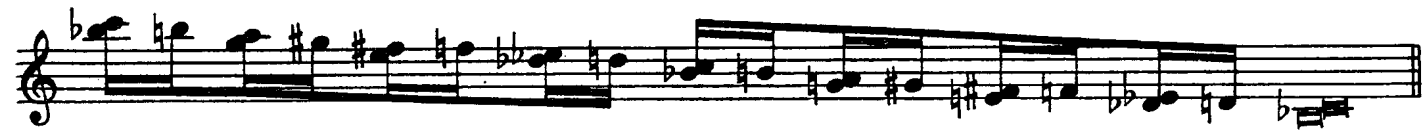

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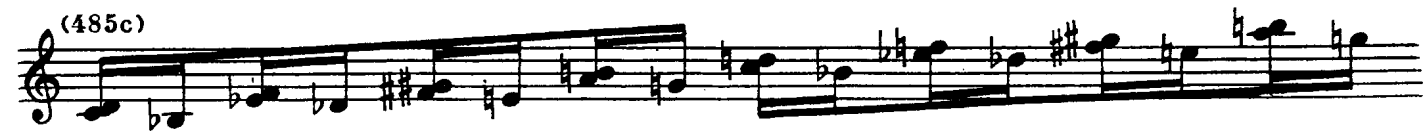
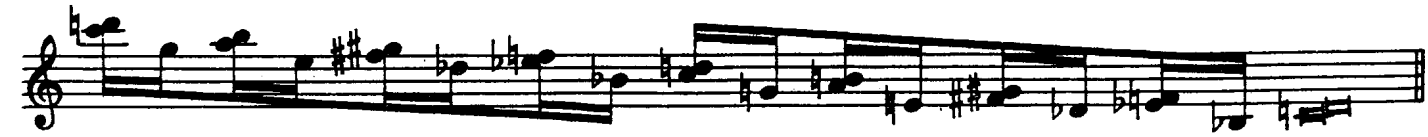
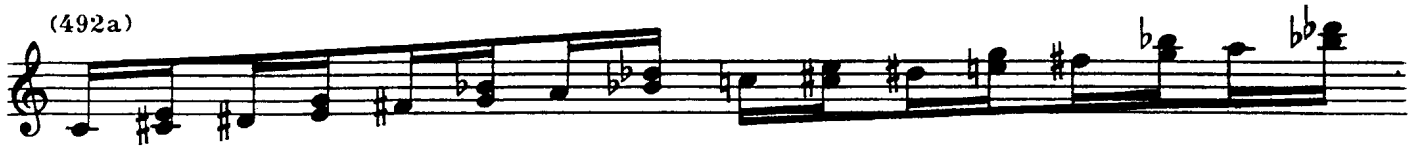
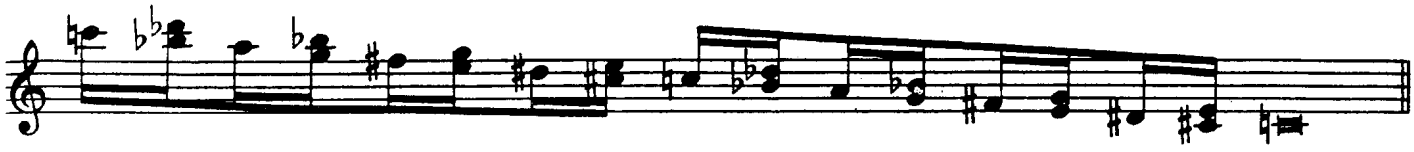




(486-491) *simile*

(492a)





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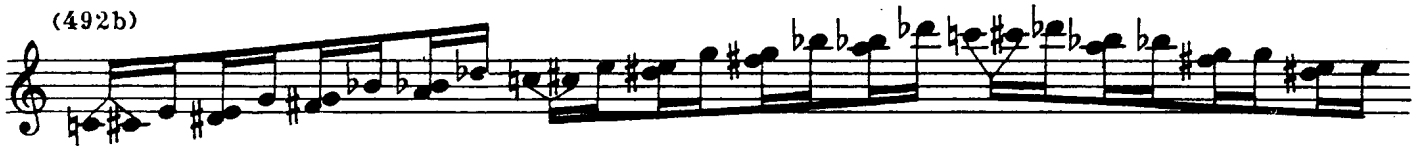

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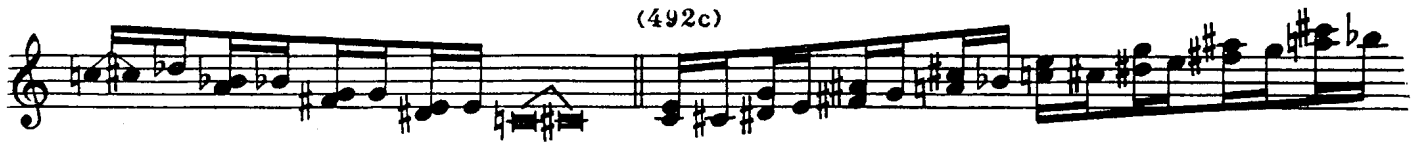

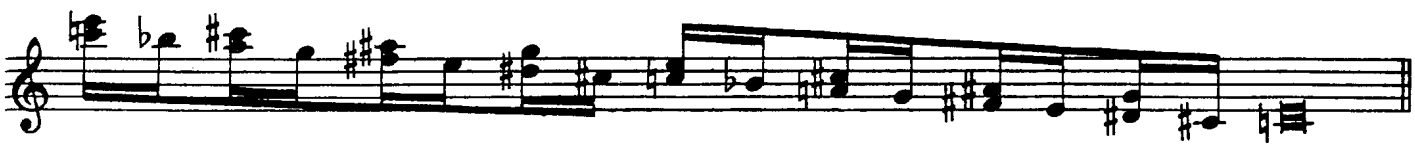

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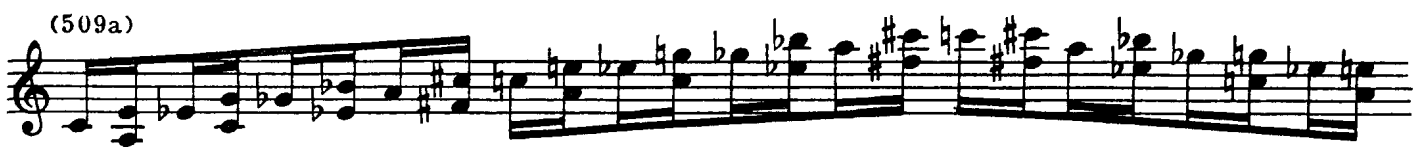

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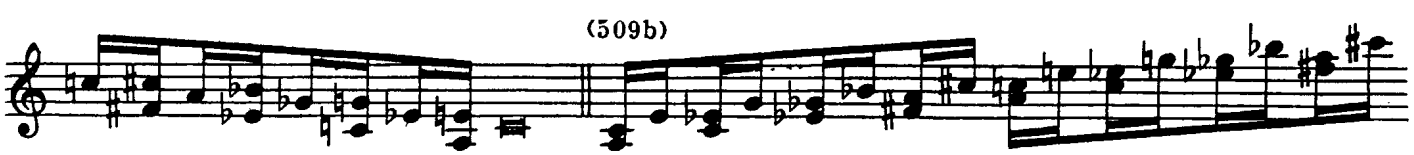

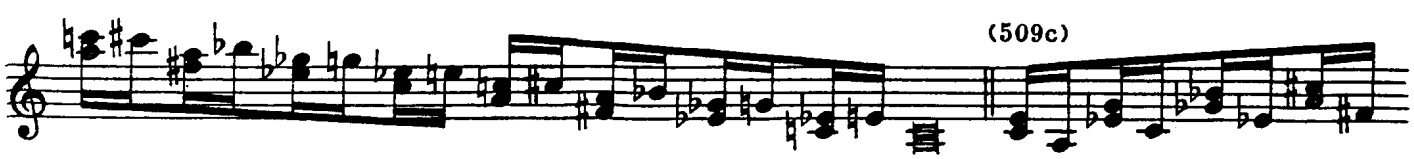

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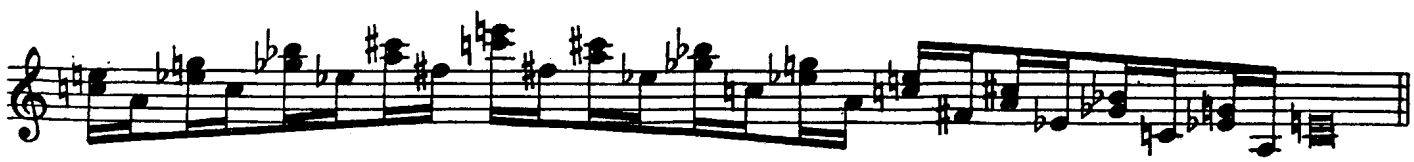

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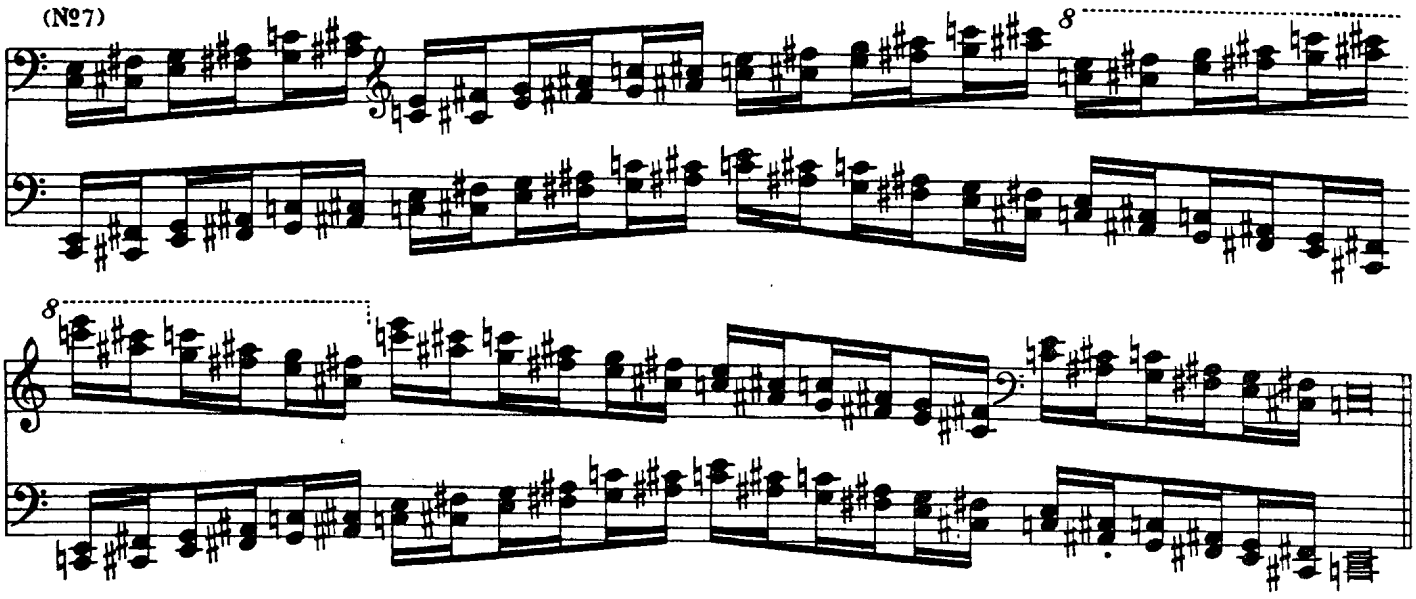

Whole-Tone Scale

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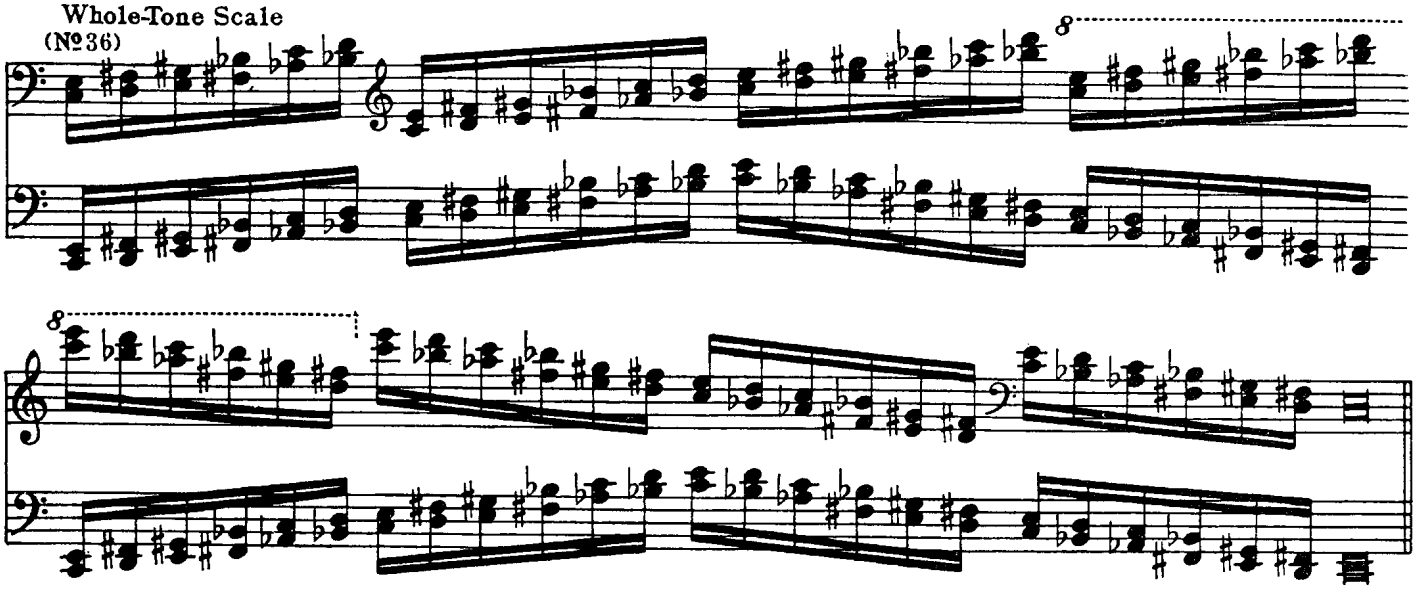

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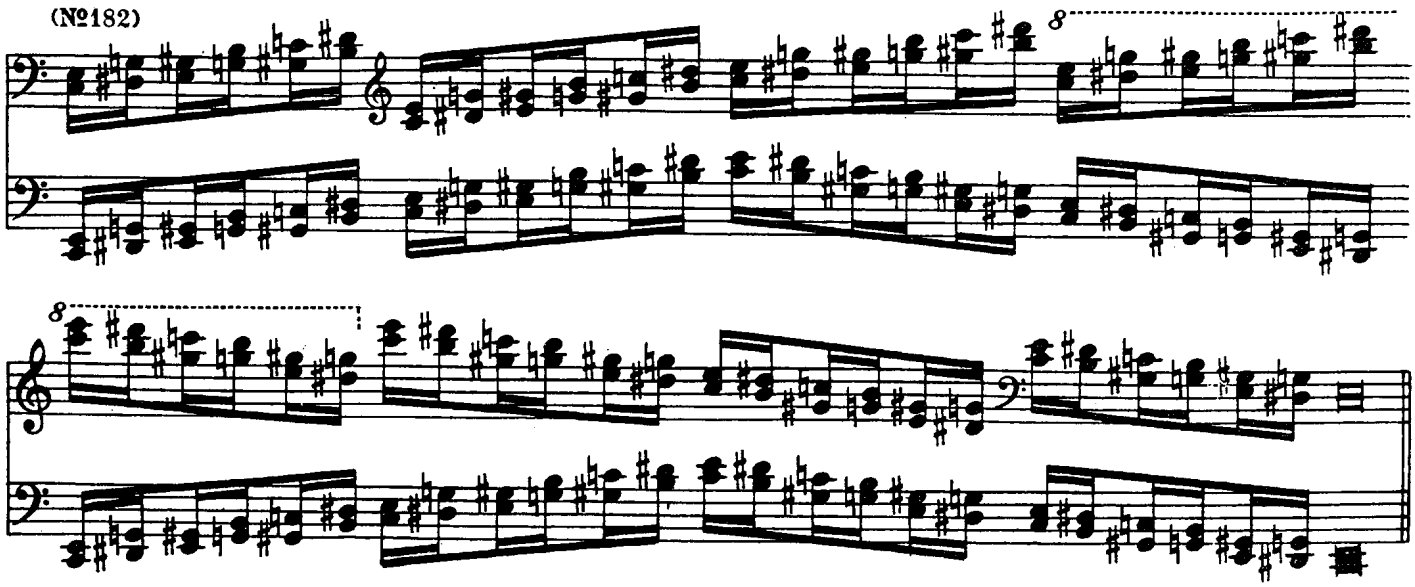

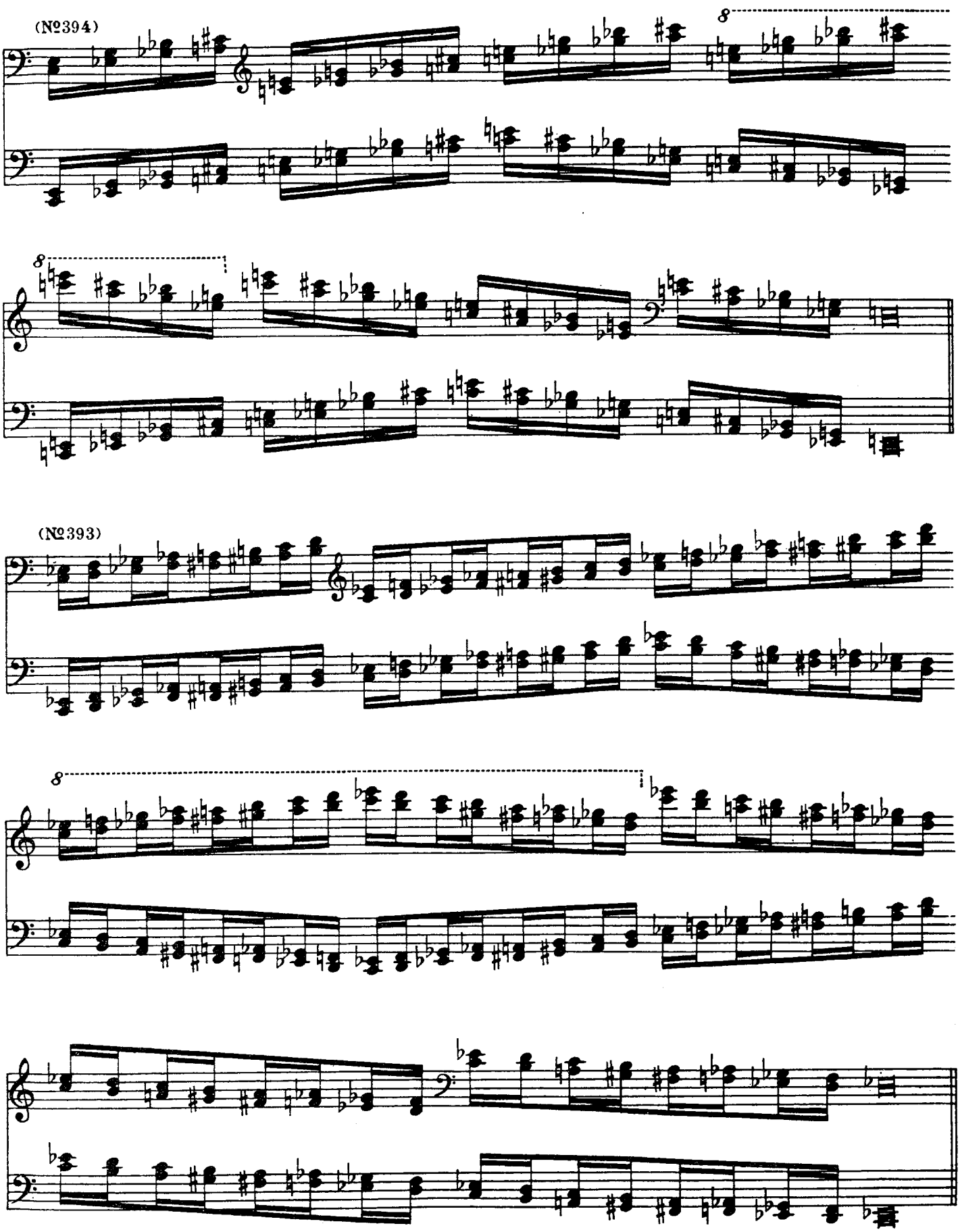
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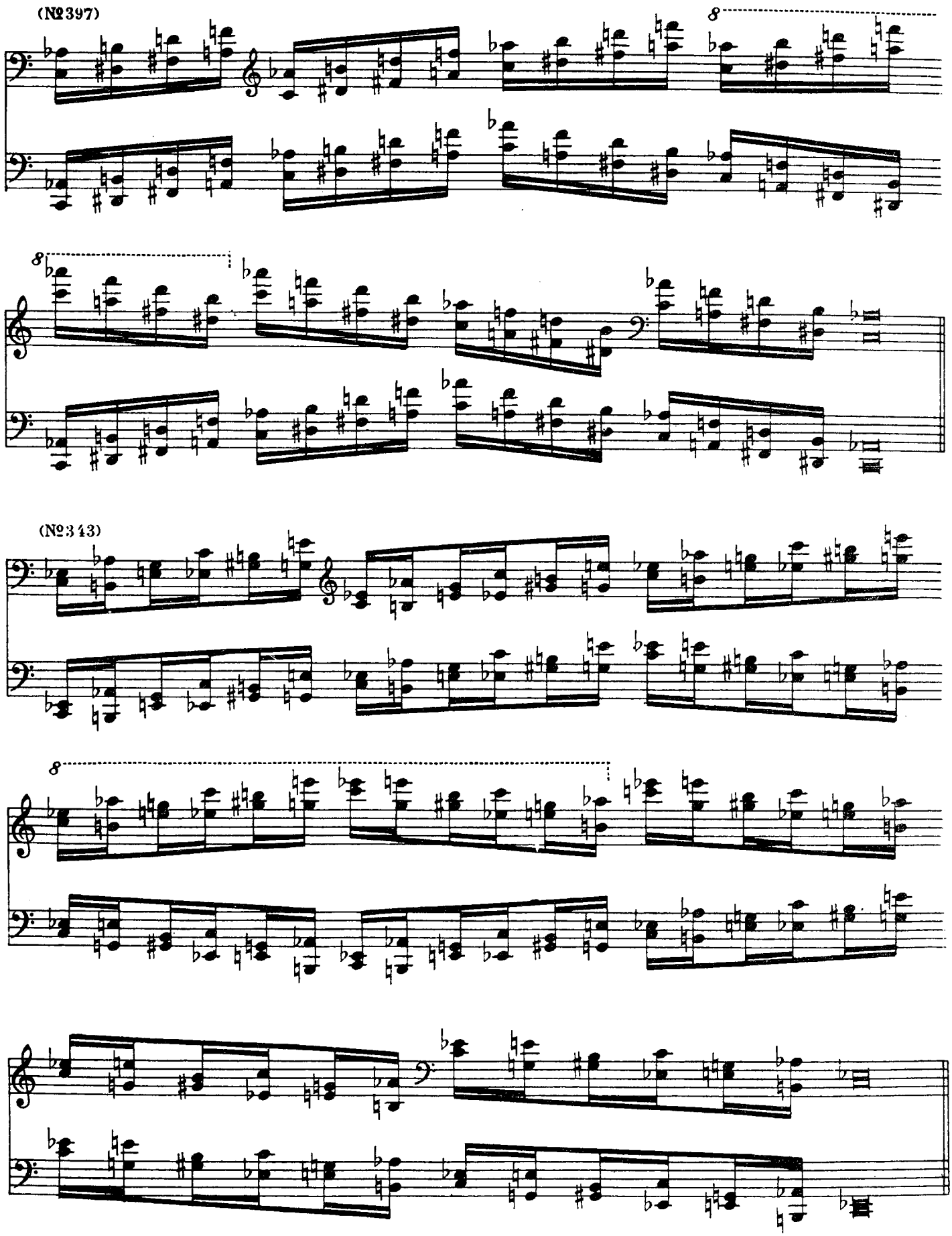
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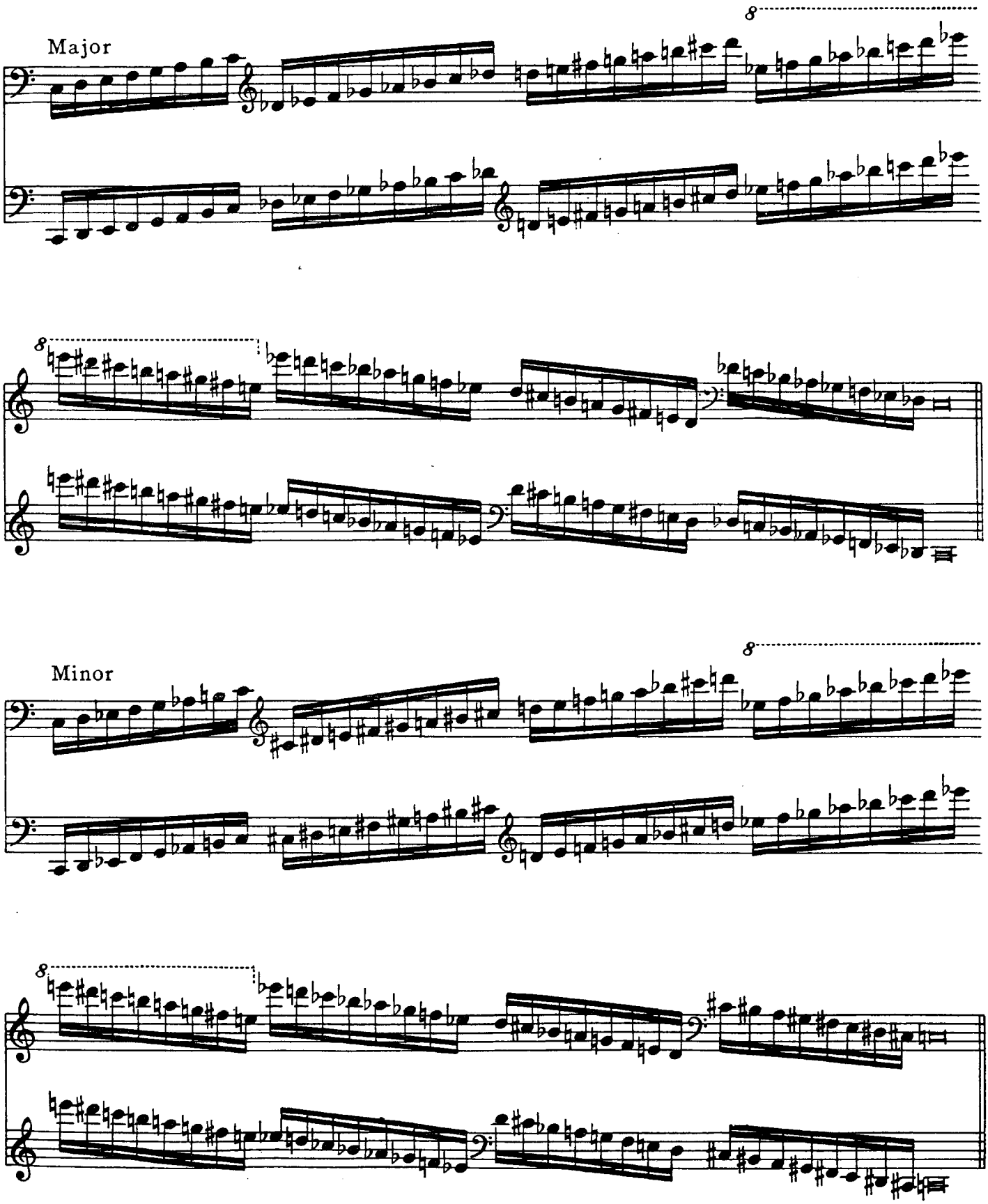
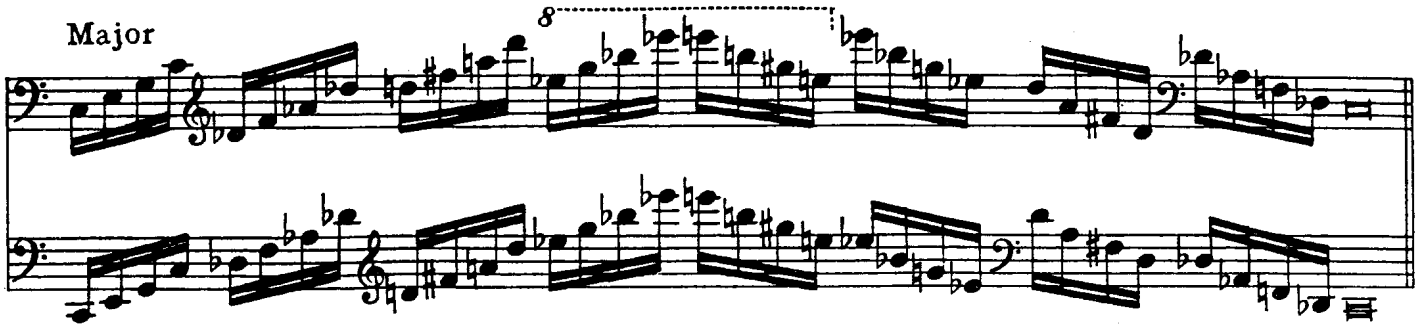
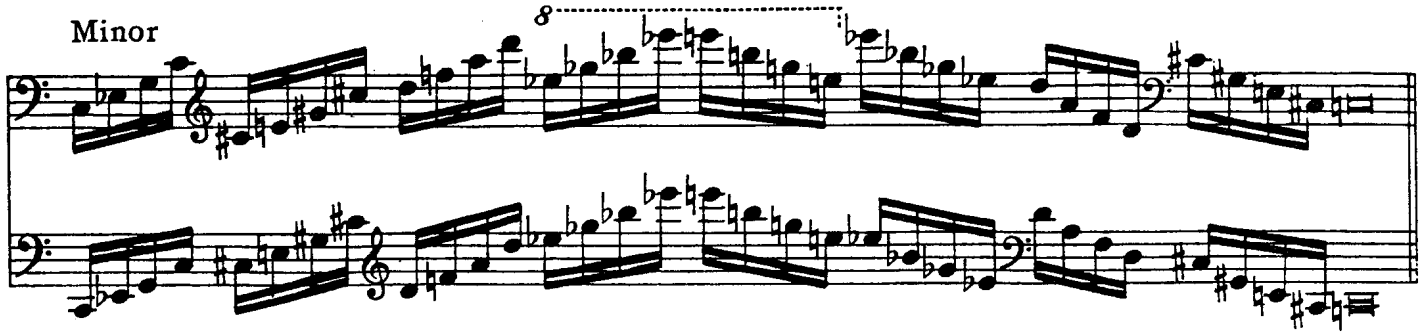
Plural Scales and Arpeggios



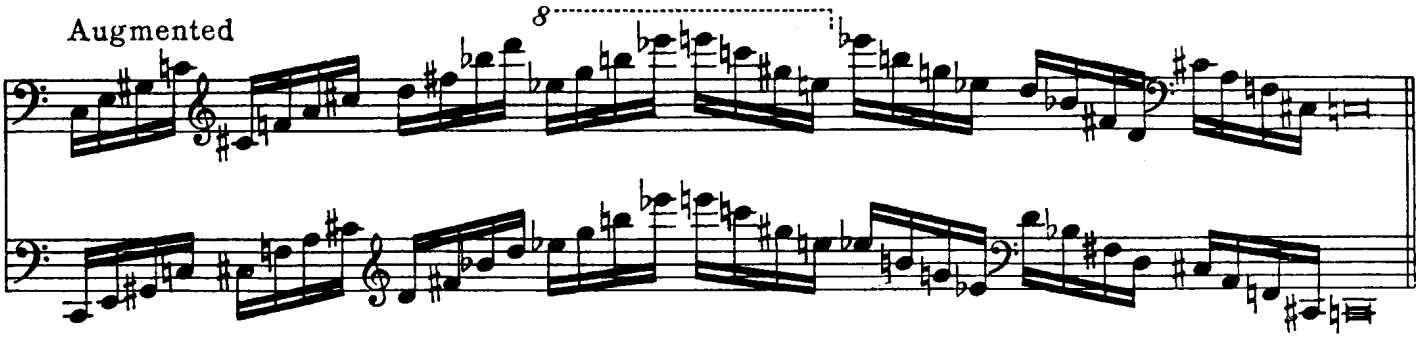
Major



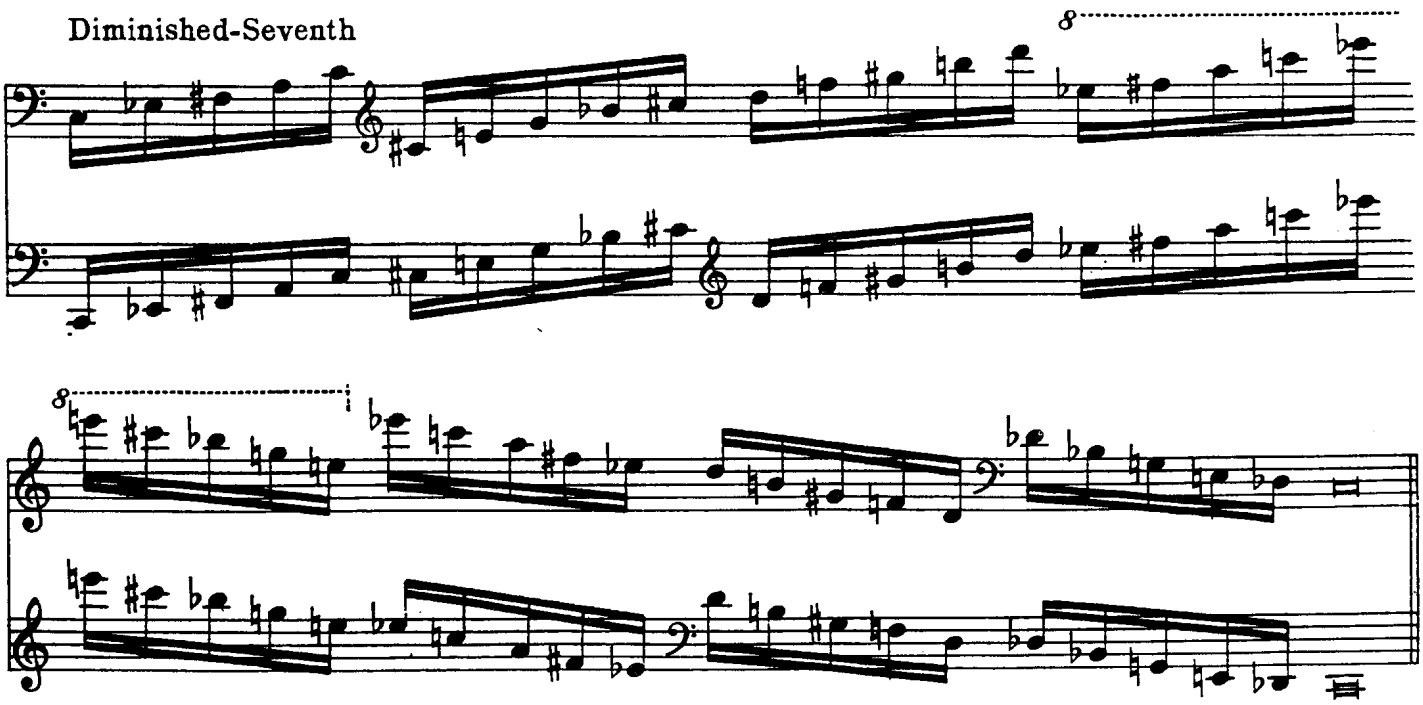
Minor



Augmented

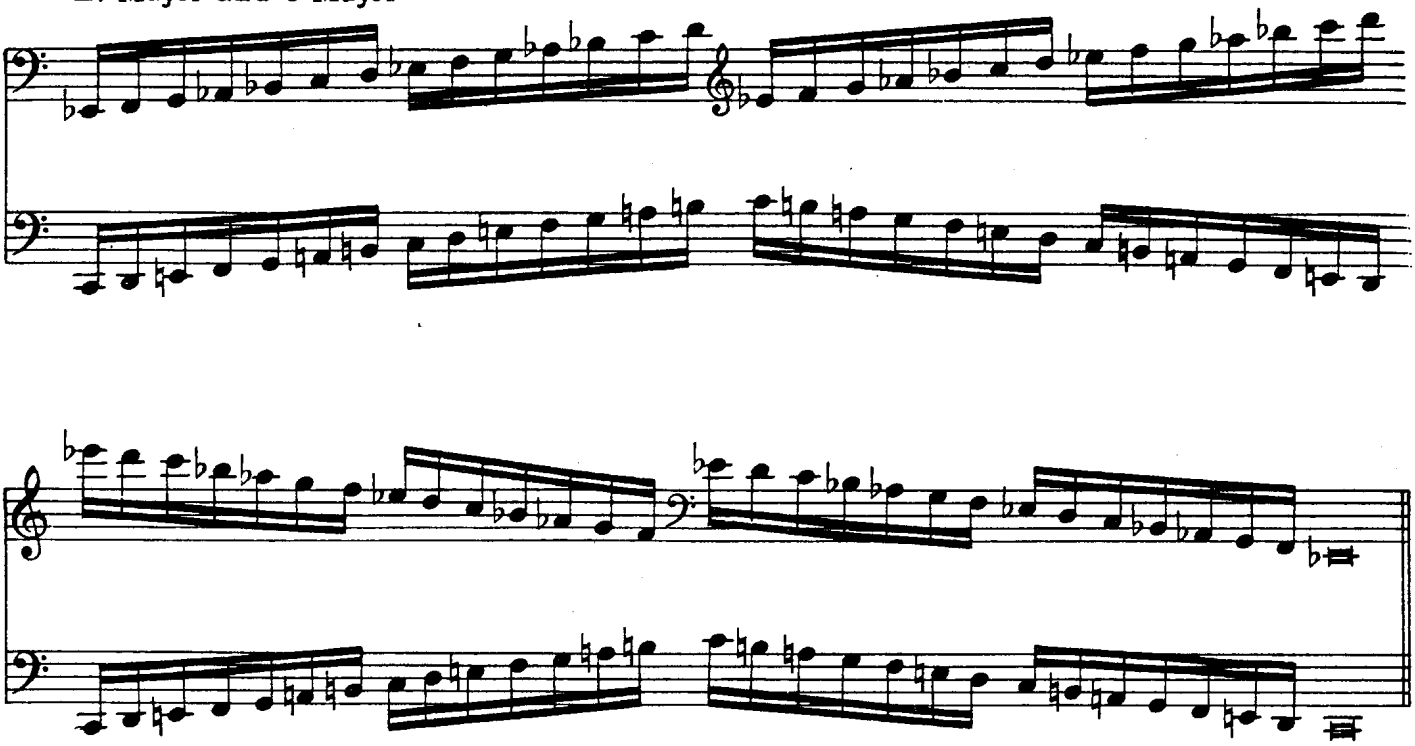


Diminished-Seventh

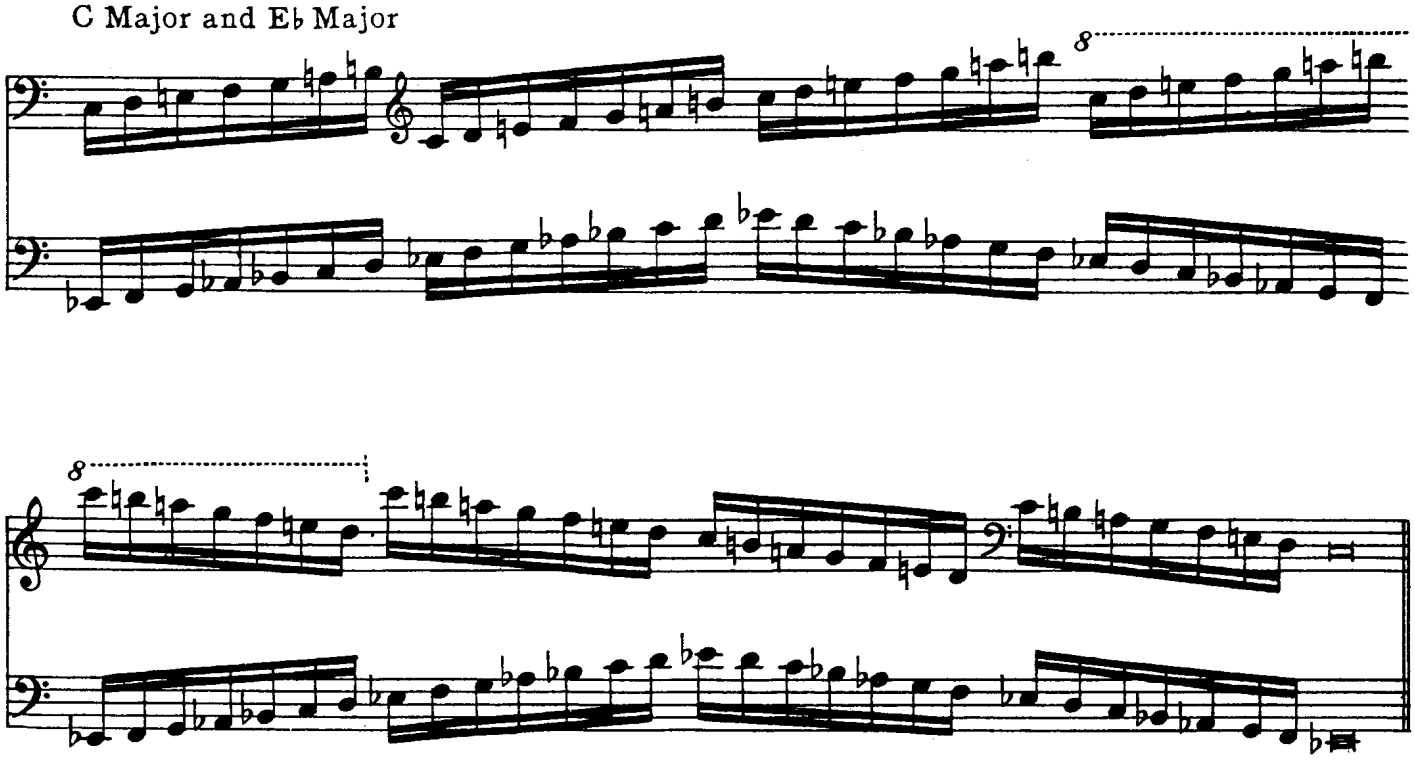


Polytonal Scales

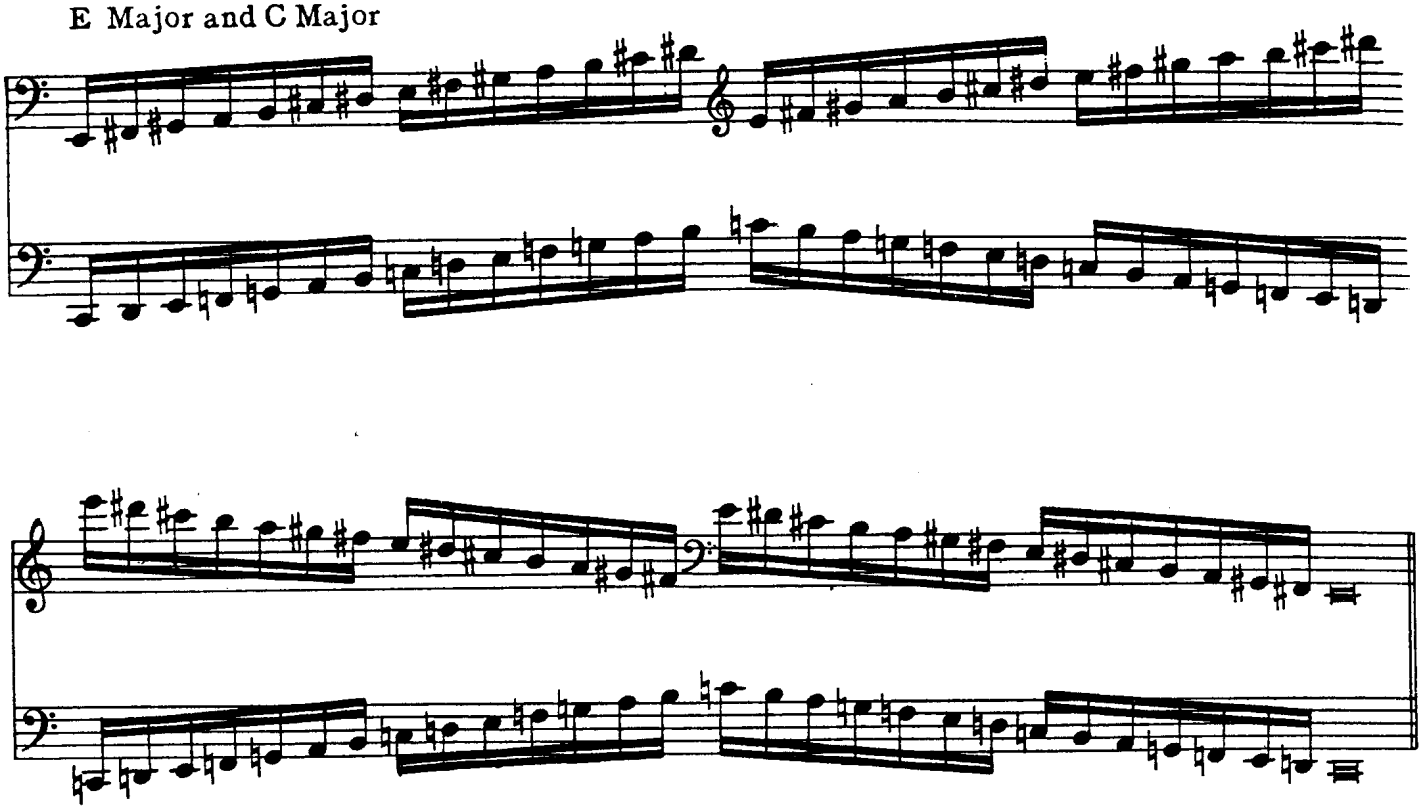
E♭ Major and C Major



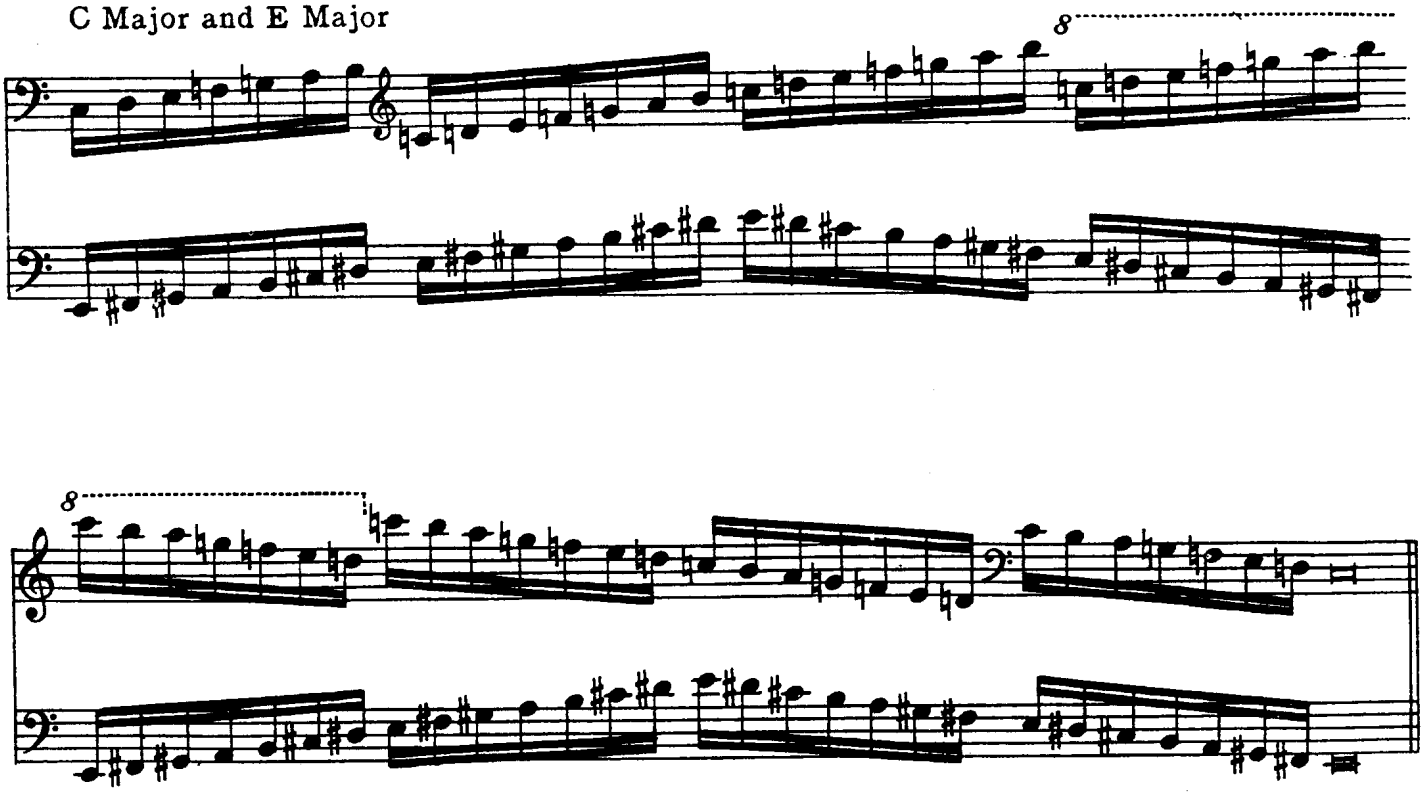
C Major and E♭ Major



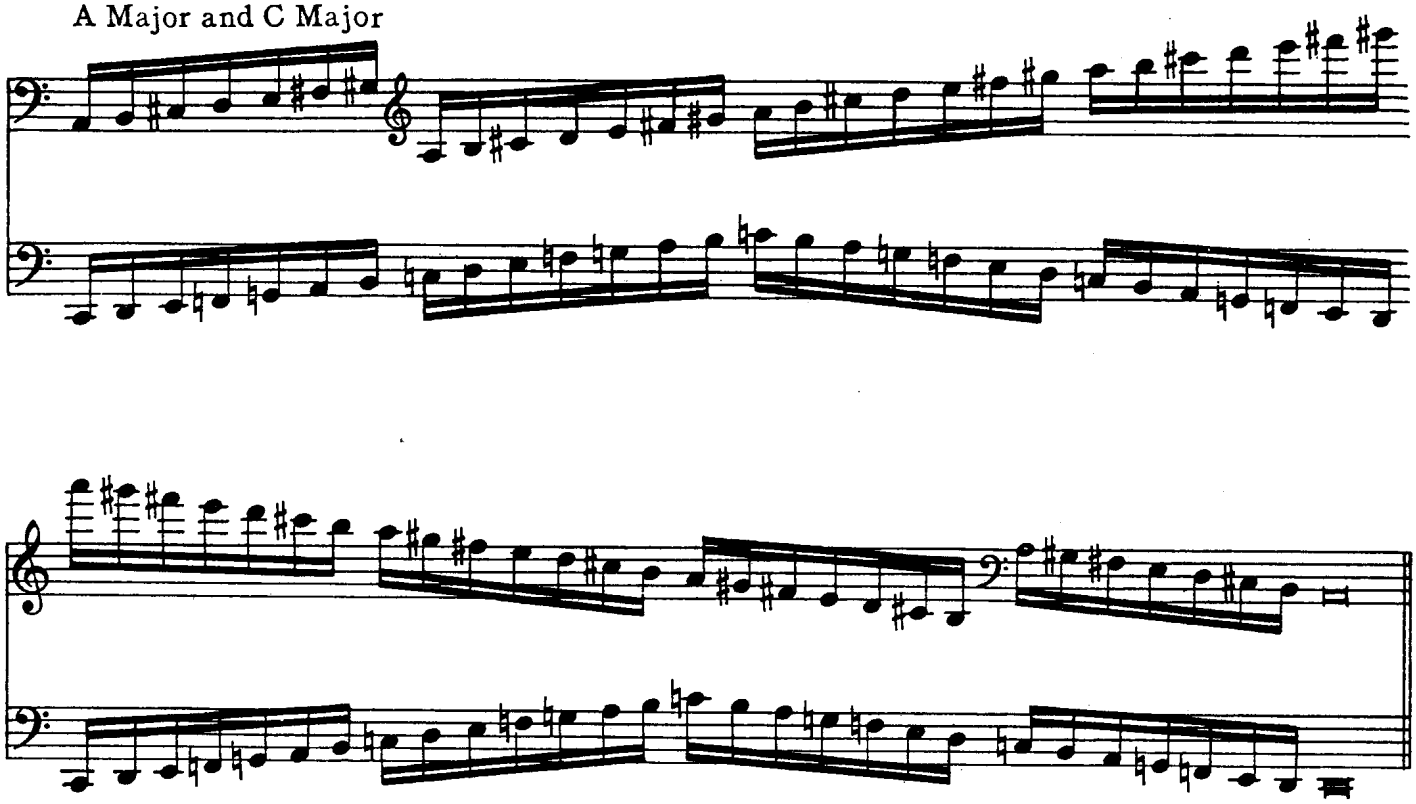
E Major and C Major



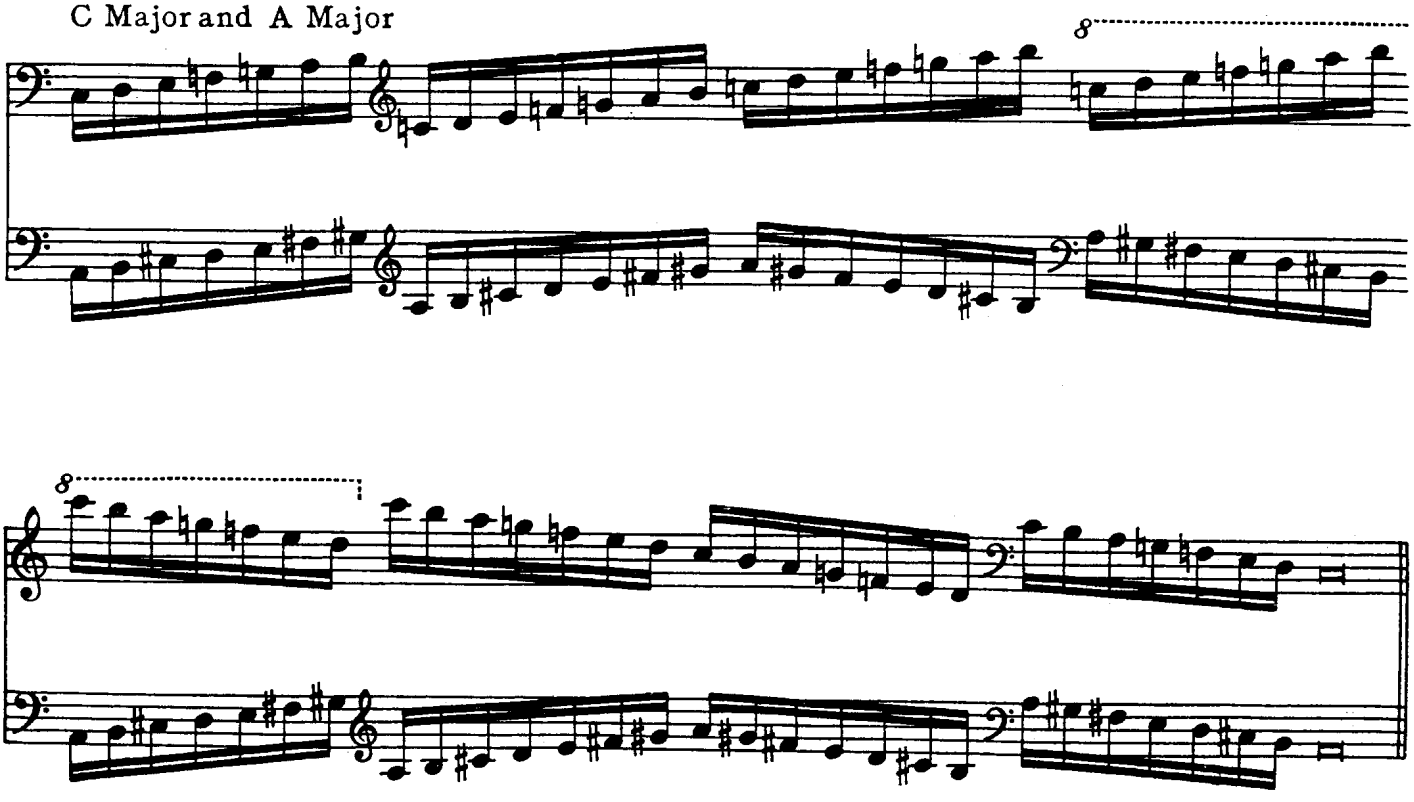
C Major and E Major



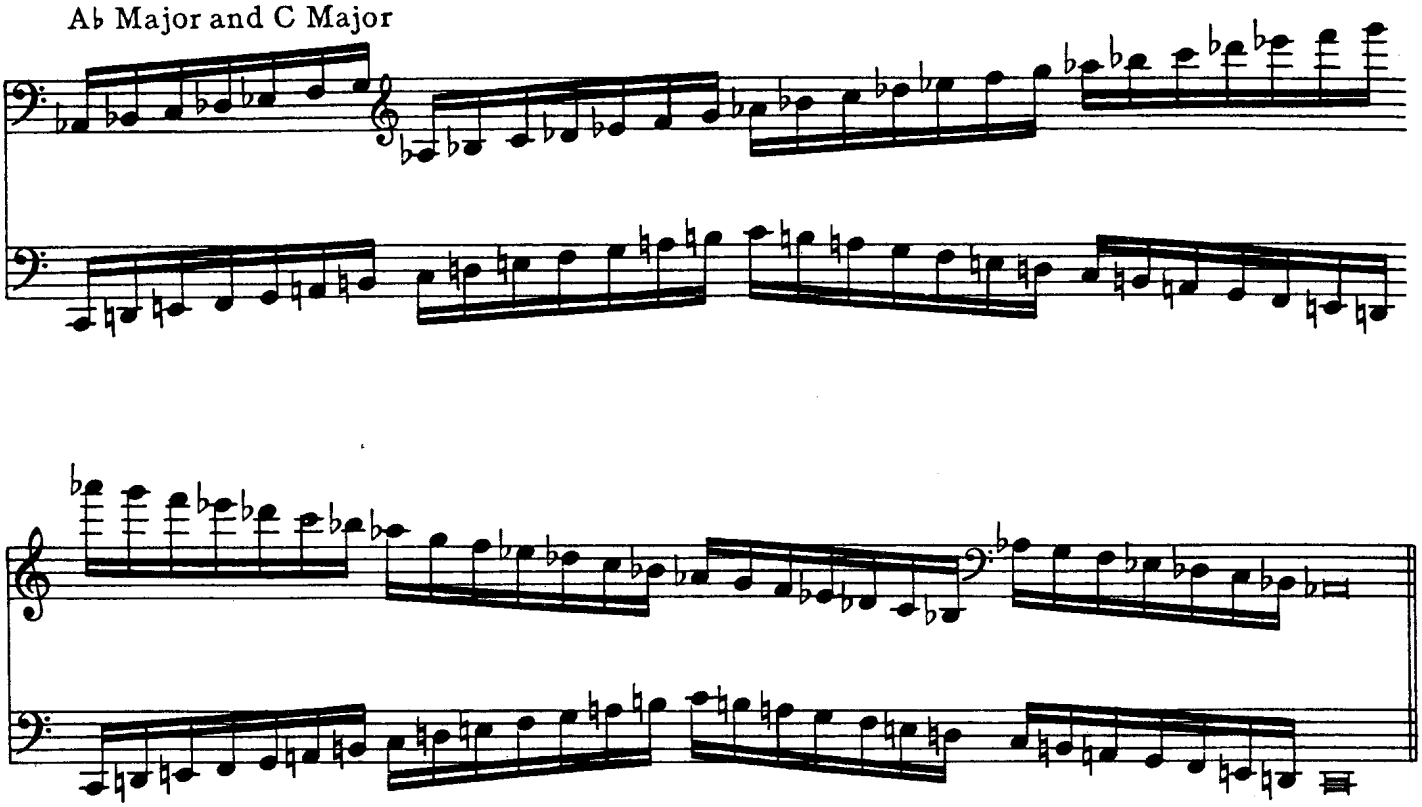
A Major and C Major



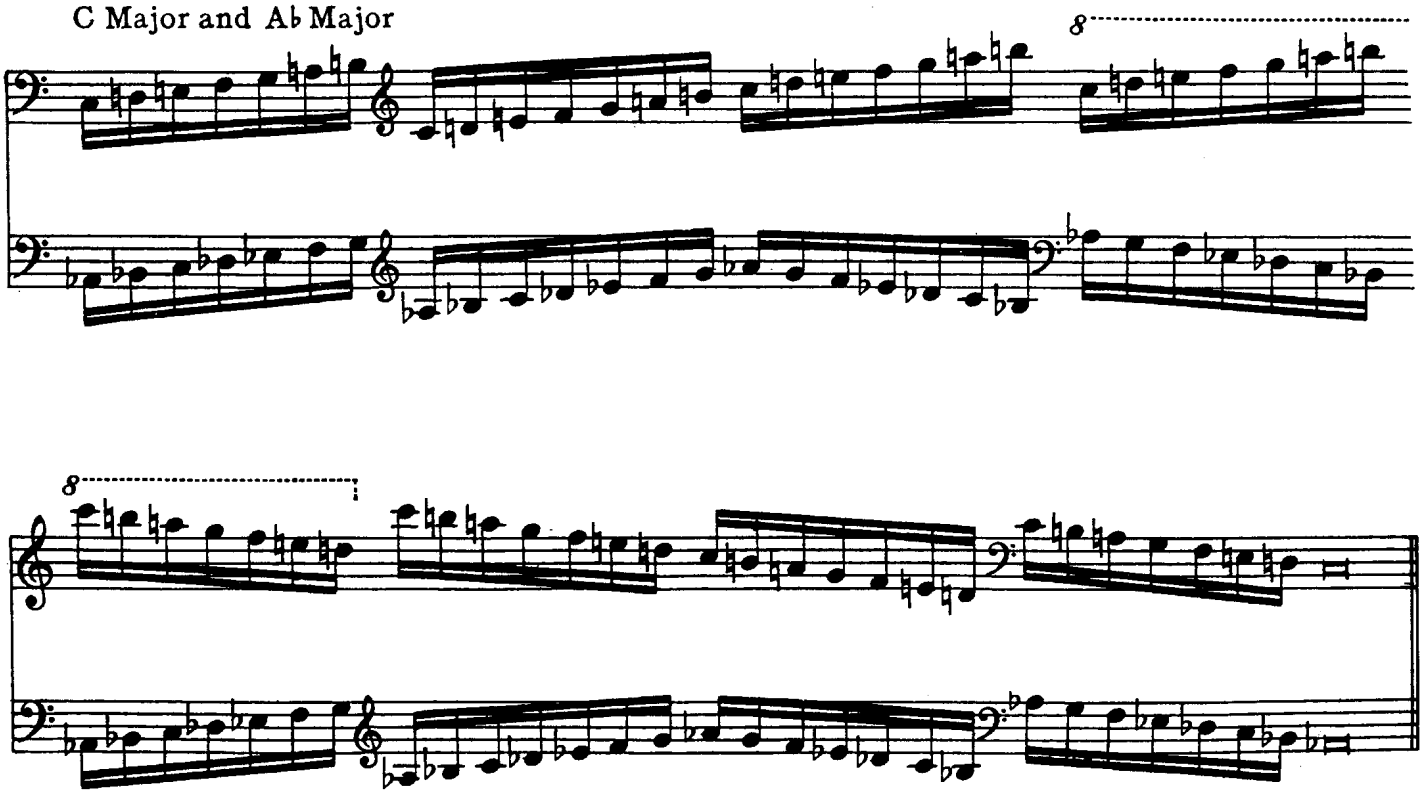
C Major and A Major



A♭ Major and C Major

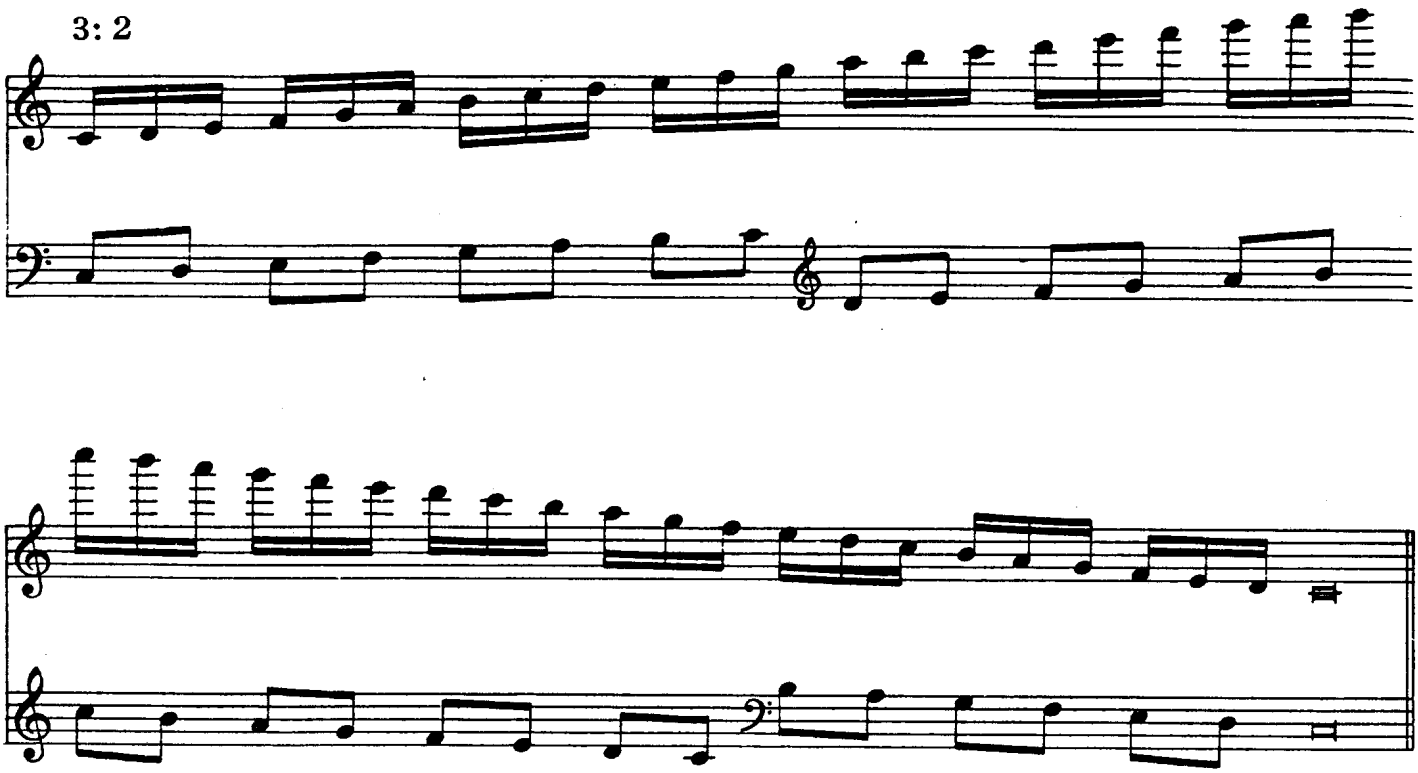


C Major and A♭ Major

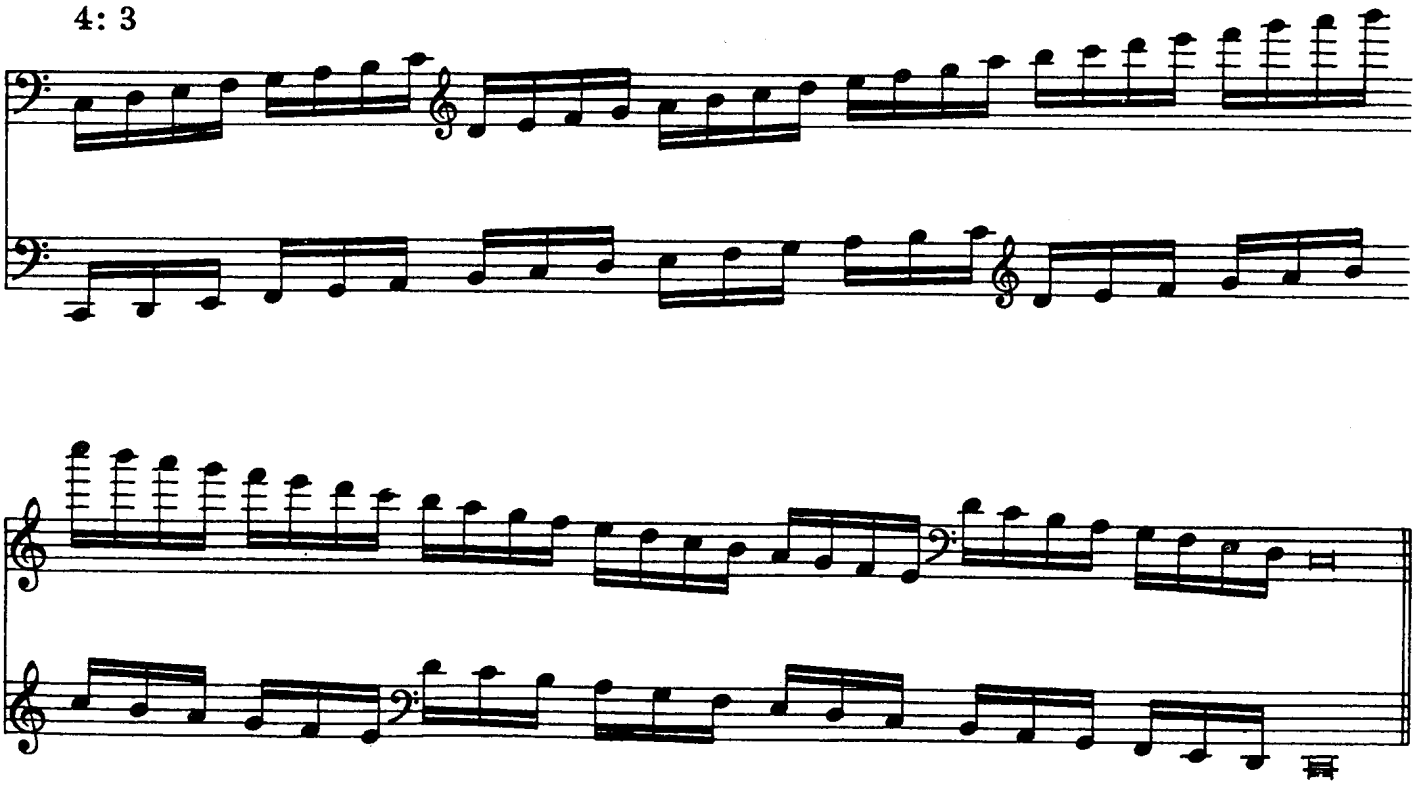


Polyrhythmic Scales

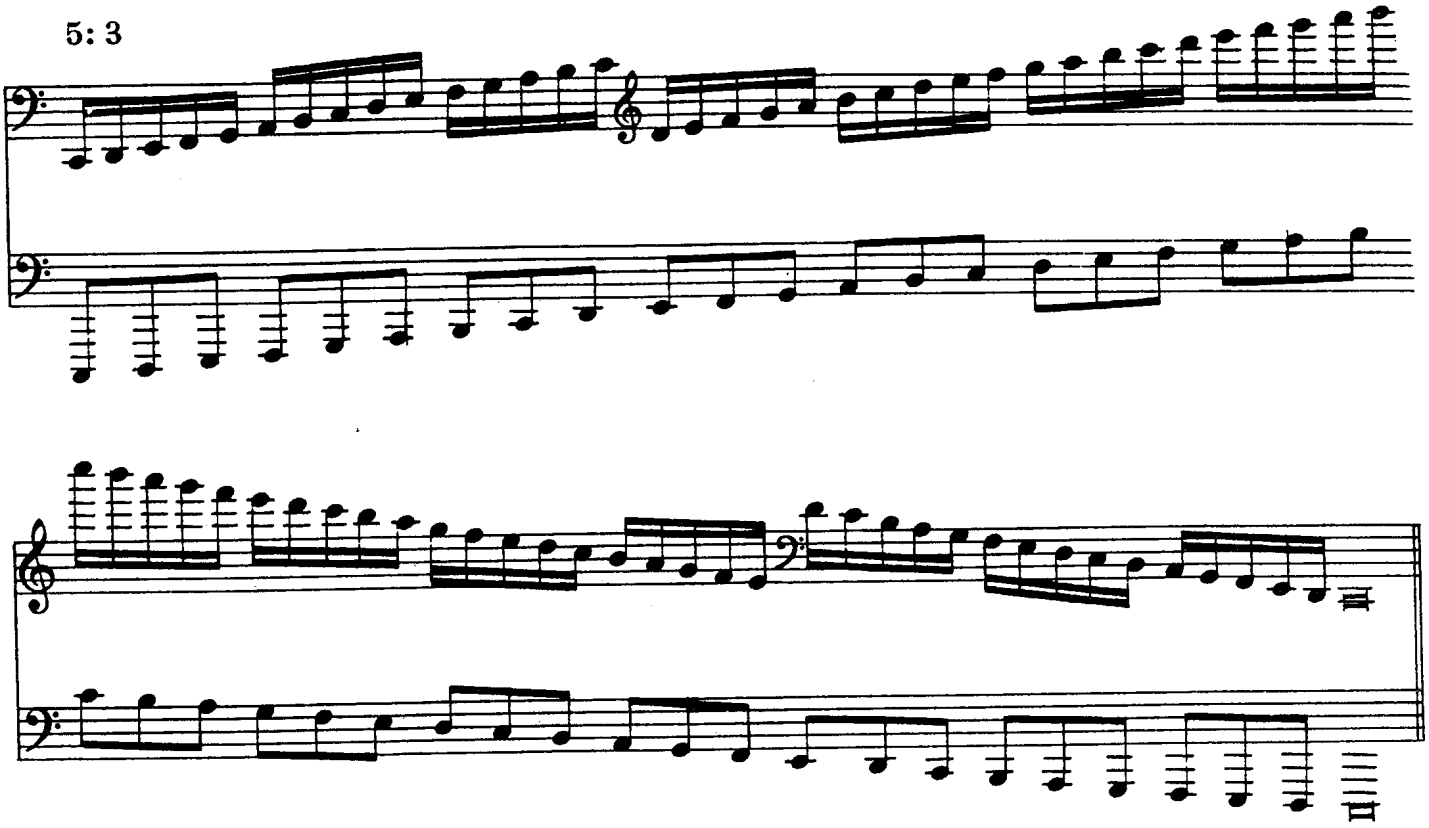
3: 2



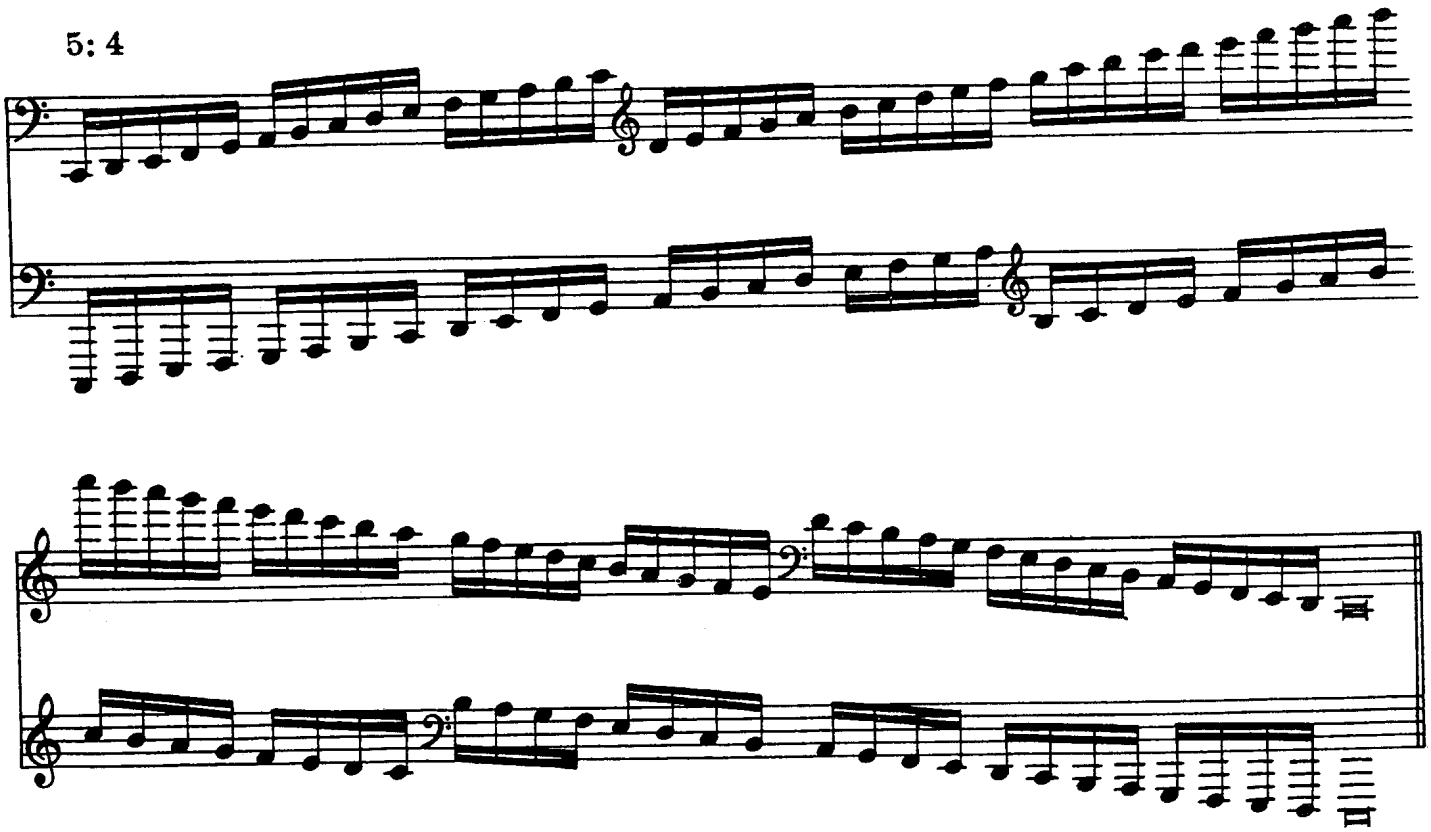
4: 3



5: 3

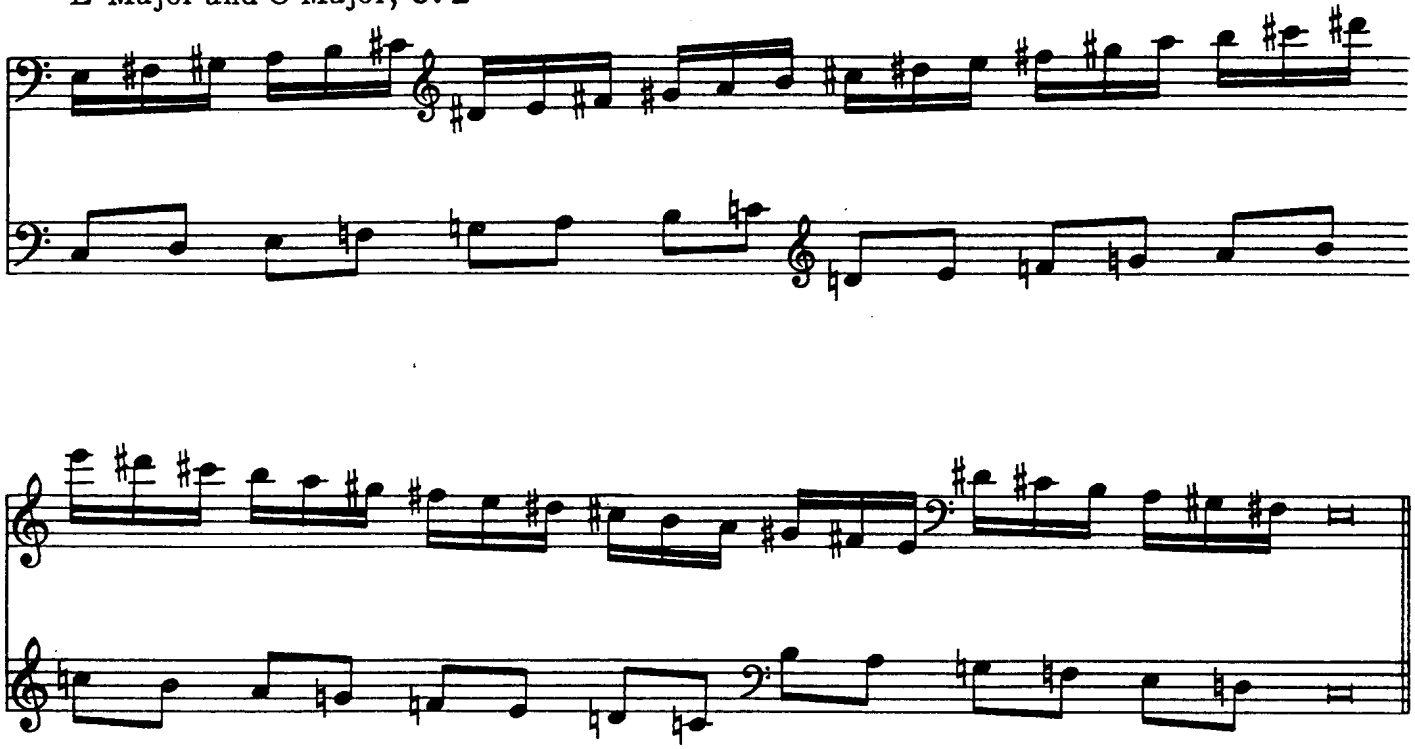


5: 4

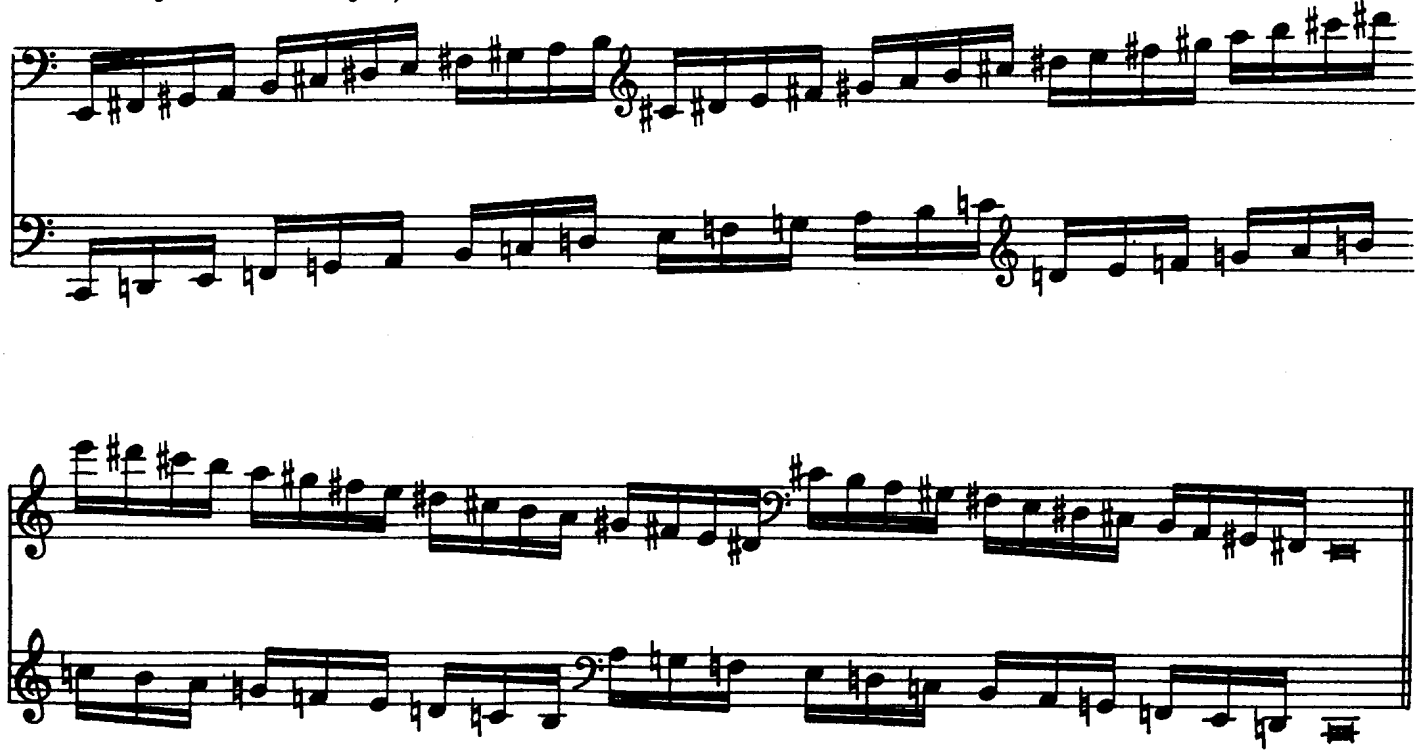


Polytonal Polyrhythmic Scales

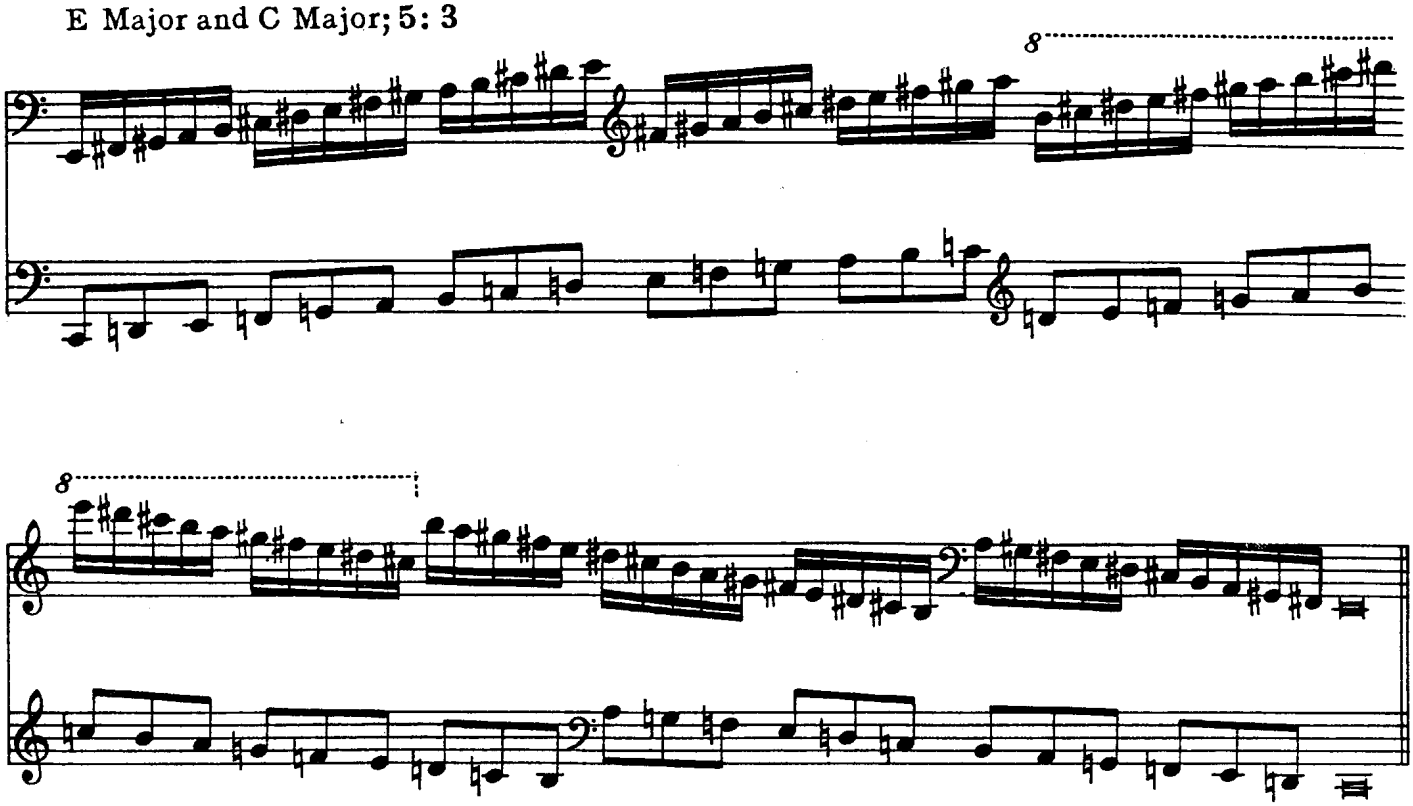
E Major and C Major; 3: 2



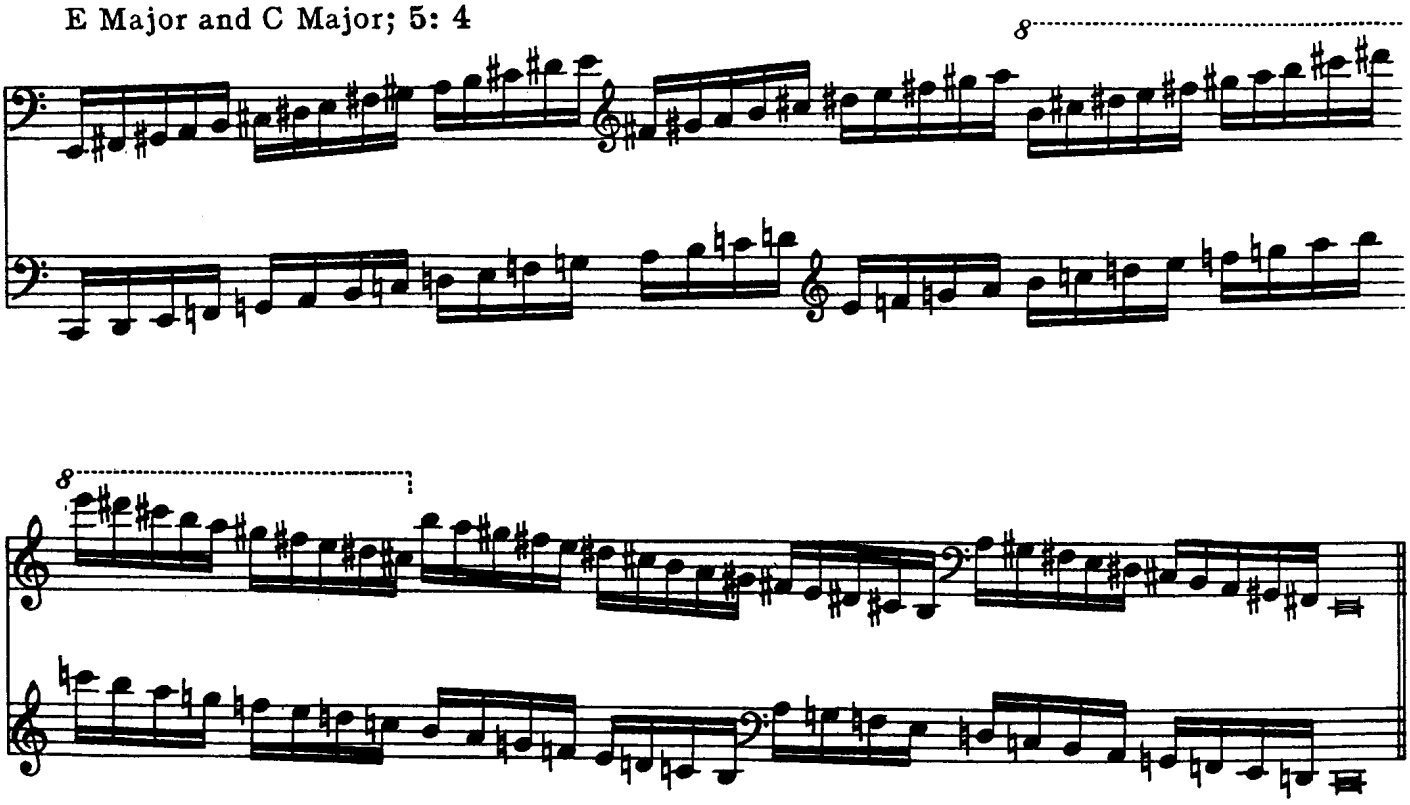
E Major and C Major; 4: 3



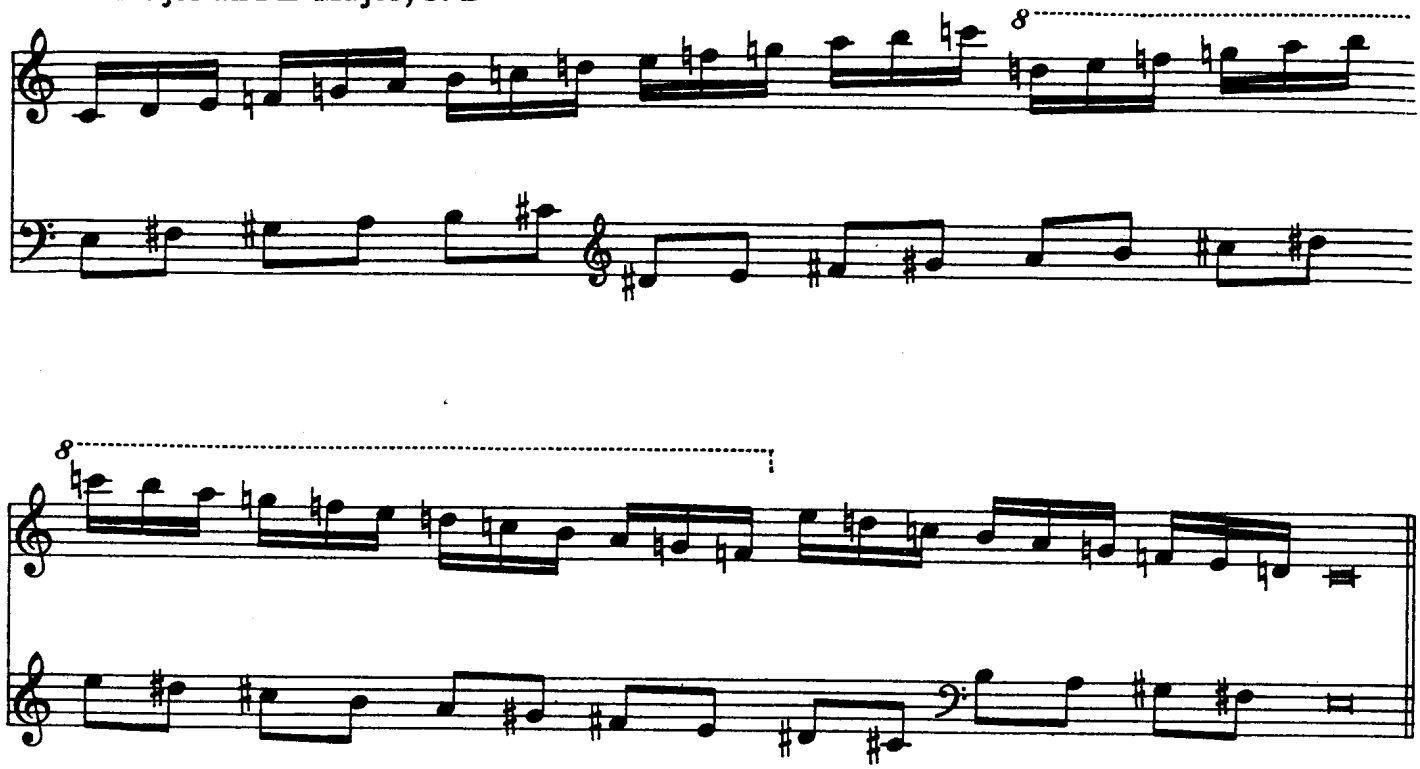
E Major and C Major; 5: 3



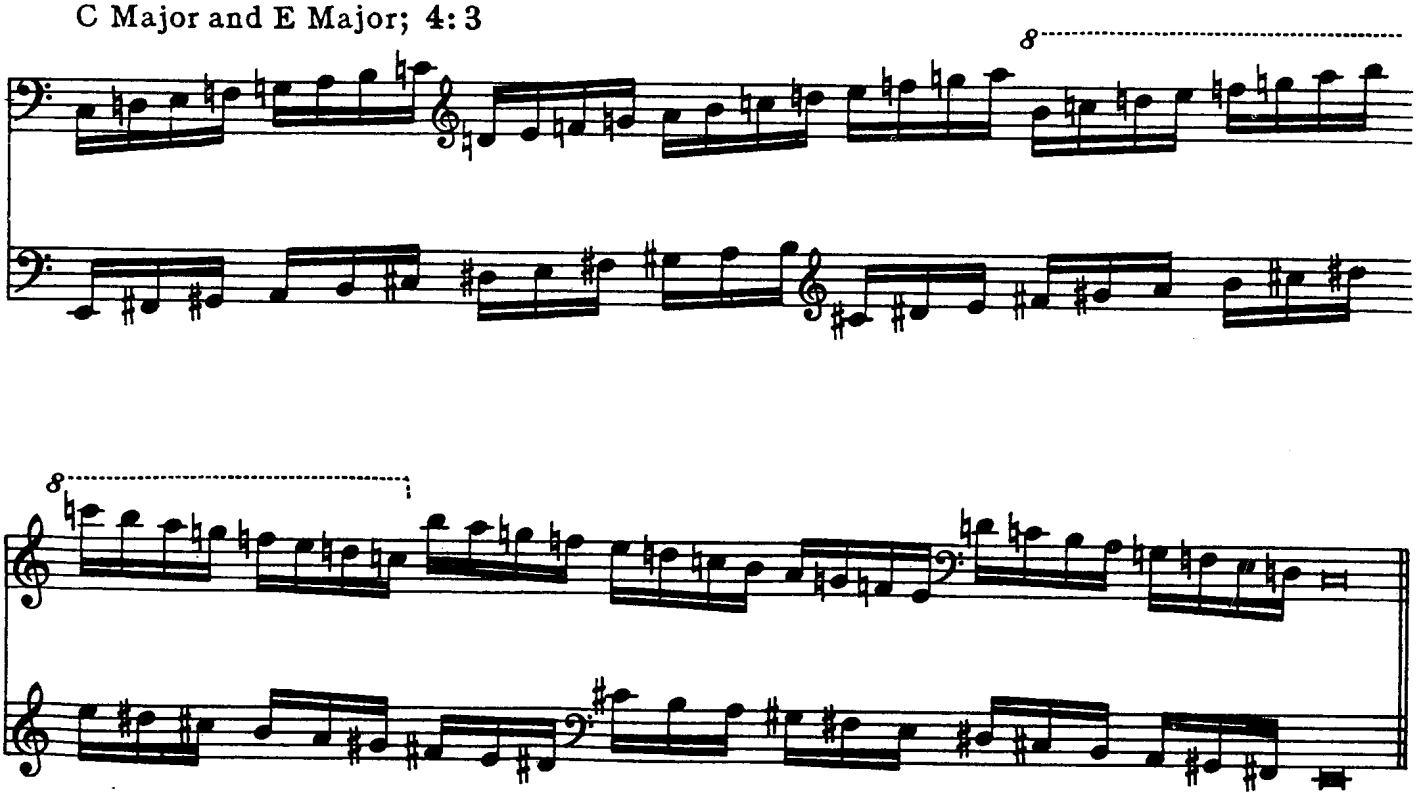
E Major and C Major; 5: 4



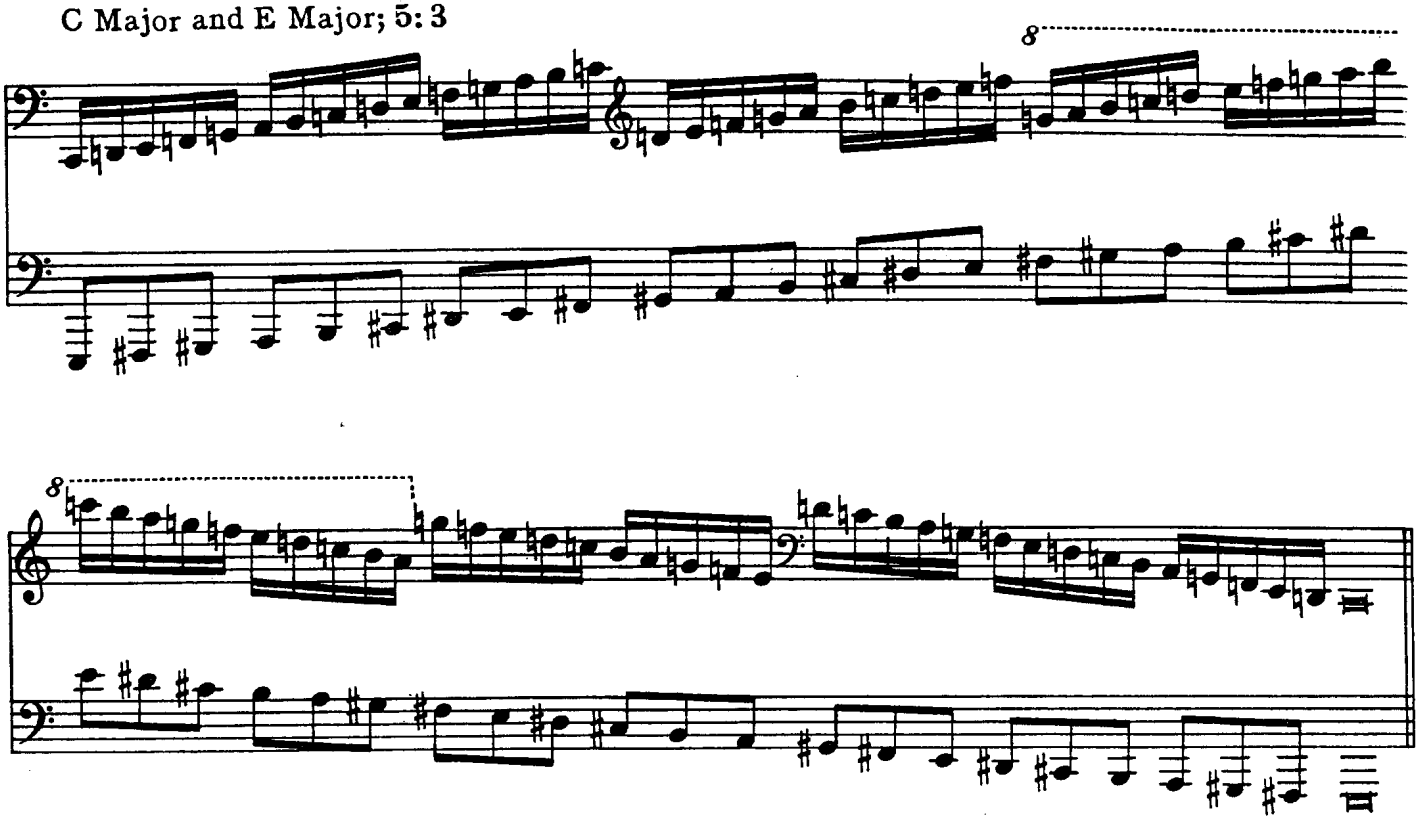
C Major and E Major; 3: 2



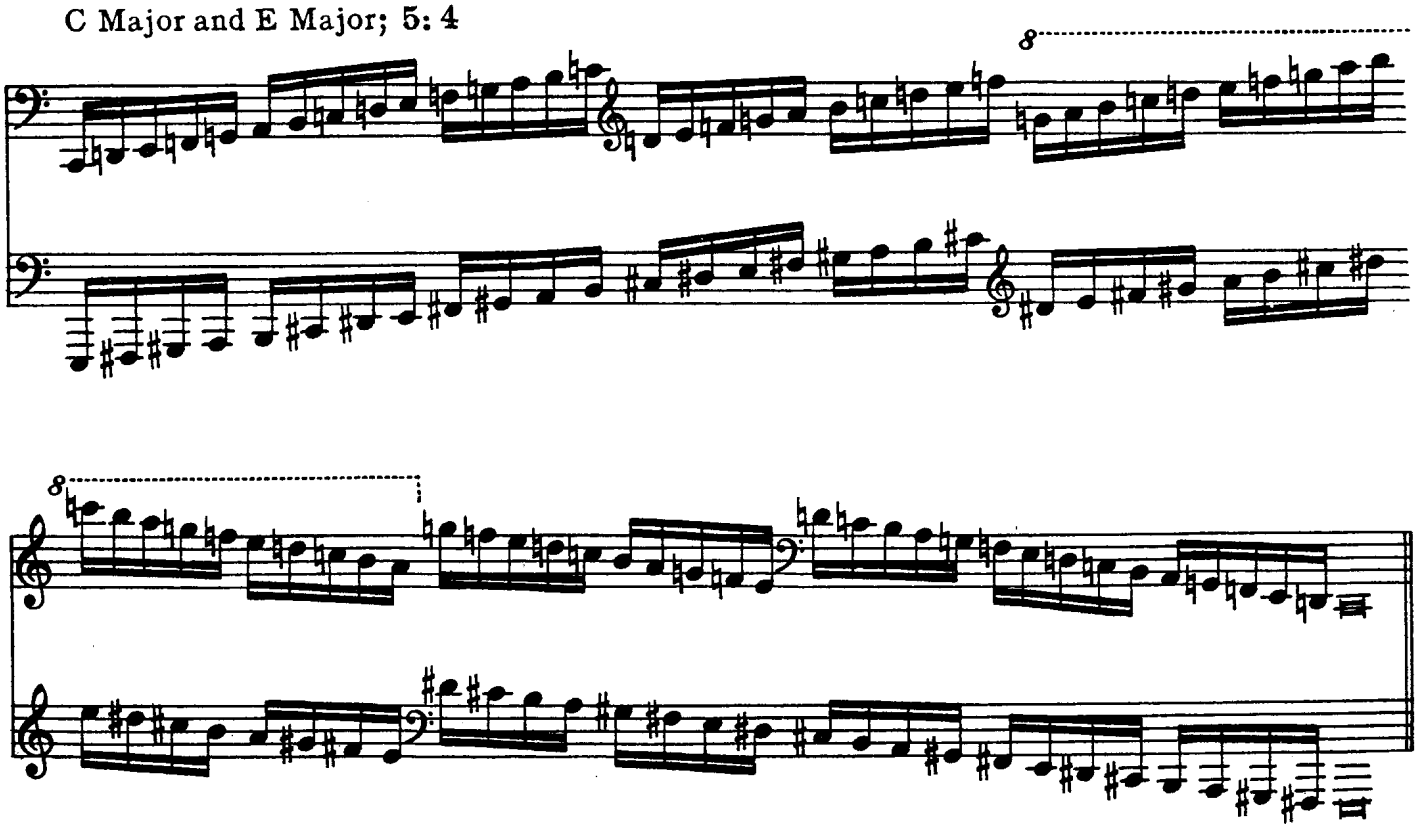
C Major and E Major; 4: 3



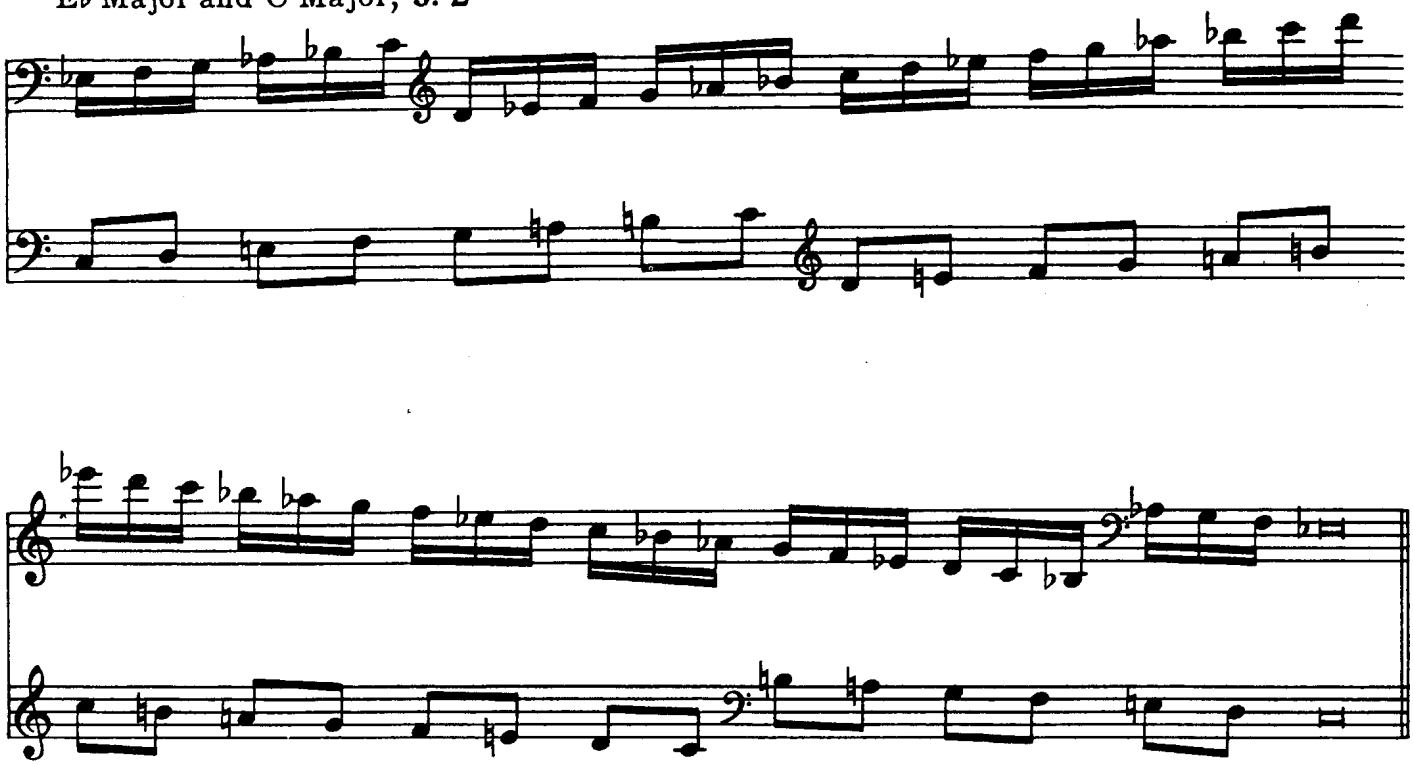
C Major and E Major; 5: 3



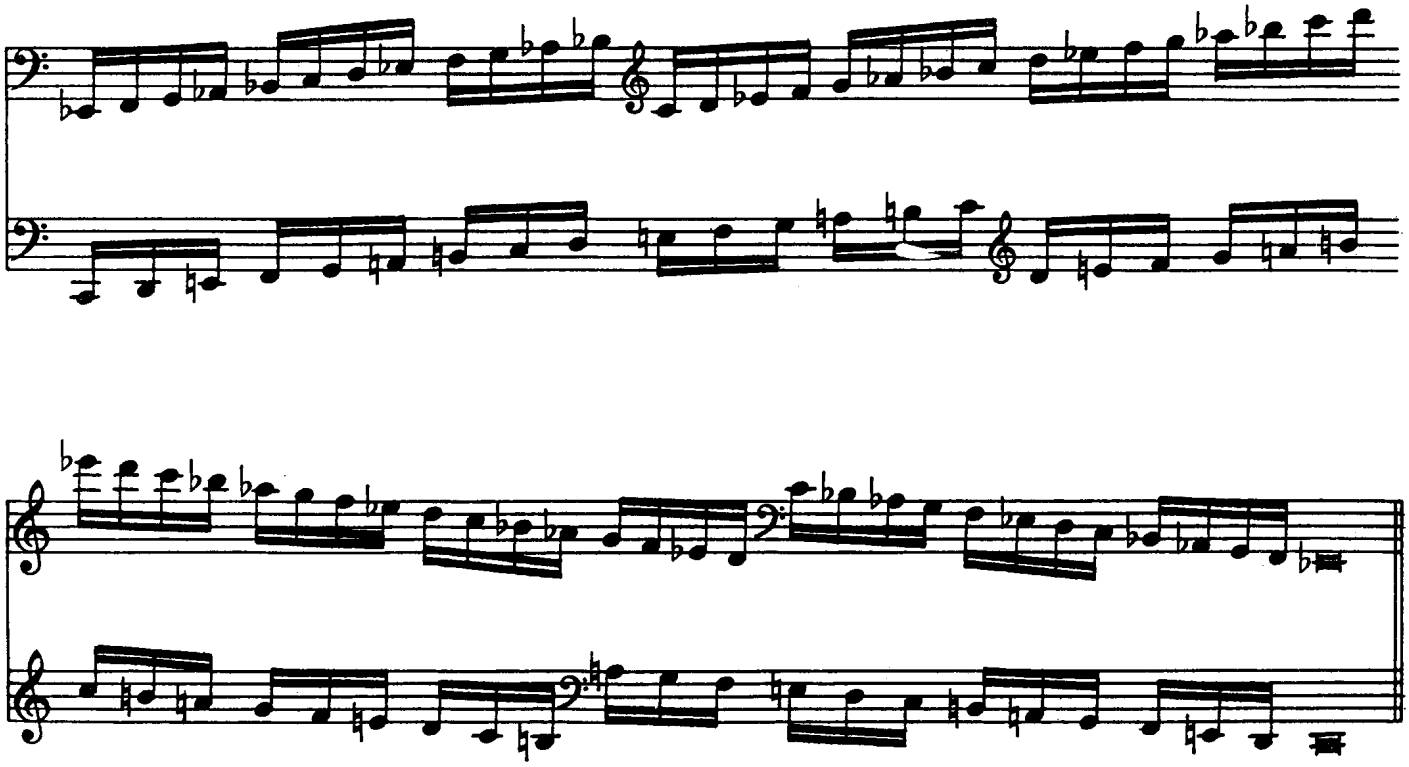
C Major and E Major; 5: 4



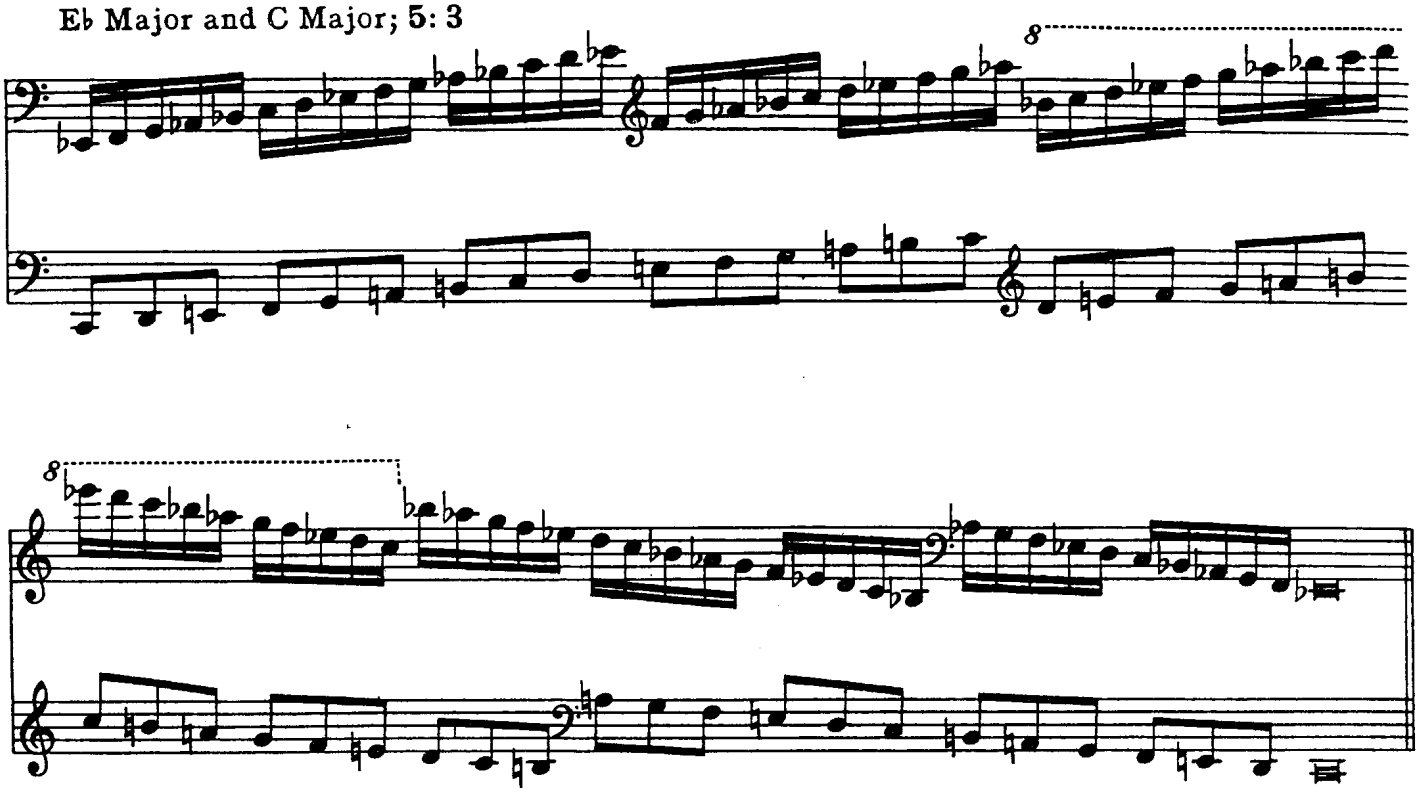
E♭ Major and C Major; 3: 2



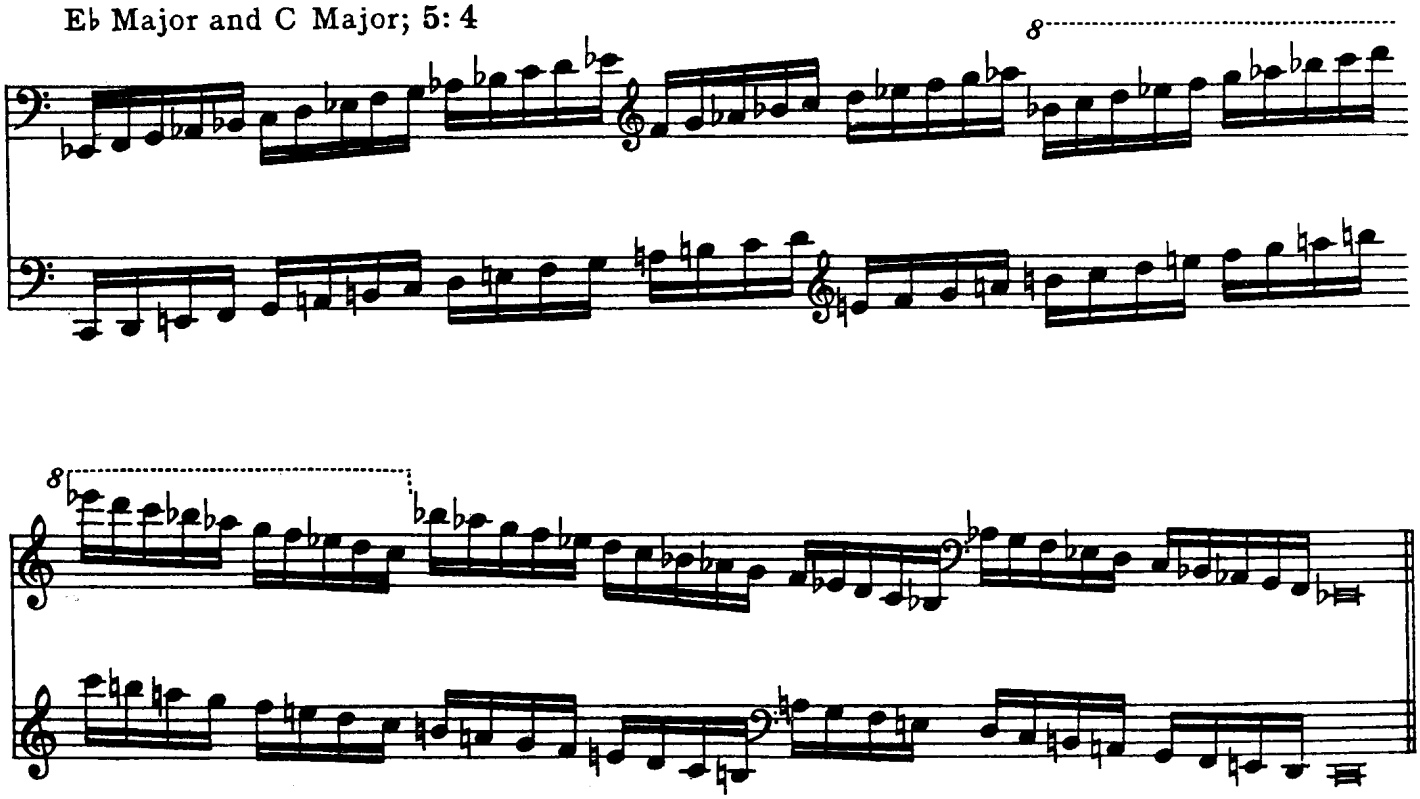
E♭ Major and C Major; 4: 3



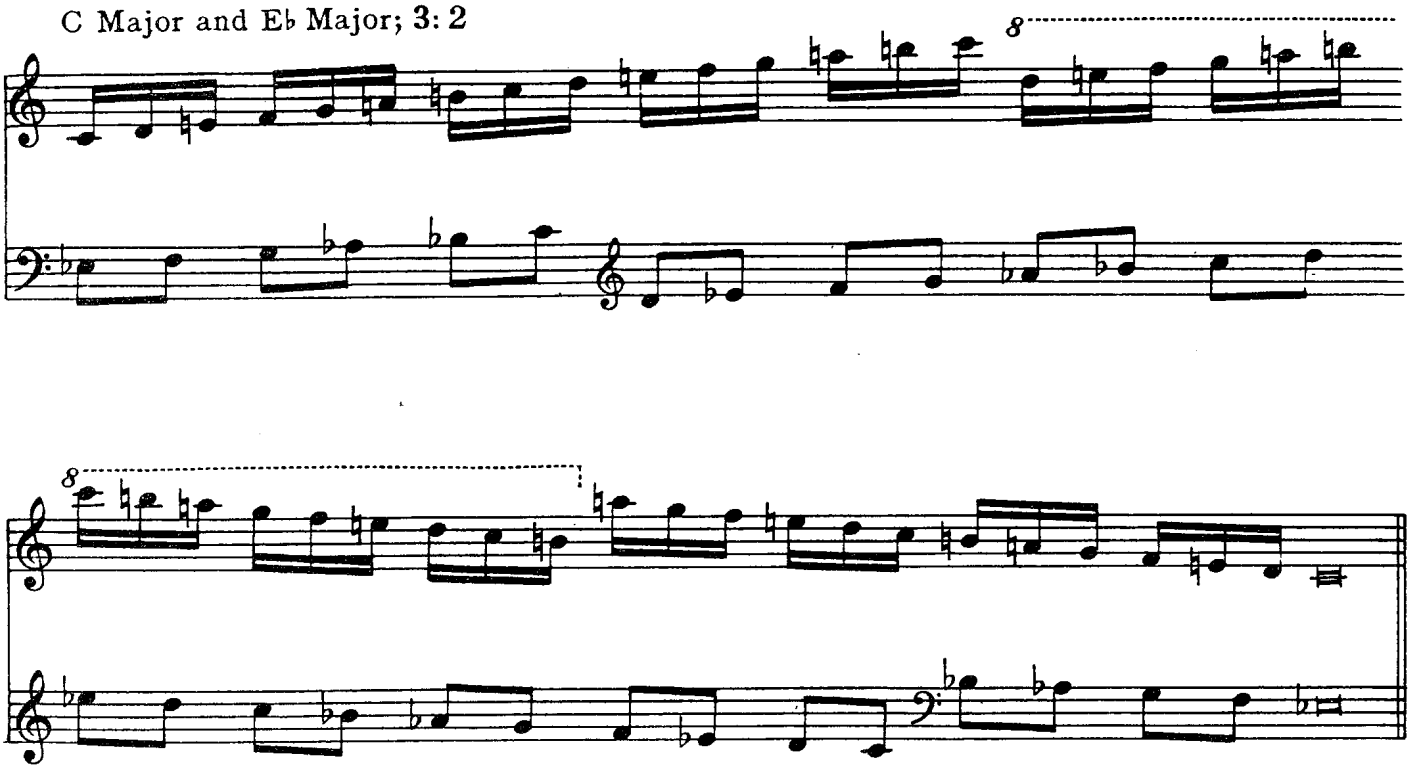
E♭ Major and C Major; 5: 3



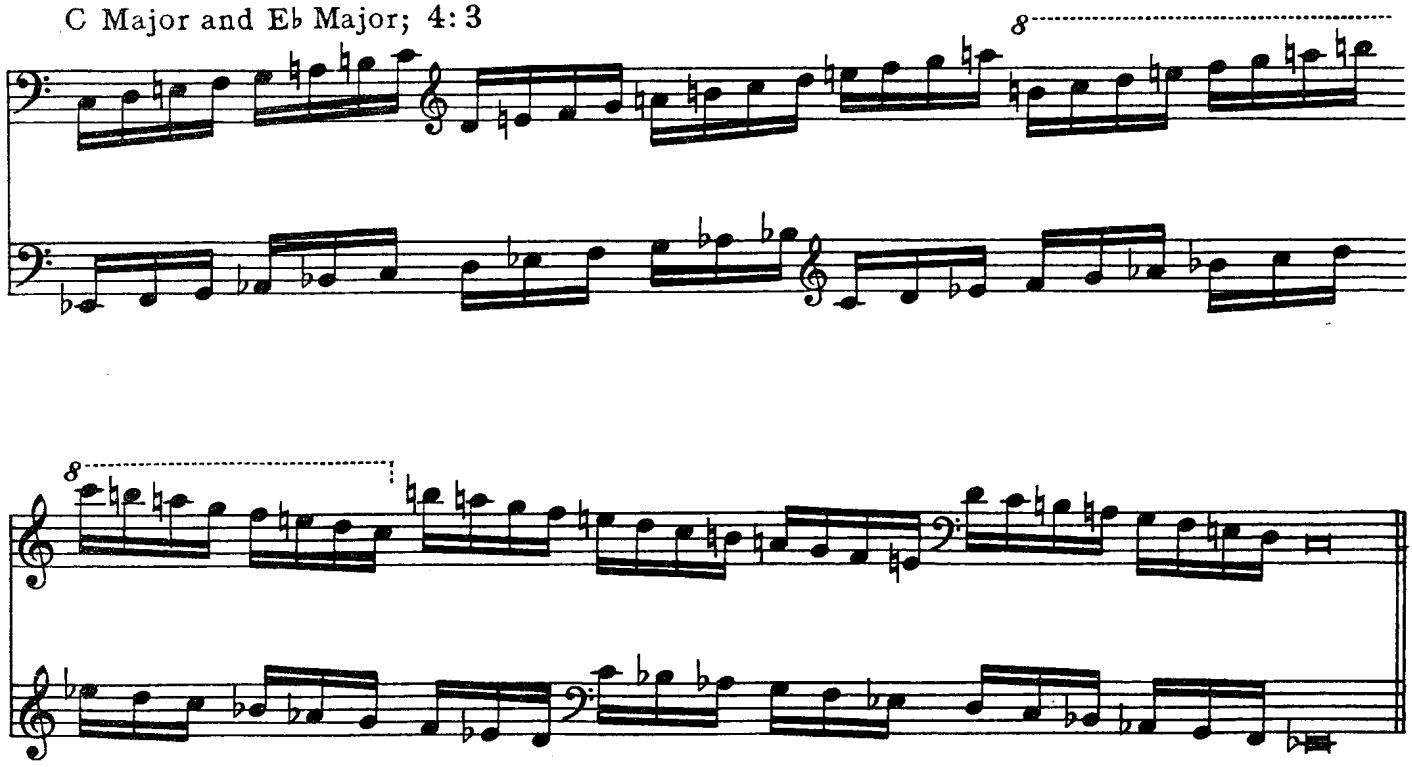
E♭ Major and C Major; 5: 4



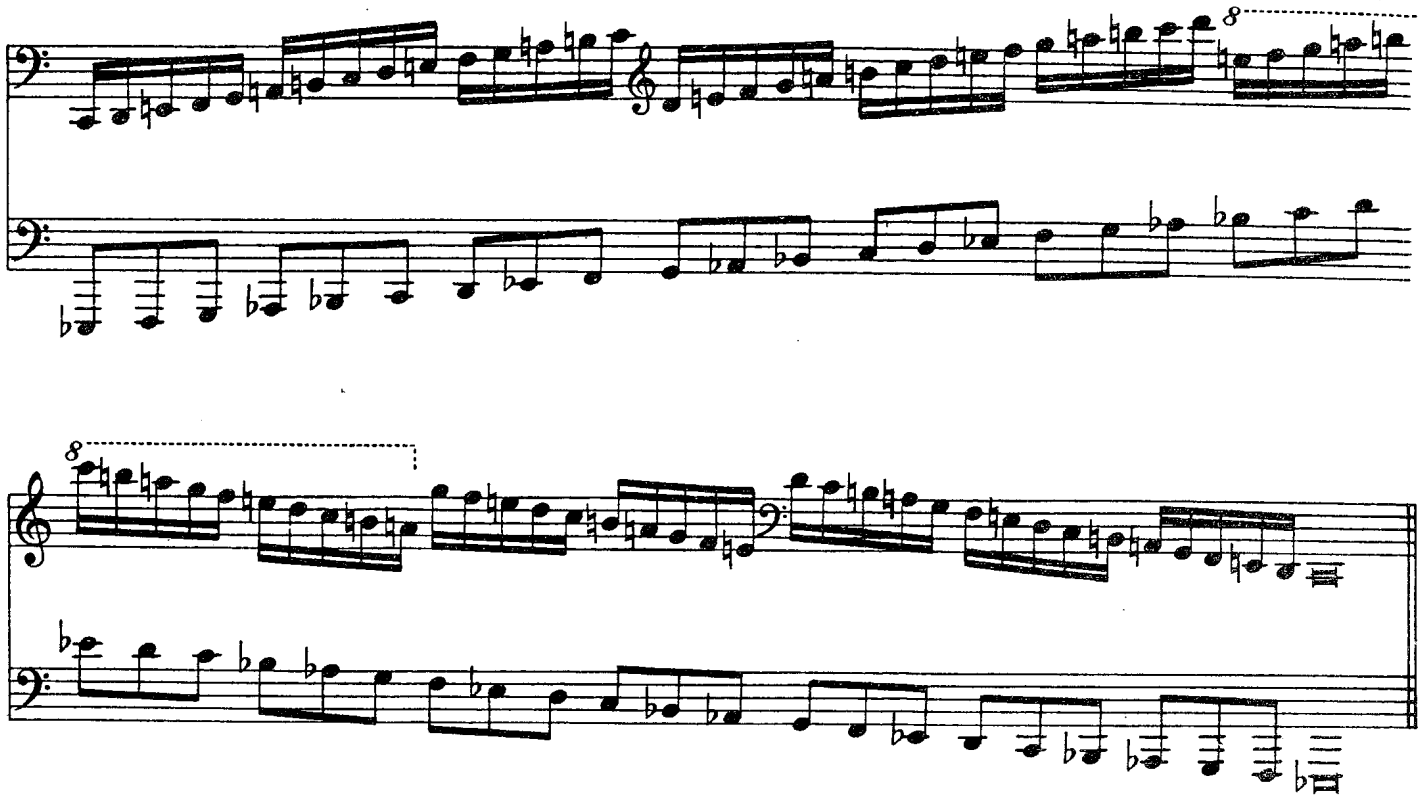
C Major and E♭ Major; 3: 2



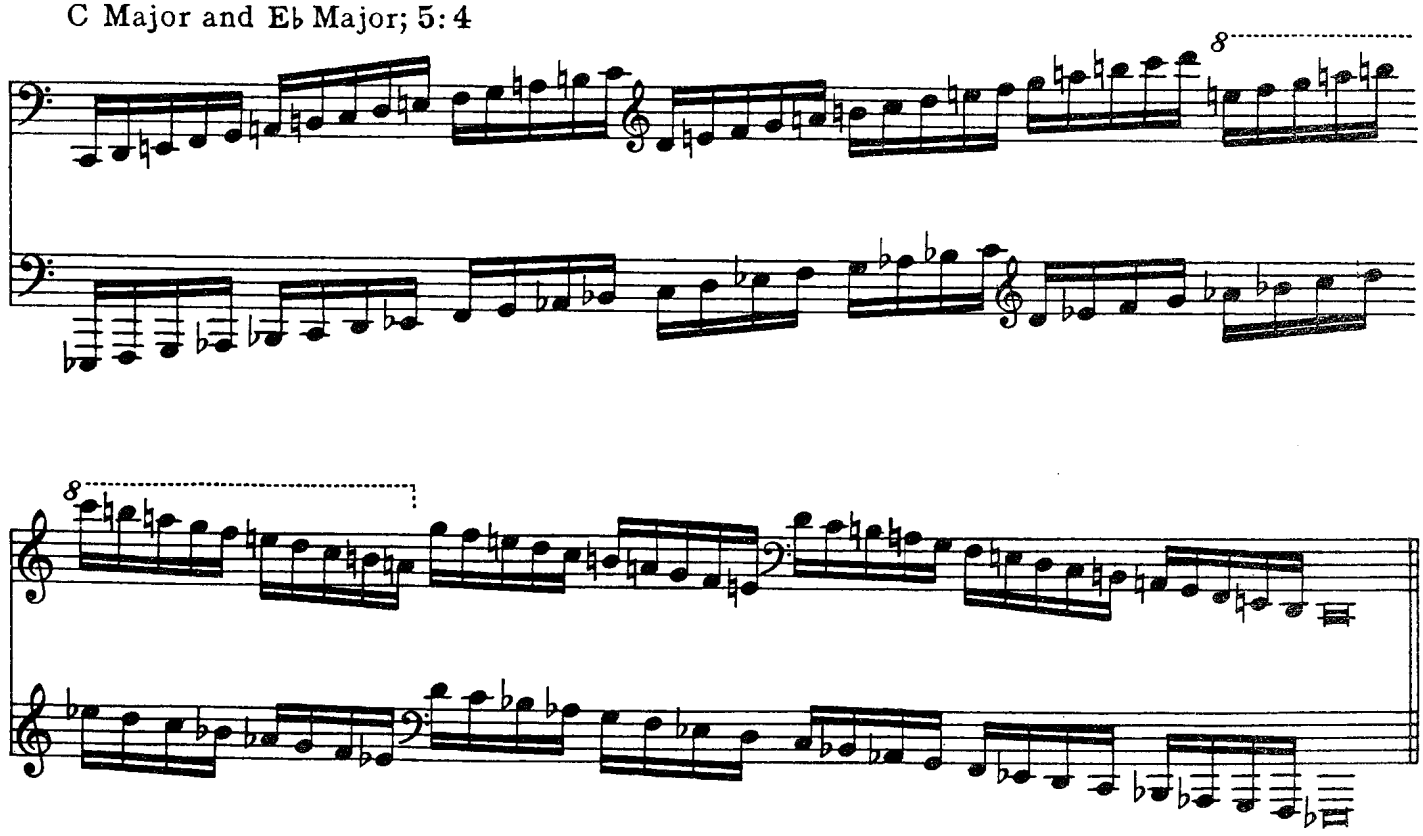
C Major and E♭ Major; 4: 3



C Major and E♭ Major; 5: 3



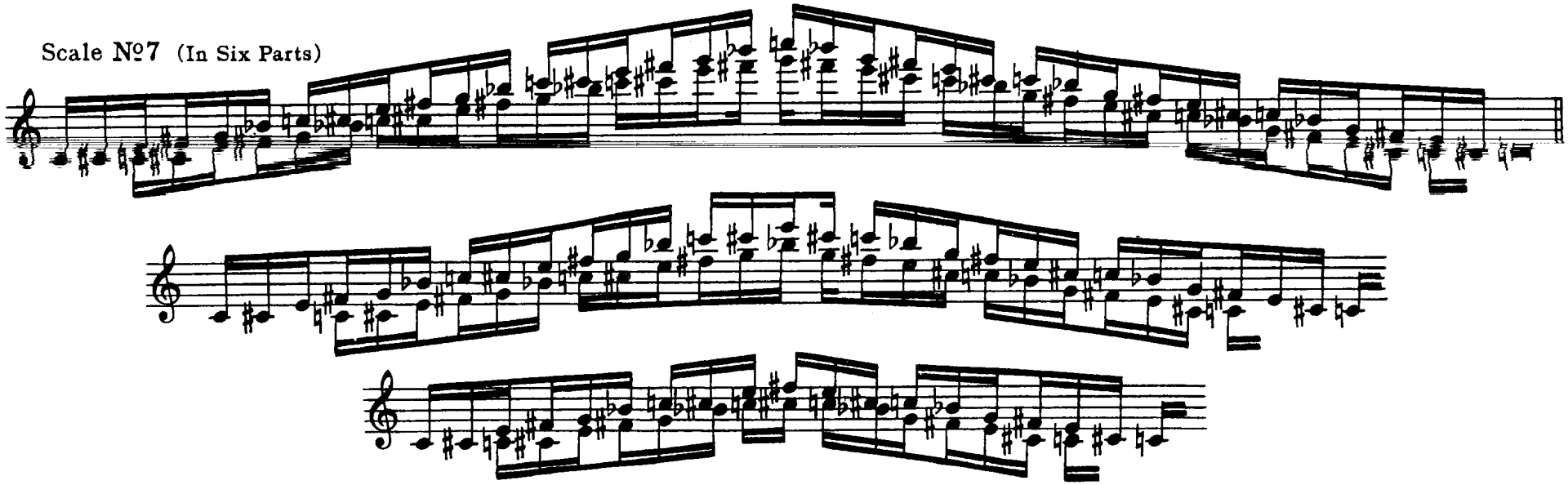
C Major and E♭ Major; 5: 4



Palindromic Canons

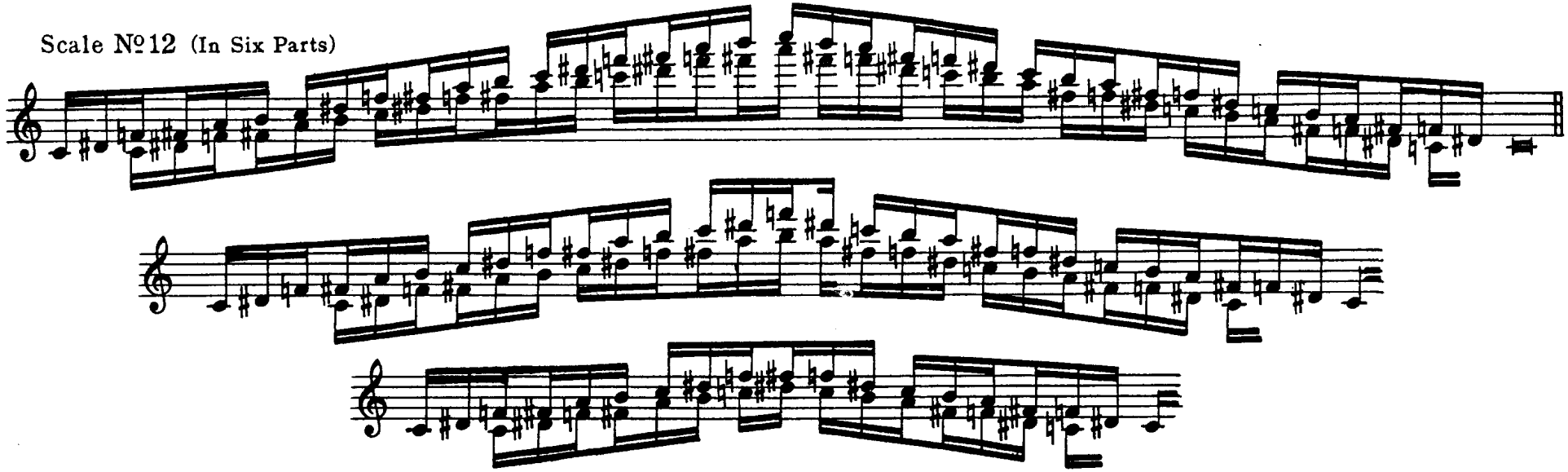
Bitonal Palindromic Canon: C Major and F♯ Major

Scale №7 (In Six Parts)



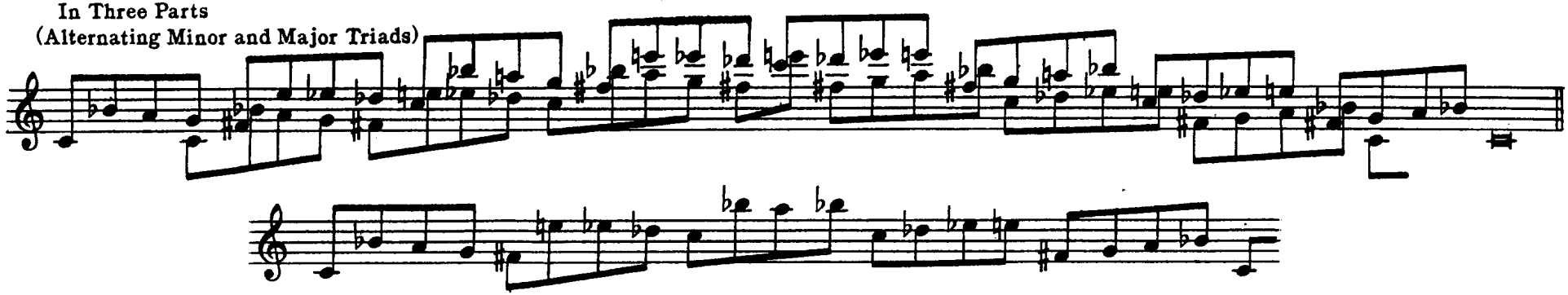
Bitonal Palindromic Canon: F Major and B Major

Scale №12 (In Six Parts)

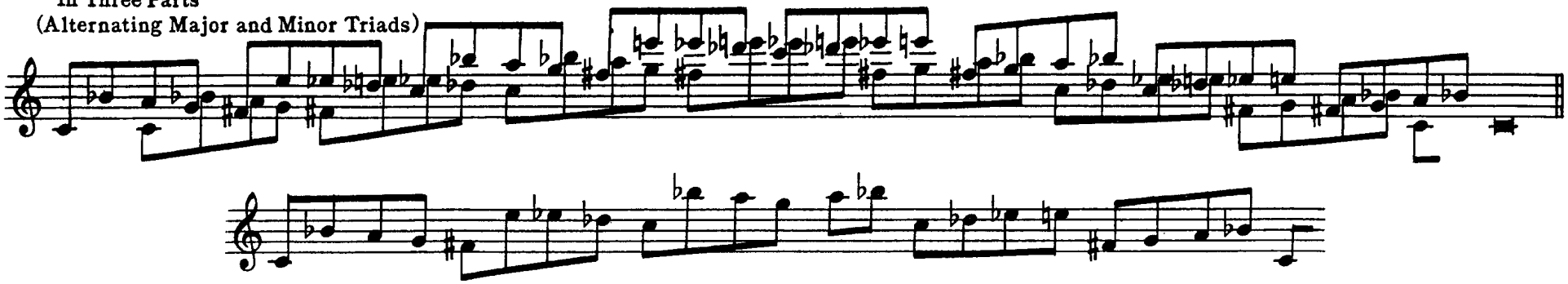


Two Palindromic Canons on Pattern 72

In Three Parts
(Alternating Minor and Major Triads)

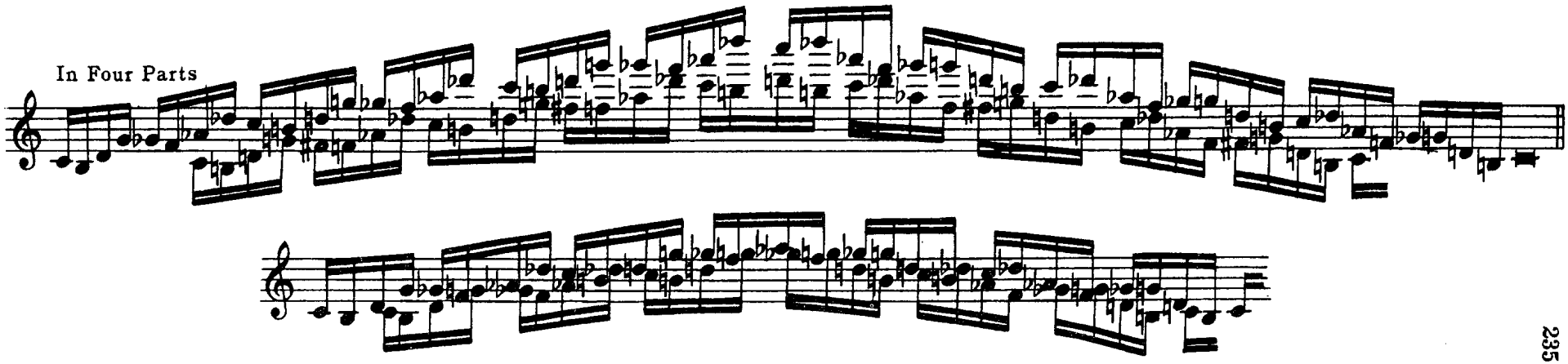


In Three Parts
(Alternating Major and Minor Triads)



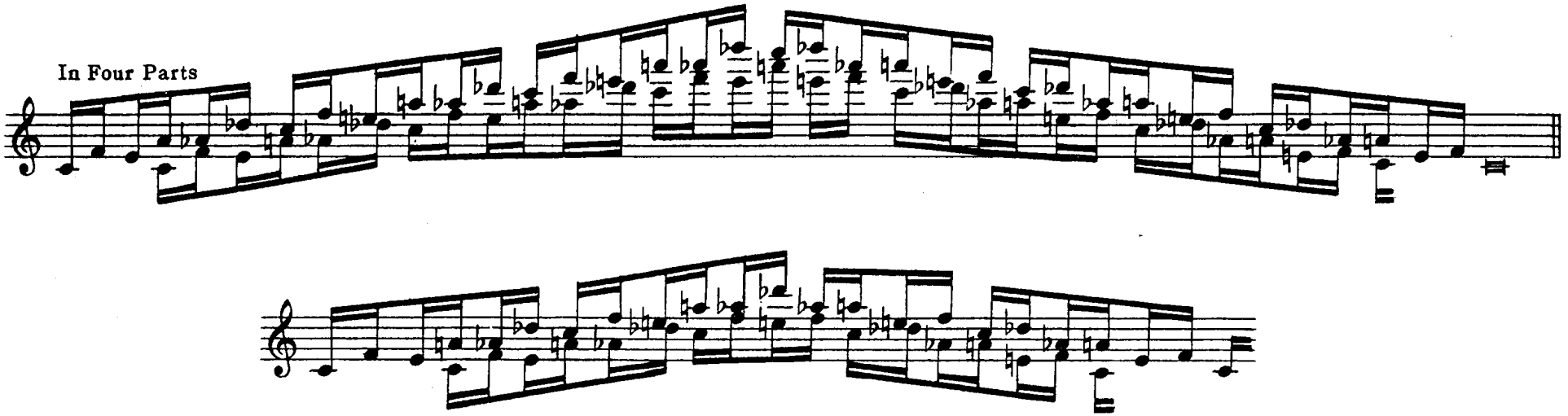
Palindromic Canon on Pattern 141

In Four Parts



Palindromic Canon on Pattern 186

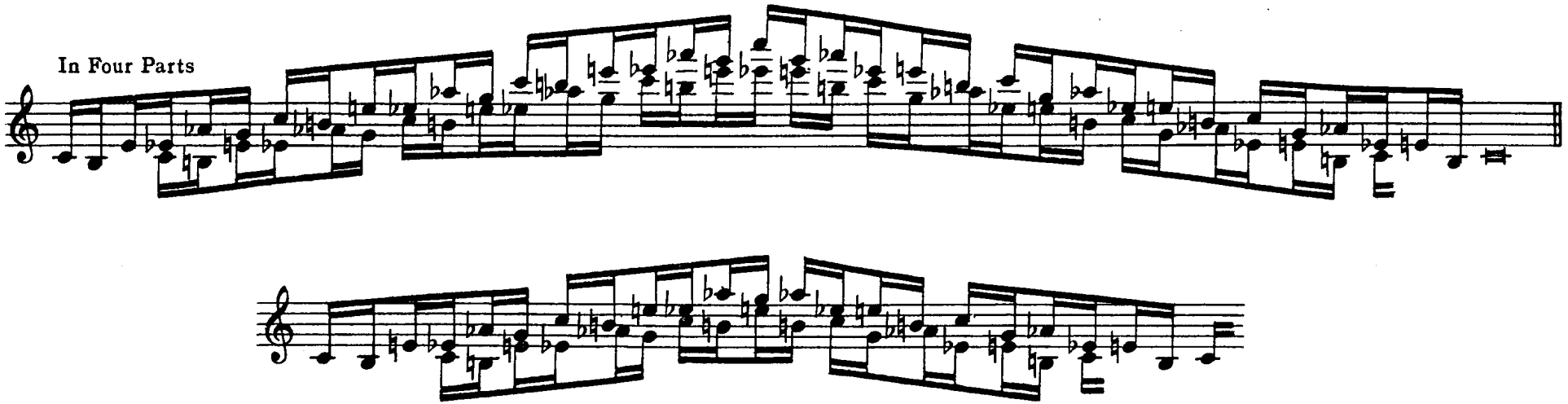
In Four Parts



Palindromic Canon on Pattern 231

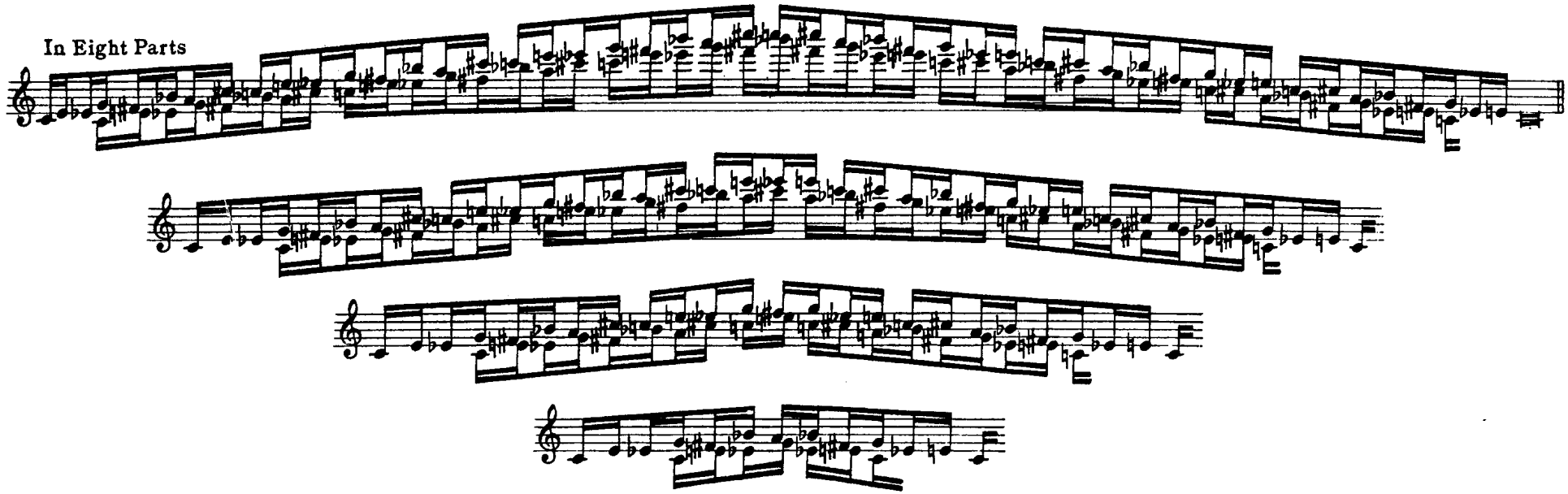
(Theme from Schoenberg: *Ode to Napoleon*)

In Four Parts



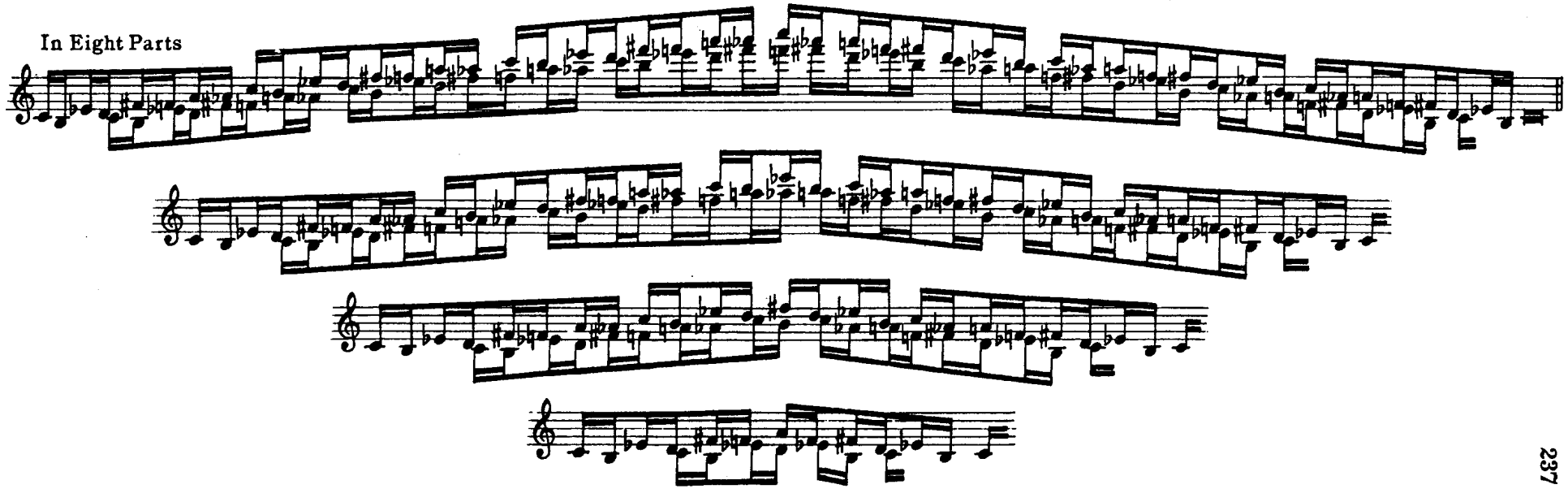
Palindromic Canon on Pattern 394

In Eight Parts

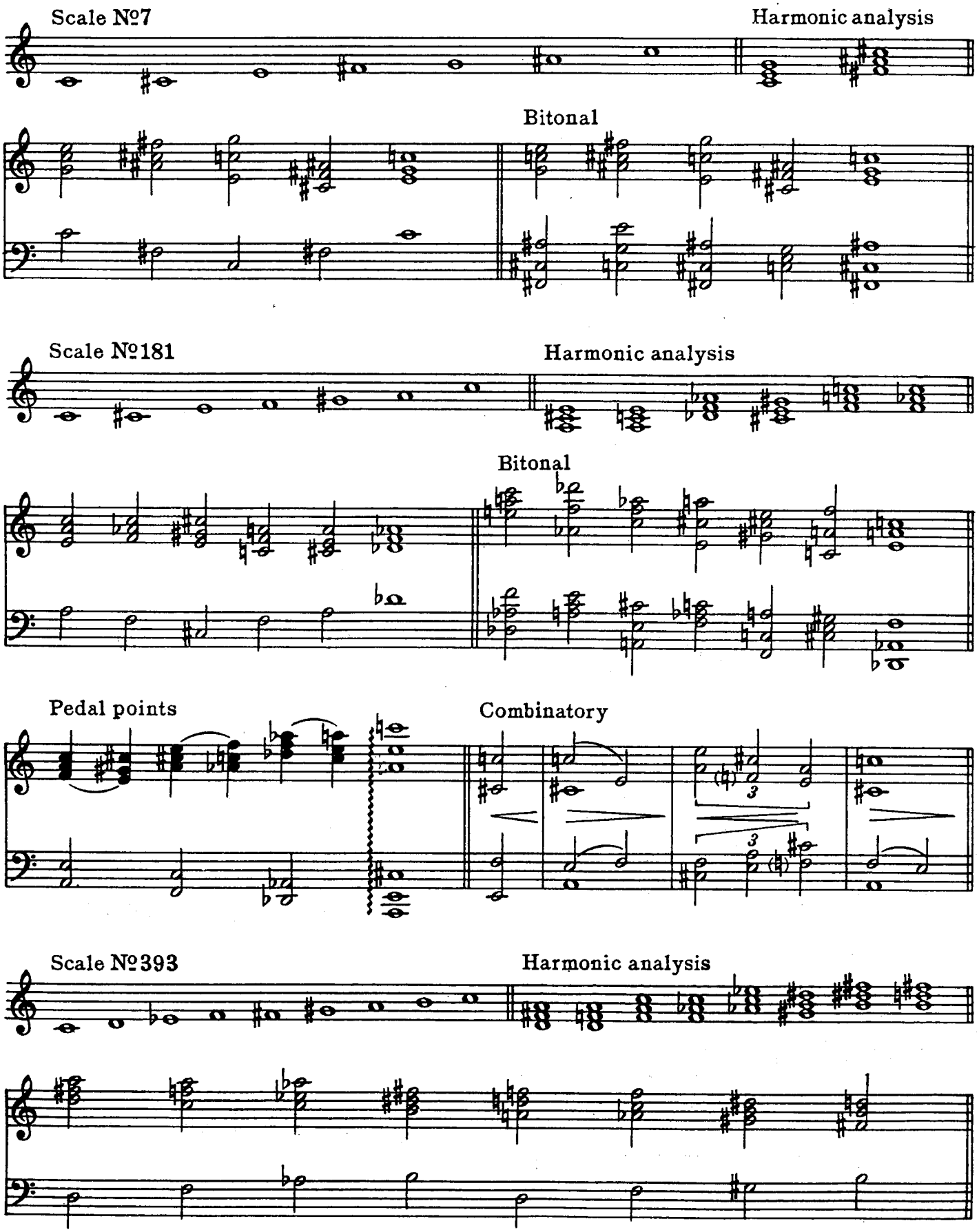


Palindromic Canon on Pattern 447

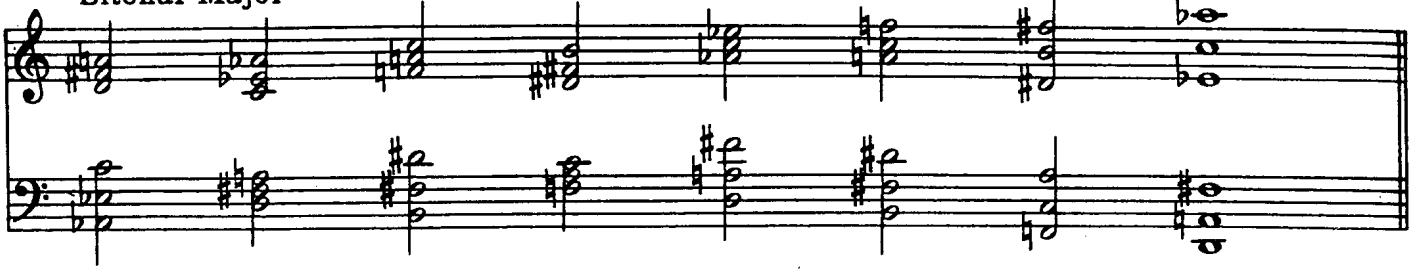
In Eight Parts



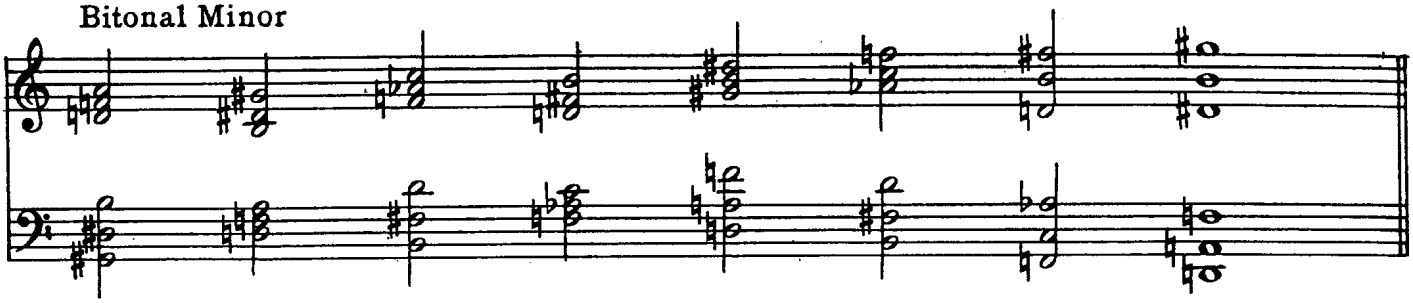
Autochordal Harmonization



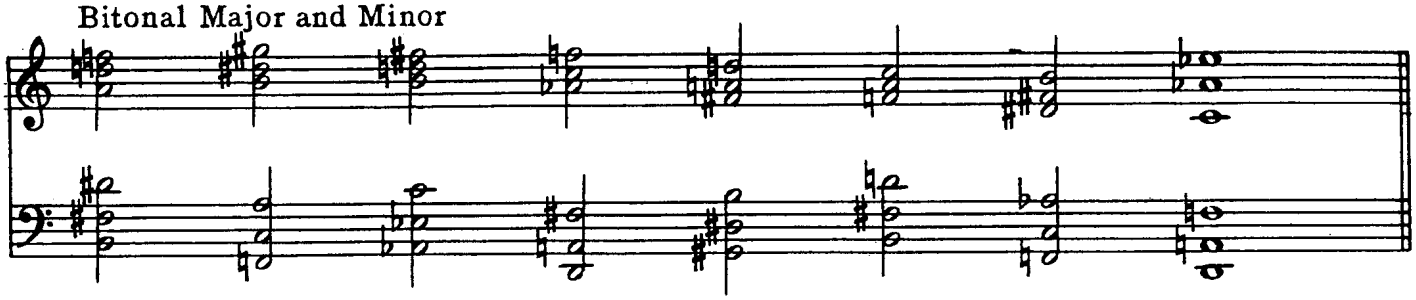
Bitonal Major



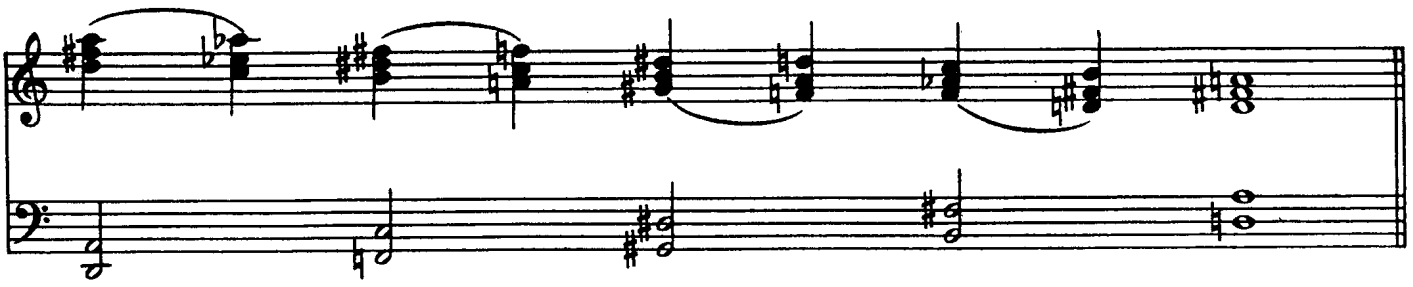
Bitonal Minor



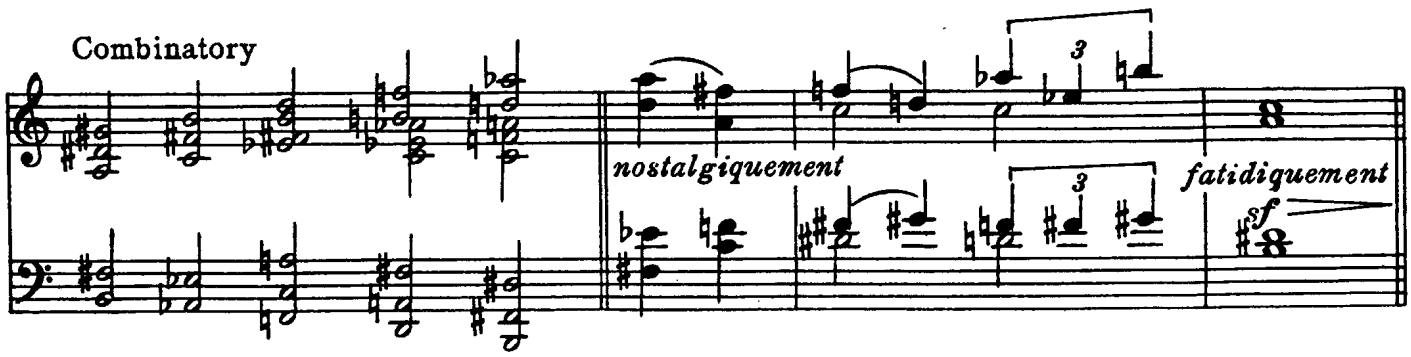
Bitonal Major and Minor



Pedal Points



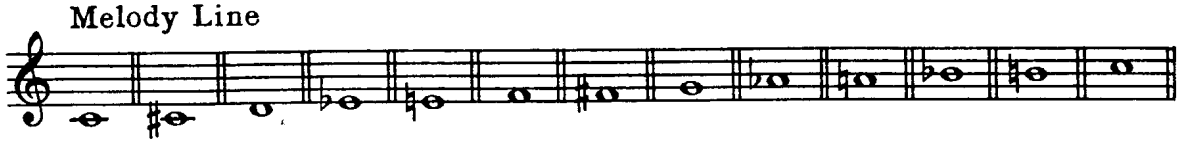
Combinatory



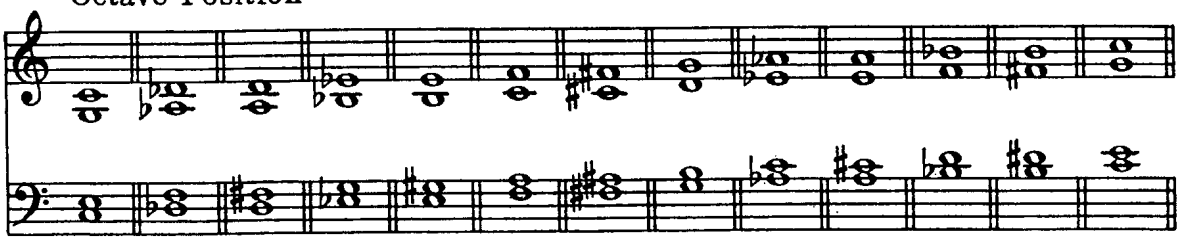
Harmonization in Major Triads

by Alternation of Octave, Tertian
and Quintan Positions

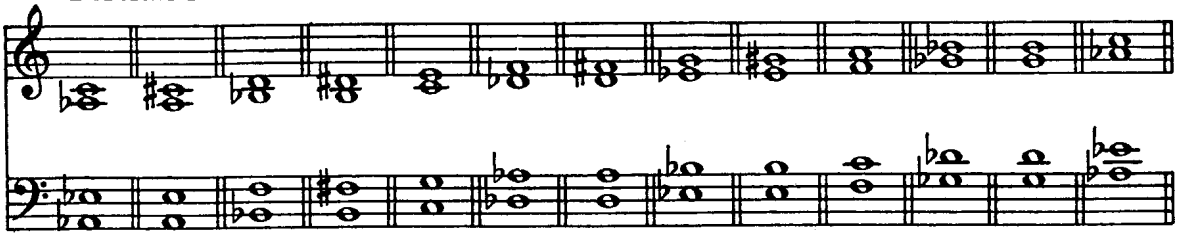
Melody Line



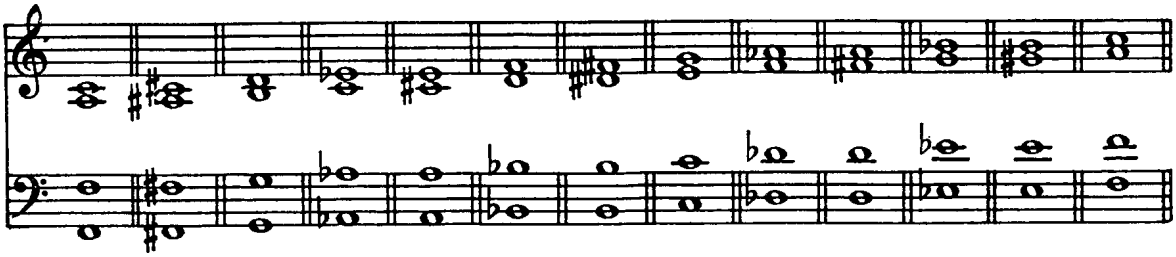
Octave Position



Tertian Position

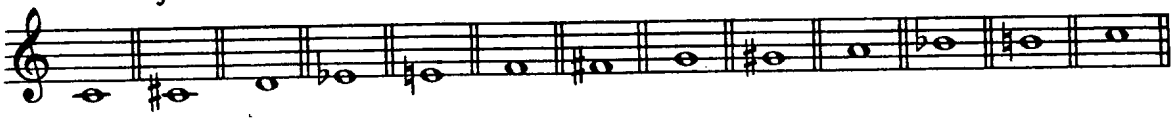


Quintan Position

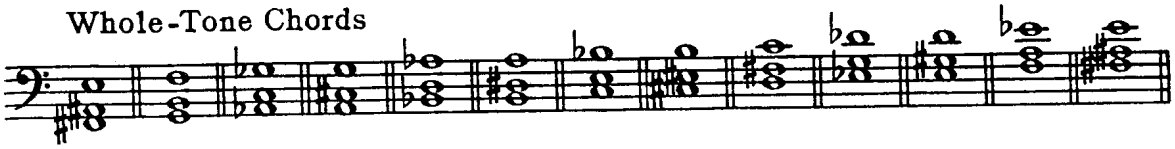


Harmonization in Seventh-Chords, Ninth-Chords and Whole-Tone Chords

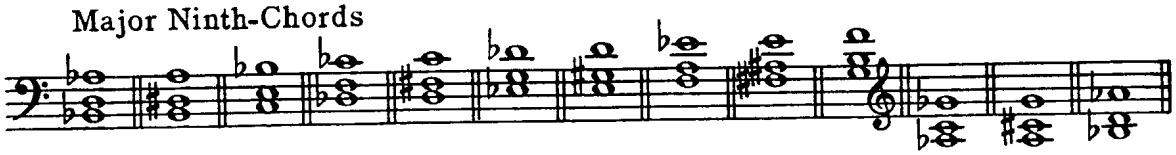
Melody Line



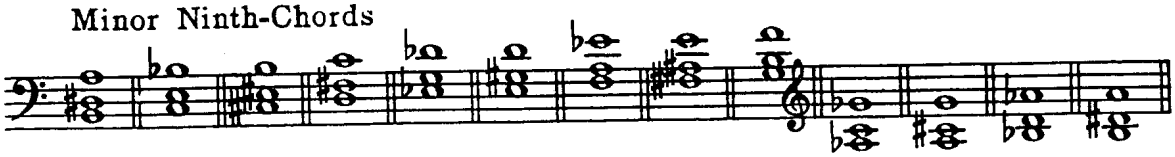
Whole-Tone Chords



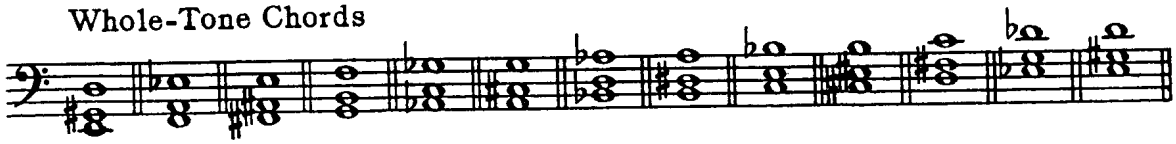
Major Ninth-Chords



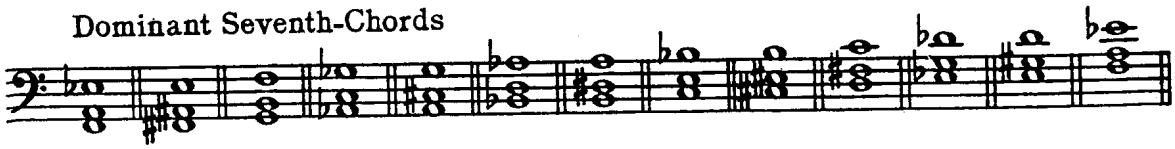
Minor Ninth-Chords



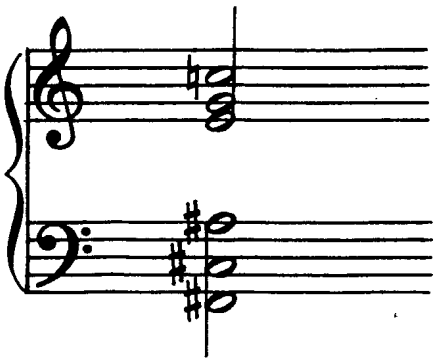
Whole-Tone Chords



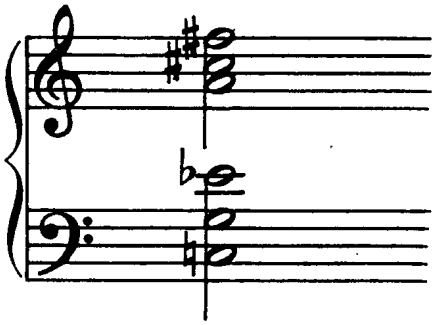
Dominant Seventh-Chords



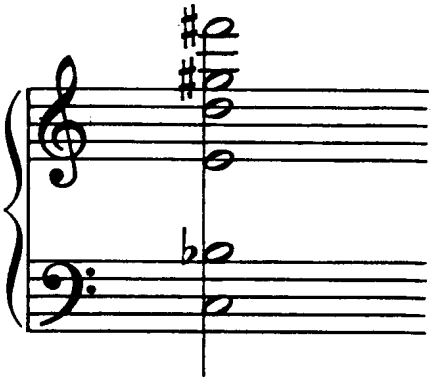
Synopsis of Chords



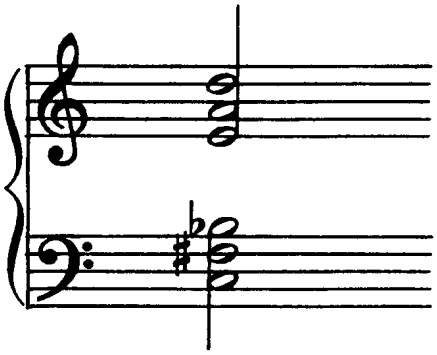
Major
Bitonal Chord



Minor
Bitonal Chord

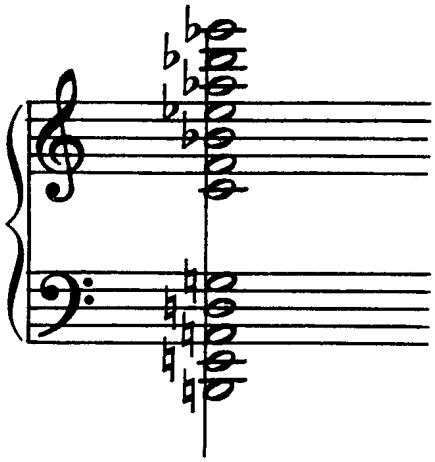


Whole-Tone
Chord



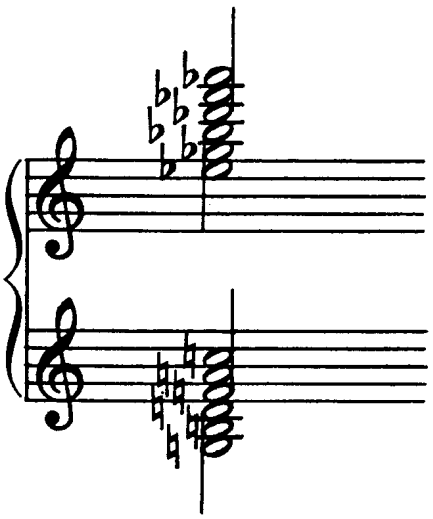
Prometheus
Chord

(Scriabin)



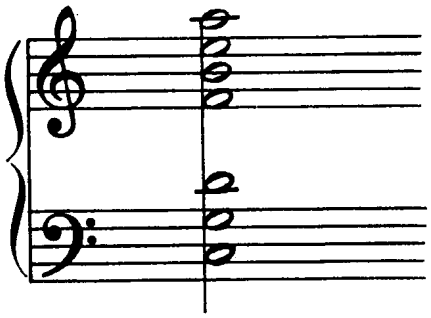
Quartal
Chord

Containing All Twelve Chromatic Tones Arranged in Fourths



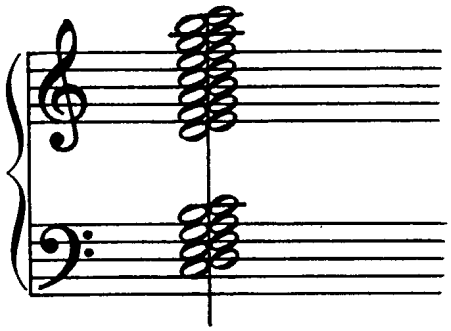
Chord
of the Minor 23rd

Containing All Twelve Chromatic Tones and Four Mutually Exclusive Triads

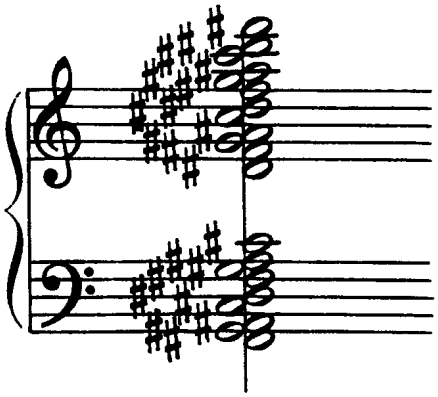


Pandiatonic Chord

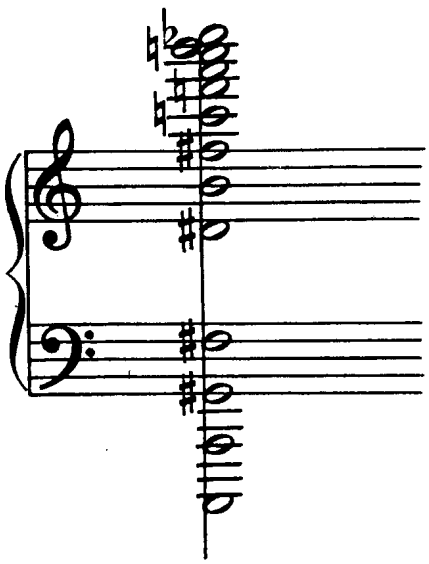
Containing All Seven Diatonic Tones



Pandiatonic Tone-Cluster

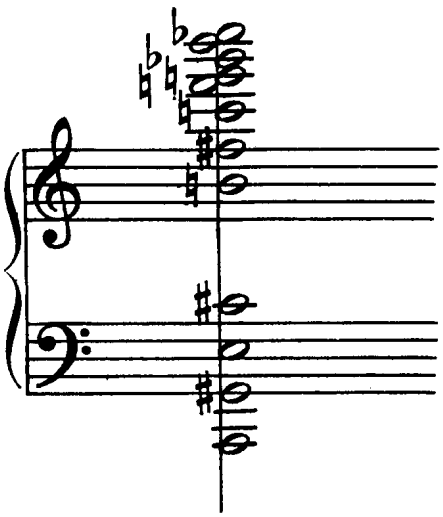


Pentatonic Tone-Cluster



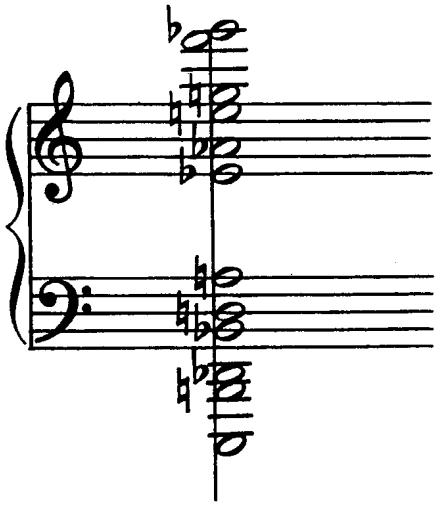
Pyramid Chord

Containing All Twelve Intervals From an Octave to a Semitone



Mother Chord

Containing All Twelve Chromatic Tones and Eleven Different Intervals



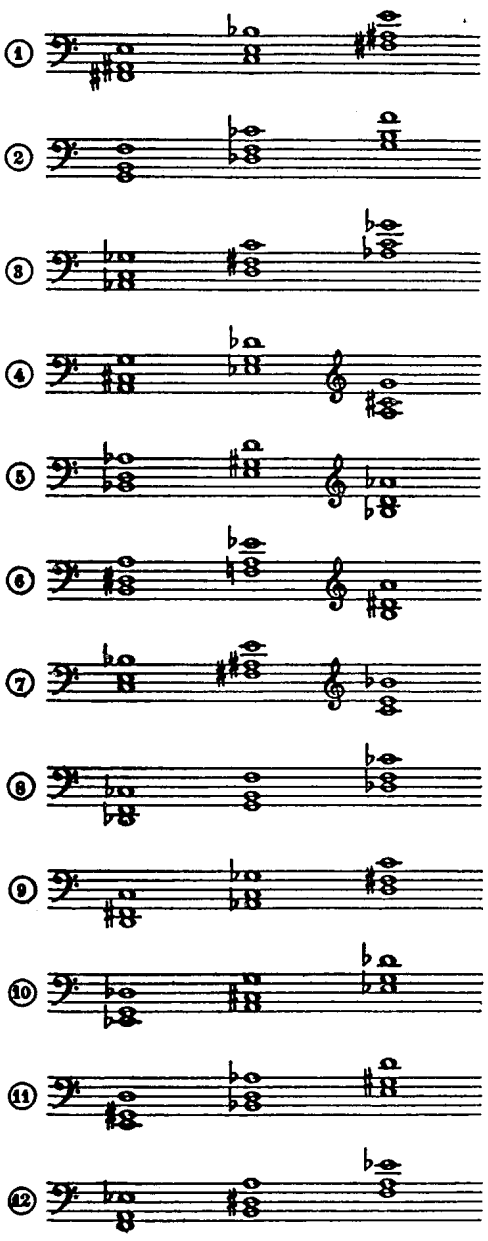
Grandmother Chord

Containing All Twelve Chromatic Tones and Eleven Symmetrically Invertible Intervals

Master Chords

Tritone Progression

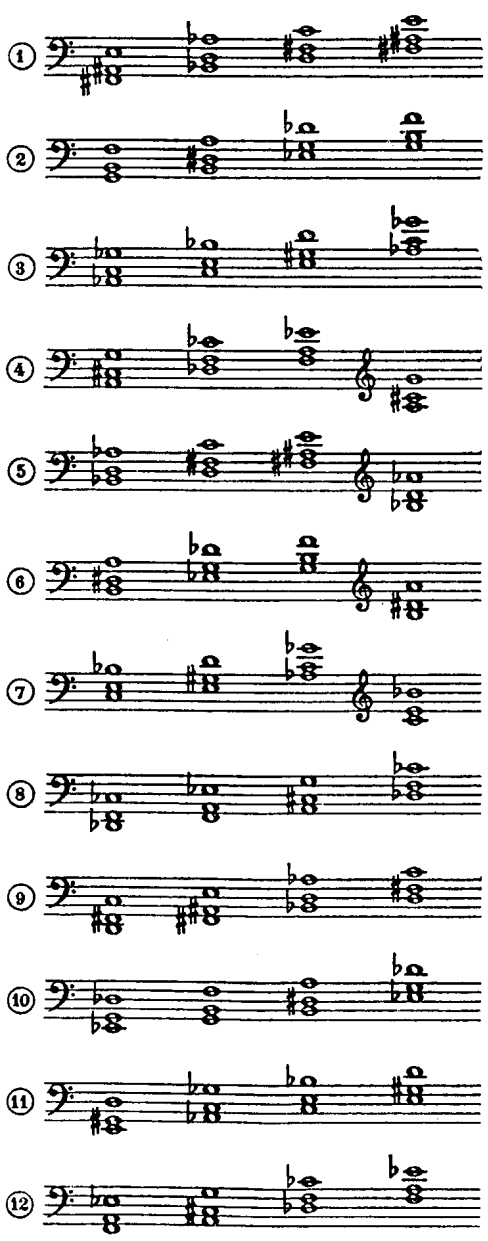
Scales and Patterns 1-180



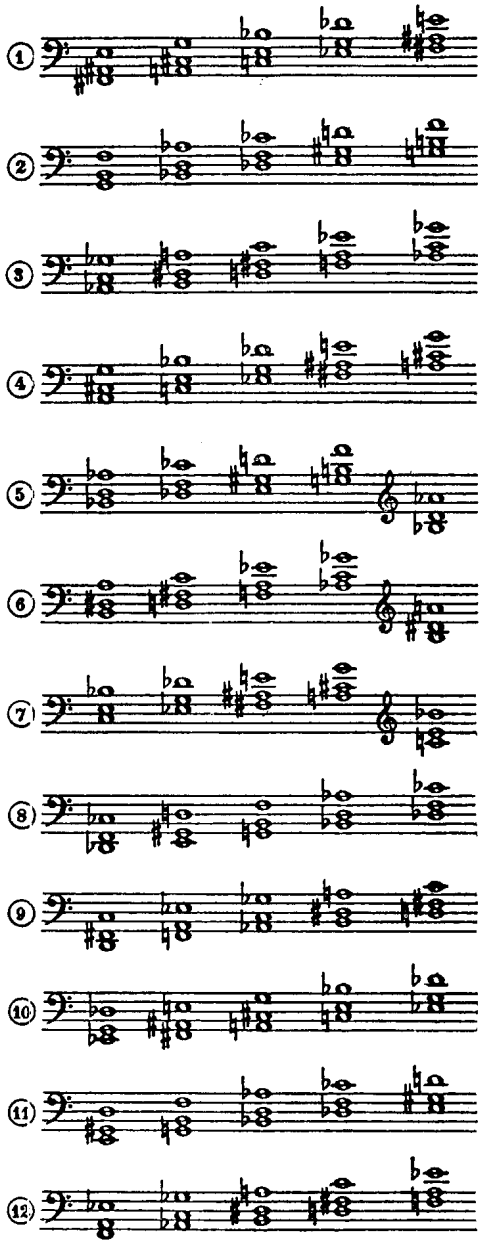
Master Chords

Ditone Progression

Scales and Patterns 181-391



Master Chords

Sesquitone Progression

Scales and Patterns 392-568