Another Way to Look at the Goldberg Variations

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Abstract

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The *Goldberg Variations* by Johann Sebastian Bach, published in 1741, has fascinated generations of performers and listeners, especially since Glenn Gould's recordings in the second half of the twentieth century. This dissertation first explores the essentials of the scholarship on this monumental work: a survey of what we know about the *Goldberg Variations*' publication, its name, its genesis, its form, its quodlibet (last variation) and the fourteen extra canons that Bach added in his personal copy of the work. In a second section, the art of free ornamentation is at stake. In baroque music, ornaments were more than decorative additions: they were a fundamental element of the style. Performers in that era were expected to add embellishments in the repeats. After an overview of ornamentation guidelines, based on the authority of three eminences in baroque ornamentation (Carl Philipp Emanuel Bach, Paul Badura-Skoda and Frederick Neumann), I have proposed my own ornamentation of the repeats of the *Goldberg*

Variations, in order to encourage modern performers to return to the improvisatory tradition of Bach's time. The complete score with varied repeats is found in the Appendix. Finally, in a third and last section, existing structural analyses of the *Goldberg* are presented, as well as my own hypothetical structure, which I have named the *Goldberg Galaxy*.

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Introduction

Like a beacon radiating on the city and the sea, Johann Sebastian Bach's *Goldberg Variations* shed light on the past and the future.[1] This work truly occupies a unique place in the history of music. It is "conceptually the most innovative, stylistically the most varied, technically the most advanced, and in sum the most ambitious and demanding published collection of keyboard music from the first half of the eighteenth century."[2]

Being a pianist myself, I played the *Goldberg Variations* for about nine years, before becoming hampered by dystonia. Demanding both physically and mentally (the work with repeats lasts around 80 minutes, from memory, and a lot of it is virtuosic in nature), the *Goldberg Variations* is also one of the most rewarding keyboard pieces to perform. It stands as one of the greatest masterpieces of all time. From beginning to end, the performer and the listener experience a real and fantastic journey. Unified in its diversity, the *Goldberg* reaches musical perfection.[3]

Who am I to measure myself up to such an iconic piece of music? So many excellent recordings have been made already (Glenn Gould's being the most famous) and so much has been written. What could I bring to the literature that could be useful? First, I will attempt a brief survey of the essentials of what we know about the *Goldberg*. Second, I would like to propose my personal ornamentation of the variations. It is now well known that "the free addition of ornaments was one of the self-evident tasks of a baroque performer."[4] Today, though, this tradition has been

[1] Calais, *Bach en concert*, p.75
[2] Wolff, *Bach's Musical Universe*, p.152
[3] Wolff states that the key to musical perfection is unity in diversity (*The Learned Musician*, p.469)
[4] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.474

substantially lost. Most performers tend to slavishly play the notes written on the page without changing anything in the repeats. Using my knowledge and experience, I have tried to let my imagination run wild to produce an ornamentation of the repeats that is stylistically and musically correct, interesting, and tasteful. This could be the point of departure for a performer toward a more imaginative and refreshing performance of the *Goldberg*.

Finally, after the survey and the ornamentation, and following a resumé of different existing analyses, I present my own structural analysis of Bach's *Goldberg Variations*, which I have named the *Goldberg Galaxy*. This original analysis, together with my personal ornamentation, is I hope worthy of attention. It is certainly another way to look at the *Goldberg Variations*.

Survey

Publication

Known today as the *Goldberg Variations*, BWV 988, the real original title of Johann Sebastian Bach's famous keyboard work is "*Aria with diverse variations for harpsichord with 2 manuals*."[5] The set of 32 pieces, an Aria followed by 30 variations and a return of the original Aria, published in 1741[6], constitutes the fourth and last volume of a collection of keyboard pieces that Bach named *Clavier-Übung*, meaning *Keyboard Practice* or *Keyboard Exercise*. He may have taken the name from Kuhnau, his predecessor as Cantor in Leipzig, who was the first to use the term *Clavier-Übung* and published two volumes of seven keyboard suites each (in 1689 and 1692)[7] named as such. It is noteworthy to point out that only a very small portion of Bach's works were printed in his lifetime. Apart from the *Clavier-Übung* series, he published the *Musical Offering*, the *Canonic Variations on Vom Himmel hoch*, the *Art of Fugue*, two cantatas (one now lost), some chorale settings, and a *Canon triplex*.[8]

Some scholars, like Gilles Cantagrel,[9] dispute the fact that the *Goldberg* was published as Part IV of the *Clavier-Übung*. The number does not appear on the title page, as opposed to the preceding three volumes. It may be because Bach changed publishers (it was Balthasar Schmid from Nuremberg, who also published the *Canonic Variations* at a later date); the latter may not have wanted to start in the middle of a series. Cantagrel argues that if the *Goldberg* was the fourth part

[5] The original title in German: *Aria mit verschiedenen Veränderungen vors Clavicimbal mit 2 Manualen*
[6] Some sources state 1742; but 1741 has been verified by Gregory Butler in 1988 (in Wolff, *Bach Essays*, p.417); the publication probably occurred at the Michaelmas Fair in September 1741 (Wolff, *Bach's Musical Universe*, p.184). Bach was then 56 years old.
[7] Wolff, *Bach's Musical Universe*, p.154
[8] Wolff, *Bach Essays*, p.430-431
[9] In Calais, *Bach en concert*, p.36

of the *Clavier-Übung*, then why not the *Canonic Variations* as part five and the *Art of Fugue* as part six?

The Name Goldberg

The story surrounding the *Goldberg* is famous; history has yet to decide what is truth and what is fiction. Johann Nikolaus Forkel, Johann Sebastian Bach's first biographer,[10] relates that the work was commissioned by Count Hermann Carl von Keyserlingk, who was then the Russian ambassador in Dresden, Saxony. He was very influential – it was thanks to him that Bach received in November 1736 the honorary title he had sought of "Compositeur to the Royal Court Orchestra" from the Dresden court, the most significant development in his career up to then.[11] Keyserlingk

> "*was often unwell and then had sleepless nights. On these occasions, Goldberg [a young house musician he employed] had to spend the night in an adjoining room so that he could play something to him during his sleeplessness. The Count once remarked in Bach's presence that he would very much like to have some keyboard pieces for his Goldberg, of a character so gentle and somewhat merry that he could be a little cheered up by them in his sleepless nights. Bach believed that he could best fulfill this wish with some variations, which until then he had held to be a thankless task because of the basic harmony being the same*."[12]

Forkel's account raises doubts for two main reasons. The first is that no dedication, either for Goldberg or Keyserlingk, appears on the title page of the published work, as it was the custom at the time and as Bach always proceeded in such cases. The second is that Johann Gottlieb Goldberg (1727-1756), Keyserlingk's harpsichordist, would have been 13 or

[10] It is noteworthy to remark that Bach's first biography (1802) came out over fifty years after his death (1750).
[11] Tomita, *Bach and Dresden*, p.170
[12] Forkel, p.51-52, in Williams, *The Goldberg Variations*, p.4-5

14 at the time. Given the extreme technical difficulty of many of the variations, it makes it unlikely that such a young musician would have been able to play them. It is not impossible, however. Eighteenth-century reports pointed out Goldberg's virtuosity at the keyboard, and referred to him as a child prodigy, making Forkel's implication plausible. Although it has never been confirmed, some sources state that Goldberg studied with Bach. Wilhelm Friedemann Bach, one of J. S. Bach's most talented sons, implied in 1767 that Goldberg had been his own pupil.[13]

Forkel also states that Count Keyserlingk was so enthusiastic about "his" variations that he offered Bach in return a gold goblet filled with a hundred louis d'or (gold coins). This would have been the highest sum of money Bach had ever received for any of his compositions. The most plausible explanation is that Bach, who during one of his visits in Dresden in November 1741 stayed with the Count,[14] offered him a copy of the *Aria with diverse variations*, which was fresh off the press (September 1741). It is likely that Goldberg "soon gained a reputation as a performer of these pieces,"[15] therefore originating today's popular name, the *Goldberg Variations*.

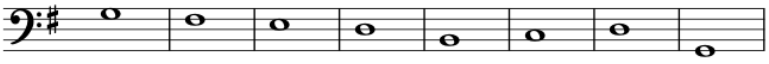
Genesis

What inspired Bach to write his *Aria with 30 variations*? Let us start with the theme (the Aria), a sarabande. It was apparently one of Anna Magdalena's (Bach's second wife) favorite

[13] David Schulenberg in Boyd, *Oxford Composer Companion: J.S. Bach*, p.194
[14] Williams, *The Goldberg Variations*, p.4
[15] John Butt in Boyd, *Oxford Composer Companion: J.S. Bach*, p.195

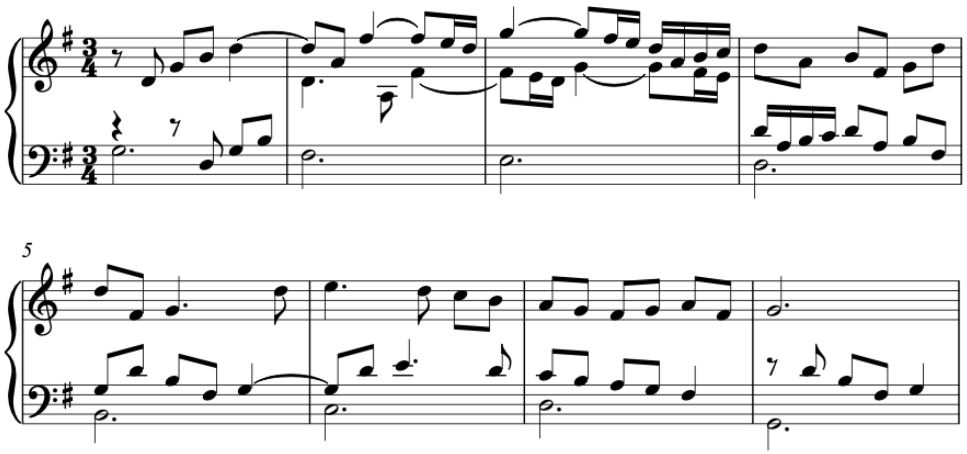
pieces.[16] We find it in the second *Clavier-Büchlein* for Anna Magdalena Bach of 1725. The Aria was probably added later, in her own hand,[17] where some space had been left out; she probably copied it around 1741, the *Goldberg* publication date. Bach's authorship of the Aria has been contested.[18] It is unmistakably and strikingly French in style and ornamentation, maybe even too much so to be the German Bach's. Or could it be Anna Magdalena's, or a mysterious French composer's?

The Aria's bass line is the real theme: the variations are not based on the Aria's melody, but on its bass and harmonic pattern, like a chaconne or passacaglia. The first eight notes of the Aria's bass are derived from an ostinato bass that had been known since the 16th century under the name of Ruggiero:[19]



This bass had been used for instance by Georg Friedrich Handel in his Chaconne from the Suite in G major, HWV 442, dated from 1703-1706 and published in 1733,[20] that Bach may have known; the last of the 62 variations is a two-voice canon at the octave:

[16] Wolff, *The Learned Musician*, p.394
[17] Wolff, *The Learned Musician*, p.394. Wolff writes that Anna Magdalena copied the right hand in soprano instead of treble clef, to make it easier for her to read and play, as she was a soprano singer.
[18] Neumann, *Bach: Progressive or Conservative and the Authorship of the Goldberg Aria*. See the refutation in Marshall, *Bach* pp.57-58, cited in Wolff, *Bach Essays*, p.417
[19] Candé, *J. S. Bach*, p.217
[20] Wolff, *The Learned Musician*, p.377



Handel HWV 442, Variation 62: canon at the octave above ostinato bass[21]

Other examples of the use of the Ruggiero are Gottlieb Muffat, in his Ciacona from *Componimenti musicali* (c. 1739) in G major, and Purcell, in his Ground in Gamut, Z645, also in G major, and his 'Let each gallant heart', Z 390 (in C Major).[22]

As regards the 30 variations, part of Bach's inspiration may have come from the Italian composer Domenico Scarlatti.[23] Scarlatti had developed a binary sonata form with a harmonic pattern of tonic moving to dominant in the first half, and dominant back to tonic in the second half. Scarlatti wrote as many as 555 sonatas in this fashion. He published his *Essercizi* in London in 1739, comprising 30 pieces (maybe inspiring Bach to write 30 variations) which "likewise contain many hand-crossings and virtuoso figurations."[24] Bach uses Scarlatti's binary form and its harmonic journey for his Aria and each of the 30 variations. Also, with the *Goldberg*, Bach reached a summit of technically demanding music for keyboard; he may have been influenced by Scarlatti's highly

[21]Wolff, *Bach's Musical Universe*, p.185

[22] Williams, *The Goldberg Variations*, pp.37-38

[23] Marshall writes: "Does it not seem that Bach […] must have known, and been responding to, Scarlatti […]?" in Marshall, *The Music of Johann Sebastian Bach*, p.48

[24] John Butt in Boyd, *Oxford Composer Companion: J. S. Bach*, p.195. Note that Williams states that the Essercizi were published in London in 1738 (Williams, *The Goldberg Variations*, p.28).

characterized and virtuosic sonatas, emulating his uniquely brilliant Italian style. Note that the Italian title *Essercizi*, meaning Exercises, mirrors Bach's and Kuhnau's German *Clavier-Übung*.

Form

The exact titles of the 32 pieces of the *Goldberg* unfold as follows:

Aria
Variation 1 *(for one keyboard)*
Variation 2 *(for 1 keyboard)*
Variation 3 *(for 1 keyboard)*: Canon at the Unison
Variation 4 *(for 1 keyboard)*
Variation 5 *(for 1 or 2 keyboards)*
Variation 6 *(for 1 keyboard)*: Canon at the Second
Variation 7 *(for 1 or 2 keyboards)*: al tempo di Giga
Variation 8 *(for 2 keyboards)*
Variation 9 *(for 1 keyboard)*: Canon at the Third
Variation 10 *(for 1 keyboard)*: Fughetta
Variation 11 *(for 2 keyboards)*
Variation 12: Canon at the Fourth
Variation 13 *(for 2 keyboards)*
Variation 14 *(for 2 keyboards)*
Variation 15 *(for 1 keyboard)*: Canon at the Fifth, Andante
Variation 16 *(for 1 keyboard)*: Overture
Variation 17 *(for 2 keyboards)*
Variation 18 *(for 1 keyboard)*: Canon at the Sixth
Variation 19 *(for 1 keyboard)*
Variation 20 *(for 2 keyboards)*
Variation 21: Canon at the Seventh
Variation 22 *(for 1 keyboard)*: Alla breve
Variation 23 *(for 2 keyboards)*
Variation 24 *(for 1 keyboard)*: Canon at the Octave
Variation 25 *(for 2 keyboards)*: adagio
Variation 26 *(for 2 keyboards)*
Variation 27 *(for 2 keyboards)*: Canon at the Ninth
Variation 28 *(for 2 keyboards)*
Variation 29 *(for 1 or 2 keyboards)*
Variation 30 *(for 1 keyboard)*: Quodlibet
Aria

All of Bach's compositions with multiple components are structured according to a plan, and Bach's "command of specially planned designs is greater than that of almost any other musician of his time or the past."[25] Here, the most striking structural element that emerges from the list of thirty-two pieces is the fact that every third variation is a canon (except for the very last variation). The thirty variations are then organized in ten groups of three. The choice of the number ten is "doubtless not accidental but alludes to the symbol of law";[26] the number three recalls the Trinity, which was very meaningful to Bach as he was deeply religious. Boyd sees the canon as a symbol for the divine law.[27] Canon comes from the Greek 'kanon', which means rule. Calais considers the canons as being the spine of the work.[28] "Few would dispute that the highest point in the history of canon was reached by Bach."[29]

The canons themselves are structured in ascending order. The first (variation 3) is at the unison, the second (variation 6) is at the second, the third (variation 9) is at the third, and so on, until variation 27, which is a canon at the ninth. Variation 30 would be expected to be a canon at the tenth, but it is instead a quodlibet, which will be explored later. Where did Bach take the idea of writing nine canons at different intervals? As far as we know, he never used this feature before or after the *Goldberg*.

The answer may come in a hypothesis from Yo Tomita: "There is a Dresden source that may have been Bach's model."[30] There is a manuscript dating around 1721 from Jan Dismas Zelenka, who

[25] Wolff, *Bach Essays*, p.343
[26] Wolff, *Bach Essays*, p.347
[27] Boyd, *Bach*, p.54
[28] Calais, *Bach en concert*, p.65
[29] Leon Coates in Boyd, *Oxford Composer Companion: J. S. Bach*, p.79
[30] Tomita, *Bach and Dresden*, p.177

was a pupil of Johann Joseph Fux (known for his *Gradus ad parnassum*) in Vienna. Zelenka copied eleven interval canons from his master, put in ascending order from the unison to the octave. Immediately after Fux's canons, come nine interval canons from Zelenka, this time in descending order, starting with the ninth, and going down to the unison (although skipping the seventh). Moreover, these canons present a three-part structure, like Bach's *Goldberg* canons (with the exception of the last and ninth canon, variation 27, which has only a two-part texture, all of Bach's canons comprise three parts: the two parts in canon and a free, independent bass part carrying the theme). Forkel reports that Bach knew Zelenka personally.[31] It is therefore probable that Bach took the interval canons idea from Zelenka, especially as they progress until the ninth, which is strikingly unusual.

The variations which are not canons also follow a pattern. Except for the very first and last of the groups of three, the groups all start with a free dance or *character piece*, followed by a brilliant, virtuosic *toccata* in second position, and the *canon* in third position. In the first group of three, this order is reversed: variation 1 is a toccata and variation 2 is a character piece. As for the last group, the tenth, both variations 28 and 29 are toccatas. Calais and Williams call the toccatas "arabesques";[32] Schulenberg calls them duets.[33] Calais also recognizes the three main national musical styles of the time in the groups of three: the brilliant and virtuosic toccatas are Italian (thinking of Scarlatti and Corelli); the free dance or character pieces are French; and the canonic variations are German.[34]

[31] Tomita, *Bach and Dresden*, p.184
[32] Calais, *Bach en* concert, p.60, and Williams, *The Goldberg Variations*, p.46
[33] Schulenberg, *The keyboard music of J. S. Bach*, p.372
[34] Calais, *Bach en concert*, p.61

"Bach's mature music is remarkable for its order and symmetry."[35] In addition to the order with the groups of three in the *Goldberg*, there is also a symmetry in the form, as noted by Wolff.[36] If we pay attention to the pieces which bear an original title designation, apart from the canons and the quodlibet, we have the Aria (first and last), the Fughetta (variation 10), the Overture (variation 16), and the Alla breve (variation 22). The first and last Aria open and close the symmetry; the Overture marks the center and the pivotal point of the variations; and the Fughetta and the Alla breve are each 6 variations apart from the Overture as folding point, completing the symmetry.

Aria 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 Aria
| | | | | |
Aria Fughetta Overture Alla breve Aria

It is apposite to remark that in all parts of the *Clavier-Übung*, so in parts I, II, and III as well as IV, there is a French overture in the center of the work: the opening of Partita IV in *Clavier-Übung I*, the Overture in the French style of *Clavier-Übung II*, and the Credo setting written in the French style of *Clavier-Übung III*.[37]

There is also another kind of symmetry between the small-scale and the large-scale patterns. The Aria consists of 32 bars in binary form, 16 bars in each half. The variations' structure mirrors this binary form, as the Aria at the beginning and end with the 30 variations equals 32 pieces, relating to the Aria's 32 bars, and the Overture (variation 16, or the 17th piece) opens the second half of the work, as does bar 17 of the Aria.

[35] Boyd, *Bach*, p.94
[36] Wolff, *Bach Essays*, p.348
[37] Wolff, *Bach Essays*, p.347

It has been mentioned that the Aria's bass line is the real theme, like a chaconne or passacaglia. A chaconne or a passacaglia however "present an uninterrupted sequence of ostinato bass variations in a single movement," while an Italianate "aria variata" unfolds in "separate ("strophic") movements, each based on the ostinato pattern – the model for Bach's *Aria with Variations*."[38]

Let us get deeper into the form of the Aria. Marshall writes:

> *[…] "the single most important characteristic of pre-classical music [is] its organization into clearly articulated and balanced phrases. Indeed, it is hard to imagine a more symmetrical and architectonically constructed composition than the theme of the Goldberg Variations: a binary division into two sixteen-measure halves, which in turn are each divided into two eight-measure periods. These are further divided into two four-measure phrases, which, finally, are divided into two two-measure motives. […] The result is a rather slow – and typically pre-classical – rate of harmonic change of one chord per measure. The theme of the Goldberg Variations, then, manifests in a veritably clinical or textbook form two of the main characteristics of the pre-classical style: thoroughgoing periodicity of phrase structure and, in combination with this, a slow harmonic rhythm."*[39]

Here Marshall and Neumann disagree. Bach is recognized as a baroque composer,[40] although his place in music history is unique. Roland de Candé writes that "Bach really has neither the purity of the classical nor the baroque exuberance: he is absolutely singular, standing alone in the very center of music history."[41] The *style galant* (or pre-classical) was emerging in the 1720s. By the mid-eighteenth century, "the clash of styles had then resolved with the demise of the baroque,

[38] Wolff, *Bach's Musical Universe*, p.187
[39] Marshall, *The Music of Johann Sebastian Bach*, p.48
[40] "Traditional opinion regards Bach's music (along with Handel's) as the supreme embodiment of what is commonly called the late Baroque." Neumann, *Bach: Progressive or Conservative and the Authorship of the Goldberg Aria*, p.281
[41] Candé, *Jean-Sébastien Bach*, p.296, translation by the author

leaving the 'galant' style in uncontested control."[42] However Neumann states that Bach "remained essentially impervious to its [the galant style] blandishments."[43] Marshall on the contrary, characterizes Bach as "progressive." According to him, Bach "allowed himself to be influenced by the latest development in musical fashion"; he states that much of his music written from 1730 to the mid-1740s, "including some of his most important works, absorbed the elements of the latest Italian pre-classical style." The most fundamental structural principle of this new style is "regular, periodic phrase organization."[44] Neumann concedes that "the Aria is a *galant* piece" but adds that it "is quite certainly not by Bach."[45]

The Quodlibet

As we have seen above, the last variation of the *Goldberg* is not a canon at the tenth as expected, but a quodlibet. A quodlibet is "a composition based on a collage of pre-existing and usually familiar melodies."[46] Forkel relates that improvised quodlibets would be sung at traditional annual reunions of the Bach family, which would occur in Thuringia, generally in Erfurt, Eisenach or Arnstadt.[47] They would start by singing a chorale, and later things would degenerate into a mélange of 'partly comic and partly improper' words.[48] Two quodlibets by Bach have been transmitted to us: the first being the final variation of the *Goldberg*, and the second being a fragment of a wedding

[42] Neumann, *Ornamentation*, p.39
[43] Neumann, *Ornamentation*, p.41
[44] Marshall, *The Music of Johann Sebastian Bach*, p.52
[45] Neumann, *Bach: Progressive or Conservative and the Authorship of the Goldberg Aria*, p.290
[46] David Humphreys in Boyd, *Oxford Composer Companion: J. S. Bach*, p.381
[47] Candé, *Jean-Sébastien Bach*, p.34
[48] David Humphreys in Boyd, *Oxford Composer Companion: J. S. Bach*, p.381

quodlibet (BWV 524) composed around the time of Bach's first marriage (1707), and which starts with the word "Steiss" ("ass").[49]

Why did Bach break the pattern of the interval canons? For John Butt, "there is no doubt that Bach's intent was mainly humorous, the combination of the thick four-part texture with the ungainly fragments of traditional tunes poking fun at his own contrapuntal inclination."[50] In 1737, Bach was criticized by Johann Adolph Scheibe, a former pupil, who labeled his style as "turgid and confused."[51] The use of popular tunes in the quodlibet may have been a boutade from Bach to Scheibe: Bach could submit himself to the strictest of all contrapuntal procedures, the canon, but he did not take himself too seriously.

There are two folk songs appearing in the quodlibet, as have been identified by notes in copies of the original print by Johann Christian Kittel[52] and Johann Philipp Kirnberger,[53] both Bach students. The first melody, "Ich bin so lang nicht bei dir gewest," is known as either the "Grossvatertanz" (Grandfather dance) or the "Kehraus" ("sweep-out" or last dance). It is a German dance song from the early seventeenth century which would have been performed at the end of events like festivals and weddings. It remained popular until the earlier nineteenth century.[54] By using this last dance tune in his last variation, Bach musically tells us that the journey is over. It could also signify that we have been away from the theme (the Aria) for so long, it is time to return home and repeat the original Aria, which completes the cycle after the last variation.

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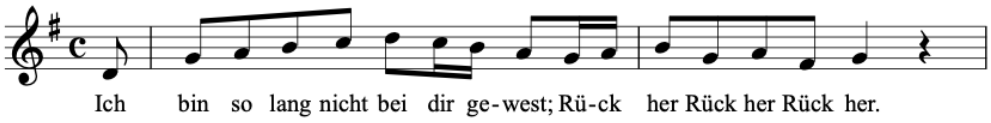
[49] Gardiner, *Musique au château du ciel*, p.118
[50] John Butt in Boyd, *Oxford Composer Companion: J. S. Bach*, p.196
[51] Tomita, *Bach and Dresden*, p.170
[52] Wolff, *Bach's Musical Universe*, p.190
[53] David Humphreys in Boyd, *Oxford Composer Companion: J. S. Bach*, p.381
[54] Wolff, *Bach's Musical Universe*, p.189

Ich bin so lang nicht bei dir g'west,
Rück her, rück her, rück her

I have been away from you for so long,
Come closer, closer, closer.

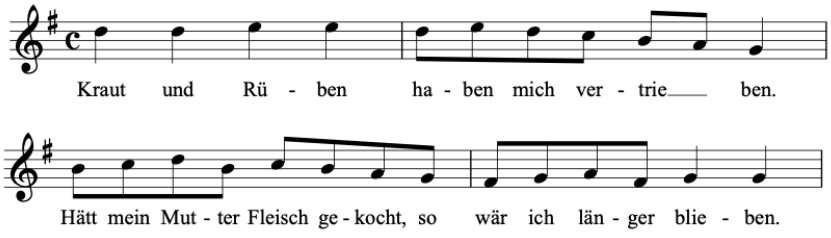


[55]

The second melody included in the quodlibet, "Kraut und Rüben", is known as the Bergamasca tune, "related to a rustic dance from northern Italy that came to be widely employed as a variation theme in 17th century keyboard music."[56] Frescobaldi is one of the composers who used the Bergamasca theme, in a set of variations in G major (like the *Goldberg*), standing as the penultimate piece of his Fiori musicali of 1635.[57] Bach knew Frescobaldi's Fiori musicali: around 1714, he himself copied the work in a hundred-page manuscript.[58] Buxtehude may also have been an inspiration for Bach:[59] he also employed the Bergamasca theme in his 32 variations set (also in G major), identifying the tune as "La capricciosa" (BuxWV250).[60]

Kraut und Rüben haben mich vertrieben,
Hätt' mein' Mutter Fleisch gekocht,
wär' ich länger blieben.

Cabbage and turnips have driven me away;
If my mother had cooked meat
I would have stayed longer.



[61]

[55] Schweitzer, *J. S. Bach: Le musicien-poète*, p.116
[56] Wolff, *Bach's Musical Universe*, p.189
[57] Ibid
[58] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.259
[59] Candé, *Jean-Sébastien Bach*, p.322
[60] Wolff, *Bach's Musical Universe*, p.189
[61] Schweitzer, *J. S. Bach: Le musicien-poète*, p.116

Boyd tells us that "Kraut und Rüben" is "used also idiomatically to mean 'a confused jumble', so perhaps Bach is suggesting that this musical mélange has driven away the sarabande theme, which he now recalls in its original form to end the work (or, if wakefulness persists, to begin it again)."[62]

The Fourteen Canons BWV 1087 and Number Symbolism

Bach had not said his last word with the nine canons of the *Goldberg*. On the last page of his personal copy of the *Clavier-Übung*, he entered a series of fourteen numbered canons, under the title "Verschiedene Canones über die ersteren acht Fundamental-Noten vorheriger Aria" (Diverse canons on the first eight fundamental notes of the previous aria).[63] There are actually fifteen pieces: number ten is double. The handwriting probably dates to 1747 or 1748.[64] An 'etc' is written at the end, as opposed to the 'Fine' at the end of the *Goldberg*, suggesting that the series could have continued further.

Number symbolism in Bach is controversial but now widely acknowledged. Friedrich Smend was one of the pioneers in the mid-twentieth century to be persuasive in demonstrating that the numbers 14 and 41 carry a special significance for Bach.[65] He may have used those numbers as his signature, either by the number of notes, rests, or bars in particular instances. These numbers come from his name, using the natural-order number alphabet, with A = 1, B = 2, C = 3, and so on, with I counting the same as J, and U the same as V, therefore amounting from 1 up to 24. From this system,

[62] Boyd, *Bach*, p.199
[63] Wolff, *Bach's Musical Universe*, p.300
[64] Williams, *The Goldberg Variations*, p.32
[65] Boyd, *Bach*, p.233

known as numerology or gematria, it can be derived that BACH is 2 + 1 + 3 + 8 = 14, and J. S. BACH is 9 + 18 + 14 = 41. One will also note that 41 is the inversion (retrograde) of 14. The most likely places for Bach to insert his signature are, as would be expected, occurring especially at the beginnings or ends of works. For instance, in the *Goldberg*, at the very opening of the variations, in the first four bars of variation 1, the right hand plays a phrase of exactly 41 notes. Then at the end, in the last and second half of the last variation (the quodlibet), the bass line (bar 9 to 16) also totals 41 notes.[66]

Is this a coincidence? Probably not, but we will never know for certain. It is one of Bach's mysteries that will never be resolved, considering the lack of any historical evidence.[67] The fourteen canons added by Bach at the end of his Handexemplar (as Wolff calls it) of the *Goldberg Variations* are another instance of possible numerical significance. The set was discovered in 1974 by Olivier Alain,[68] while the copy was in the hands of Paul Blumenroeder in Strasbourg. It had previously been owned by Franz Stockhausen, who was director of the Strasbourg Conservatory; it cannot be traced further back.[69] It is now at the Bibliothèque Nationale in Paris. As the set of fourteen canons was previously unknown, this copy of the original edition of the *Goldberg Variations* which came from Bach's hand is considered as "the most important Bach source that has come to light in a generation."[70]

[66] Schenkman, *Tatlow's Bach and Bach's Signatures in the "Goldberg Variations"*
[67] Boyd reports that Ruth Tatlow in 1991 advised caution and pointed out the lack of any historical evidence; in Boyd, *Bach*, p.235
[68] Kenyon, *A Newly Discovered Group of Canons by Bach*, p.391
[69] Alain, *Un supplément inédit aux Variations Goldberg de J. S. Bach*, p.247
[70] Wolff, *The Handexemplar of the Goldberg Variations,* in *Bach Essays*, p.163

Forkel had written in 1802 about the Goldberg Variations: "It must be observed that, in the engraved copies of these variations, there are some important errata, which the author has carefully corrected in his copy."[71] The copy discovered in Strasbourg nearly fifty years ago is most certainly the copy referred to by Forkel. The edition used for this dissertation is a revised Henle edition, published in 1978, according to Bach's notes in the newly found Handexemplar. The most important alterations (reviewed by Paul Badura-Skoda) consist of the following:[72]

Aria: Slur above 32nd-notes in treble
Var.5: bar 19: Slurs above eighth-notes in treble
Var.7: Speed direction *al tempo di giga*
Var.8: bar 19: # precedes final 16th-note c^1 of left hand
Var.9: bar 12f.: Appoggiaturas precede each 1st note and inverted mordent on *b i*n bar 13
Var.10: bars 1 and 5: Mordents on the half-notes
Var.13: bar 12: gruppetto appears in treble
Var.14: bars 9-12, 15f, 25-28 and 31f: Staccato dots
Var.25: Speed direction *adagio.* Bars 1f, 5f, 14: Appoggiaturas precede eighth-notes
Var.26: bars 2, 4, 6, 12-23, 25-27: Appoggiaturas. Bar 10f: Mordents.

The fourteen canons may have originally been intended for the Mizler society. Lorenz Christoph Mizler was a former Bach student who founded the *Societät der Musikalischen Wissenschaften* (Society of the Musical Sciences), "devoted to the relation of music to philosophy and mathematics."[73] Bach became a member in 1747. It has been suggested that he waited to enter the society to be the 14th member; Handel was the 11th, in 1745.[74] The canons appear to be divided in five groups, according to the canonic techniques used (as simplex, duplex, mixed, or the number of voices). The resulting pattern is 4 – 1 – 4 – 1 – 4, for the total of fourteen; a curious combination of the numbers 14 and 41.[75]

[71] Kenyon, *A Newly Discovered Group of Canons by Bach*, p.391
[72] Bach, *Goldberg-Variationen*, p.3
[73] Kenyon, *A Newly Discovered Group of Canons by Bach*, p.393
[74] Candé, *Jean-Sébastien Bach*, p.229
[75] Alain, *Un supplément inédit aux Variations Goldberg de J. S. Bach*, p.293

It is sometimes hard to know where to stop when looking for numerology in Bach. For instance, it has been noticed that we see fourteen silver buttons on Bach's 1746 portrait by Haussmann,[76] and that there are fourteen notes on the upper parts of the canonic composition Bach holds in this same portrait, the enigmatic triple canon for six voices, BWV 1076.[77] [78] That could be disputable; but there exists in the literature some genuinely hair-raising publications, based on arithmetic that turns to obsession. One example would be Vincent Dequevauviller, in his 2000 article of the *Revue de Musicologie* published by the *Société Française de Musicologie*, discussing Bach's *Brandenburg Concertos* and the *Goldberg Variations*. Dequevauviller reports that the six *Brandenburg Concertos* comprise a total of 2664 bars. In this 2664 he sees the number 6 as resembling the letter G and therefore relates it to the two G Major tonalities of the two central concertos (the tonalities of the six *Brandenburg Concertos* unfold as F – F – G – G – D – B), as well as the letter F with the number 6 and the B and D with the numbers 2 and 4.[79] With the *Goldberg* he sees the first eight notes of the theme (the Ruggiero, as previously seen, G – F# – E – D – B – C – D – G) as relating to the name Goldberg:[80]

Key word:	**G**	O	L	**D**	B	E	R	**G**
Aria bass notes in German:	**G**	Fis	E	**D**	H	C	D	**G**

[76] The 1746 Haussmann portrait of Bach is known as the only authentic portrait that has survived, with its replica of 1748 (Wolff, *The Learned Musician*, p.391). A portrait and a representative work were required to enter the Mizler society (Candé, *Jean-Sébastien Bach*, p.229). Bach chose to submit the *Canonic Variations on Vom Himmel hoch*.

[77] Kenyon, *A Newly Discovered Group of Canons by Bach*, p.393

[78] According to Friedrich Smend, there would be as many as 120 solutions to this mirror canon (Candé, *Jean-Sébastien Bach*, p.230)

[79] Dequevauviller, *Des Concertos Brandebourgeois aux Variations Goldberg : Jeux de lettres et de chiffres dans les œuvres de Bach*, p.267

[80] Dequevauviller, *Des Concertos Brandebourgeois aux Variations Goldberg : Jeux de lettres et de chiffres dans les œuvres de Bach*, p.275

Ornamentation

The Art of Free Ornamentation and Bach's Music

The function of embellishments (or ornaments, or graces, as Neumann sometimes calls them) is to connect notes,[81] to enhance the beauty of a passage,[82] or to add more grace, elegance, smoothness or variety.[83] It is common knowledge that music performers in the Baroque era were accustomed to freely add embellishments (either improvised or planned in advance), especially in repeats, da capos of arias, and slow movements of concertos. In the case of slow movements, Adagios for instance, "the composers wrote only the outline of the melody [what we could also call a skeletal design]; the performer was expected to embroider it lavishly with improvised embellishments."[84] Bach, however, willfully defied this convention. He tended to write out the ornamentation in full, like a minority of other composers, such as Frescobaldi (as we have seen, Bach copied his Fiori Musicali, a manuscript of a hundred pages; he might therefore have taken the habit from Frescobaldi[85]). The question that arises is, as Neumann asks, did Bach write out all the ornaments he wished or did he leave some leeway to the performer to add others? Neumann answers: "Since he was never consistent in his habits, no categorical answer is possible."[86]

On the free addition of ornaments, then, we must "exercise extreme caution" in the case of Bach, tells us Badura-Skoda. "After all, Scheibe accused him [Bach] of having written out virtually everything in full,"[87] leaving no freedom to the performer. Despite this warning, Badura-Skoda

[81] C. P. E. Bach, *Essay*, p.84
[82] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.382
[83] Neumann, *Ornamentation*, p.3
[84] Neumann, *Essays in Performance Practice*, p.198
[85] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.259
[86] Neumann, *Essays in Performance Practice*, p.200
[87] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.11

states that an ornamented version on the repeat still "corresponds more closely to Bach's intention than slavish repetition."[88] Neumann proposes a safe solution: "On occasion perhaps some thought ought to be given to the possibility of reserving Bach's fully ornamented text for the repeat and leaving out a few of the ornaments the first time through."[89]

Indeed, Neumann's proposal would be the easy way out. However, the goal here is not to make things easy but to bring to the modern performer a suggestion of ornamentation for each of the repeats of the thirty-two pieces of the Goldberg, with discretion and good taste, in keeping with the style. The complete score with varied repeats can be found in the Appendix section. The Bach version and my ornamented ("Papillon") version are presented one below the other, to make the comparison easier. The Bach version is to be played first, whereas the Papillon version is to be played second, as the repeat, for each of the two halves of every piece. Variation 25 may be an exception, as the Papillon version is less ornamented than the Bach; there the performer may follow Neumann's suggestion and play the less ornamented version first, followed by Bach's ornamented version. In any case, in all instances where I have added ornamentation, it is always up to the performer to decide whether to take the suggestion or not.

French and Italian Ornamentation

In the 18th century, ornamentation became divided into two basic types of embellishments: "essential" and "arbitrary".[90] These can be respectively associated with the French and Italian styles, as noted by Quantz:

[88] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.514
[89] Neumann, *Essays in Performance Practice*, p.201
[90] Neumann, *Ornamentation*, p.39

> *[…] "the manner in which it should be played and embellished […] may be viewed in accordance to the French or Italian style. The first requires a clean and sustained execution of the air, and embellishment with the essential graces, such as appoggiaturas, whole or half-shakes, mordents, turns, battements, flattements, etc, but no extensive passage-work or significant addition of extempore embellishments. In the second manner, that is the Italian, extensive artificial graces that accord with the harmony are introduced […] in addition to the little French embellishments."*[91]

In the 17th century, German ornamentation followed Italian models. "The musical baroque was an Italian phenomenon."[92] The Italian type of embellishment, or arbitrary, is also called diminution. A diminution is "the elaboration of a melody by replacing long notes by many short ones, while retaining the melody's essential contours."[93] The French, with their rational minds, rather developed the shorthand device of symbols for their ornaments.[94] The French ornament practices did not become known and imitated in Germany until the early part of the 18th century. After they finally did, "their influence spread so rapidly that they soon assumed a role equal to, and in keyboard music probably superior to, that of the Italians."[95] The German synthesis of the French or essential ornaments resulted in what could be identified as the first distinctly German school of ornamentation. Its nerve center was "the Berlin school of C. P. E. Bach, Marpurg, and Agricola, and – to a much lesser degree – of Quantz."[96] The Germans were less inclined to luxuriance in matters of diminution than the Italians. One reason for their moderation was their more complex counterpoint. "The denser the texture, the less the need for ornamental enrichment and the greater

[91] Quantz, *On Playing the Flute*, p.162, in Badura-Skoda, *Interpreting Bach at the Keyboard*, p.251
[92] Neumann, *Ornamentation*, p.37
[93] Boyd, *Oxford Composer Companion: J. S. Bach*, p.140
[94] Neumann, *Essays in Performance Practice*, p.198
[95] Neumann, *Ornamentation*, p.38
[96] Neumann, *Ornamentation*, p.39

the danger of interference with the basic musical structure."[97] This is another reason why we should proceed with discretion while adding ornaments in Bach's music.

Ornamentation Guidelines and Application in the *Goldberg*

The very nature of *free* ornamentation does not lend itself to rigid rules.[98] There are, however, guidelines and advice to be found in the literature. I have here mainly turned my attention to the knowledge of three authorities in matters of ornamentation: Paul Badura-Skoda, Frederick Neumann, and C. P. E. Bach (one of Bach's sons). On the latter, Badura-Skoda and Neumann disagree; we should then be cautious. Badura-Skoda, while citing some ornamentation rules from C. P. E. Bach, points out that such rules are "of interest because they can probably be traced back to J. S. Bach, his son's 'sole teacher'."[99] Neumann on the contrary warns that

> *[…] "because of his complete stylistic re-orientation [he turned to the galant style] Philipp Emanuel [C. P. E. Bach] cannot be considered to speak for his father in matters of musical aesthetics. […] Philipp Emanuel and his followers ought to be disqualified as authorities on Bach ornamentation and not used as primary sources*."[100]

All ornaments, whether essential or arbitrary, are added notes; therefore, they create an increase in rhythmic activity. I have noticed, especially in the music of J. S. Bach, that the rhythmic activity tends to increase around cadences and at the end of phrases or bars. This propels the energy toward the important structural points and drives the music incessantly forward. We can see for instance, looking at the *Goldberg* Aria, that Bach increases the rhythmic activity with repeated

[97] Neumann, *Ornamentation*, p.539
[98] Neumann, *Ornamentation*, p.525
[99] Badura-Skoda, *Interpreting Bach at the Keyboard*, p. 447
[100] Neumann, *Essays in Performance Practice*, pp.201-202

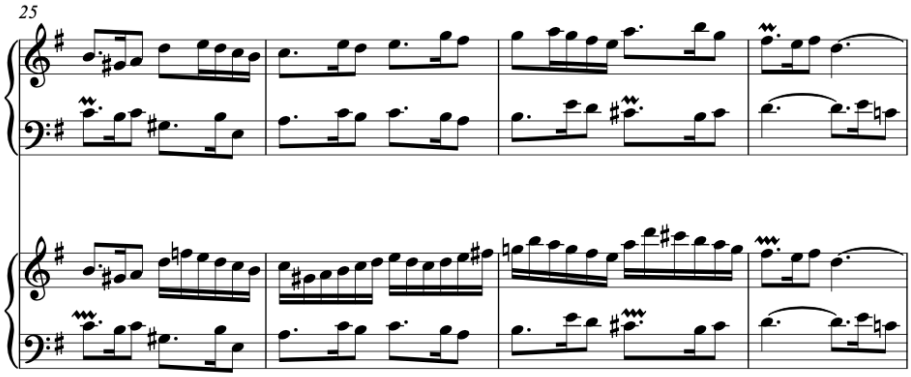
inverted dotted rhythm (bar 7) before the cadence in G major. Also, in the second half of the Aria, the last 6 bars (bar 27-32) suddenly burst into an even flow of 16th notes in the right hand and 8th notes in the left hand, keeping the momentum going until the end. I have tried to emulate this technique in my ornamentation. Some examples: in variation 2, I have added 32nd notes at the cadence points of each half (bar 15 going into 16, and bar 31 going into 32). Similarly, in variation 19, I added even 32nds at the cadence in G major bar 7-8, in D major bar 15-16, and G major bar 31-32.

On the question of when and where to add additional embellishments, Badura-Skoda mentions the case of the penultimate note in cadences: it (depending on the context) "had to be supplied with a trill, a Pralltriller, or more rarely, a mordent."[101] For instance, see the Pralltriller added on the penultimate note of variation 16. Badura-Skoda also tells us that one of Bach's favorite forms of embellishment was filling in intervals of a third.[102] I have done so consistently in variations 2 and 4, and for instance also in variation 17, where I have filled in the last third of every bar (left hand), creating momentum to move from one bar (and harmony) to the next. Neumann also talks of filling in the thirds: "For the one-note graces, a Zwischenschlag can always be inserted in descending thirds, and often in ascending ones too."[103]

Neumann mentions that Quantz stated a few general principles in ornamentation, "the most important of which bears on the integrity of the structural notes that must not be obscured and as a rule ought to remain in place."[104] If one departs too much from the structural notes, the

[101] Badura-Skoda, *Interpreting Bach at the Keyboard*, p. 477
[102] Badura-Skoda, *Interpreting Bach at the Keyboard*, p. 483
[103] Neumann, *Ornamentation*, p.551
[104] Neumann, *Ornamentation*, p.566

ornamentation rather becomes a free variation. I have tried to respect the structure in the *Goldberg*. In variation 7, for instance, I have added diminutions, but the structure, here the notes on the beats, has remained in place (see especially bar 25-27; my ornamentation is below the original text):



Note how the even flow of sixteenth notes helps the music move forward to the cadence point in D Major (bar 28).

Another rule or principle, even if perhaps obvious, should be mentioned: "embellishments are better suited to slow or moderate than to rapid tempos, and to long rather than short notes,"[105] tells us C. P. E. Bach. Indeed, the shorter or faster the notes, the less room or time is left to add extra ones.

Let us now focus on the essential ornaments that are the mordent ( ) and the inverted mordent (or short trill, or Pralltriller, or Schneller, or snap).[106] Where should we use one or the

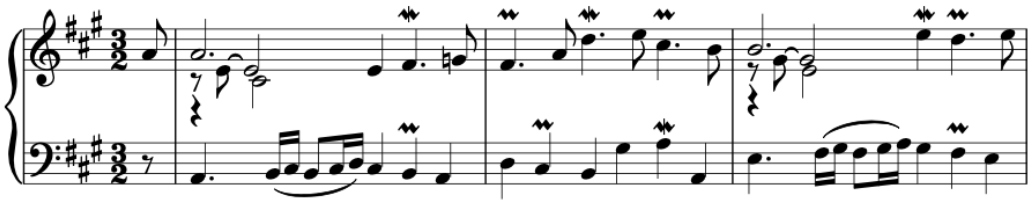
[105] C. P. E. Bach, *Essay*, p.84

[106] "There can be no doubt that Schneller and Pralltriller, both terms invented by C. P. E. Bach, are identical." Badura-Skoda, *Interpreting Bach at the Keyboard*, p.300

other? C. P. E. Bach considers the mordent as "especially good in a stepwise or leaping ascent. It seldom appears in descending leaps and never in descending seconds."[107] He further notes that

> *"It should be observed that the mordent is the opposite of the short trill [Pralltriller]. The latter may be used only over a descending step, precisely the situation which is unsuited to the mordent. The one element which they have in common is that both may be applied to the interval of a second: ascending in the case of the mordent and descending in the case of the short trill [Pralltriller]."*[108]

In J. S. Bach's Courante II of his first English Suite, we can see an example of this rule being applied (see below). When the note preceding the ornament is below, a mordent is used; when the preceding note is above, it is a Pralltriller or inverted mordent. Notice that there are ten ornaments in just three bars!


[109]

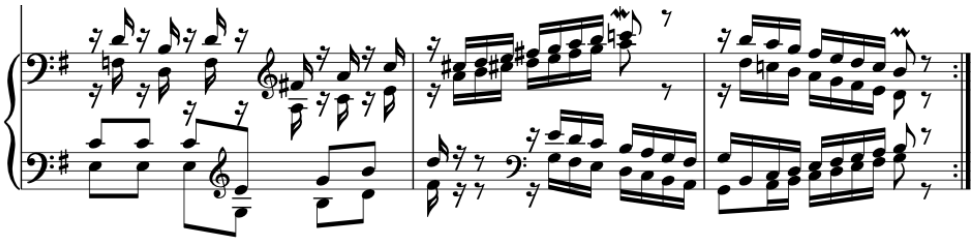
This preponderance of ornaments is characteristic of the baroque style. C. P. E. Bach says of embellishments that "they are, in fact, indispensable."[110] Badura-Skoda remarks that

> *"Bach's understanding of concepts such as 'natural' and 'noble simplicity' was not the same as that of the early Viennese Classical period. Bach would have considered it to be just as 'unnatural' to play a slow melody in unembellished form (as in late Mozart, or Beethoven) as to go out of the house without his wig. In other words,*

[107] C. P. E. Bach, *Essay*, p.128
[108] C. P. E. Bach, *Essay*, p.131
[109] Bach, *Englische Suiten für Klavier : Nr.1-3*, p.11
[110] C. P. E. Bach, *Essay*, p.79

what sometimes strikes us, the heirs of the Viennese Classical and Romantic periods, as mannered, was still perfectly 'natural' as far as Bach was concerned."[111]

Variation 23 is one example of my use of mordent and Pralltriller in the *Goldberg*: mordent after an ascending step, and Pralltriller after a descending step.



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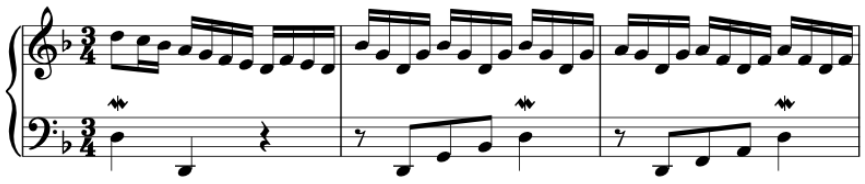
In an 1801 letter to the Leipzig publishers Hoffmeister & Kühnel, Forkel comments on embellishments, confirming C. P. E. Bach's rule: "the is a Pralltriller that is used in descending melodies, whereas in ascending ones the short mordent is employed."[113]

Badura-Skoda tells us that the brilliance given by mordents gives the possibility of accenting rhythmically important notes in dance-like pieces, and that because of this, the mordent, "unlike other ornaments, is often to be found in the bass."[114] It also appears particularly with upward leaps, mostly on the target-note.[115] An example by J. S. Bach would be the D minor Prelude of the second volume of the Well-Tempered Clavier (WTC):

[111] Badura-Skoda, *Interpreting Bach at the Keyboard*, pp.485-486
[112] Bach, *Goldberg Variations*, variation 23, bar 30-32, ornamentation by the author
[113] Badura-Skoda, *Intepreting Bach at the Keyboard*, p.345
[114] Badura-Skoda, *Intepreting Bach at the Keyboard*, p.447
[115] Ibid



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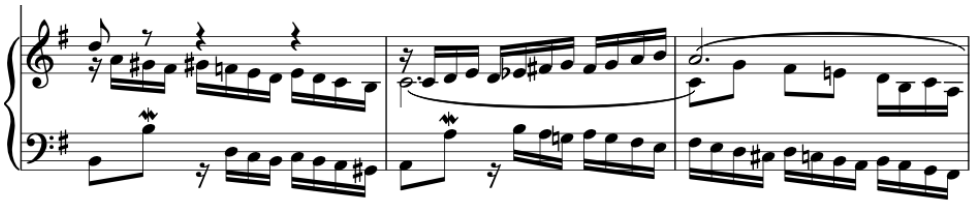
An example of my use of mordent in the bass on the target-note after an upward leap would be in variation 12. Being on the upbeat, the mordent also adds a touch of humor:



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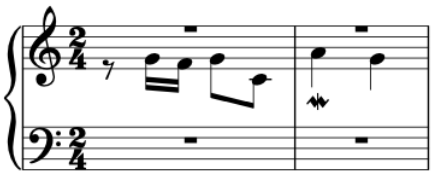
Another example by Bach would be the first Fugue of the second volume of the WTC:



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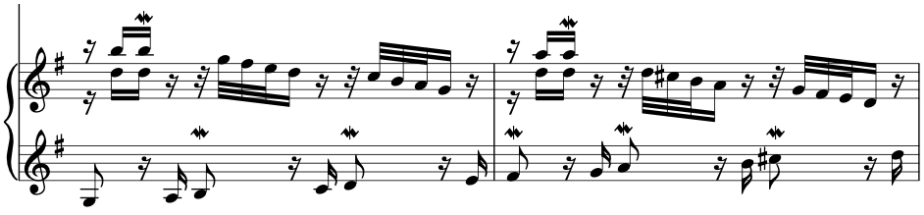
Neumann is in accordance with Badura-Skoda: he states that "the mordent will fit best on a repeated note or on a rising interval."[119] One example of my use of mordent on a repeated note would be in variation 23 (right hand; the left-hand ornamentation is by Bach):



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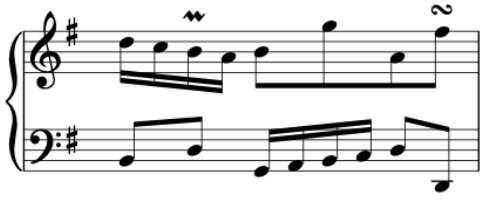
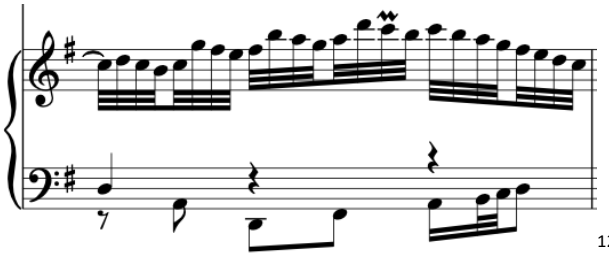
[116] Bach, *Das Wohltemperierte Klavier, Teil II*, p.28, bar 1-3
[117] Bach, *Goldberg Variations*, variation 12, bar 26-28, ornamentation by the author
[118] Bach, *Das Wohltemperierte Klavier, Teil II*, p.6, bar 1-2
[119] Neumann, *Ornamentation*, p.551
[120] Bach, *Goldberg Variations*, variation 23, bar 9-10

As for the Pralltriller or inverted mordent, Badura-Skoda cites O'Donnell, who reports that it was already commonplace in Bach's early years, appearing especially on the third semiquaver of groups of four.[121] One example in Bach's music would be a case in the fifteenth Prelude of the second volume of the WTC, bar 45:



[122]

In the above example, note Bach's use of a turn (or gruppetto) on the last note (F#) of the right hand. This rhythmically propels the music into the next bar, a technique of Bach to create momentum, as was discussed earlier. One example of my use of Pralltriller on the third note of a group of four would be in variation 13:



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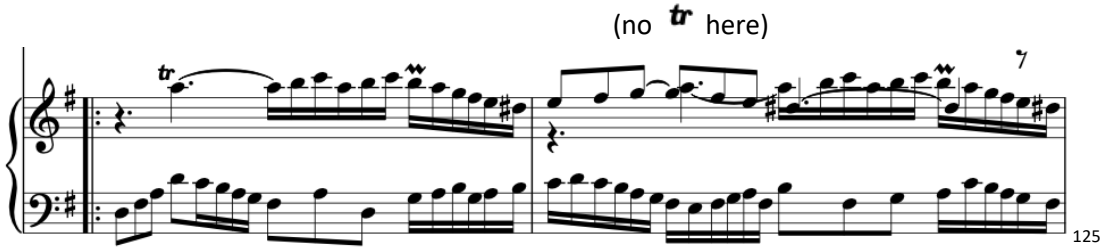
Another principle of ornamentation concerns imitations or recurring themes. Badura-Skoda advises that if we add ornaments to a theme that reappears a number of times, the added embellishments should be repeated as well, "provided that they are playable."[124] One example where an ornament (here a trill) would have been expected to be reiterated to follow the canonic

[121] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.348
[122] Bach, *Das Wohltemperierte Klavier, Teil II*, p.79, bar 45
[123] Bach, *Goldberg Variations*, variation 13, bar 28, ornamentation by the author
[124] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.478

rule but was not, would be in variation 3, the canon at the unison. The trill on A (right hand) would not be playable the second time (in the following bar), but the Pralltriller on B is :



[125]

C. P. E. Bach is more categorical than Badura-Skoda: in his treatise he declares that "all imitations must be exact to the smallest detail."[126] This is probably a case where, as Neumann warned, C. P. E. Bach should not be taken as a primary source to speak for his father. This inflexibility or implacableness is foreign to the music of J. S. Bach. As mentioned in the introduction, Wolff states that J. S. Bach's musical perfection equates unity in diversity[127] – the key word here being *diversity*. In variation 10 (Fughetta) and 22 (Alla breve) for instance, I have applied mostly the same ornamentation to each instance of the returning themes or motifs, but not everywhere, to avoid monotony. Exact repetition is mathematically and logically satisfying, but musically dull. To find the fine balance between consistency and variety – or unity and diversity – is certainly the hardest task that awaits the performer when stepping into the field of free ornamentation.

Performance Considerations

Ornamentation in the repeats as I have done in the *Goldberg* is one way to impart variety to the performance. However, as previously mentioned, it is up to the performer to decide whether

[125] Bach, *Goldberg Variations*, variation 3, bar 9-10, ornamentation by the author
[126] C. P. E. Bach, *Essay*, p.86
[127] Wolff, *The Learned Musician*, p.469

to change the level of ornamentation or not, and to what extent. Sometimes, a change in articulation, voicing, or dynamics may be all that is needed to "inject the necessary element of diversity"[128] in the repeats. In certain variations, the texture is already so dense and fully ornamented, or the music so perfect and complete, that adding further diminutions or essential ornaments seems out of the question. In some cases of this kind, I have proposed certain articulation marks on the repeats.

Regarding Bach's articulation, Badura-Skoda is helpful: "a simple rule emerges. This is that stepwise passages should on the whole be played legato, whereas larger intervals and leaps should be detached." "Octave leaps should almost never be played legato."[129] Again, it would be ill-fated to formulate any kind of rigid rule or doctrine on this matter; this is only a useful guideline.

When it comes to the performance of essential ornaments (therefore those mostly indicated by French-derived symbols), there are several ornamentation tables and treatises that exist in which composers and pedagogues strived as best they could to explain and teach those symbols. However, as Neumann tells us, "there was no such thing as a general Baroque convention and many treatises are bound to contradict each other on many points."[130] The ornamentation tables "gave rise to many misconceptions."[131] The ornaments, when "pressed into metrical straitjackets [of the ornamentation tables], fail in their fundamental artistic function: instead of dissolving rigidity, they enhance it."[132] One should instead consider the ornaments as the result of

[128] Neumann, *Ornamentation,* p.551
[129] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.96
[130] Neumann, *Essays in Performance Practice*, p.197
[131] Neumann, *Essays in Performance Practice*, p.198
[132] Neumann, *Essays in Performance Practice*, p.199

an improvisatory tradition, and perform them with a "touch of spontaneity, rhythmic freedom, and imaginative nuance."[133]

The Last Aria

The *Goldberg Variations* is a journey, both for the performer and for the listener. Ralph Kirkpatrick talks of "the light of this journey – a spiritual crossing."[134] When the Aria returns at the end of the work, one truly feels a transformation: we face the exact same music as the initial piece, but after the experience of all that has been said in between, it inherently feels different. The Aria is metamorphosed, transfigured. The modern listener may compare this effect with the return of the theme at the end of the variations in Beethoven's Piano Sonata Op.109,[135] although it may be argued that in the case of the *Goldberg* the scope of the transformation is even greater, due perhaps to the greater length of the journey.

For the repeat of this last Aria, I have a very bold suggestion. Instead of presenting an ornamented version like for the first Aria, I propose the opposite: playing the Aria in its skeletal design, down to its bare bones. Neumann and Badura-Skoda would disagree: "total skeletal austerity […] was foreign to the period's style,"[136] says Neumann; "it amounts to a misrepresentation,"[137] he adds; "if the *Goldberg* Aria were reduced [to its bare notation] […] This would simply not make 'Bachian' sense,"[138] says Badura-Skoda. Despite these warnings, I still think that ending with the outline of the Aria rather than an ornamentation is very effective: we are left

[133] Neumann, *Essays in Performance Practice*, p.245
[134] Calais, *Bach en concert*, p.84
[135] Schulenberg, *The Keyboard Music of J. S. Bach*, p.372
[136] Neumann, *Ornamentation*, p.574
[137] Neumann, *Ornamentation*, p.572
[138] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.506

with only the very essential. Having gone in both directions (the ornamented version and the bare bones version), nothing else can been said; the journey is complete. It also makes for a very modern performance. Why not? It is only one possibility; there is no such thing as a definitive interpretation. After all, Neumann's wisdom has the last word: "Any performance, to be valid and convincing, must be an act of artistry, not of historical demonstration."[139]

[139]Neumann, *Ornamentation*, p.575

Structural Analysis

Survey of Existing Structural Analyses

In the Form section above, we have explored the most important elements of structure of the *Goldberg Variations*: the groups of three with the canons, the symmetry in the variations, the binary form, and the periodicity in the phrase structure. In this section, we will go further with more analysis elements, also opening the door to some more subjective kinds of structural analyses. After a brief survey of what exists in the literature, I will present my own hypothetical structure, which I have named the *Goldberg Galaxy*.

Owen Jander (1966)[140] finds that there is a mathematical balance (which he calls rhythmic symmetry) in the nine canons of the Goldberg. The nine canons all have a different time signature, except for two of them, the canons at the third (variation 9) and at the seventh (variation 21), which share a time signature of "common time," C. There is a difference in the feeling of the pulse in these two C times, however. They both indicate that there are 4 beats of a quarter per bar, but the sub-unit in the canon at the third is mainly the eighth note (so 2 sub-units per beat), while in the canon at the seventh the sub-unit is mainly the sixteenth note (so 4 sub-units per beat). The canon at the third would then be 4 x 2, and the canon at the seventh 4 x 4. If we follow the same logic for all the canons, we find that all the possible combinations of the numbers 2, 3, and 4 have been used. This rhythmic scheme is certainly not a coincidence: Bach really aimed at a survey, exhausting all the possibilities for the greatest diversity.

[140] Jander, *Rhythmic Symmetry in the "Goldberg Variations"*

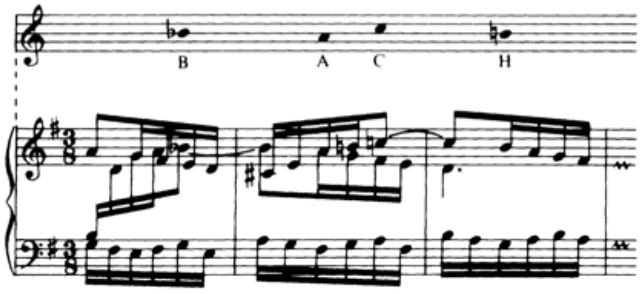
Beats x Sub-units	Time Signature	Canon
2 x 2	¢	at the Sixth (var. 18)
2 x 3	6/8	at the Ninth (var. 27)
2 x 4	2/4	at the Fifth (var. 15)
3 x 2	3/8	at the Second (var. 6)
3 x 3	9/8	at the Octave (var. 24)
3 x 4	3/4	at the Fourth (var. 12)
4 x 2	C	at the Third (var. 9)
4 x 3	12/8	at the Unison (var. 3)
4 x 4	C	at the Seventh (var. 21)

Werner Breig (1975) suggested that the Goldberg might have first been conceived with 24 variations instead of 30, around the first eight canons (from the unison to the octave).[141] However, we are not told which variations were added and why.[142] Also, if we retain the hypothesis that Bach on the outset might have been inspired by Zelenka to include nine canons, up to the ninth (see above, in the Form section), this theory seems less plausible.

David Humphreys (1984-5) considers the thirty variations as containing three cycles: the canon cycle, the 'planet cycle' and the 'virtuoso cycle.' His 'cosmological allegory' in the planet cycle extends to the 'nine spheres of Ptolemaic cosmology': he associates variations 4, 7, 10, 13, 16, 19, 22, 25 and 28 respectively to Earth, the Moon, Mercury, Venus, Sun, Mars, Jupiter, Saturn, and Fixed stars.[143] Although imaginative, the attribution seems rather arbitrary.

[141] Schulenberg, *The Keyboard Music of J. S. Bach*, p.371
[142] Williams, *The Goldberg Variations*, p.48
[143] Williams, *The Goldberg Variations*, p.100

Alan Street (1987) in his essay attempts to show that "it is the 'Goldberg' Variations which represents Bach's definitive defence of Scheibe's criticisms, conceived according to the rules of oratory and taking its ultimate inspiration from Quintilian's *Institutio oratoria.*"[144] Street, in his approach from rhetoric, finds a parallel between Bach's musical structure and Quintilian's advice in giving a speech. Williams comments that "much of this is as harmless as it is hilarious."[145] Nonetheless, a particular detail is of interest. In variation 6 (bar 11-13), Street finds Bach's signature, B A C H (B-flat, A, C, B):

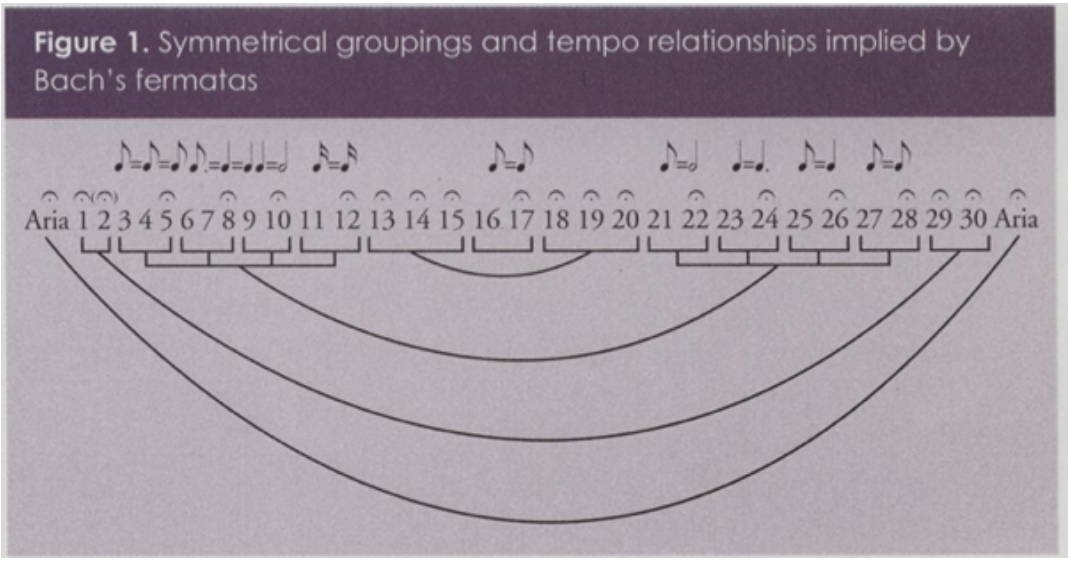


[146]

Cory Hall (2005) uncovers a symmetrical plan that goes beyond the one noted by Wolff (see above in the Form section). Following a careful study of Bach's autograph manuscript, the *Handexemplar* with the Fourteen Canons discovered in 1974 mentioned earlier, Hall noticed that the fermatas at the end of variations divided the work into single variations (the ones with a fermata both before and after) and paired or grouped variations (two or more variations with no fermata in between). When there is no fermata at the end of a variation, it suggests that Bach meant the performer to continue straight into the next variation, without much pause or ritardando, creating a pair or group of variations. In these cases, a tempo relationship needs to be established between

[144] Street, *The Rhetorico-Musical Structure of the "Goldberg" Variations*, p.91
[145] Williams, *The Goldberg Variations*, p.102
[146] Street, *The Rhetorico-Musical Structure of the "Goldberg" Variations*, p.97

the variations. The following diagram by Hall shows the resulting symmetry and tempo relationships. A fermata after variation 2 has been added (in parentheses in the diagram): Hall assumed that it was probably an oversight by Bach, as otherwise the symmetry seems perfect. Hall also mentions that "popular editions such as Henle [the one used here] and NBA both incorrectly reproduce Bach's fermatas."[147] He advises to use the Peters edition, to his knowledge one of the only editions in which the reproduction of Bach's fermatas is correct. As they are reputed incorrect in the edition I used, the fermatas have not been included in the Appendix; I suggest following Hall's diagram.



[148]

Patrick Calais (2017) proposes to see in the *Goldberg Variations* a 'Suite of suites.'[149] In accordance with the hypothesis by Breig that the *Goldberg* started with a core of 24 variations, Calais suggests that there are four original suites of six movements each, with added transition variations before, in between and after. Almost all instrumental compositions of the 16th and 17th

[147] Hall, *Bach's Goldberg Variations DEMYSTIFIED*, p.98
[148] Hall, *Bach's Goldberg Variations DEMYSTIFIED*, p.37
[149] Calais, *Bach en concert*, p.61

century were dance suites.[150] The suite's classical layout, imposing itself in the second half of the 17th century, particularly under the influence of Froberger, Reinken, Buxtehude, Kuhnau and Pachelbel,[151] unfolds as Allemande, Courante, Sarabande, and Gigue, with "other dances perhaps interpolated between the last two."[152] An optional introduction might be added as well, in the form of a "prelude, sinfonia, overture or fantasia."[153] Calais's proposition puts the canons in the center of groups of three, instead of at the end.[154] The idea of the suites might be more convincing if the character pieces followed more closely the classical layout of the suite. Apart from Calais's first suite, ending with a Gigue, the suite patterns seem inconsistent with the convention.

J. S. Bach – Les Suites "Goldberg" (1739-1741)[155]

	Suite I	**Suite II**		**Suite III**	**Suite IV**	
	V.1 – Toccata / Ouverture			**V.16 – Ouverture à la française**		
	V.2 – Invention à 3	V.8 – Toccata		V.17 – Toccata - courante	V.23 – Toccata	
	V.3 – *Canon à l'unisson*	V.9 – *Canon à la 3ce*		V.18 – *Canon à la 6te*	V.24 – *Canon à l'8ve*	
	V.4 – Invention à 4 – To pass.	V.10 – Fughetta		V.19 – Passepied	V.25 – Aria adagio To sarab.	
	V.5 – Courante	V.11 – Inv. à 2 - Toccata		V.20 – Toccata - courante	V.26 – Chaconne To sarab.	
	V.6 – *Canon à la 2de*	V.12 – *Canon à la 4te*		V.21 – *Canon à la 7ème*	V.27 – *Canon à la 9e*	
	V.7 - Gigue	V.13 – Air / To Sarabande		V.22 – Alla breve	V.28 – Toccata	
ARIA		**V.14** – Toccata	**V. 15** Andante *Canon à la 5te*		**V.29** – Toccata - Finale	**V.30** ARIA

Moreover, Calais, seeing in the *Goldberg* the narrative of a journey, proposes to read into the nine canons the nine territories where Bach lived or sojourned: Eisenach, Ohrdruf, Lüneburg, Lübeck, Arnstadt, Mühlhausen, Weimar, Cöthen, and Leipzig.[156]

[150] Candé, *J. S. Bach*, p.346
[151] Ibid
[152] Boyd, *Bach*, p.94
[153] Candé, *J. S. Bach*, p.346
[154] Calais, *Bach en concert*, p.44
[155] Calais, *Bach en concert*, p.59
[156] Calais, *Bach en concert*, p.90

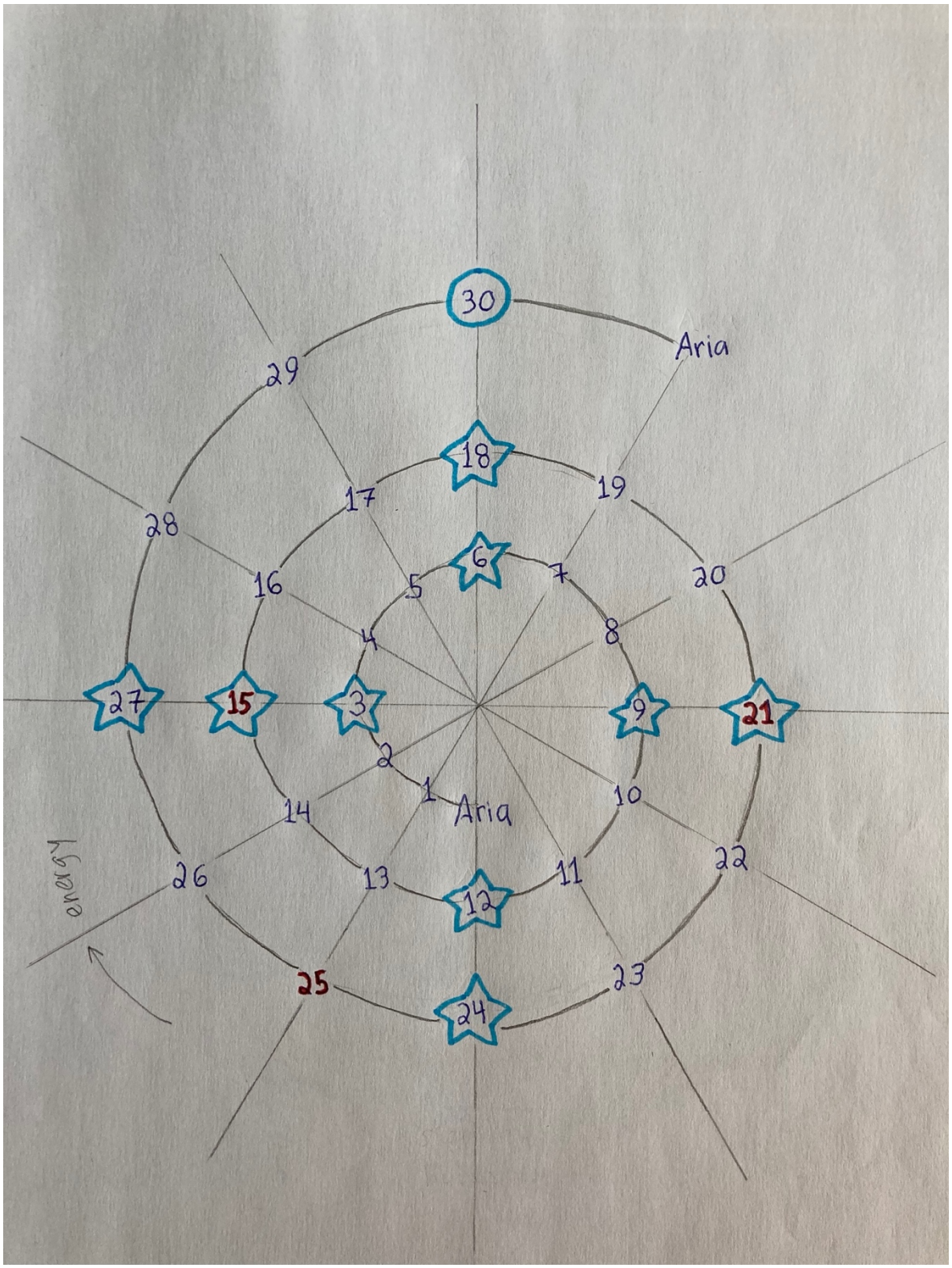
The Goldberg Galaxy

As Williams remarks, "It does seem to be the nature of the *Goldberg* to inspire a range of hypotheses."[157] Some of this mythical and mystical work's secrets might yet await to be uncovered. The symmetrical structure as put forward by Wolff and – a step further – Hall is very convincing, but I myself had been searching for an alternative structural analysis that would give the canons the prominent place they deserve, as the spine of the work. Also, the symmetrical structure is linear; however, I always felt that there was something circular in the *Goldberg*. When we come back to the Aria at the end, it really feels as though we have come full circle. There was something elusive I was looking for, that would illustrate this circular or cyclical quality.

I tried a few configurations before I finally came upon the structure that I named the *Goldberg Galaxy* (see next page). If we place the variations on a circle divided in twelve (like the clock, or the semitones of the scale), the canons strategically appear on the vertical and horizontal axes, forming a cross. The canons are marked with stars on the diagram. I started with the Aria at six o'clock, like a pendulum at rest; then as the work unfolds, the pendulum gains momentum, and starts moving up and clockwise. The result is an "organic spiral" that looks like a galaxy. The summit is reached at twelve o'clock, after two and a half turns, with the final variation, variation 30, which is not a canon as expected, but a quodlibet, as previously studied.

Could it be that Bach had this circular pattern in mind when he chose to compose a canon every third variation? It is possible. The resulting cross is compelling, as it was a crucial symbol for Bach. Mellers states that "The simultaneously temporal and atemporal nature of Bach's music is

[157] Williams, *The Goldberg Variations*, p.48


30
Aria
29
18
19
17
28
6
7
16
5
20
8
4
27
15
3
9
21
2
1
Aria
14
10
26
13
11
22
12
energy
25
23
24

thus exactly mirrored in the simultaneously harmonic-vertical and linear-horizontal character of his technique: in this sense he may be said to be the supreme composer of the Christian Cross, itself a metaphor at once vertical and horizontal."[158]

Apart from the canons' cross, another feature that is striking in the spiral is the element of increasing motion. In the center, at the beginning, the movement is small; then it gains momentum, as the distances between the variations become bigger and bigger. In my personal experience of performing the *Goldberg*, I always felt an incredible increase of energy especially in the last six variations. Variation 25 is the longest and the emotional climax of the work. After it, filled from that emotional energy, there seems to be an acceleration of the pace from variation 26 to 30, like a sprint to finish, variation 30 sounding like a real feast, a victory, a journey accomplished. Williams sees an escalation in the texture: "since the last four virtuoso movements for two manuals (Nos 23, 26, 28, 29) have more voices than the earlier (Nos 5, 8, 11, 14, 17, 20), there is a perceptual buildup in the virtuoso group."[159] Schulenberg's view is in agreement with mine: "the last half-dozen variations – all extraordinary in one way or the other – serve together as a climax."[160]

What I like best about the *Goldberg Galaxy* is this element of motion and growth that the spiral immediately gives at a glance, as opposed to a linear structure, which is more static. The element of motion is fundamental in baroque music.[161] Badura-Skoda speaks about "the even flow characteristic of baroque music: a feature that has sometimes been poetically compared with an undulating ocean."[162] The *Goldberg Variations* spiral out organically, sprouting and growing from

[158] Mellers, *Bach and the Dance of God*, p.9
[159] Williams, *The Goldberg Variations*, p.47
[160] Schulenberg, *The Keyboard Music of J. S. Bach*, p.372
[161] Fleming, *The Element of Motion in Baroque Art and Music*
[162] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.16

the kernel of the Aria, up until the summit that is the last variation. After the summit, the Aria returns; interestingly, with the *Goldberg Galaxy*, if we fall back from that point (the last Aria) through the center, we come back to variation 1, and the cycle can start again.

There is a structural mystery shrouding the three variations in the minor mode. The Aria and all of the *Goldberg Variations* are in G Major, except for variations 15, 21, and 25, which are in G minor, evoking "darker sentiments."[163] They appear in red in the spiral diagram. Why those three in particular? Knowing Bach and his carefully designed plans, there must be a reason. In a linear structure, the positioning of these three variations seems rather arbitrary. In the *Goldberg Galaxy* however, the placement appears more deliberate: variations 15 and 21 are in perfect symmetry on the horizontal axis, and variation 25 is on the axis of and in symmetry with the last Aria. The fact that there are three variations in minor is certainly related to the Trinity, which like the cross, represents a determining and significant Christian symbol for Bach.

[163] Boyd, *Bach*, p.138

Conclusion

"Despite its elegance, its dexterity and its complexity, Bach's music has primitive, pagan roots. It is music to celebrate a feast, the turn of the year – life itself."[164] The *Goldberg Variations* is just that: it is a celebration of life. It is a journey through all human emotions; it is humanity itself. John Butt talks of the remarkable range of character of the canons: "from the supremely lyrical (variations 3 and 9) to the intensely emotional (variations 15 and 21) and even the humorous (variation 27)."[165]

As already mentioned, what makes the Goldberg reach musical perfection is its unity in diversity. Diversity is achieved through a range of meters, tempos, texture, and musical expression.[166] Unity is assured on two levels. Firstly, on the small scale, each movement is unified by its own motivic development and unique form used (such as canon, overture, invention, and so on).[167] Then, on the larger scale, "the complete set is unified through the use of the common bass line, chord progressions, key, and binary structure."[168]

Wilfrid Mellers speaks of Johann Sebastian Bach's crucial position in European music history: Bach, "rooted in his Baroque present, looked back to a medieval past, and at the same time anticipated the future."[169] The *Goldberg Variations* is an atemporal work. Ingrained in the baroque tradition, it brings the contrapuntal art – and especially the art of the canon, the strictest form of counterpoint – to unparalleled highs, with other late Bach works, namely the Musical Offering, the

[164] Gardiner, *Musique au château du ciel*, p.572, translation by the author
[165] John Butt in Boyd, *Oxford Composer Companion: J. S. Bach*, p.196
[166] Wolff, *Bach's Musical Universe*, p.187
[167] Ehle, *Comments on the Goldberg Variations*, p.22
[168] Ibid
[169] Mellers, *Bach and the Dance of God*, p.8

Art of Fugue, and the Canonic Variations on "Vom Himmel hoch". It is one of the greatest sets of variations ever composed for keyboard, with its classical counterpart, Beethoven's Diabelli Variations. In this sense, it foreshadows the future. Such large-scale works were rare in the time of Bach. We might see the heritage and the influence of the *Goldberg Variations* in other gigantic modern masterpieces, such as Messiaen's *Quatuor pour la fin du temps (Quartet for the End of Time)*, its journey also rooted in a profoundly Christian faith.

Following a survey of the essentials of the literature about the *Goldberg Variations*, I have explored the art of free ornamentation, and proposed varied repeats of the *Goldberg* that I hope will enable the modern performer to be in possession of useful ideas and tools to originate and stimulate a performance that is stylistically valid, imaginative, and never monotonous nor boring. In the baroque era, such varied repeats were the norm; in the following classical era, "the role of the performer declined; from being a free collaborator he became a mere executant carrying out orders. The ability to improvise gradually disappeared."[170] In this dissertation, I have tried to encourage today's performers to go back to the improvisatory tradition and add ornaments and embellishments for the refinement and enhancement of the work. I hope I have succeeded. As previously stated, my ornamentation is only a suggestion; it is up to the artist to decide whether to absorb my ideas or not.

Finally, I have presented an alternative structural analysis, a hypothetical spiral structure named the *Goldberg Galaxy*, that intends to offer a more organic kind of constitution and grant the canons the place they merit as the spine of the work, as opposed to a linear analysis as put forward by Wolff or Hall. Whether Bach sought to emulate the Christian cross with the canons of the

[170] Badura-Skoda, *Interpreting Bach at the Keyboard*, p.476

Goldberg Variations will always remain a mystery, but it is for me a possibility. Apart from the canons' cross, the element of motion and growth that transpires from the *Goldberg Galaxy* is what makes this layout most persuasive and powerful. It seems to be the best design to reflect the work's circular or cyclical quality that is instinctively felt while hearing or performing it. Together with my personal ornamentation, it is unquestionably another way to look at the *Goldberg Variations*.

Bibliography

Alain, O. (1975). Un supplément inédit aux Variations Goldberg de J. S. Bach. *Revue de Musicologie*, *61*(2), 244–294. https://doi.org/10.2307/928397

Bach, C. P. E. (1949). *Essay on the True Art of Playing Keyboard Instruments* (translated and edited by William J. Mitchell). W. W. Norton & Company.

Bach, J. S. (1972). *Das Wohltemperierte Klavier: Teil II* [piano score]. G. Henle Verlag.

Bach, J. S. (1951). *Englische Suiten für Klavier: Nr. 1-3* [piano score]. C. F. Peters.

Bach, J. S. (1978). *Goldberg-Variationen* [piano score]. G. Henle Verlag.

Badura-Skoda, P. (1993). *Interpreting Bach at the Keyboard.* Oxford University Press.

Boyd, M. (2000). *Bach.* Oxford University Press.

Boyd, M. (ed.). (1999). *Oxford Composer Companions: J. S. Bach.* Oxford University Press.

Calais, P. (2017). *Bach en concert: essai sur les Variations Goldberg, 2e édition augmentée.* L'Harmattan.

Candé, R. de. (1984). *Jean-Sébastien Bach.* Seuil.

Collins, D. (2002). Bach's Occasional Canon BWV 1073 and "Stacked" Canonic Procedure in the Eighteenth Century. *Bach*, *33*(2), 15–34. http://www.jstor.org/stable/41640503

Dequevauviller, V. (2000). Des Concertos Brandebourgeois aux Variations Goldberg: Jeux de lettres et de chiffres dans les œuvres de Bach. *Revue de Musicologie*, *86*(2), 265–288. https://doi.org/10.2307/947403

Ehle, R. C. (1969). comments on the GOLDBERG VARIATIONS. *American Music Teacher*, *19*(2), 20–22. http://www.jstor.org/stable/43537444

Fleming, W. (1946). The Element of Motion in Baroque Art and Music. *The Journal of Aesthetics and Art Criticism*, *5*(2), 121–128. https://doi.org/10.2307/425800

Gardiner, J.E. (2019). *Musique au château du ciel : un portrait de Jean-Sébastien Bach* (translated by L. Cantagrel and D. Collins). Flammarion.

Hall, C. (2005). Bach's Goldberg Variations DEMYSTIFIED. *American Music Teacher*, *54*(5), 35–98. http://www.jstor.org/stable/43549138

Jander, O. (1966). Rhythmic Symmetry in the "Goldberg Variations." *The Musical Quarterly*, *52*(2), 204–208. http://www.jstor.org/stable/741037

Kenyon, N. (1976). A Newly Discovered Group of Canons by Bach. *The Musical Times*, *117*(1599), 391–393. https://doi.org/10.2307/959253

Marshall, R. L. (1989). *The Music of Johann Sebastian Bach: the Sources, the Style, the Significance.* Schirmer Books.

Mellers, W. (1980). *Bach and the Dance of God*. Oxford University Press.

Neumann, F. (1985). Bach: Progressive or Conservative and the Authorship of the Goldberg Aria. *The Musical Quarterly*, *71*(3), 281–294. http://www.jstor.org/stable/948157

Neumann, F. (1982). *Essays in Performance Practice.* UMI Research Press.

Neumann, F. (1978). *Ornamentation in Baroque and Post-Baroque Music. With Special Emphasis on J. S. Bach.* Princeton University Press.

Schenkman, W. (2003). Tatlow's Bach and Bach's Signatures in the "Goldberg Variations." *Bach*, *34*(2), 63–106. http://www.jstor.org/stable/41640515

Schulenberg, D. (2006). *The Keyboard Music of J. S. Bach. Second Edition.* Routledge, Taylor & Francis Group.

Schweitzer, A. (1905). *J.-S. Bach: Le musicien-poète*. Éditions Maurice et Pierre Foetisch.

Street, A. (1987). The Rhetorico-Musical Structure of the "Goldberg" Variations: Bach's "Clavier-Übung" IV and the "Institutio Oratoria" of Quintilian. *Music Analysis*, *6*(1/2), 89–131. https://doi.org/10.2307/854217

Tomita, Y. (2007). *Bach and Dresden: A New Hypothesis on the Origin of the Goldberg Variations (BWV 988).* In D. Zager (dir.). *Music and Theology: Essays in Honor of Robin A. Leaver* (p. 169-192). The Scarecrow Press, Inc.

Tomita, Y. (1999). Bach and His Early Drafts: Some Observations on Little Known Early Versions of "Well-Tempered Clavier" II and the Goldberg Variations from the Manfred Gorke Collection. *Bach*, *30*(2), 49–72. http://www.jstor.org/stable/41640456

Vinay, G. (1995). L'interprétation comme analyse: les Variations Goldberg. *Revue de Musicologie*, *81*(1), 65–86. https://doi.org/10.2307/947350

Williams, P. (2001). *Bach: The Goldberg Variations.* Cambridge University Press.

Wolff, C. (1999). *Bach: Essays on His Life and Music.* Harvard University Press.

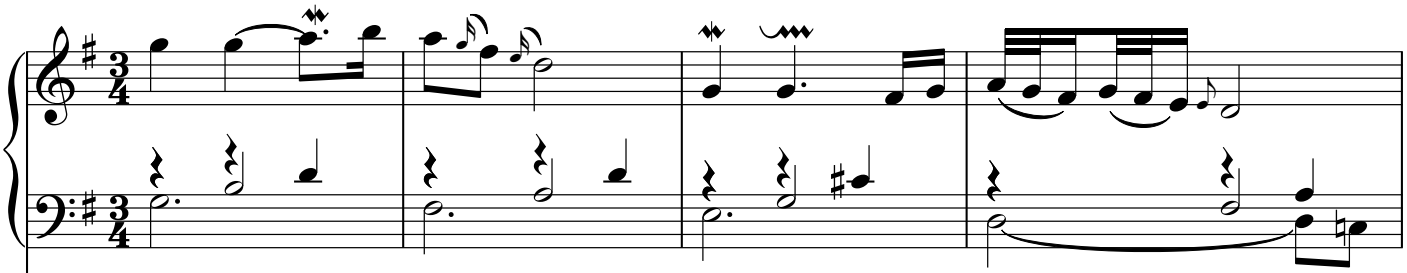
Wolff, C. (2020). *Bach's Musical Universe: The Composer and His Work.* W. W. Norton & Company

Wolff, C. (2013). *Johann Sebastian Bach: The Learned Musician.* Norton.

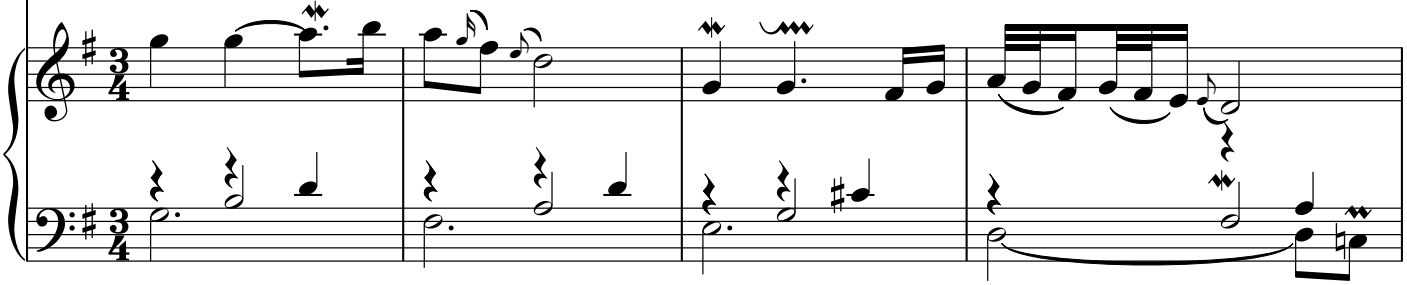
Appendix: The Goldberg Variations Complete Score with Varied Repeats

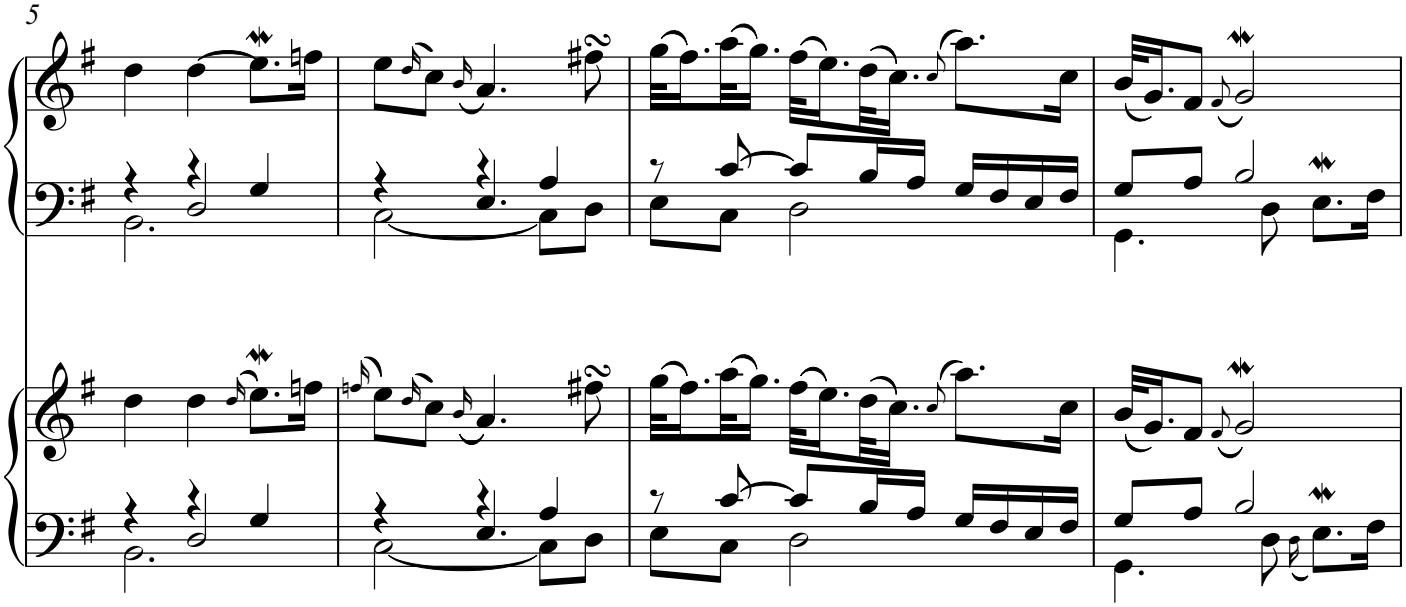
The complete score of J. S. Bach's *Goldberg Variations* was copied from the Henle edition (1978), using the Sibelius Ultimate music notation software. The original (Bach) version and my ornamented (Papillon) version are presented one under the other, to make the comparison easier, but of course are not meant to be played together. The Bach version is to be played first whereas the Papillon version is to be played second, as the repeat, in turn, for each of the two halves of every piece. Please note that for variation 26, it was impossible with the software to reproduce the original time signatures (18/16 concurrently with 3/4, and alternating), so the 3/4 time signature was used for both hands and for the whole variation.

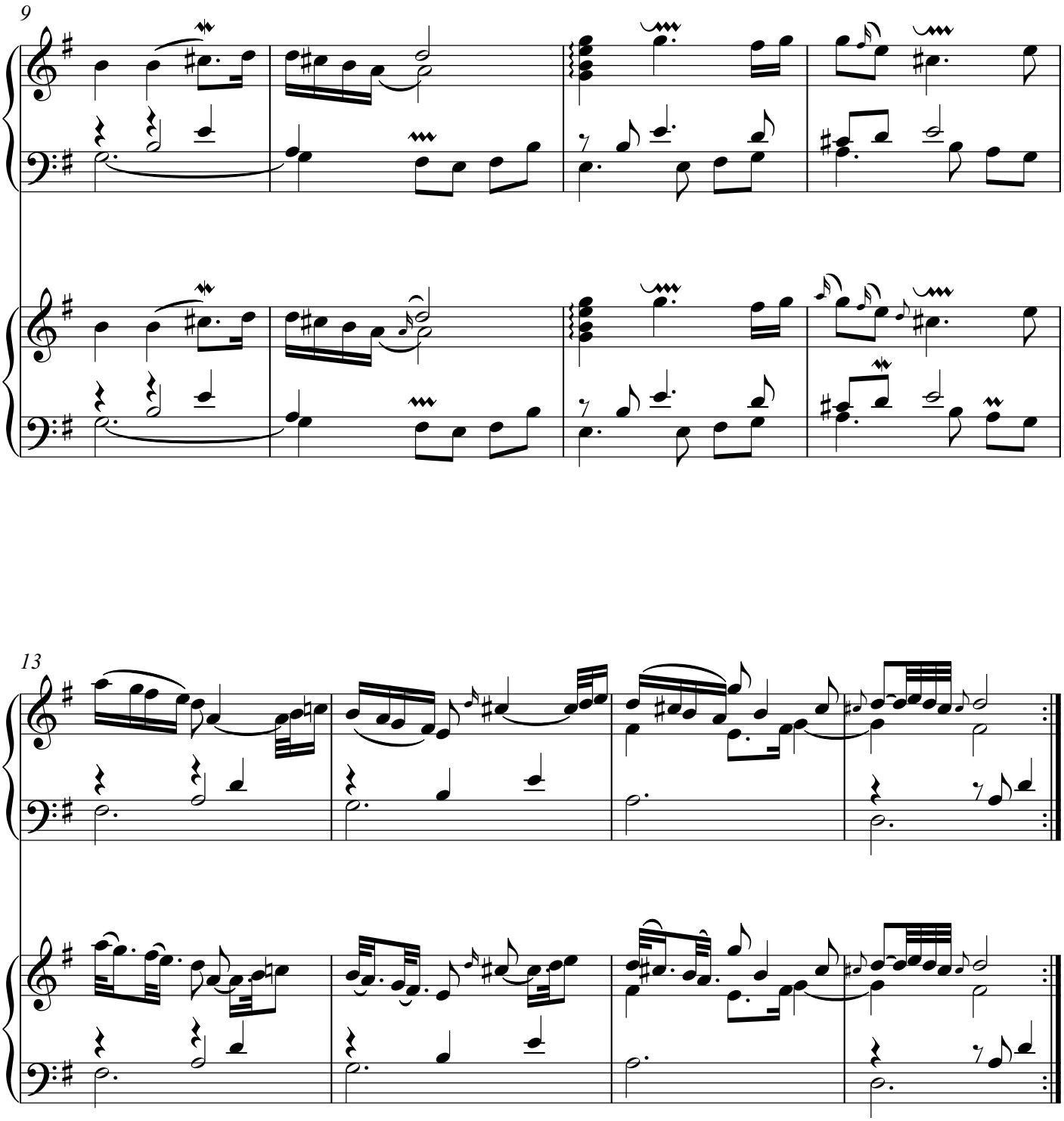
Aria (Bach)



Aria (Papillon)



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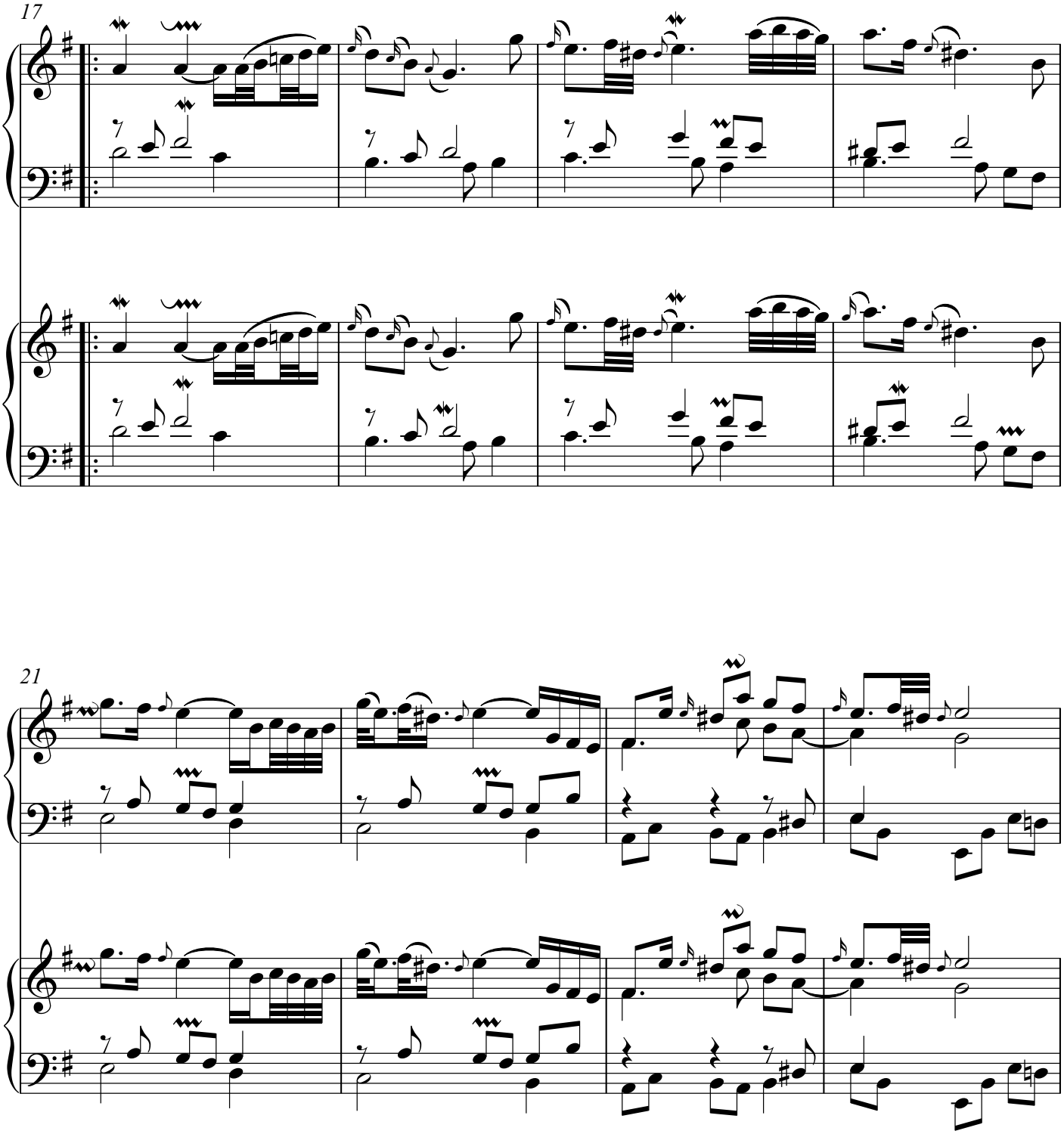
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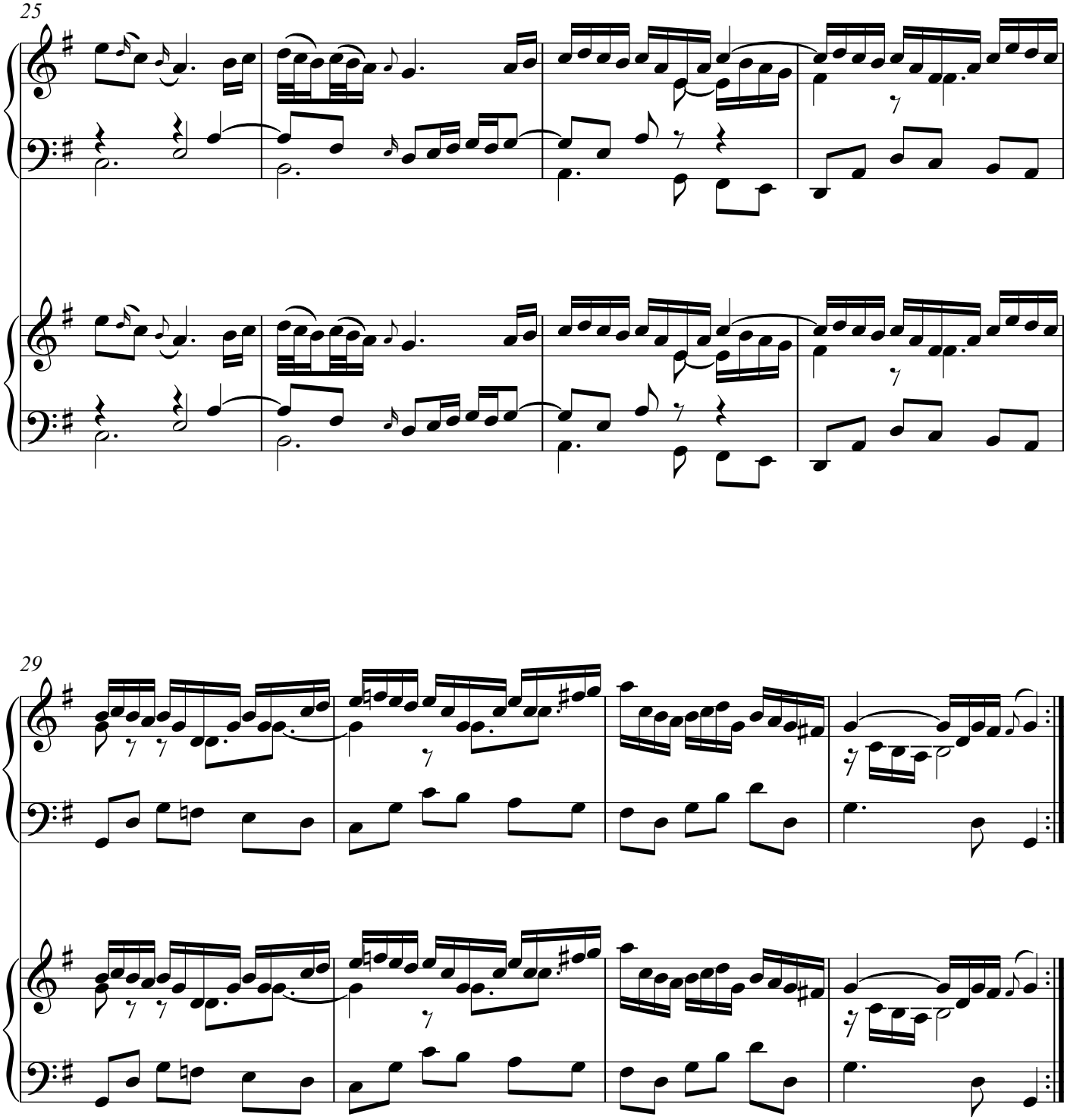
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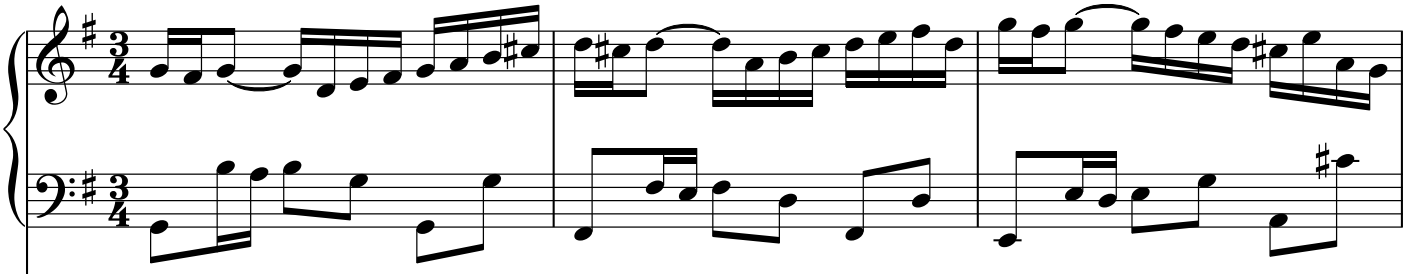

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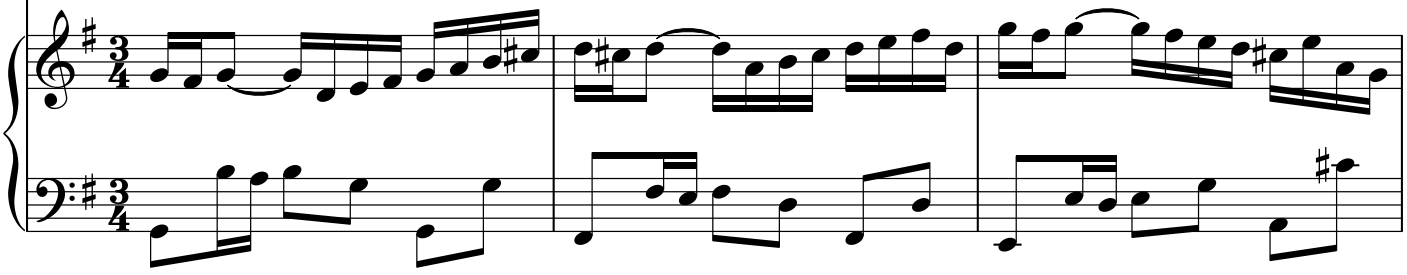

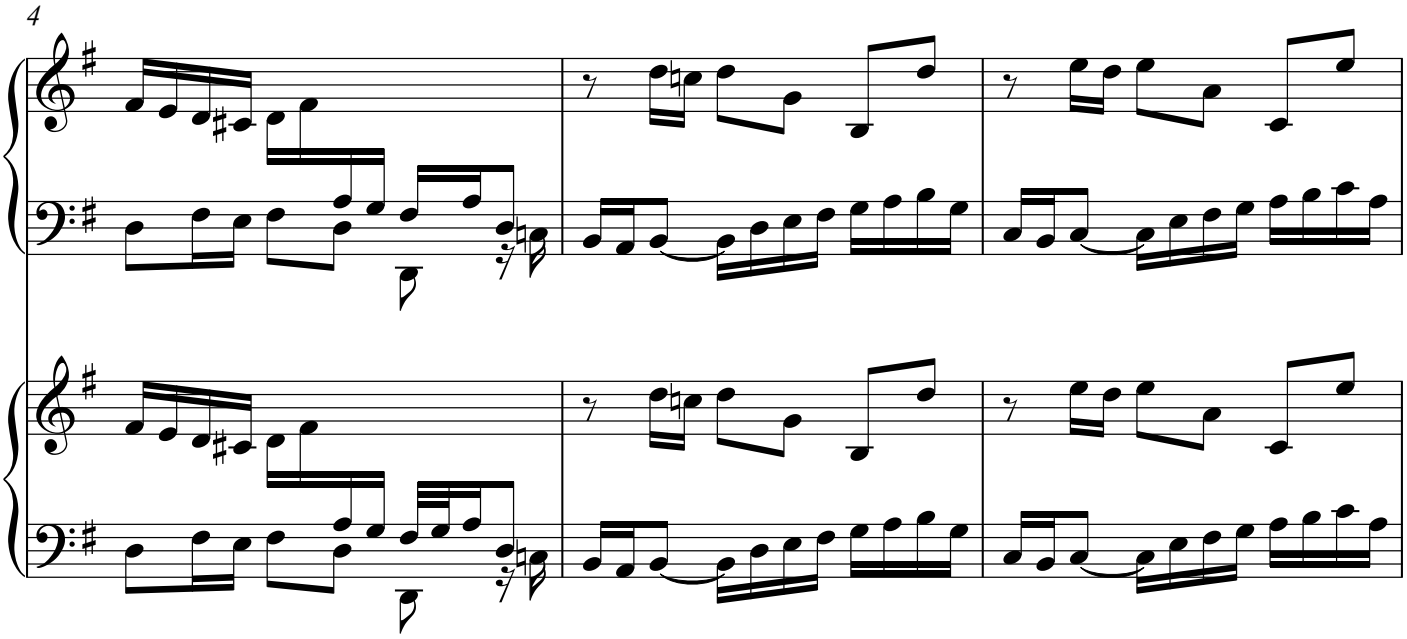

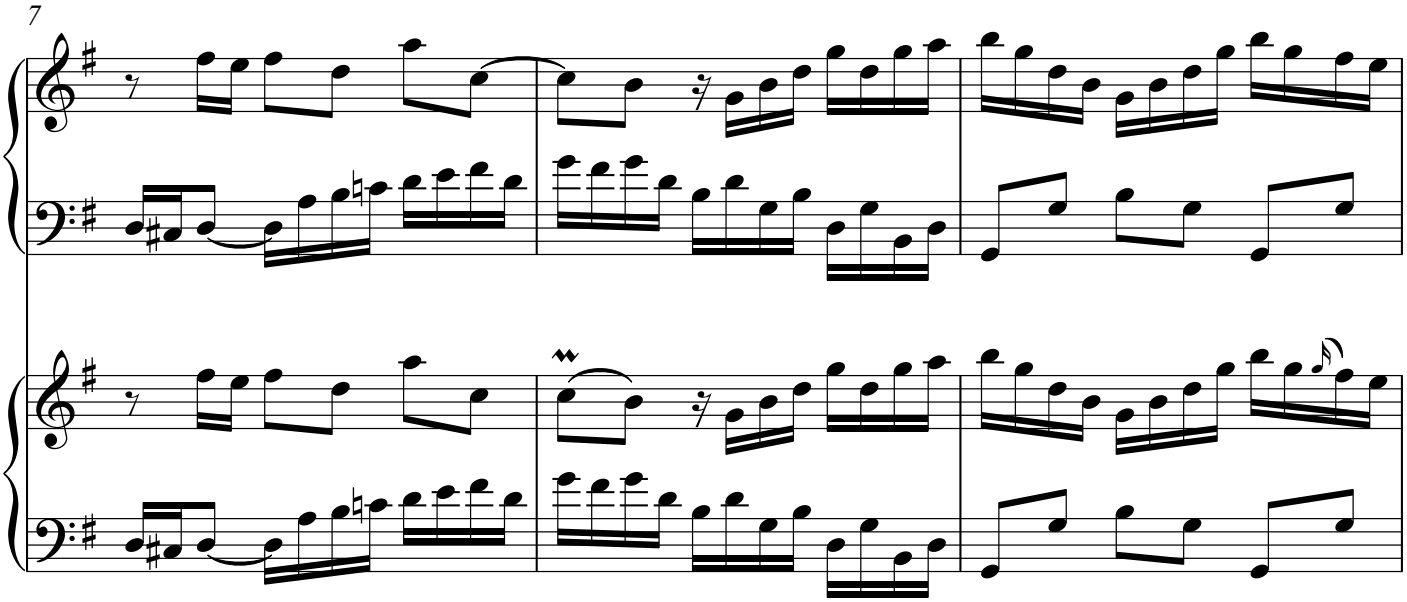
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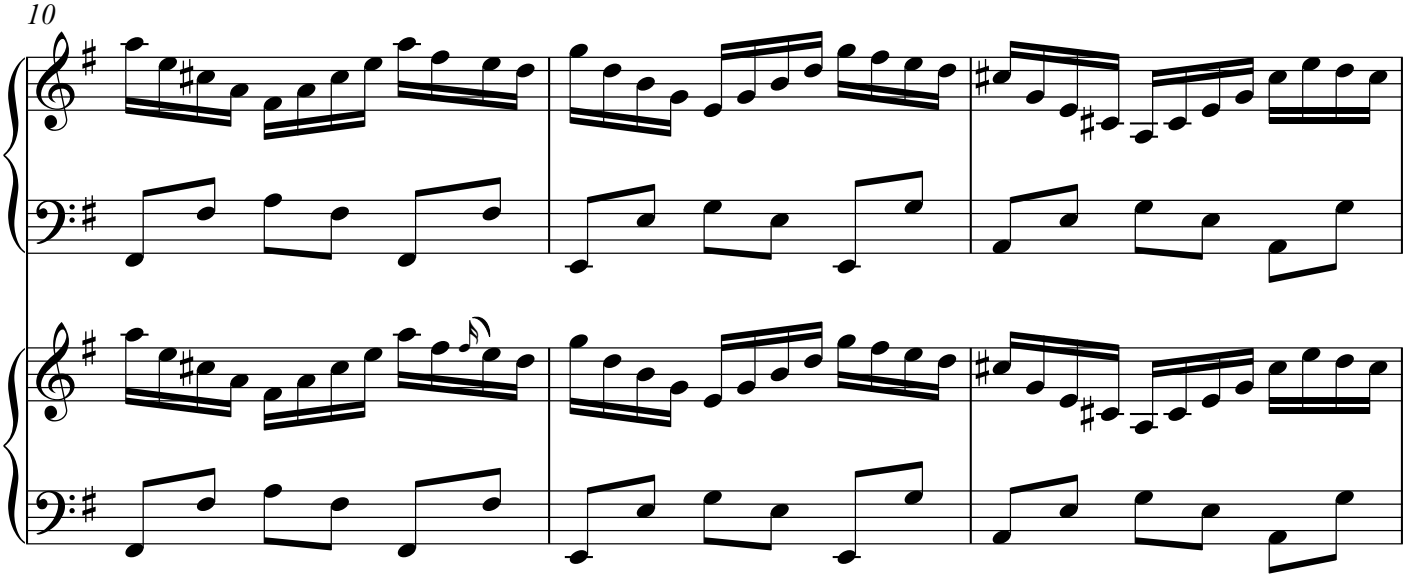
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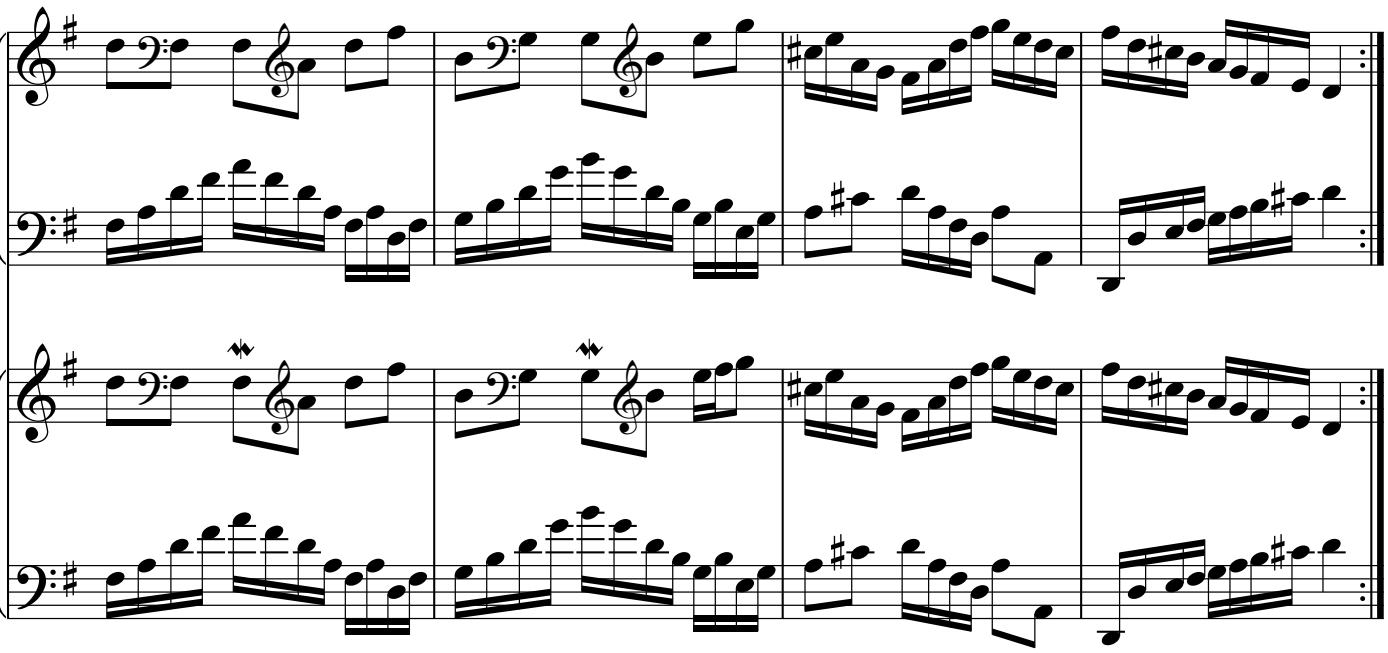

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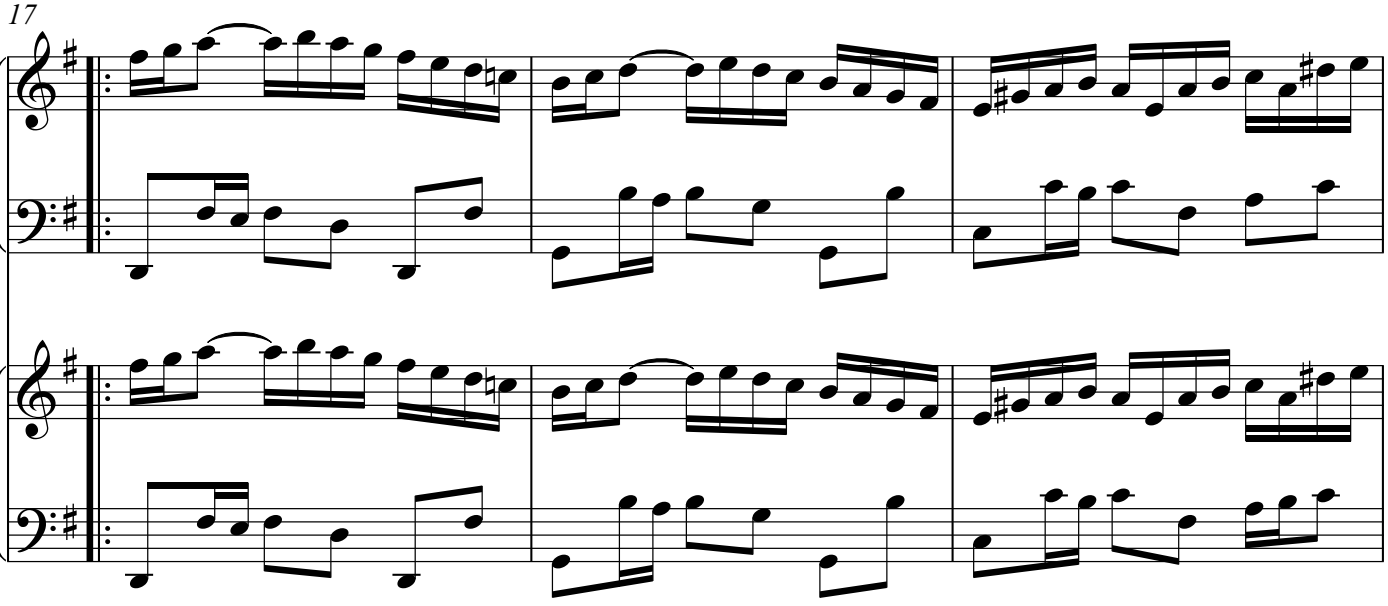

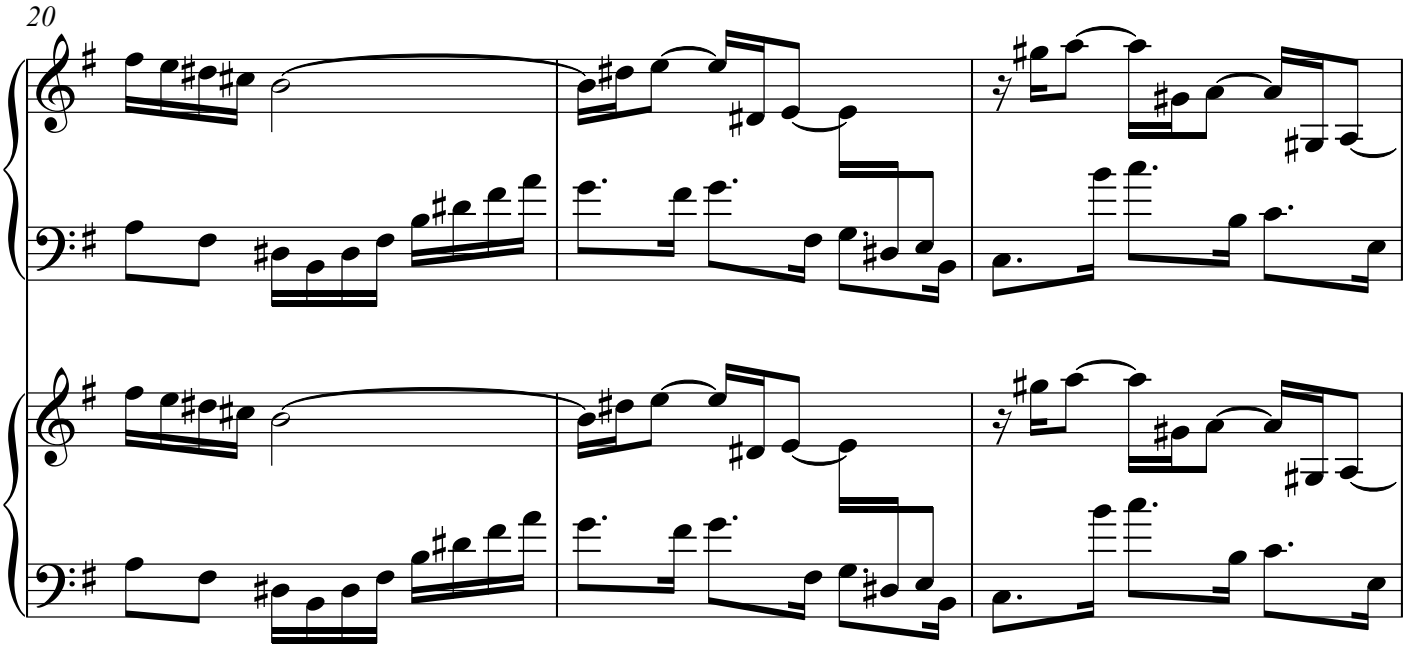
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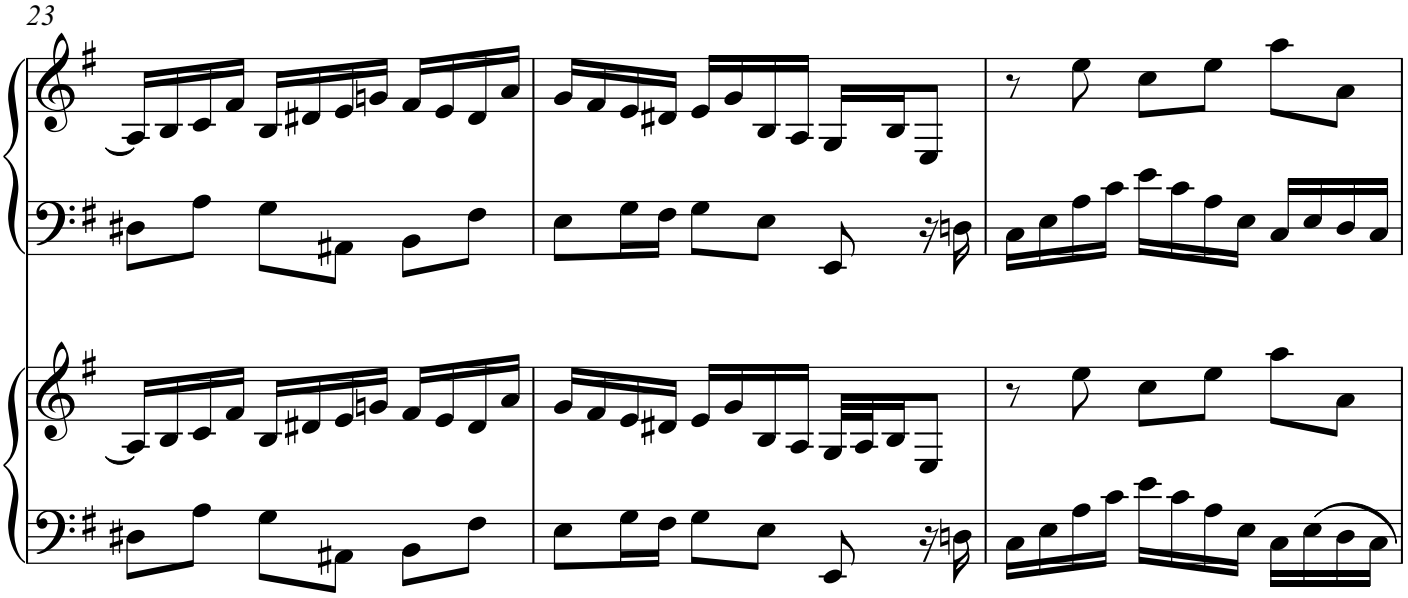
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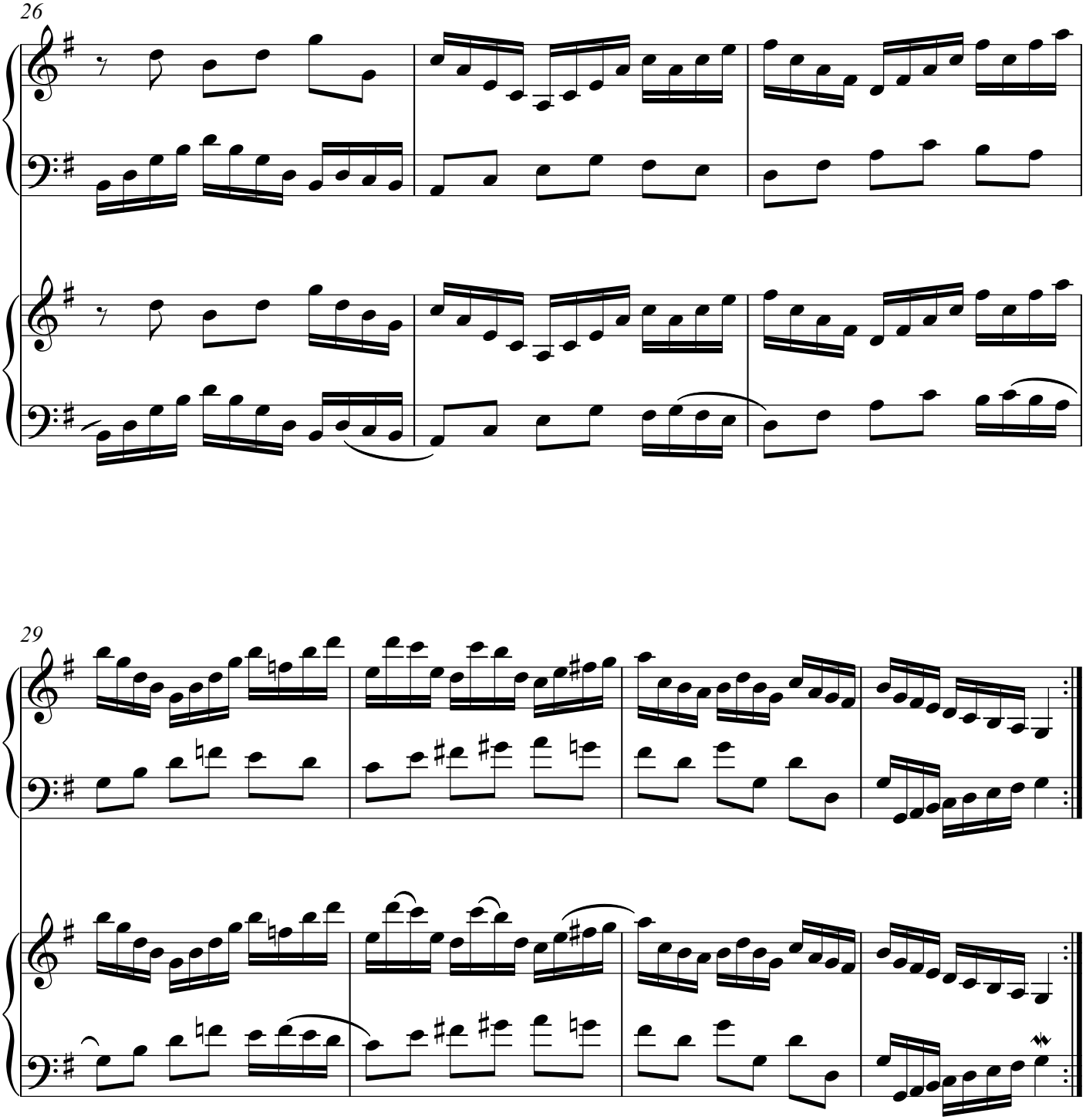
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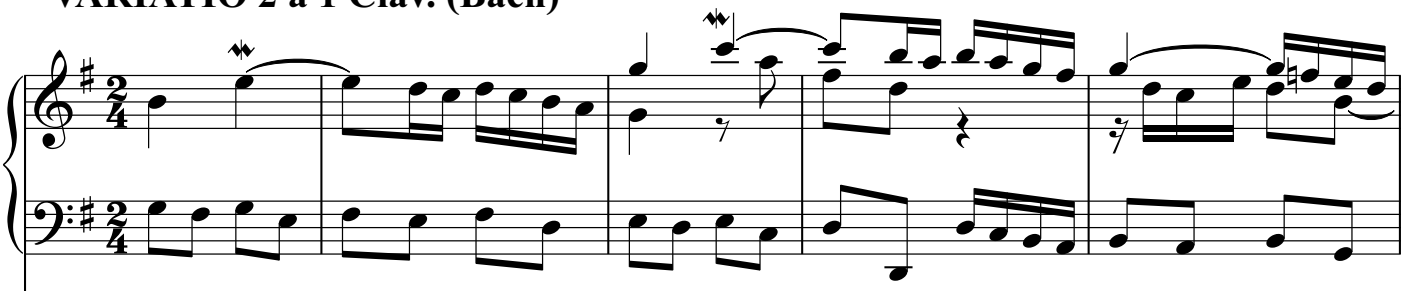

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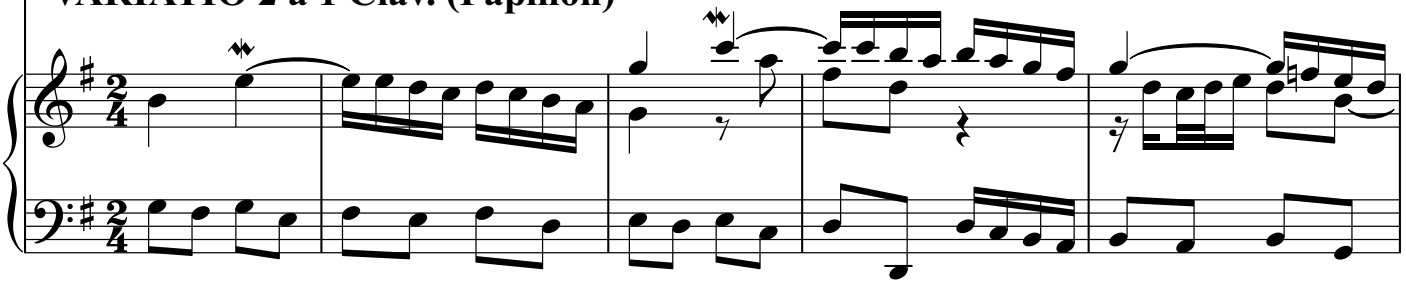

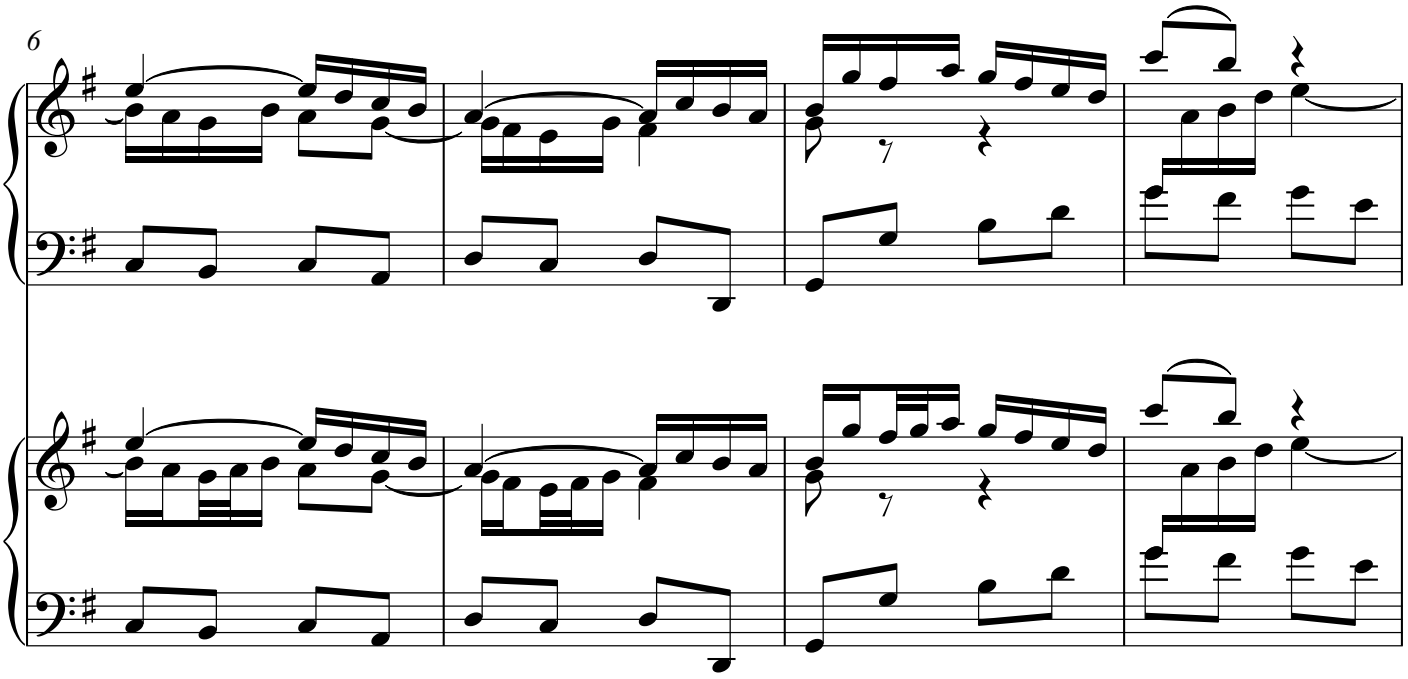

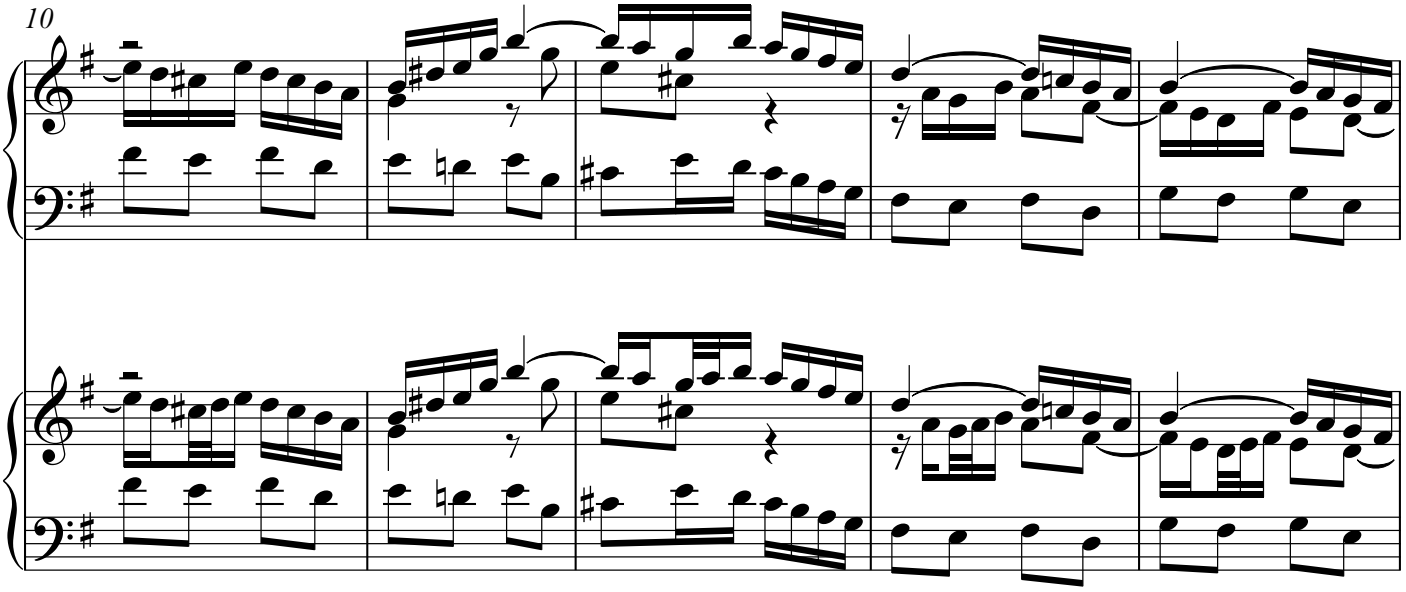
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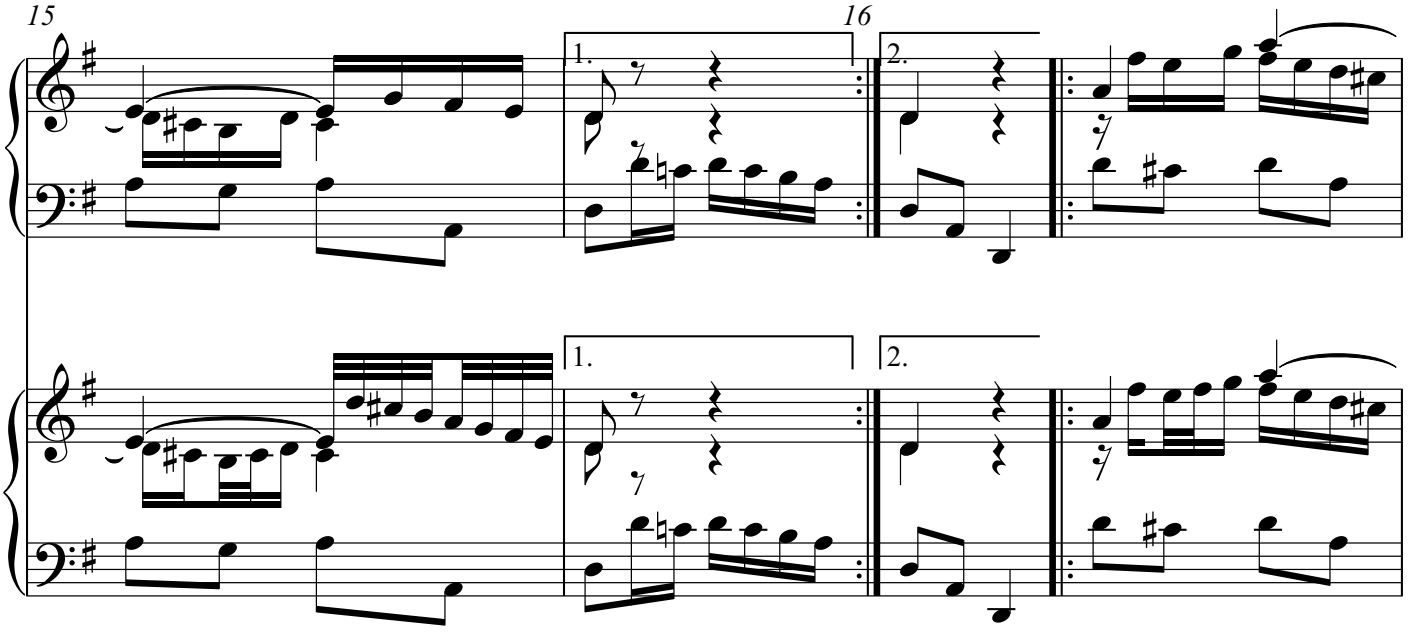
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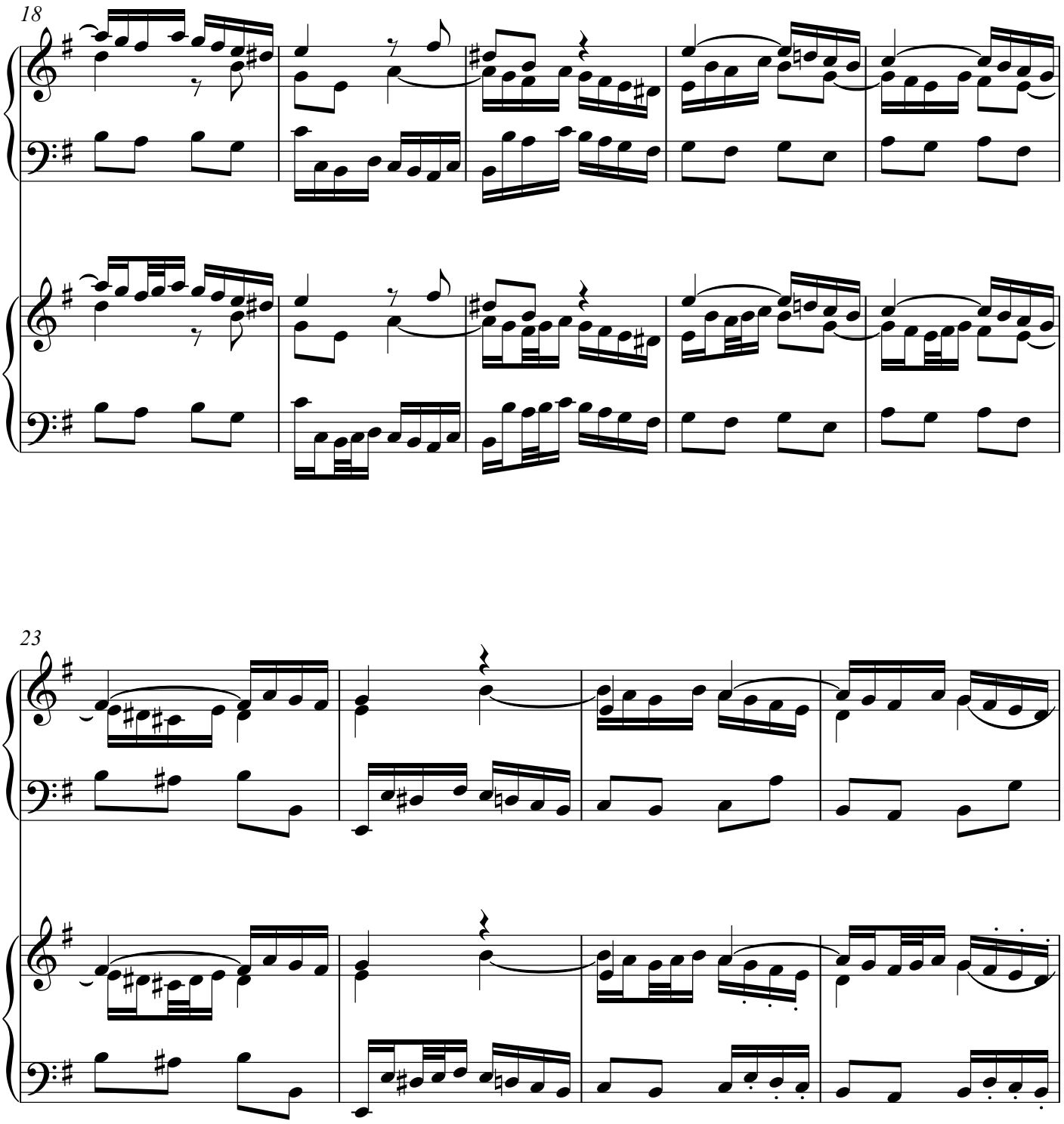
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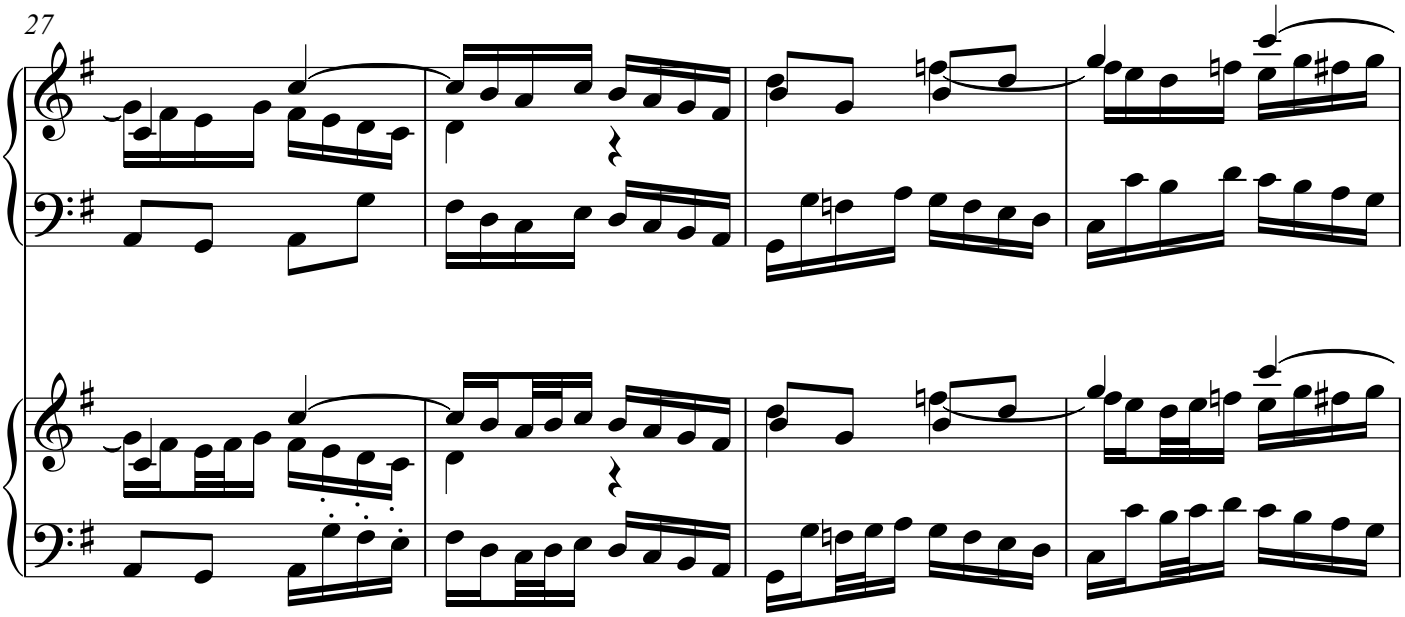
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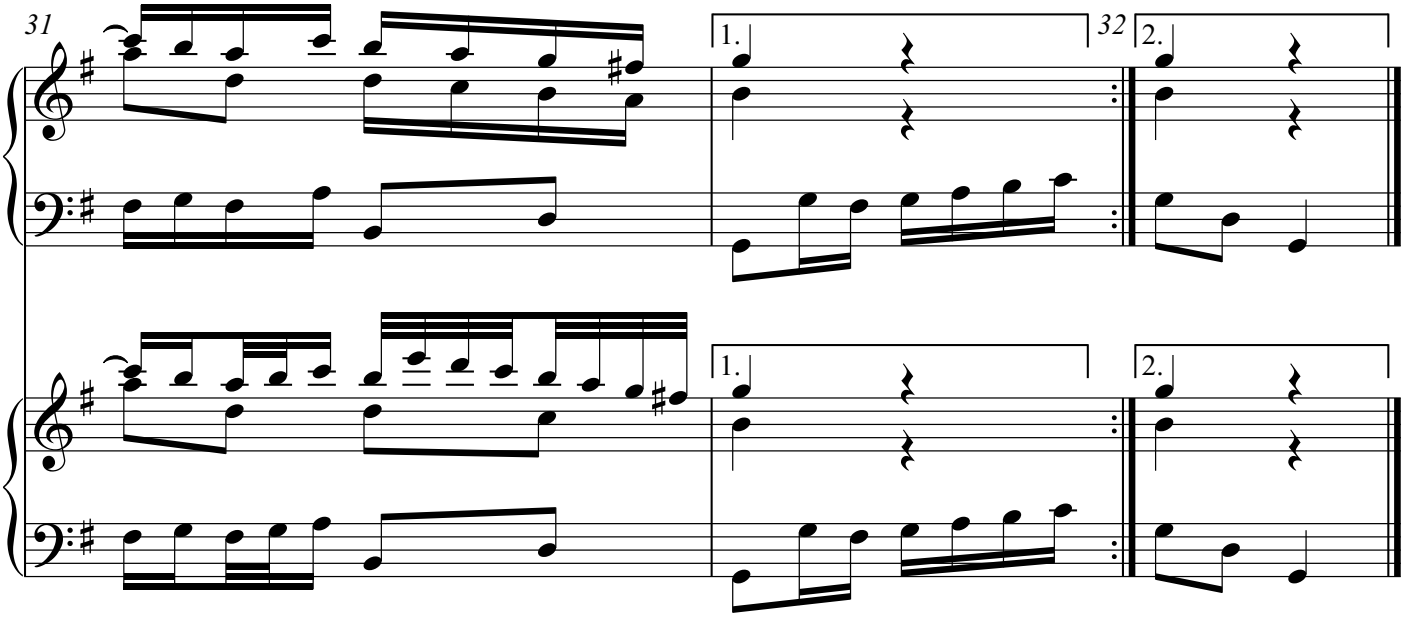
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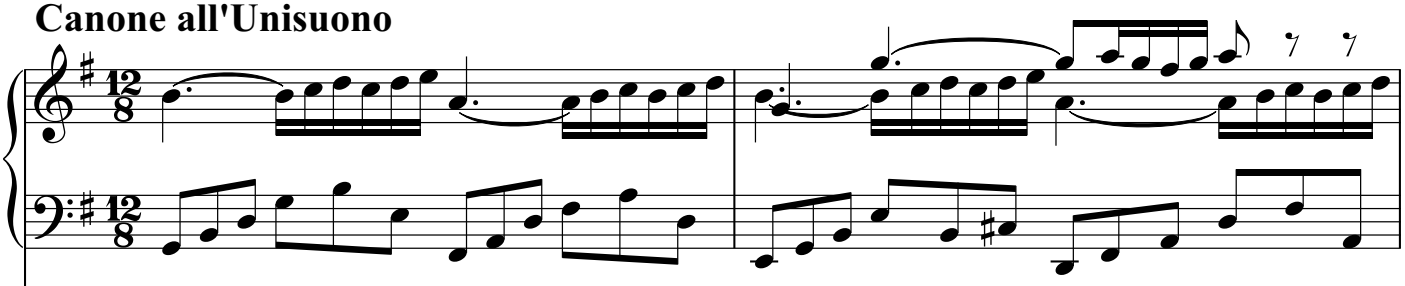
Canone all'Unisuono



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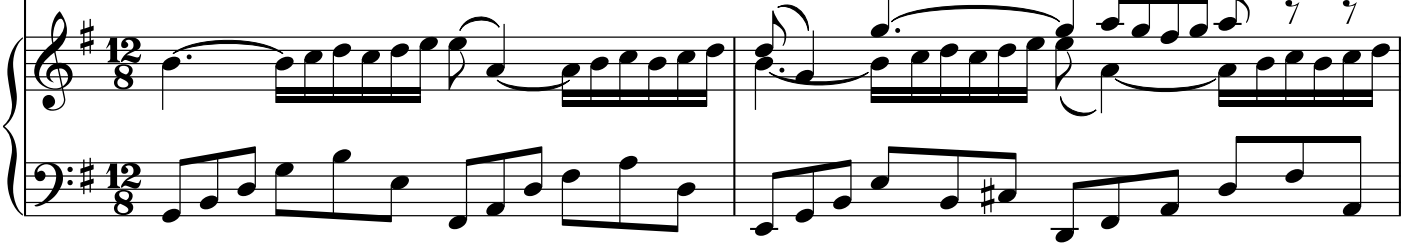

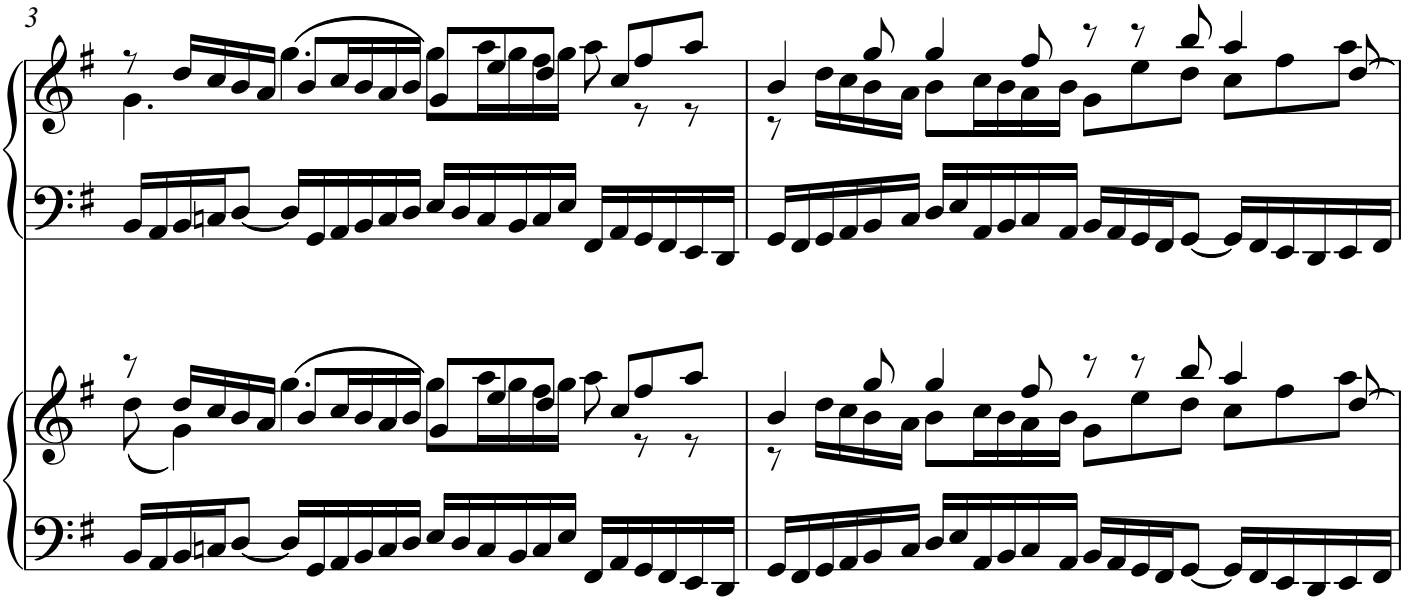

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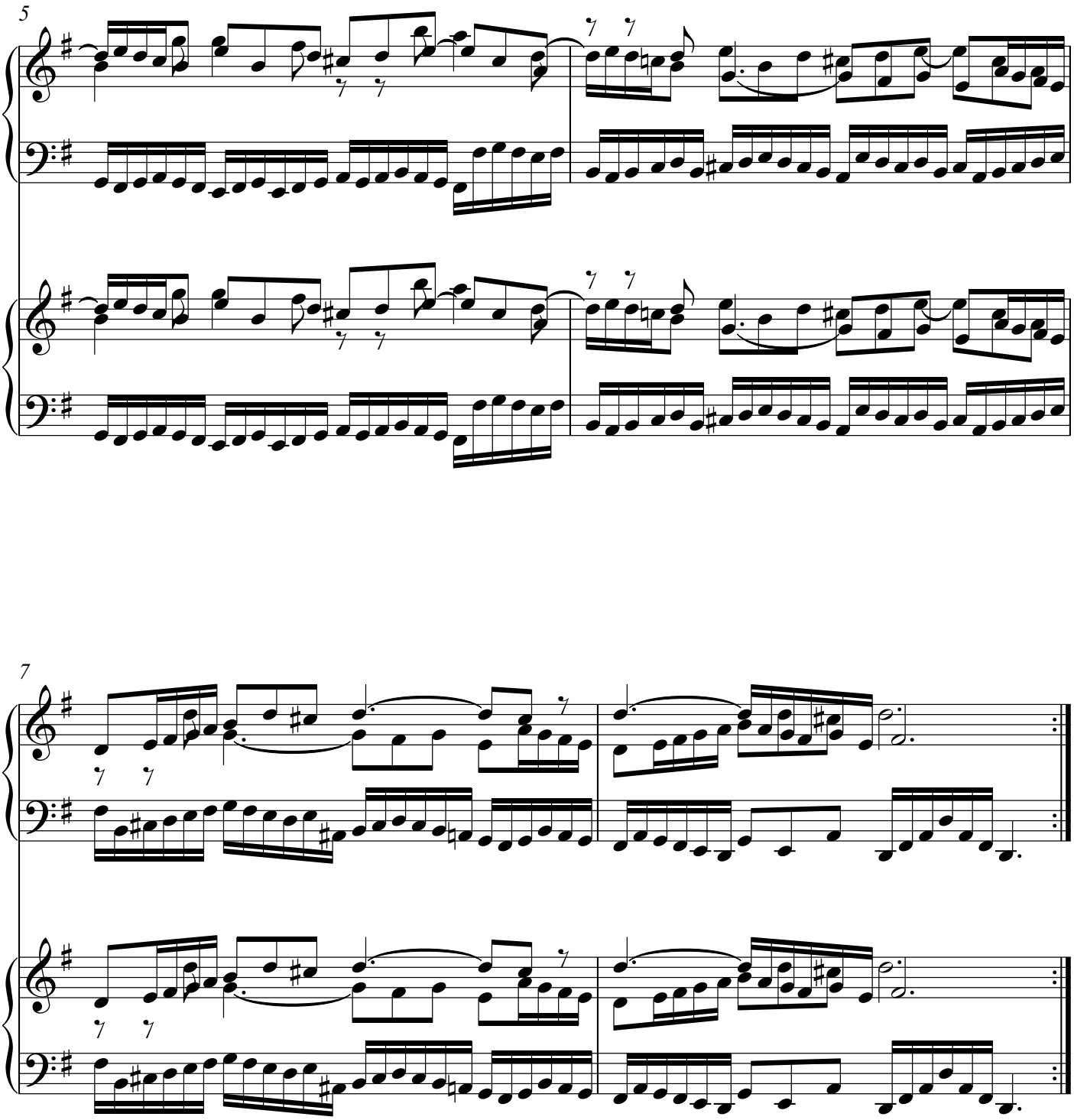
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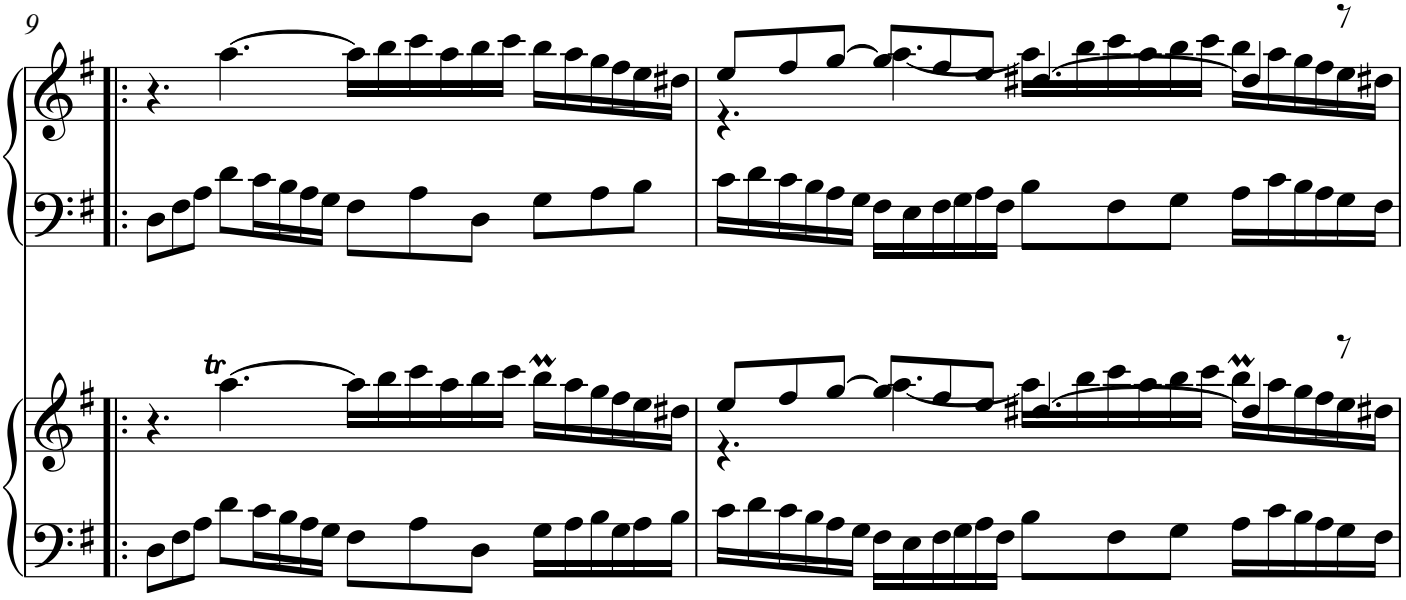
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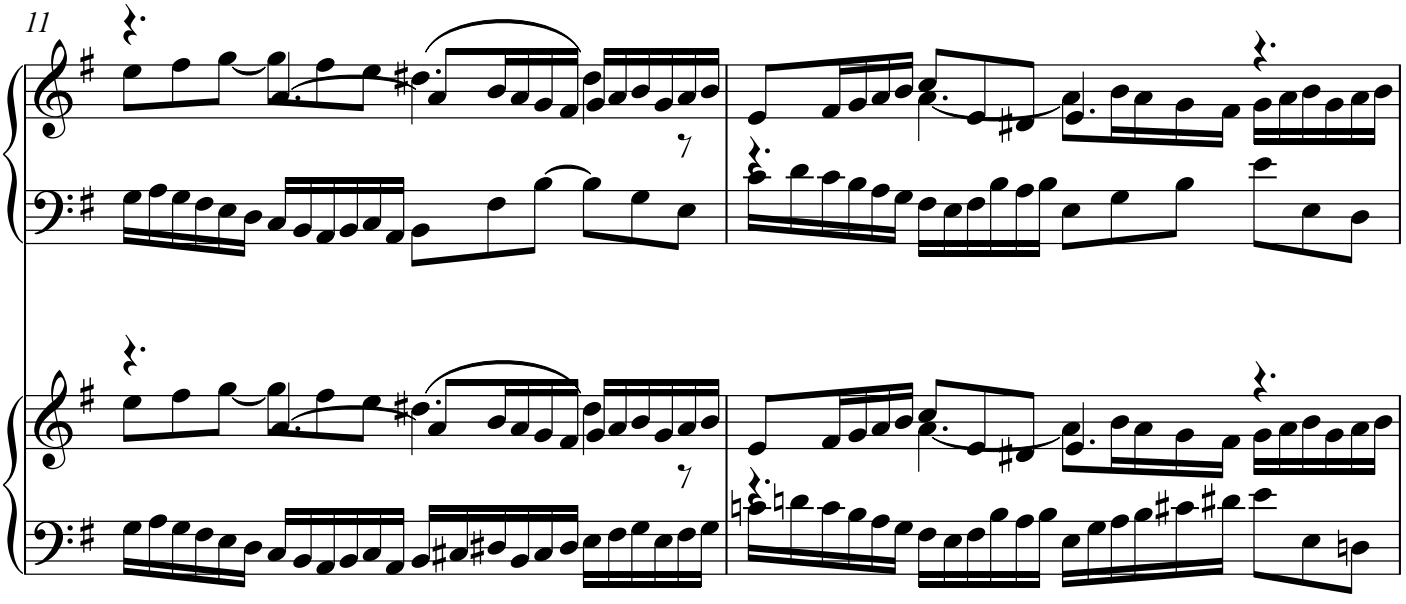
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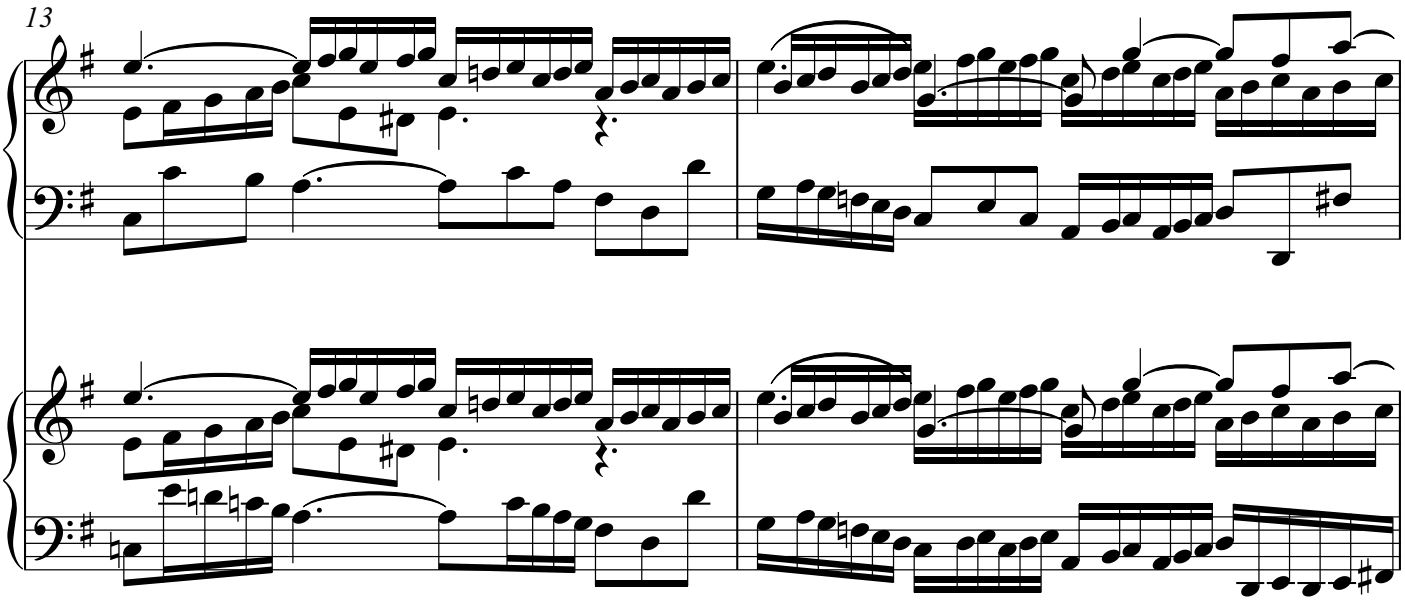
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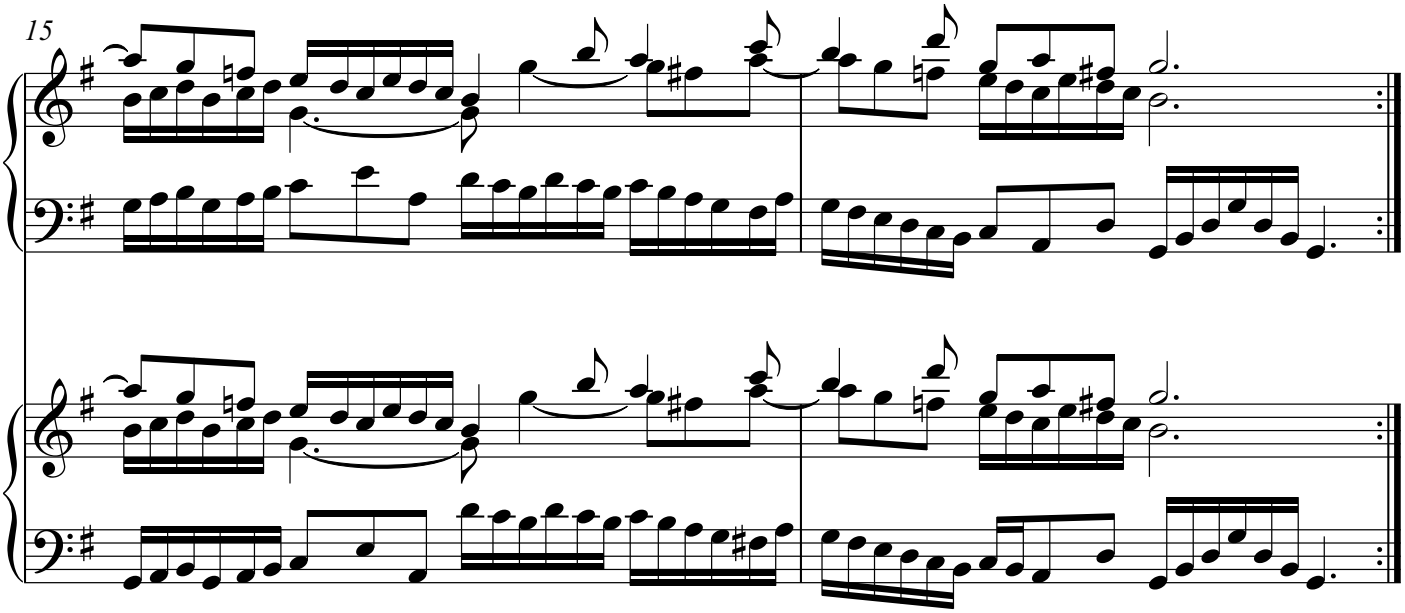
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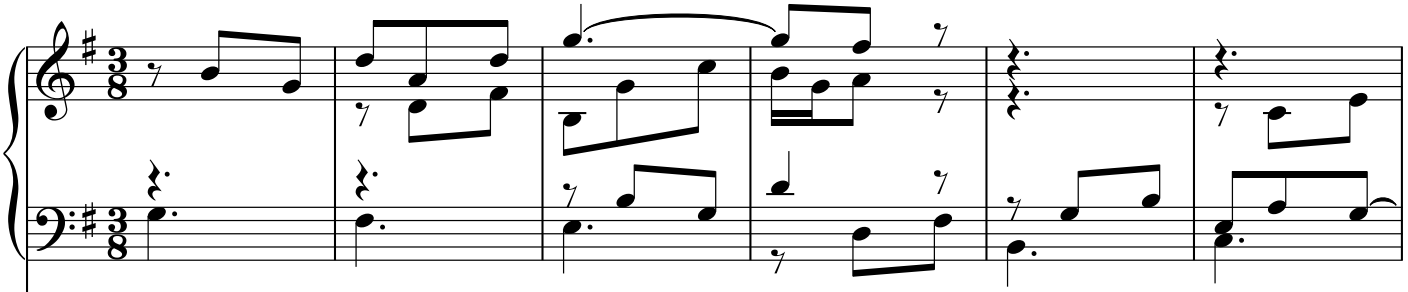

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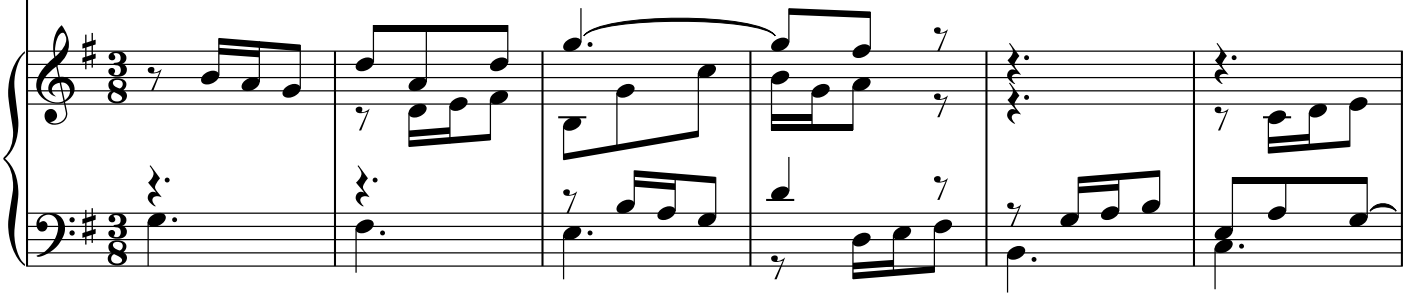

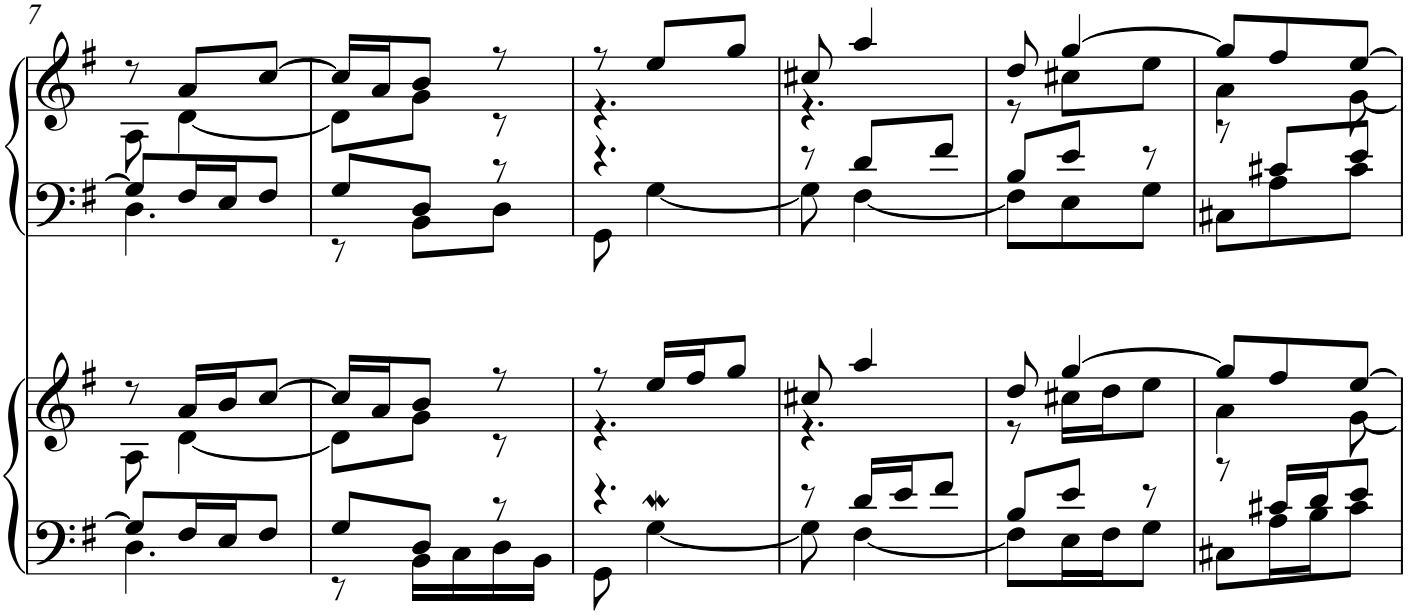

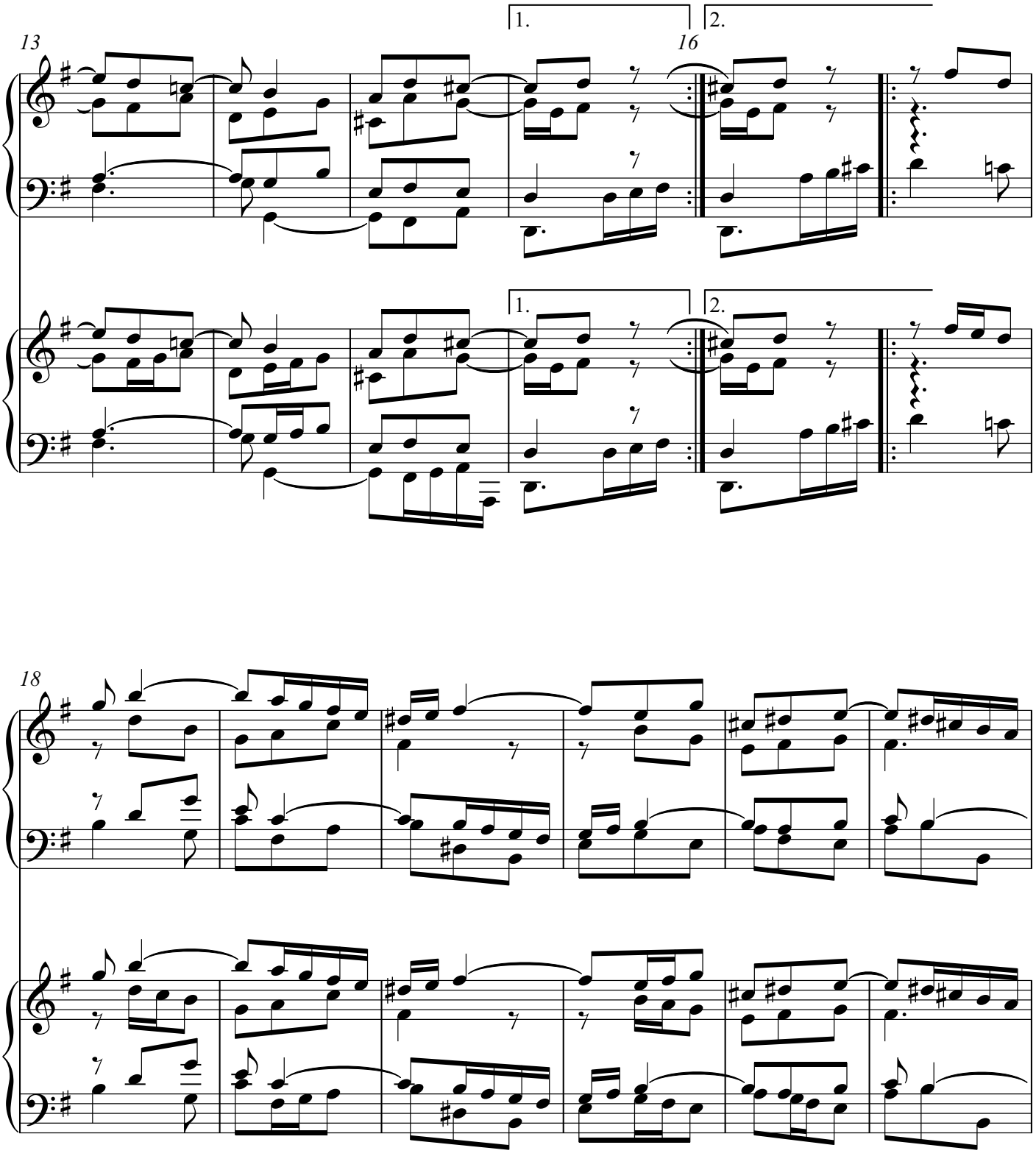
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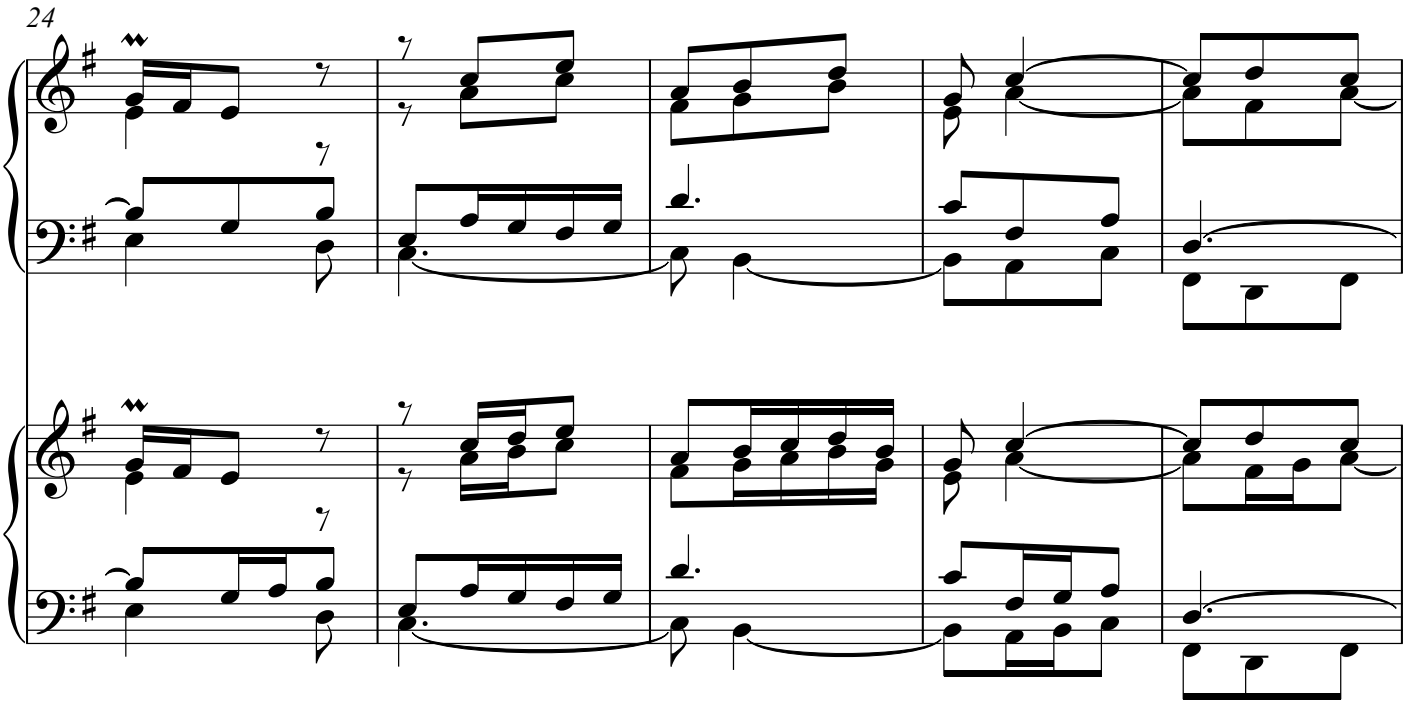
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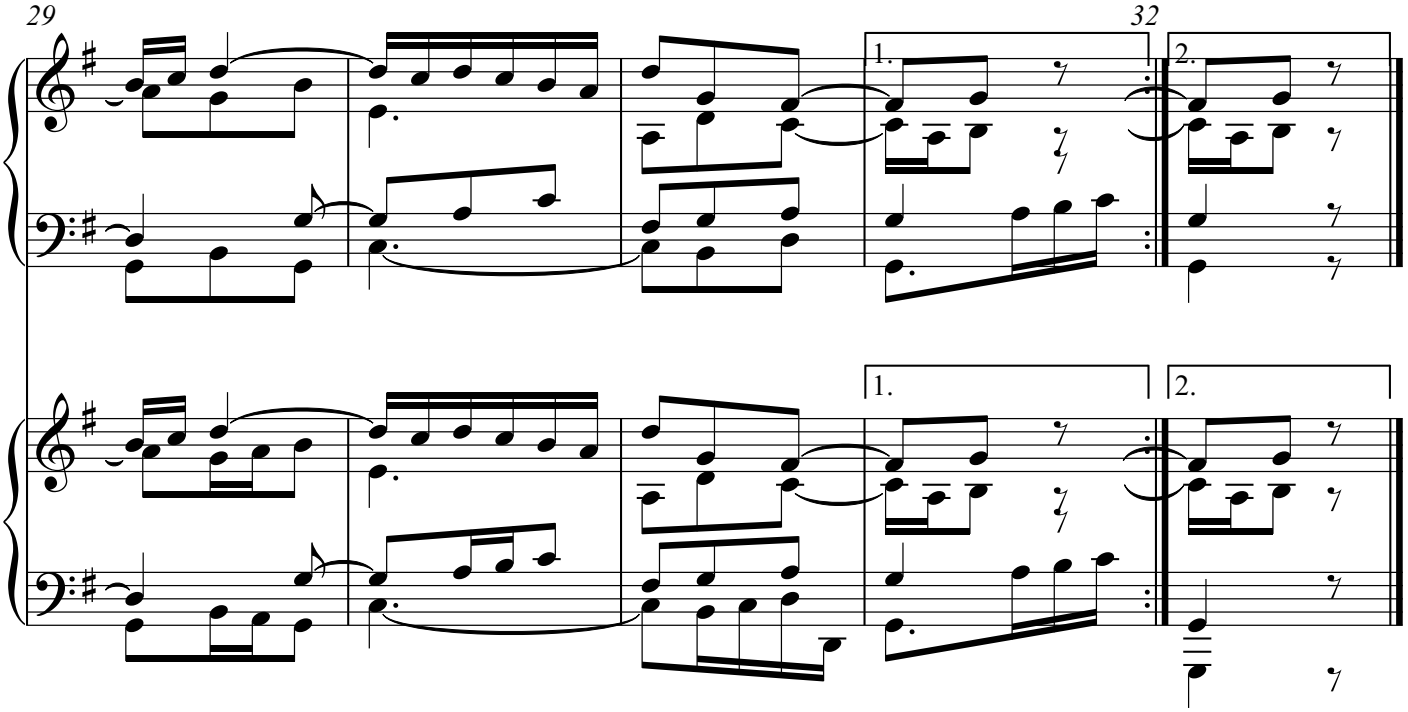
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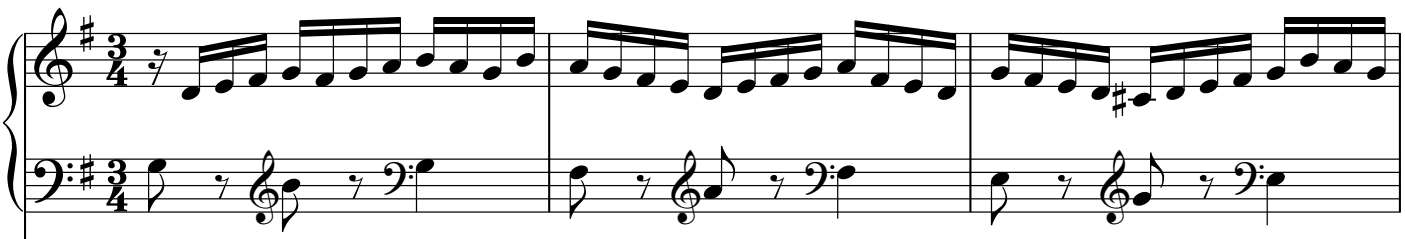

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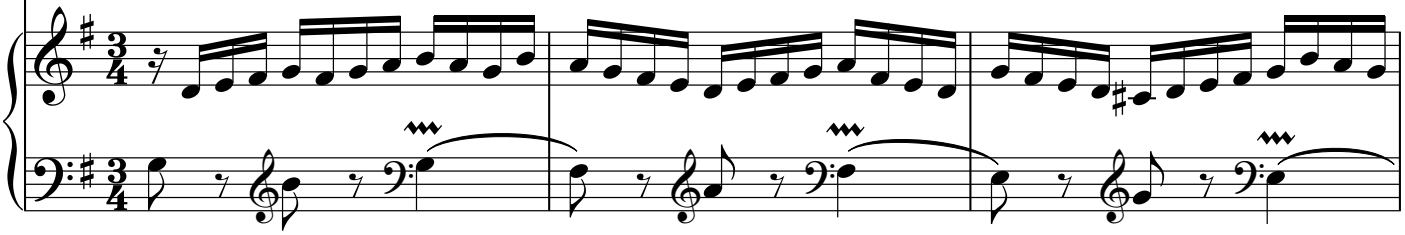

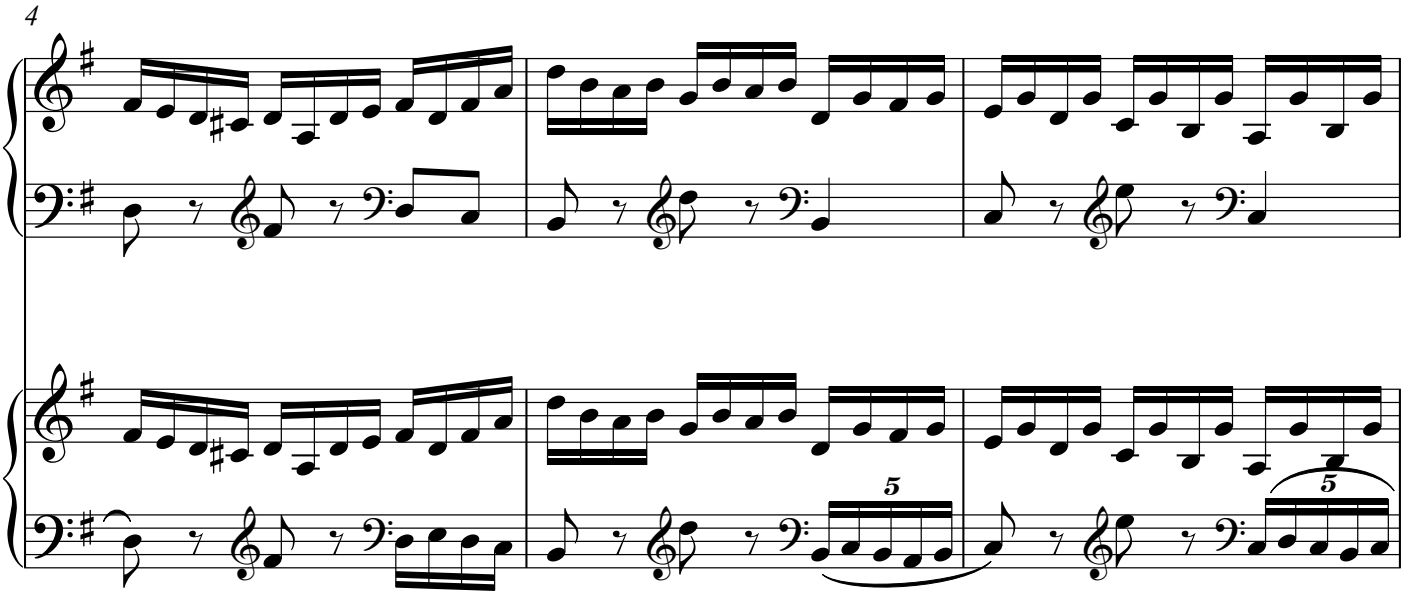

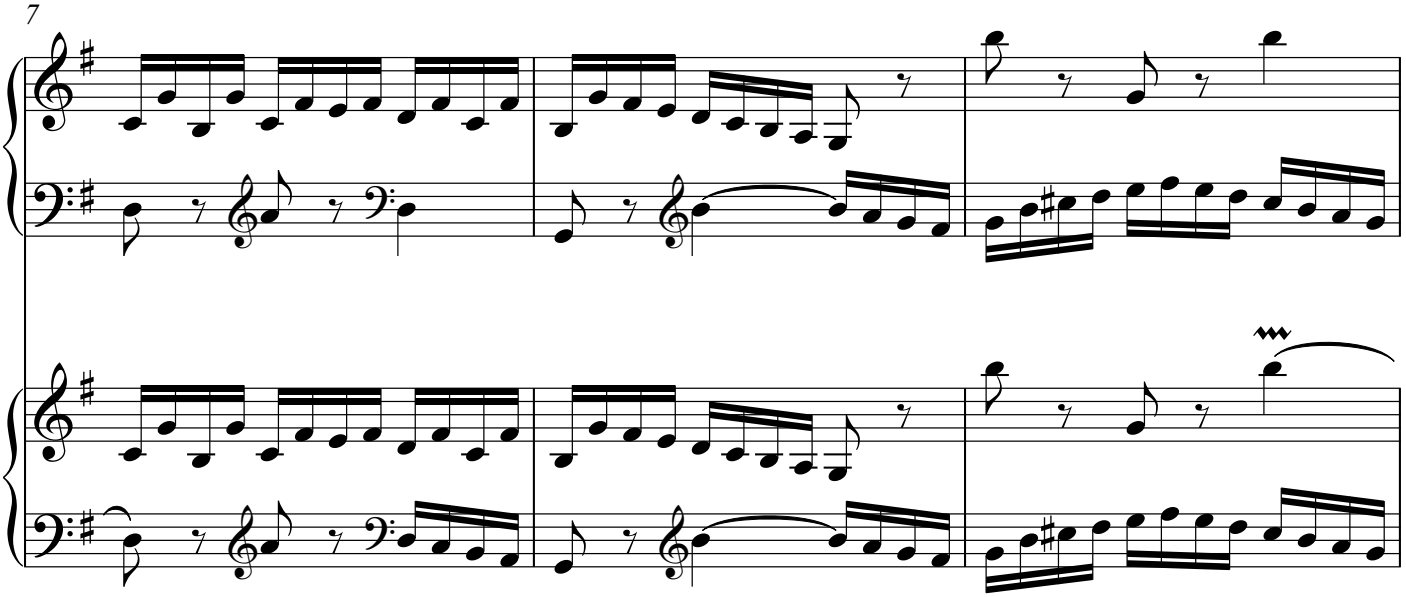

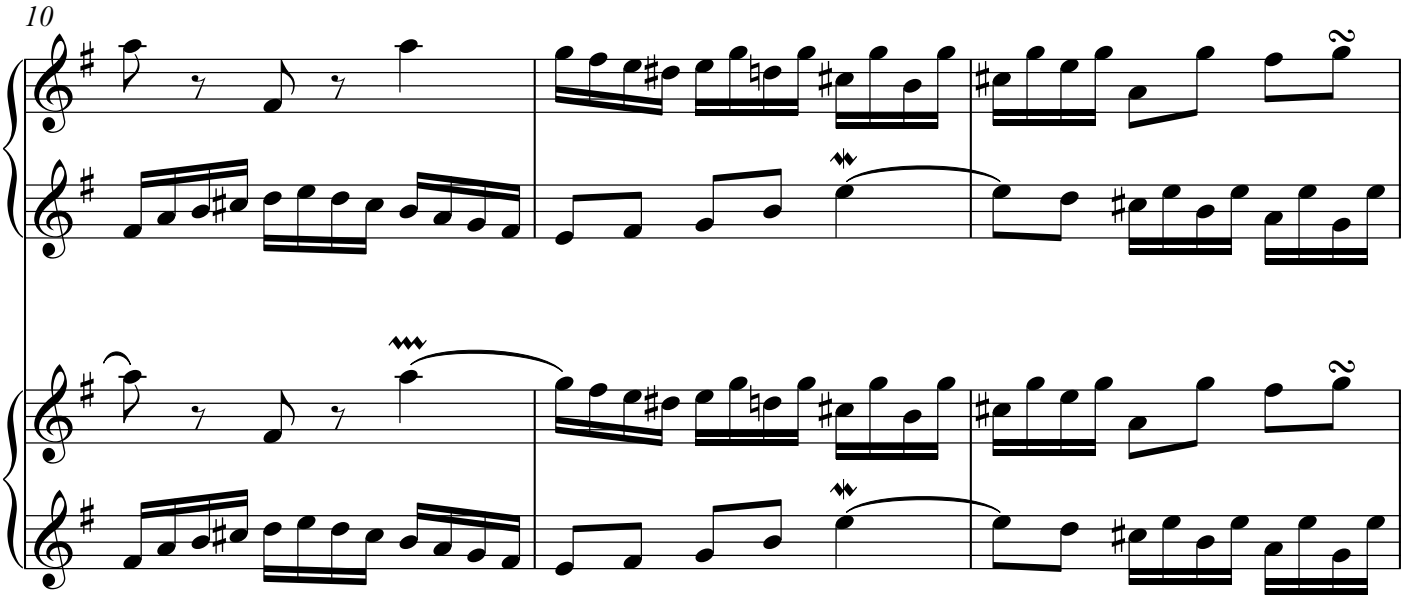

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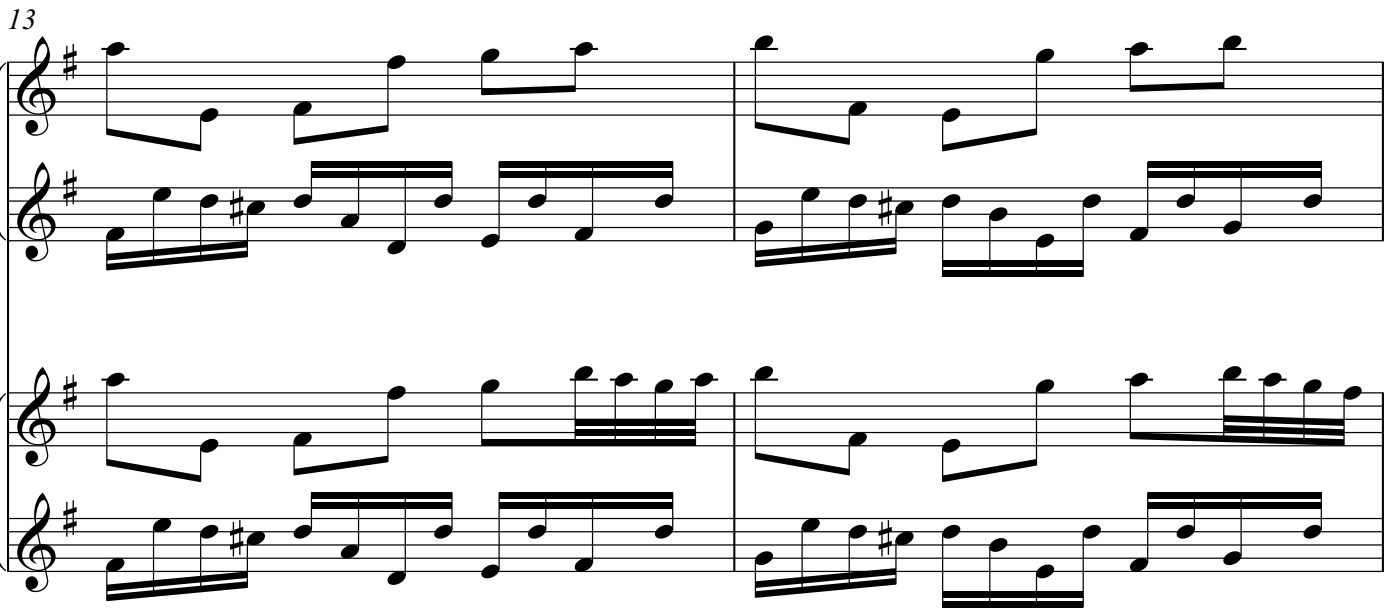
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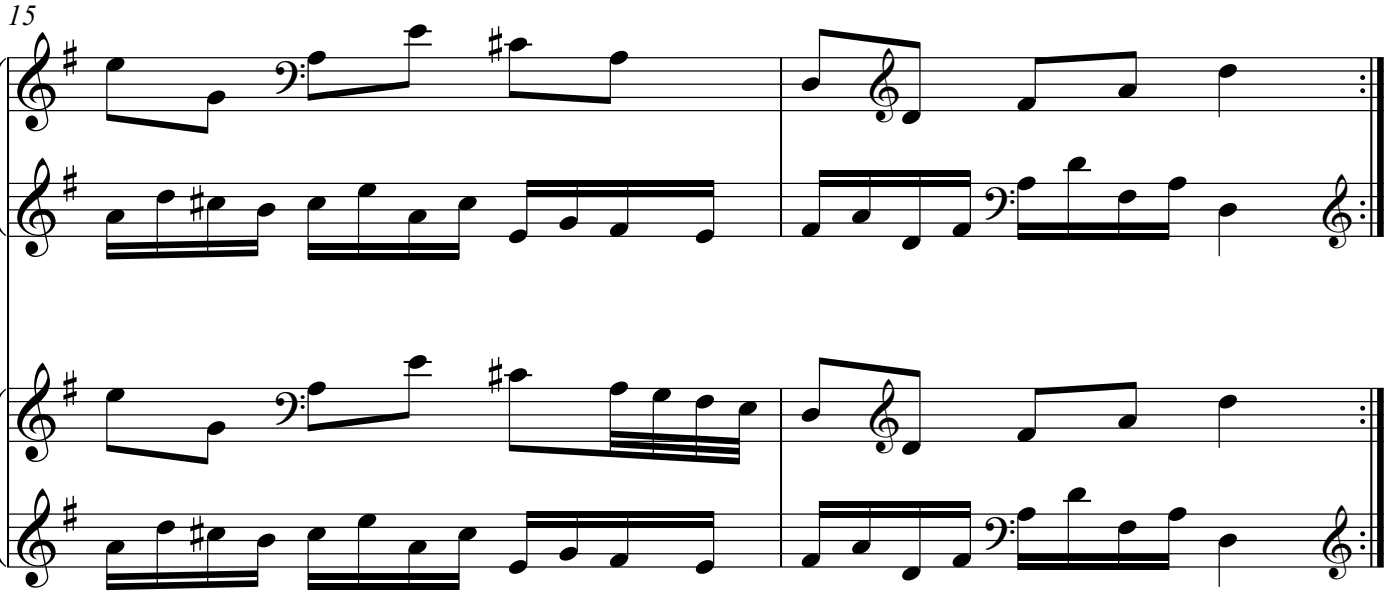
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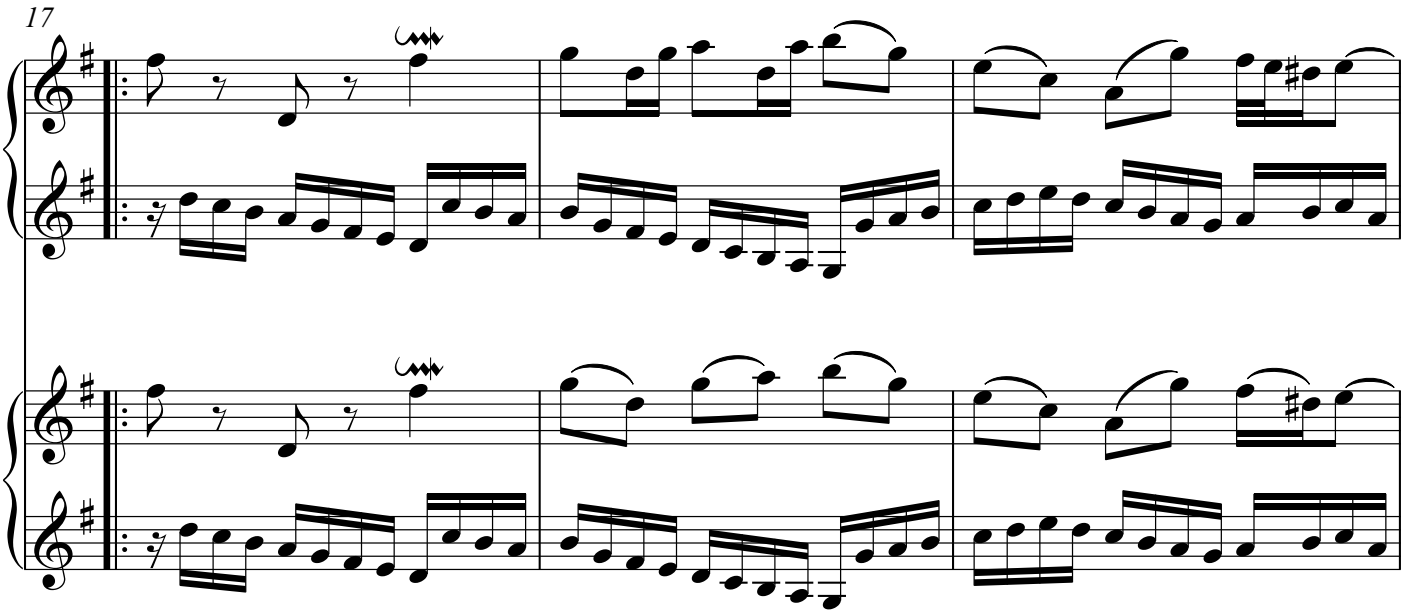

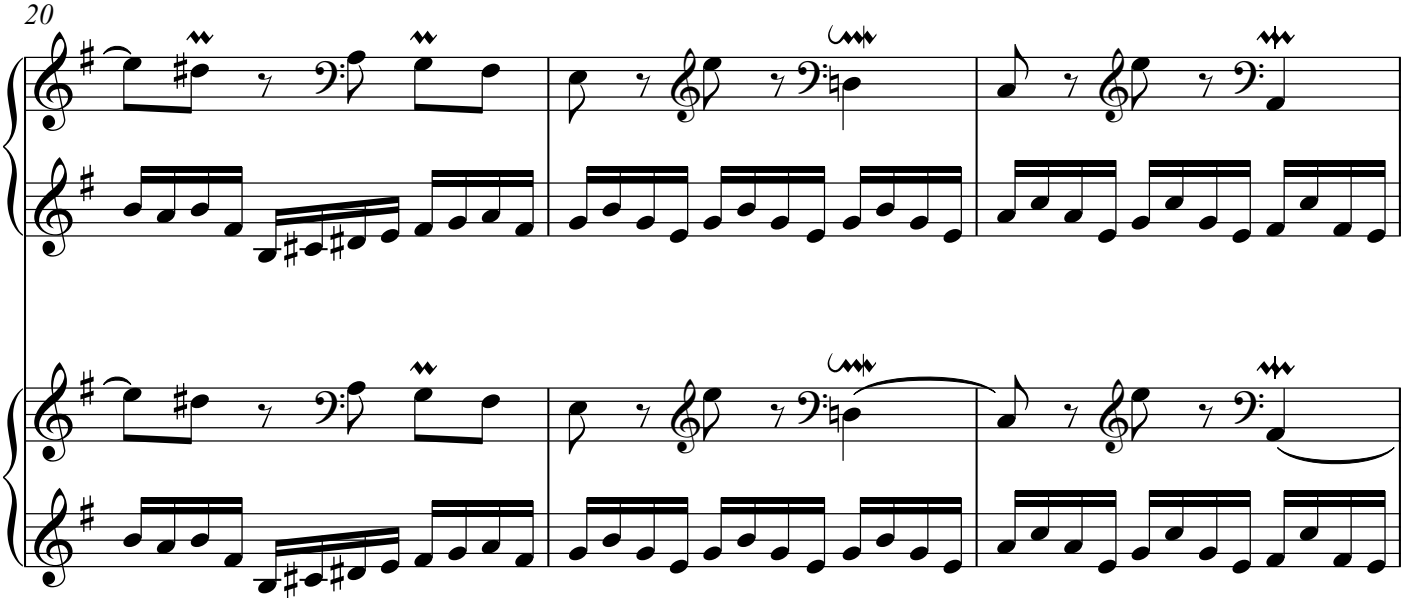

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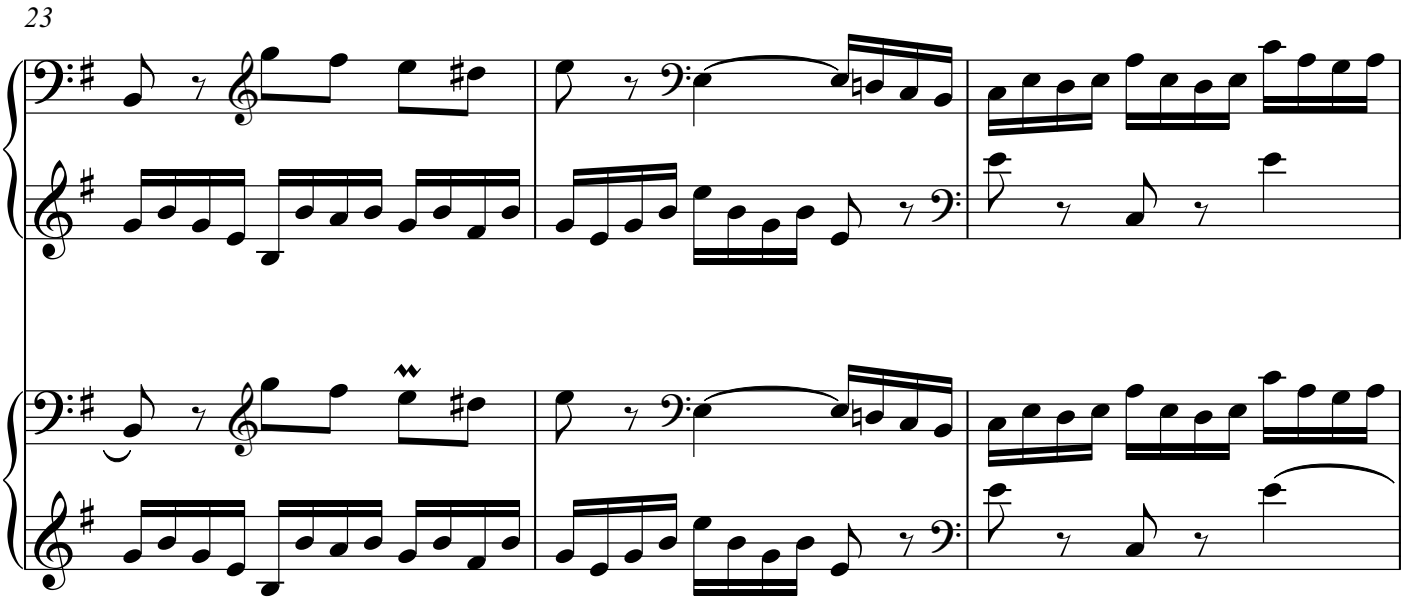
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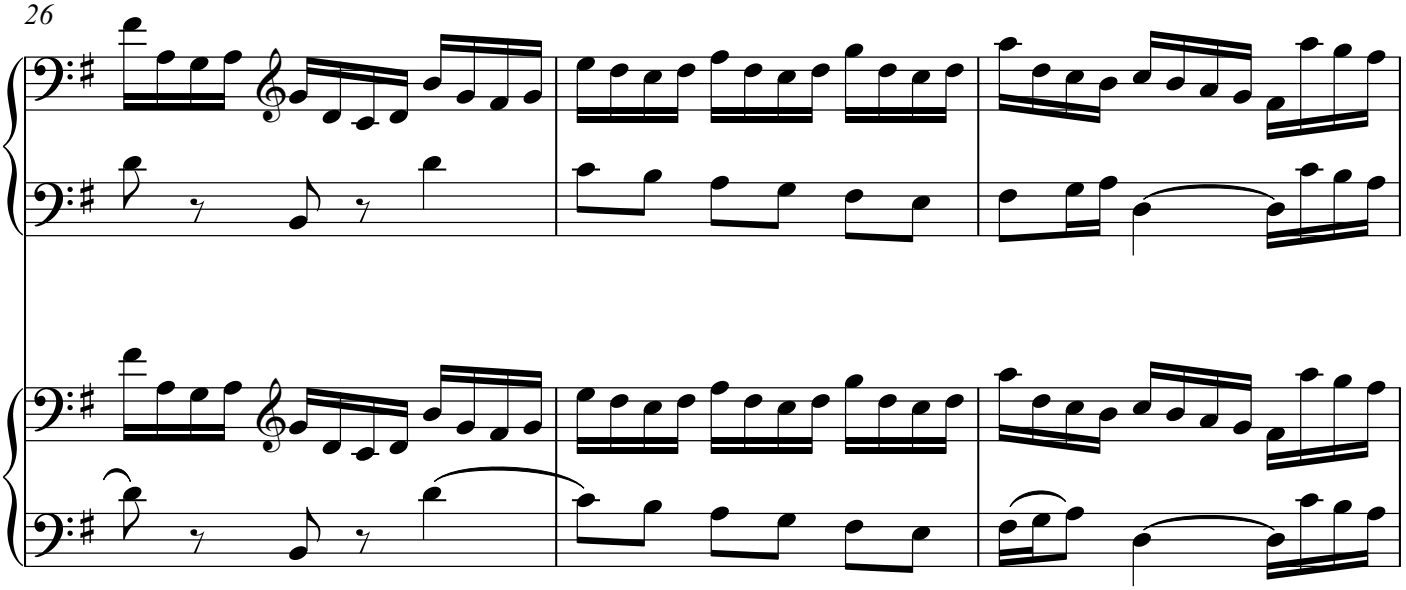
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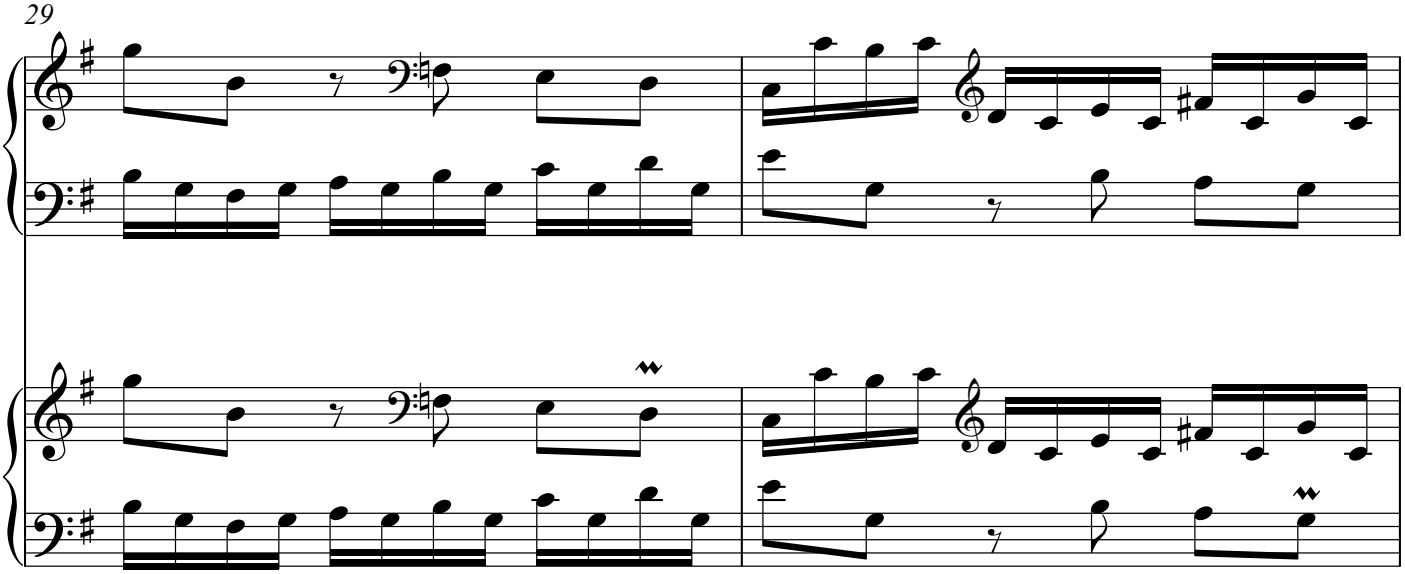
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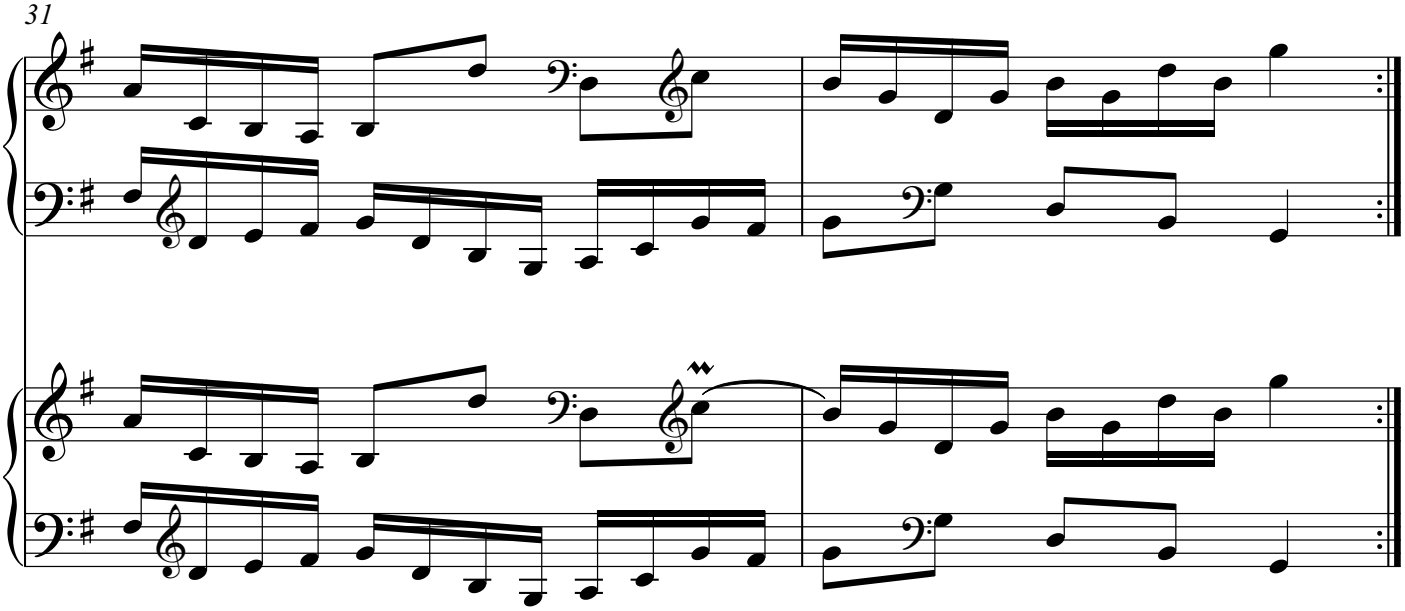
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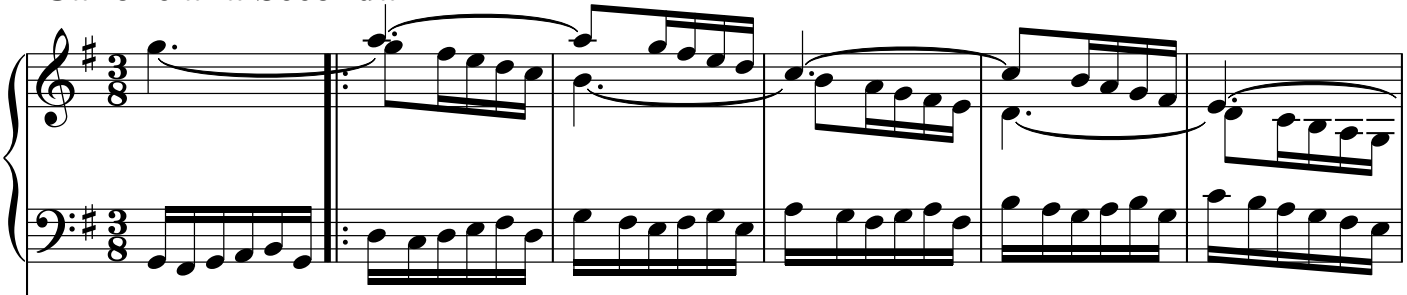
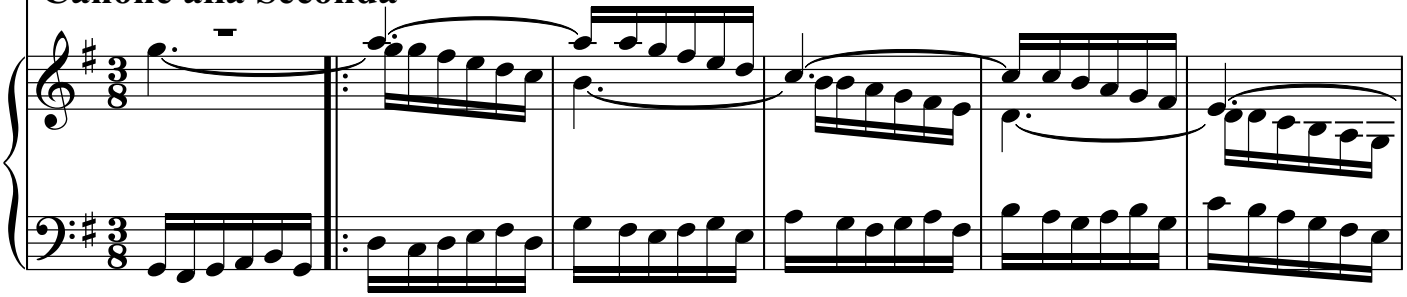
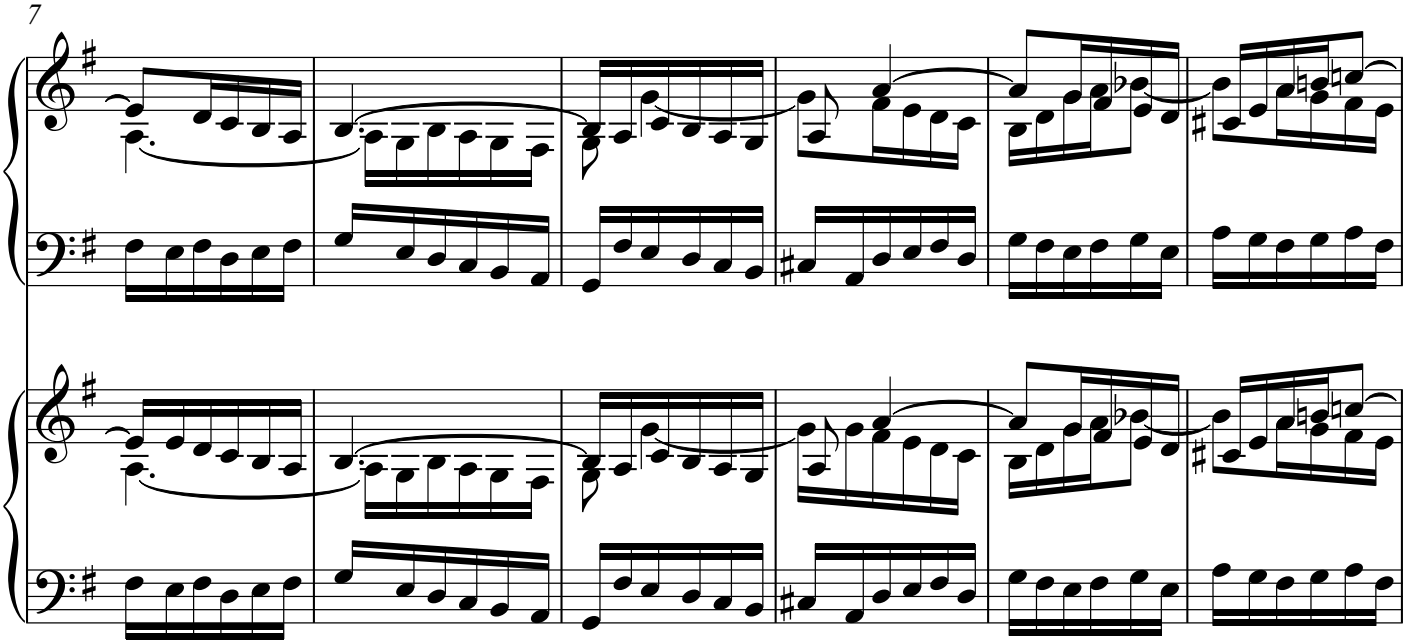
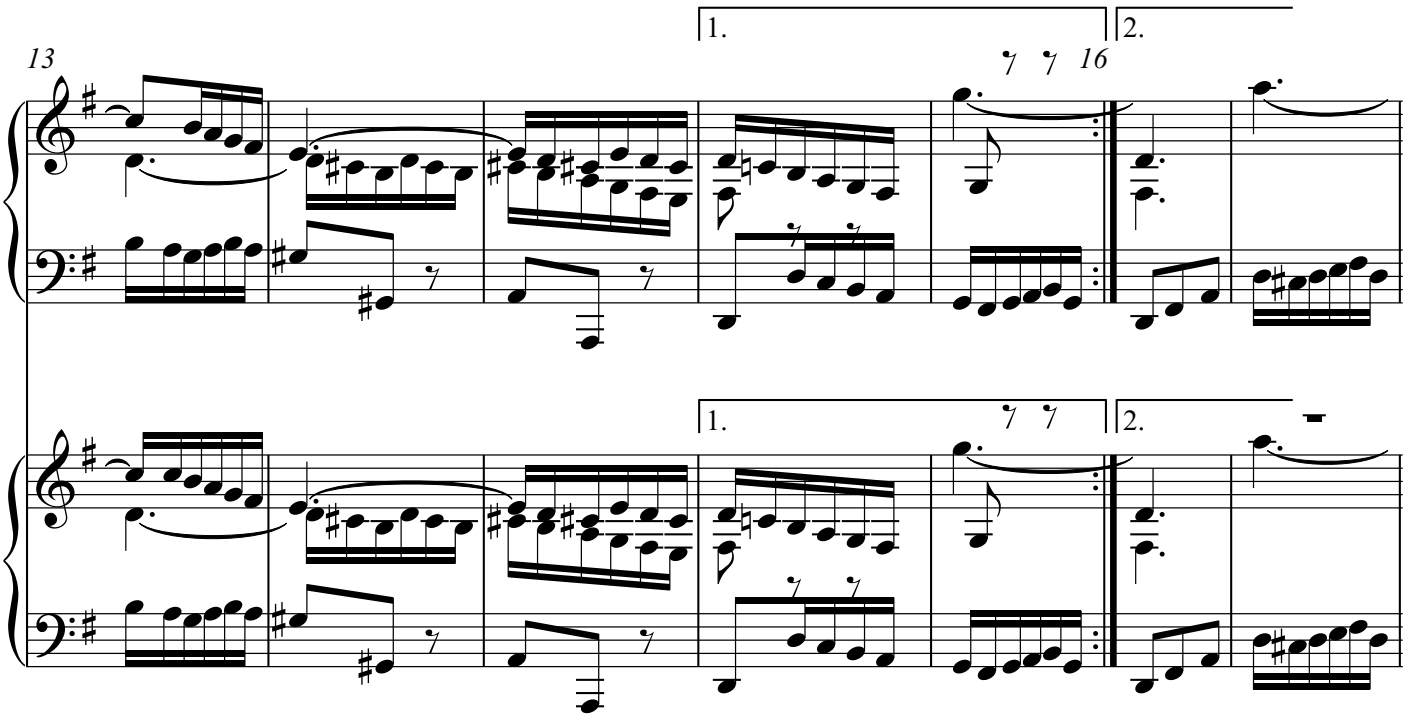
Canone alla Seconda



VARIATIO 6 a 1 Clav. (Papillon)
Canone alla Seconda



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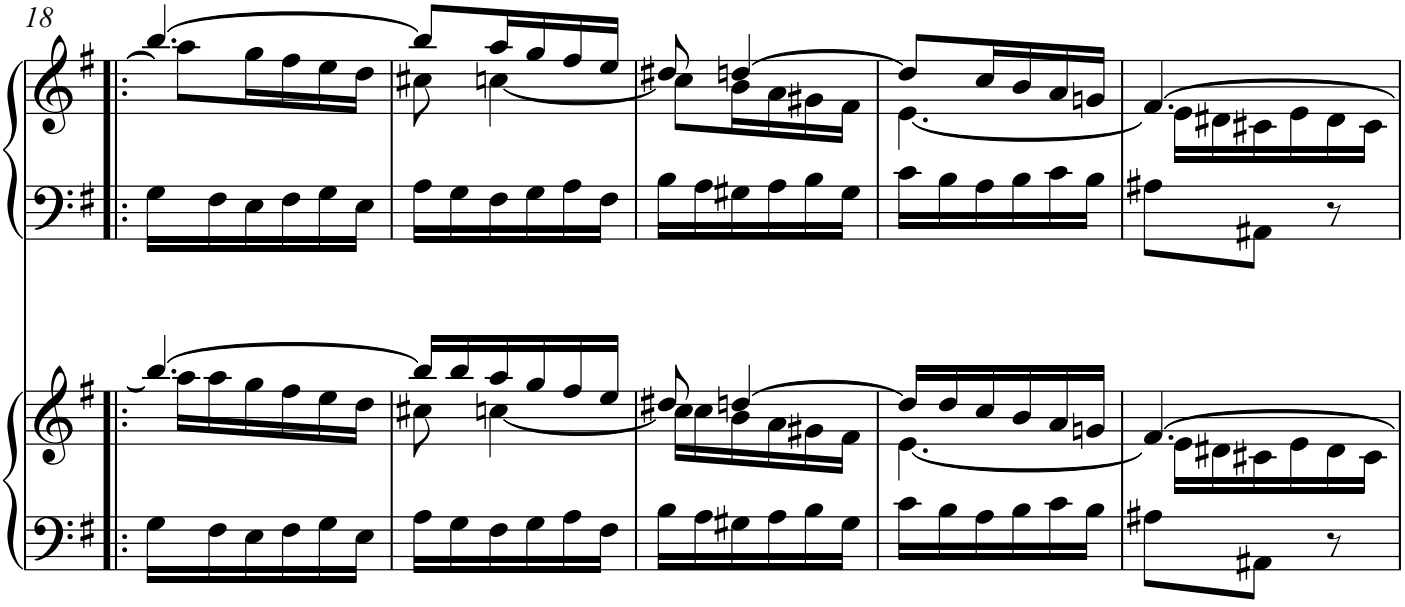
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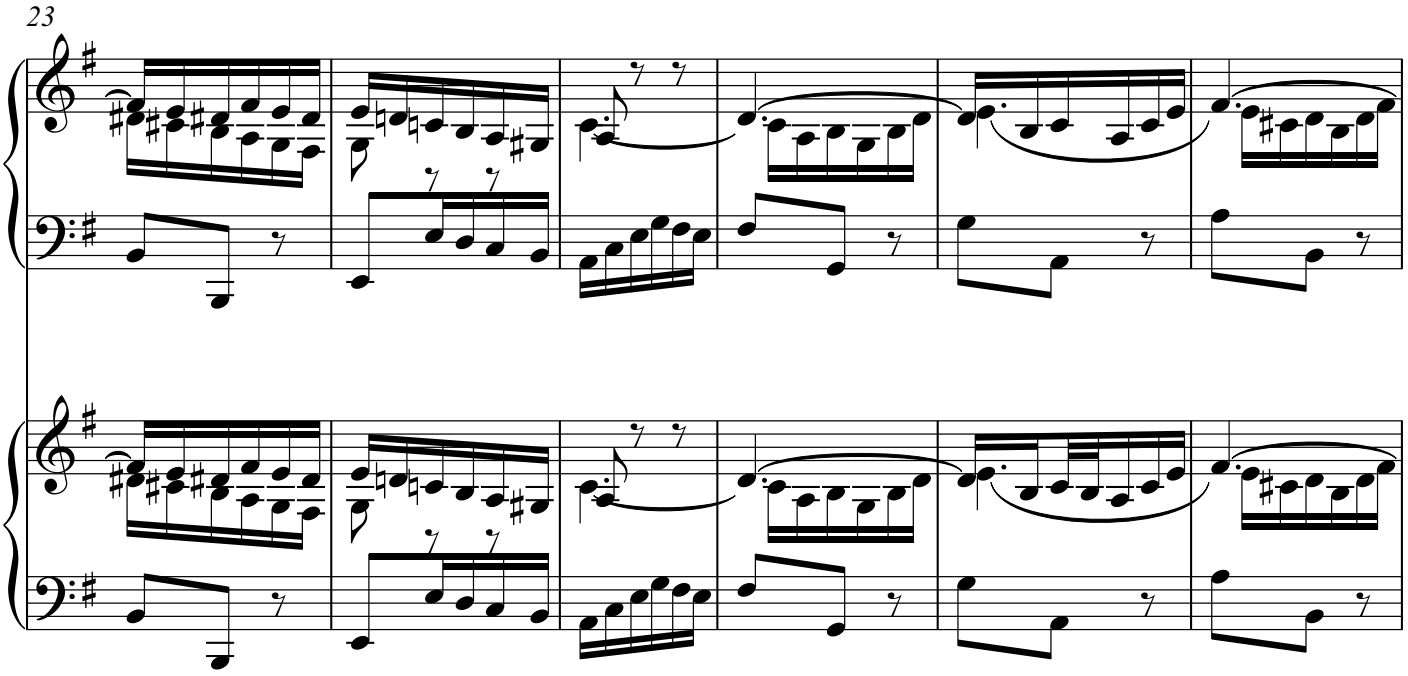
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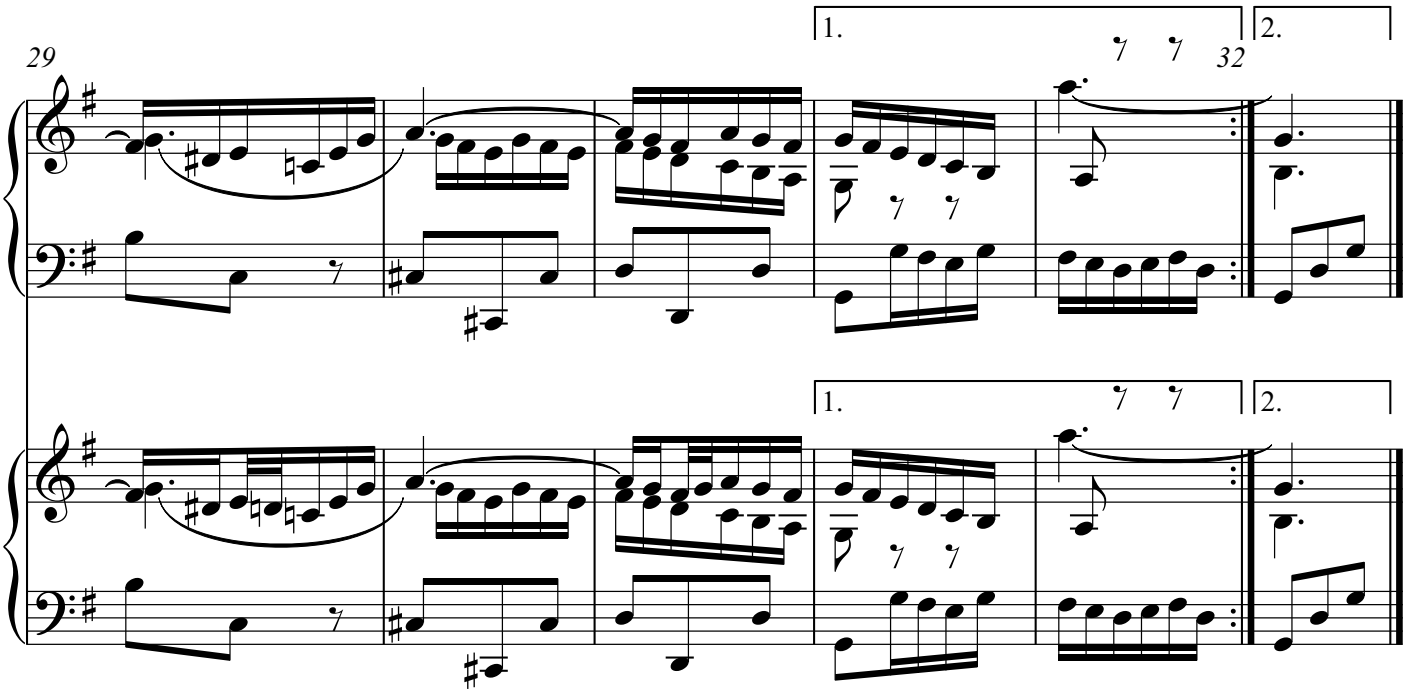
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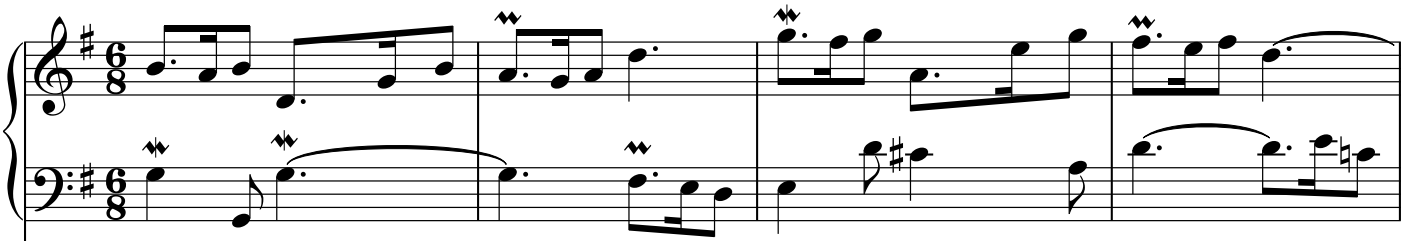
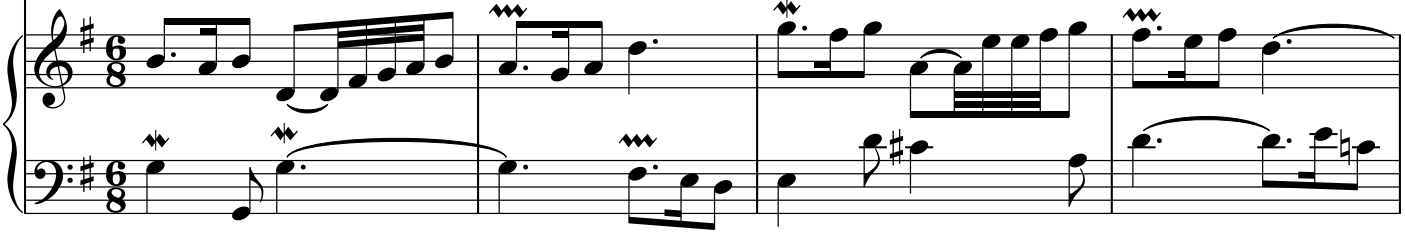
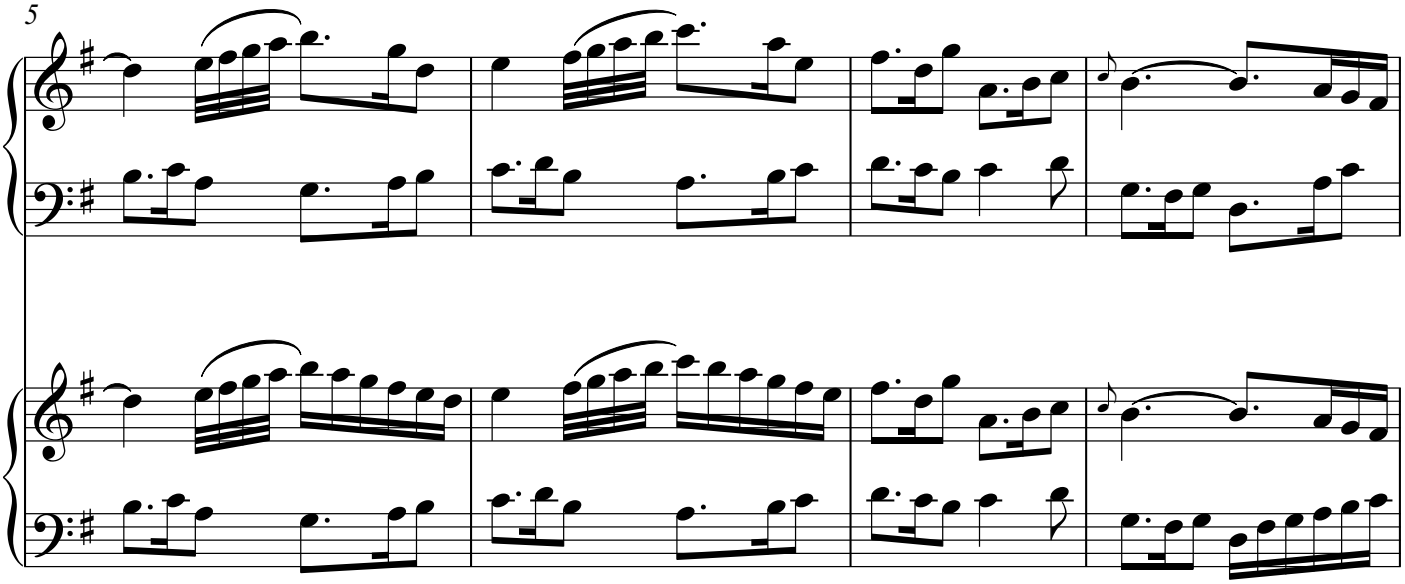
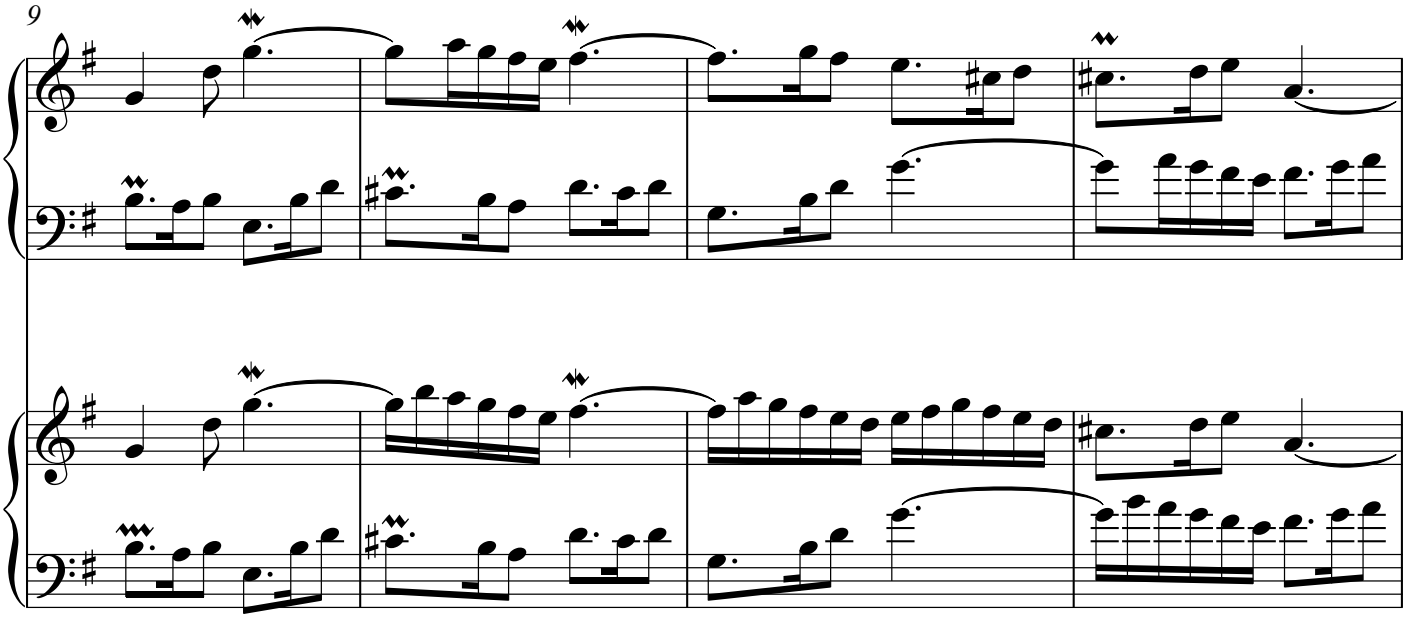
VARIATIO 7 a 1 ovvero 2 Clav. (Bach)
al tempo di Giga



VARIATIO 7 a 1 ovvero 2 Clav. (Papillon)
al tempo di Giga



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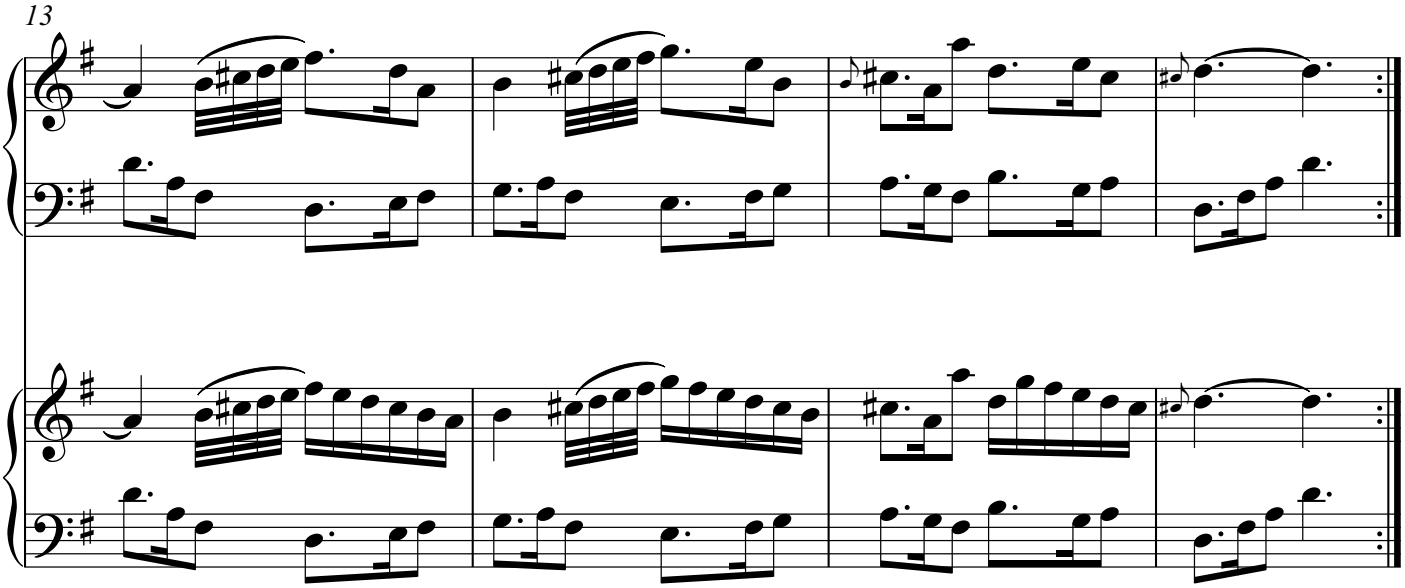
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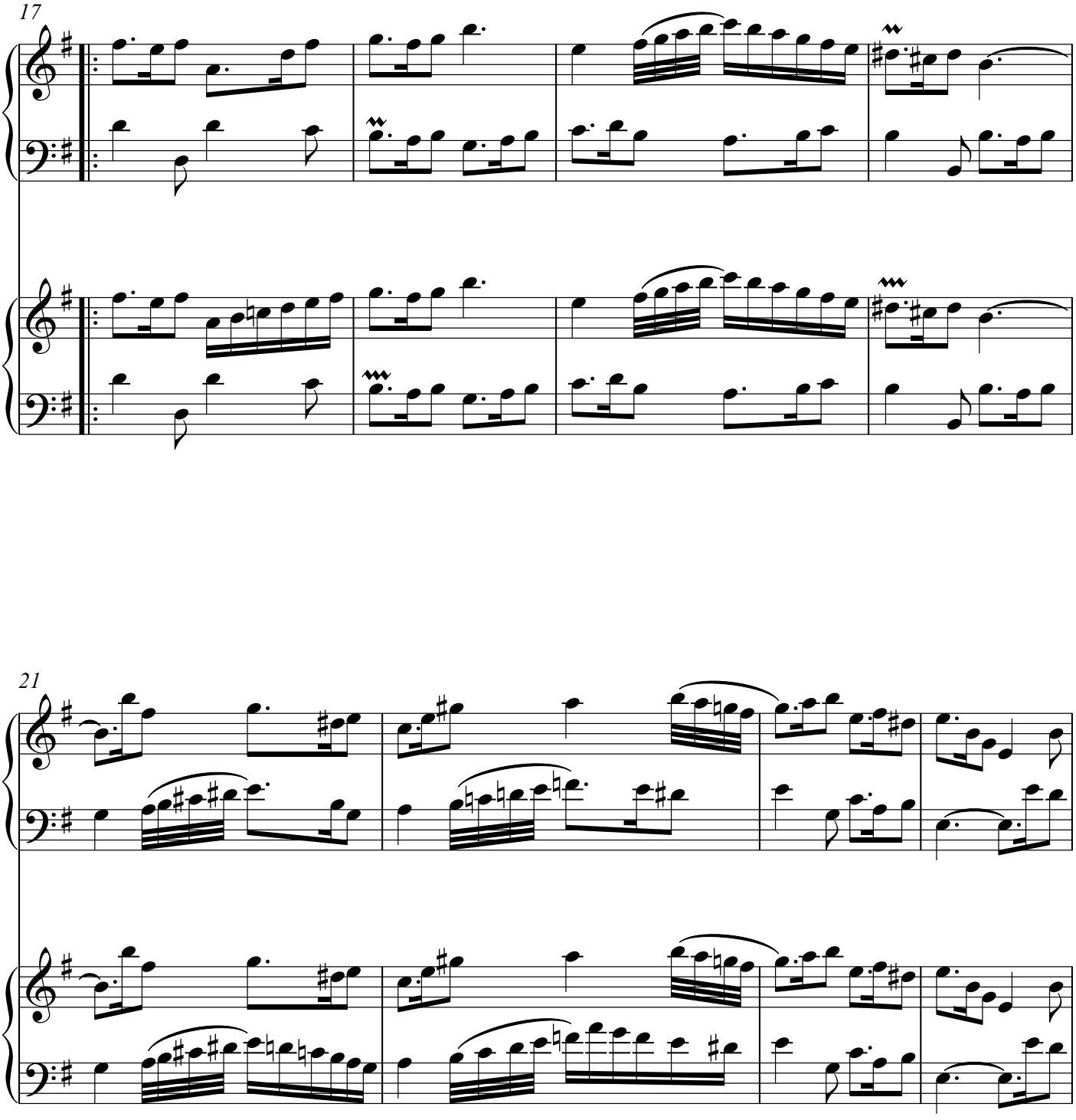
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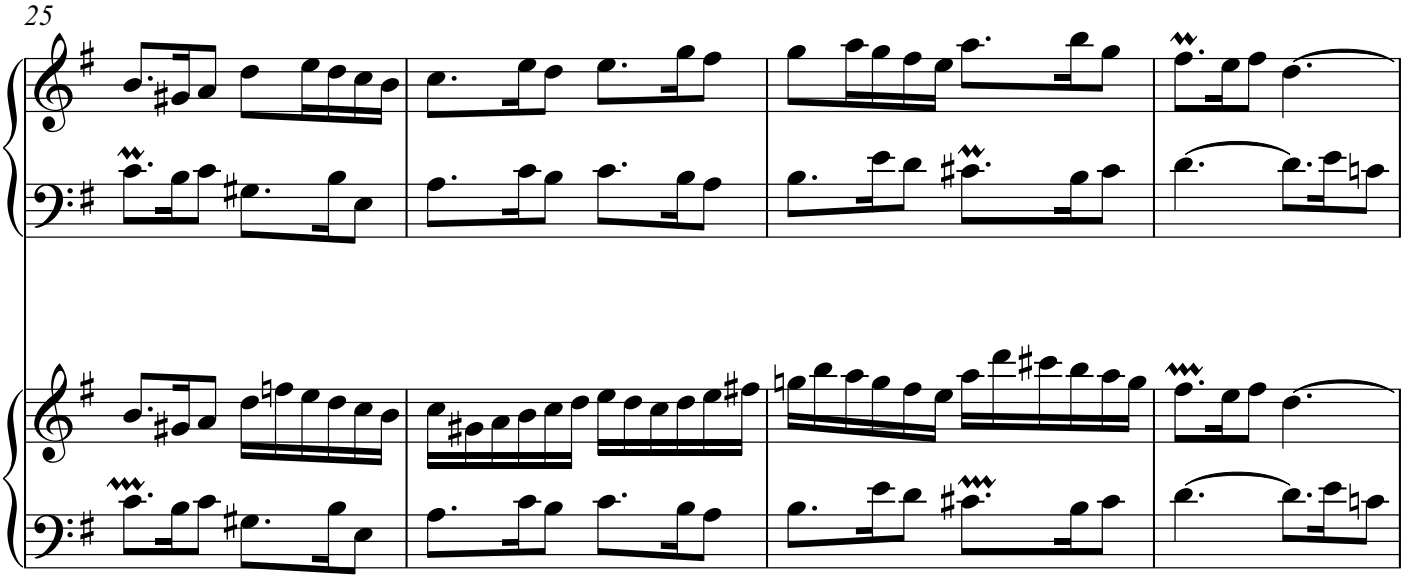
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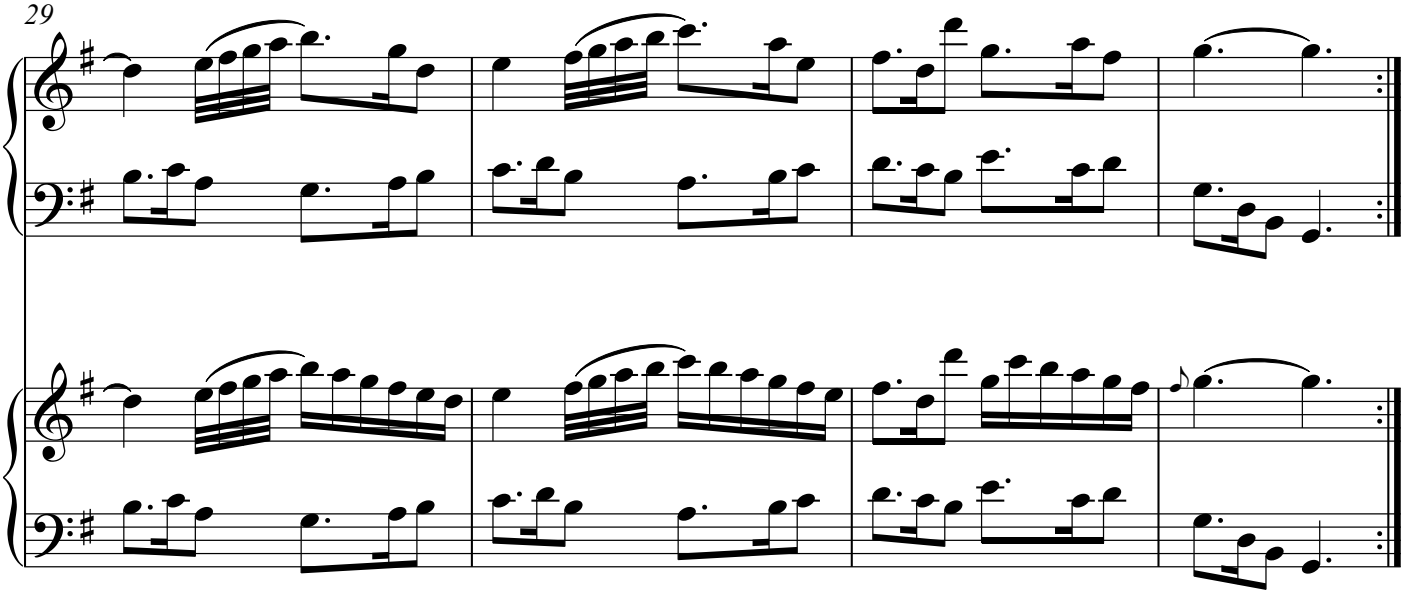
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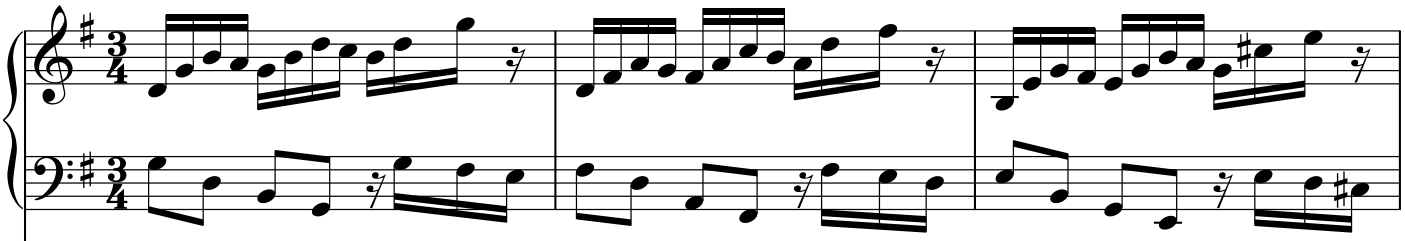
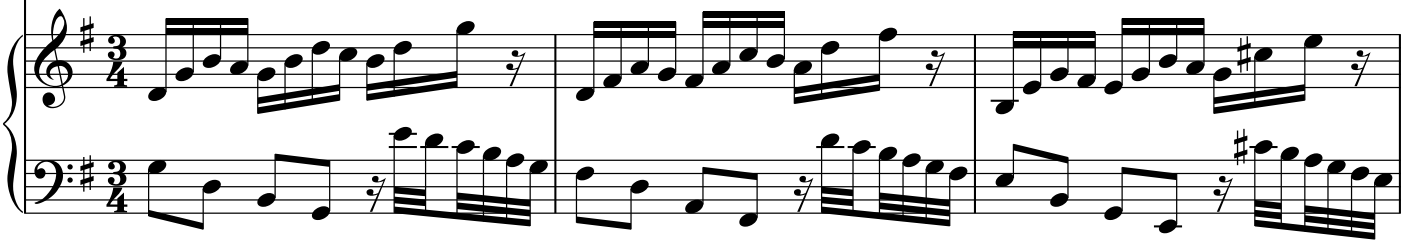
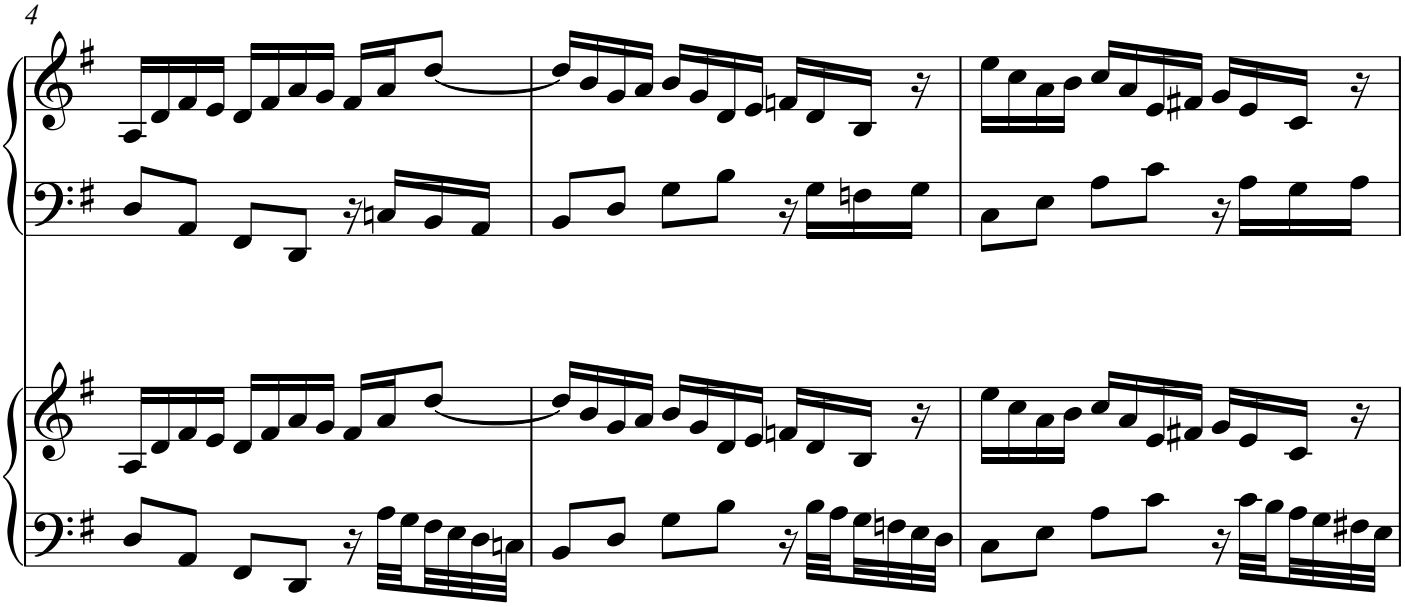
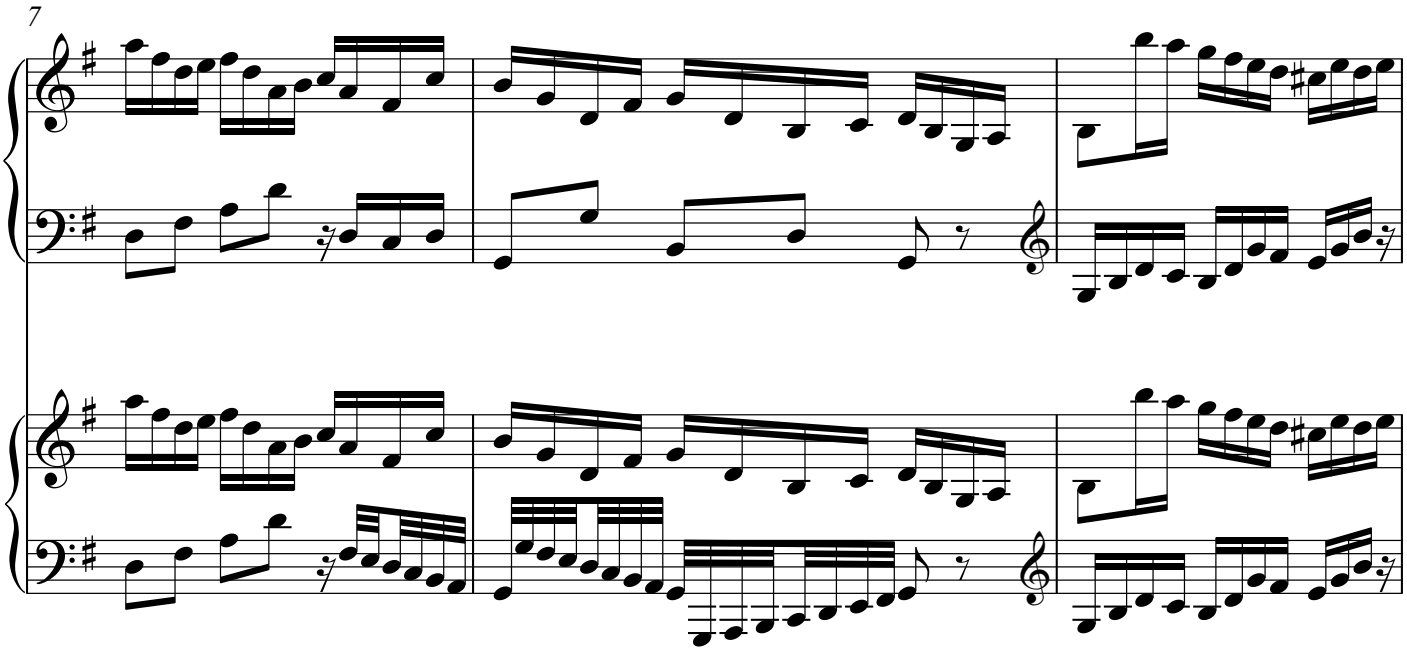
VARIATIO 8 a 2 Clav. (Bach)



VARIATIO 8 a 2 Clav. (Papillon)



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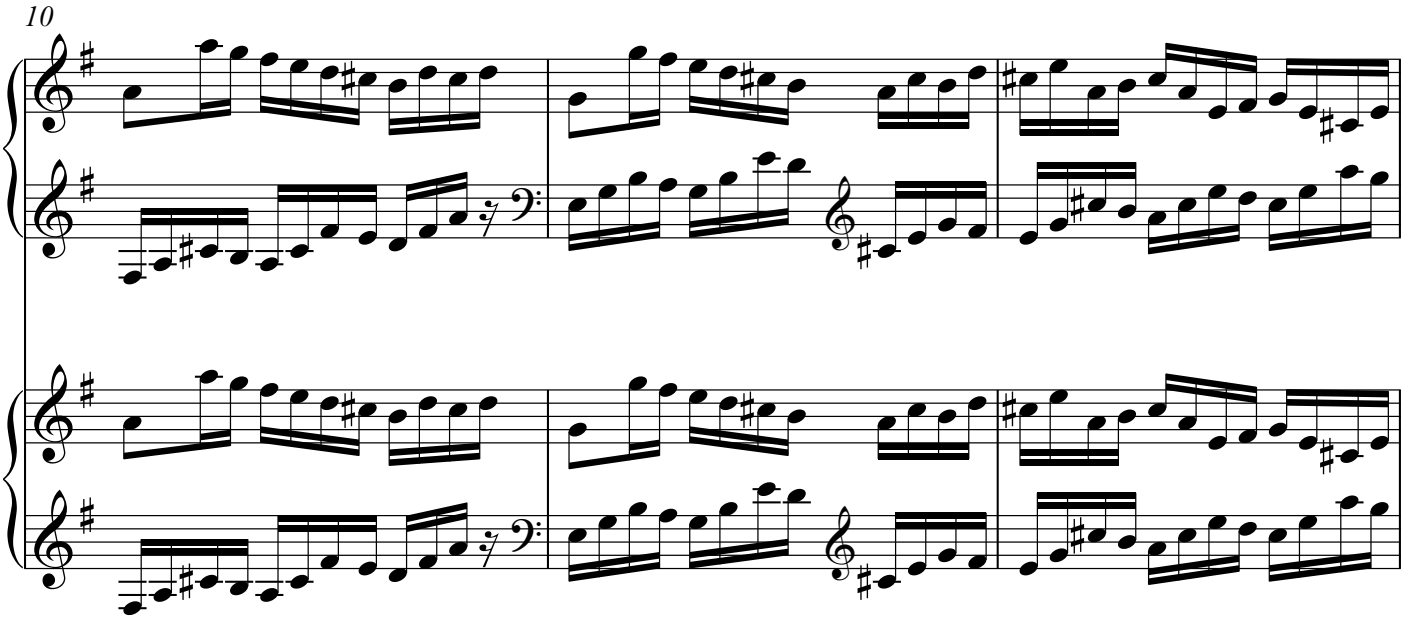
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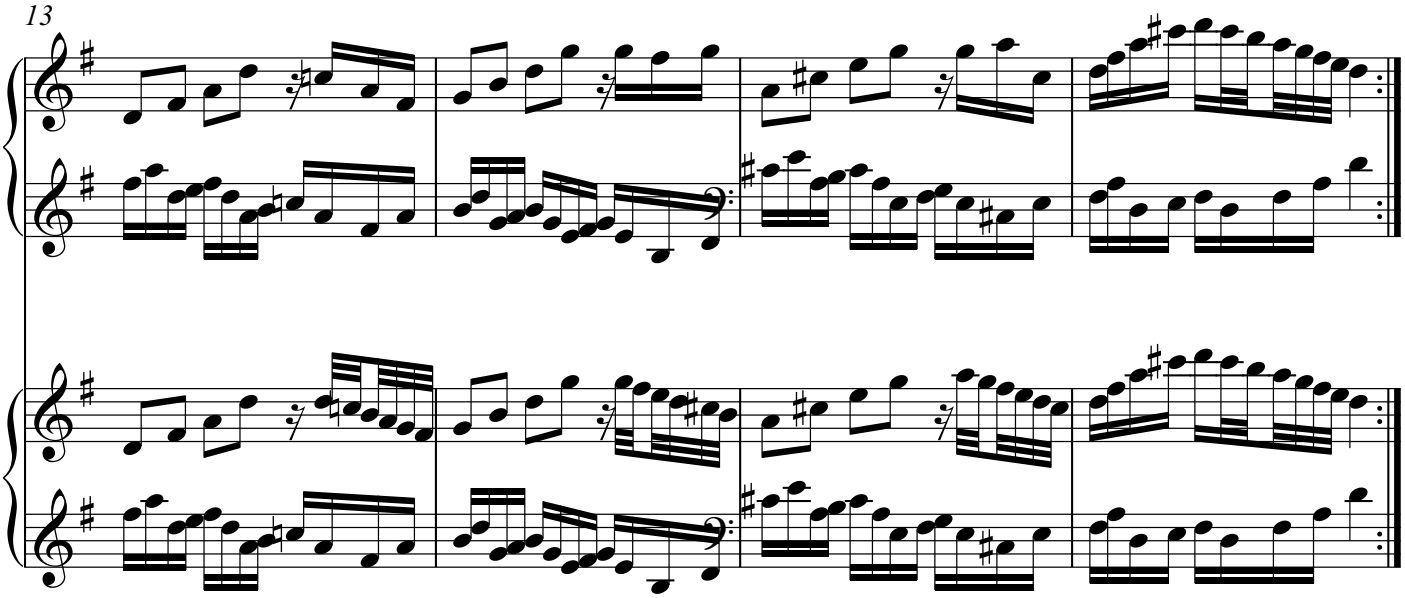
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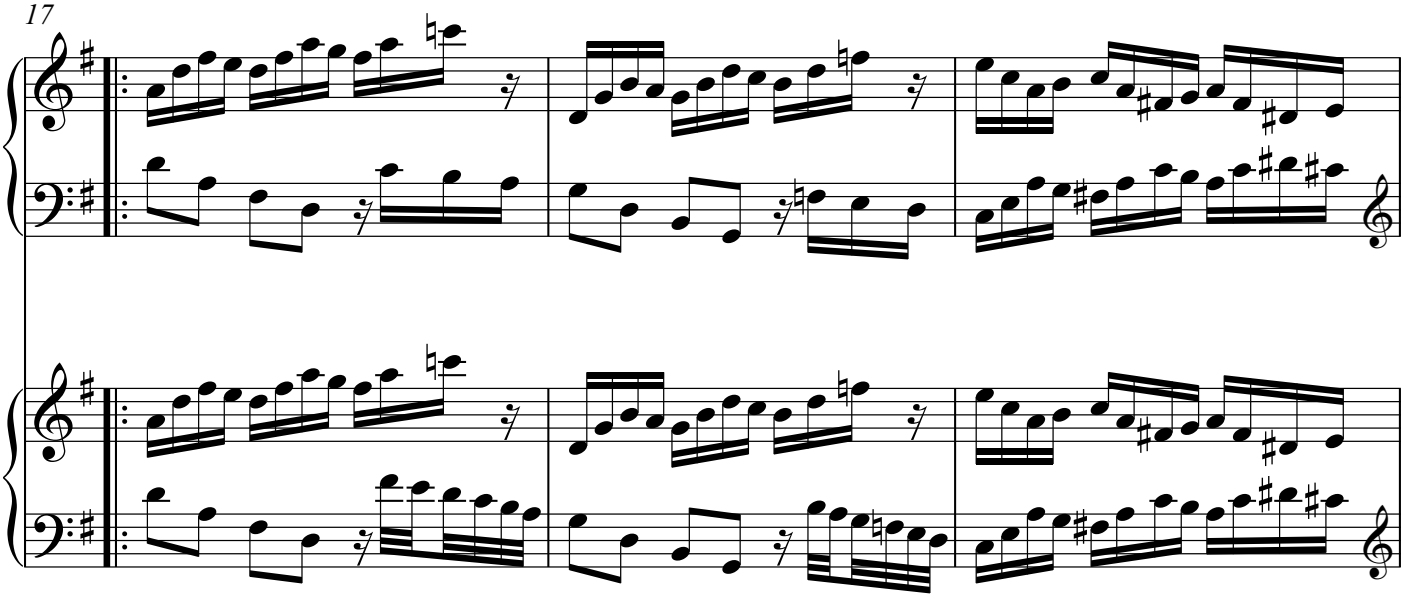
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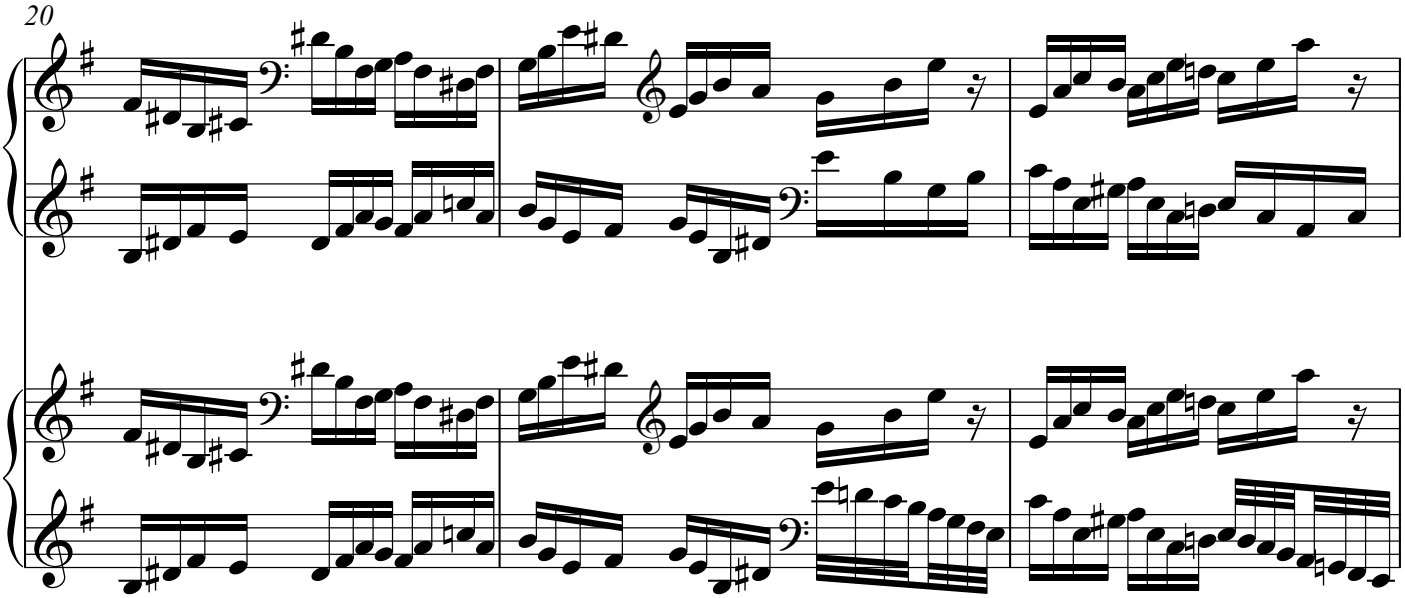
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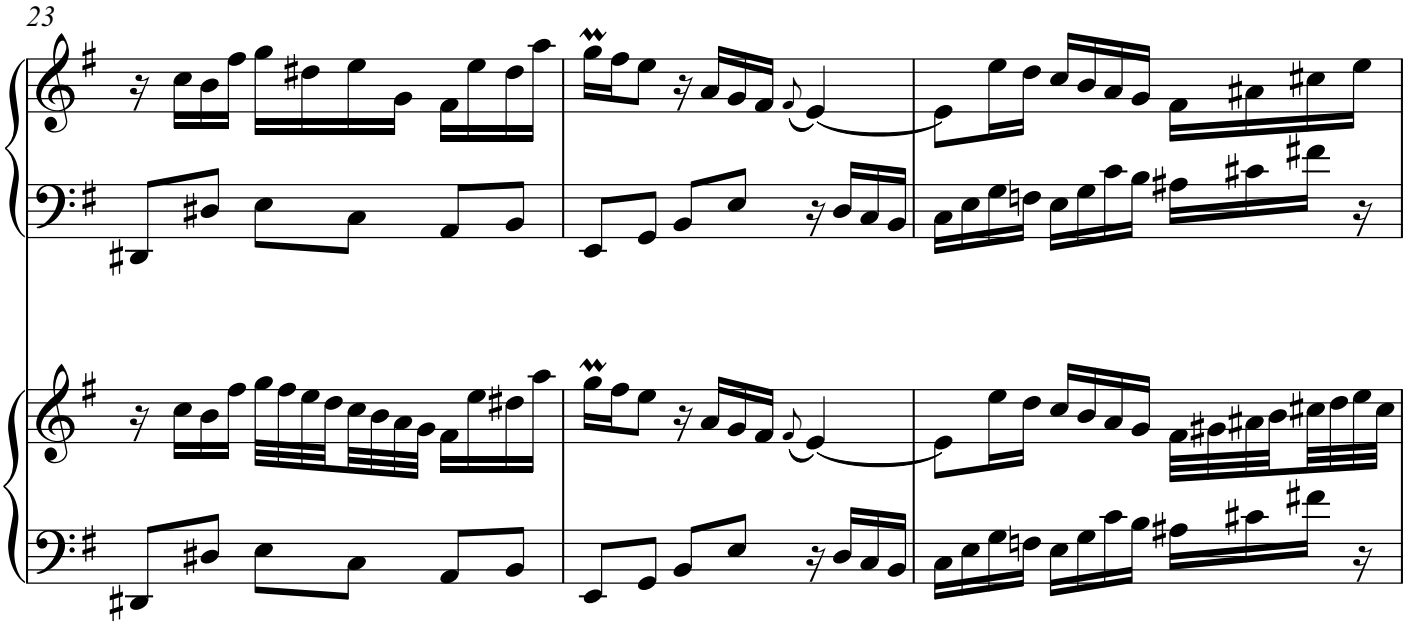
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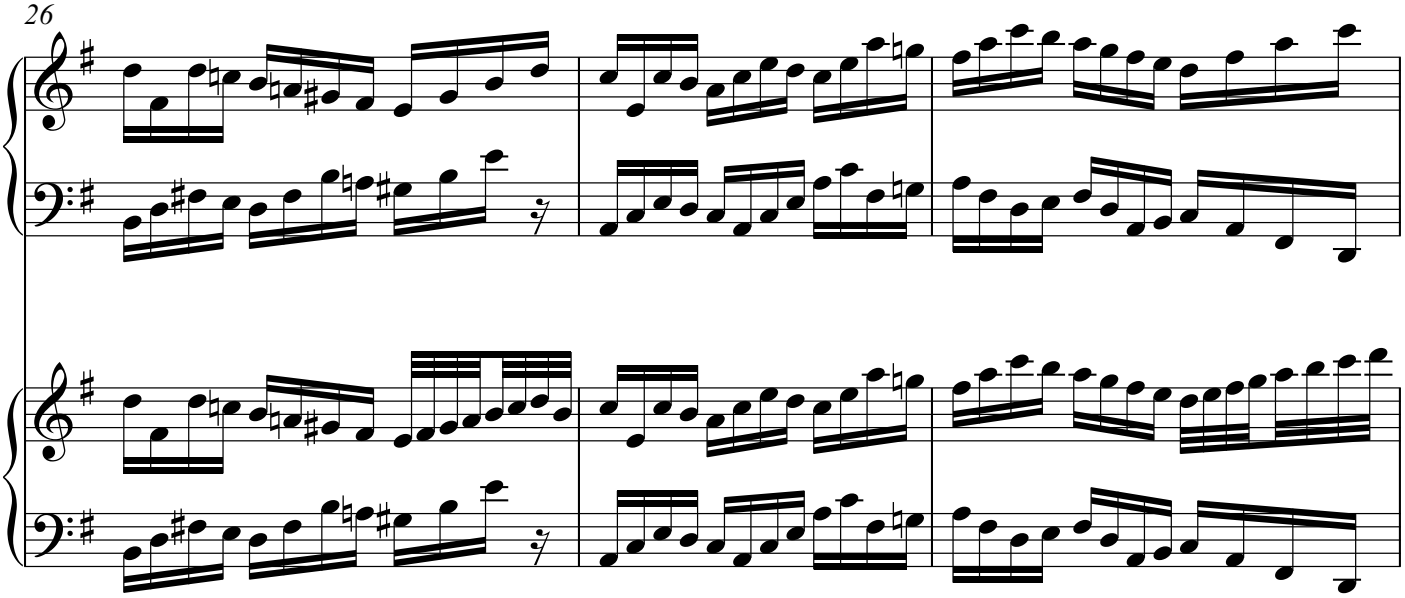
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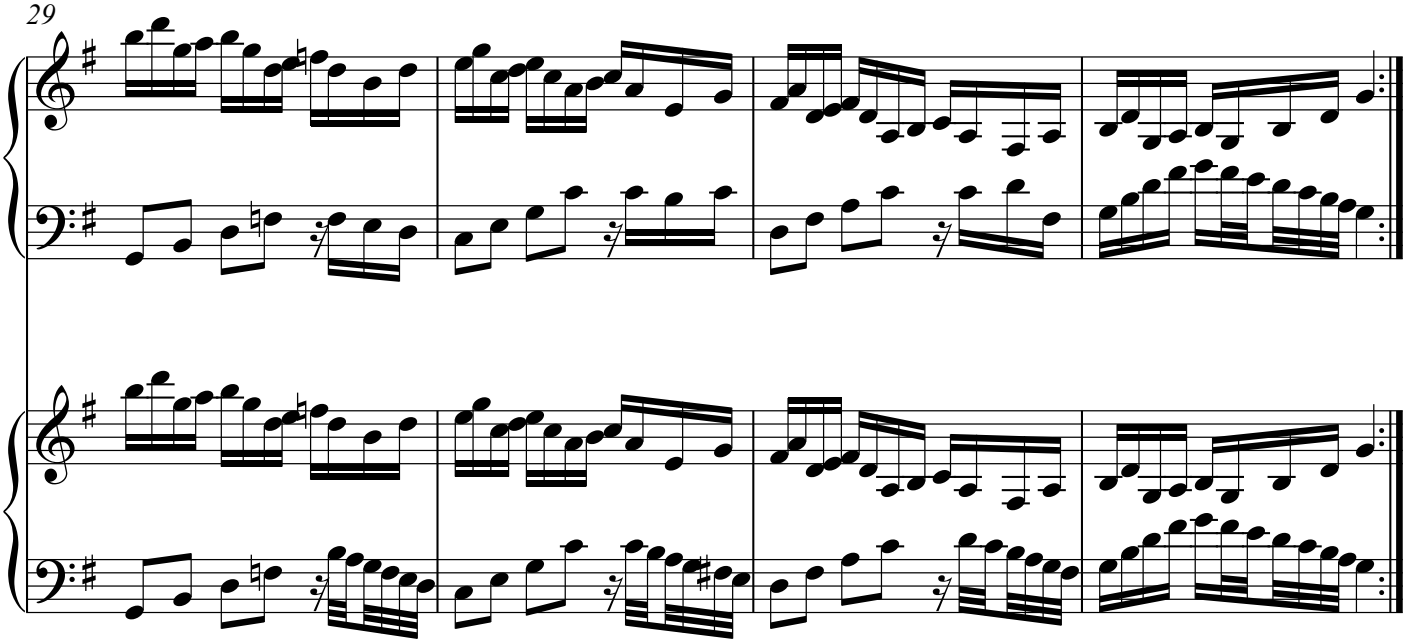
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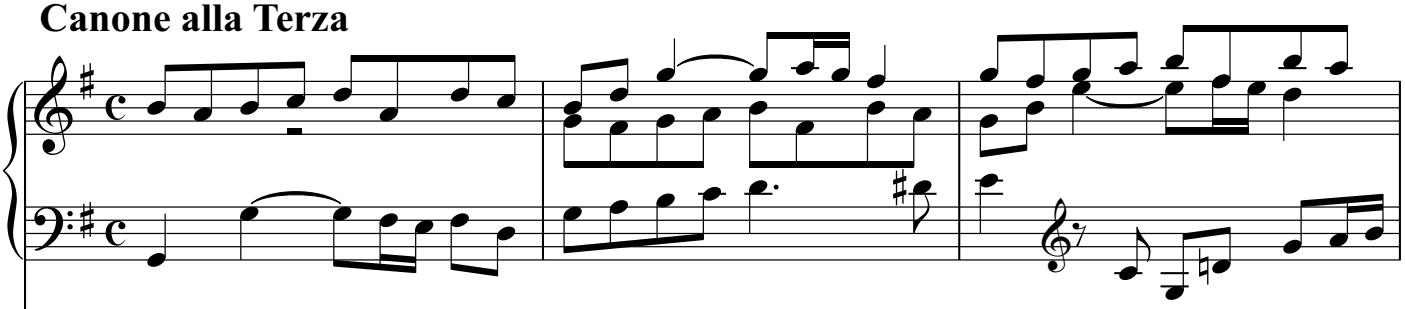
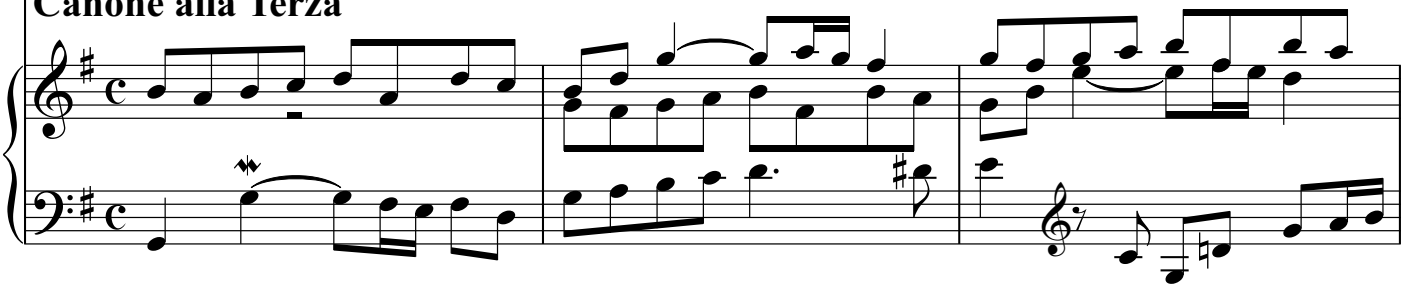
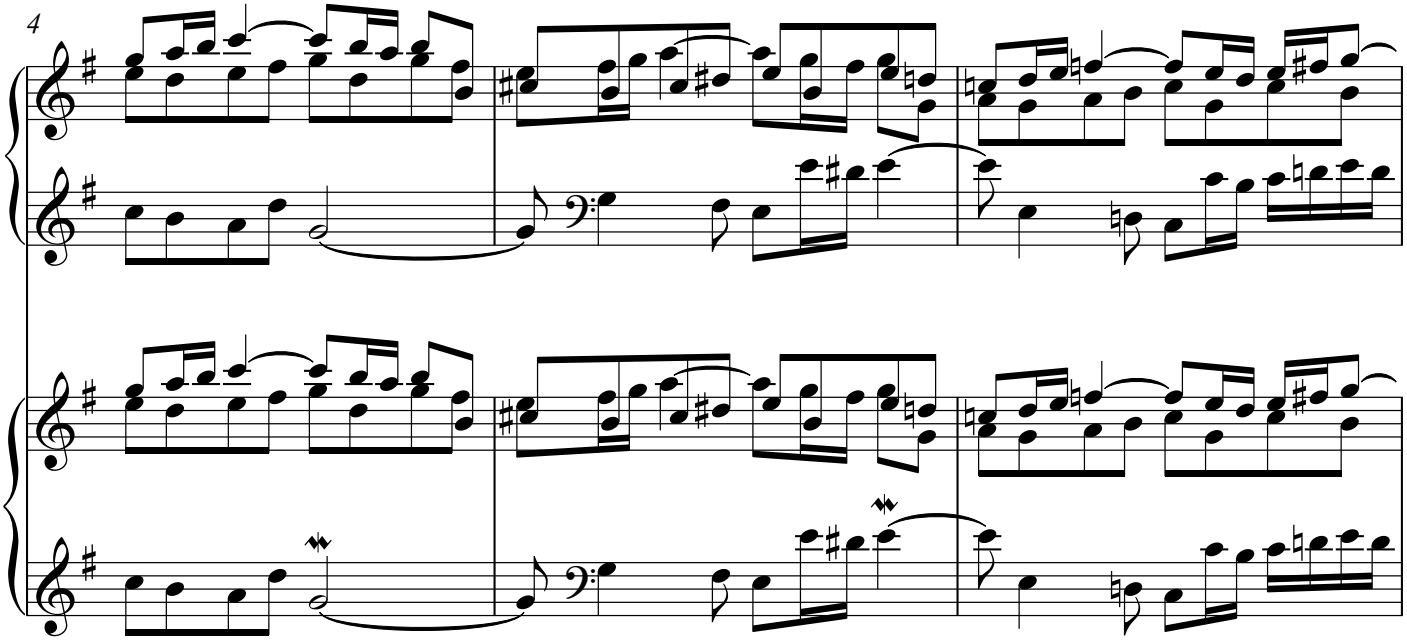
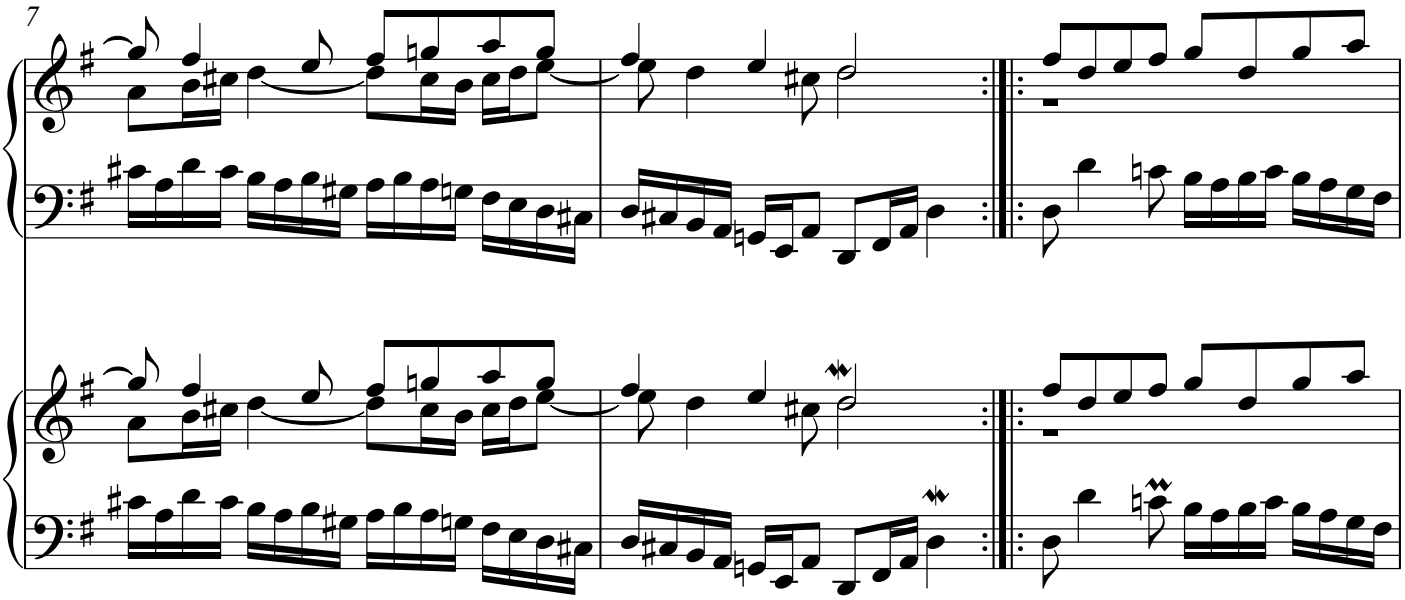
VARIATIO 9 a 1 Clav. (Bach)
Canone alla Terza

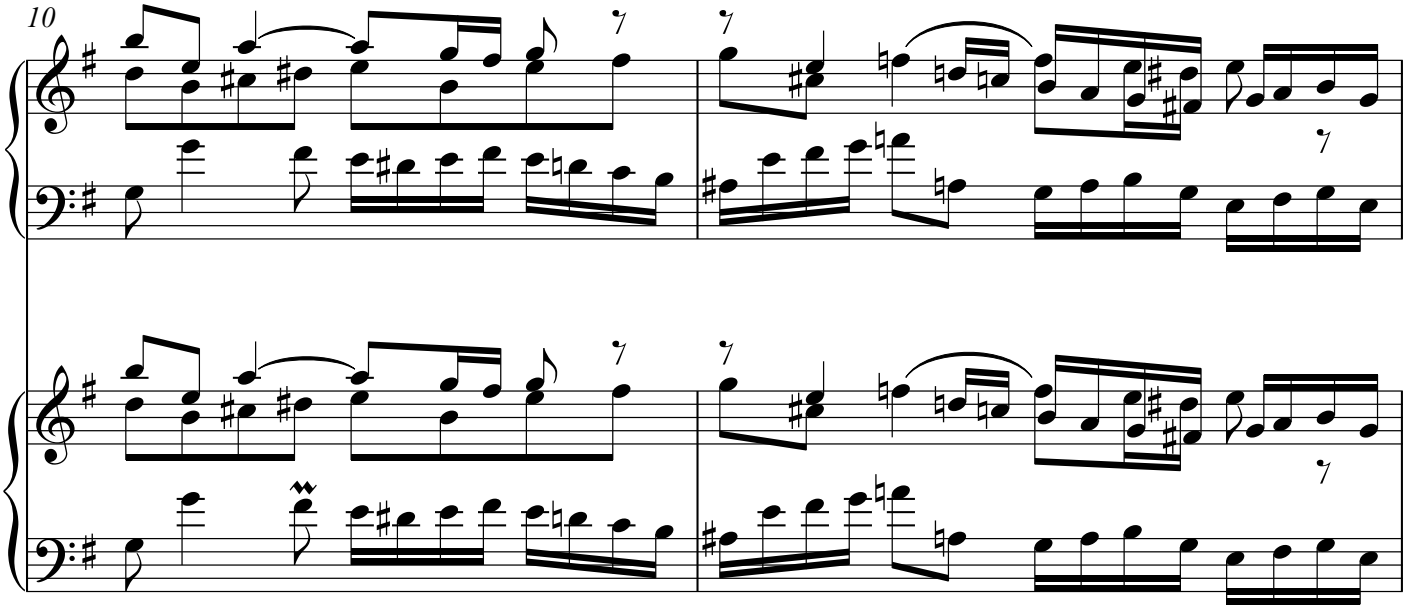


VARIATIO 9 a 1 Clav. (Papillon)
Canone alla Terza









V.S.

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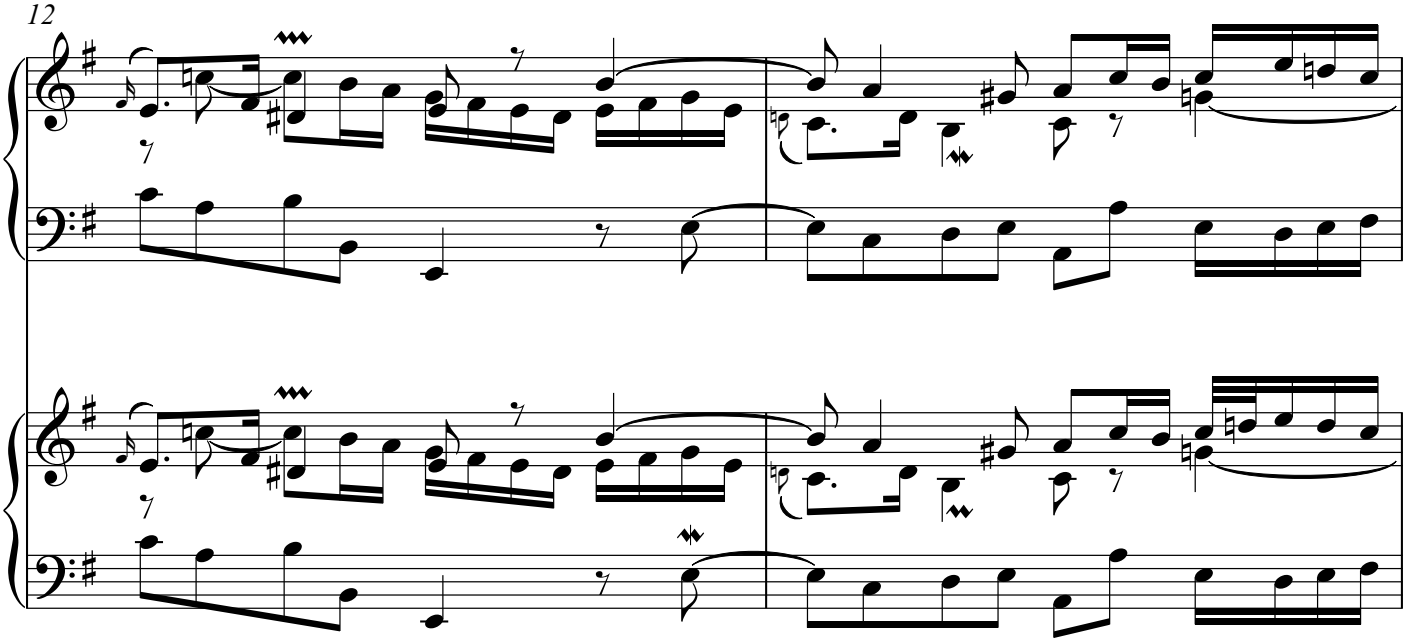

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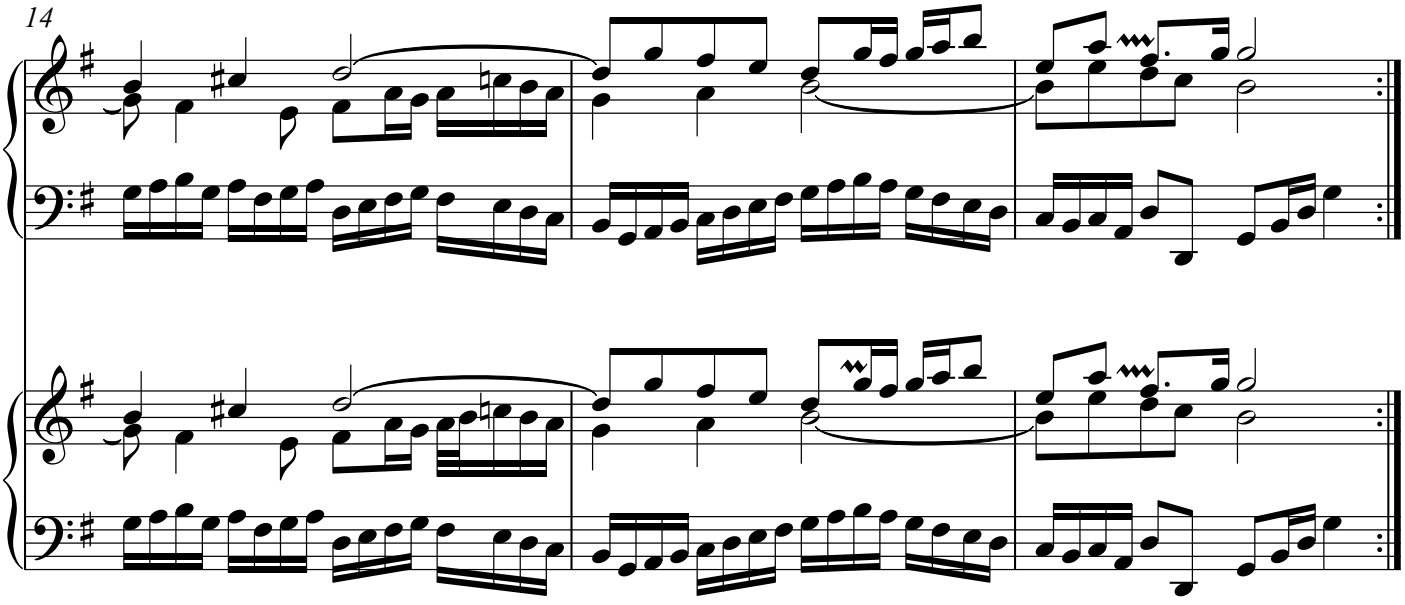
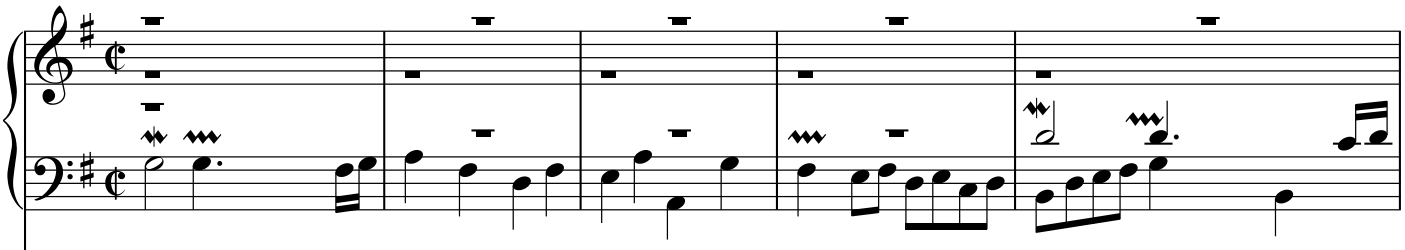
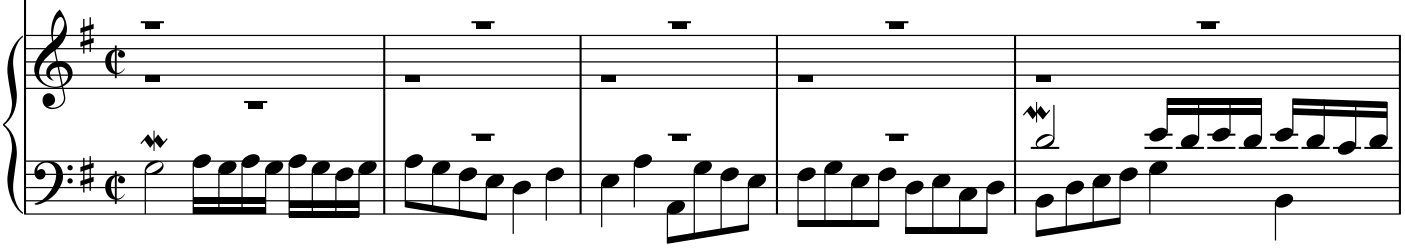
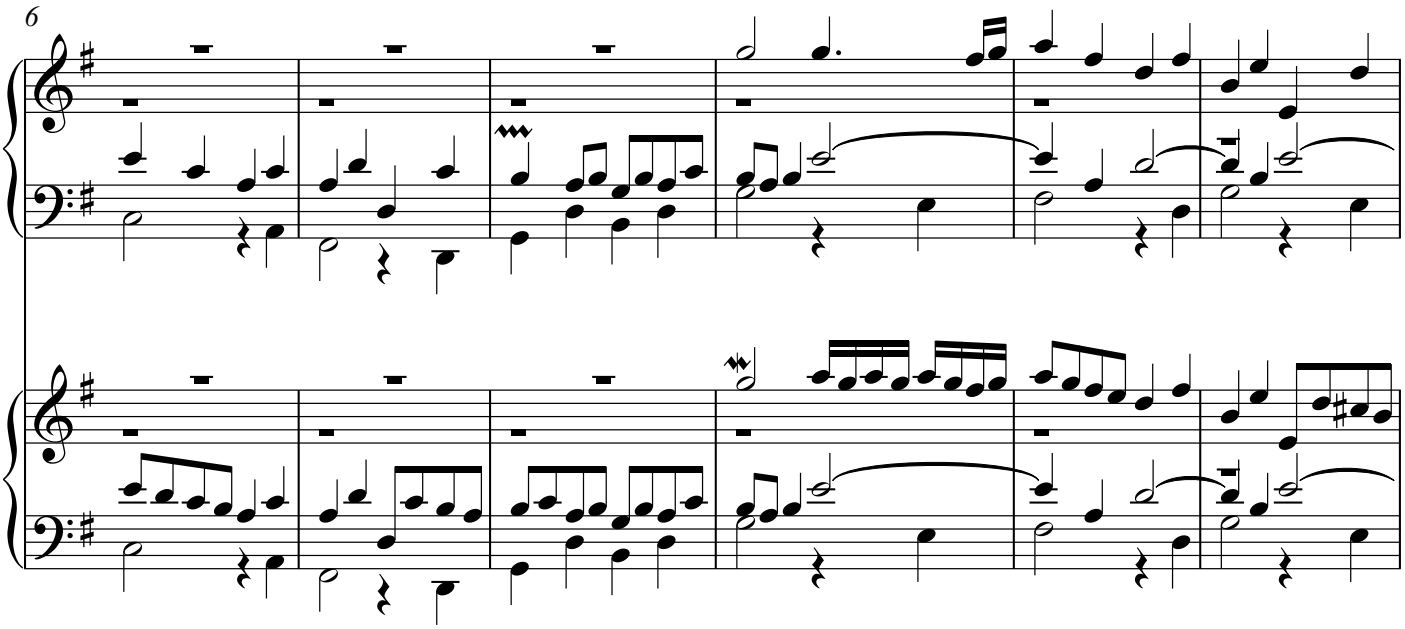


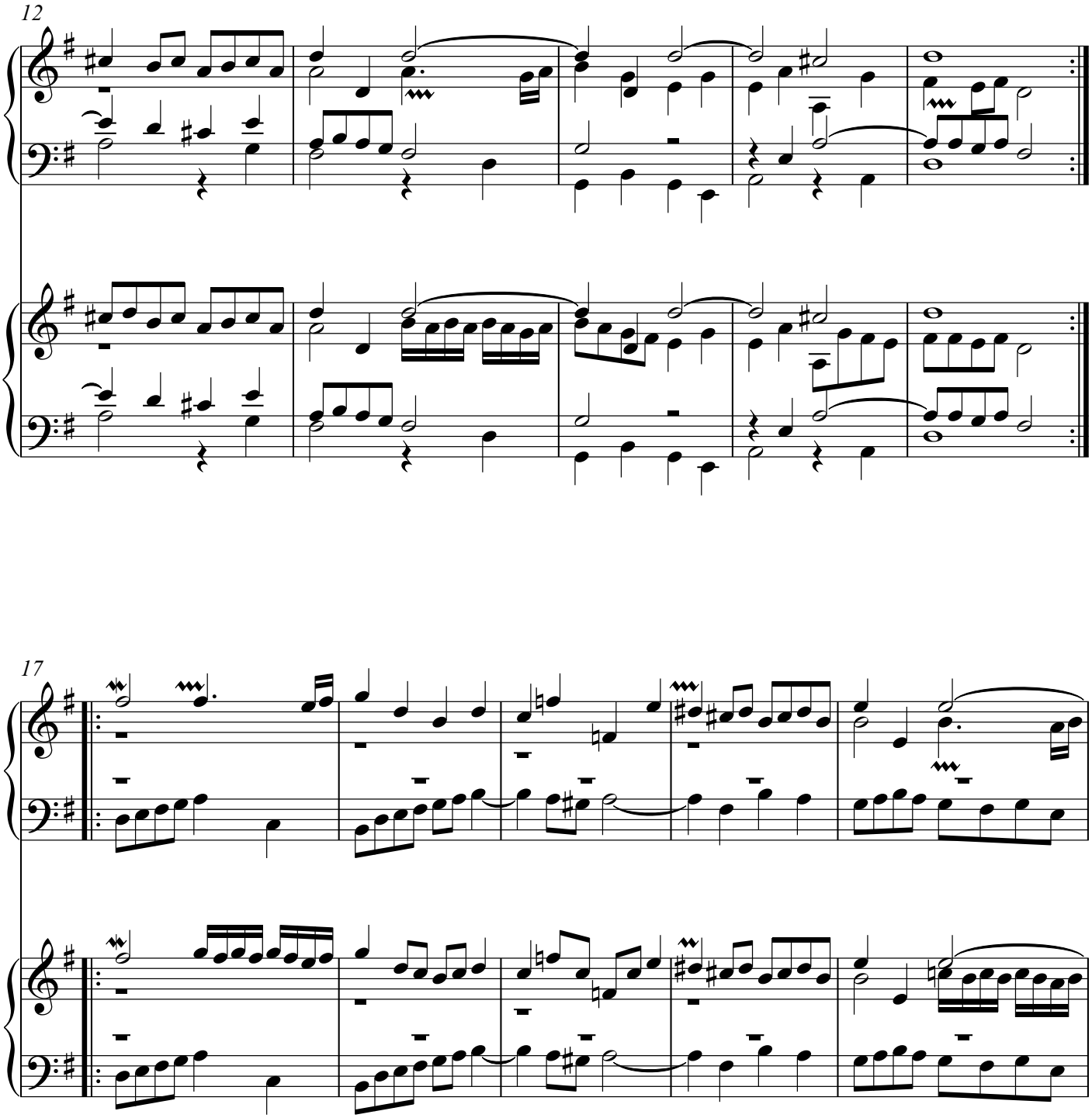
VARIATIO 10 a 1 Clav. (Bach)
Fughetta



VARIATIO 10 a 1 Clav. (Papillon)
Fughetta



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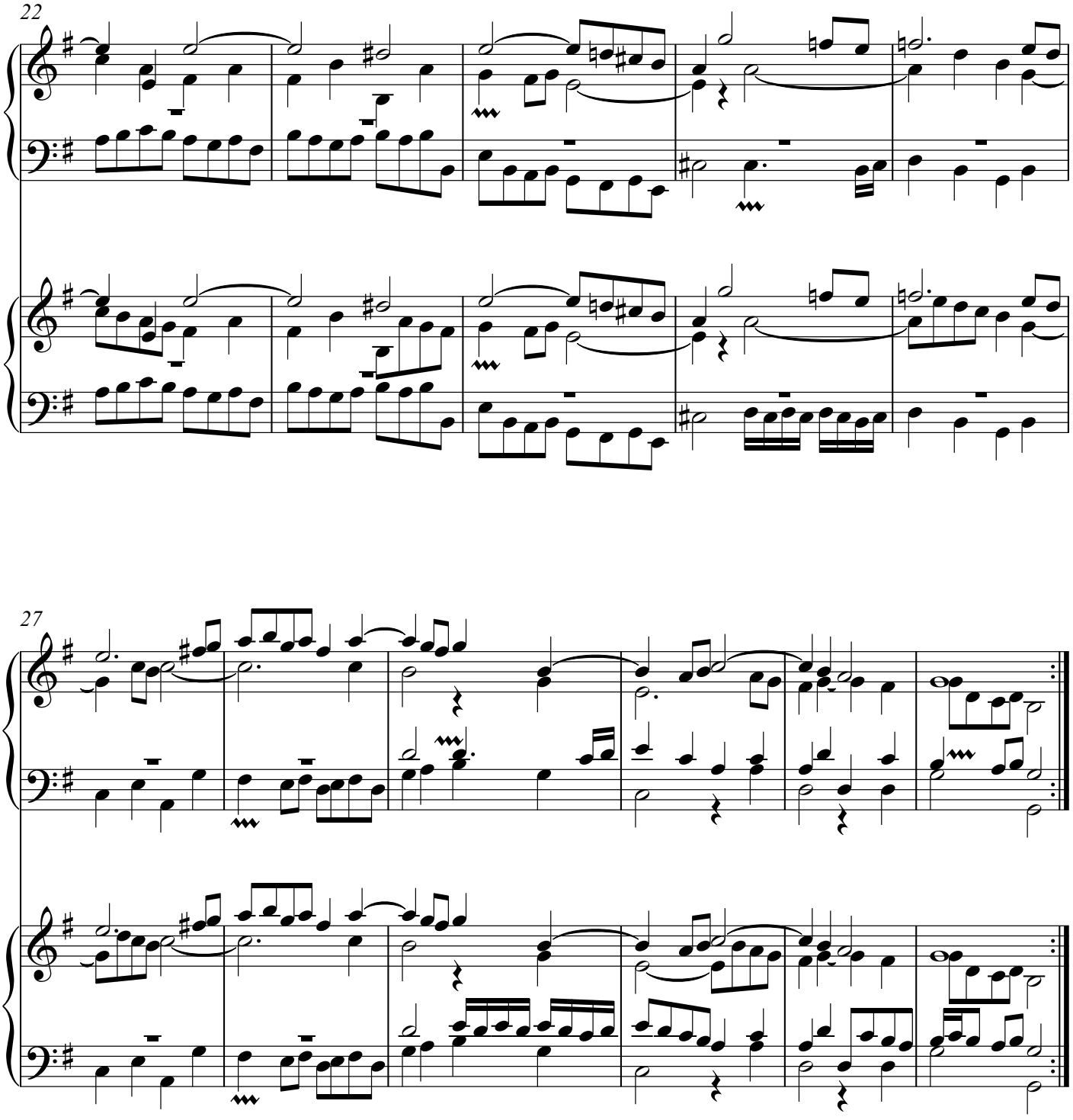
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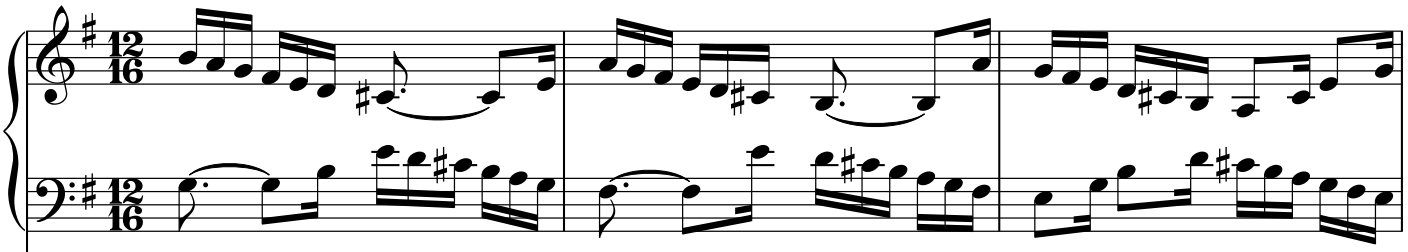
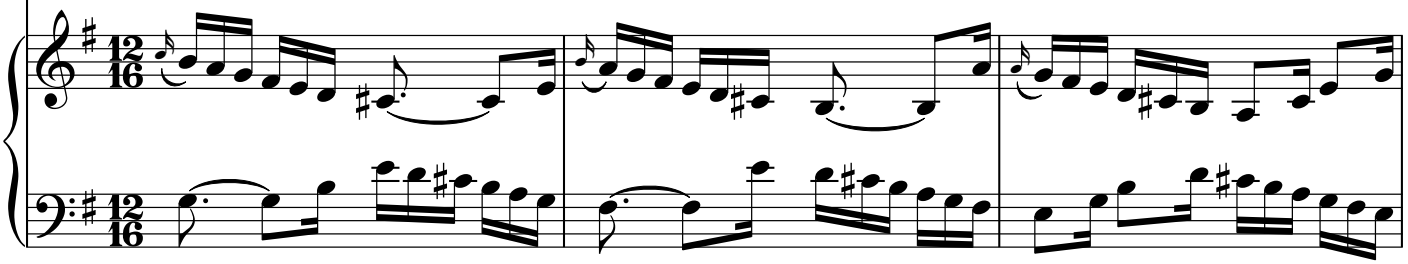
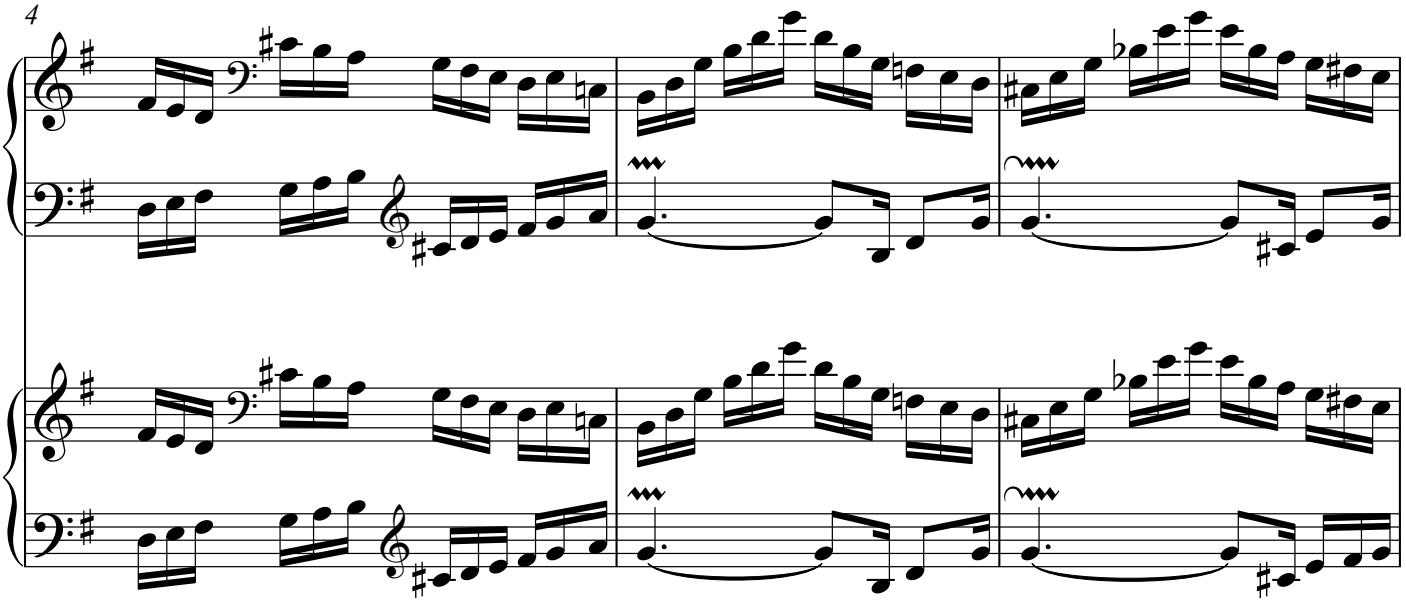
VARIATIO 11 a 2 Clav. (Bach)



VARIATIO 11 a 2 Clav. (Papillon)





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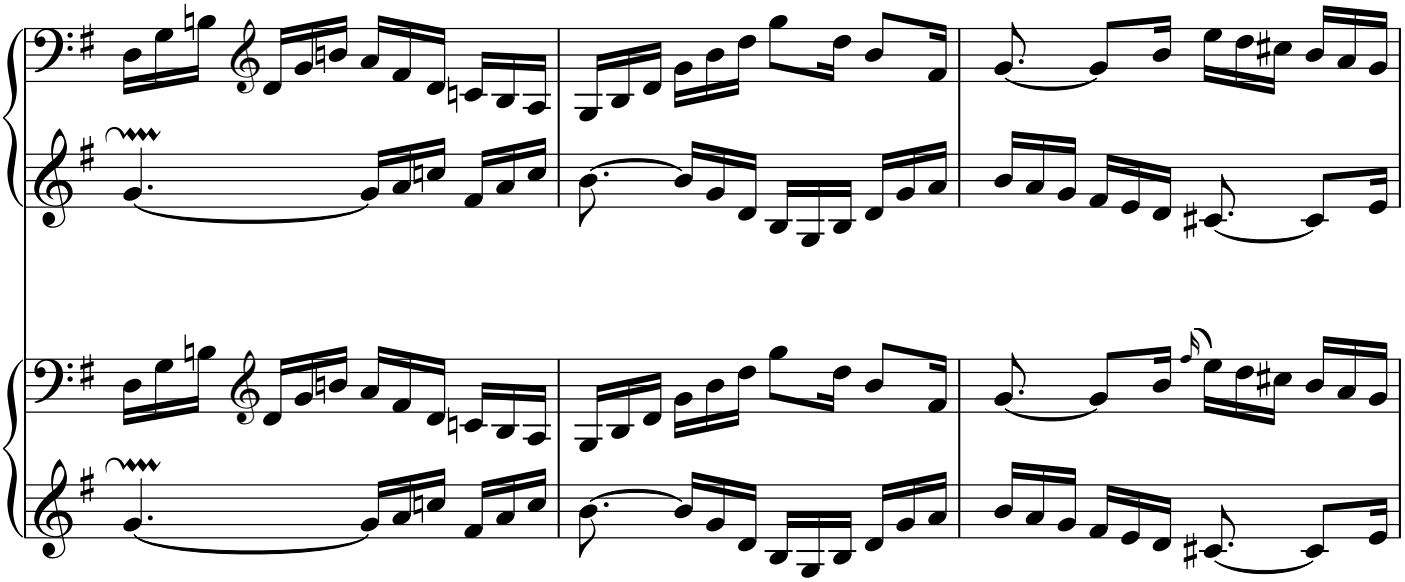

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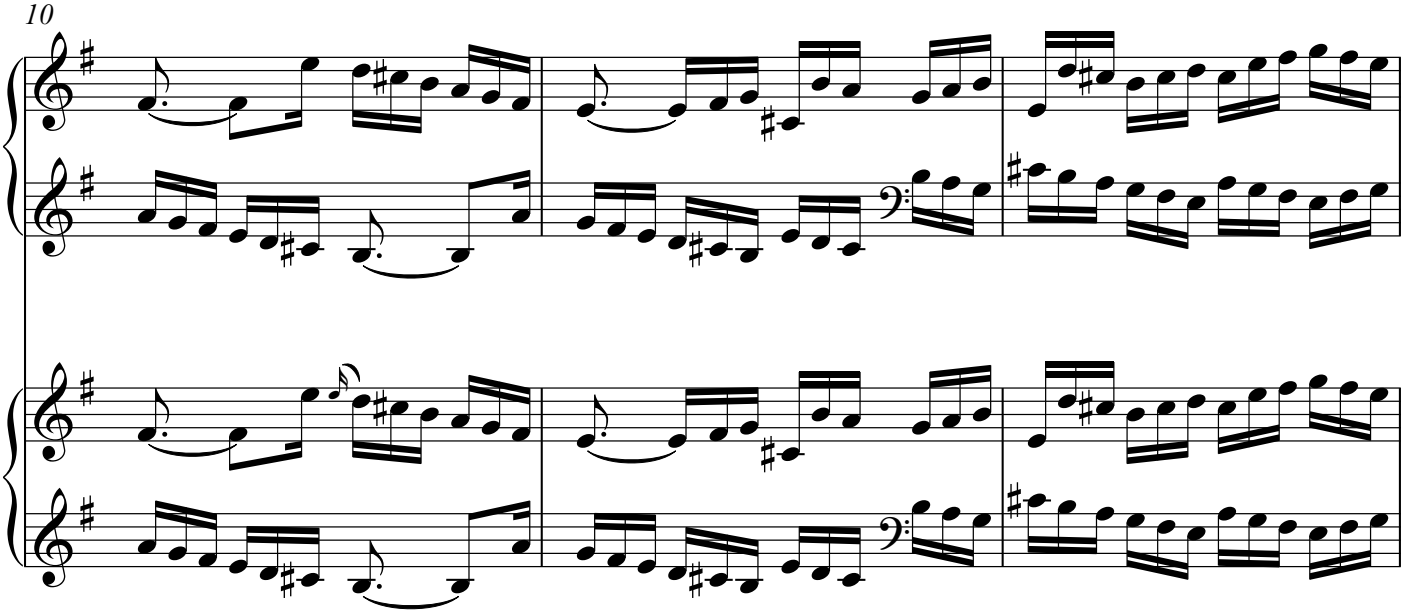

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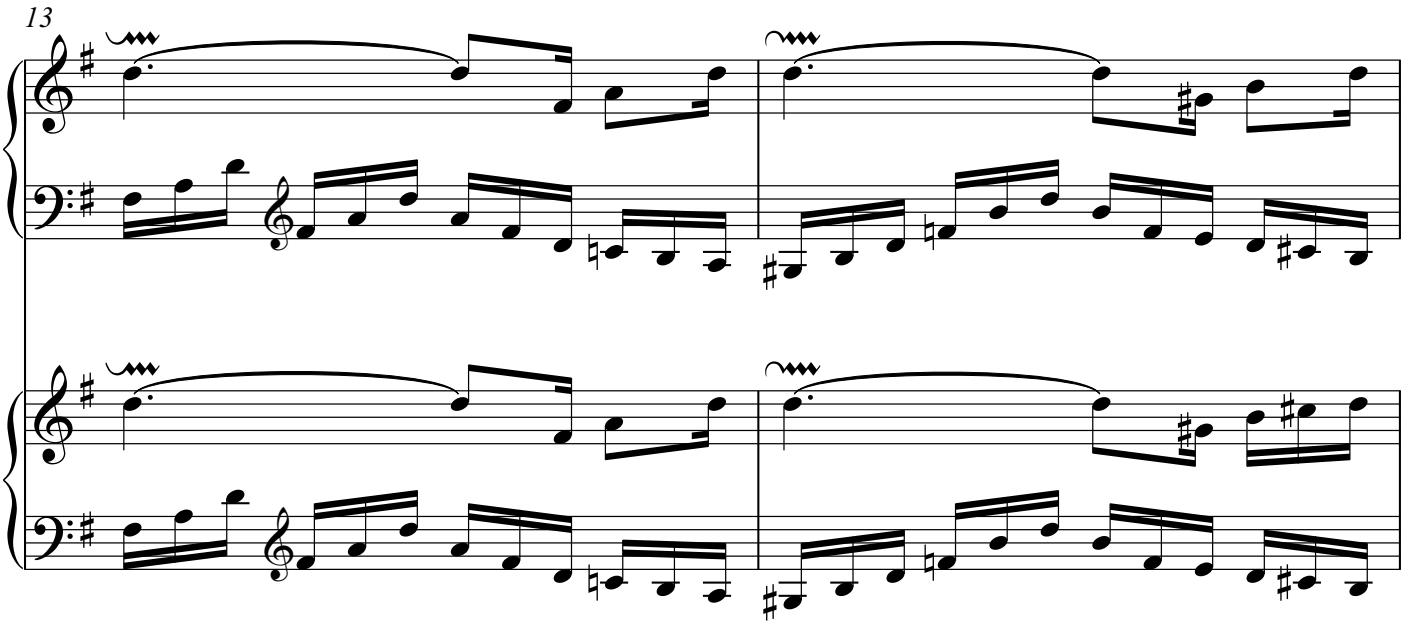
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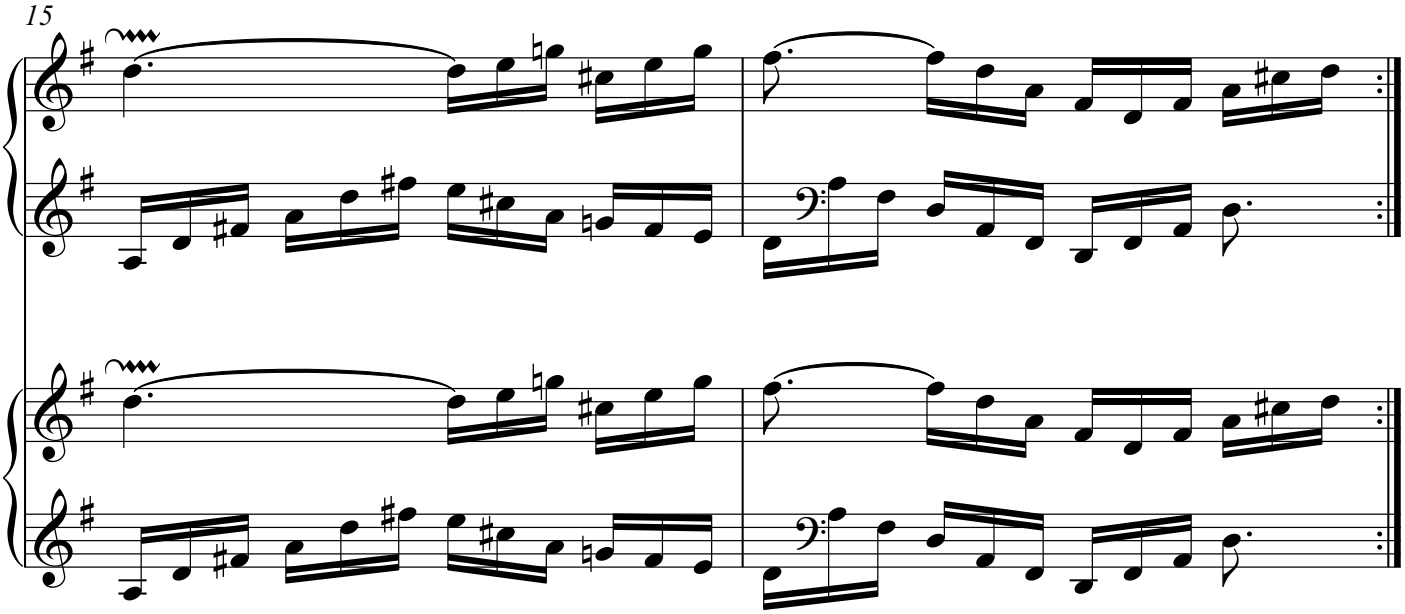
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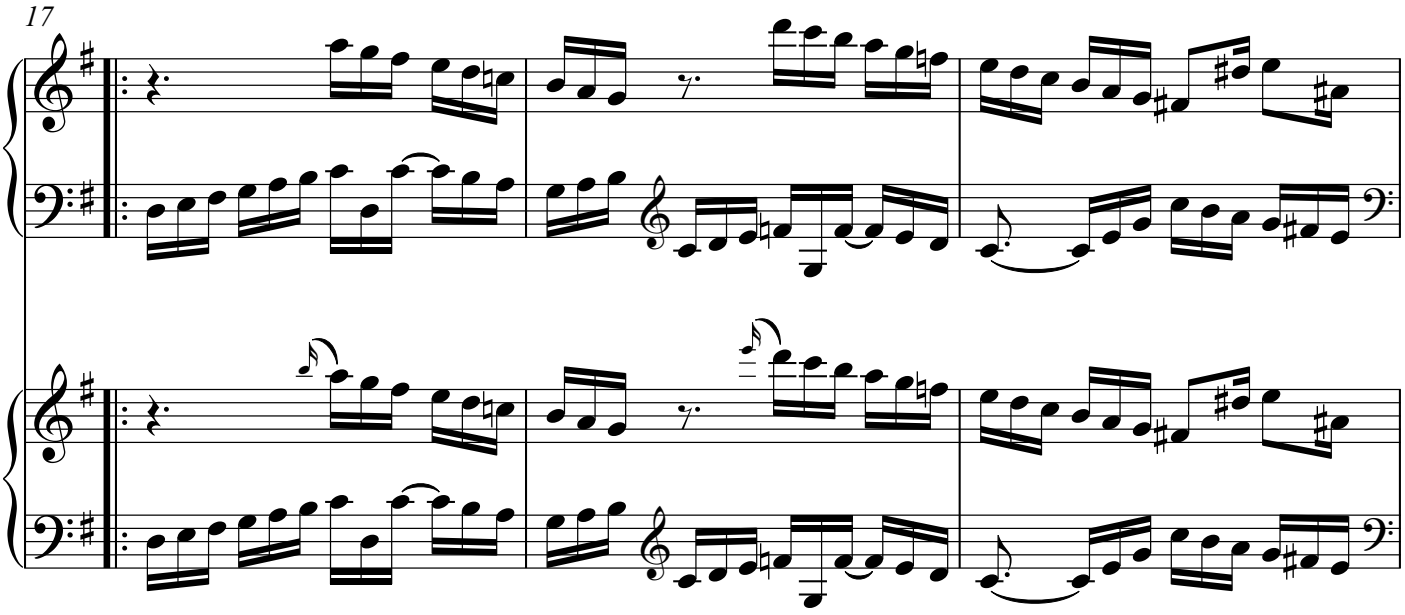

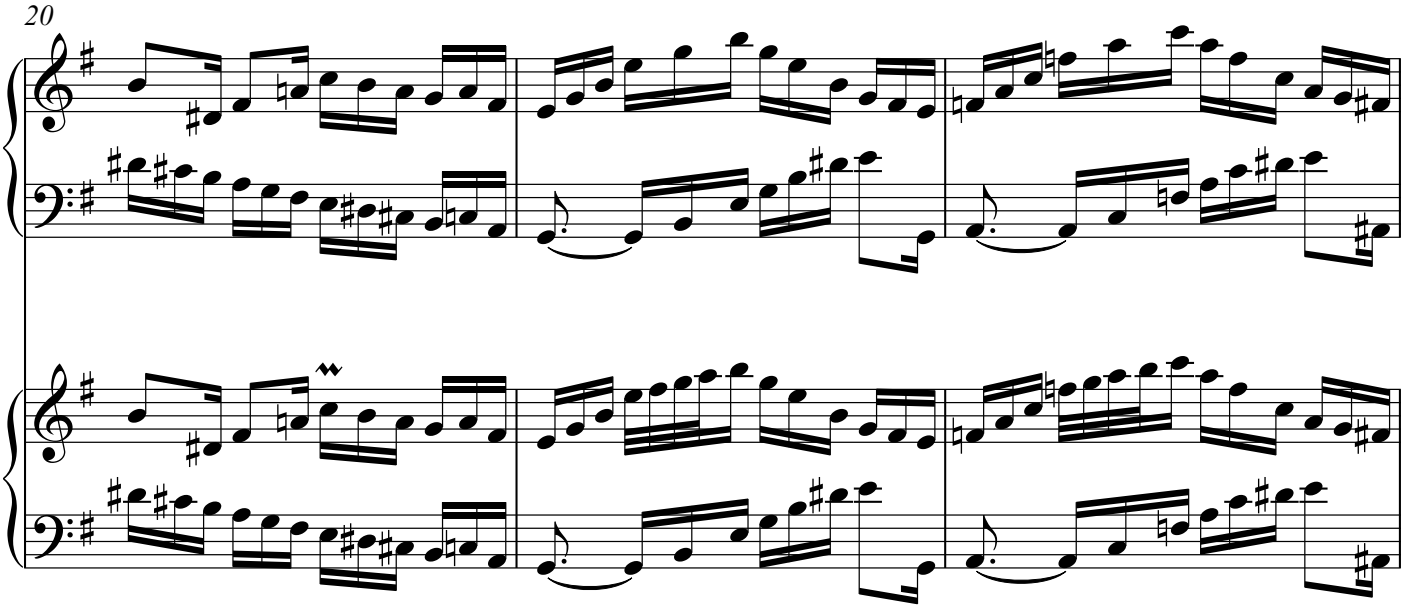

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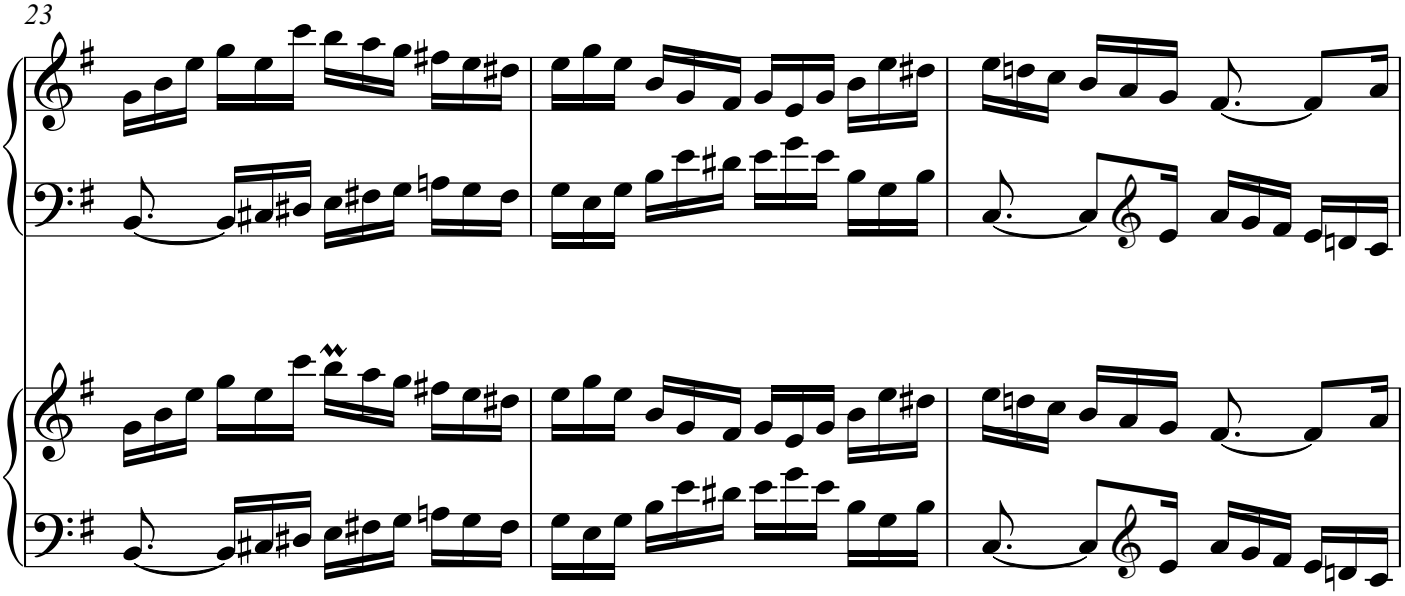
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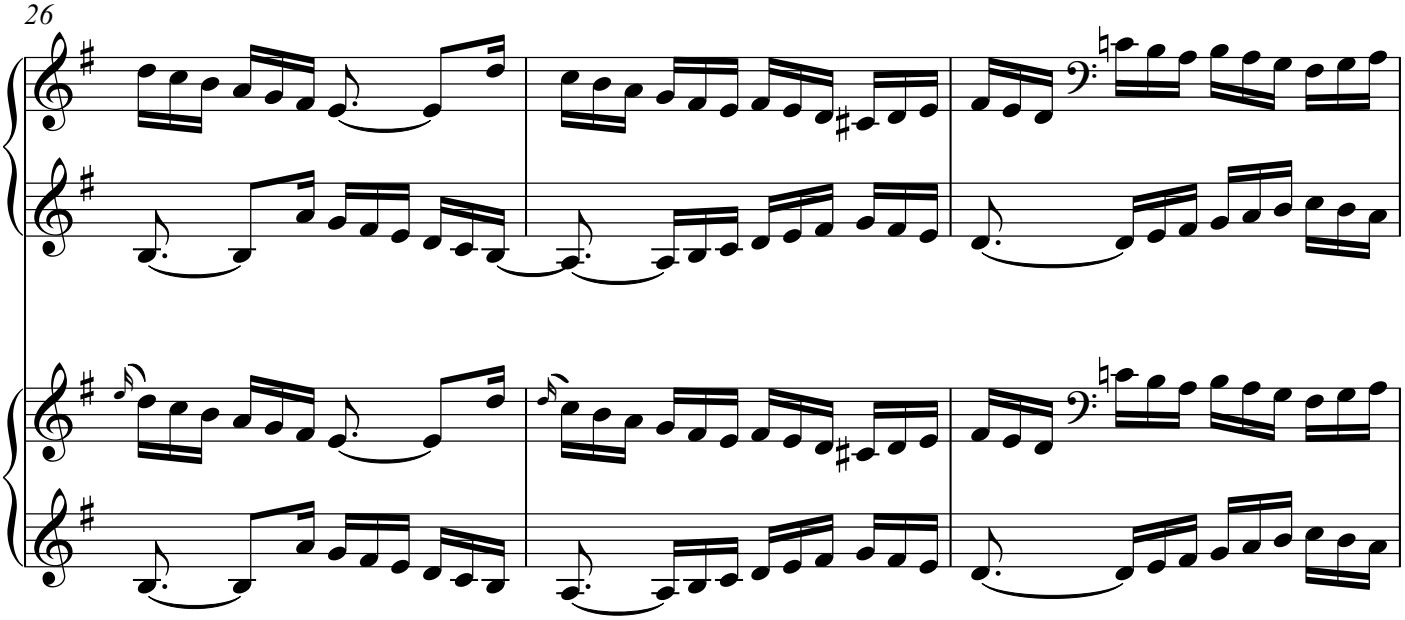
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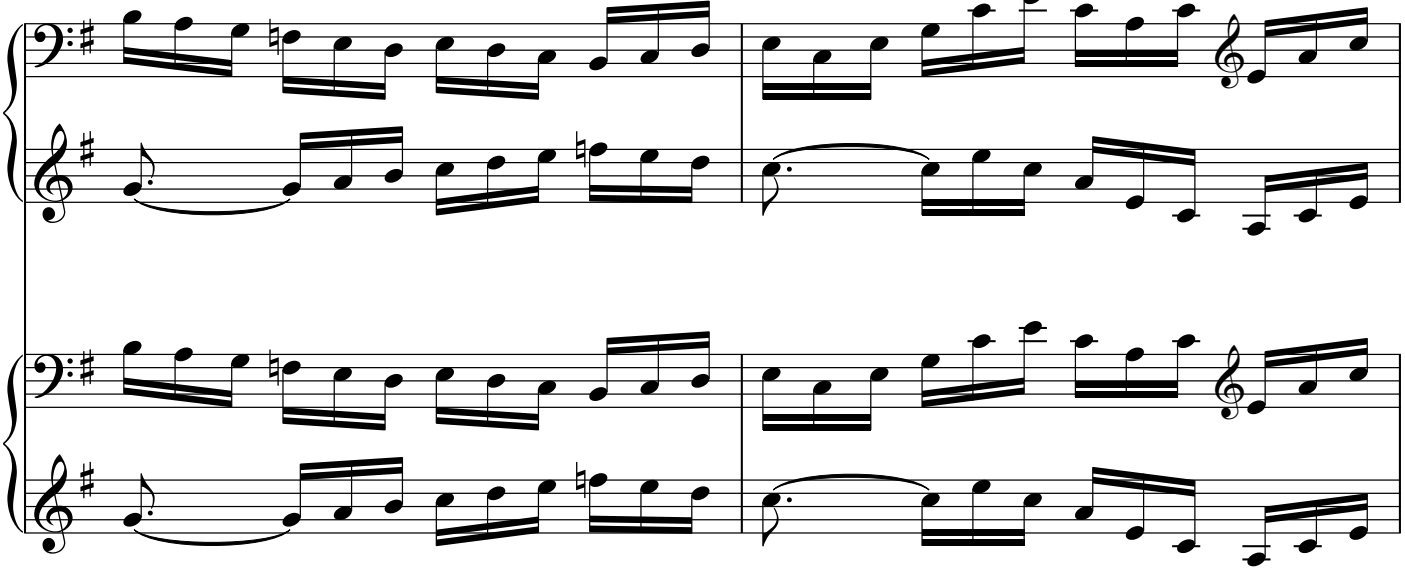

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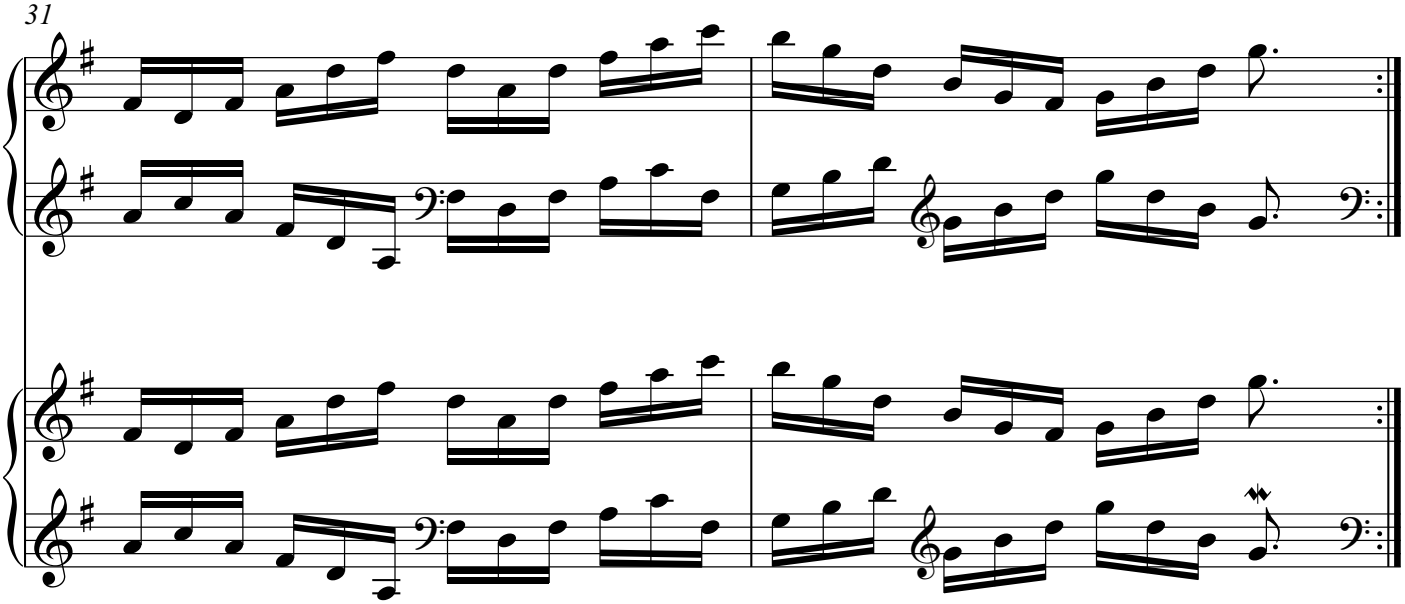
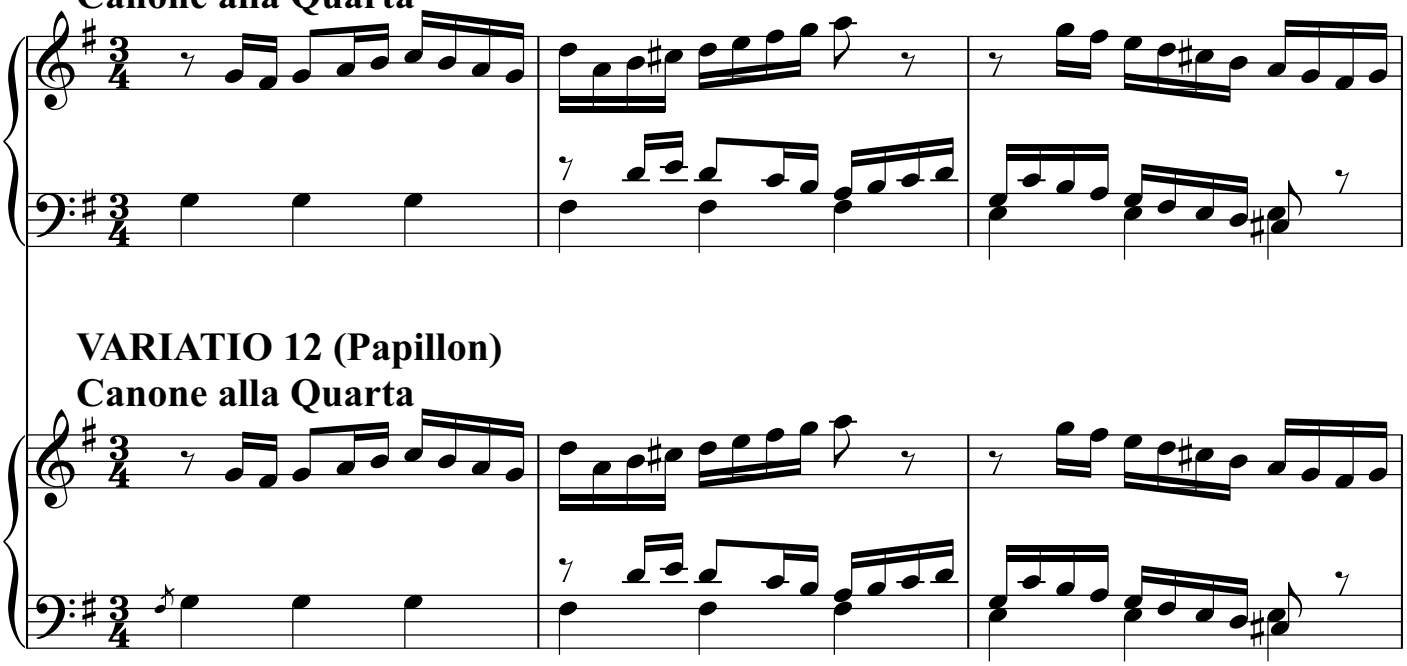
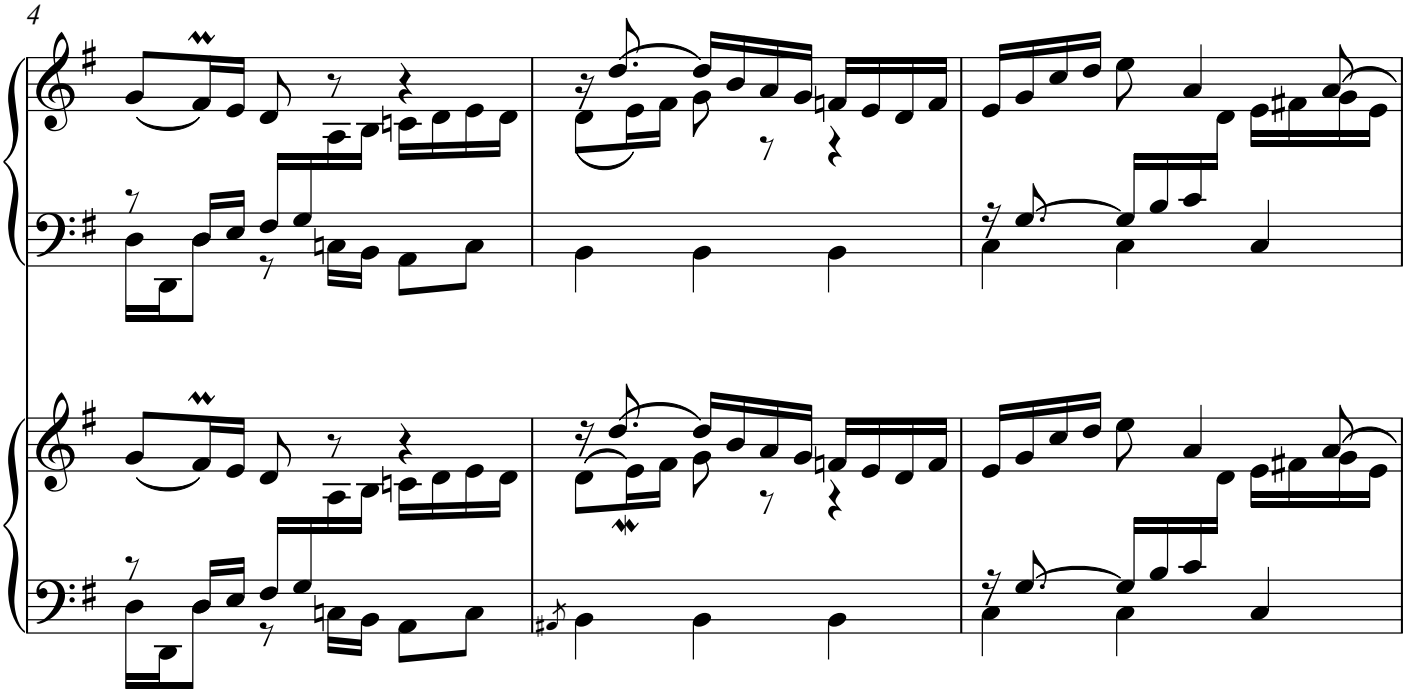
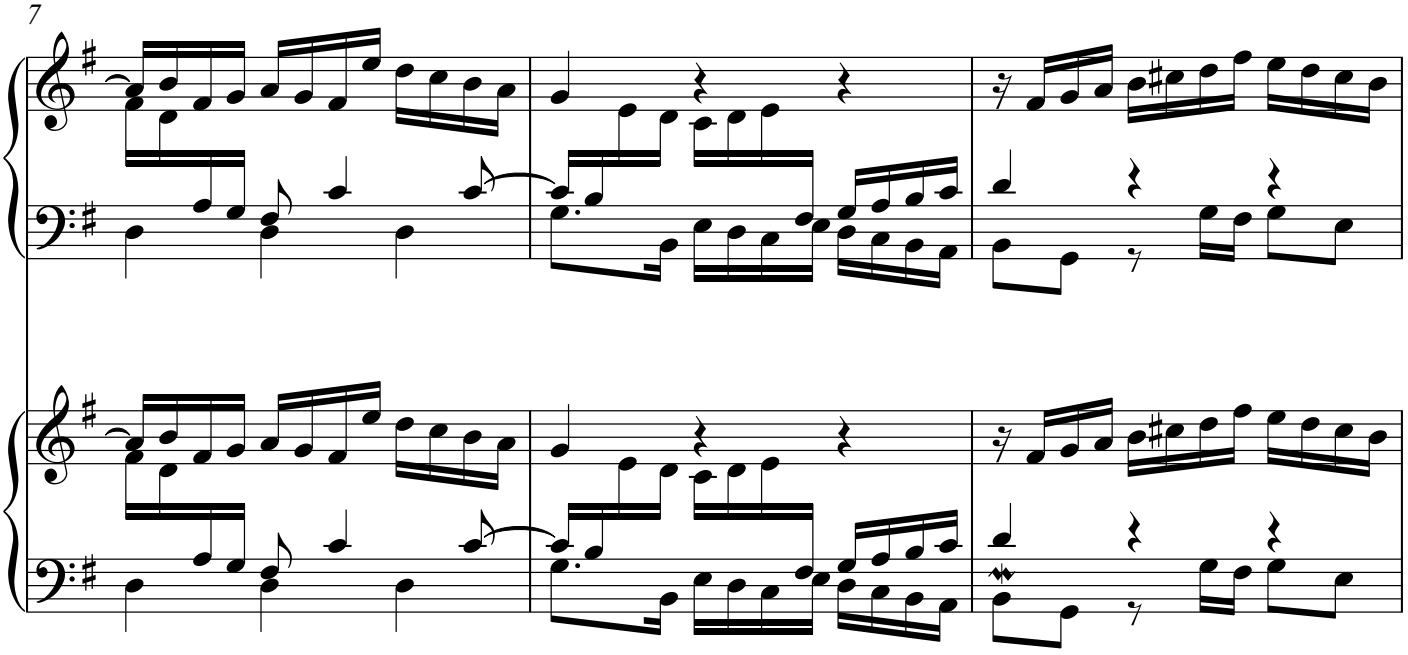


VARIATIO 12 (Bach)
Canone alla Quarta



VARIATIO 12 (Papillon)
Canone alla Quarta

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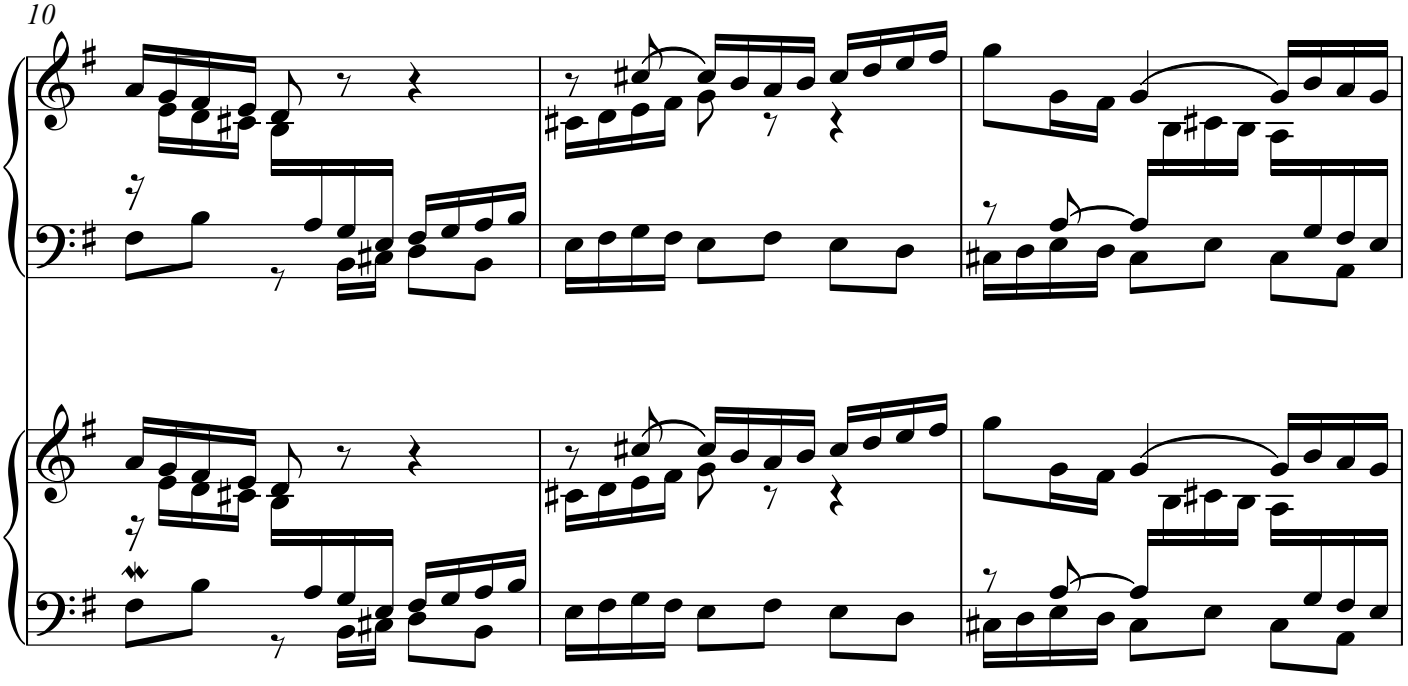
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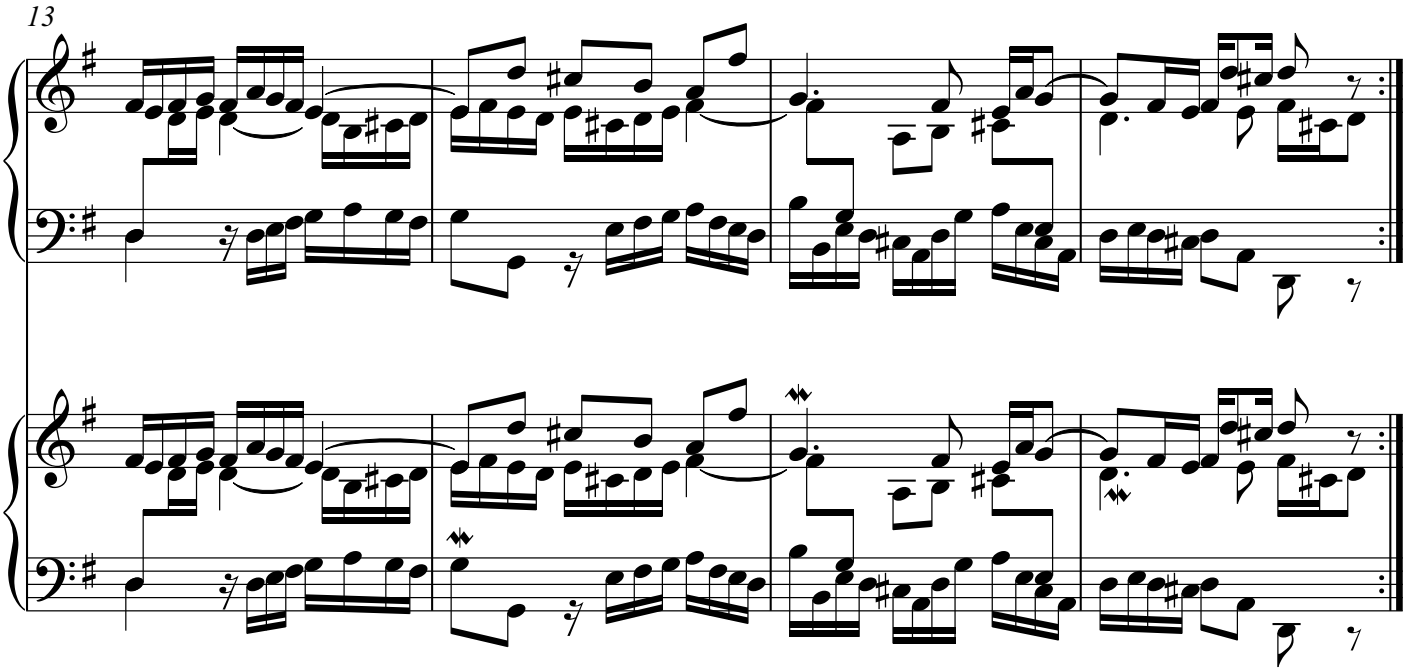
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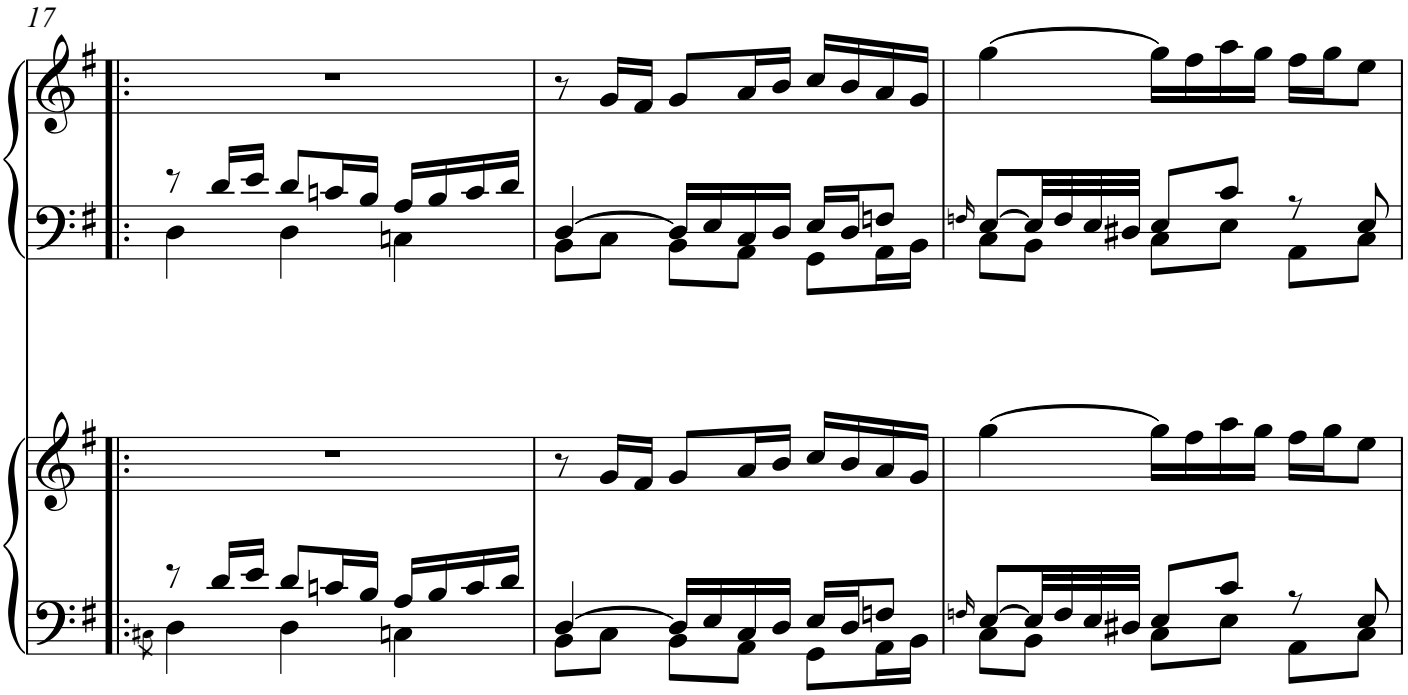
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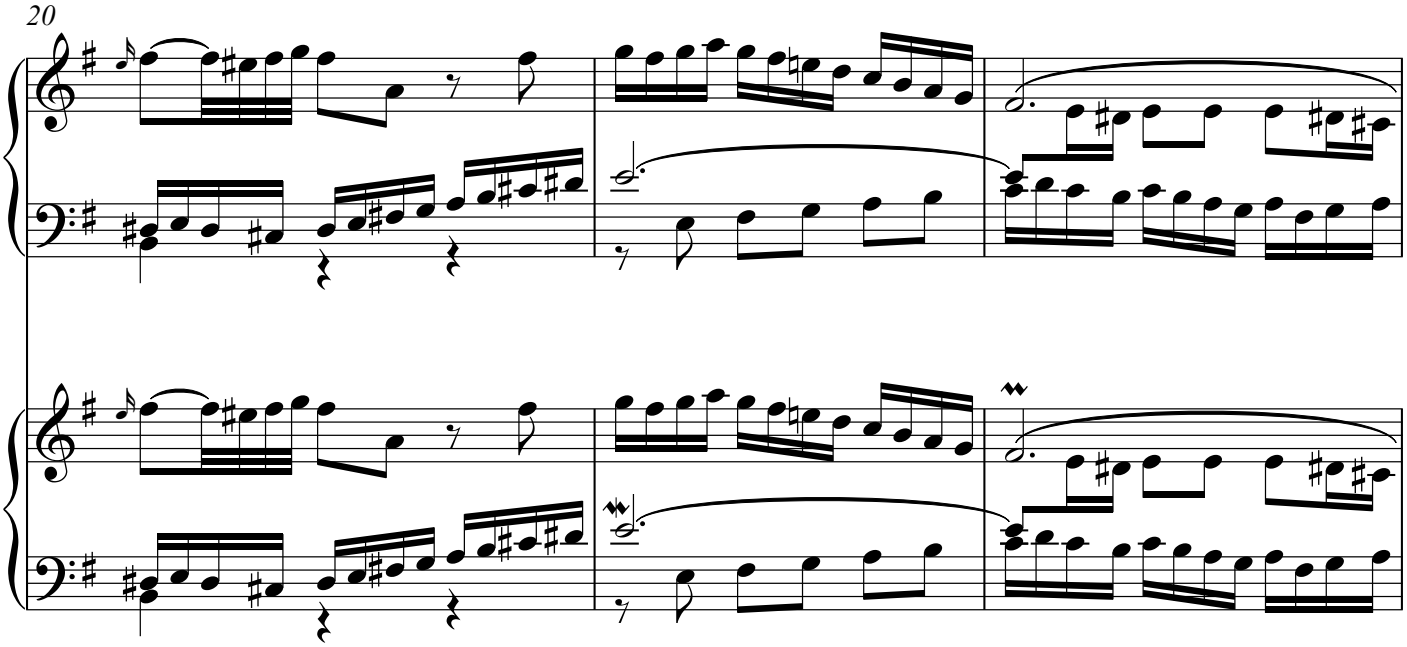
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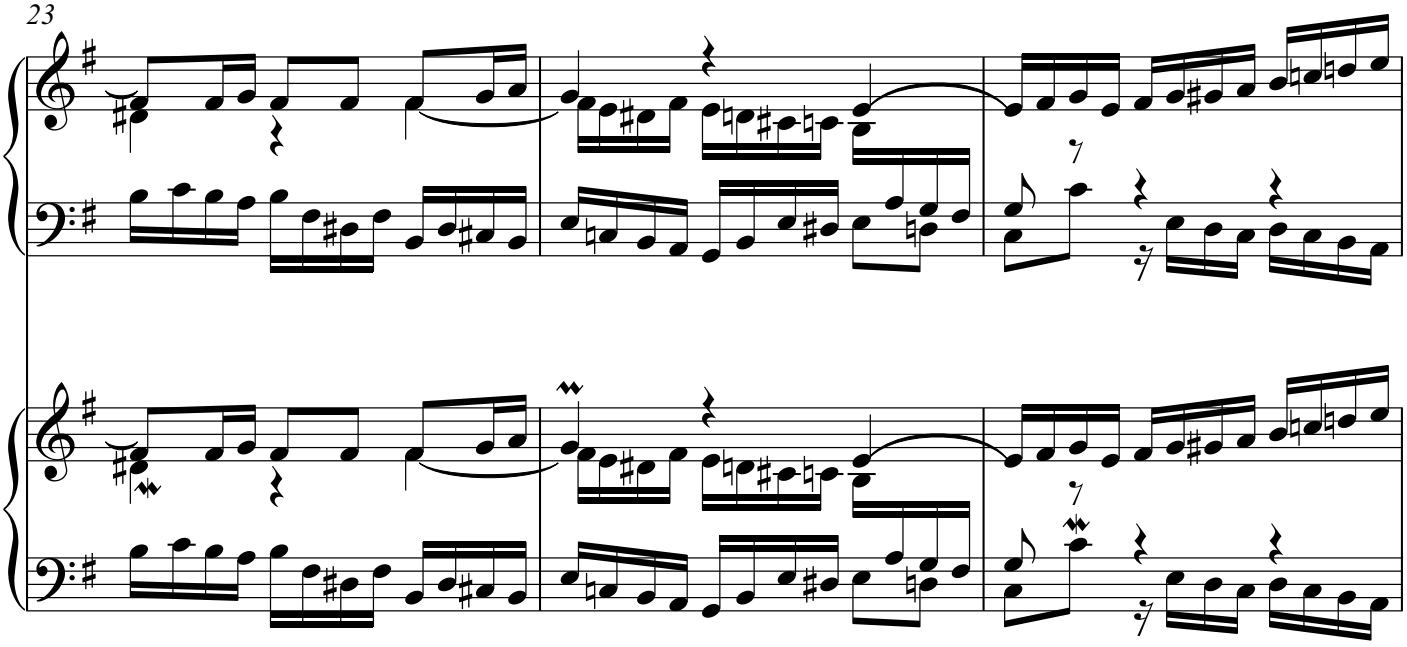
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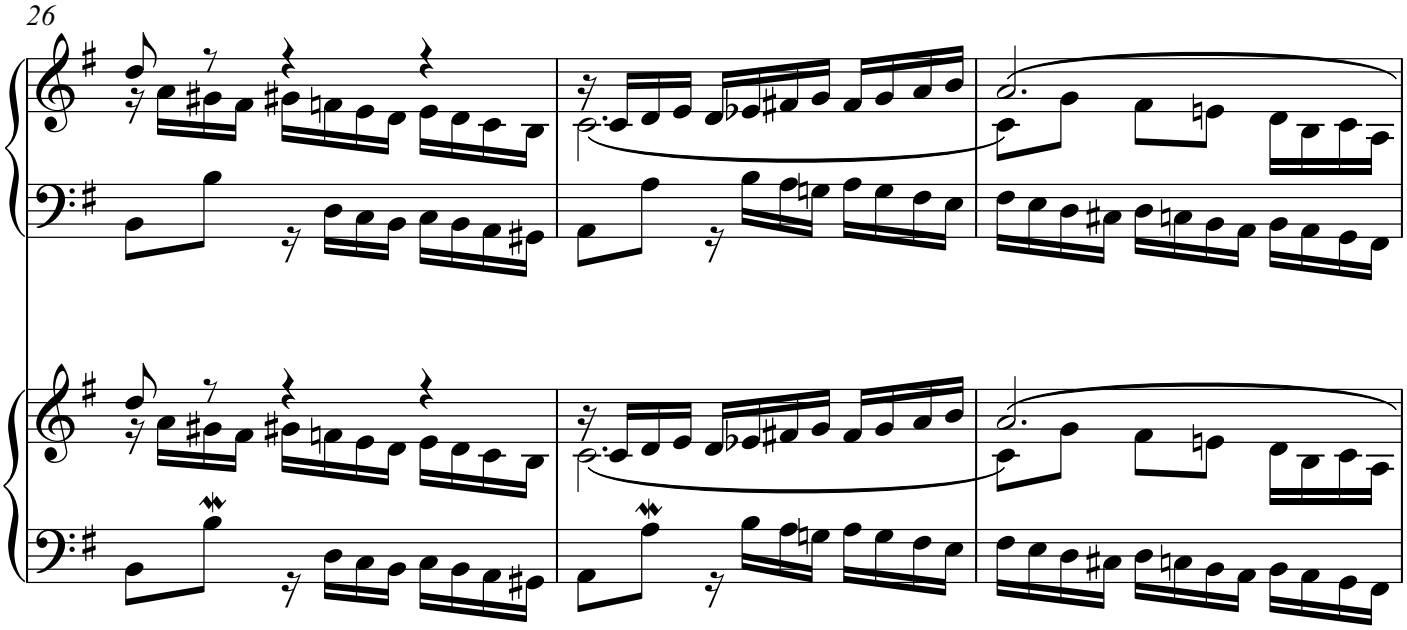
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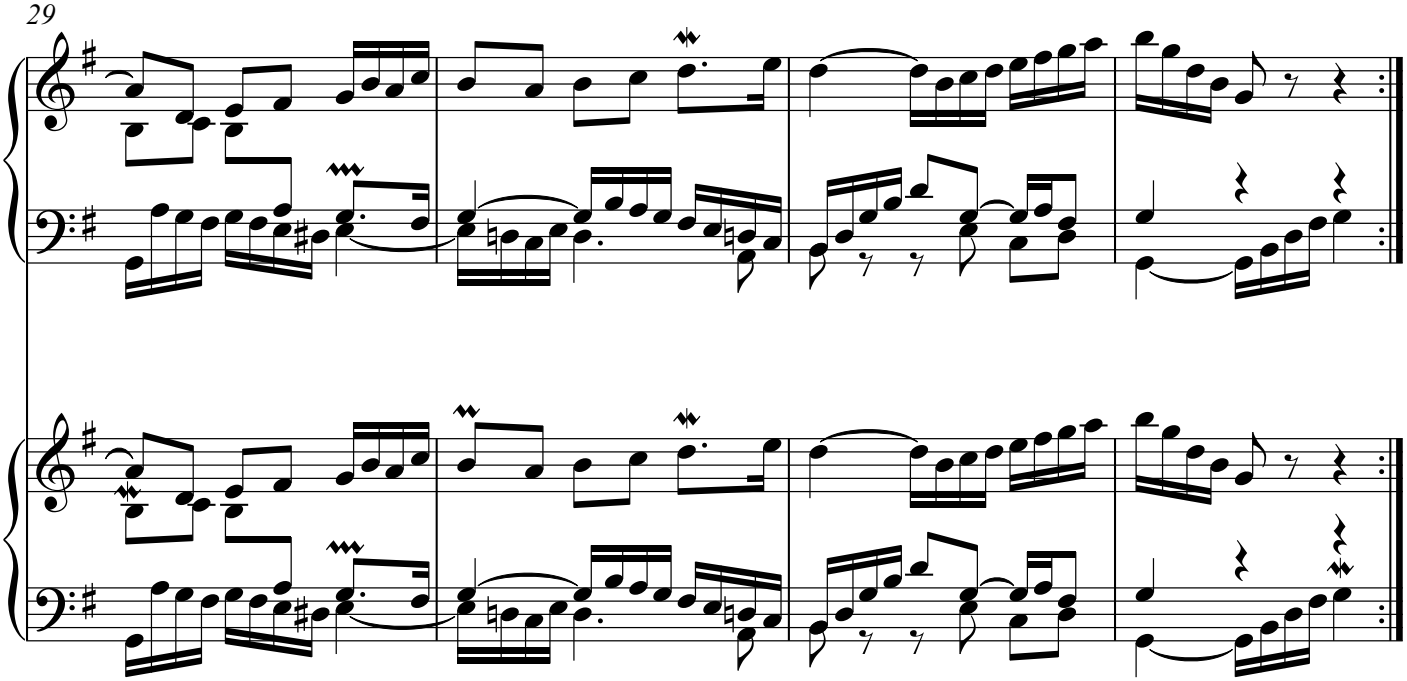
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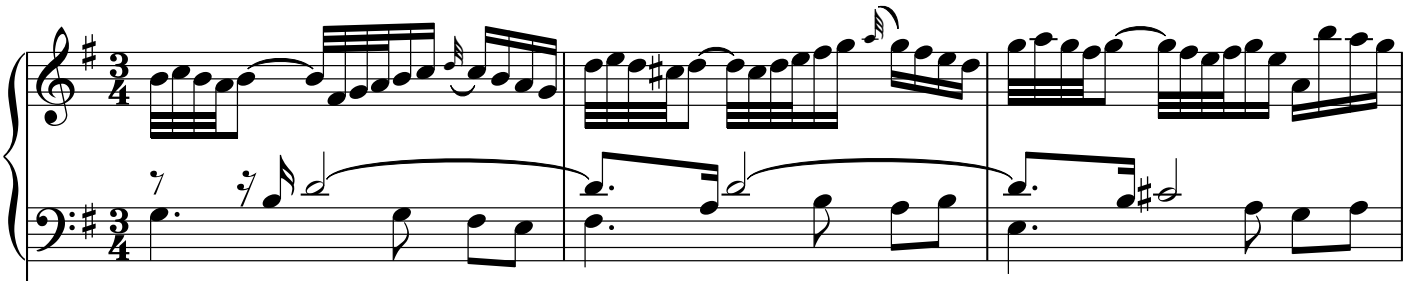
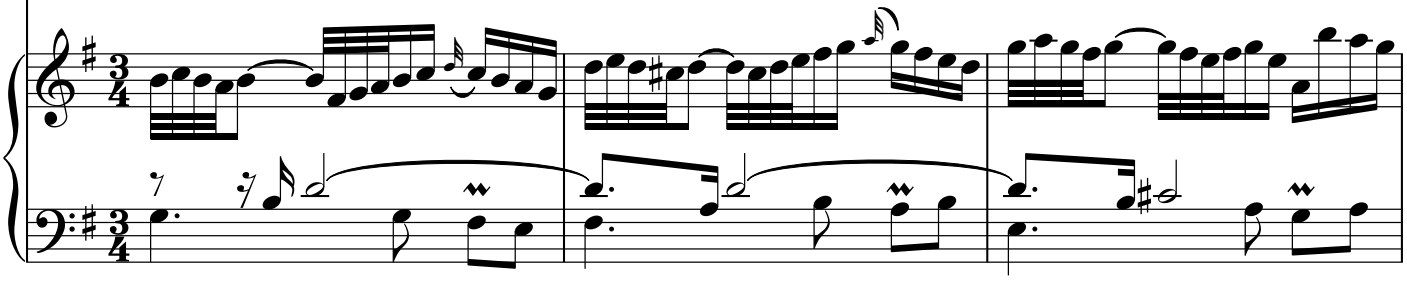
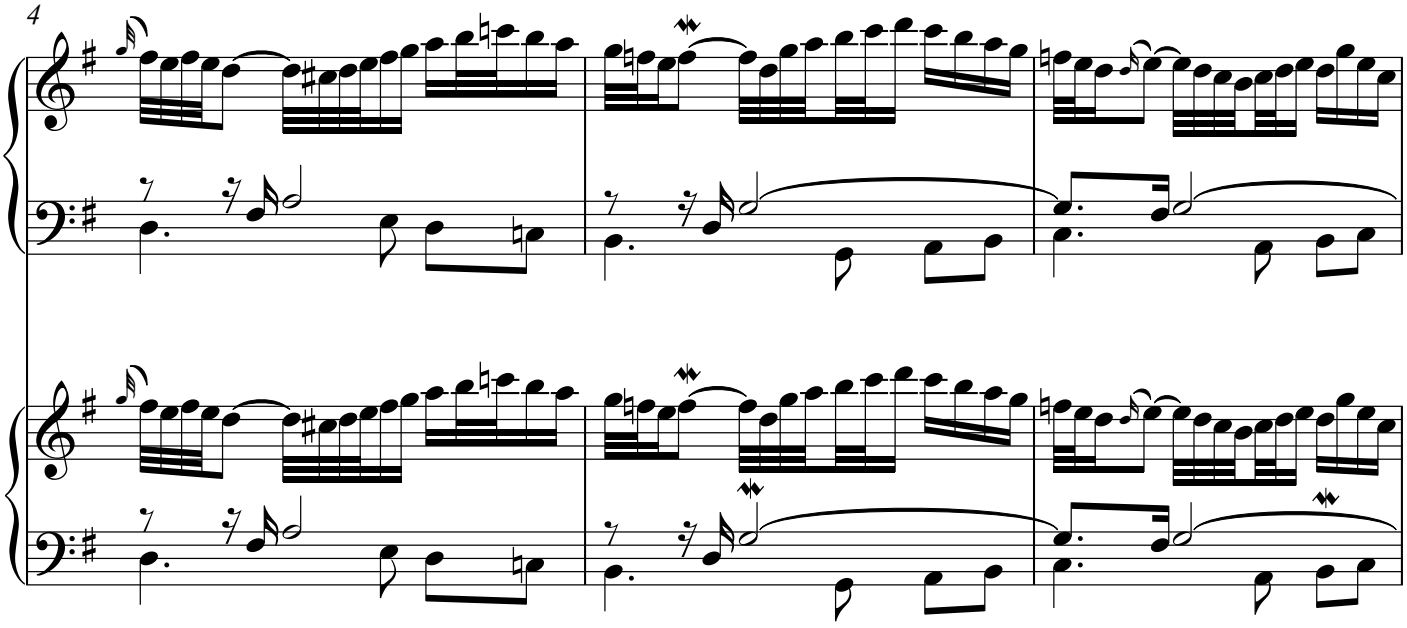
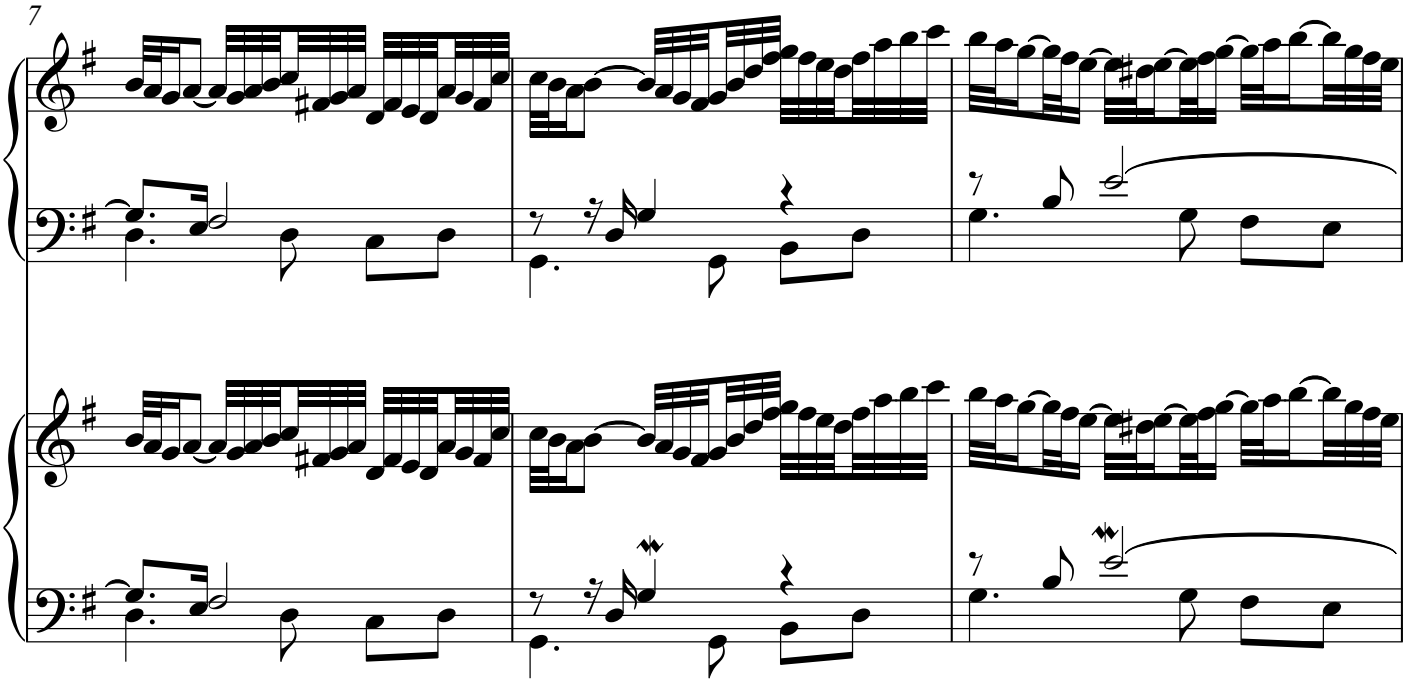
VARIATIO 13 a 2 Clav. (Bach)



VARIATIO 13 a 2 Clav. (Papillon)



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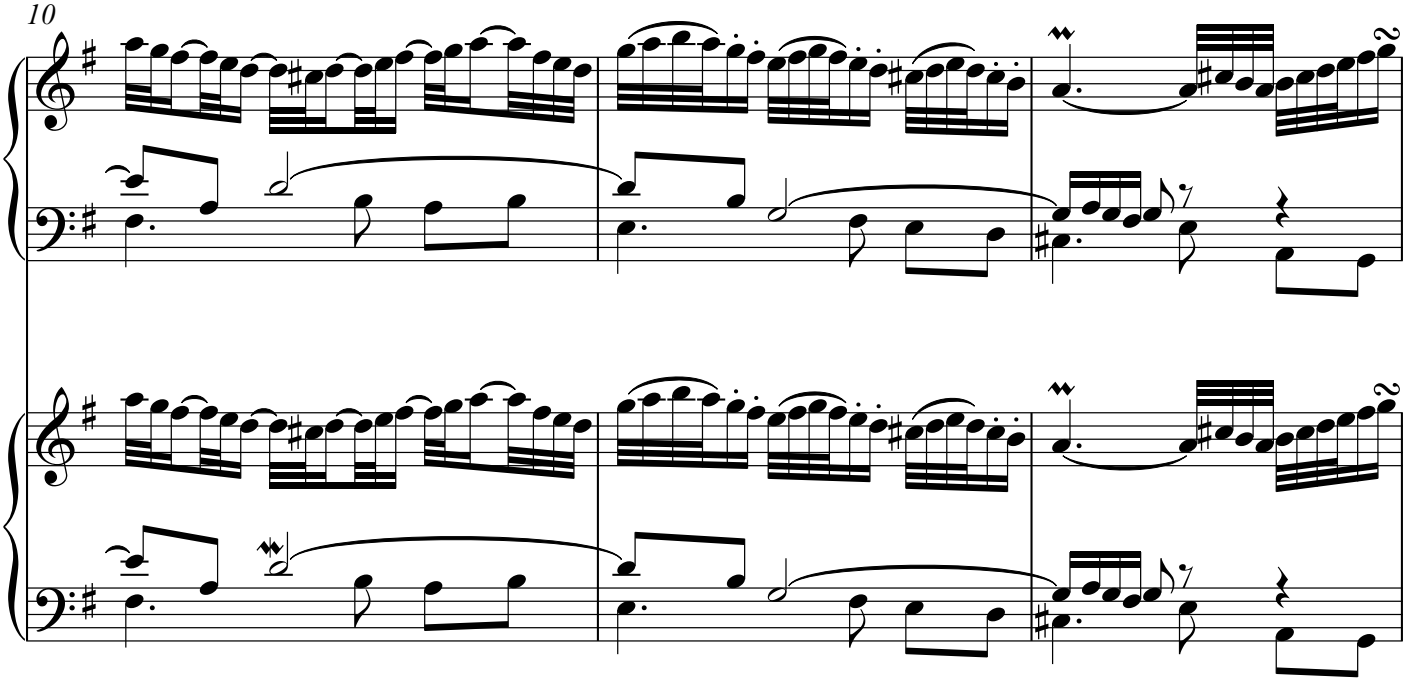
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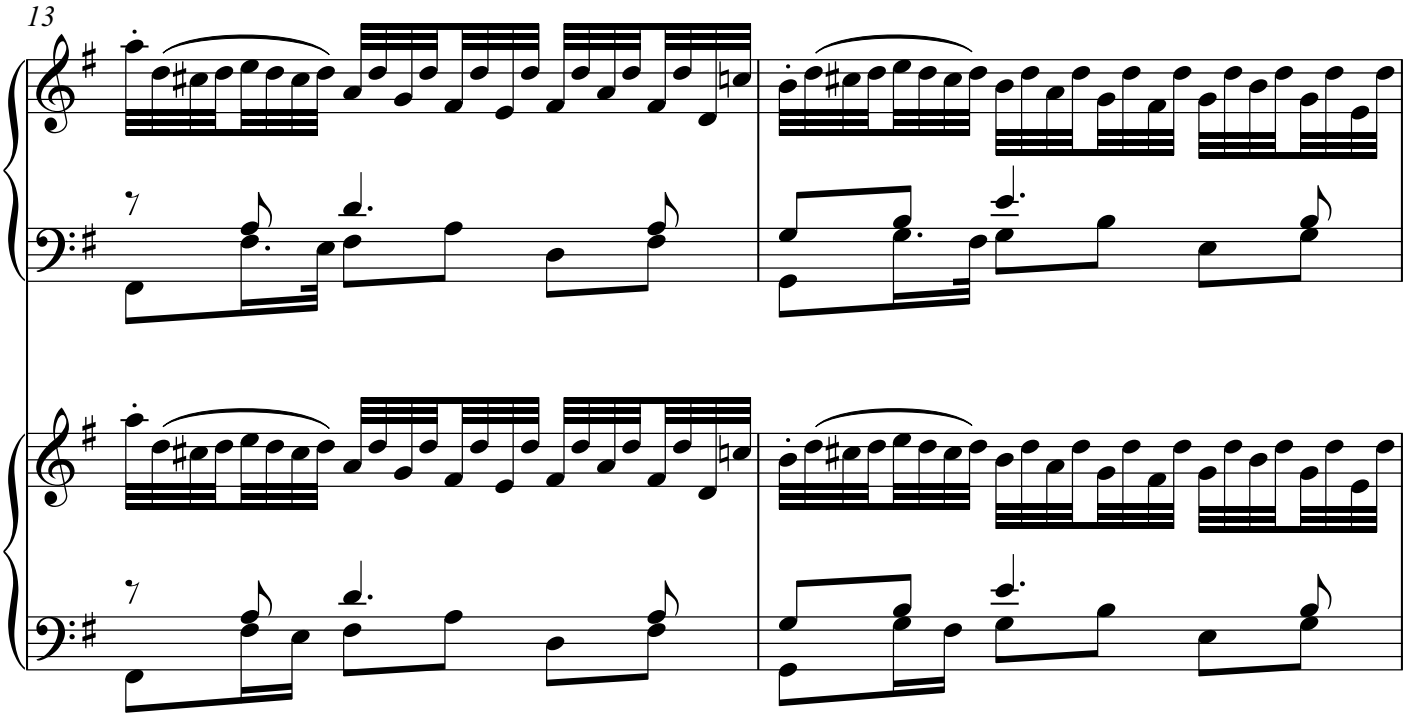
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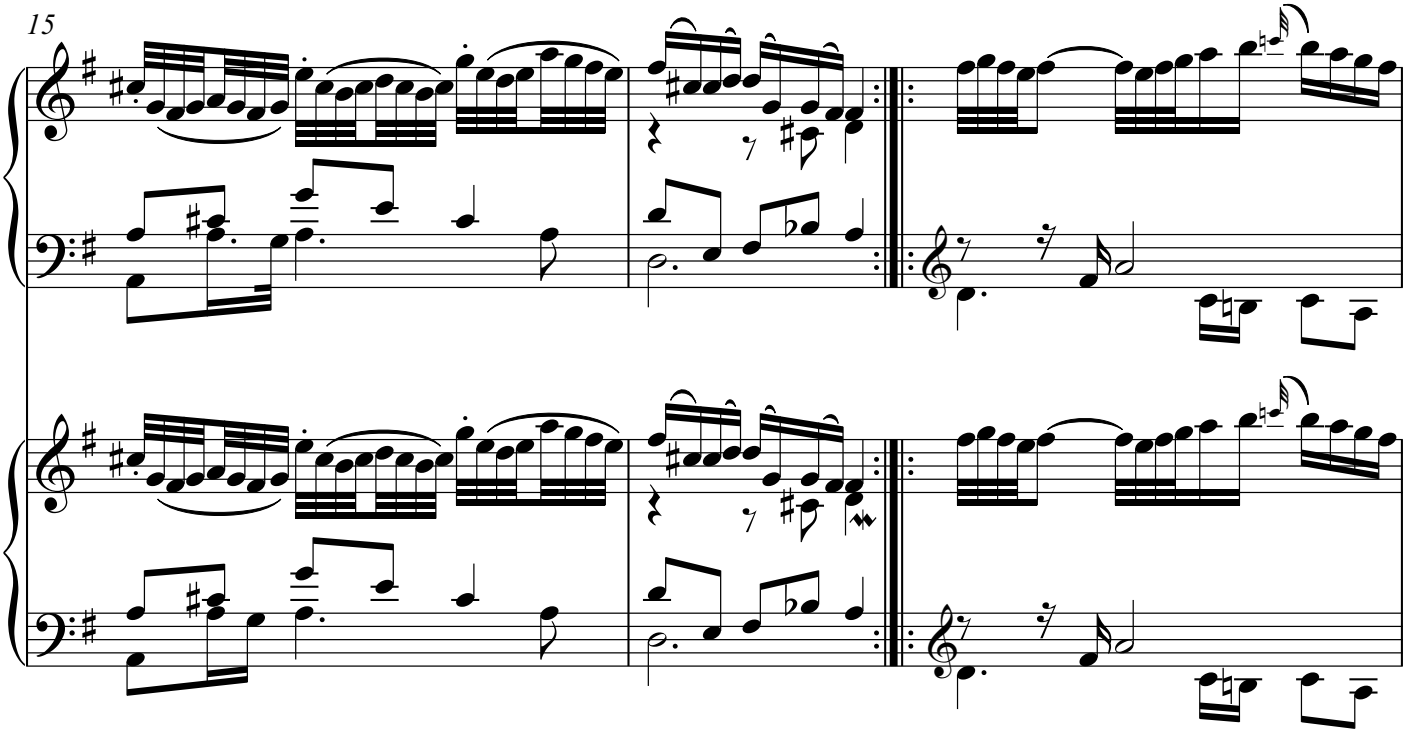
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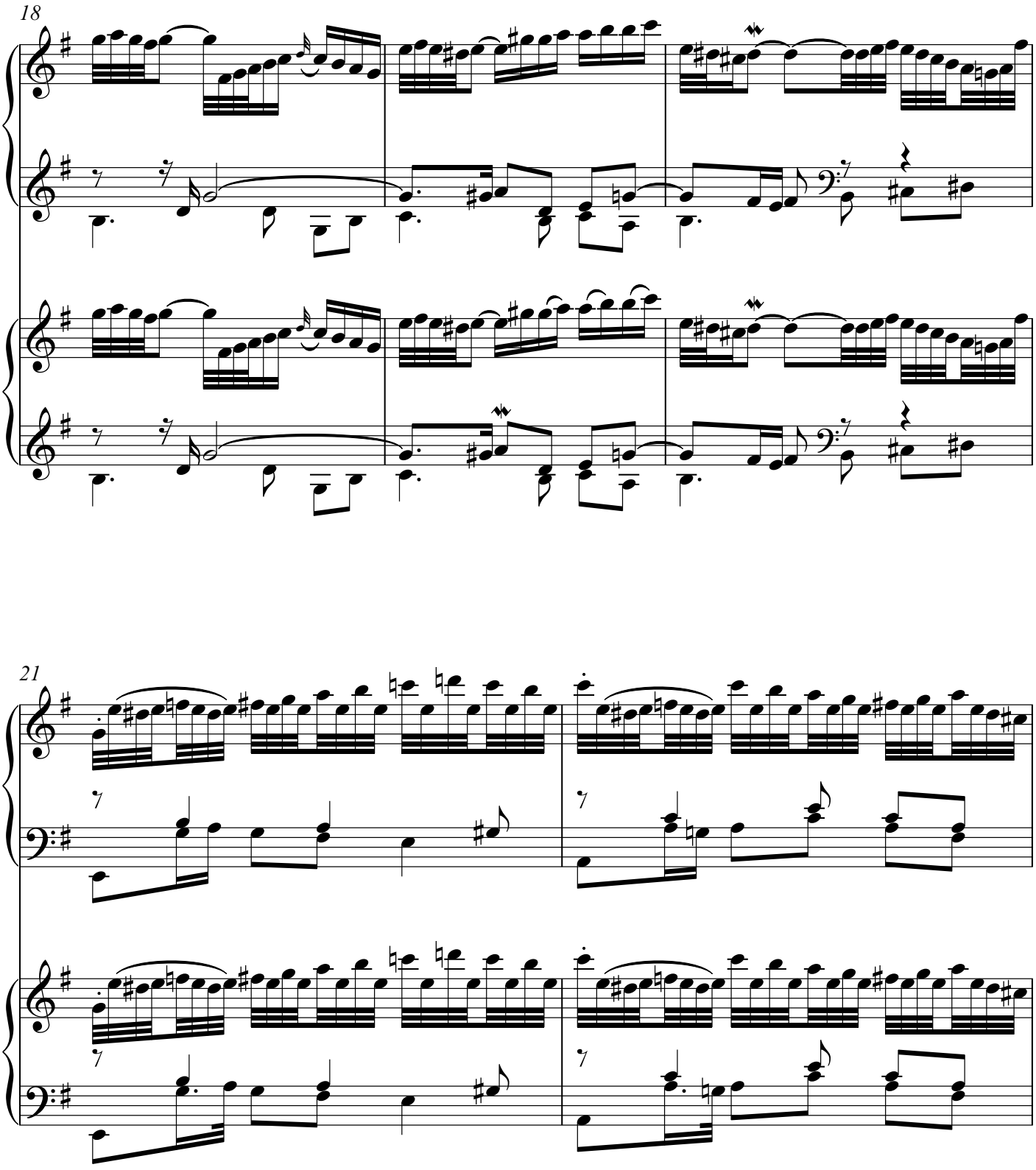
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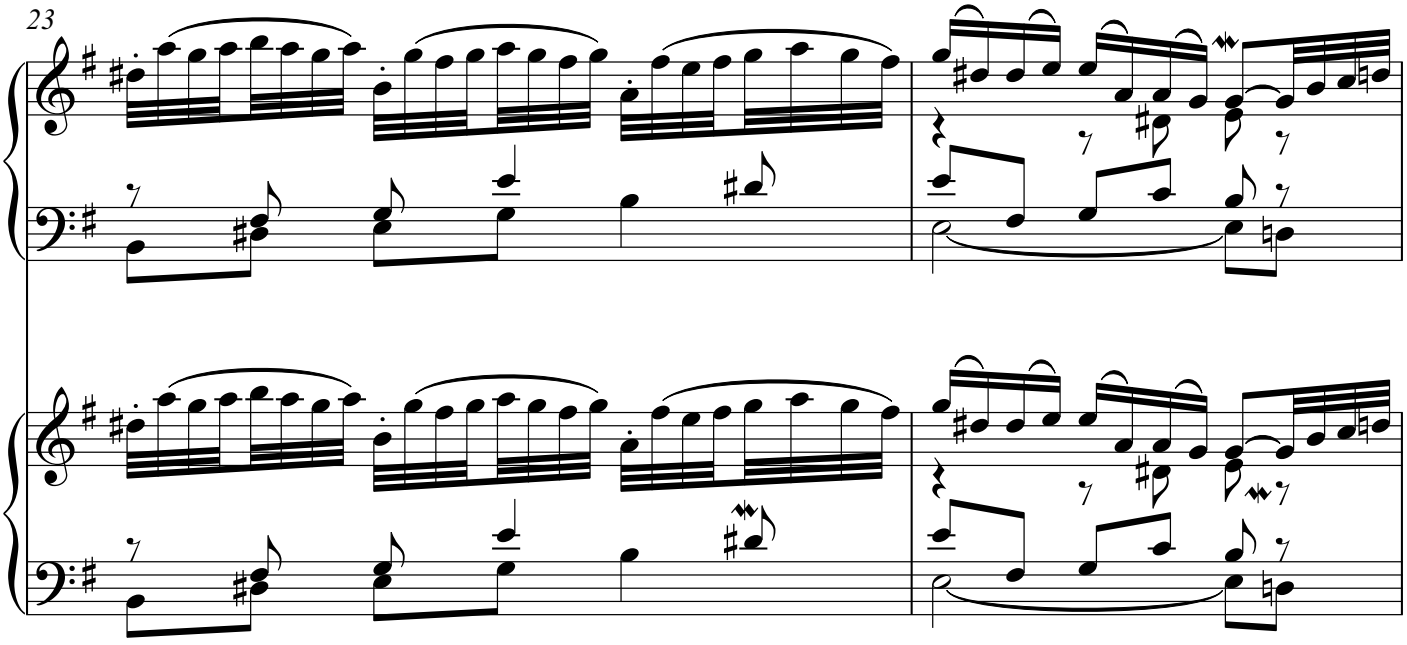
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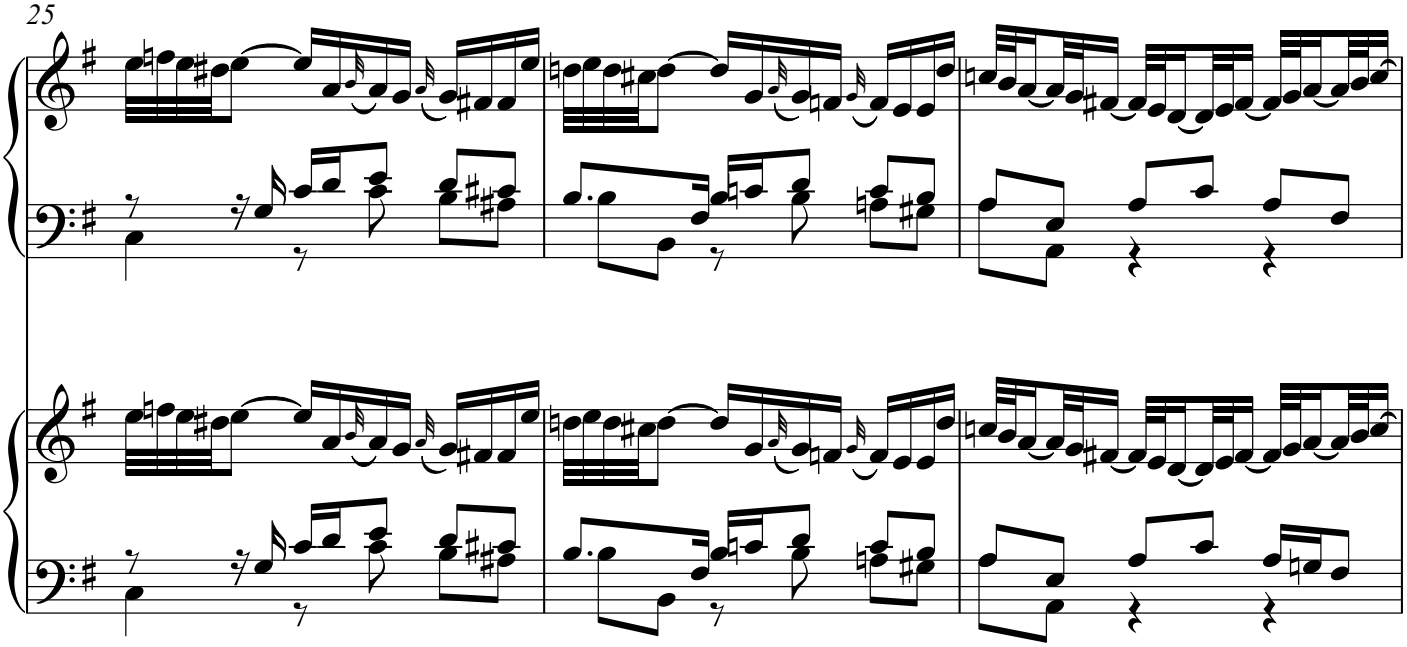
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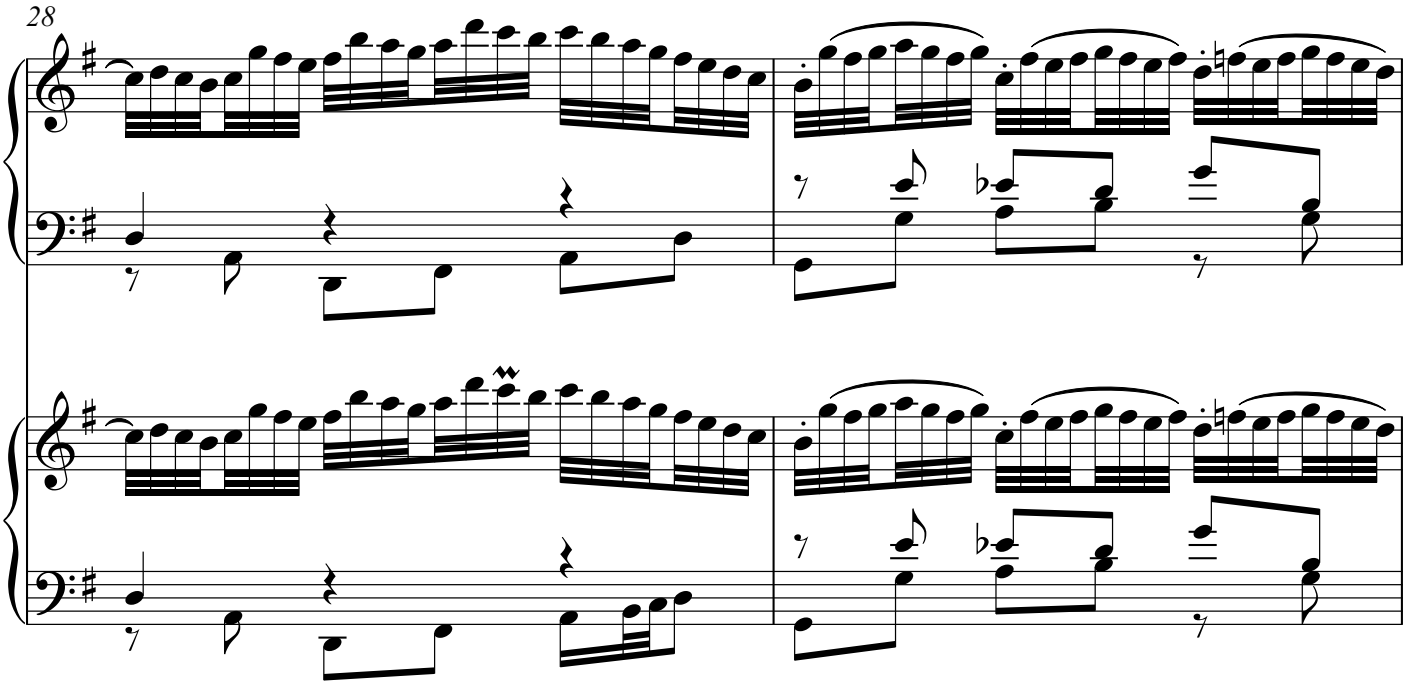
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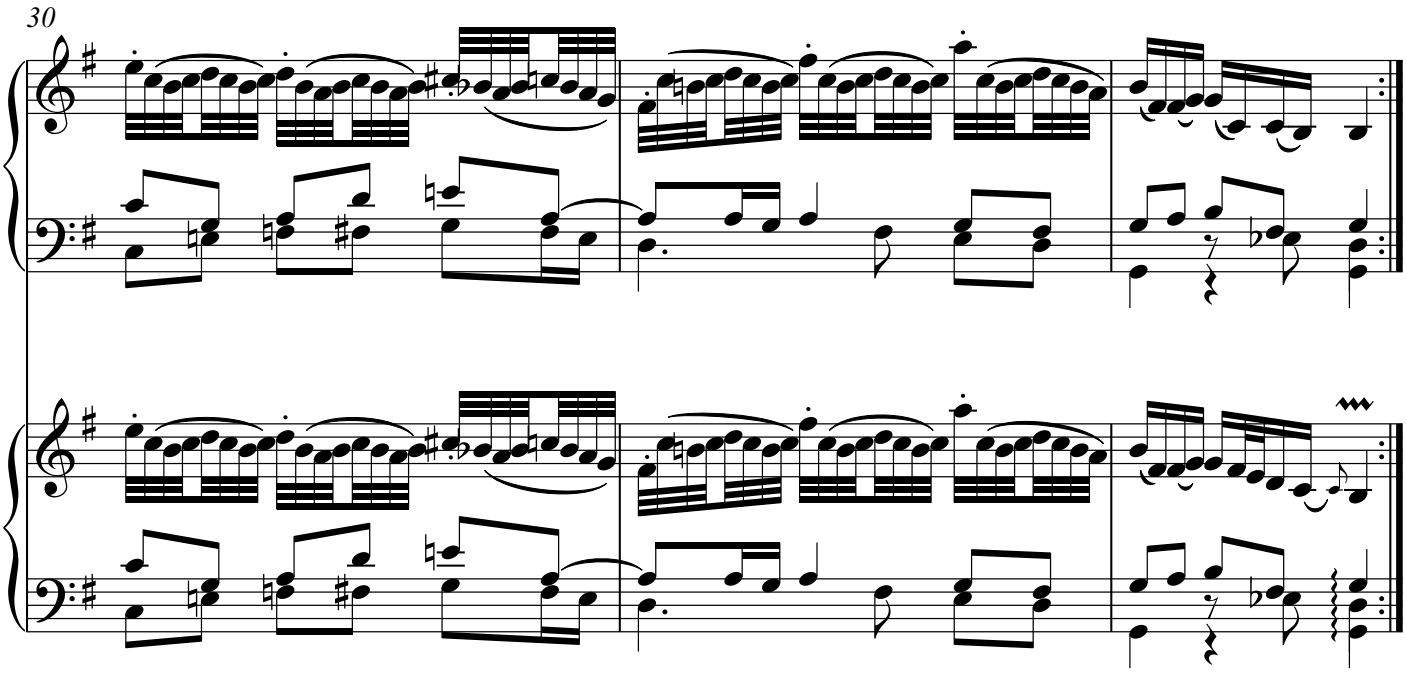
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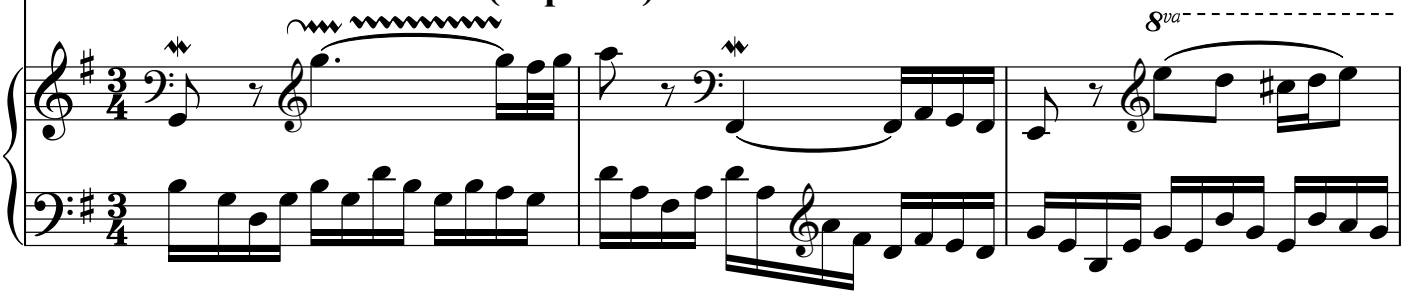
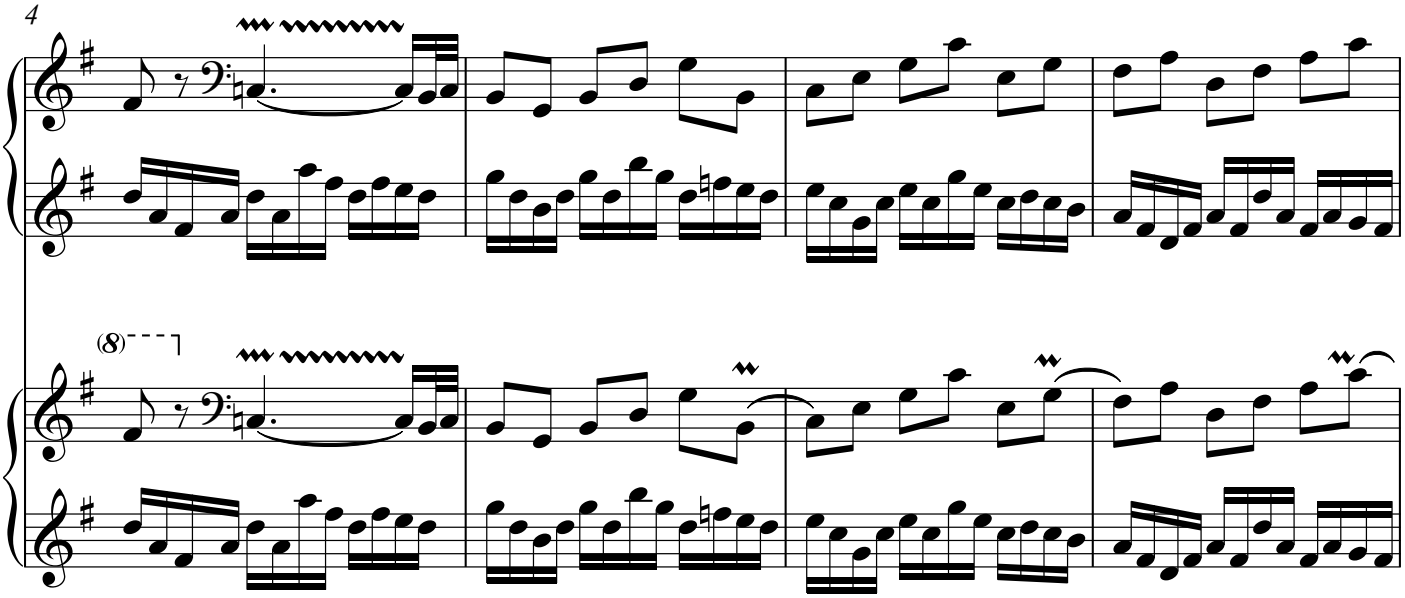
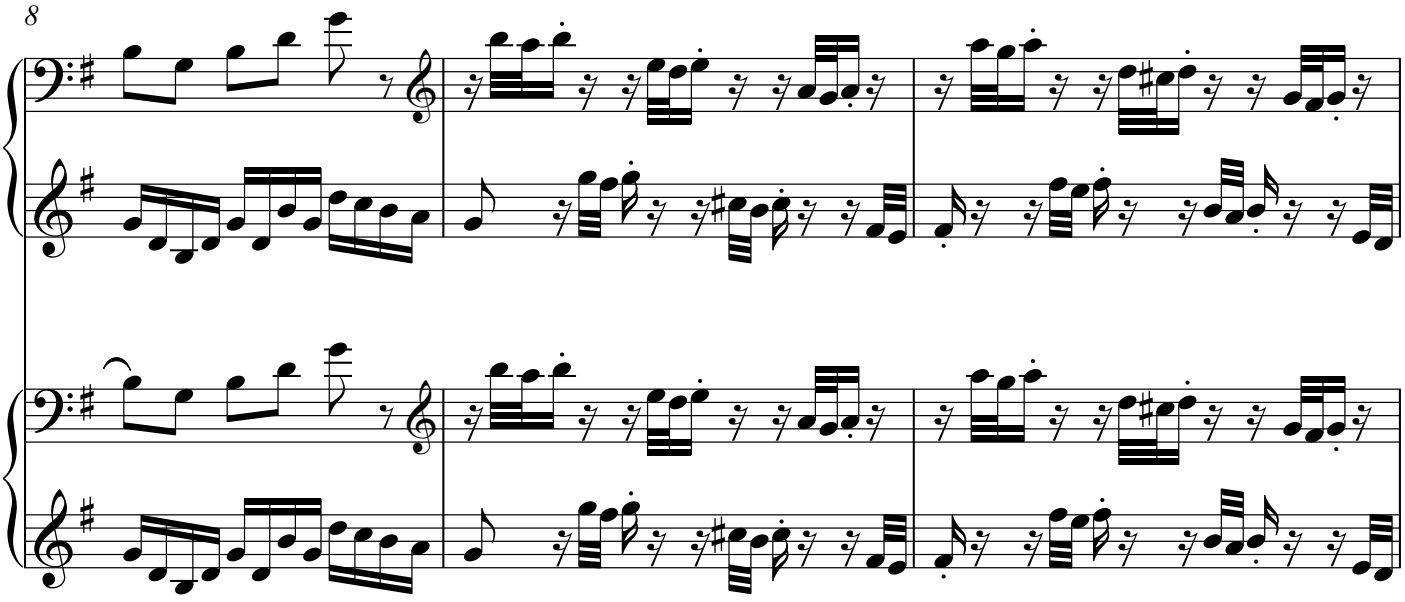
VARIATIO 14 a 2 Clav. (Bach)

VARIATIO 14 a 2 Clav. (Papillon)



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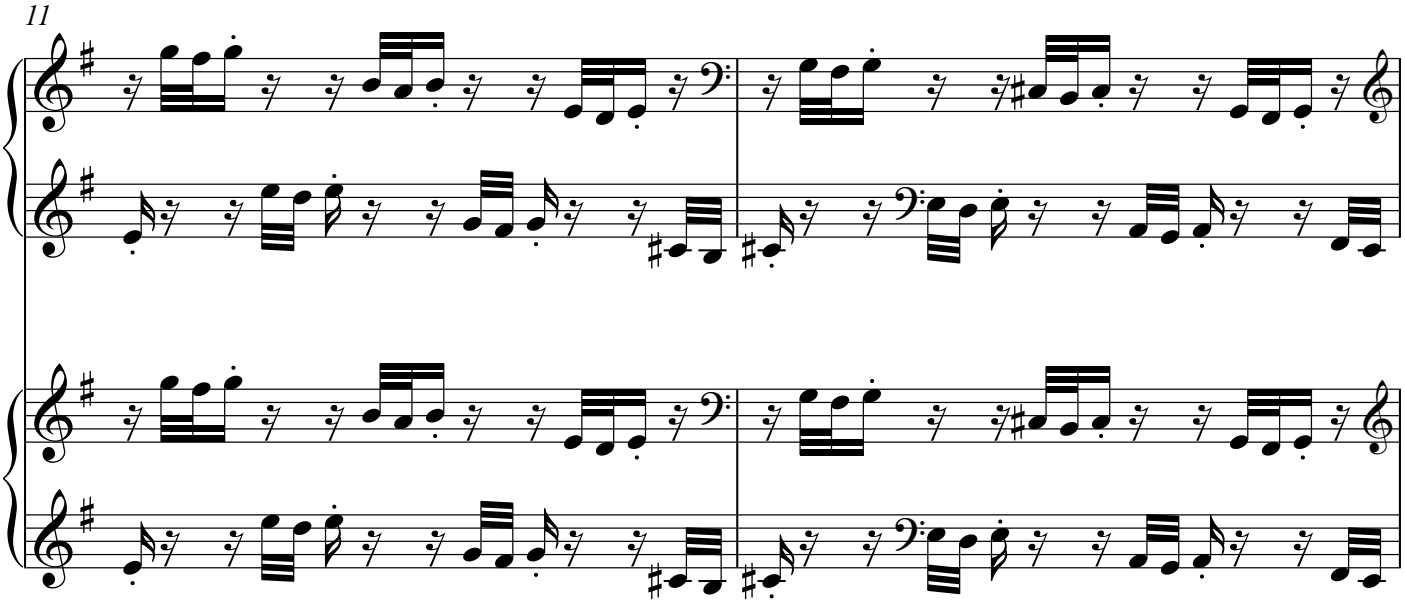
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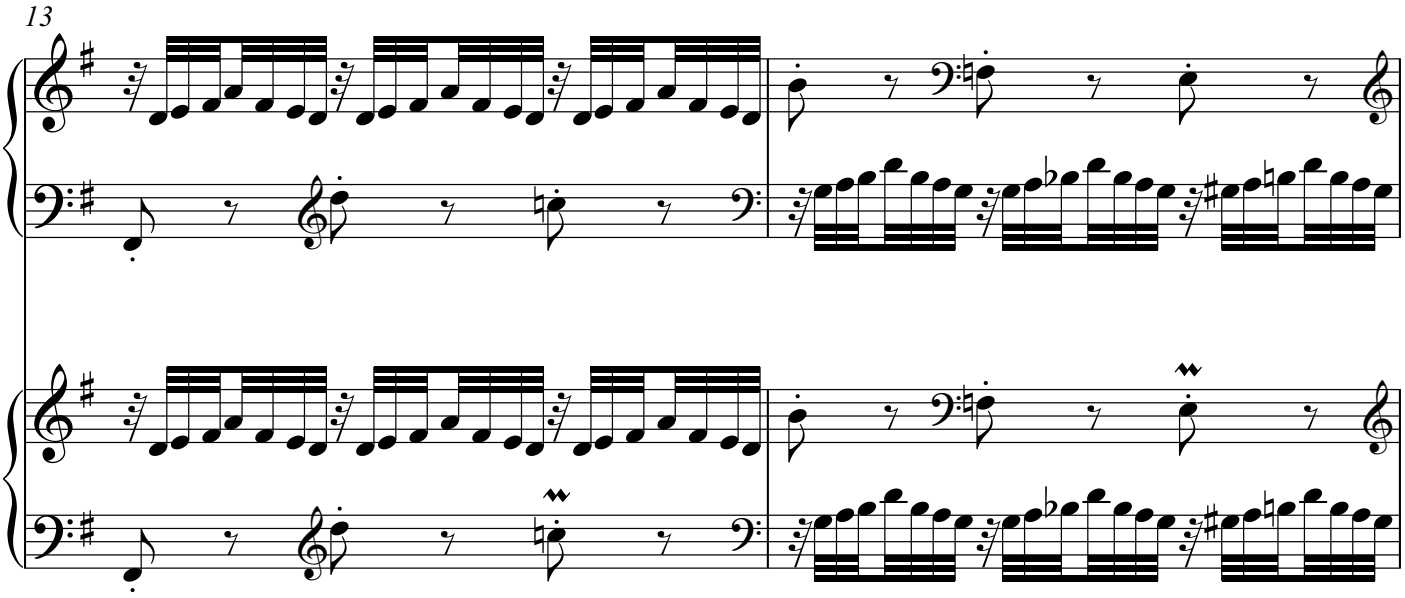
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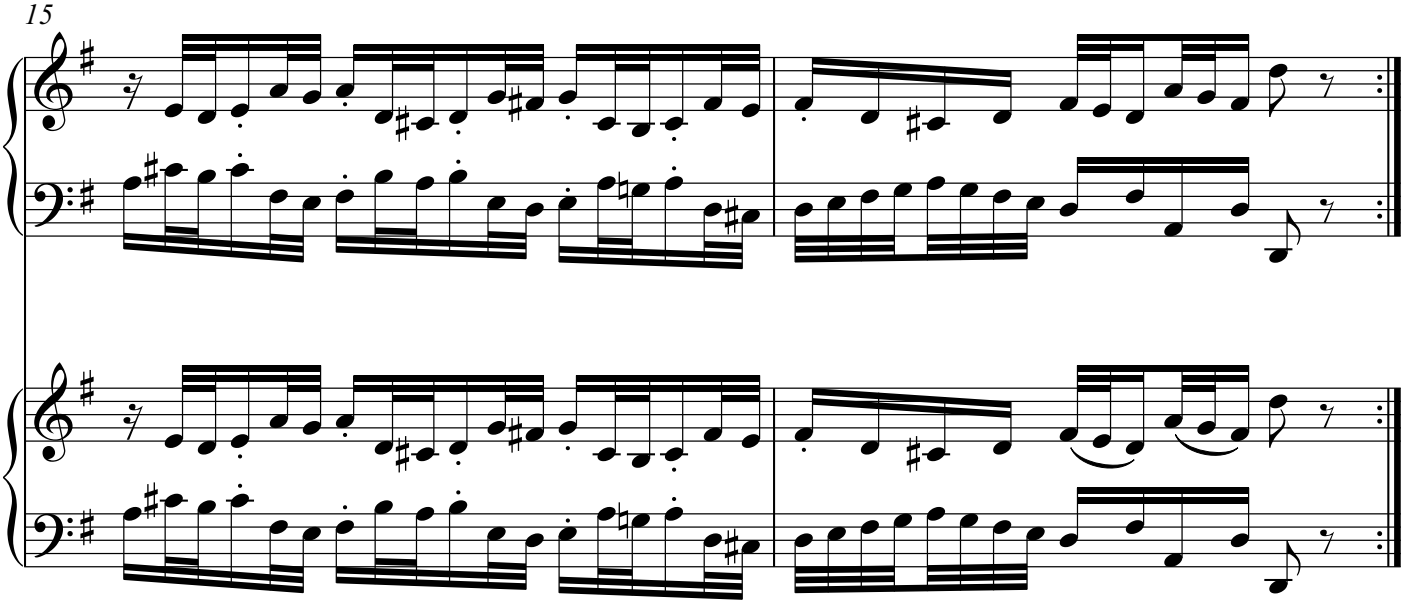
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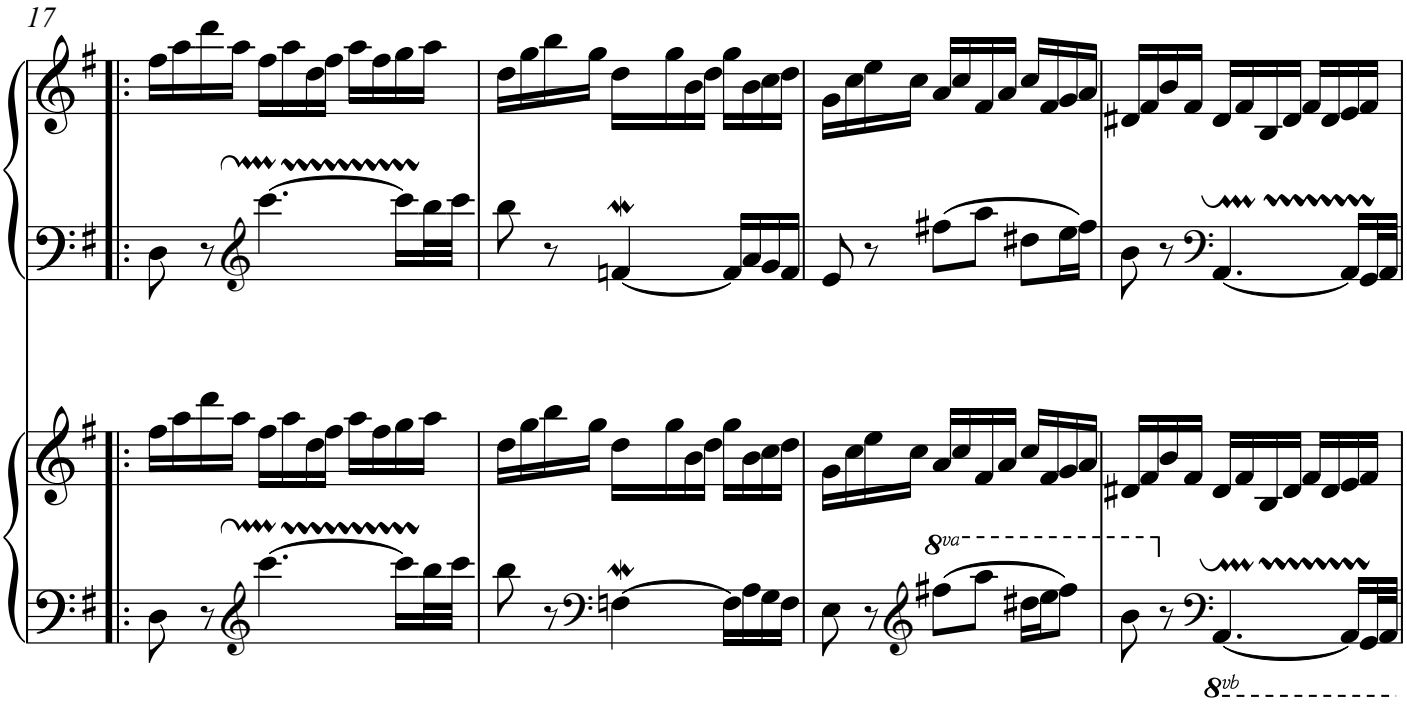
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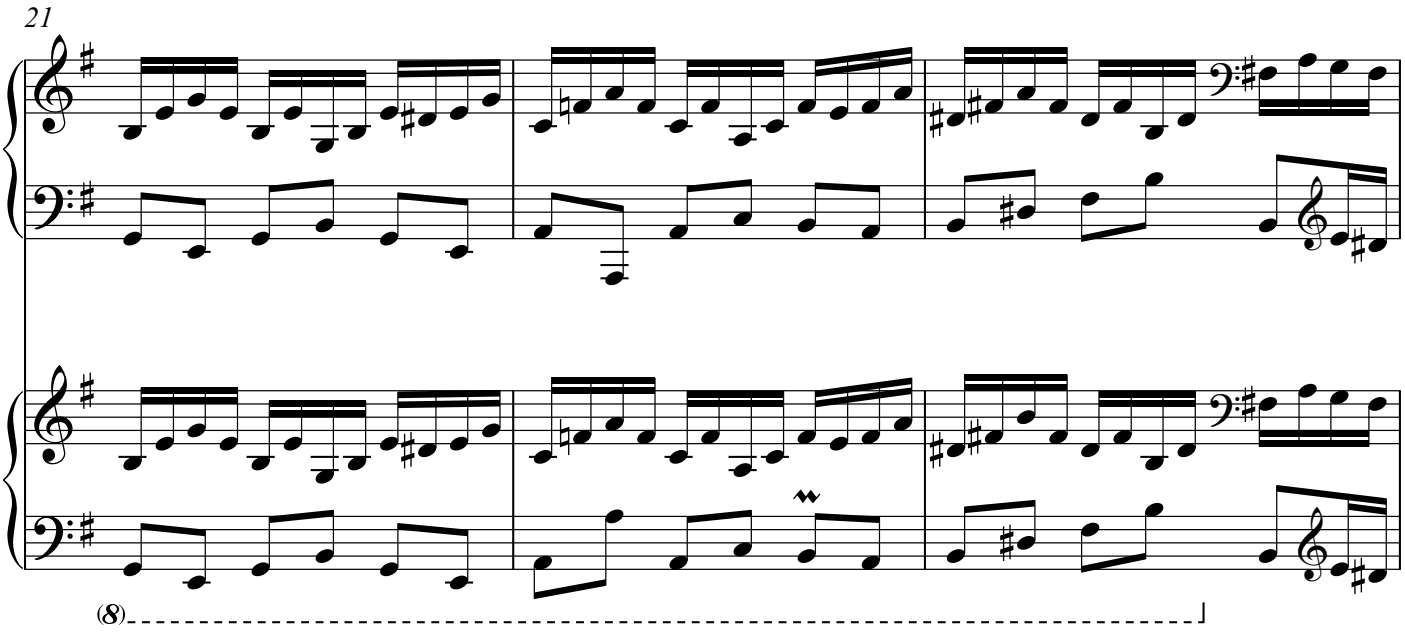
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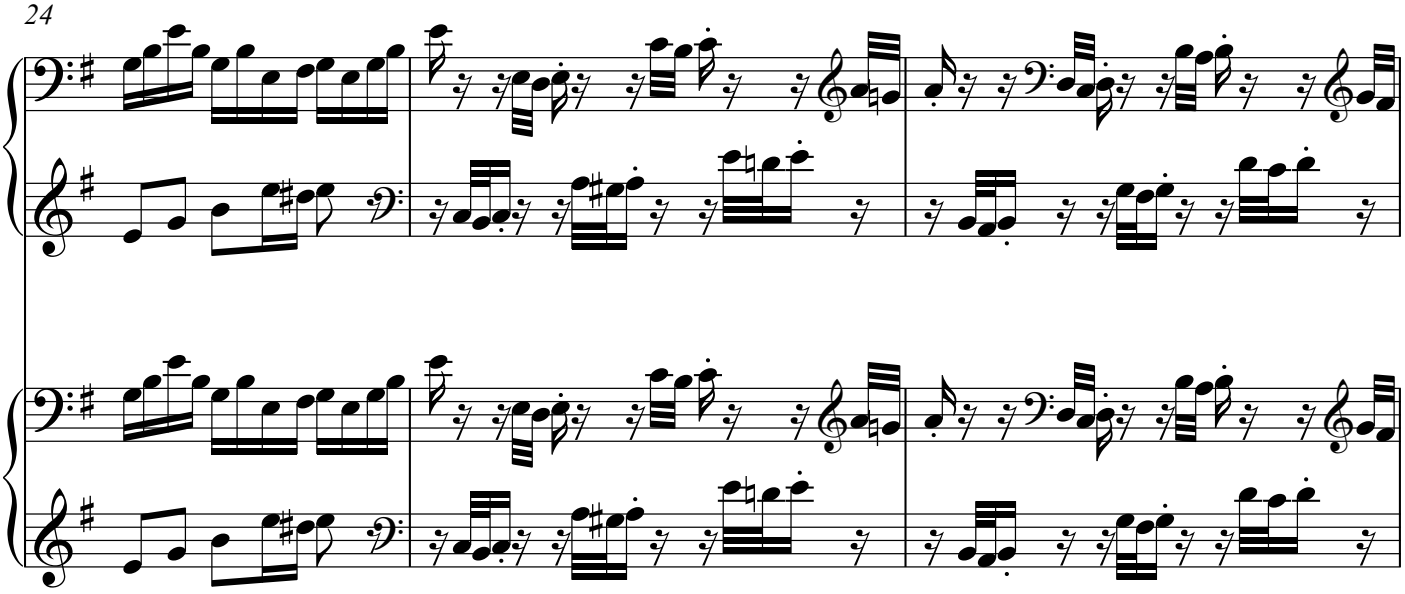

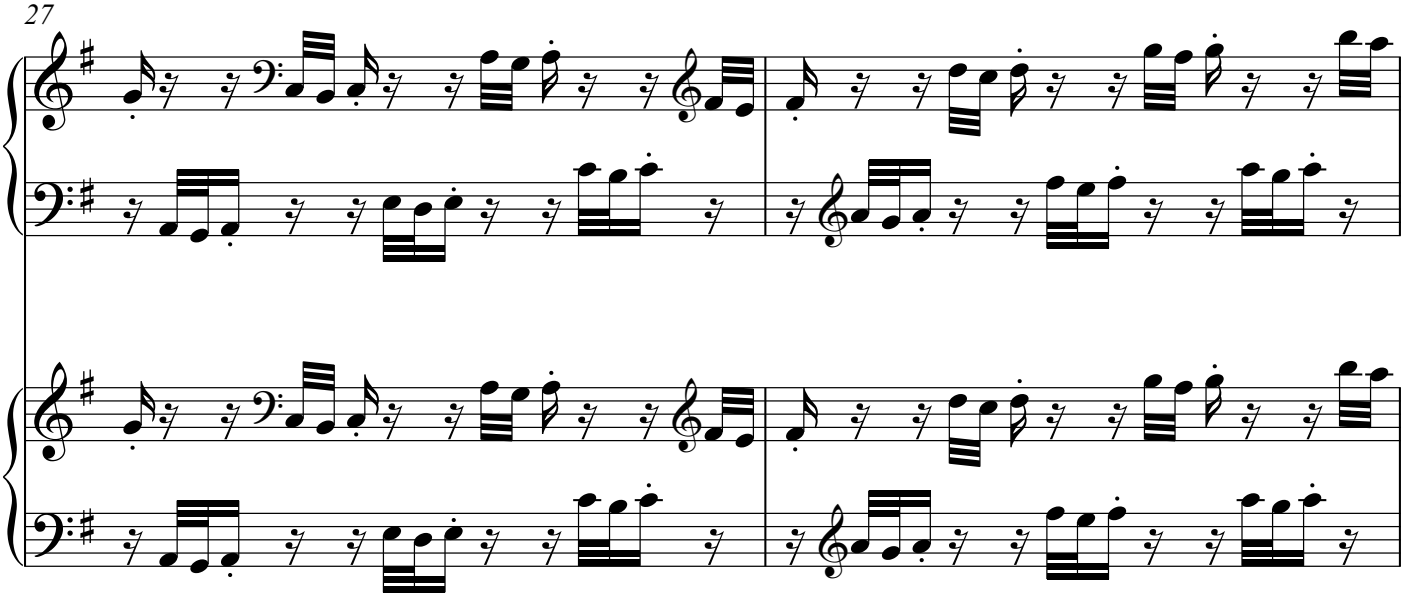

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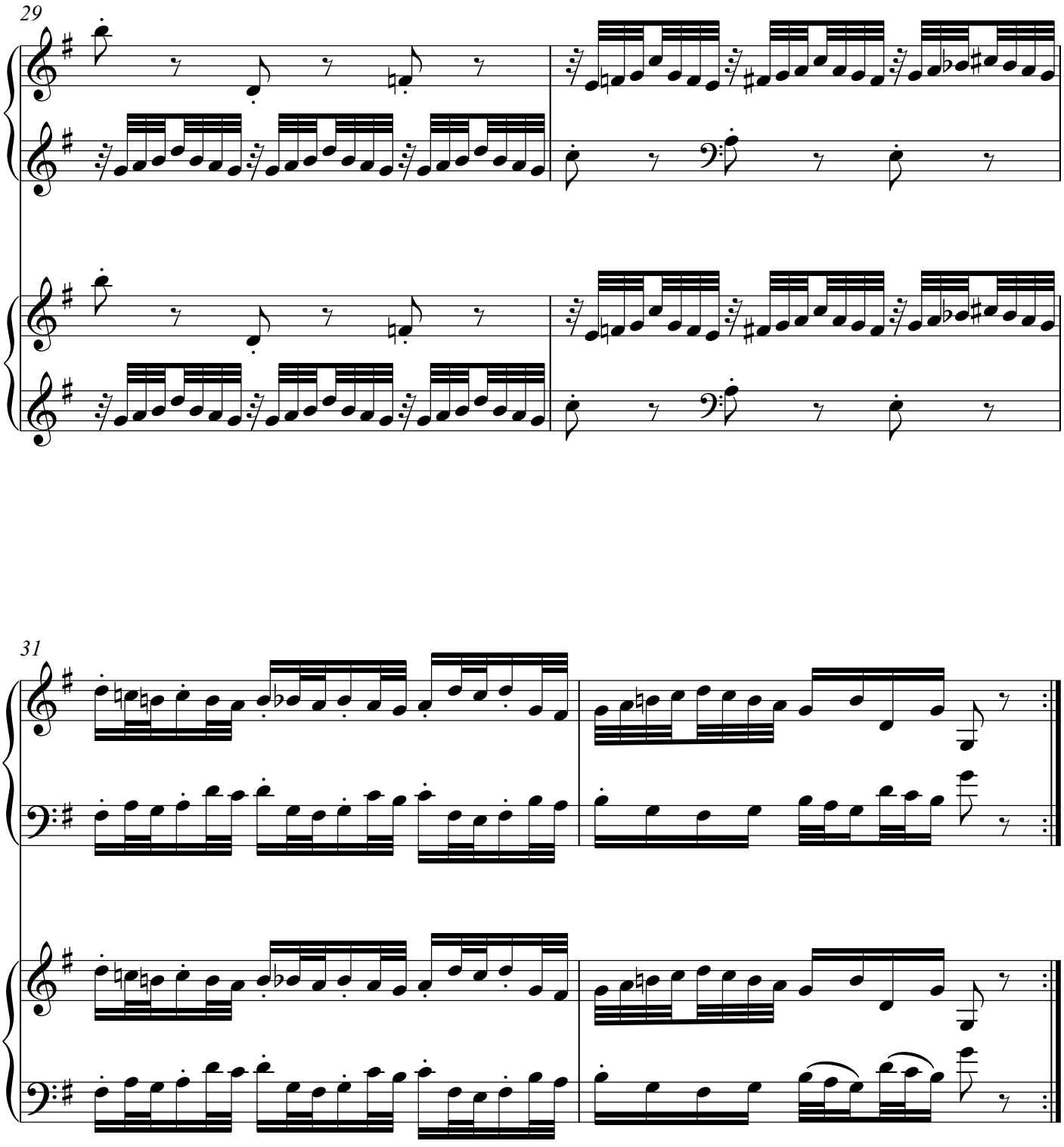
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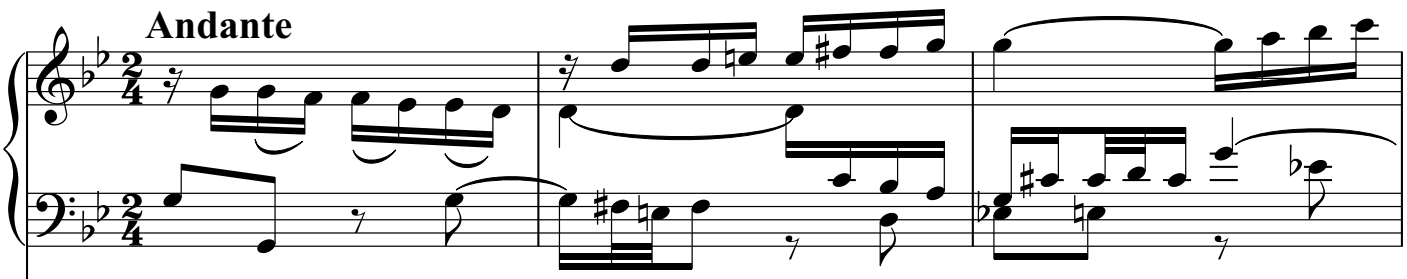
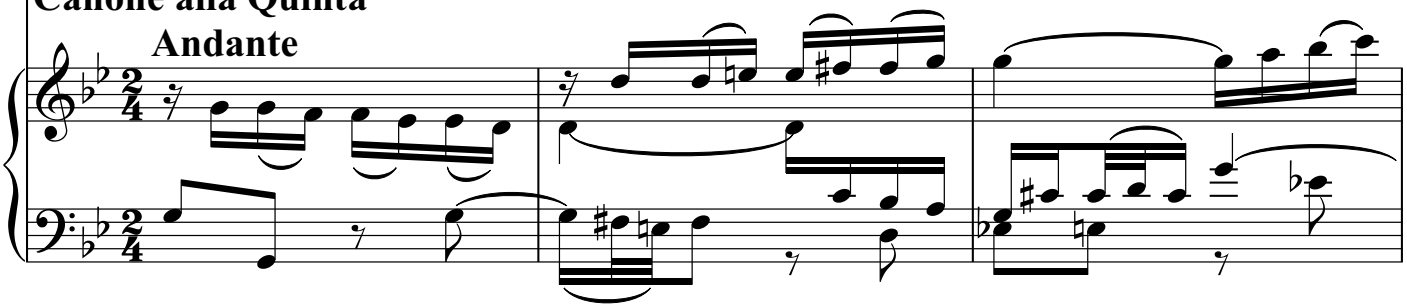
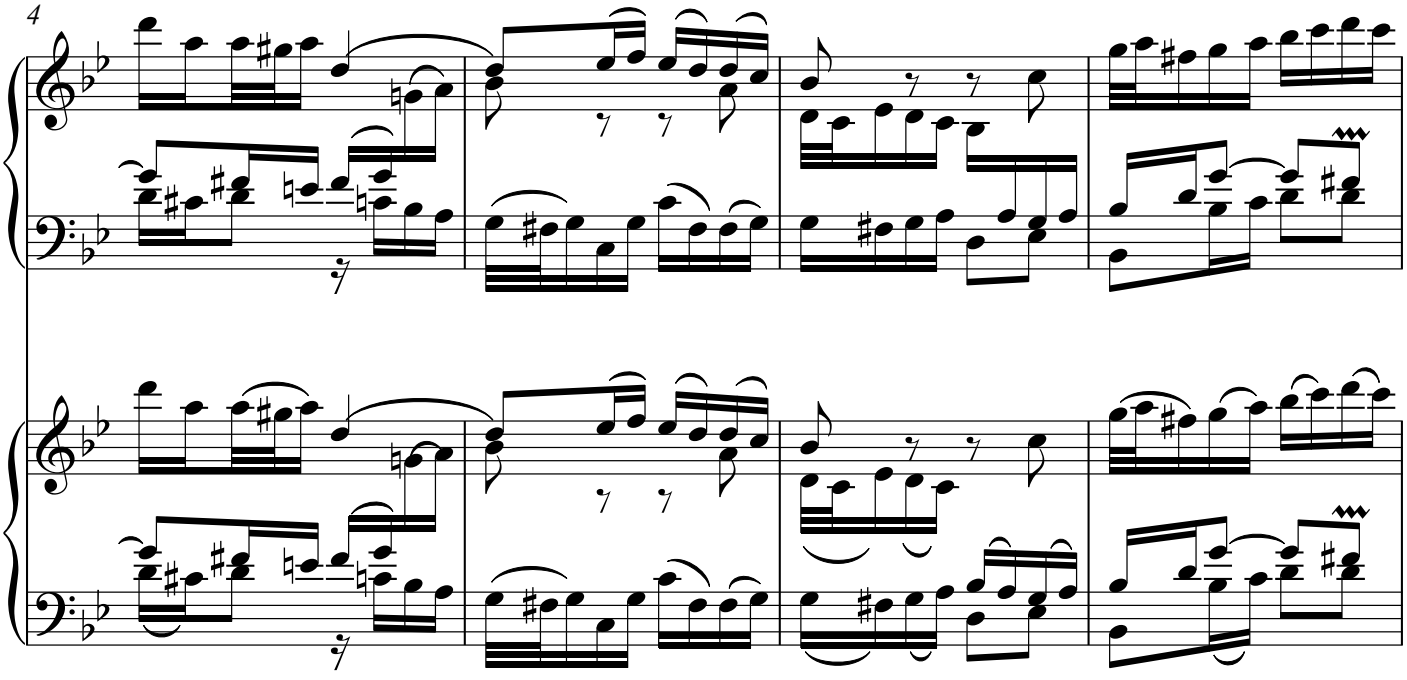
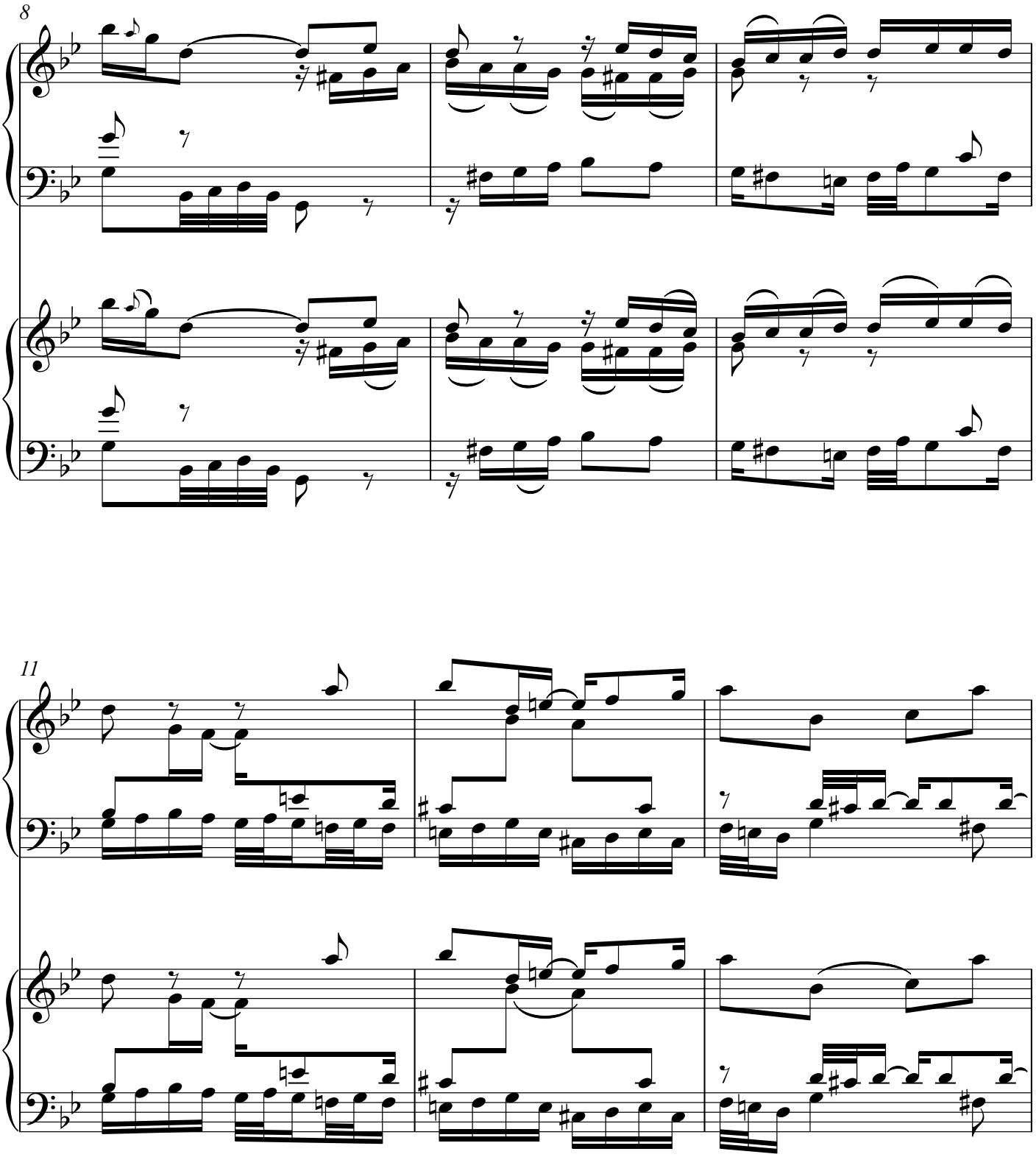
VARIATIO 15 a 1 Clav. (Bach)
Canone alla Quinta
Andante



VARIATIO 15 a 1 Clav. (Papillon)
Canone alla Quinta
Andante



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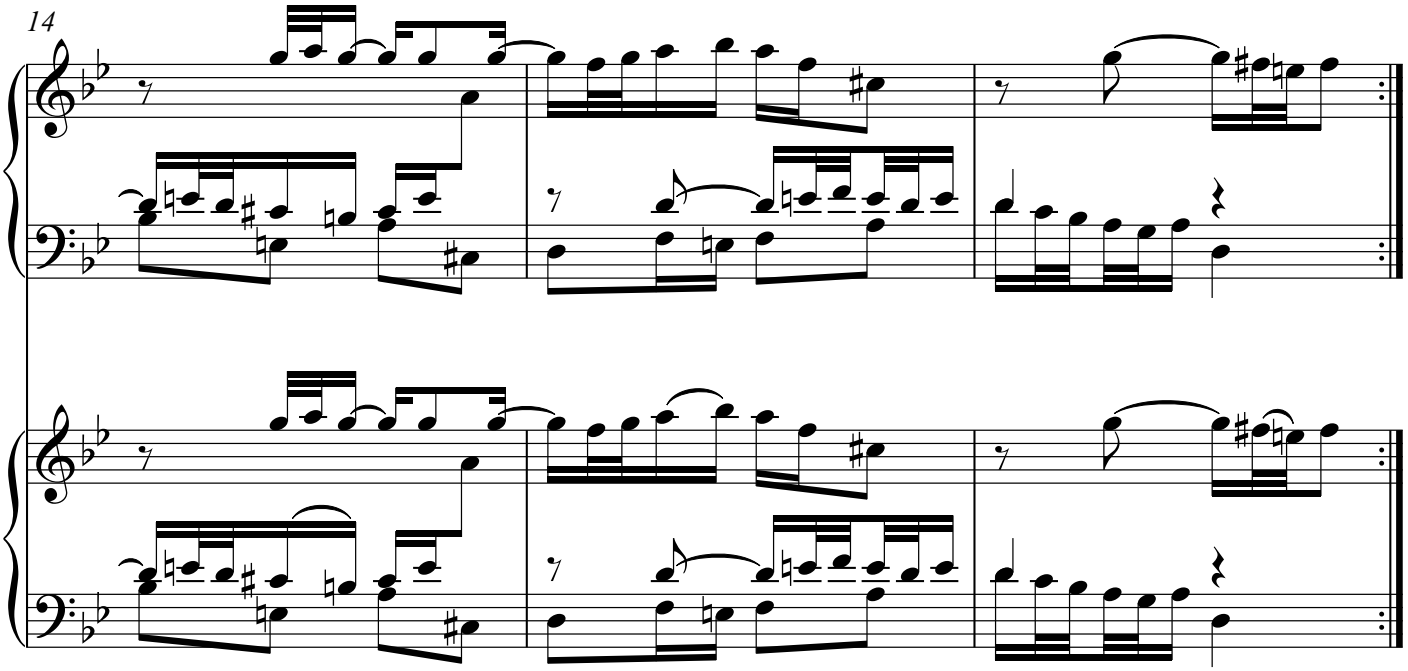
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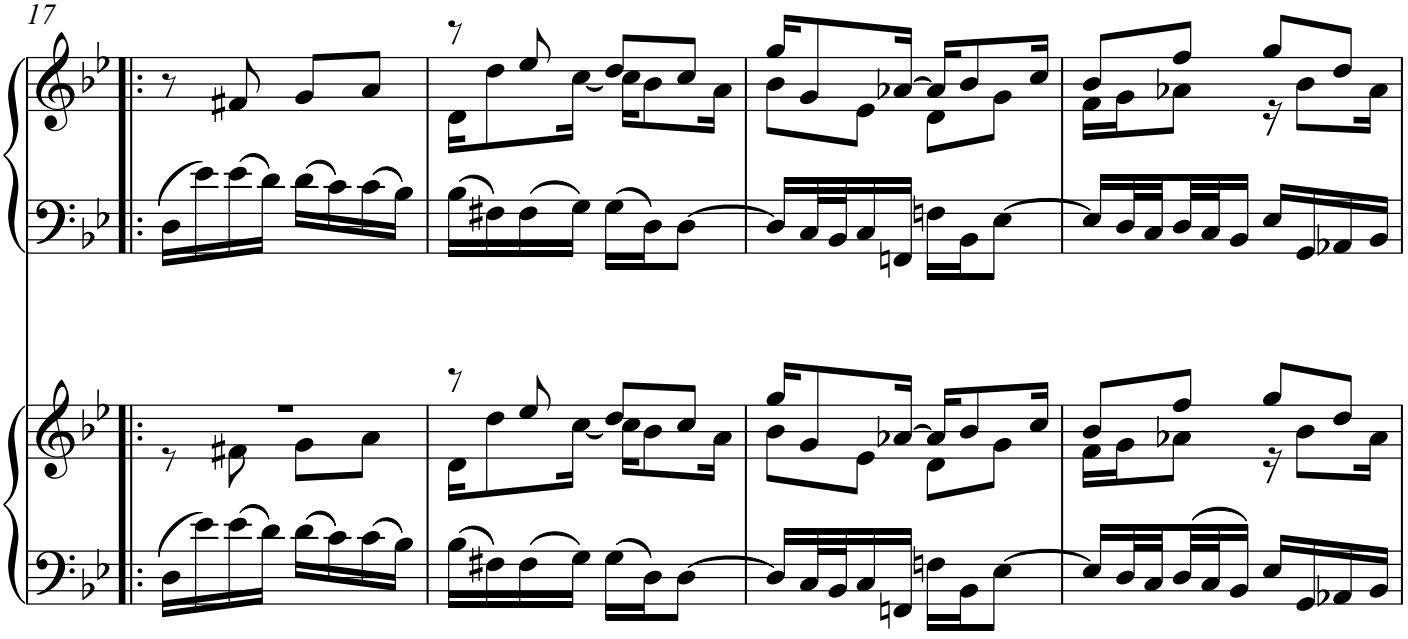
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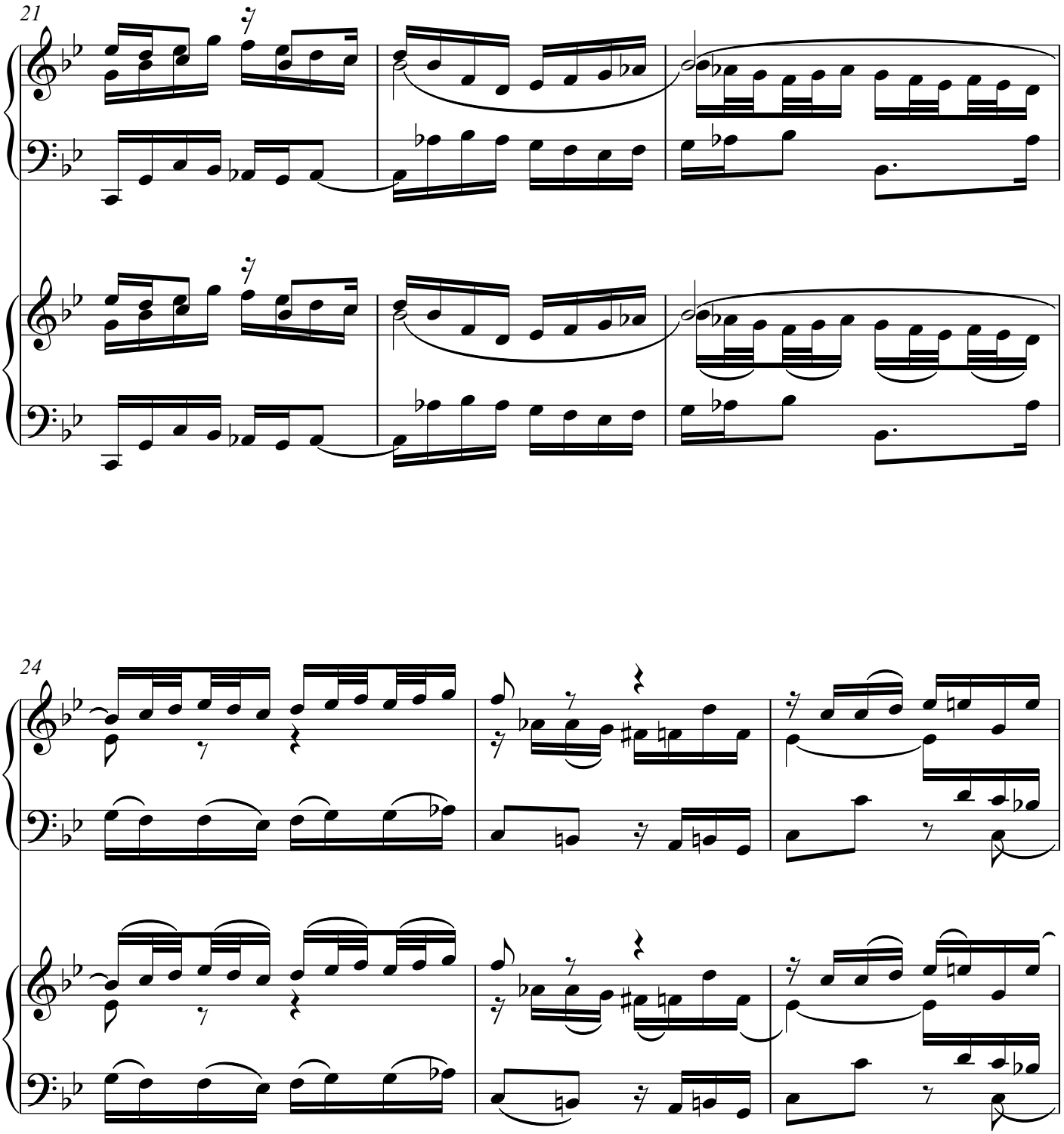
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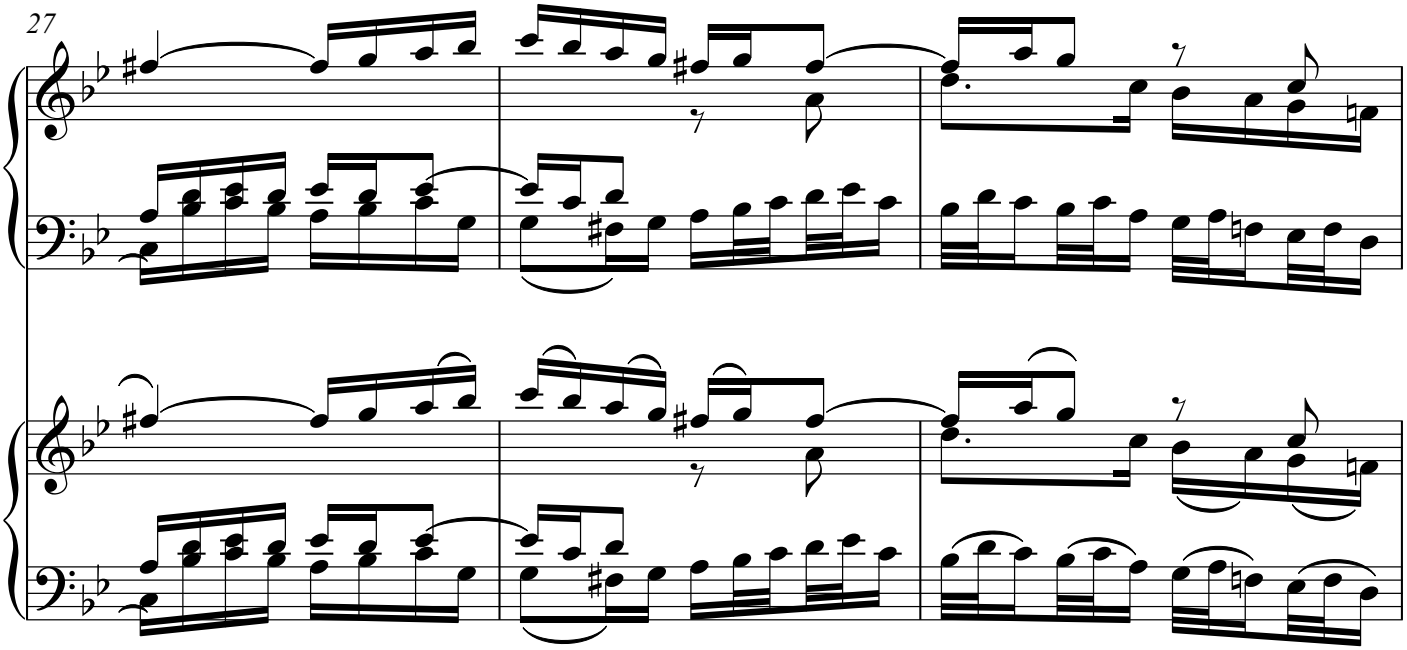
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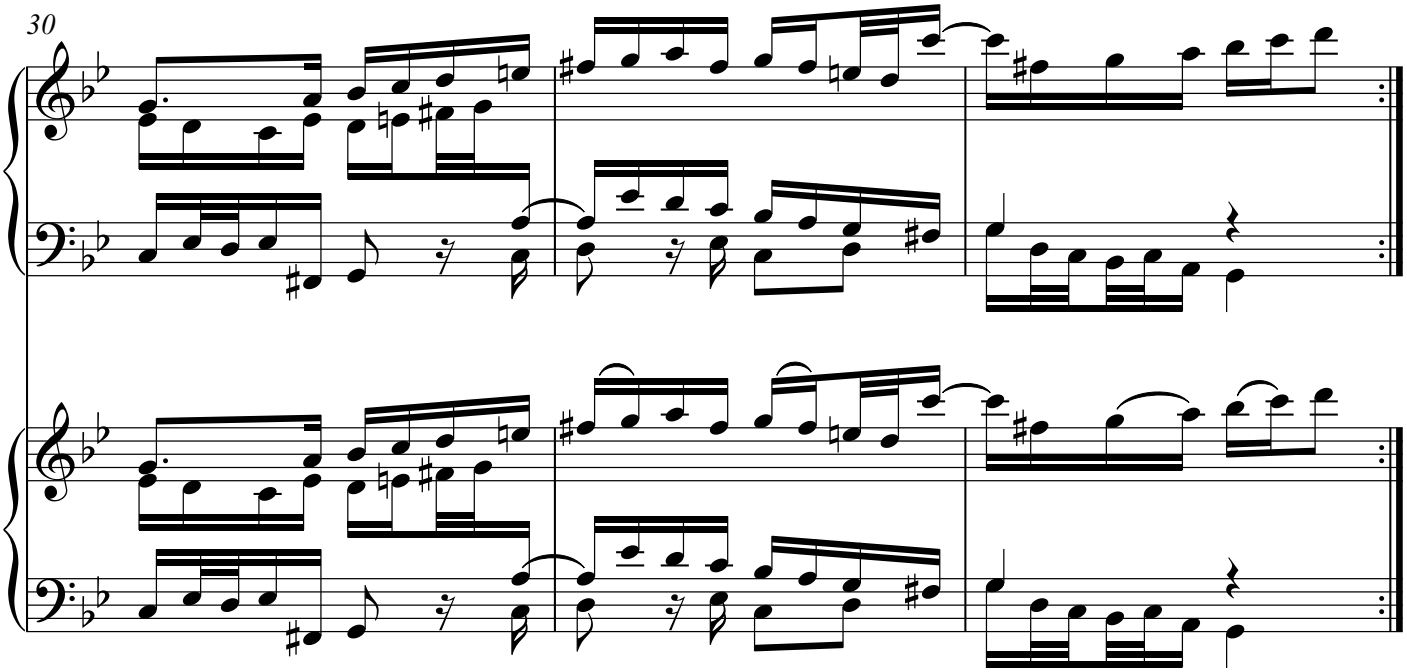
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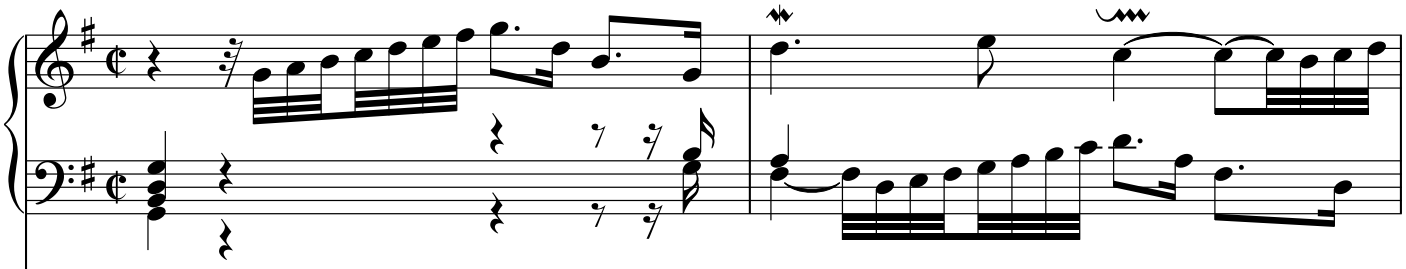
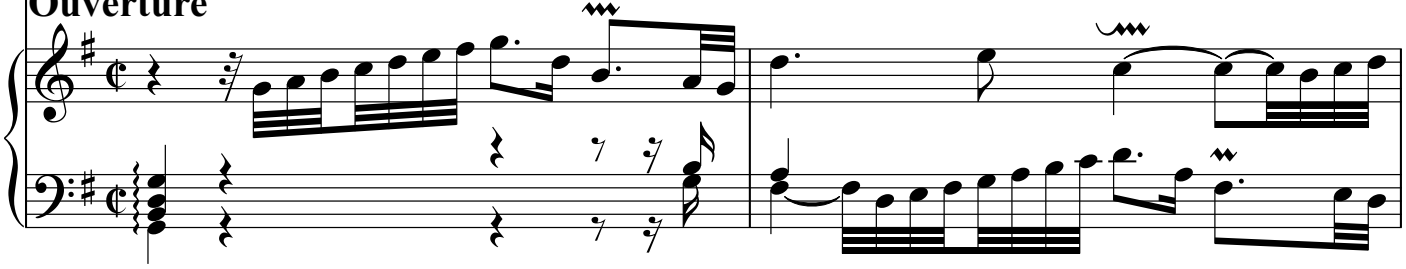
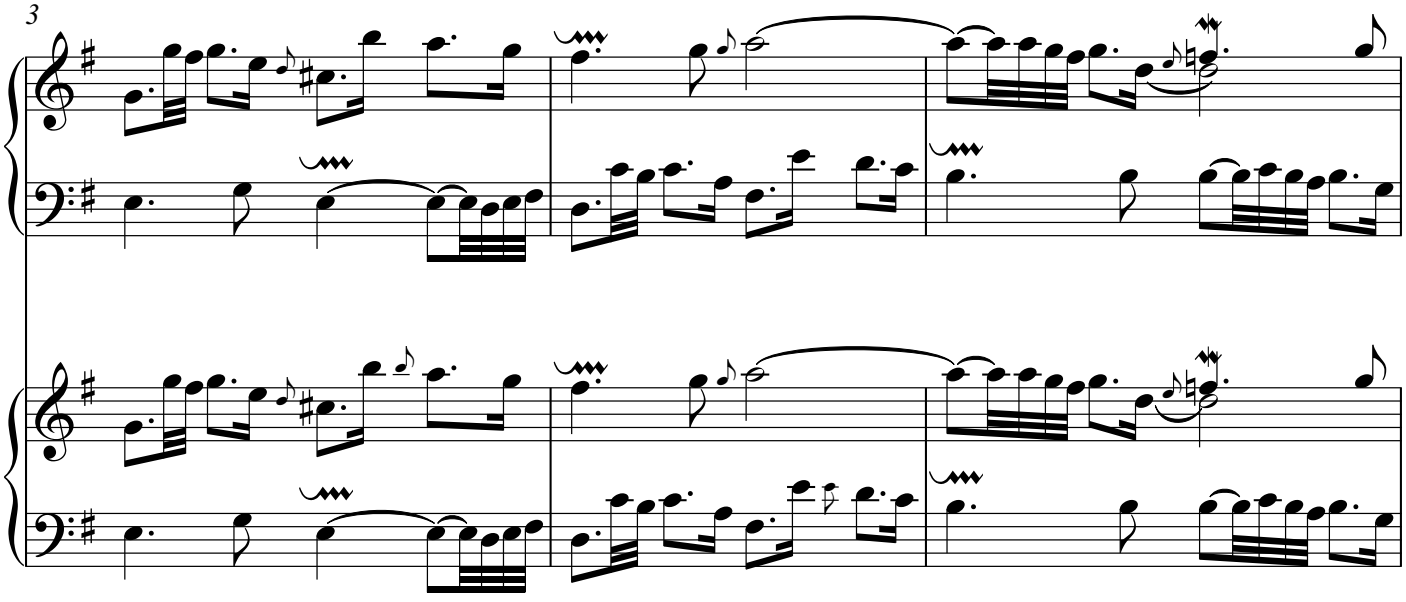
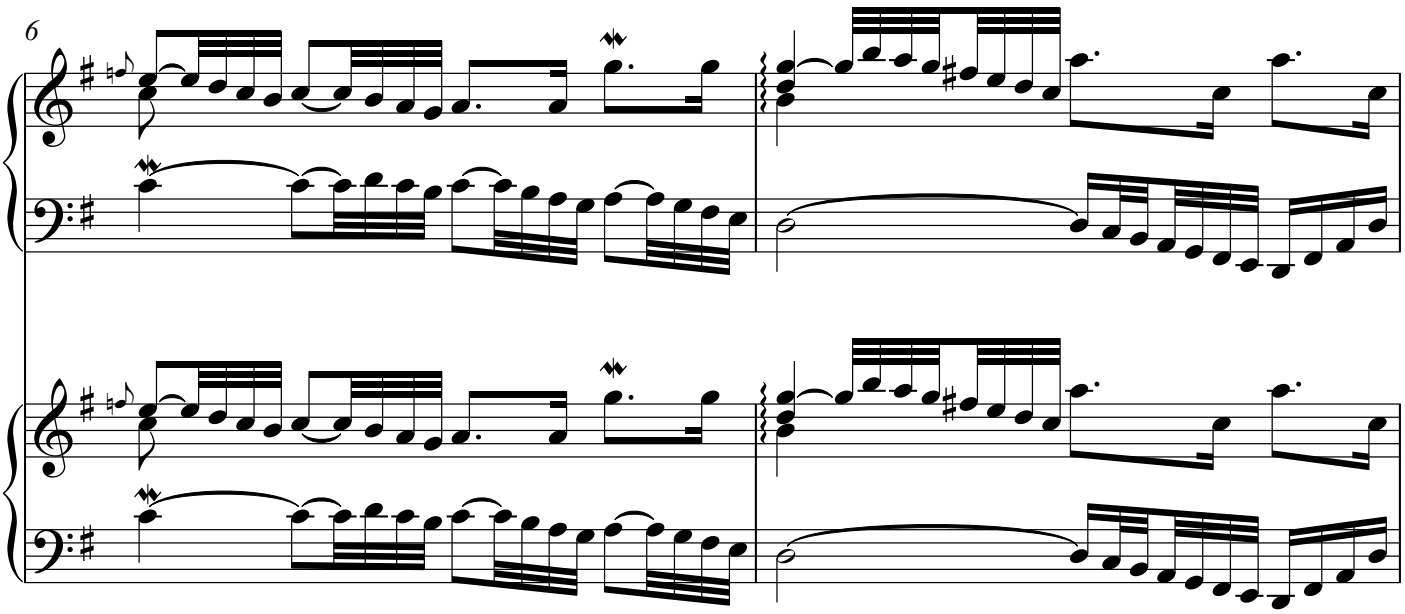
VARIATIO 16 a 1 Clav. (Bach)
Ouverture

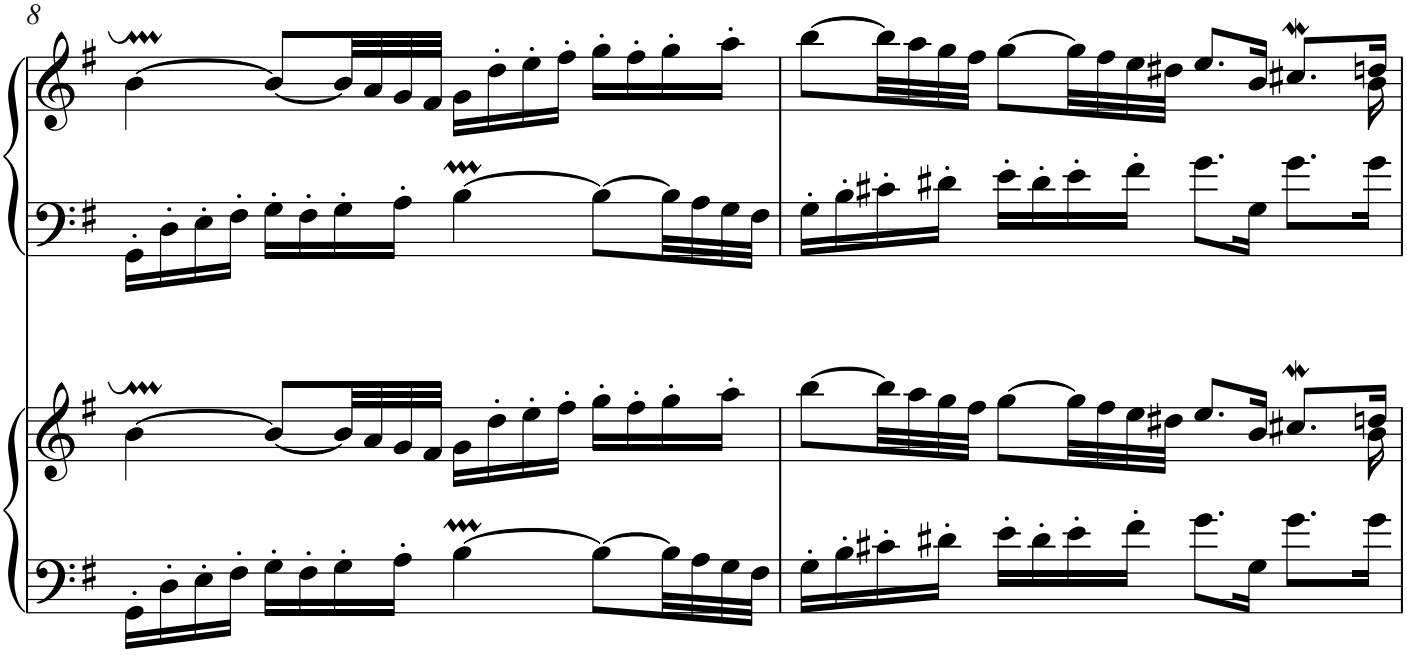


VARIATIO 16 a 1 Clav. (Papillon)
Ouverture









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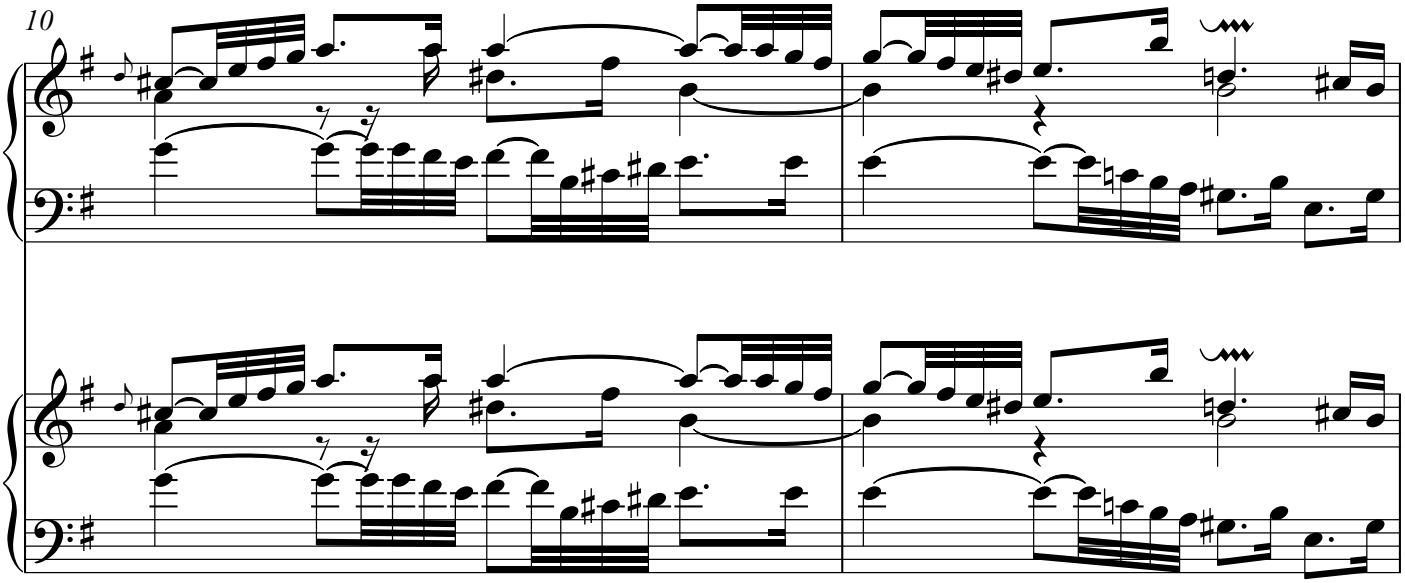
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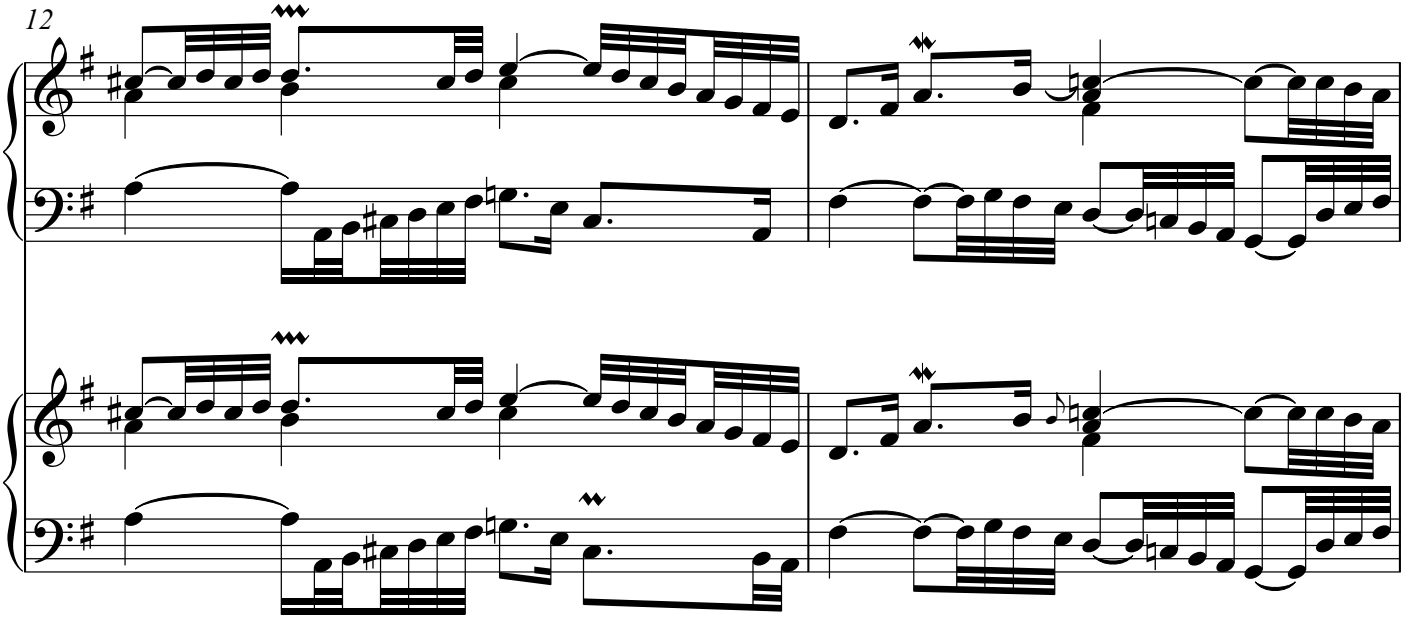
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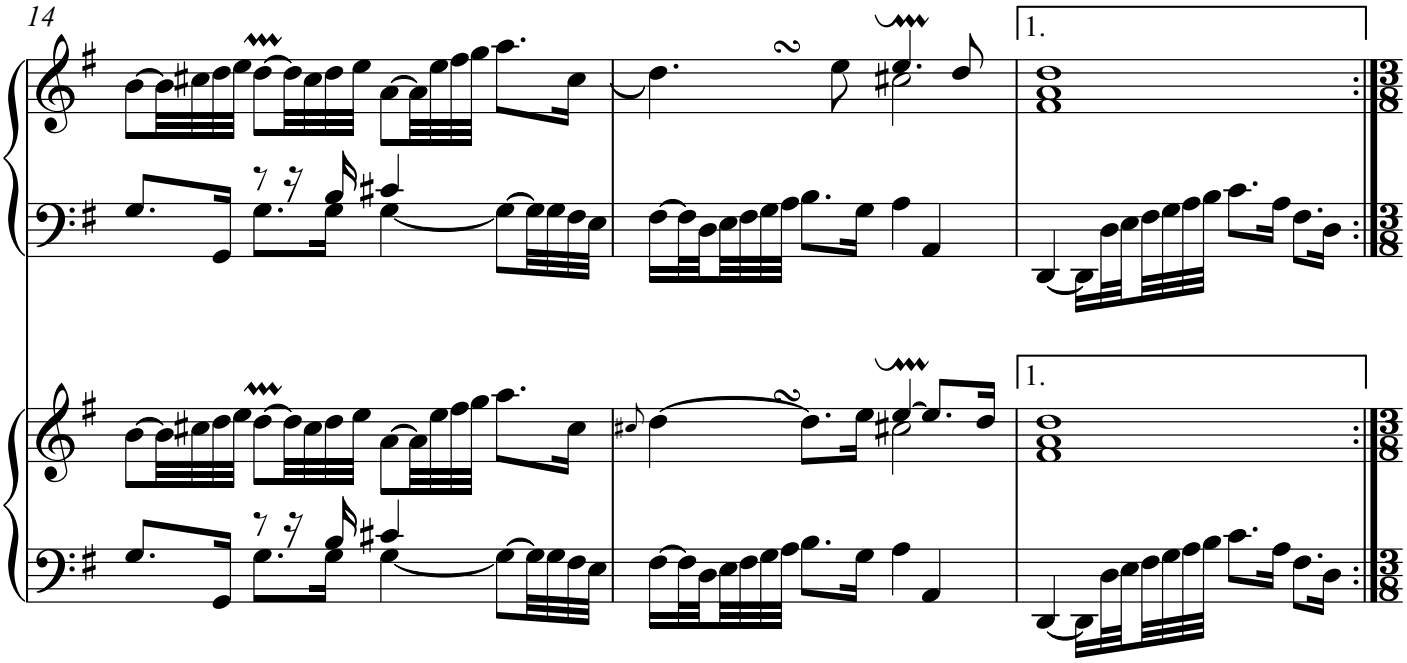
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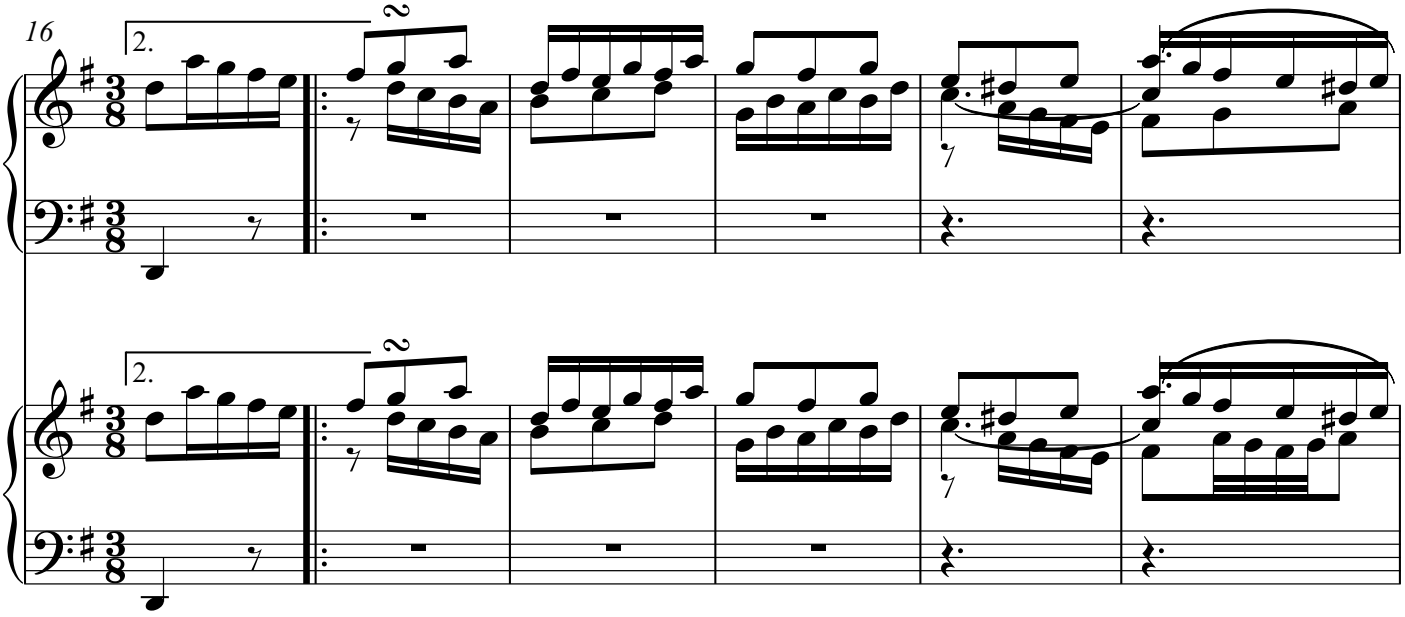
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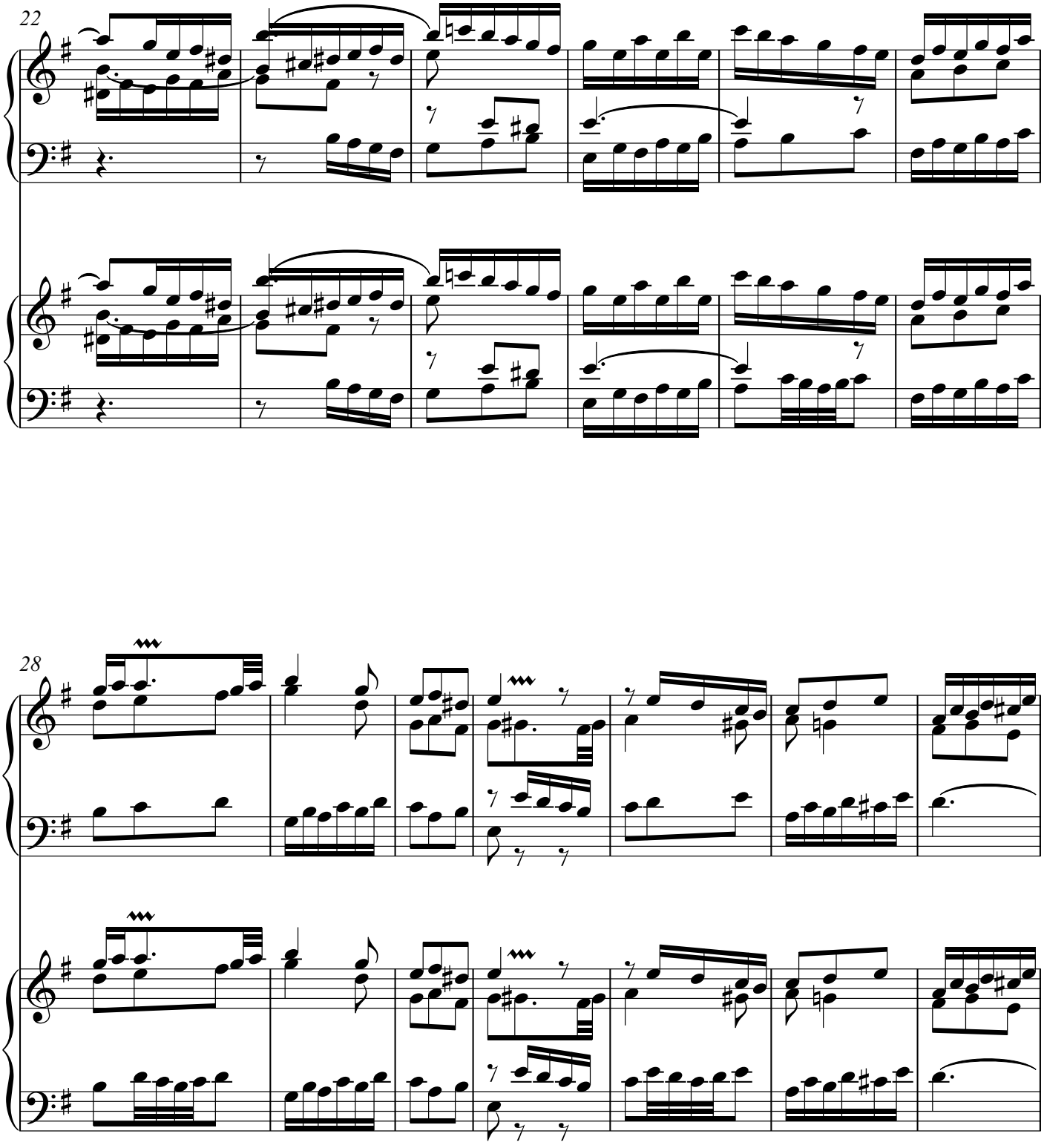
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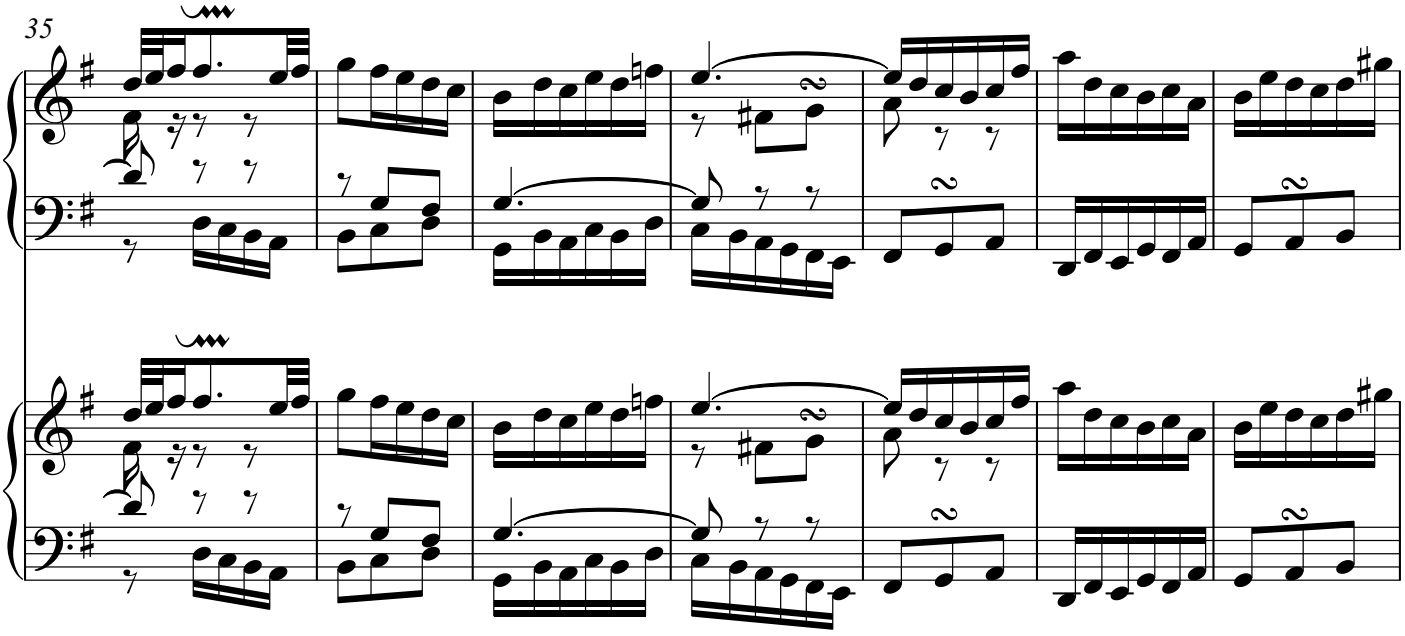
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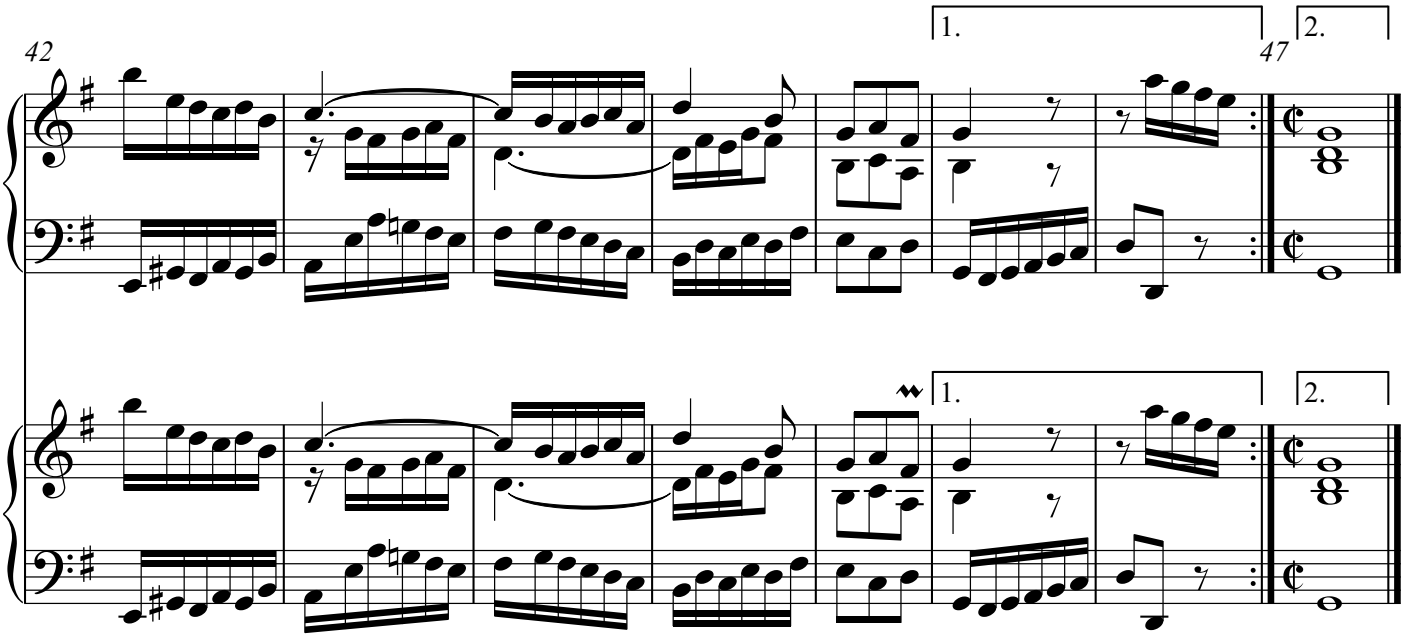
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47
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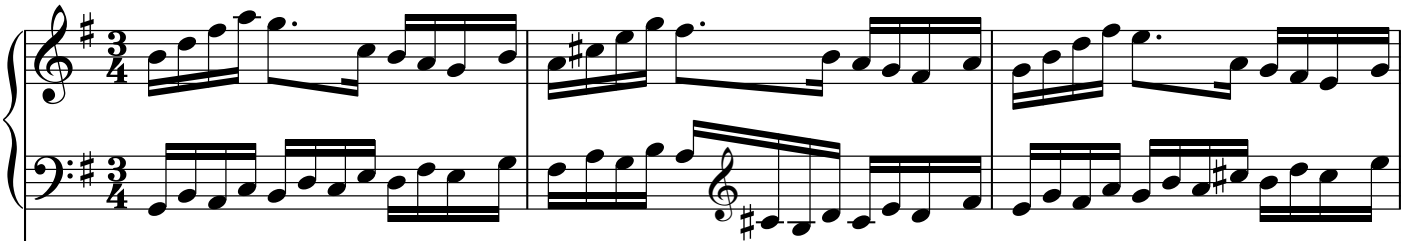
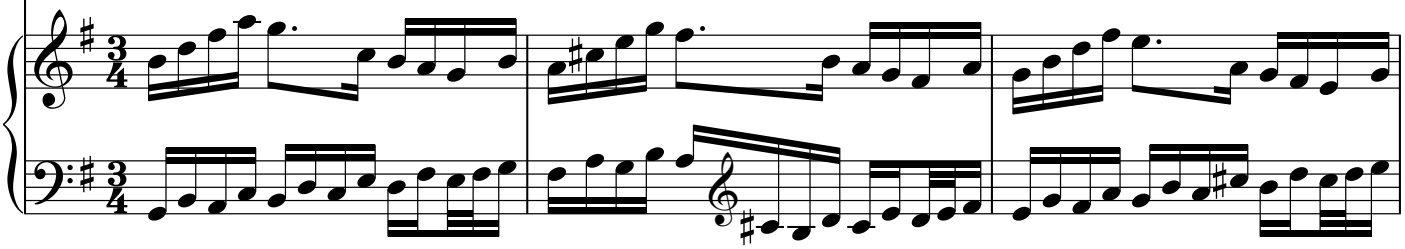
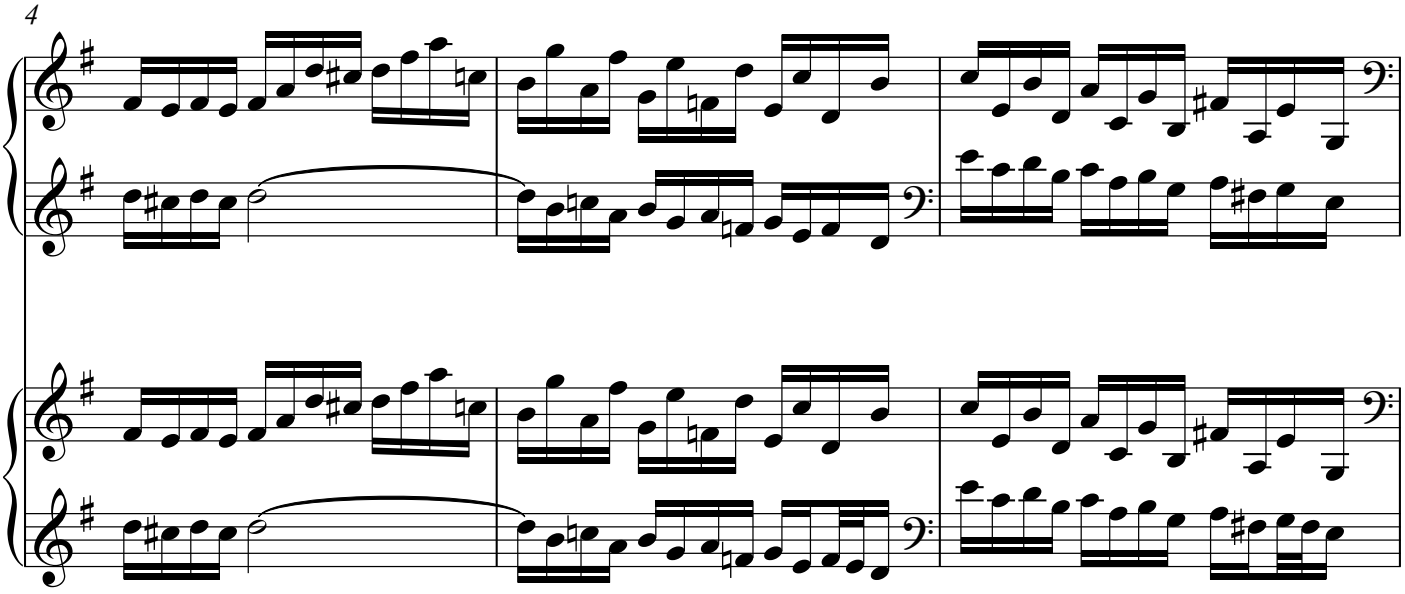
1.
2.

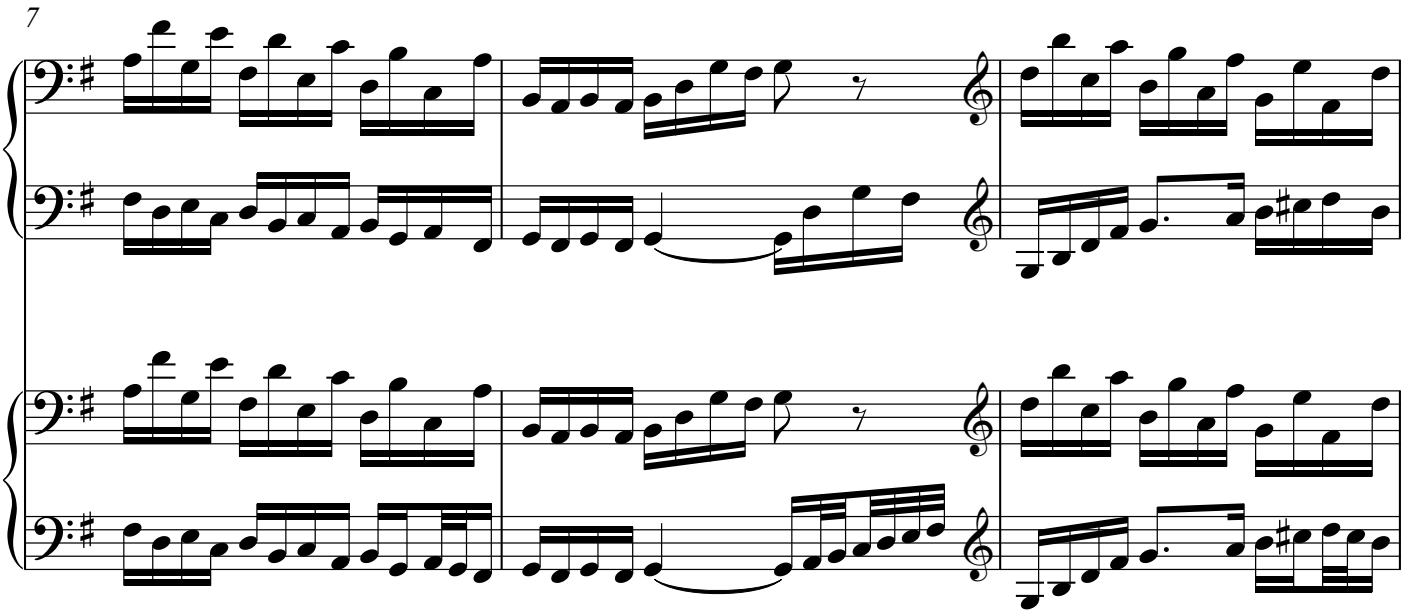
VARIATIO 17 a 2 Clav. (Bach)

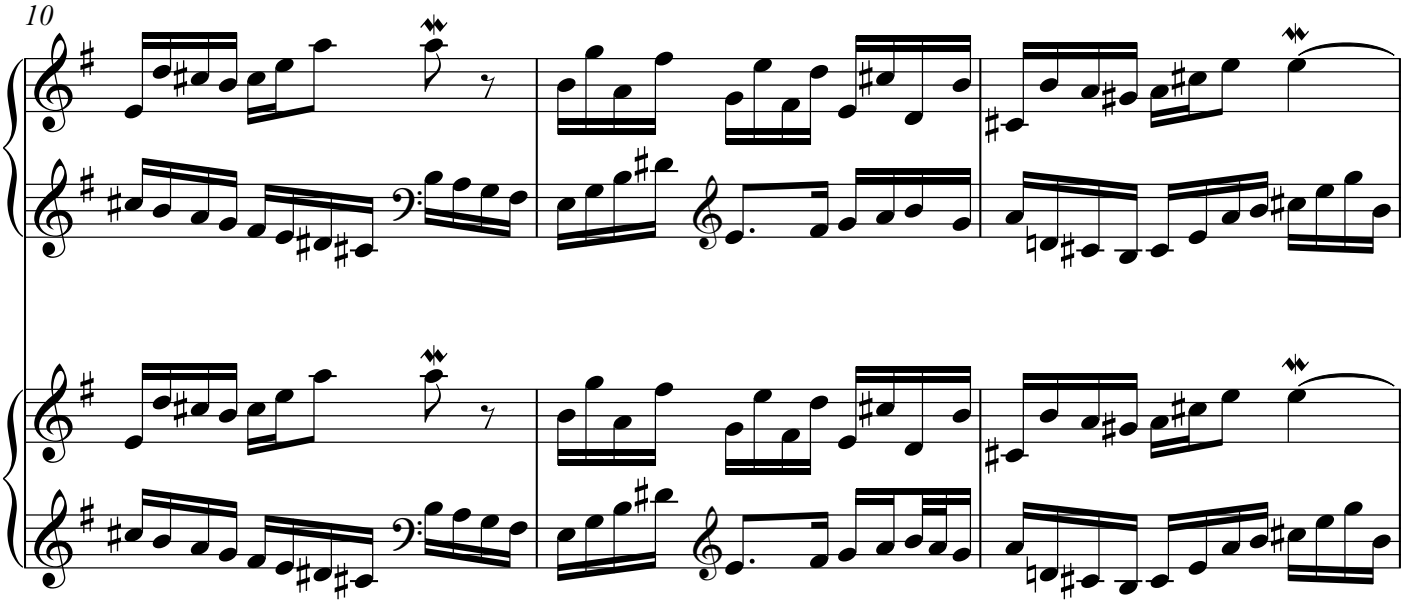


VARIATIO 17 a 2 Clav. (Papillon)









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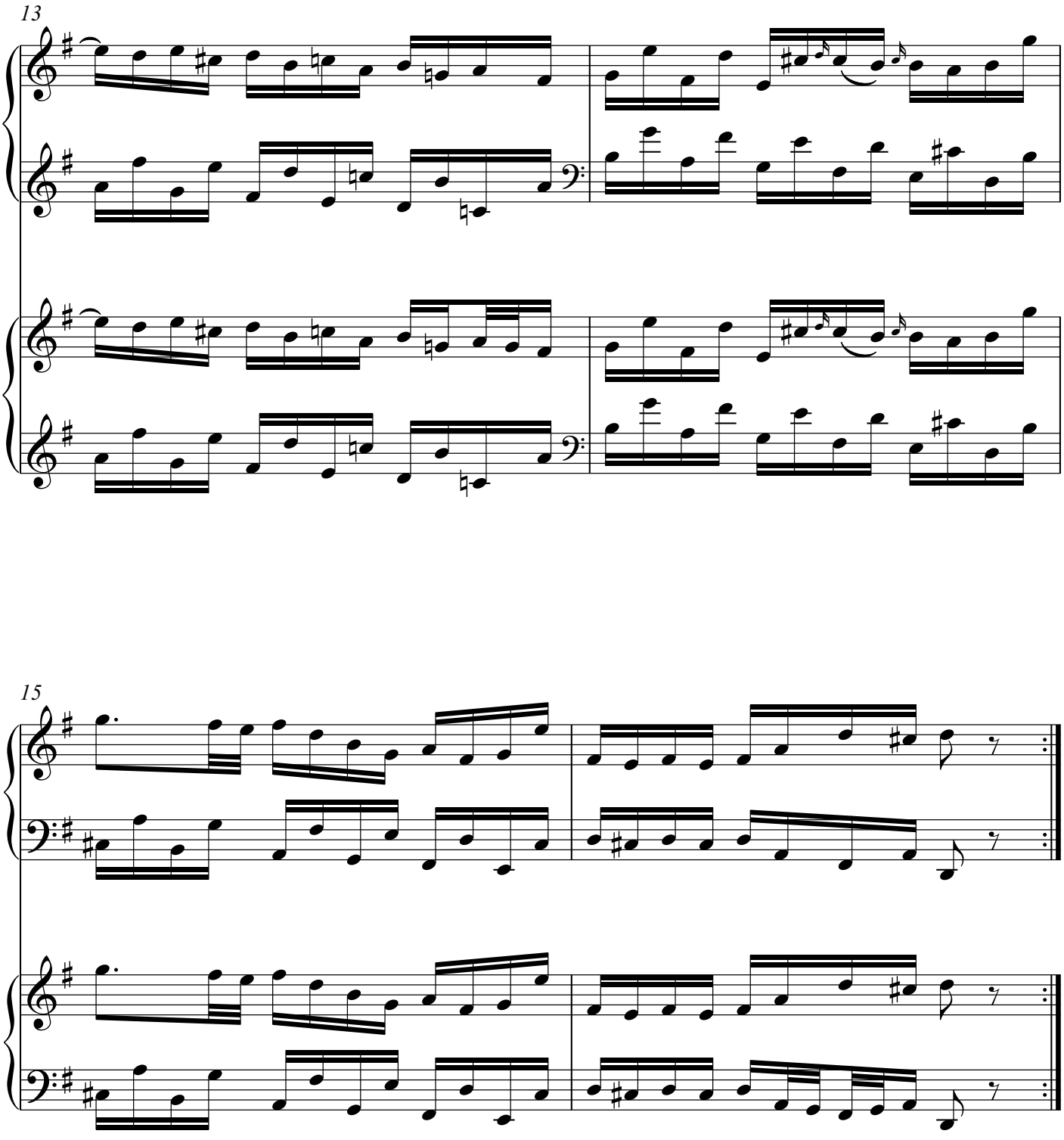
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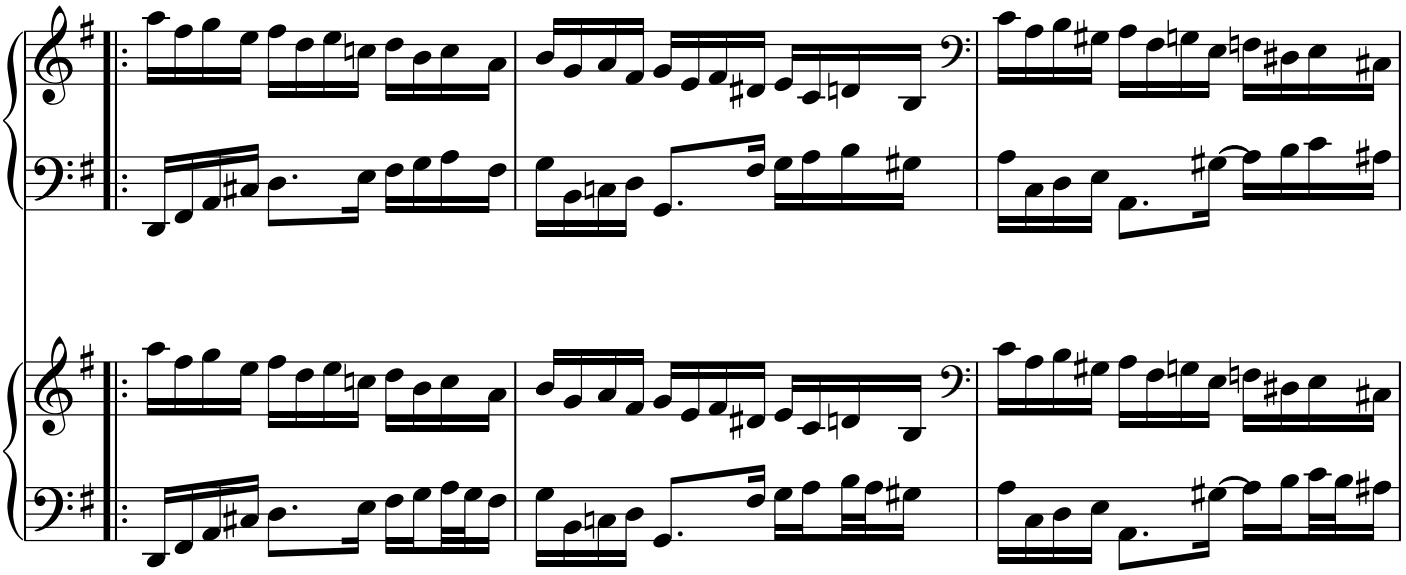

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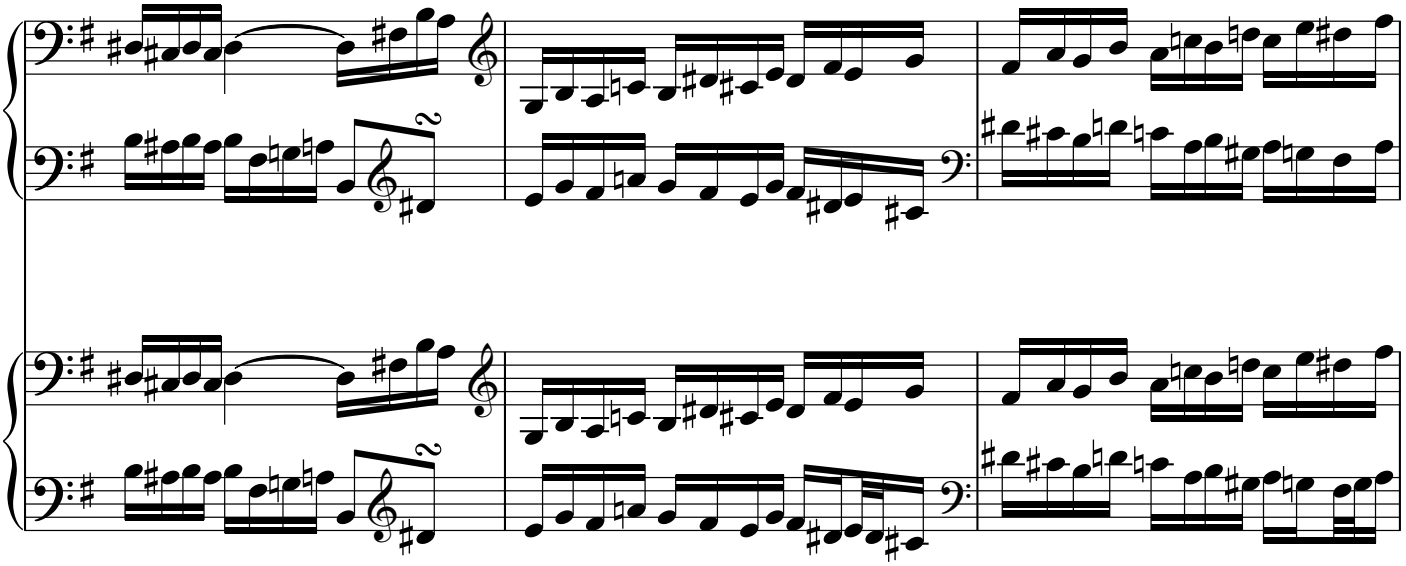

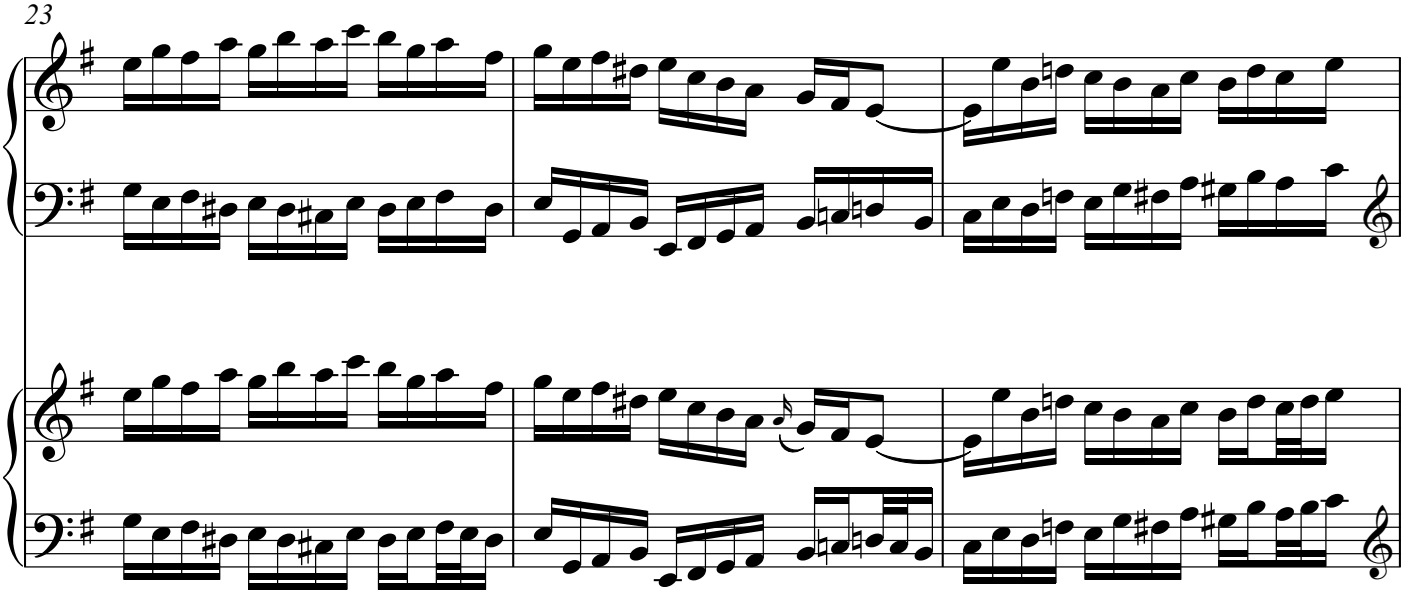
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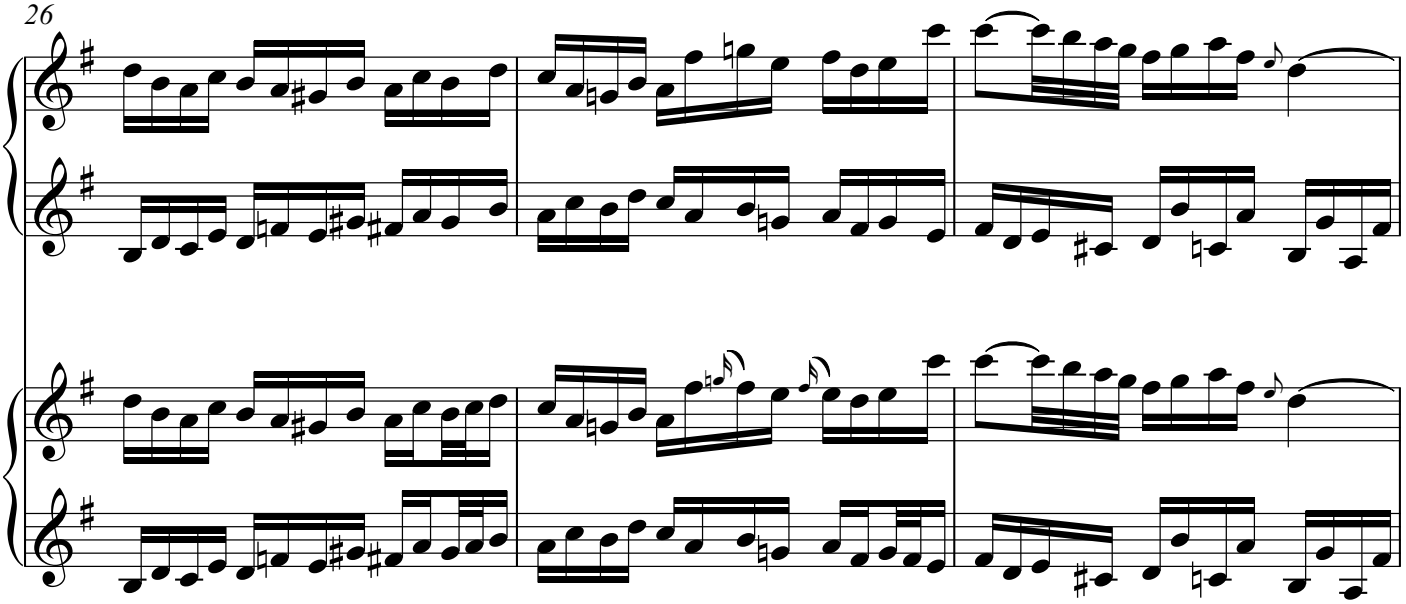
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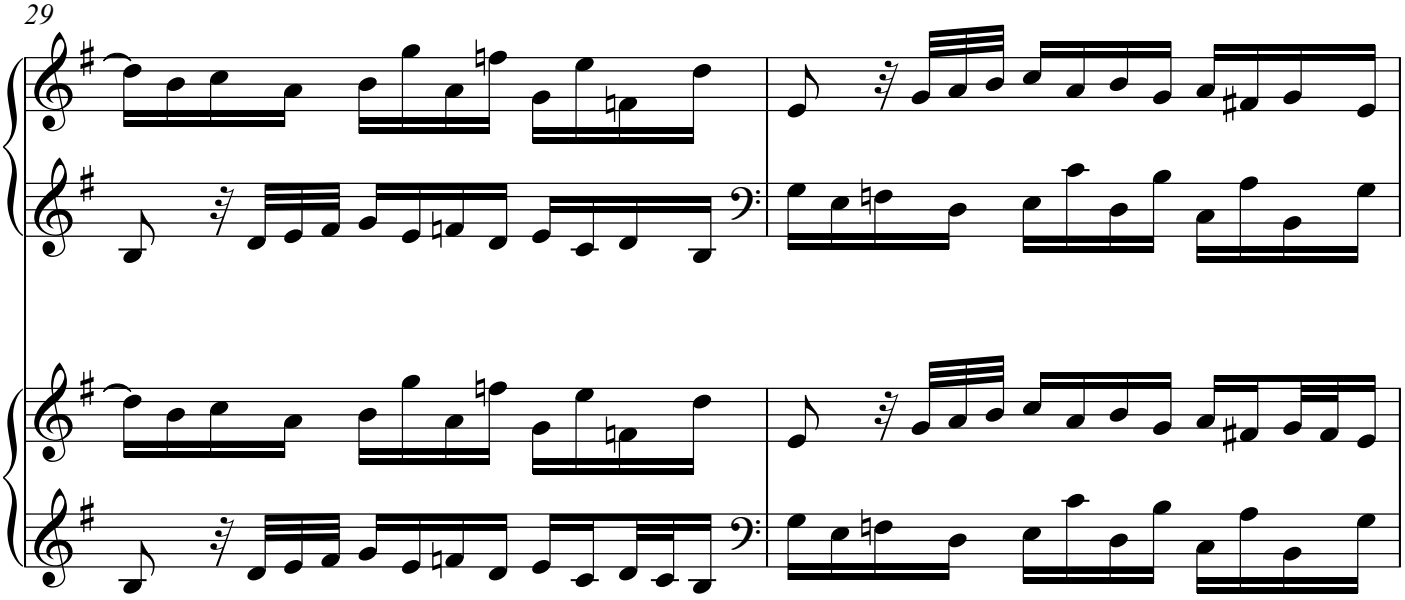
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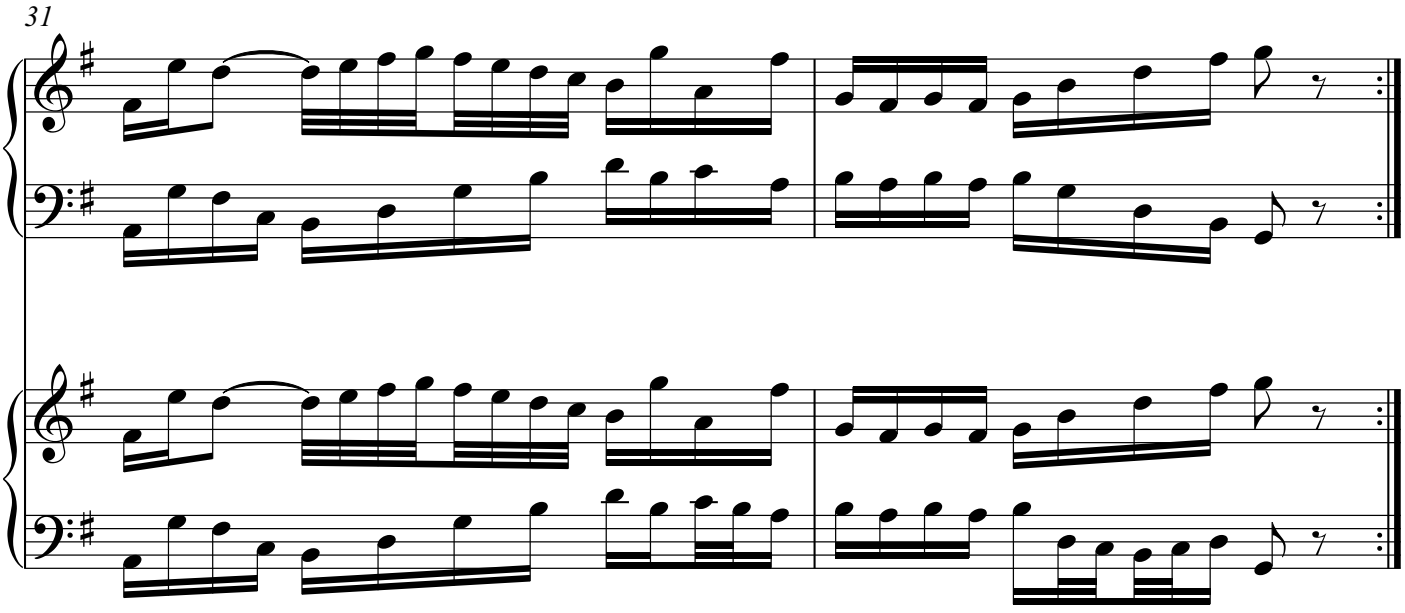
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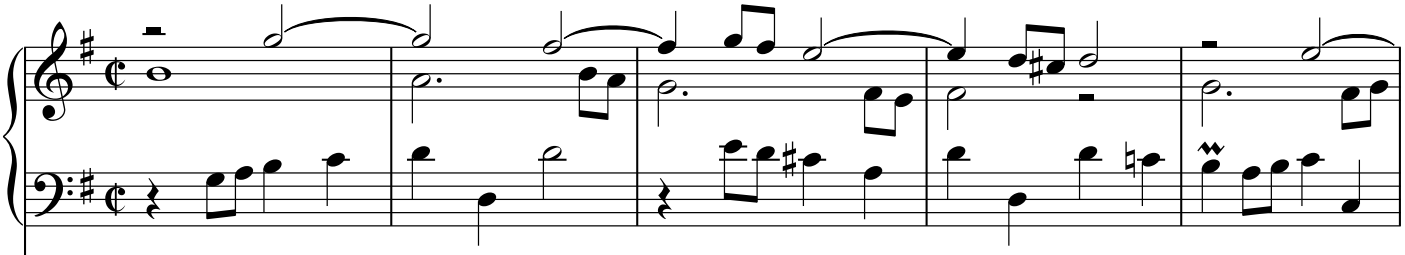
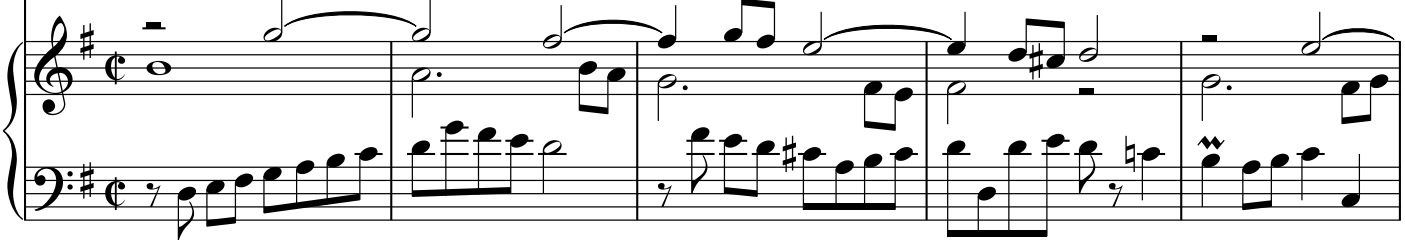
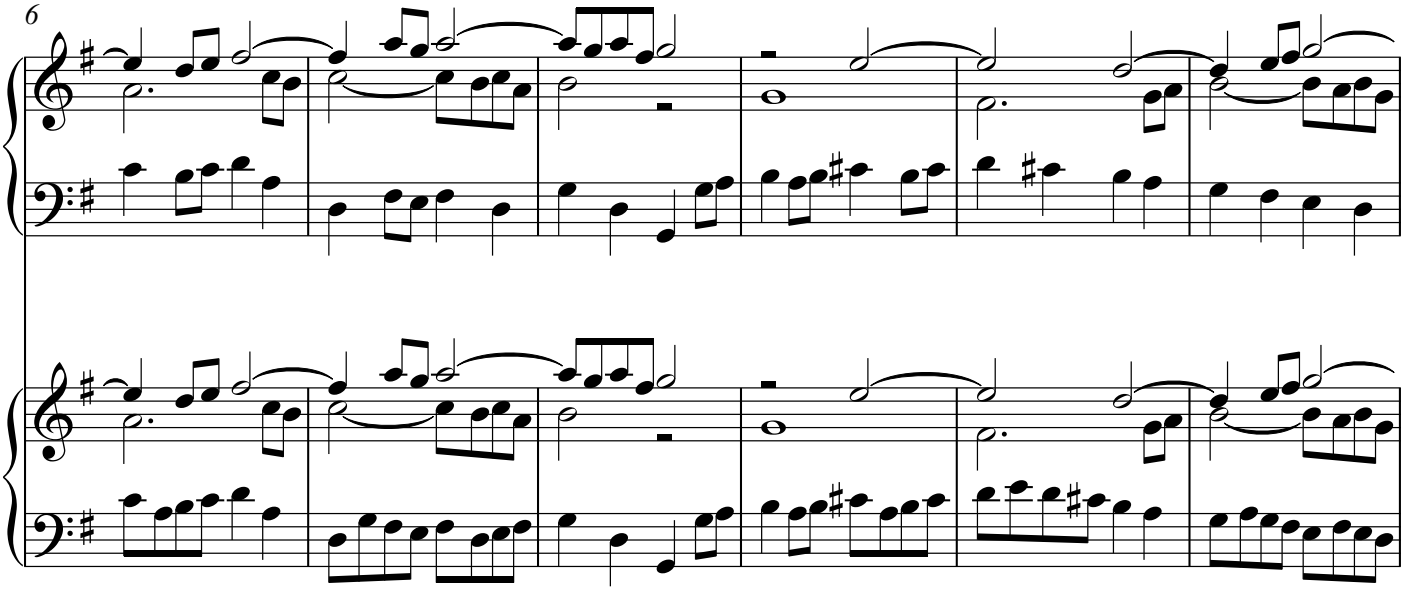
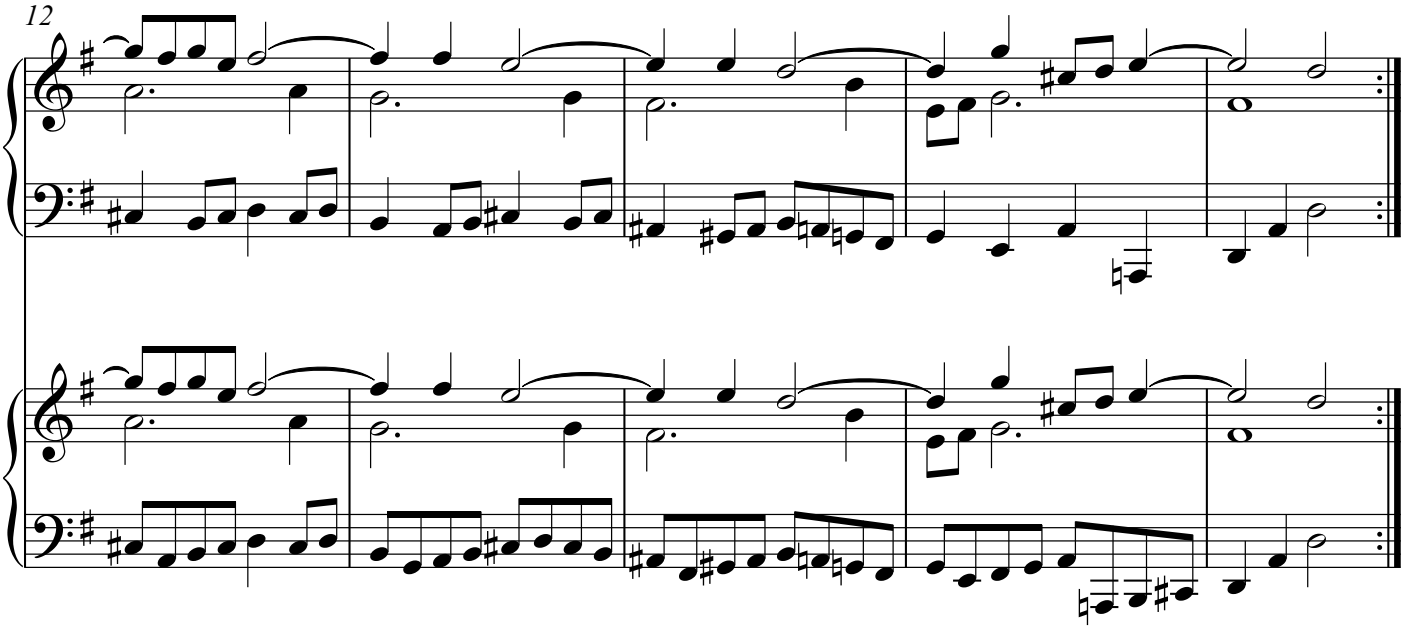
VARIATIO 18 a 1 Clav. (Bach)
Canone alla Sesta



VARIATIO 18 a 1 Clav. (Papillon)
Canone alla Sesta



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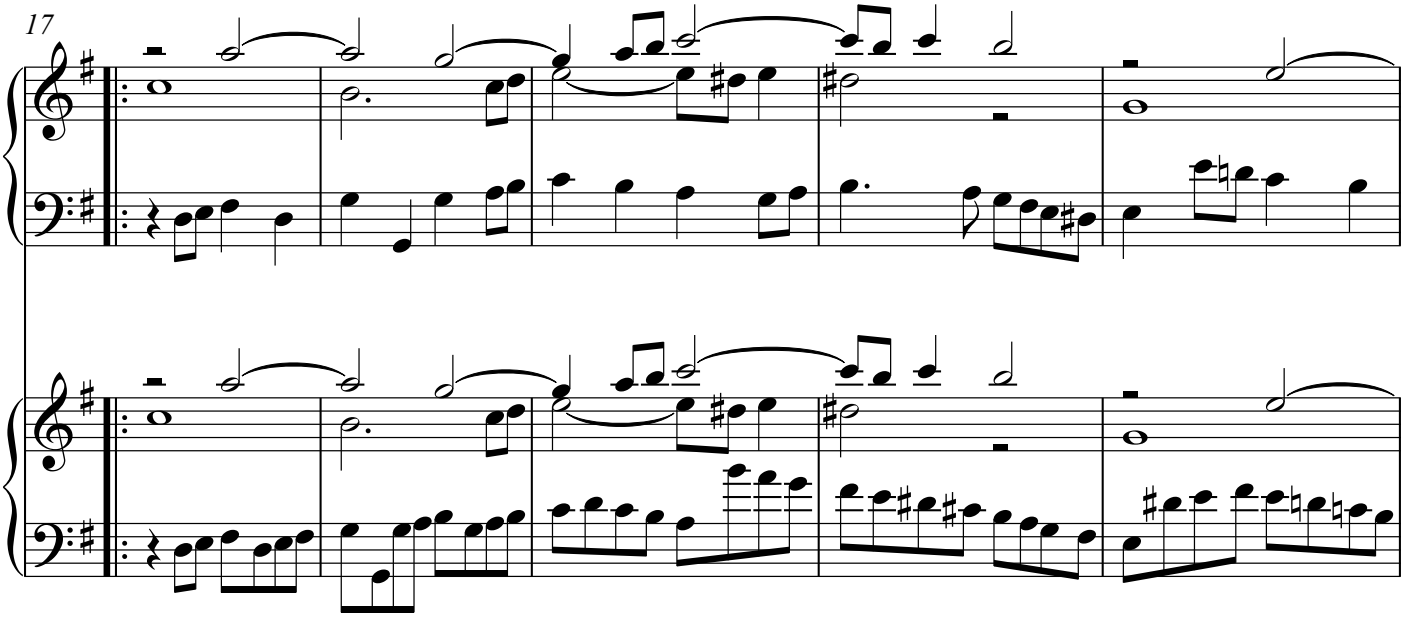
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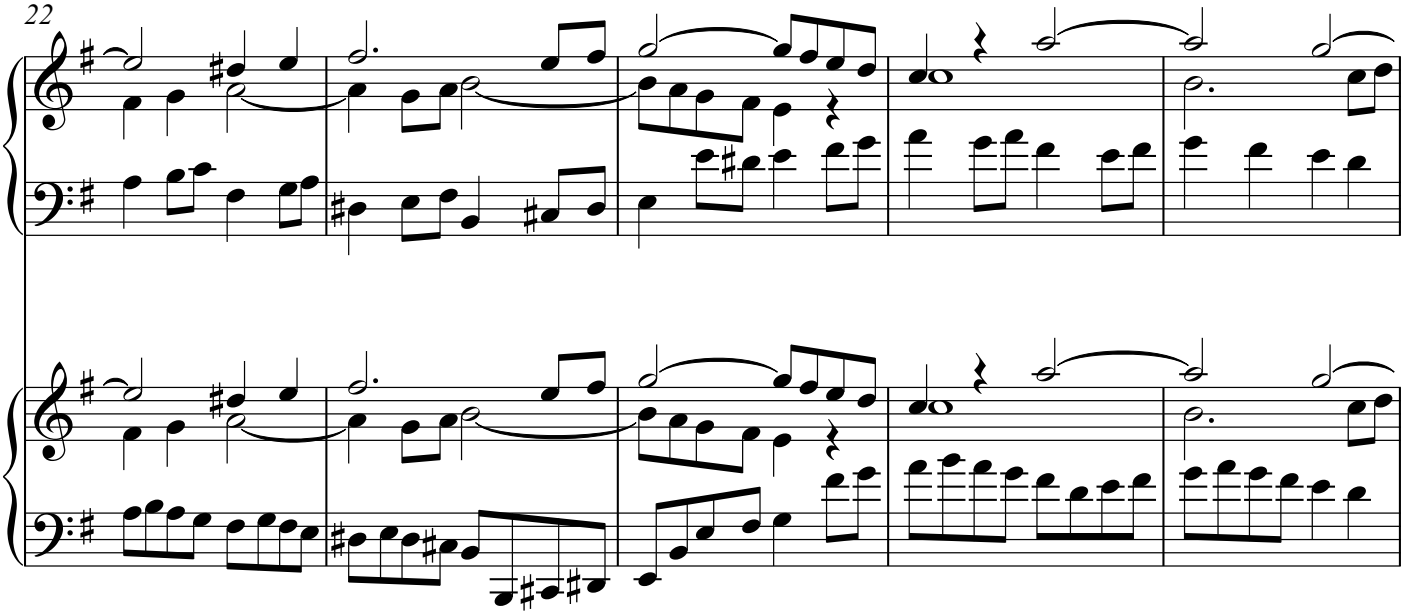
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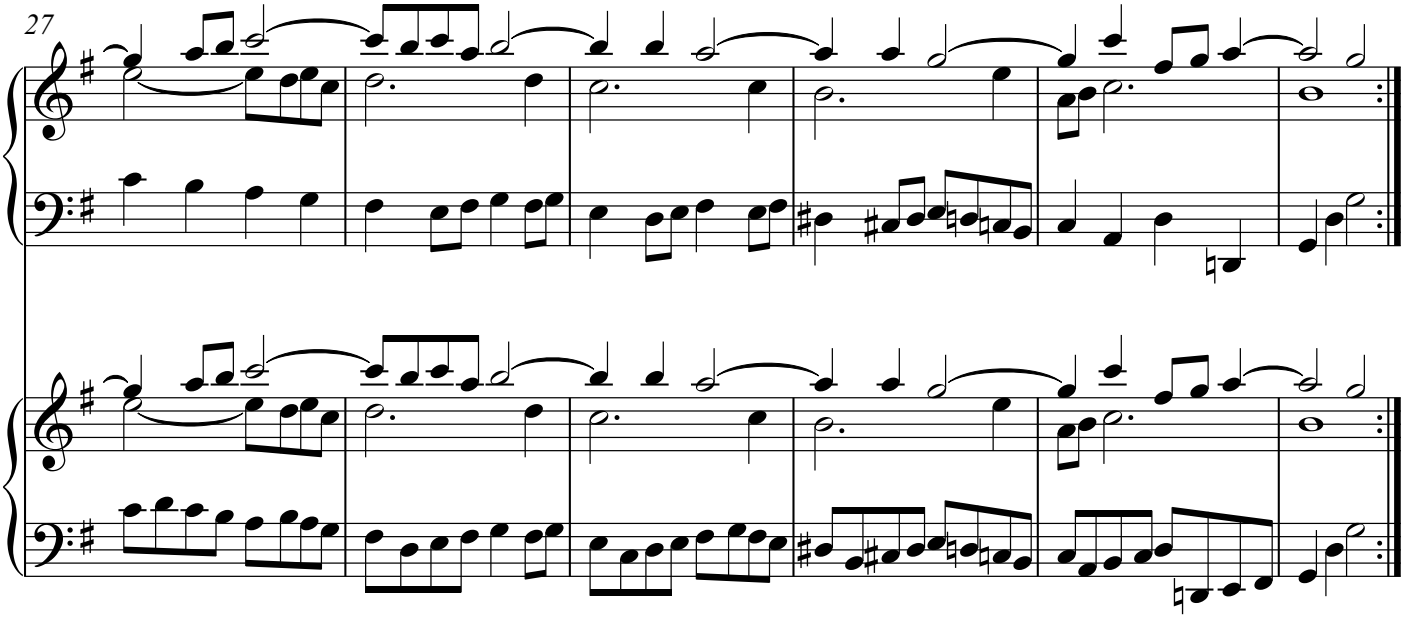
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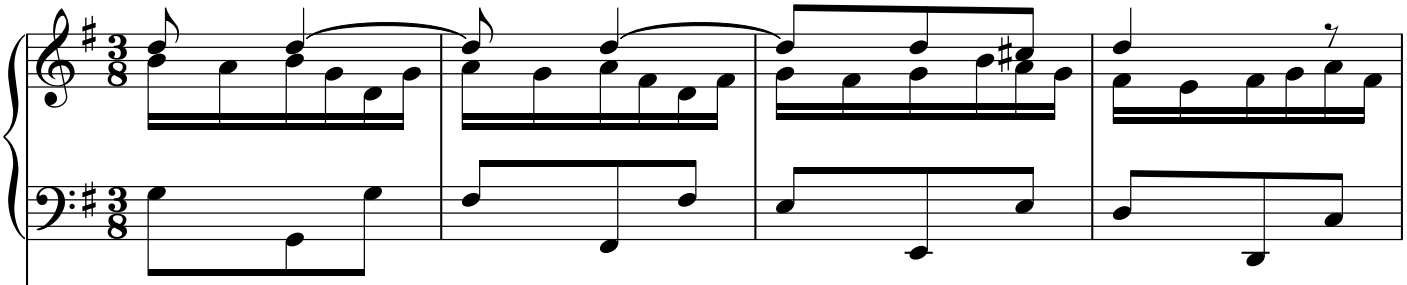
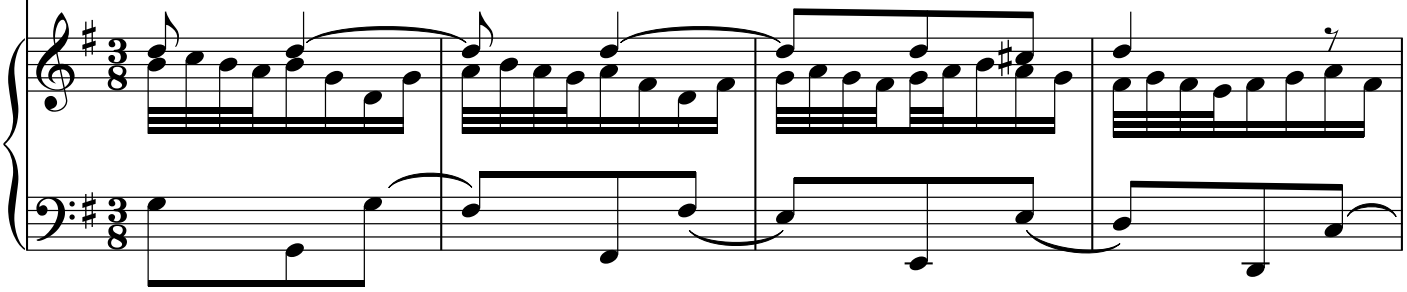
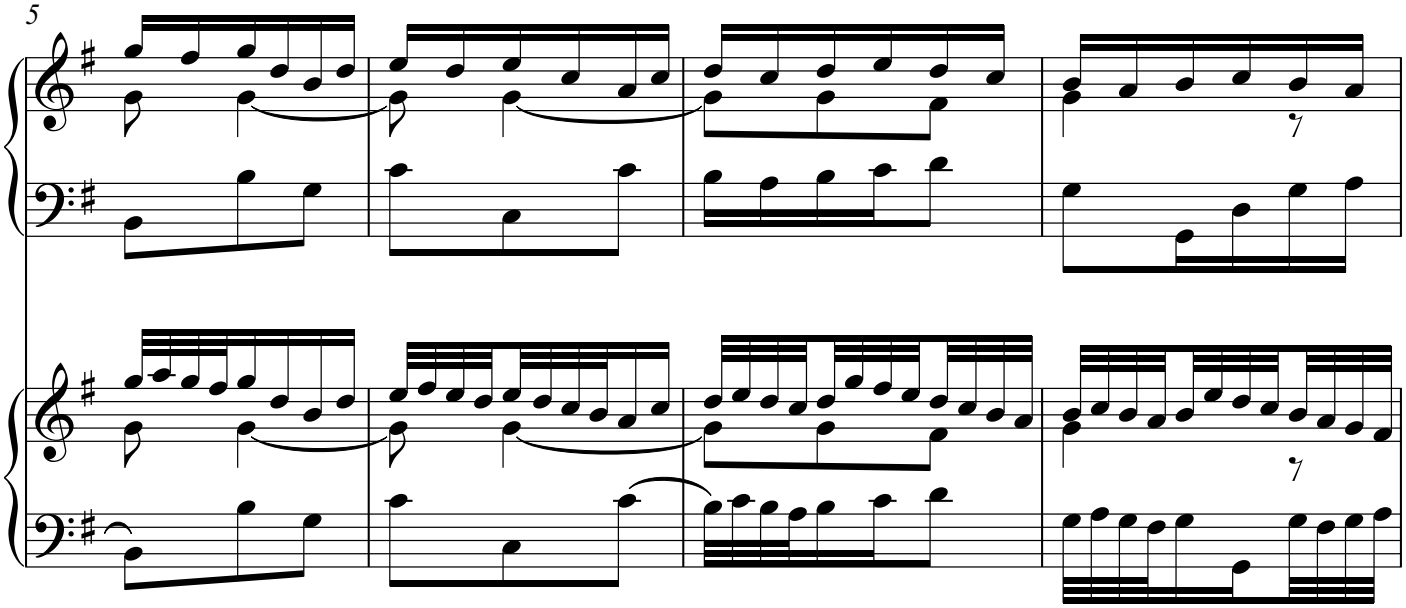
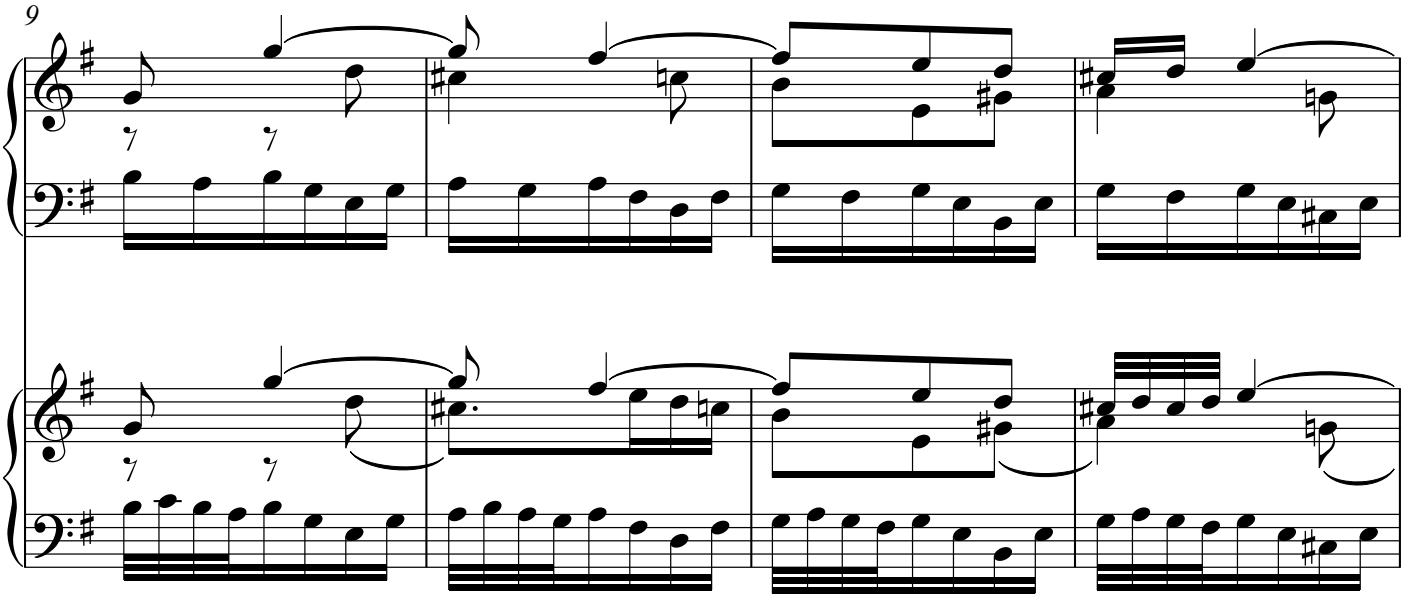
VARIATIO 19 a 1 Clav. (Bach)



VARIATIO 19 a 1 Clav. (Papillon)



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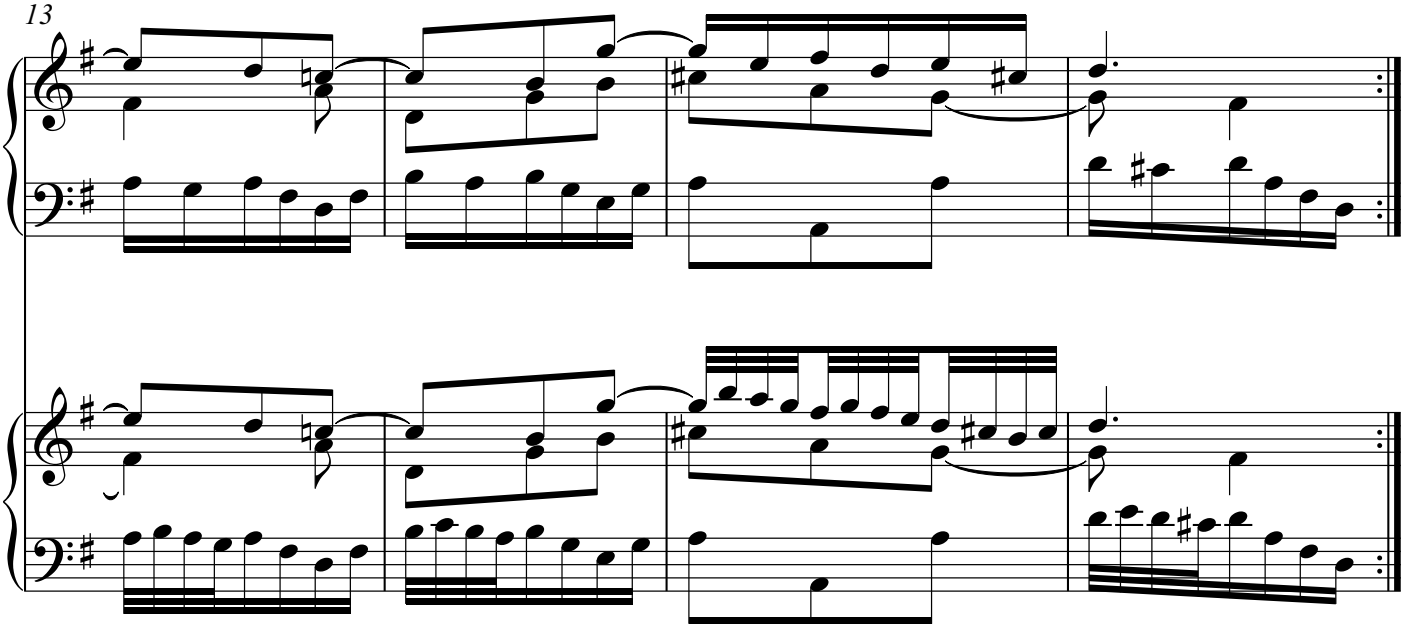
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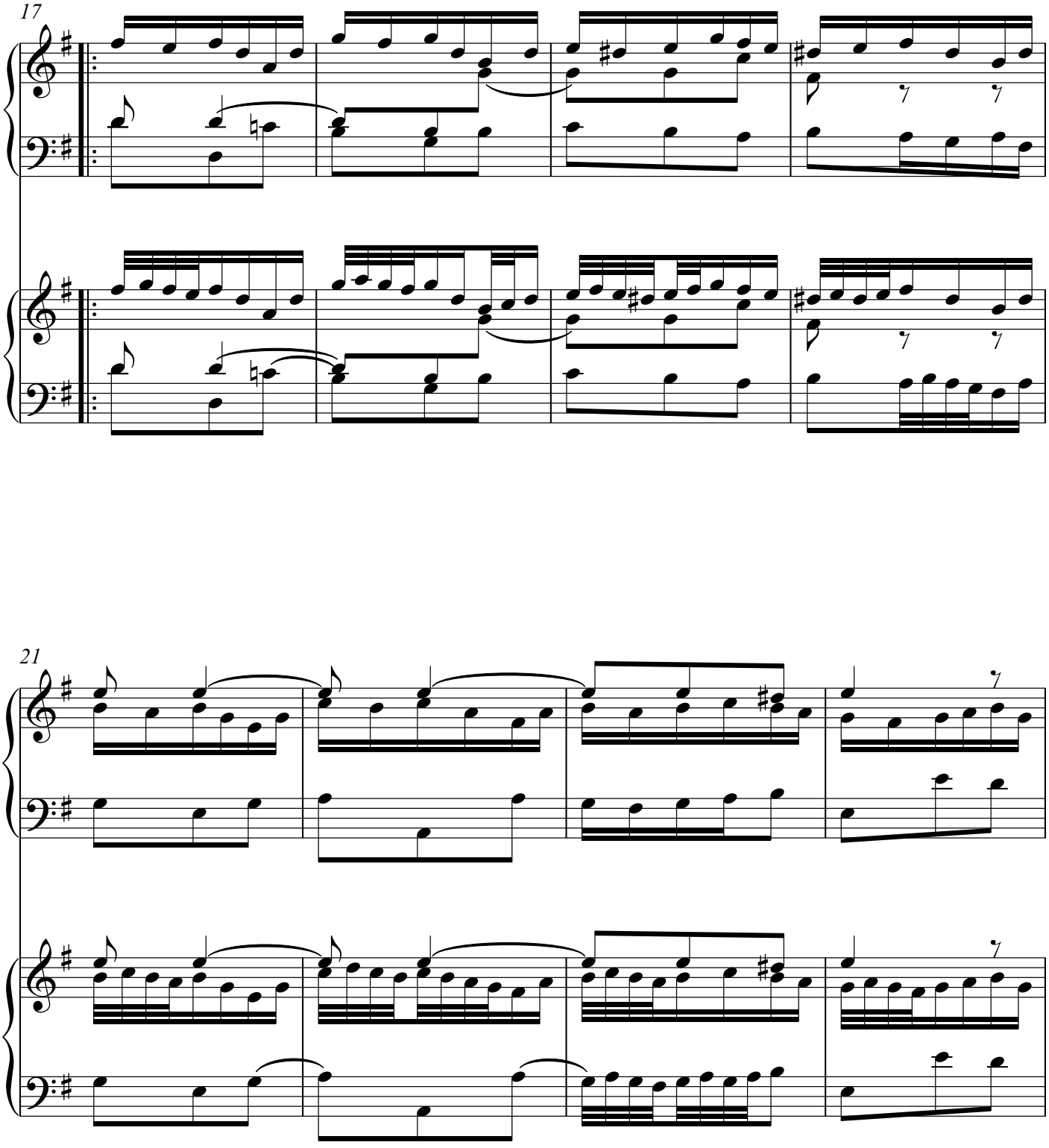
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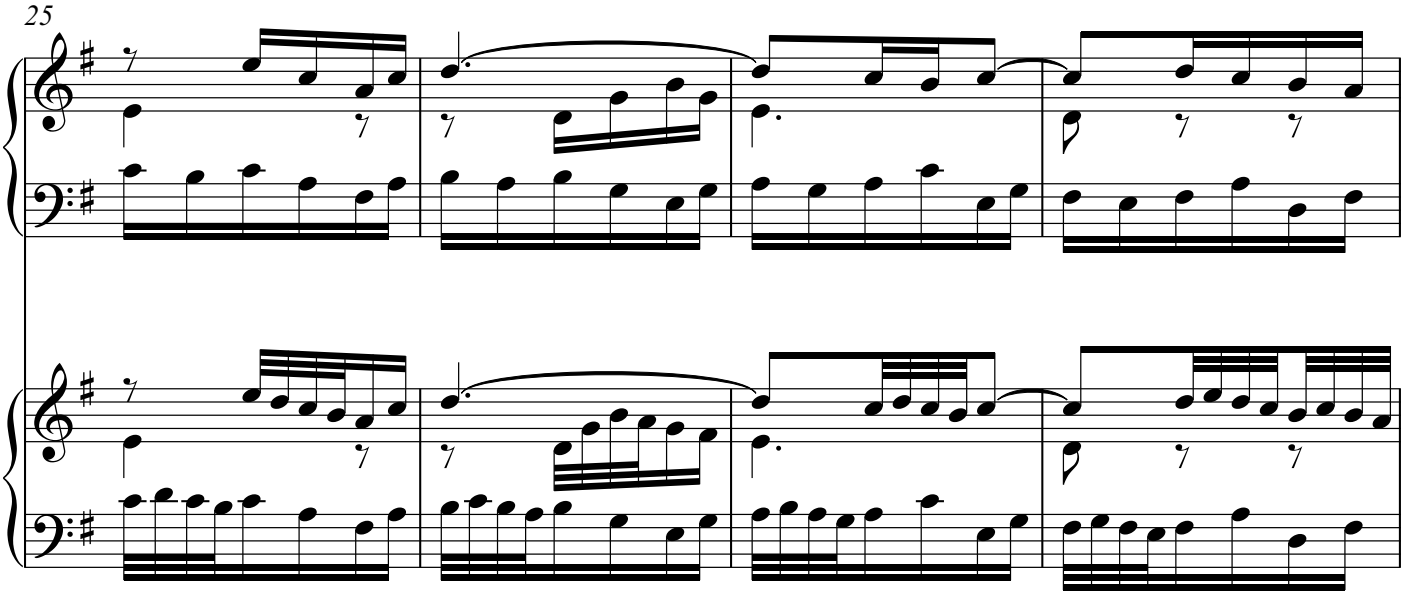
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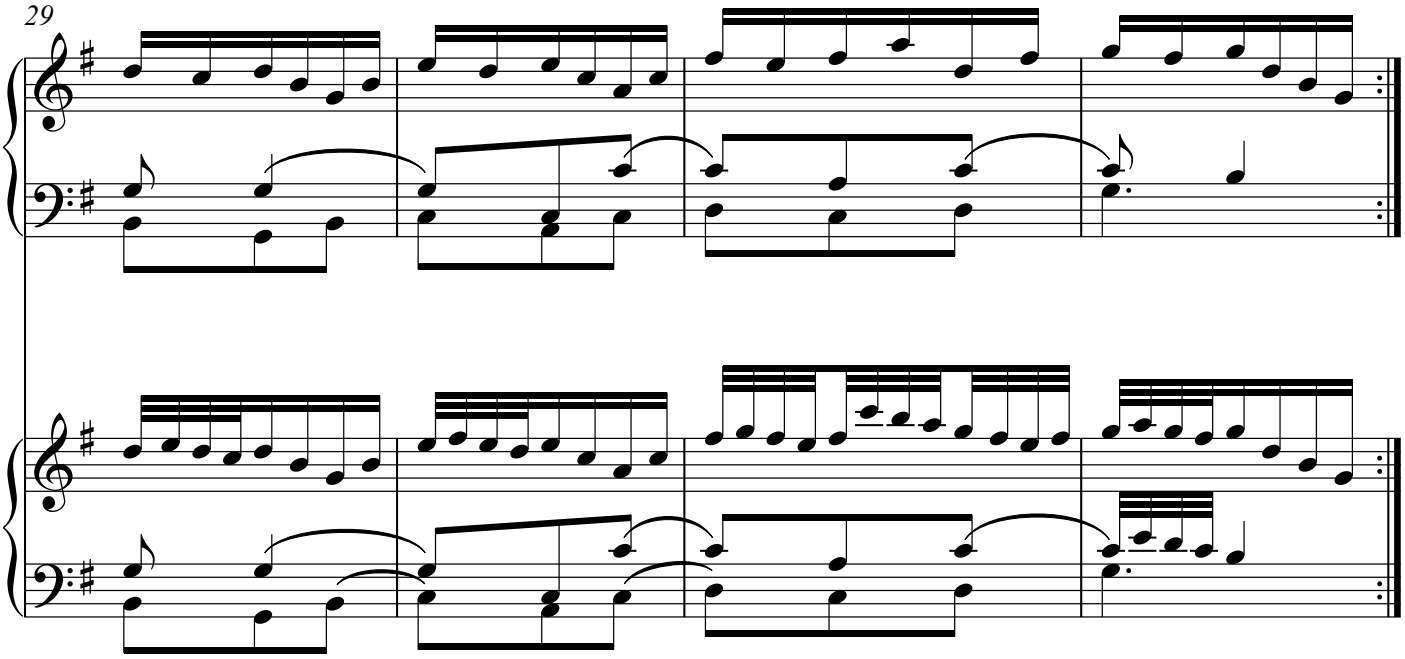
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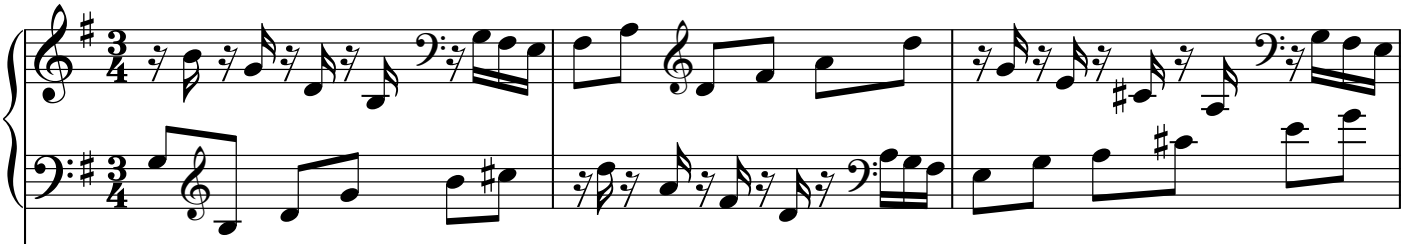
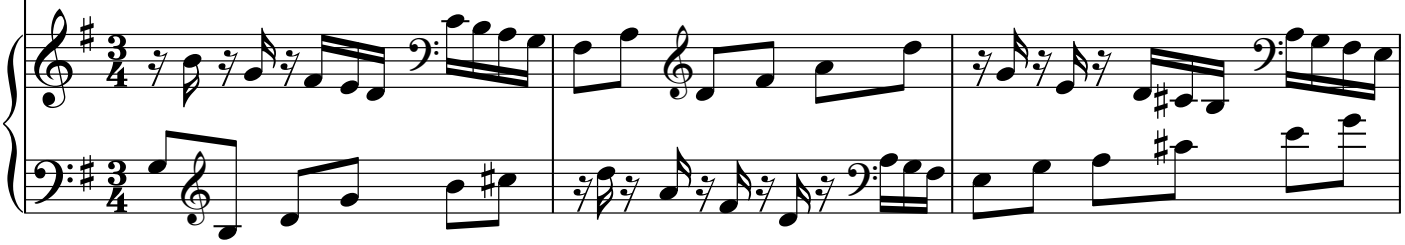
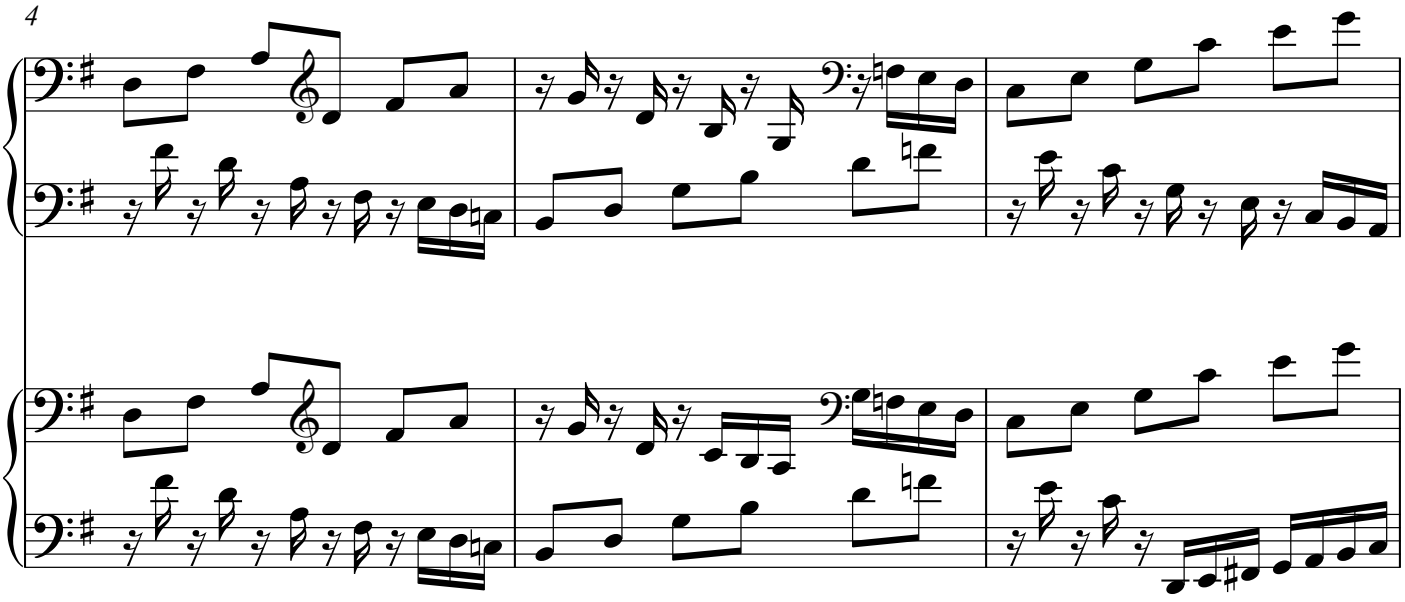
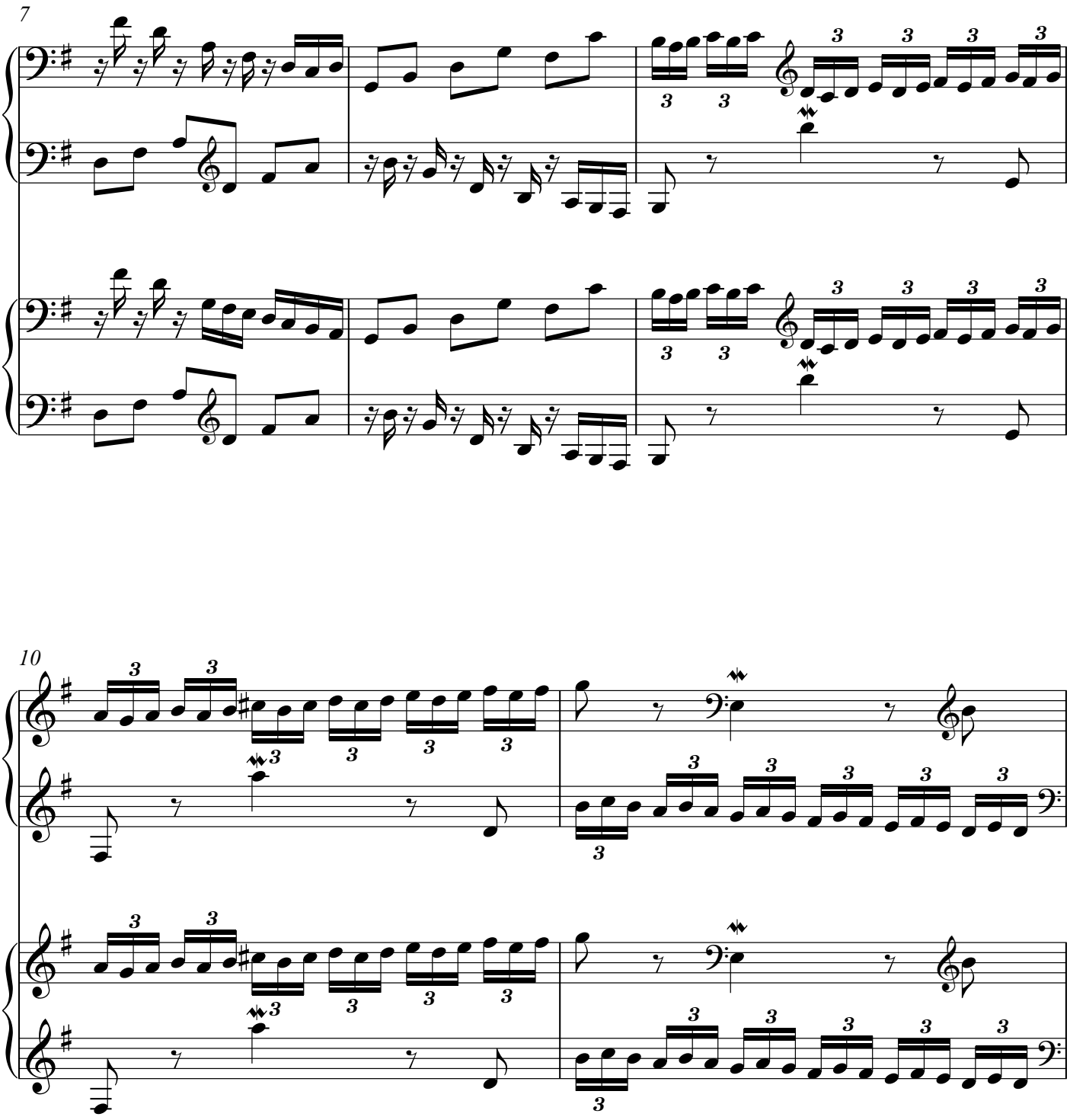
VARIATIO 20 a 2 Clav. (Bach)



VARIATIO 20 a 2 Clav. (Papillon)



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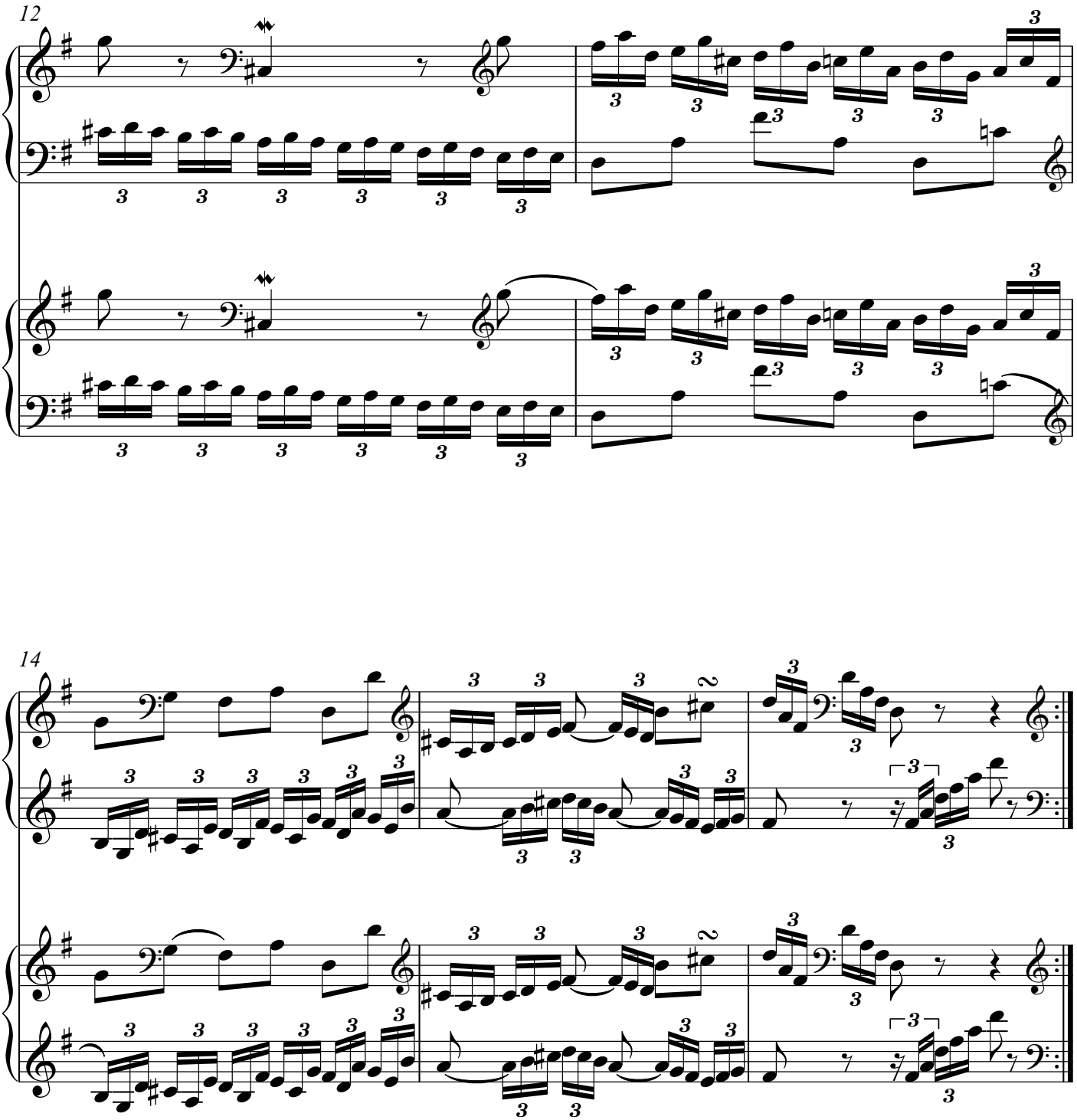
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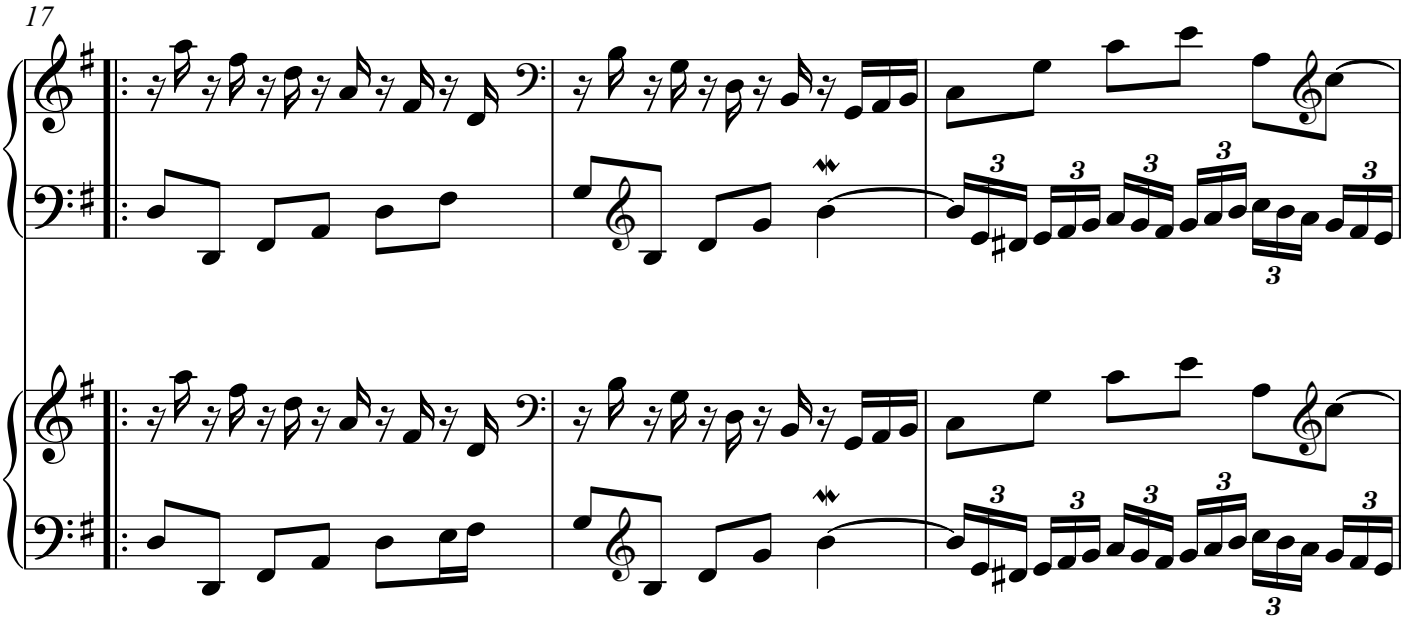
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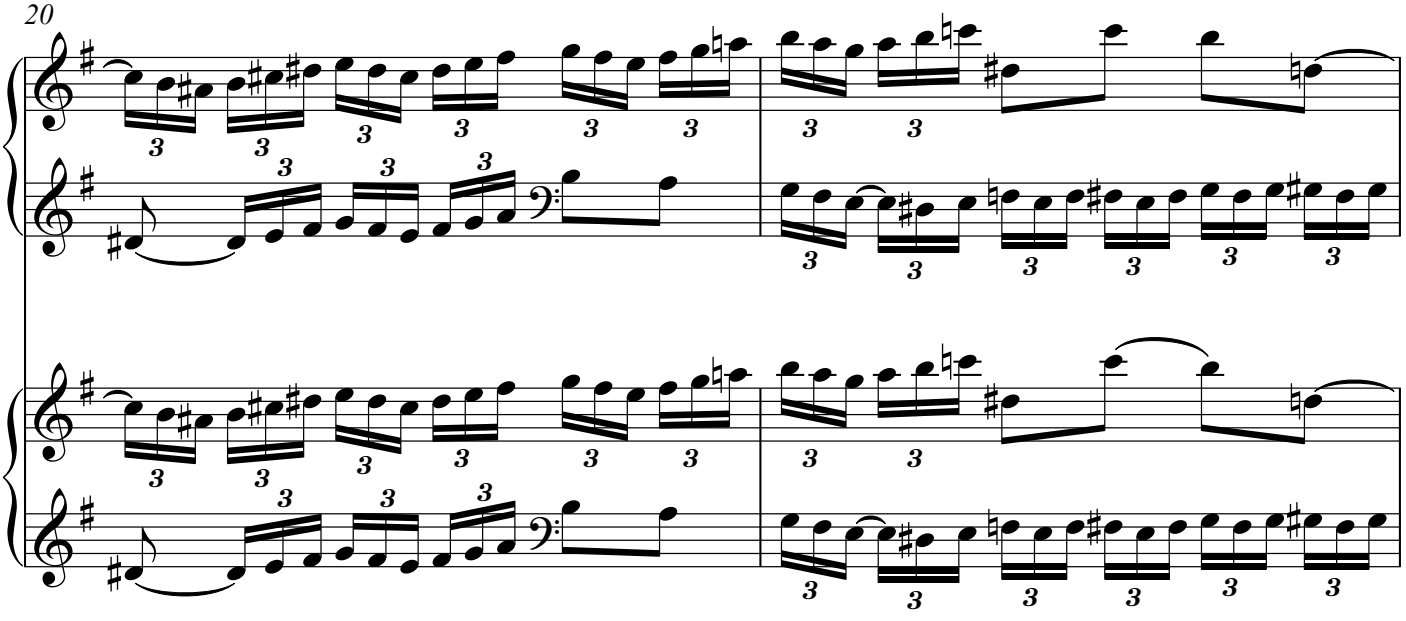
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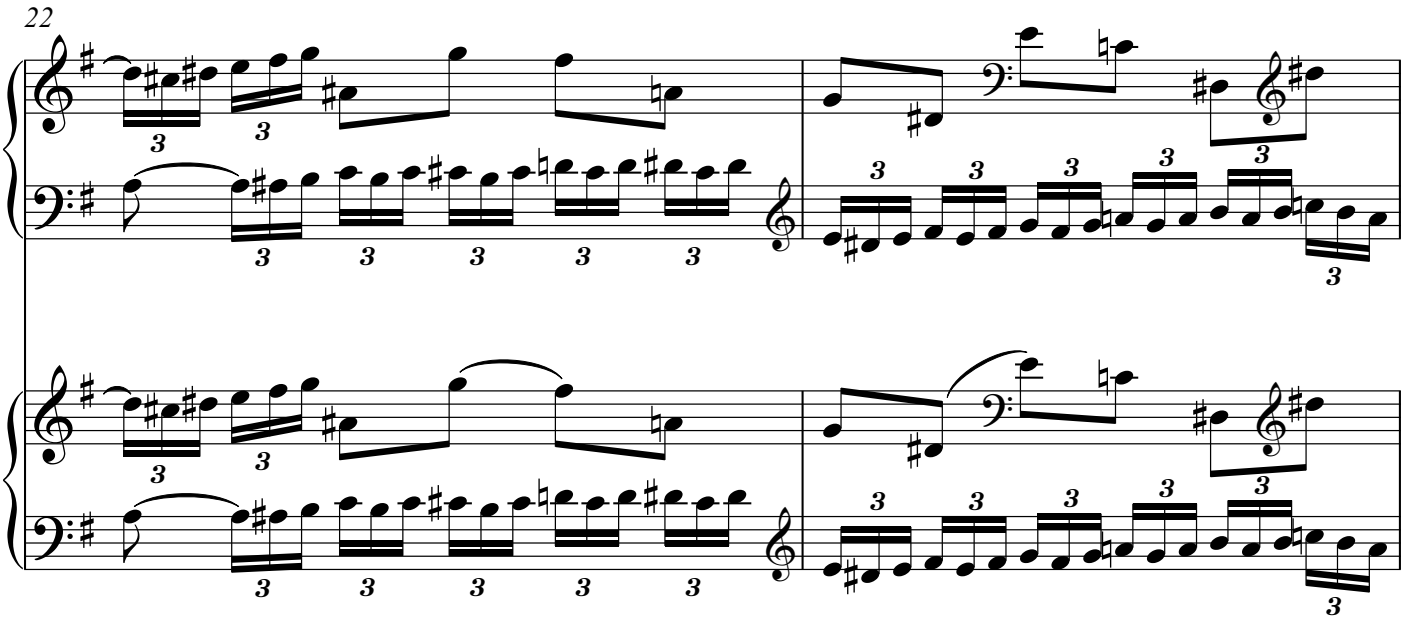
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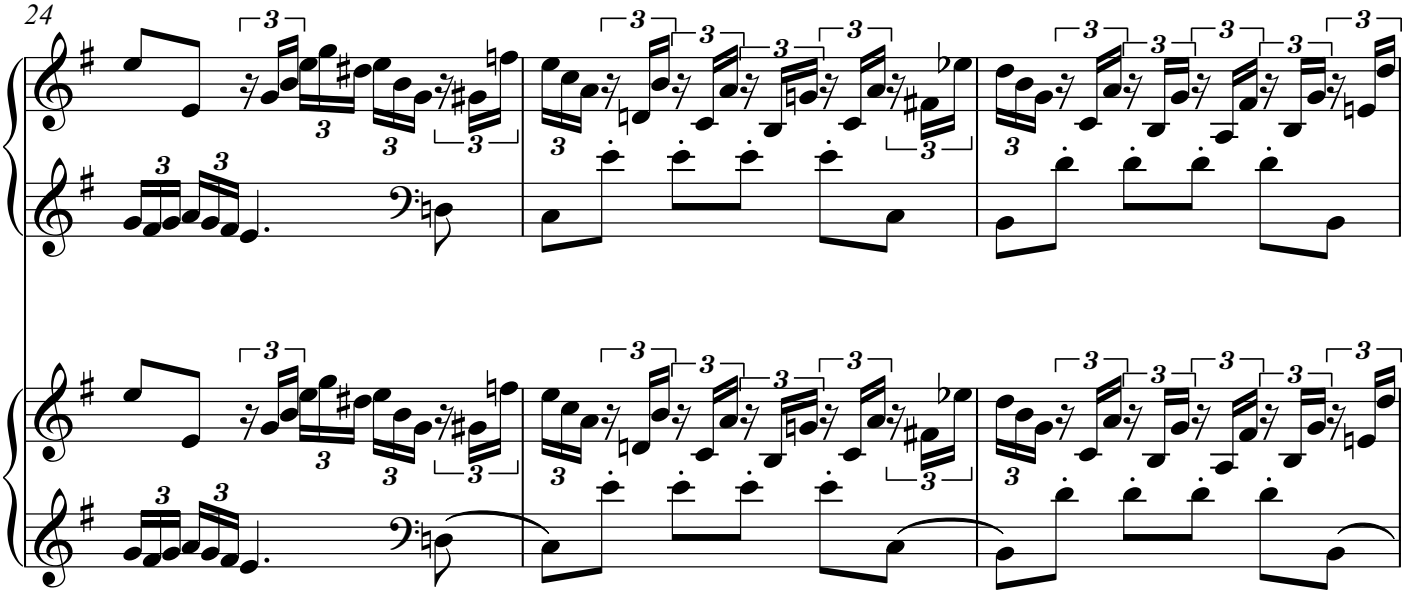
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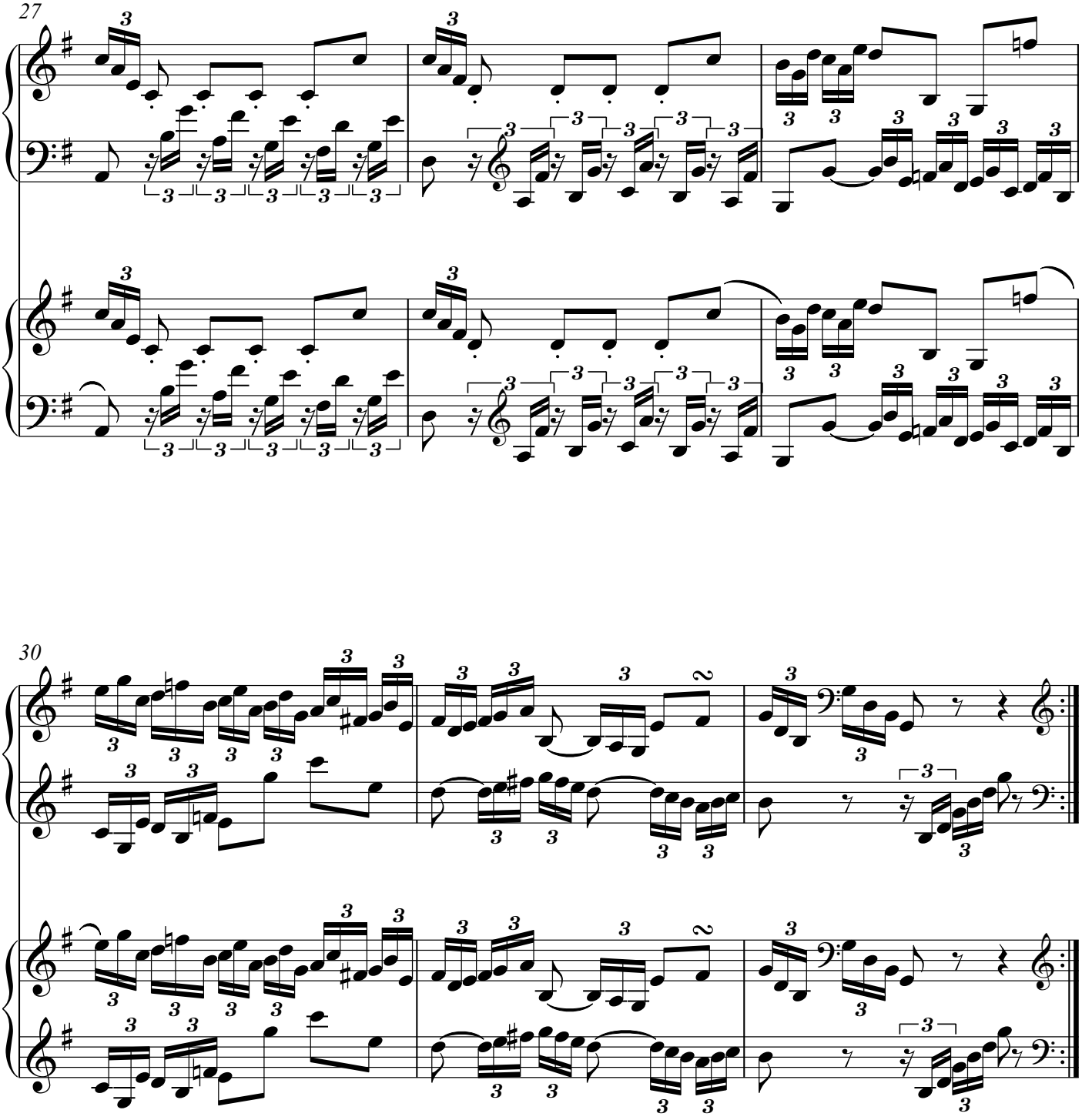
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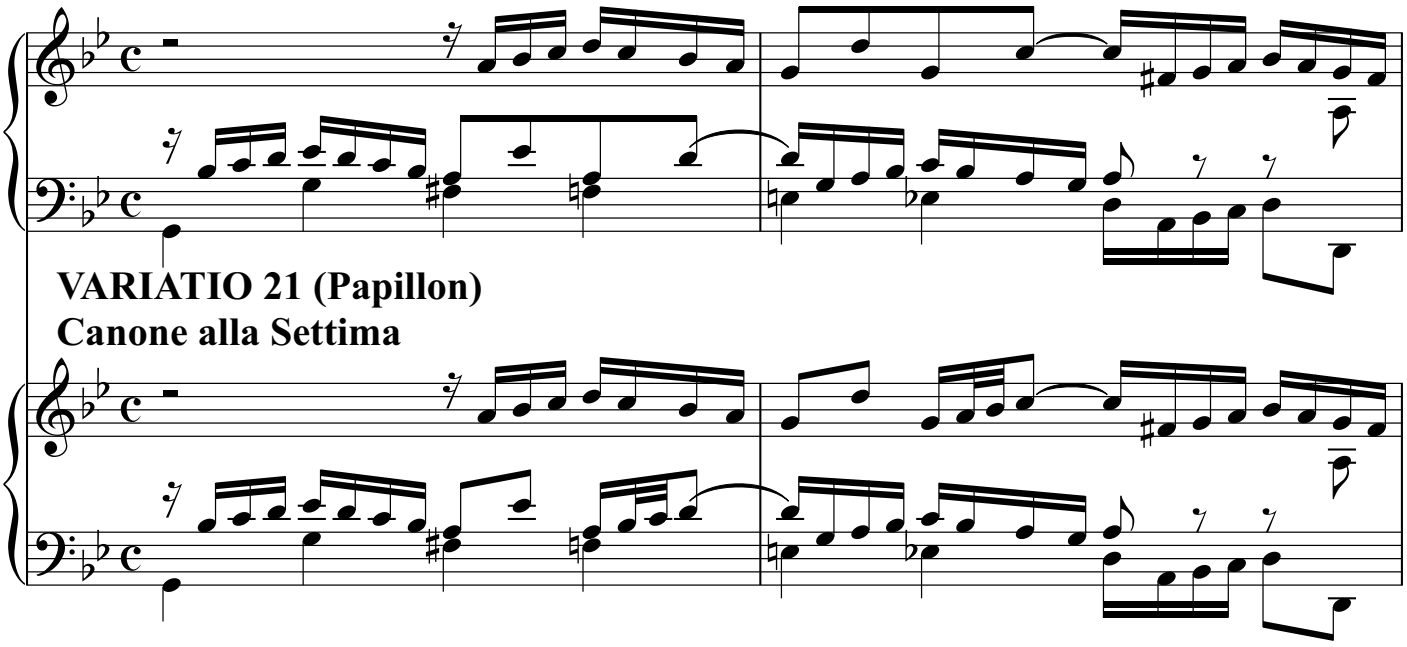
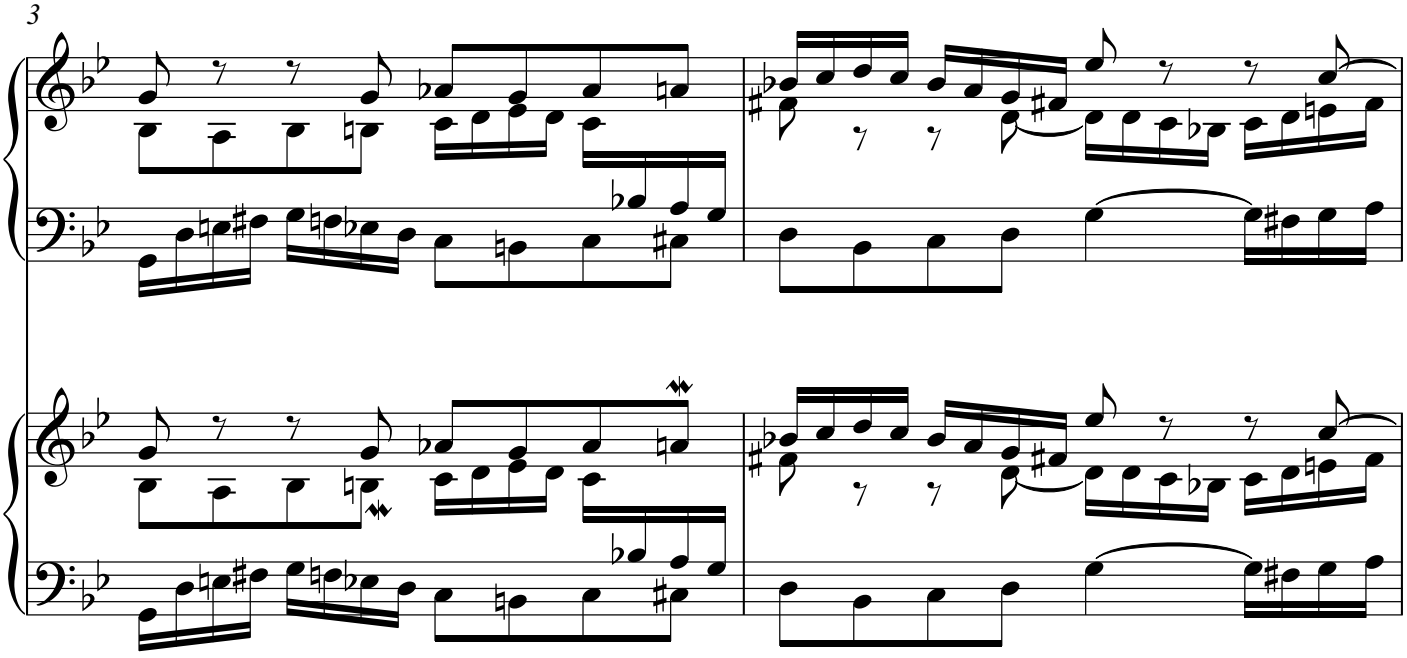
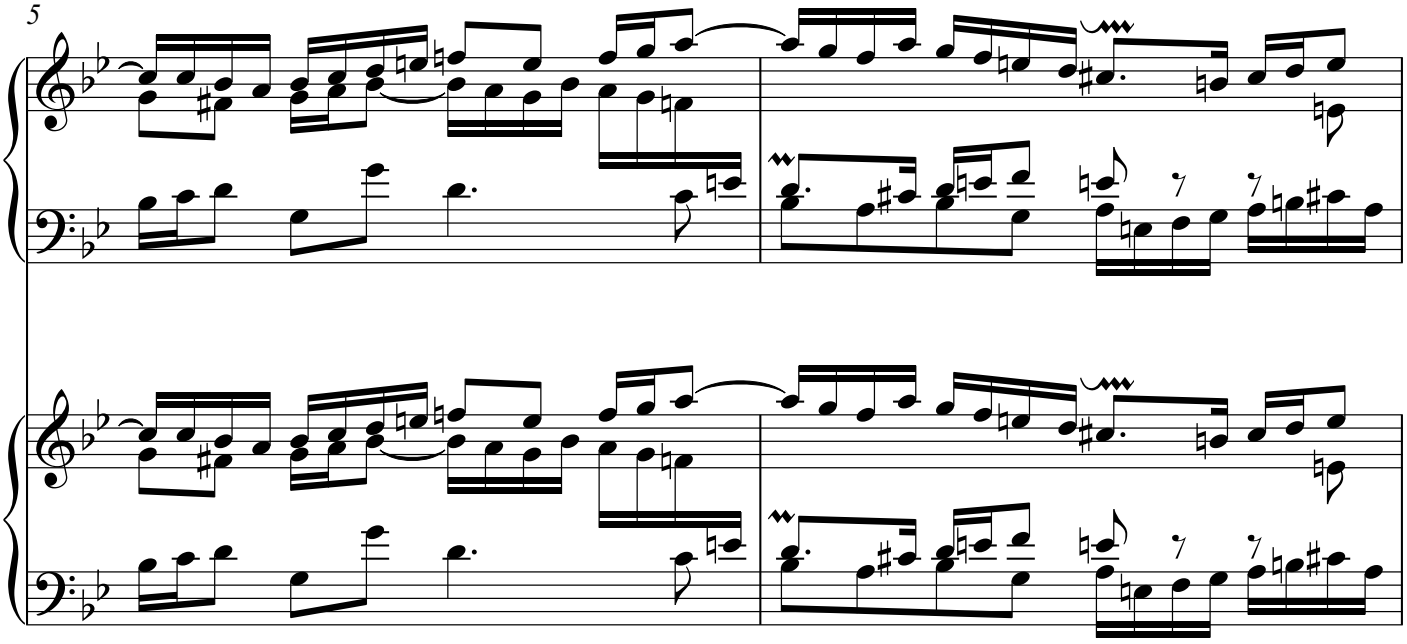
VARIATIO 21 (Bach)
Canone alla Settima



VARIATIO 21 (Papillon)
Canone alla Settima



V.S.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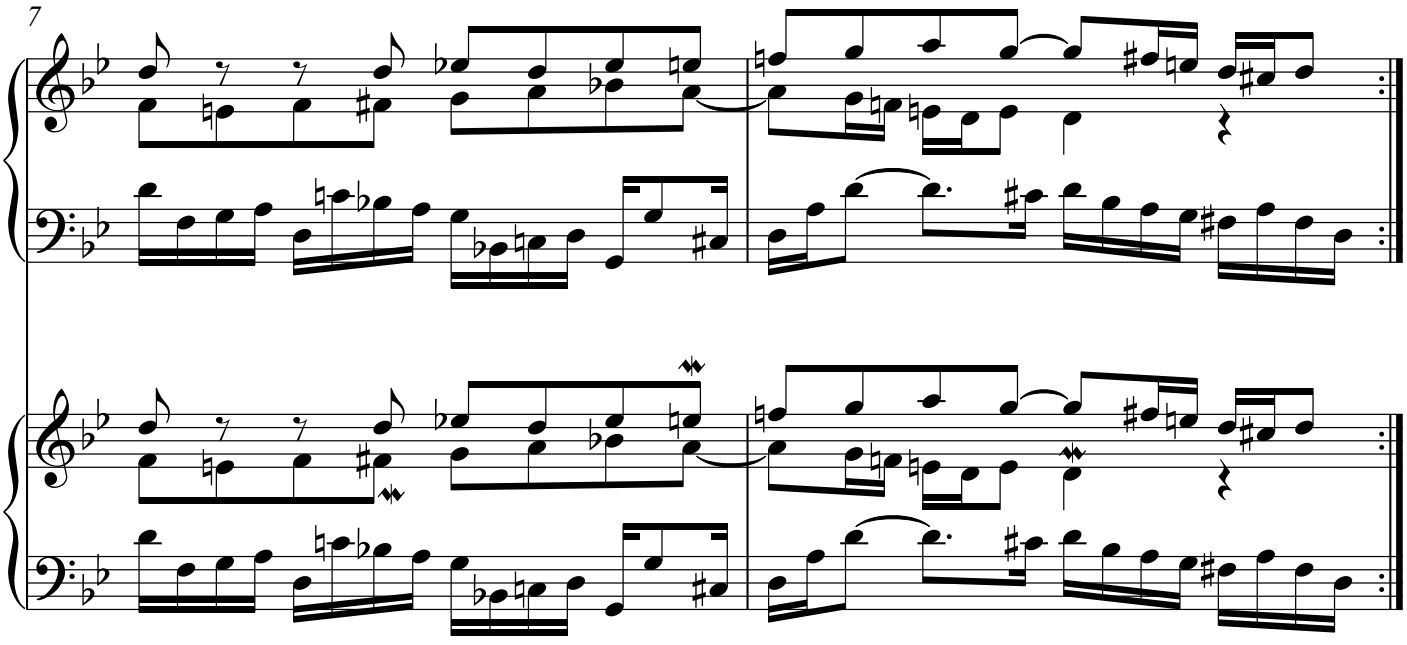
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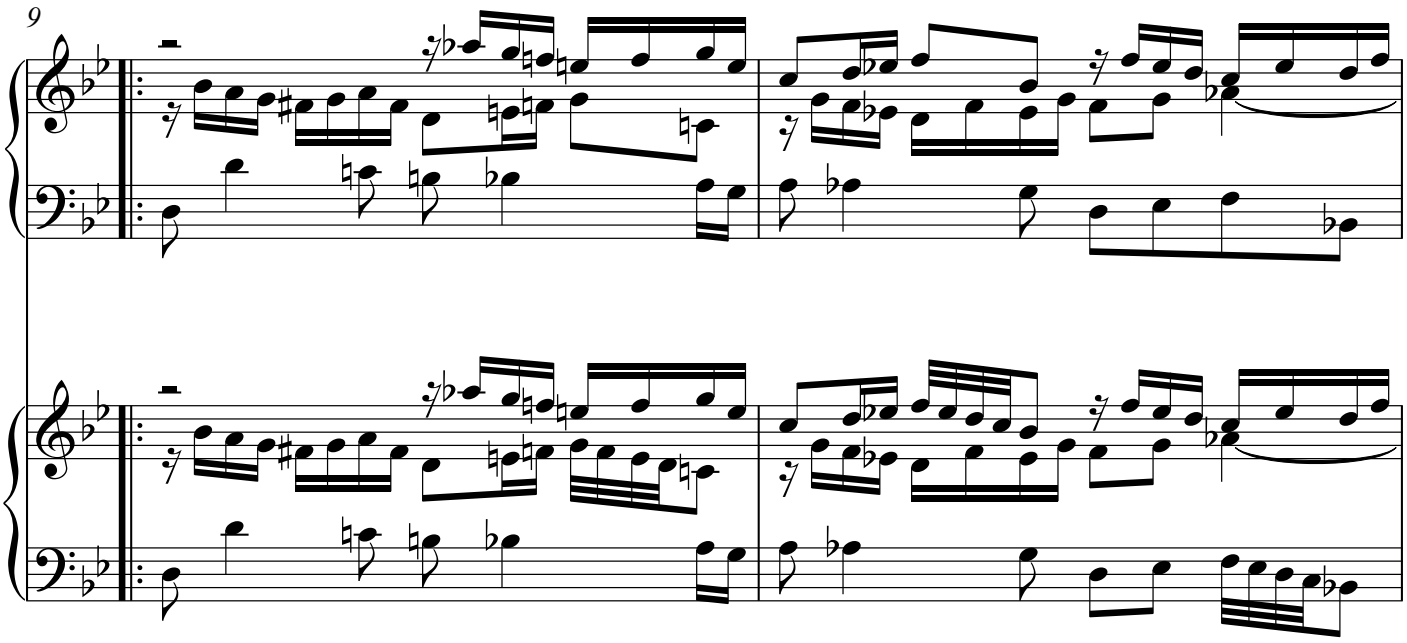

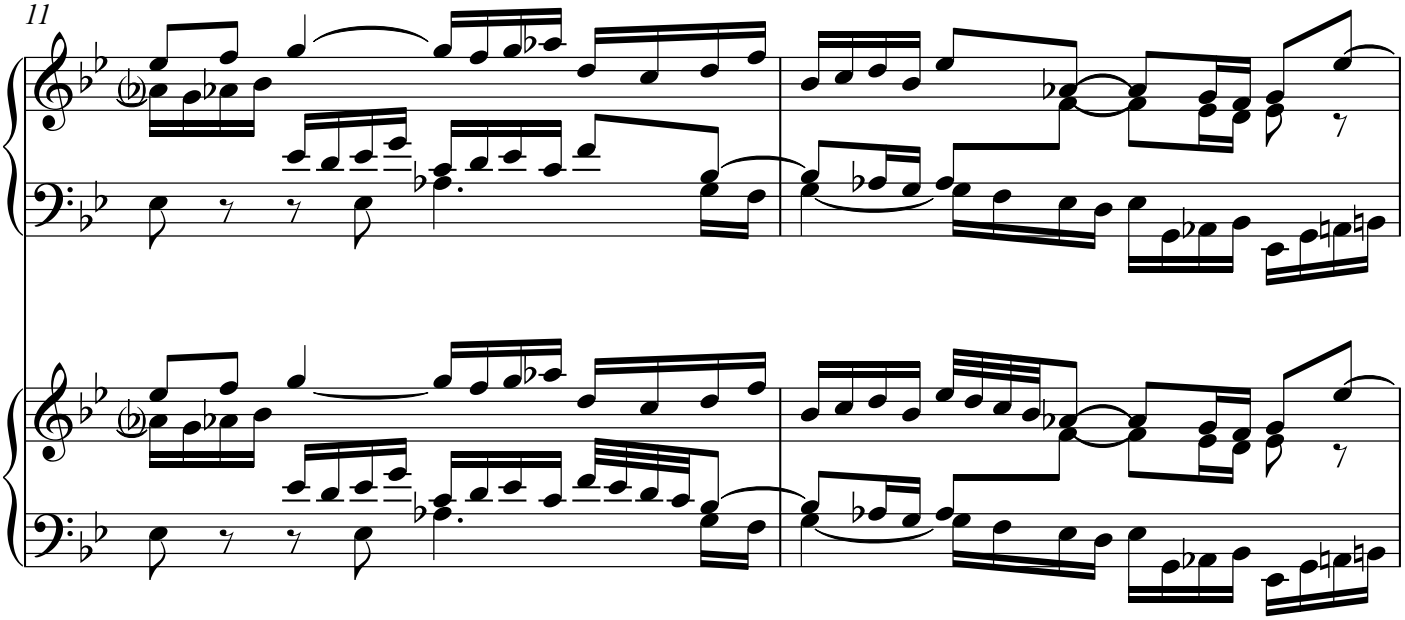

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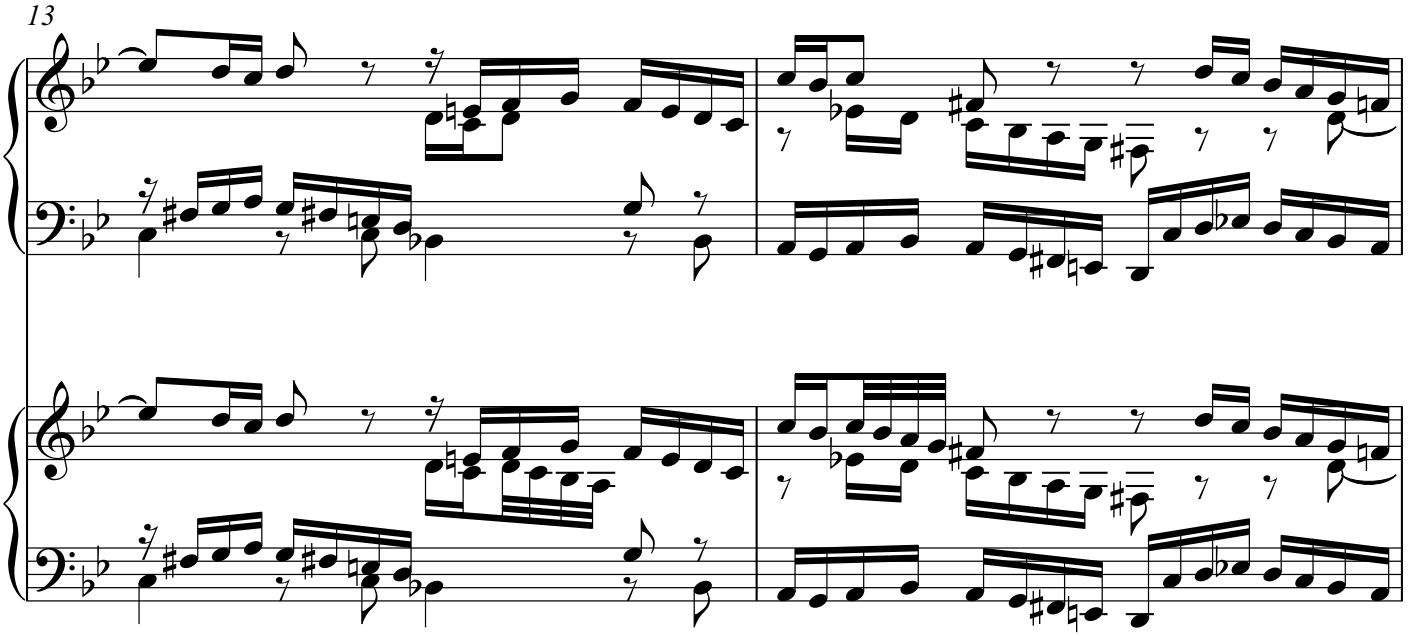
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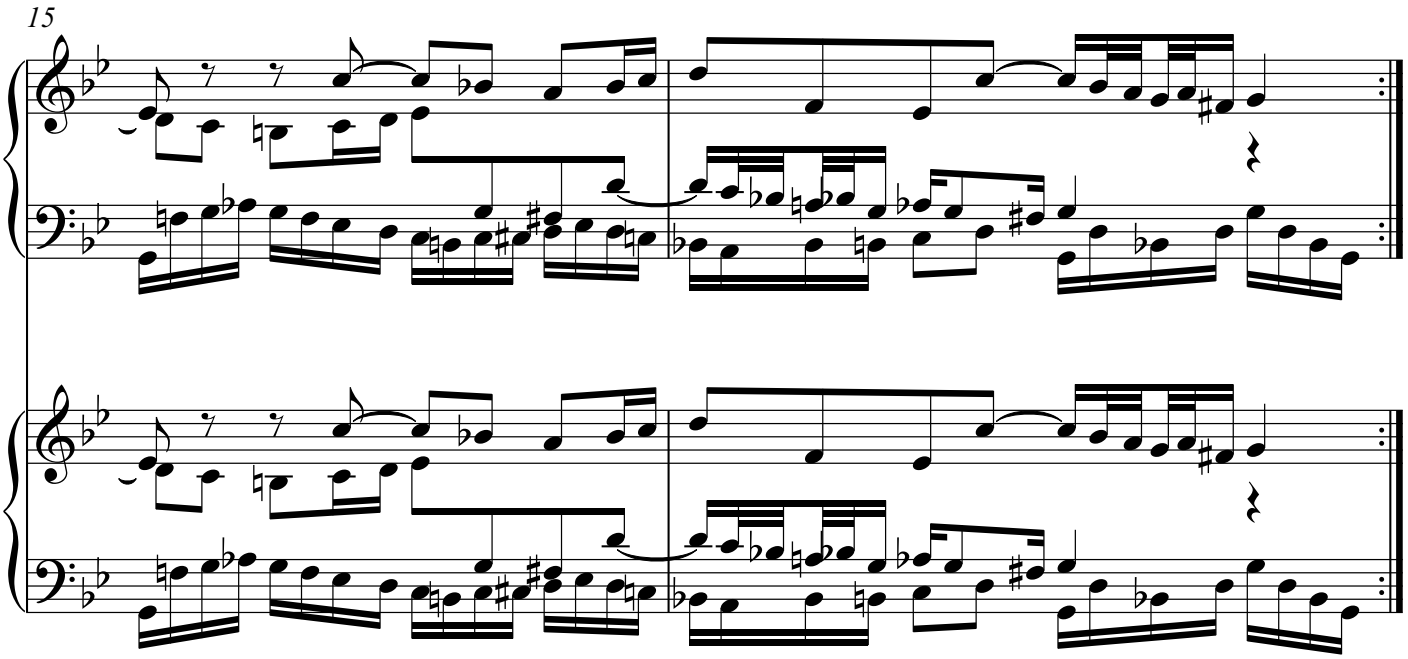
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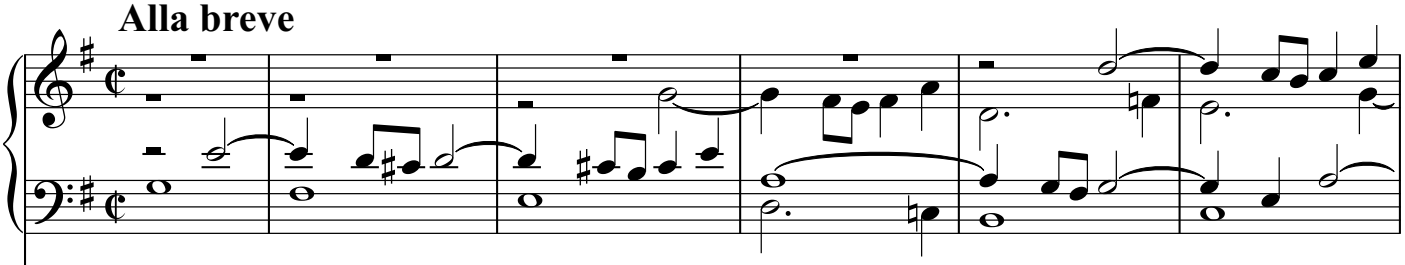
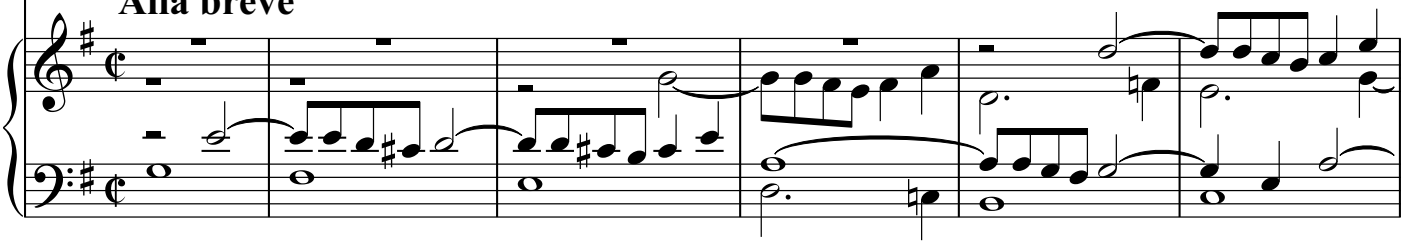
VARIATIO 22 a 1 Clav. (Bach)

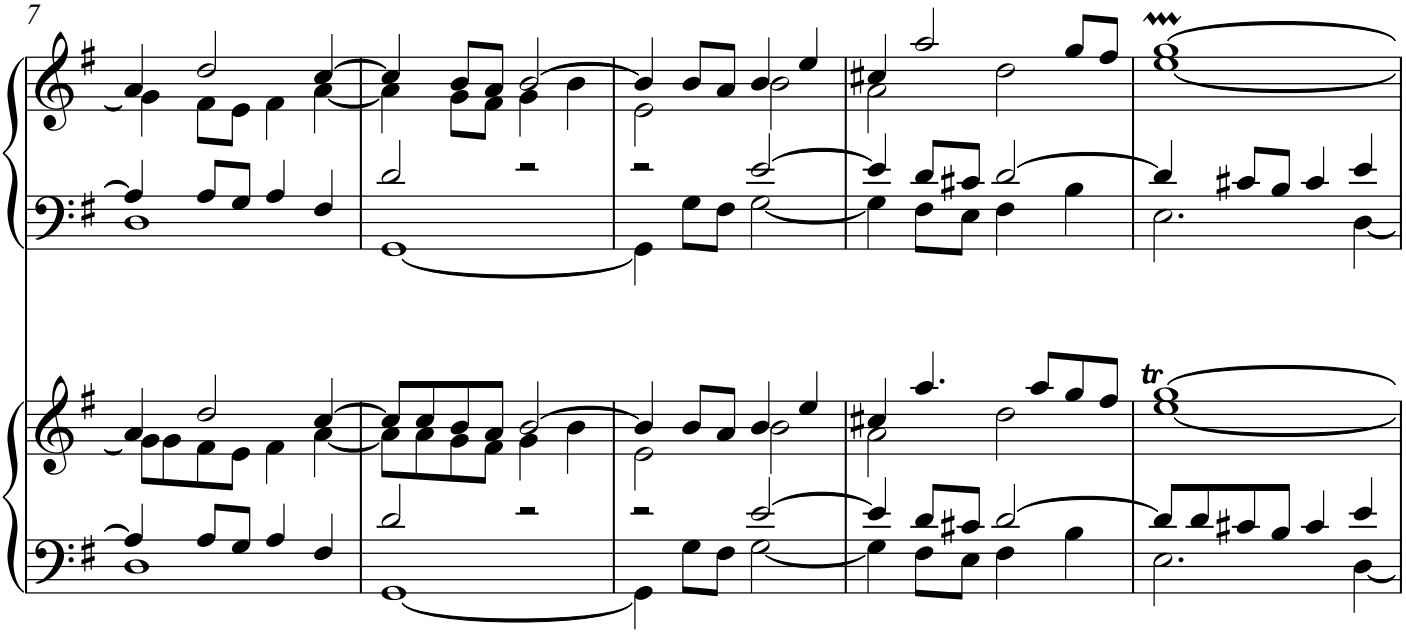
Alla breve



VARIATIO 22 a 1 Clav. (Papillon)

Alla breve





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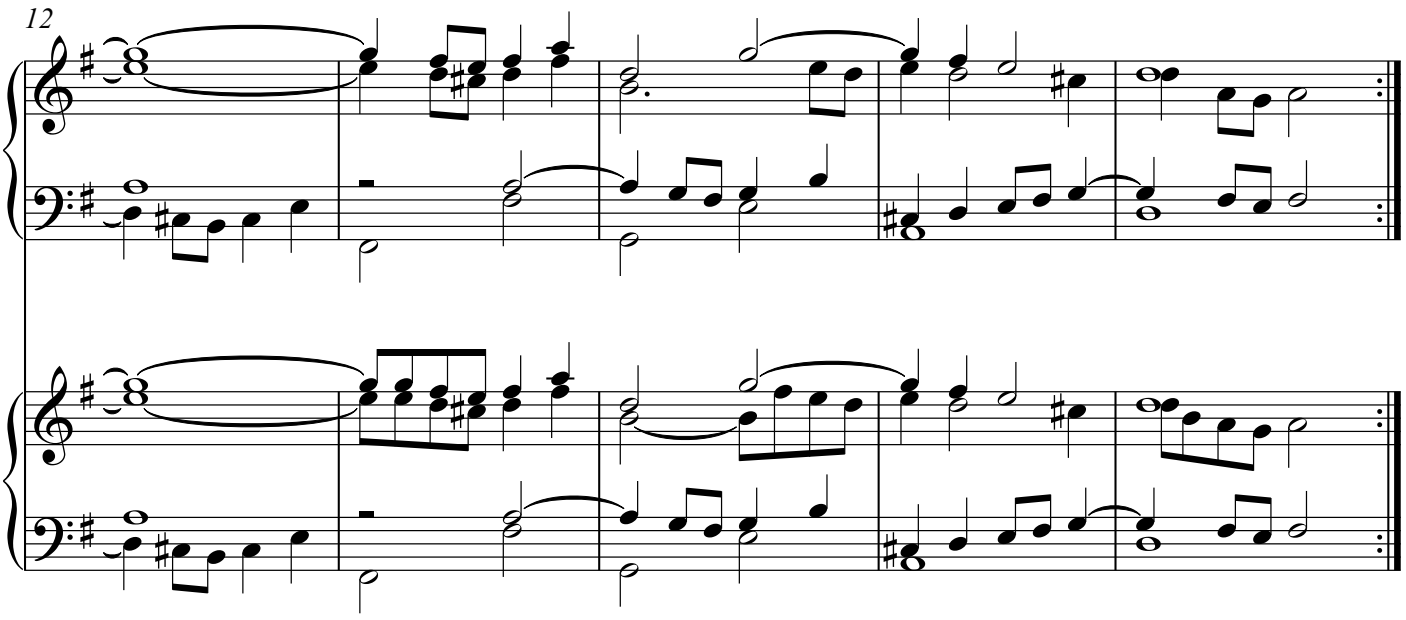
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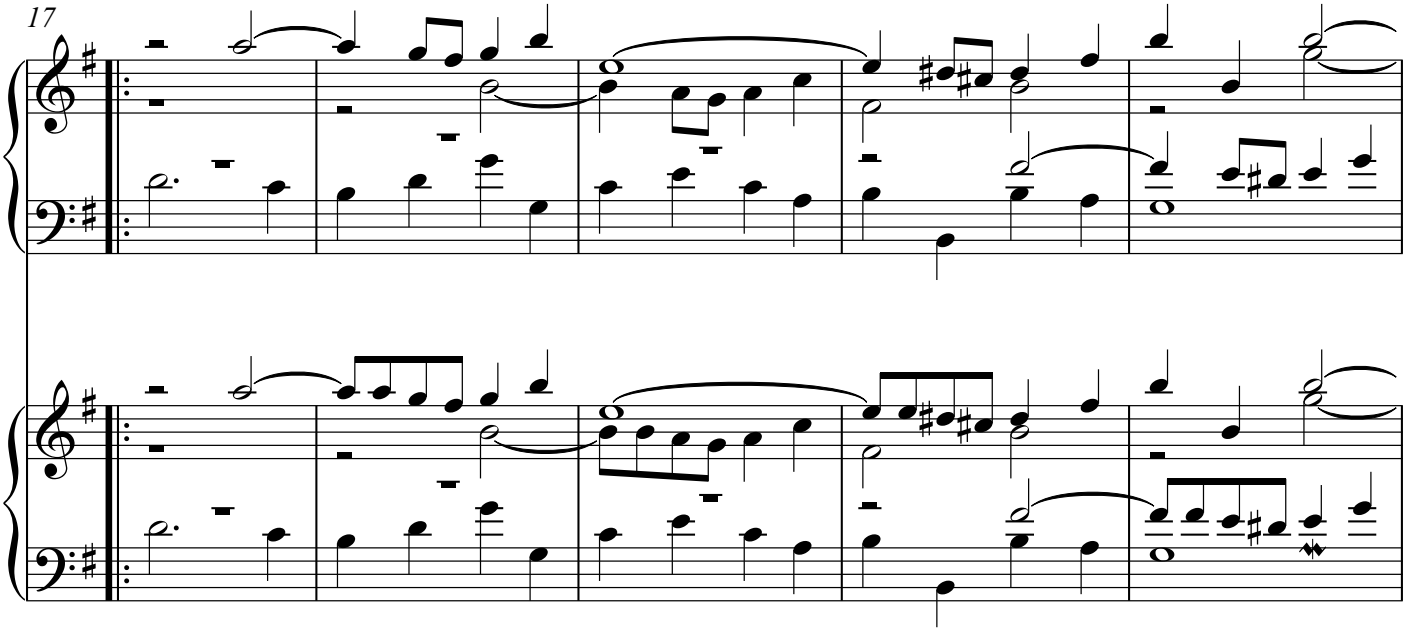
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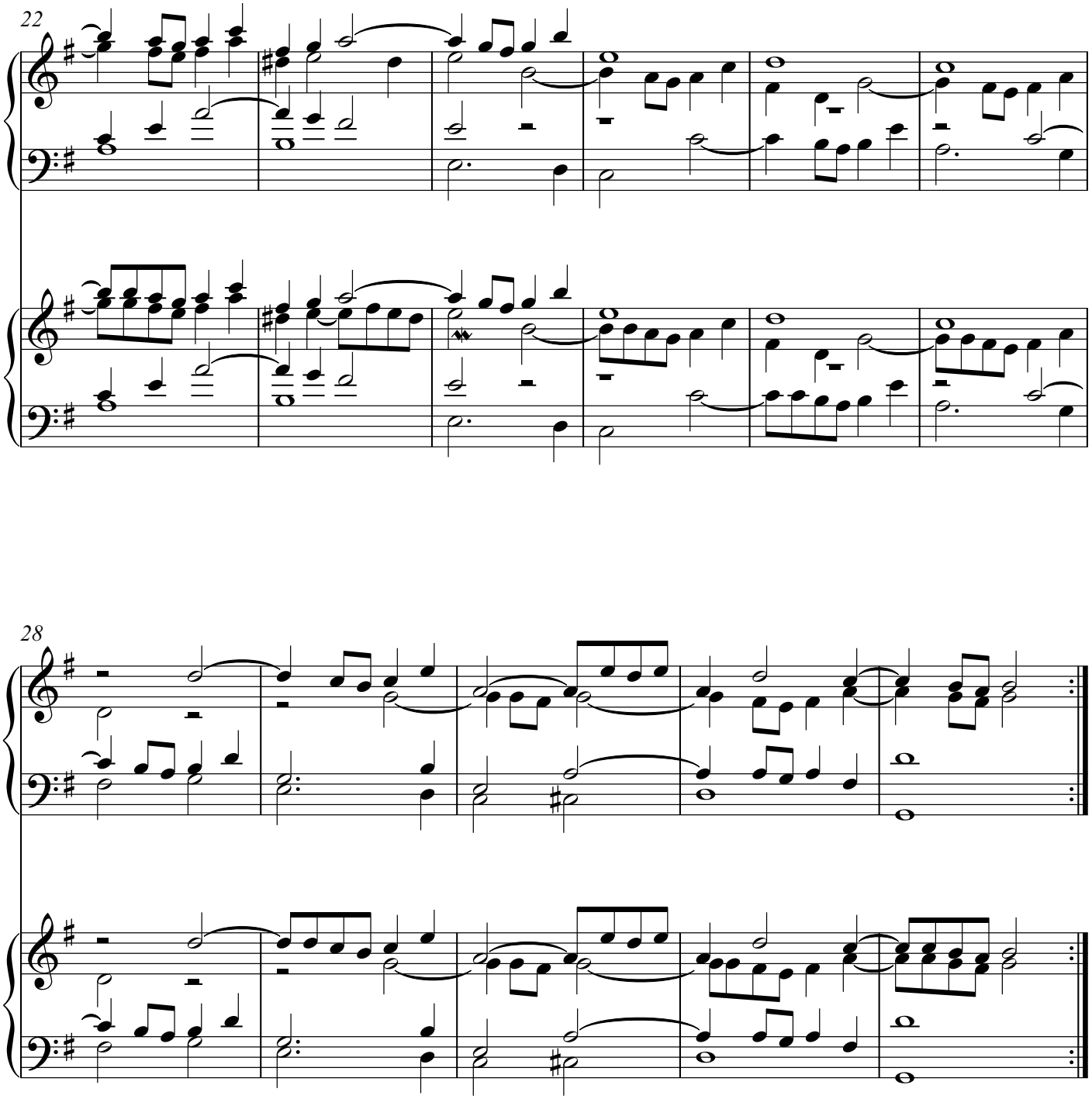
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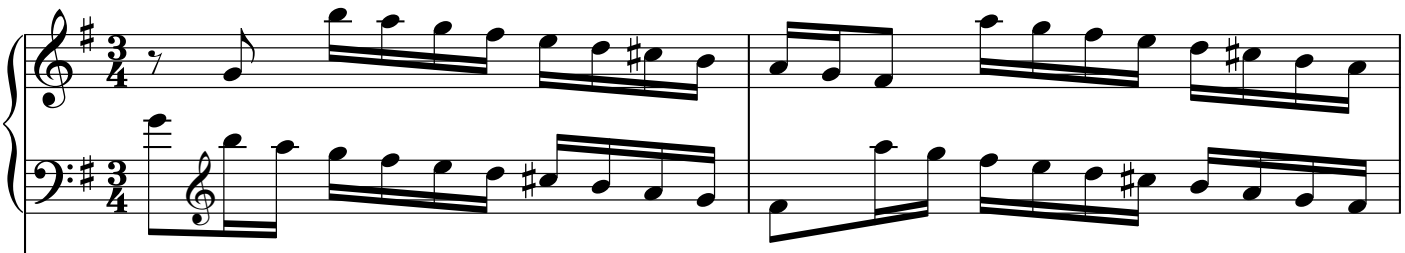
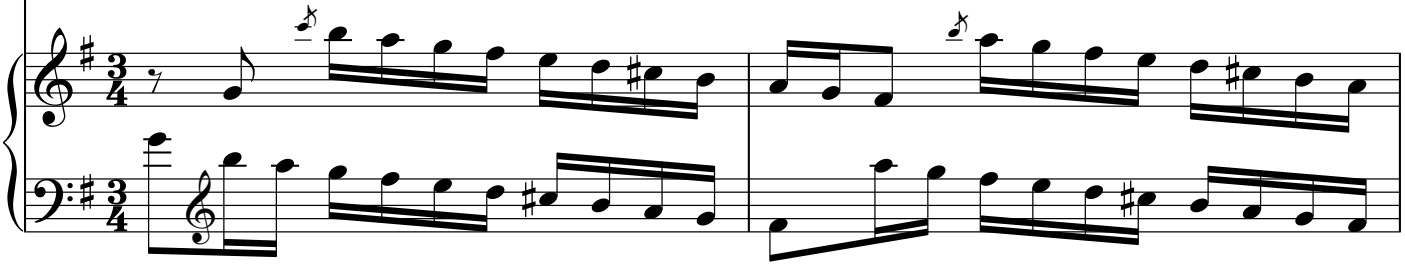
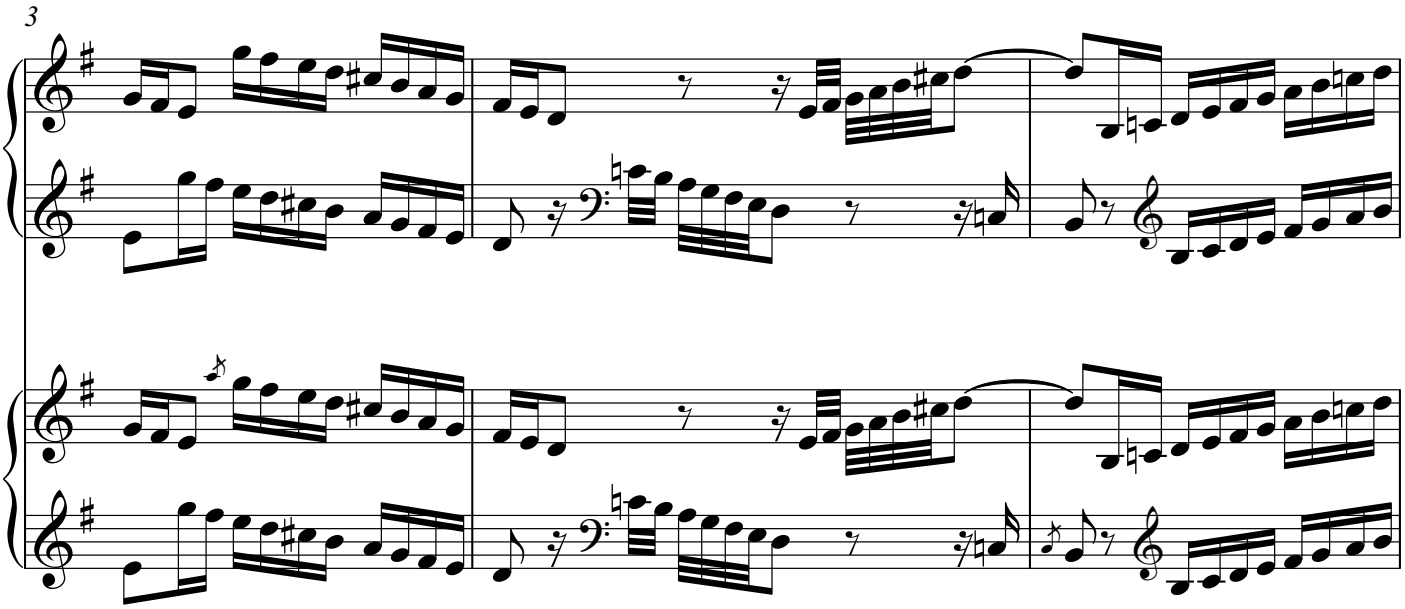
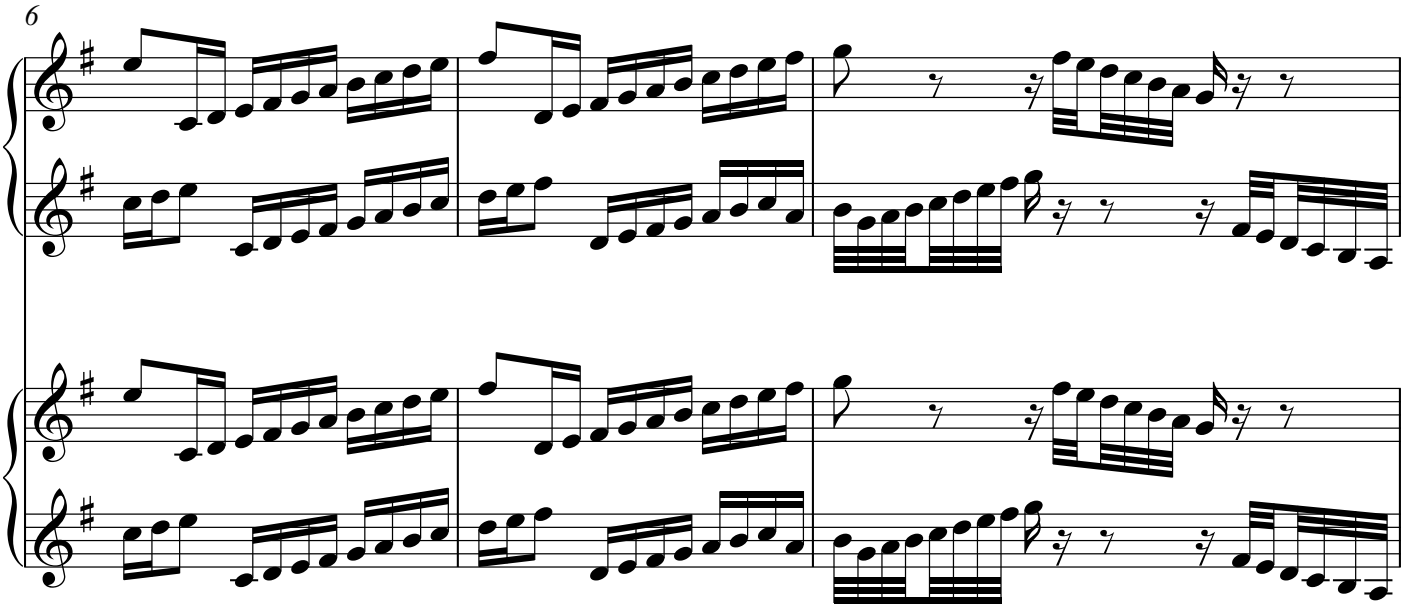
VARIATIO 23 a 2 Clav. (Bach)



VARIATIO 23 a 2 Clav. (Papillon)



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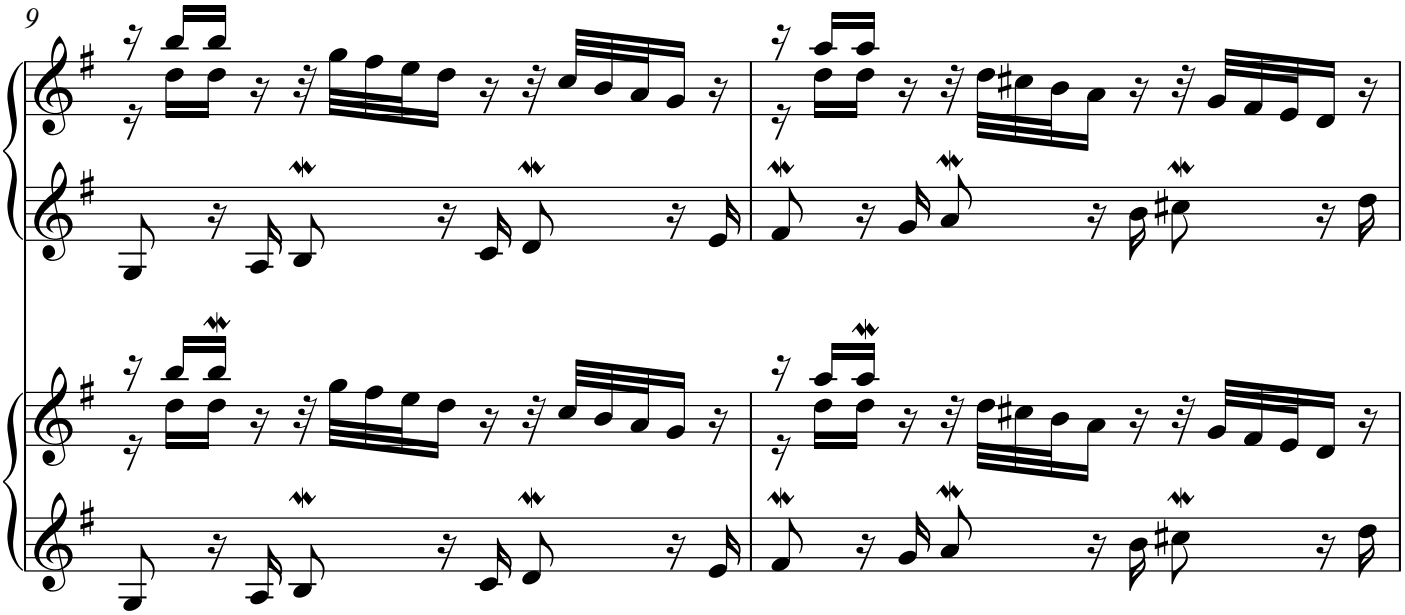
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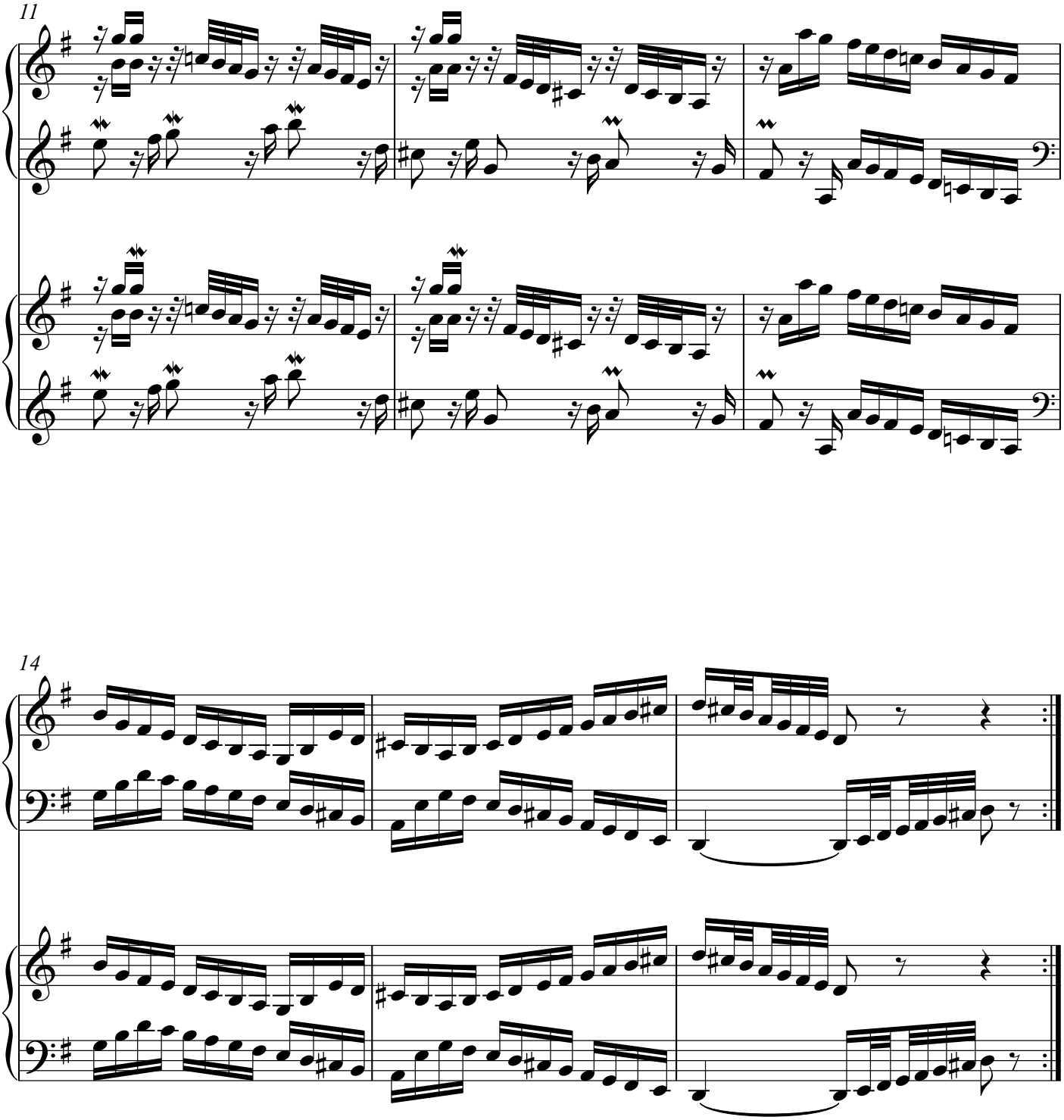
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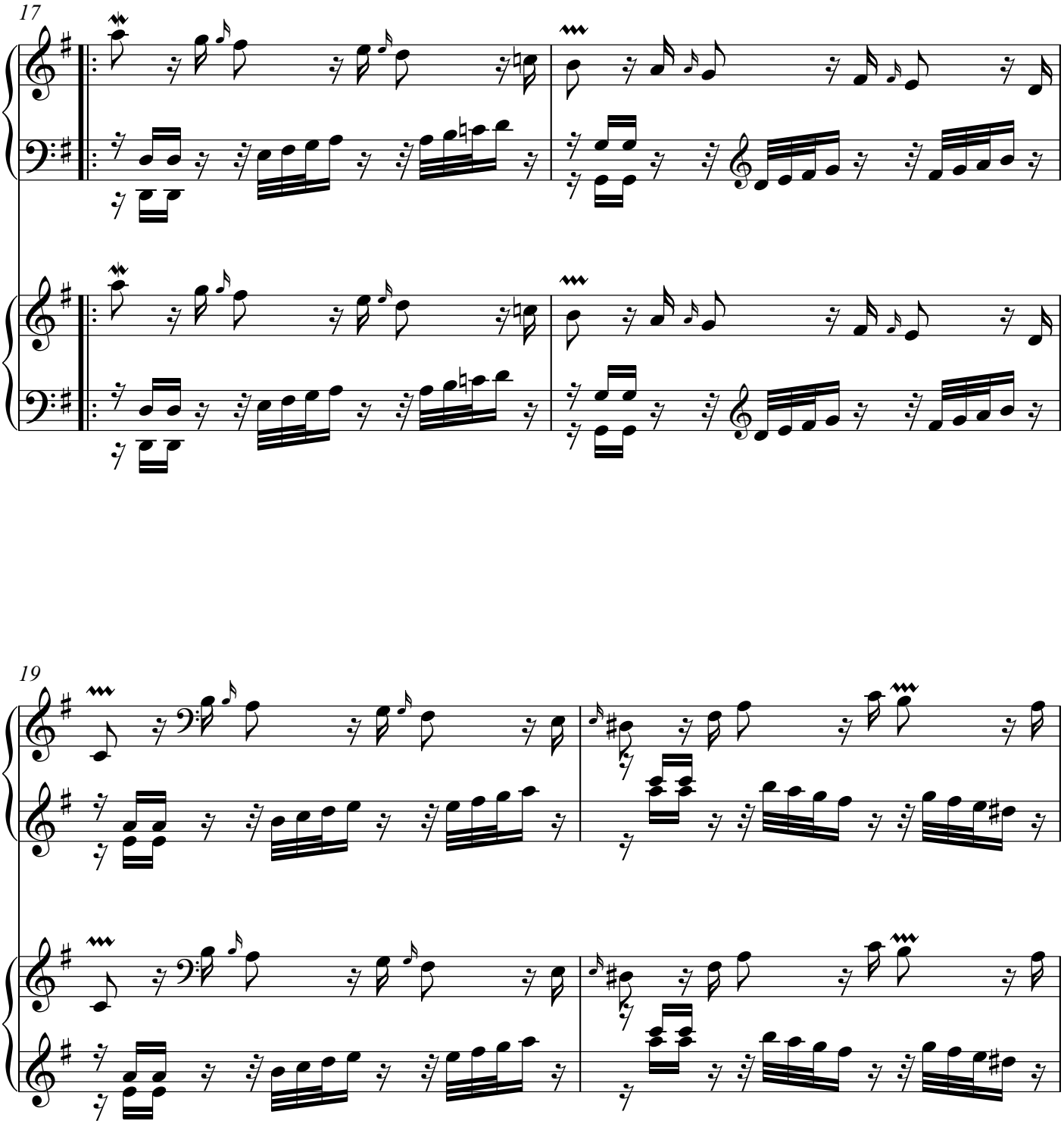

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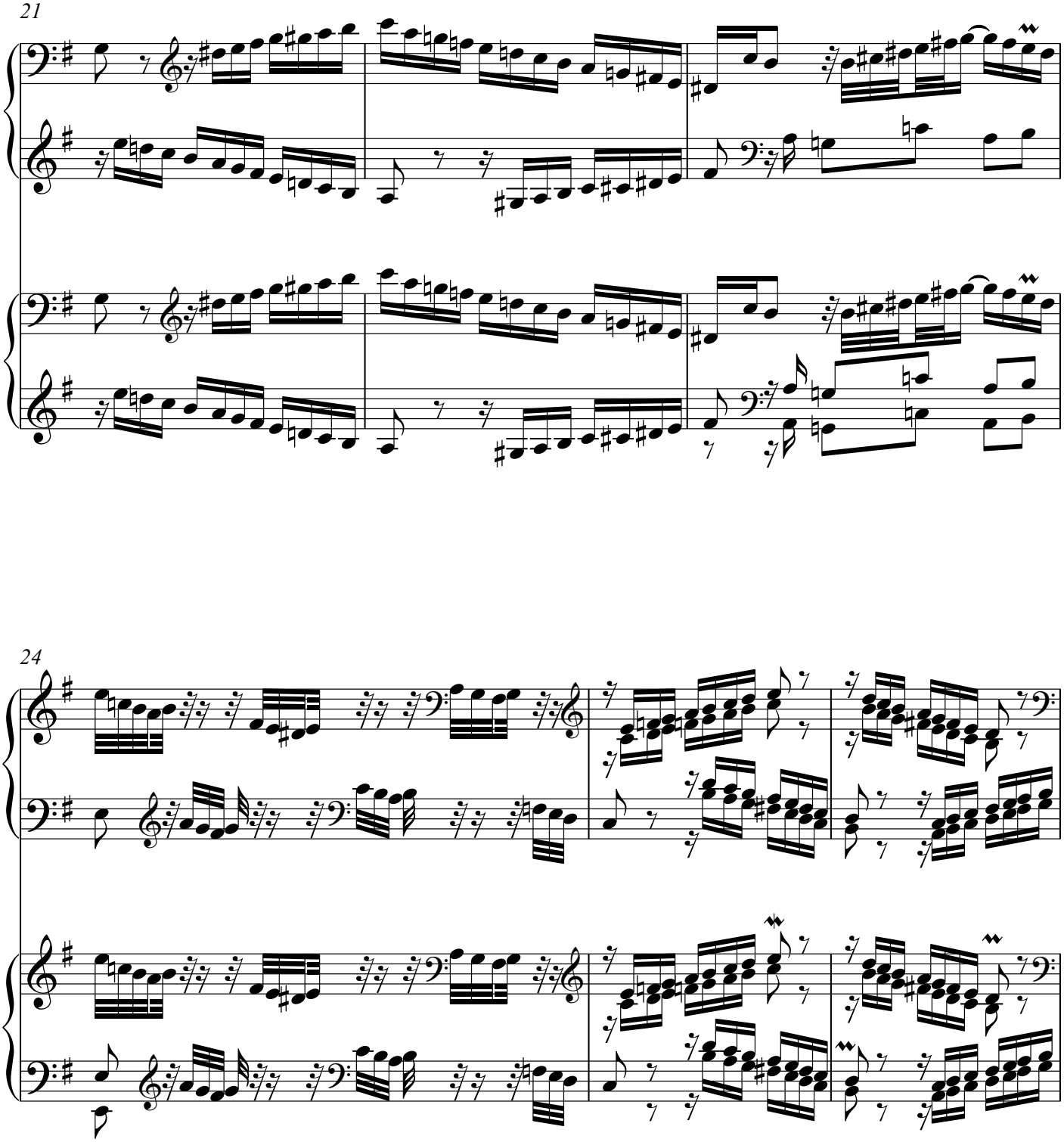
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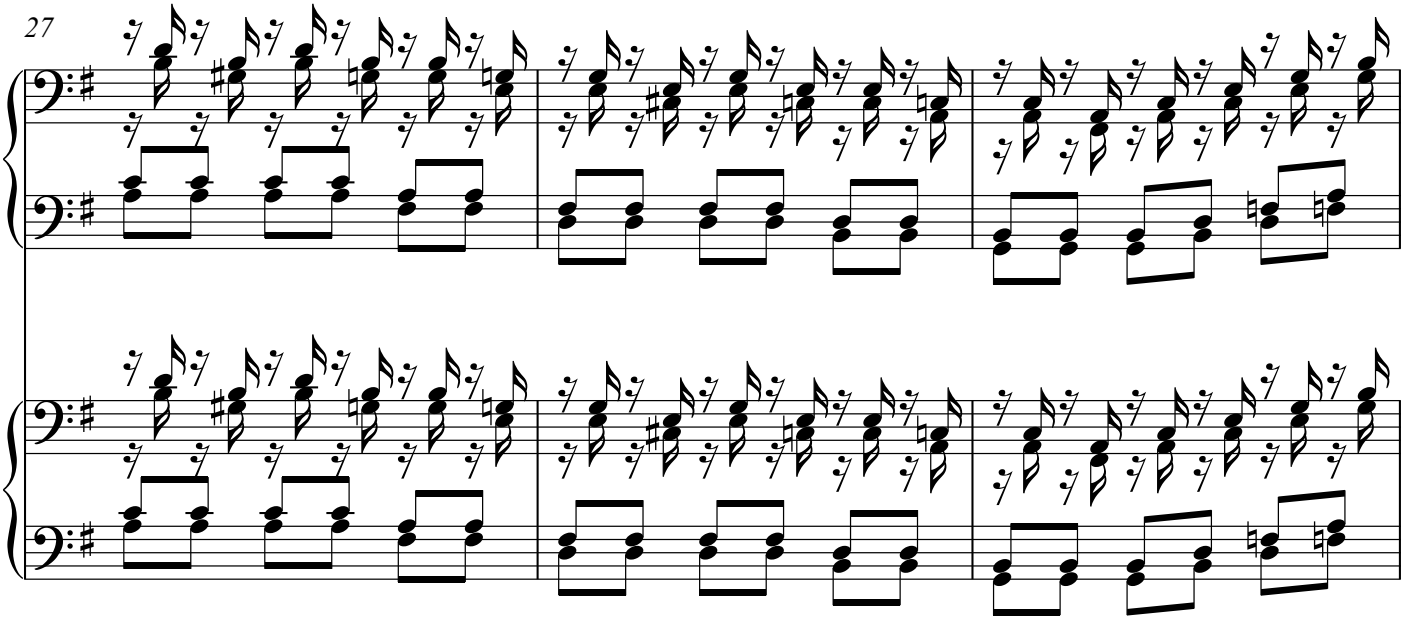
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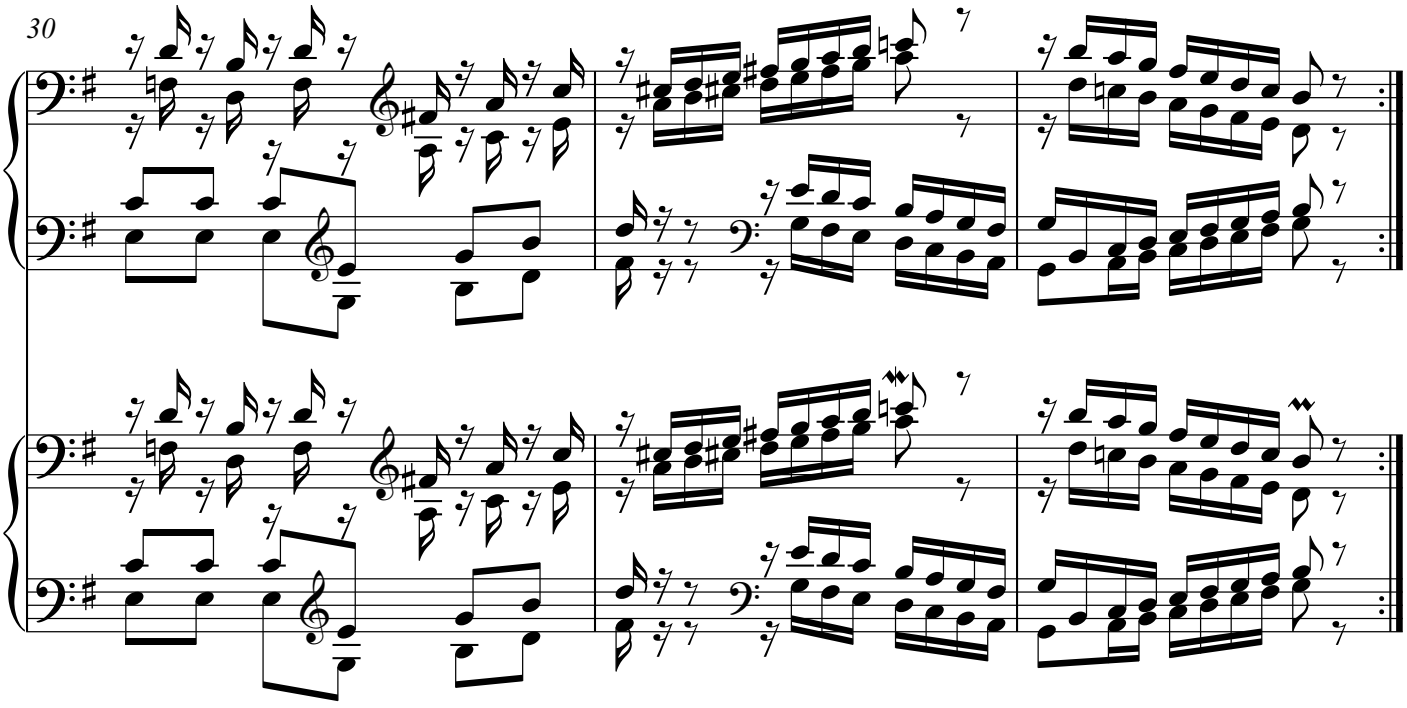
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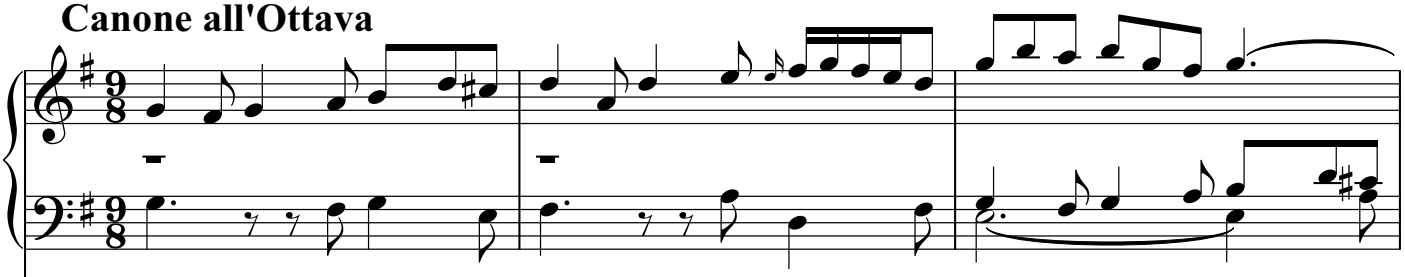
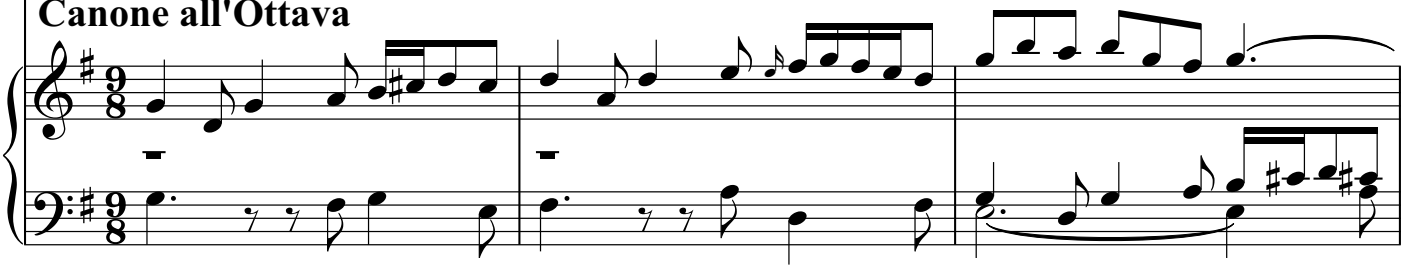
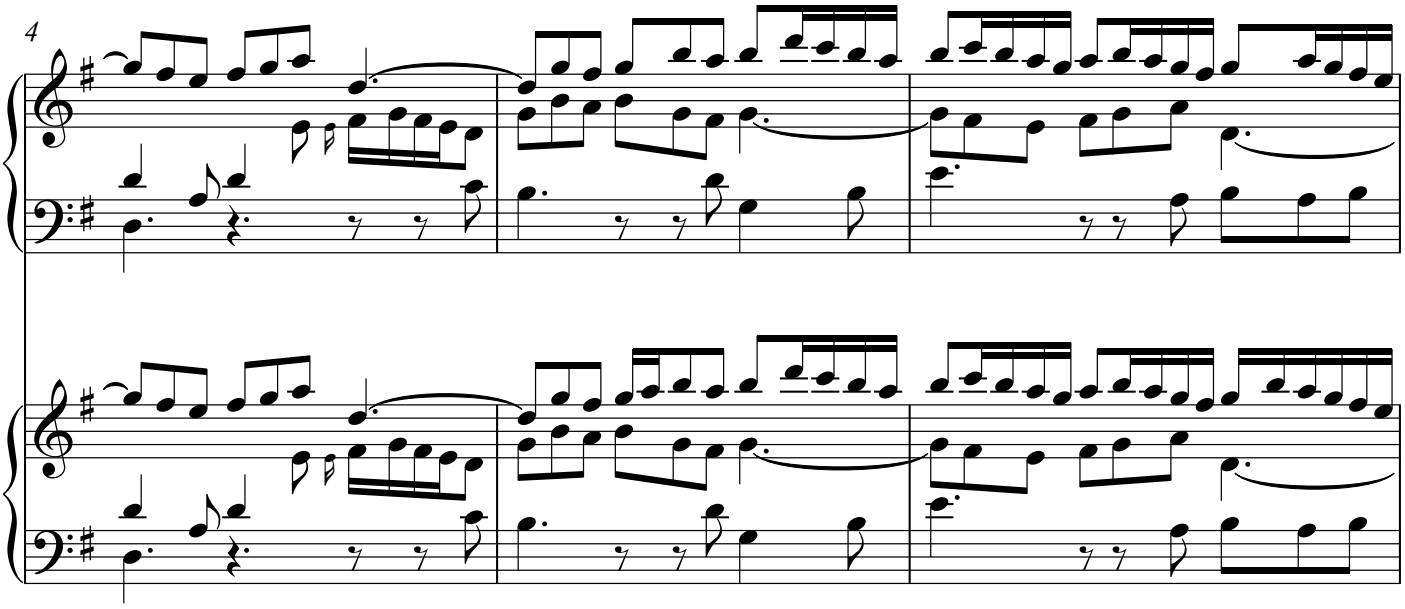
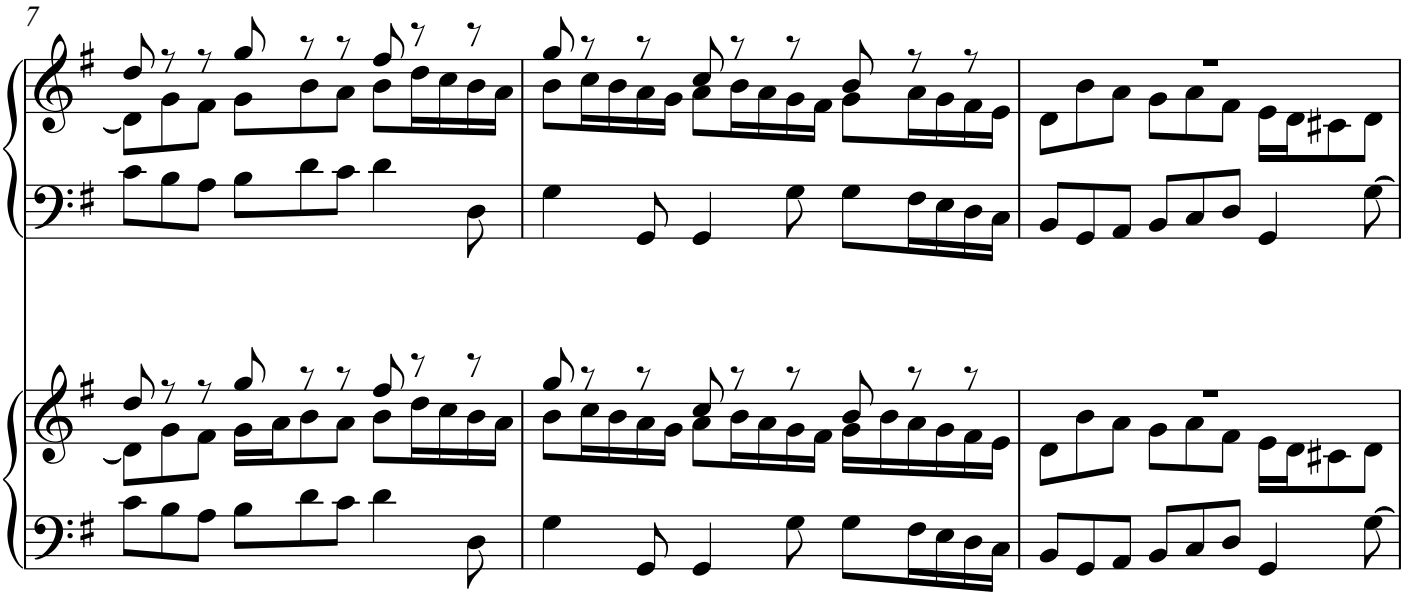
VARIATIO 24 a 1 Clav. (Bach)
Canone all'Ottava

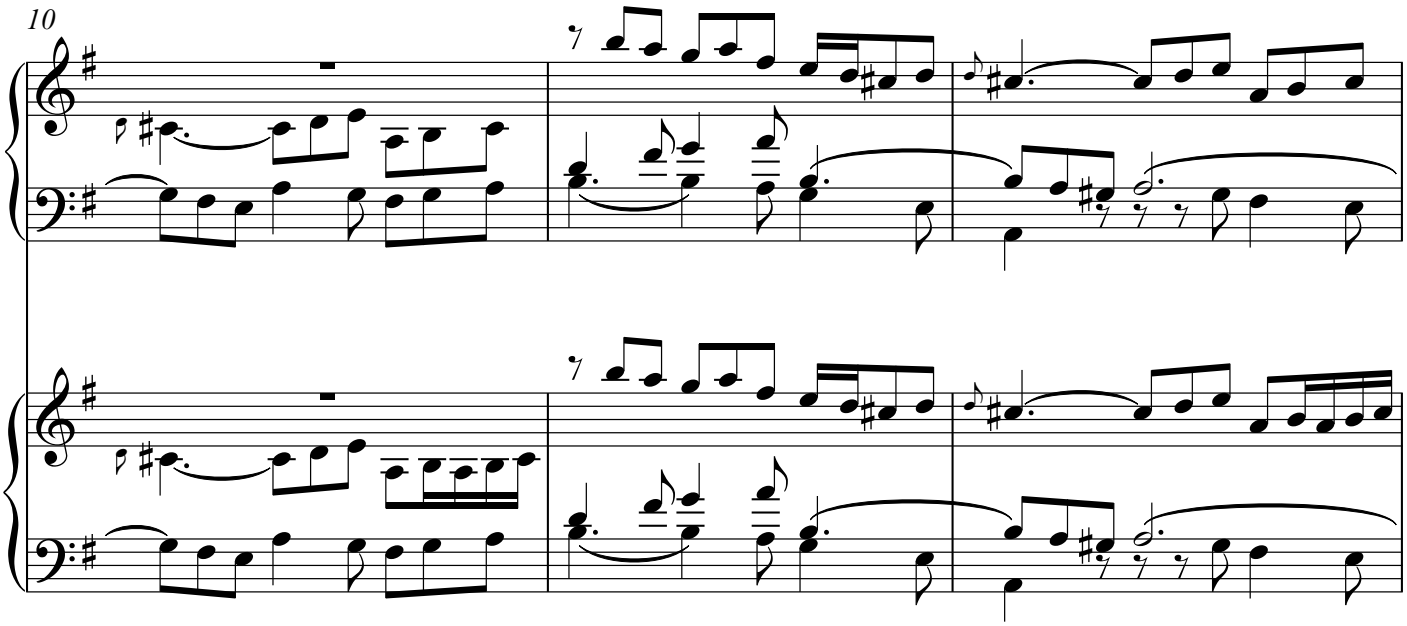


VARIATIO 24 a 1 Clav. (Papillon)
Canone all'Ottava









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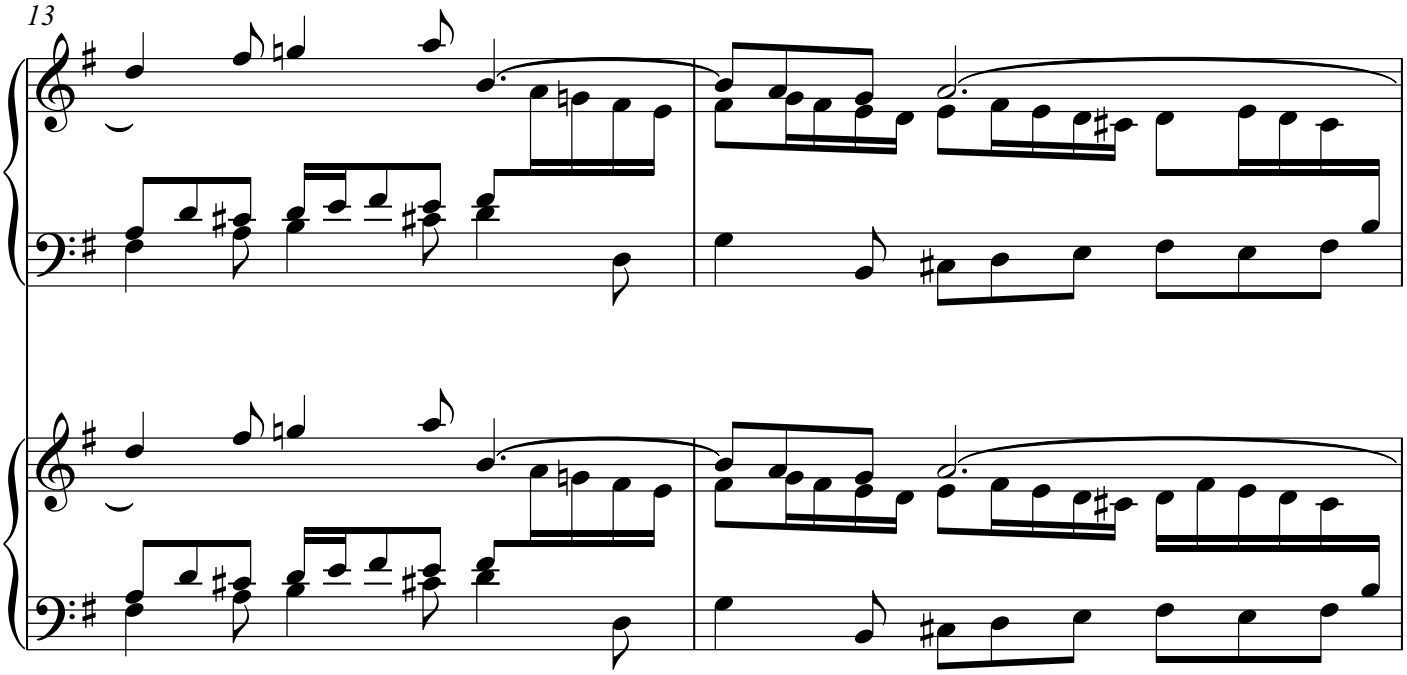
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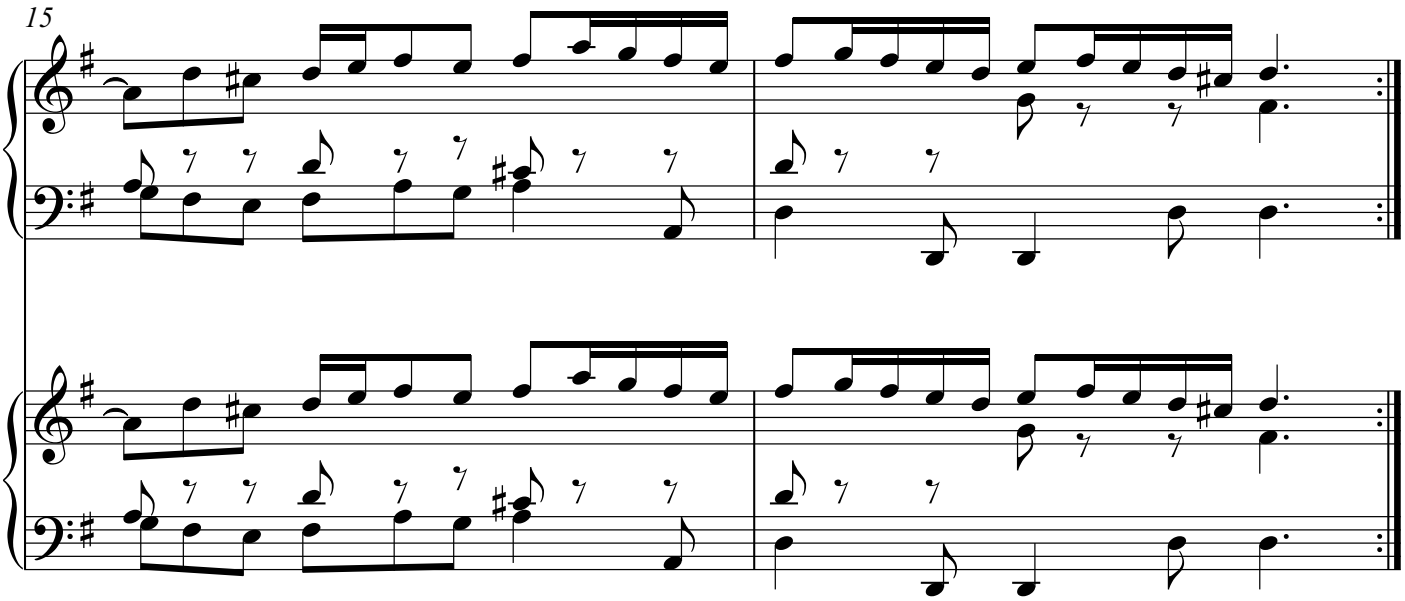
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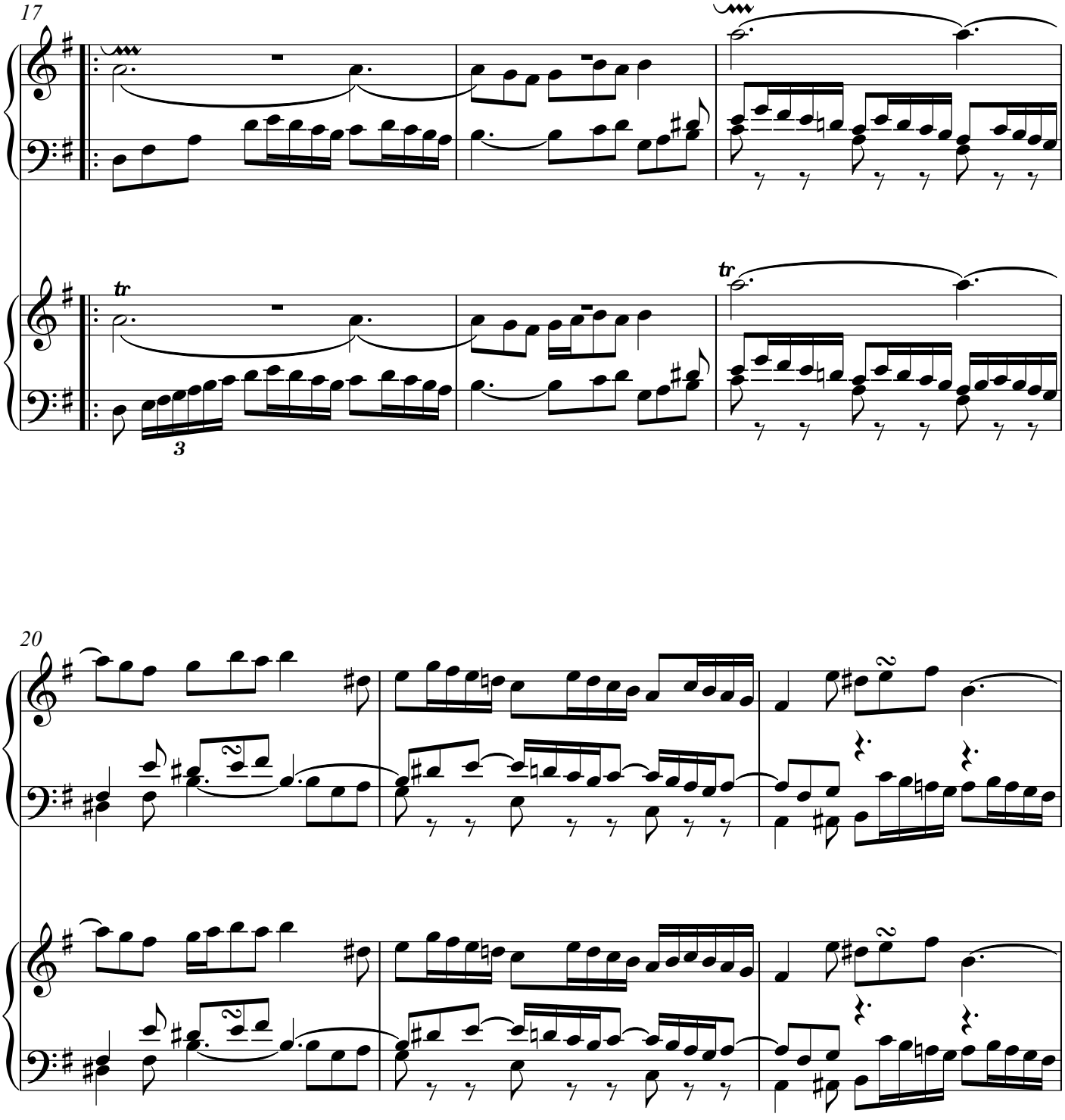

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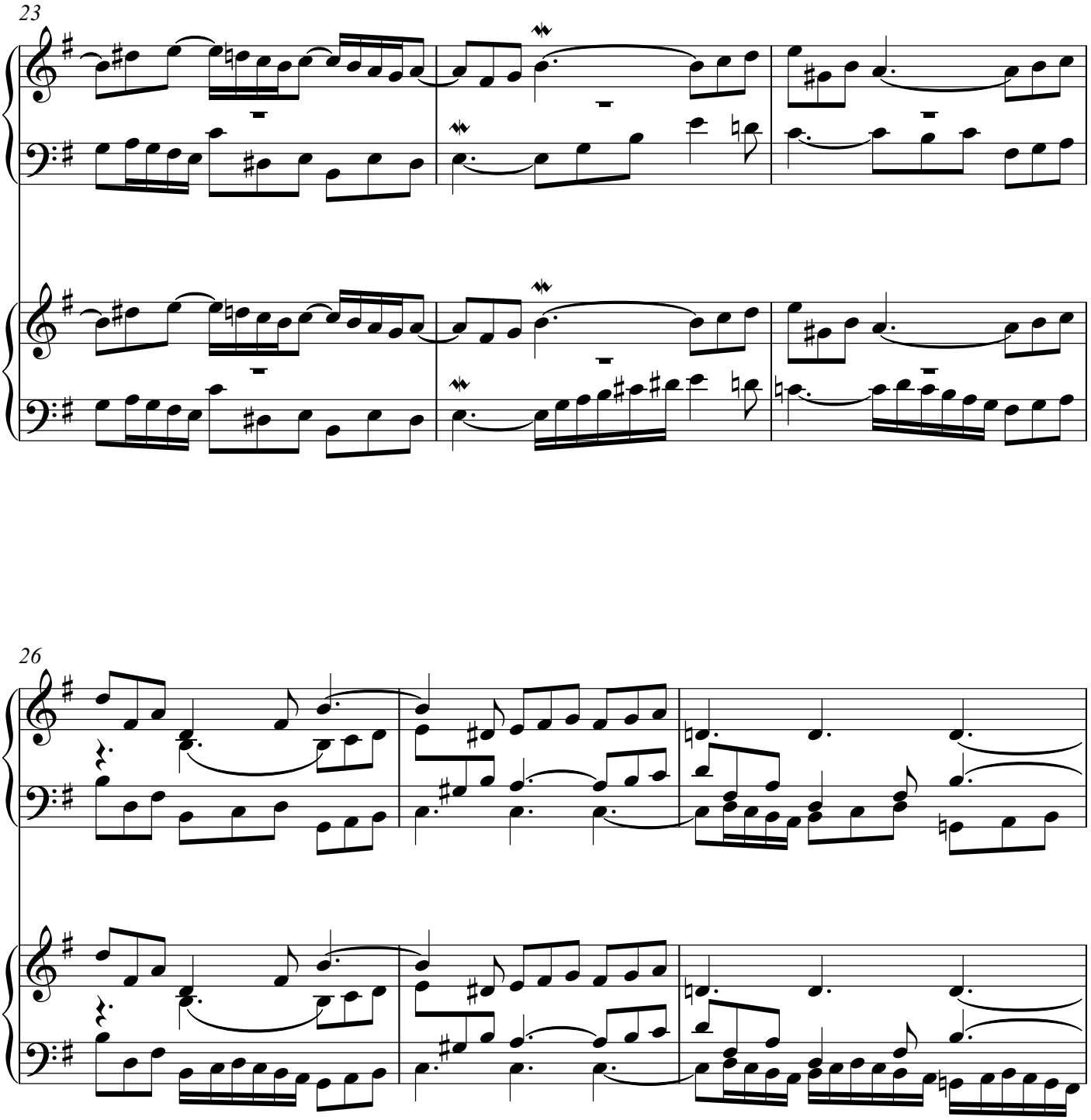
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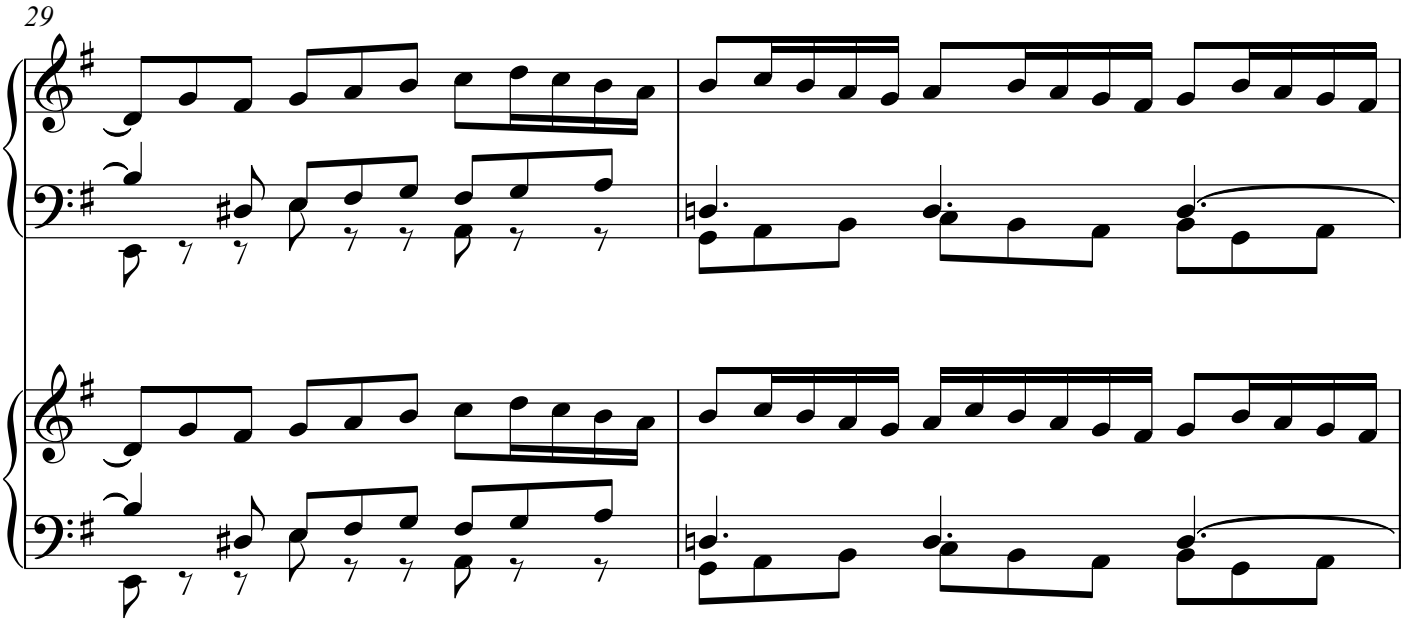
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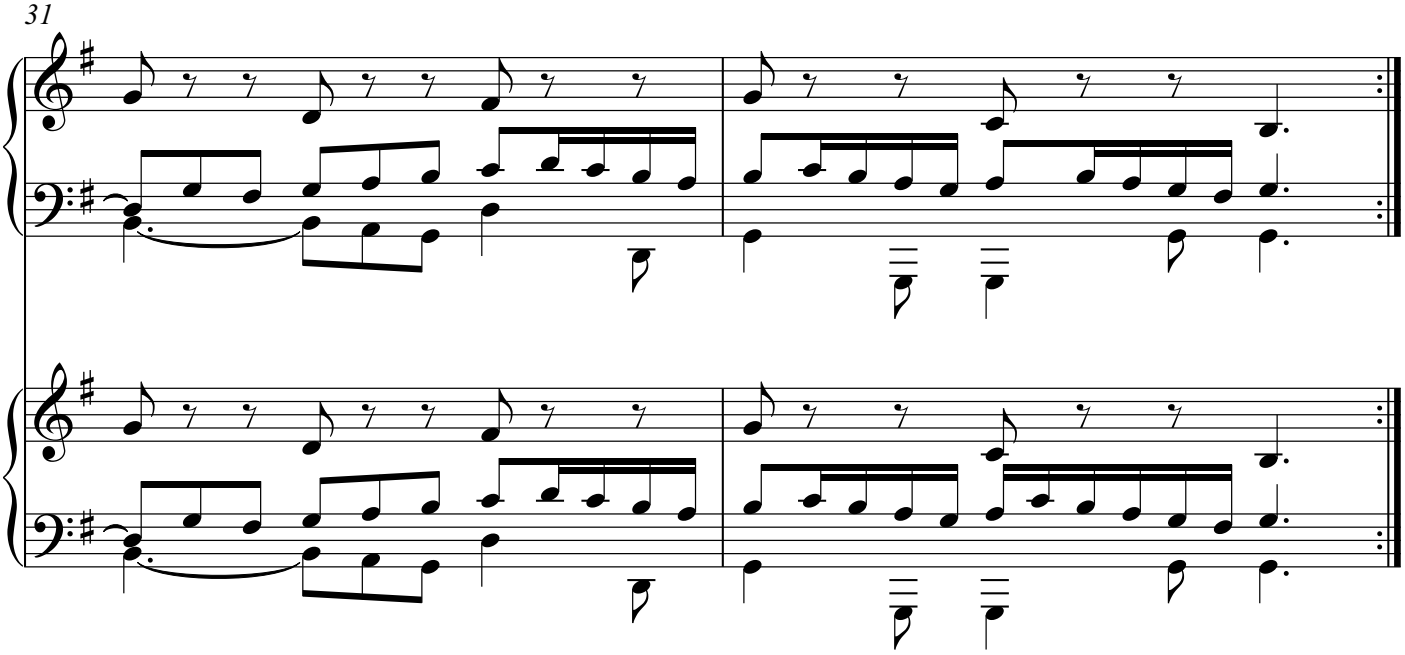
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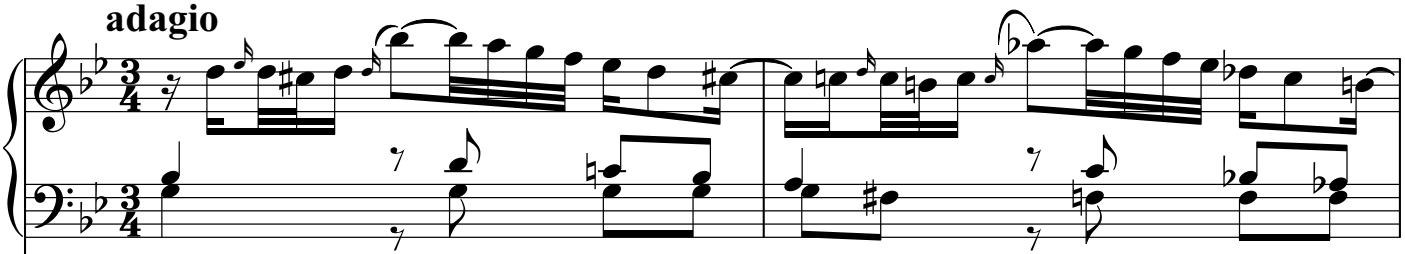
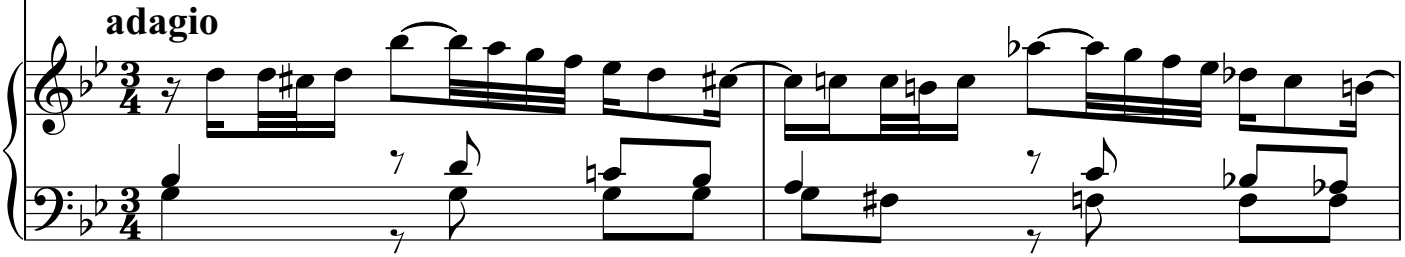
VARIATIO 25 a 2 Clav. (Bach)

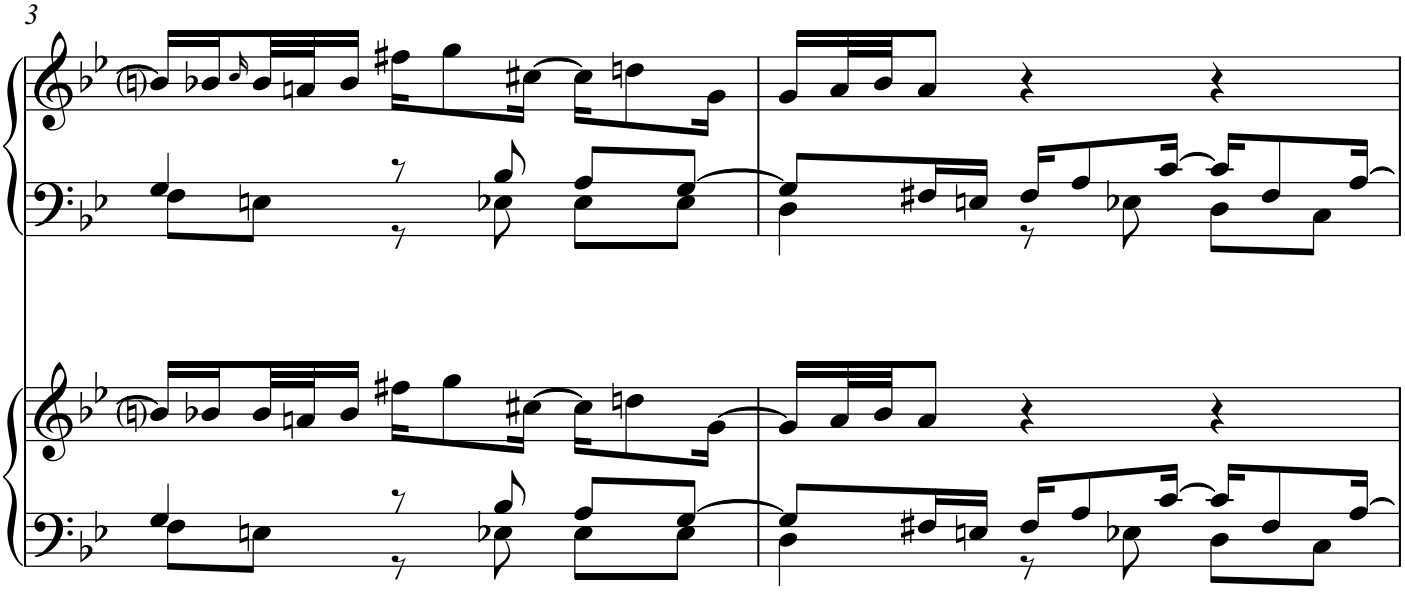
adagio

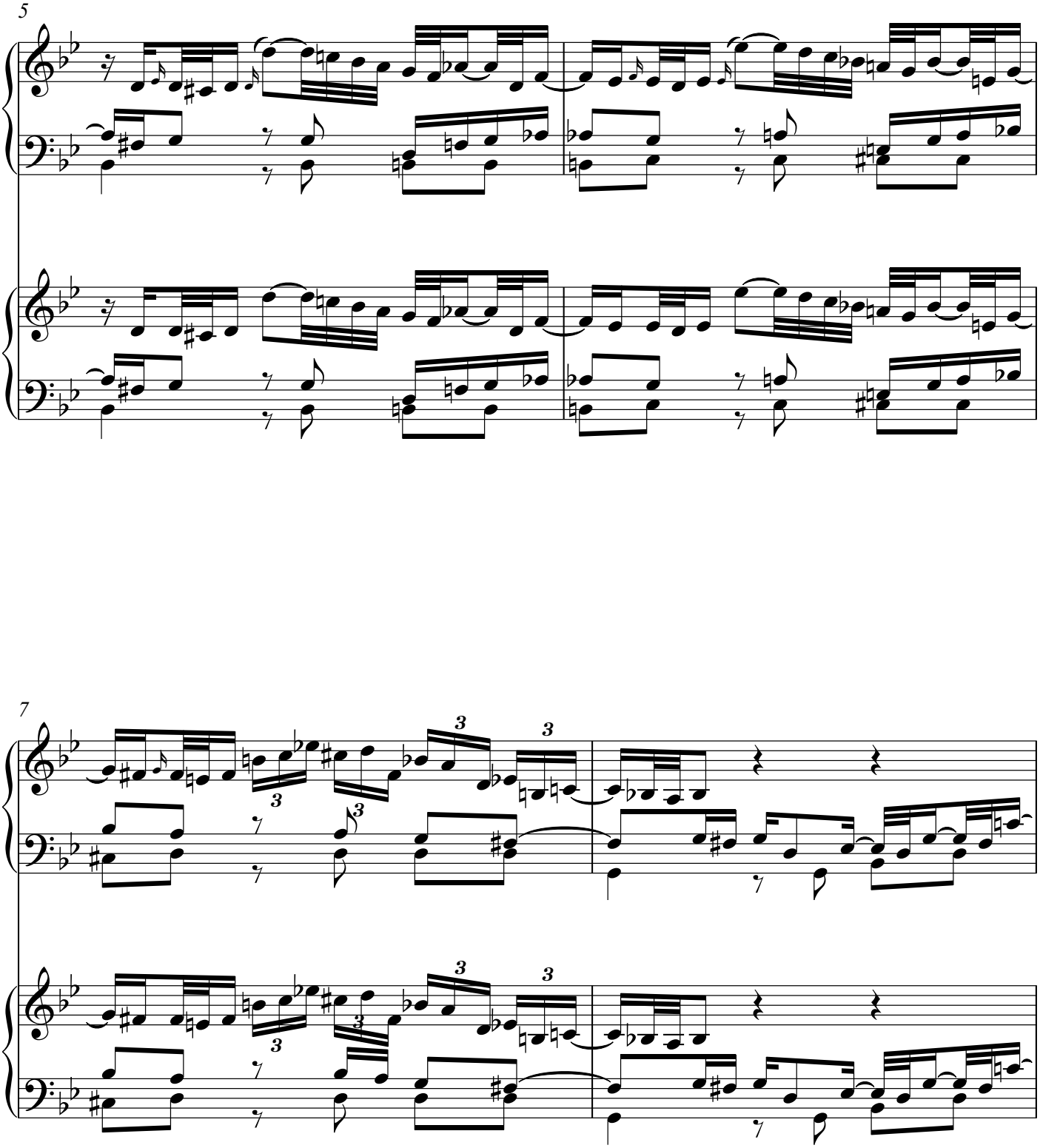


VARIATIO 25 a 2 Clav. (Papillon)

adagio



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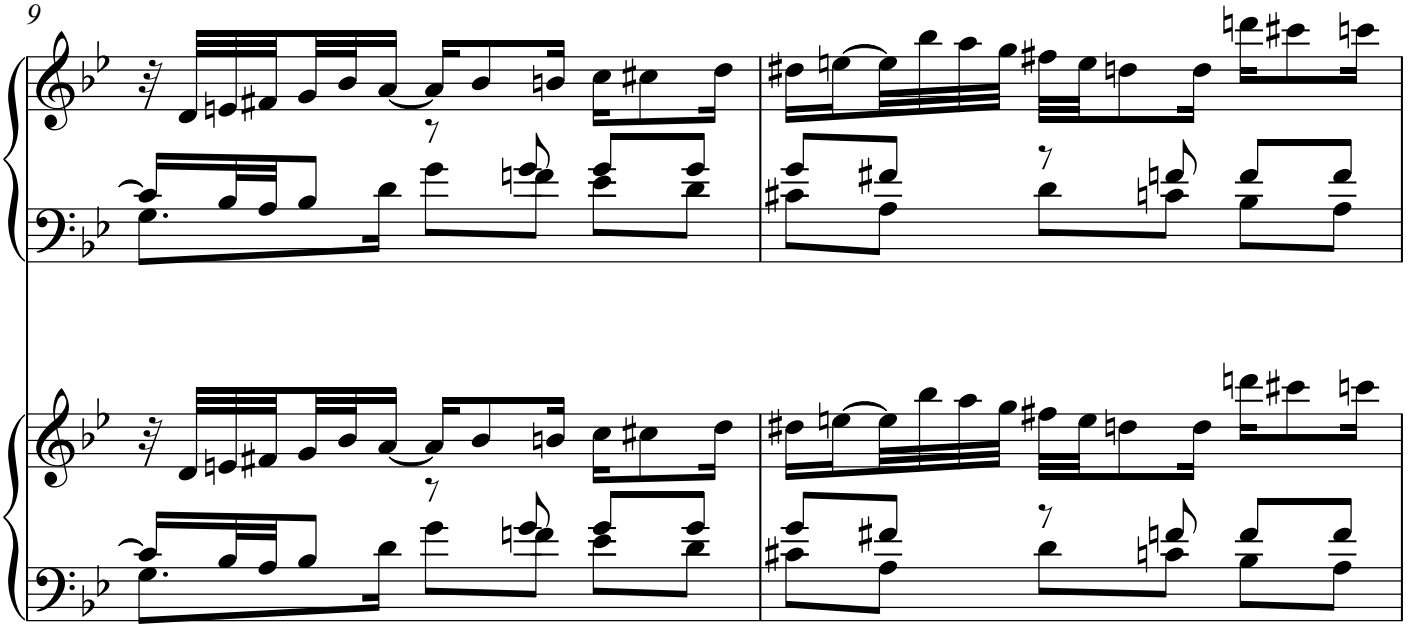
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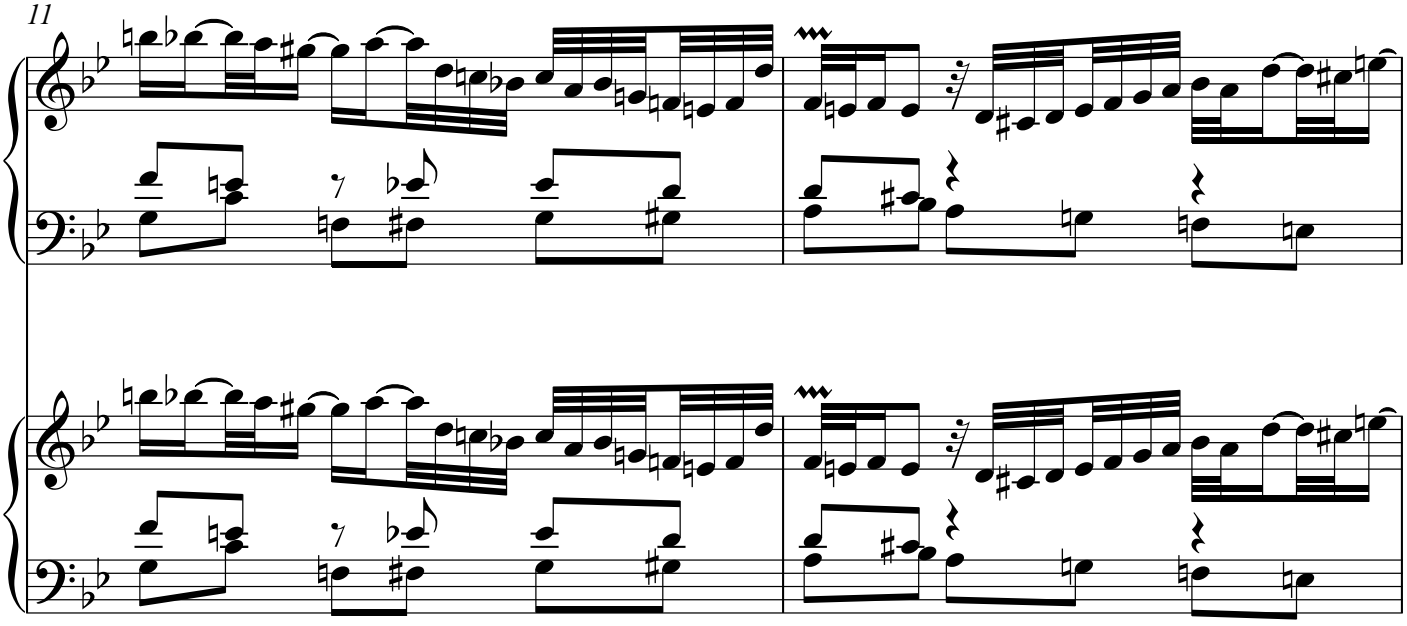
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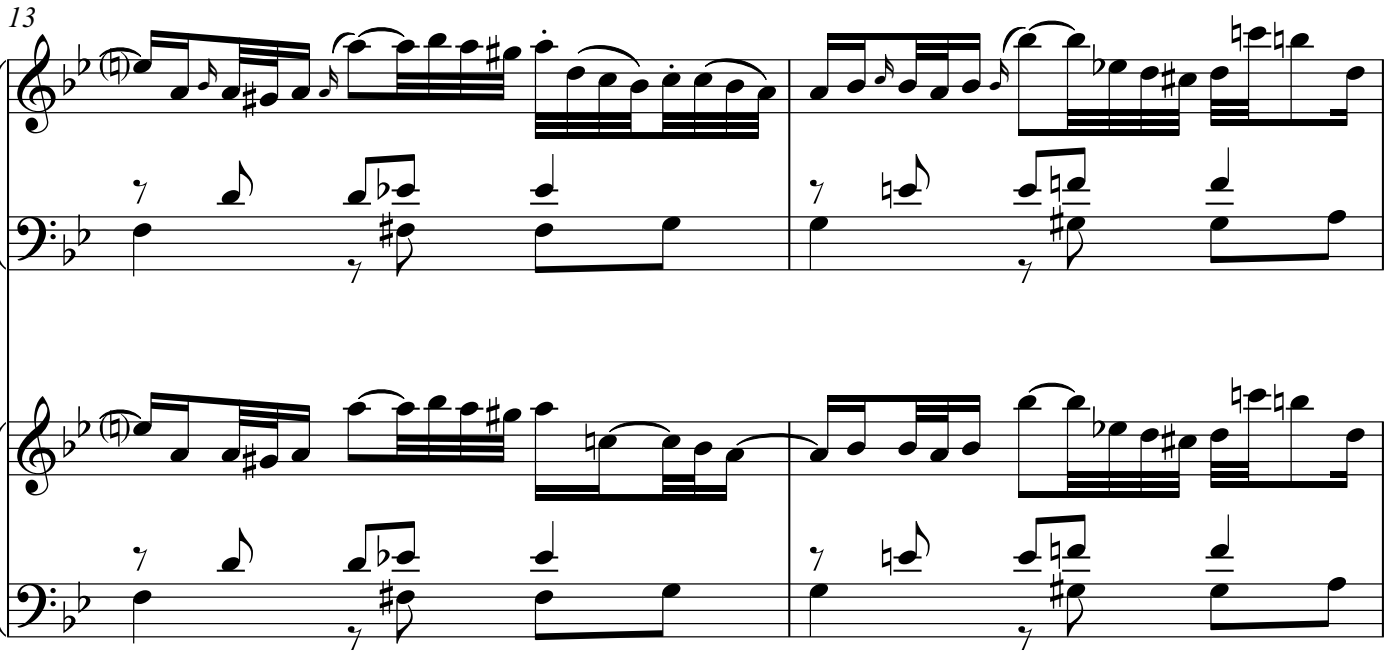

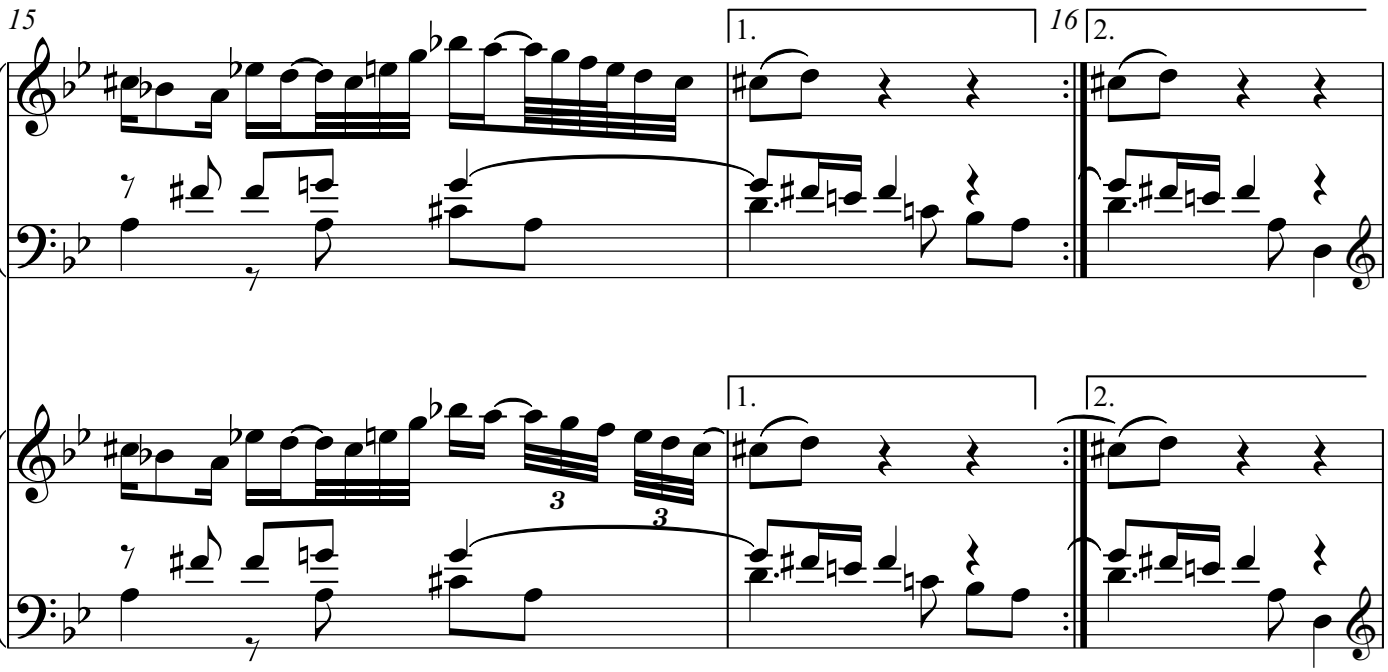

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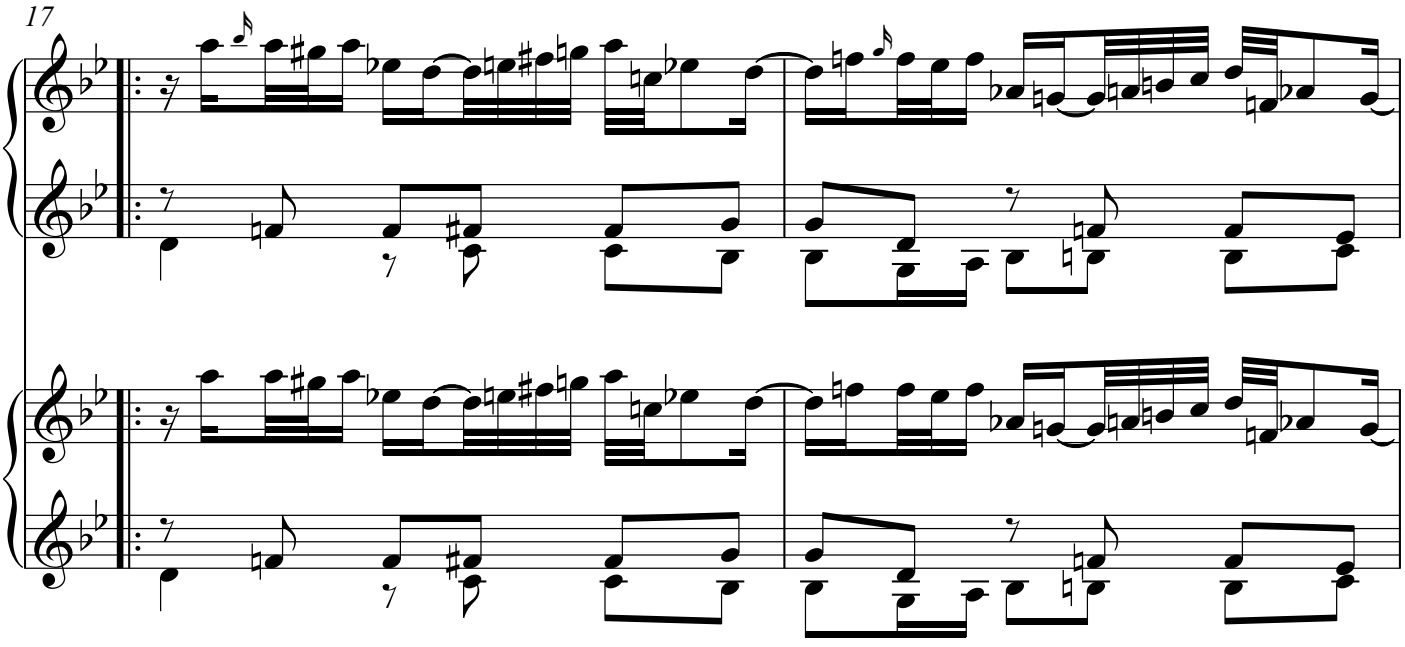
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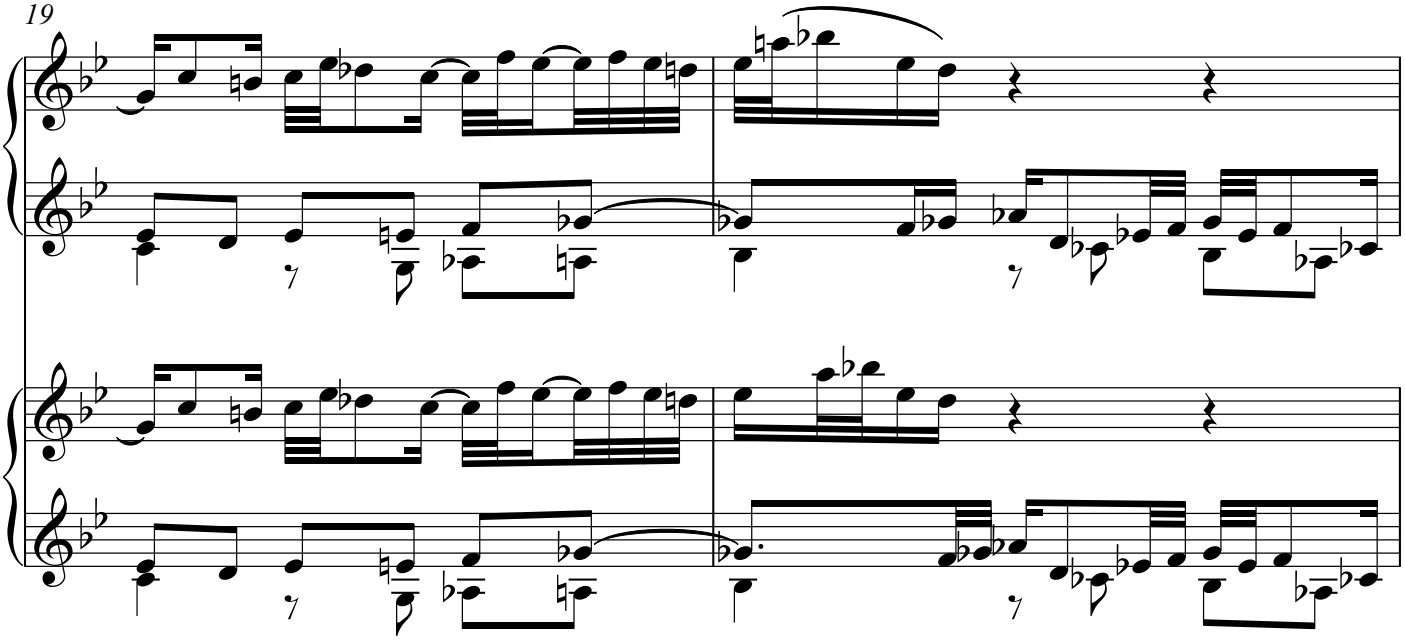
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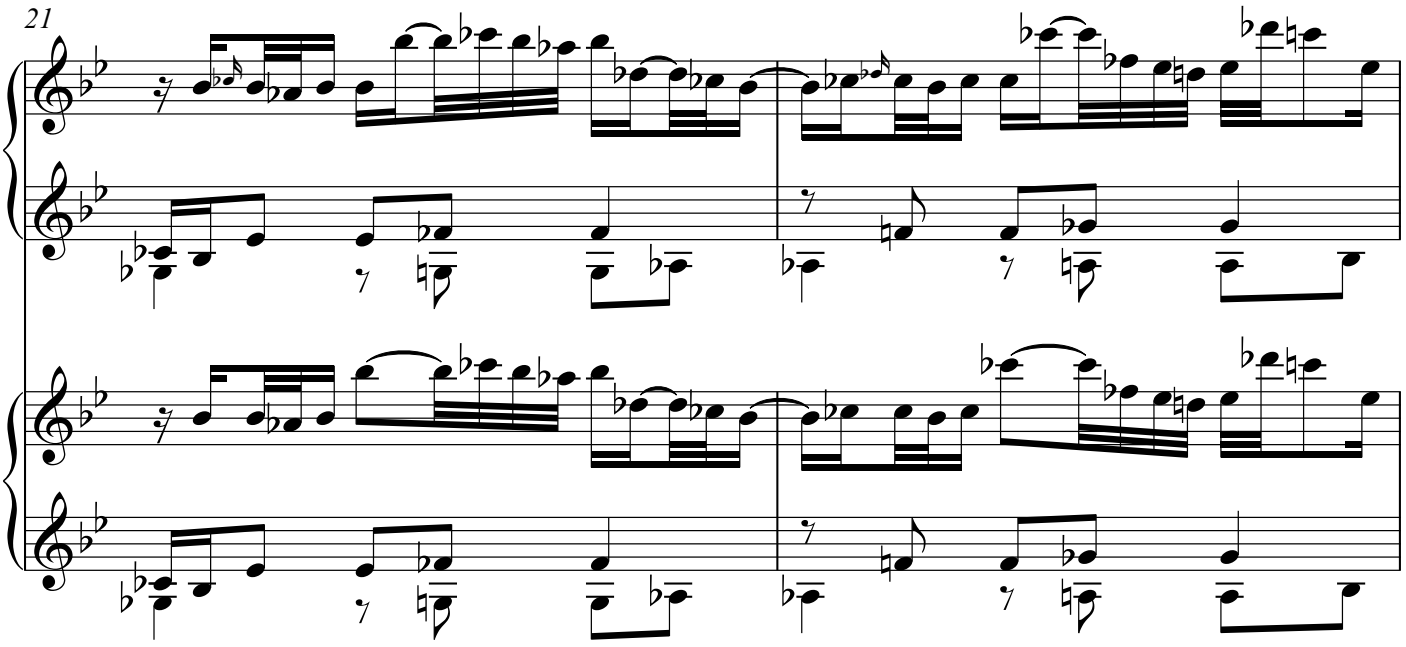
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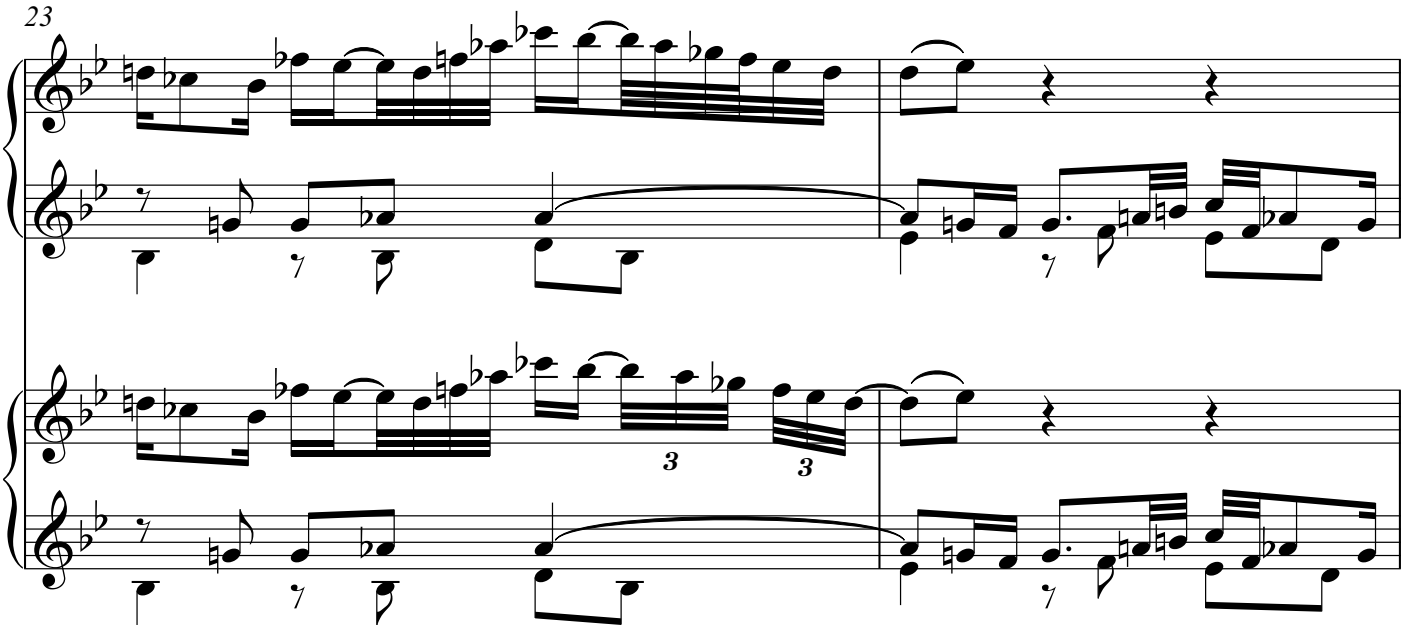
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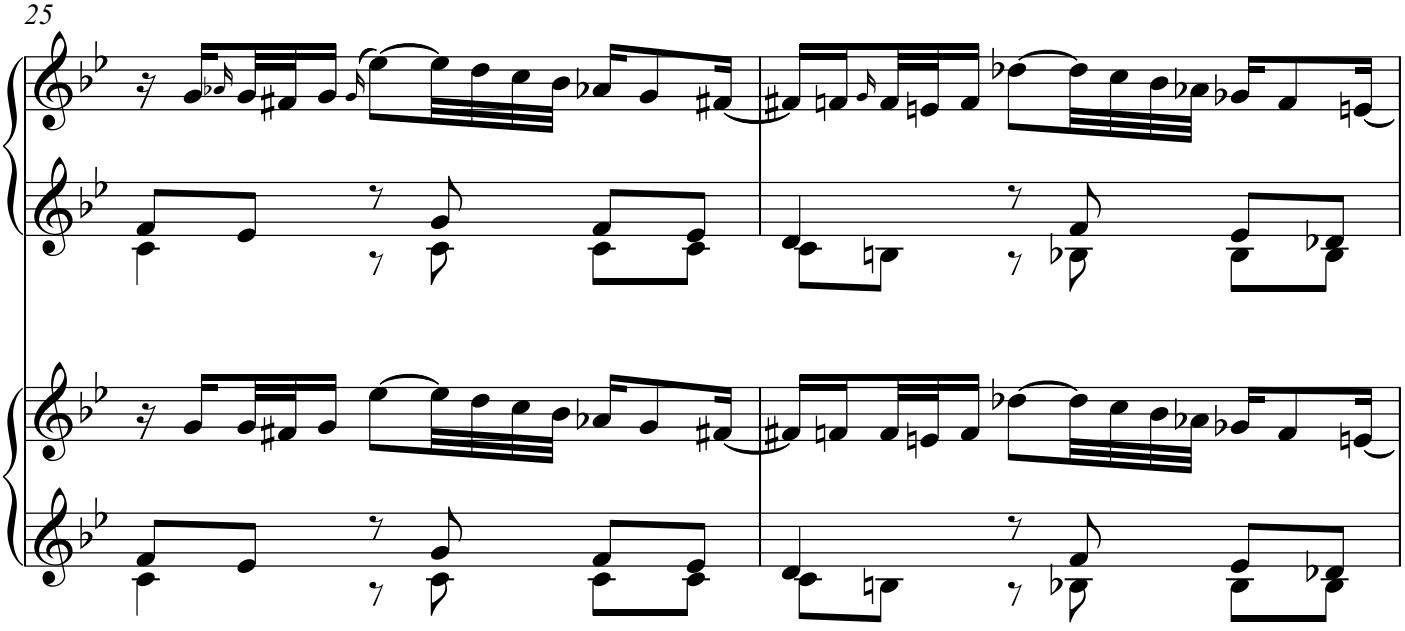
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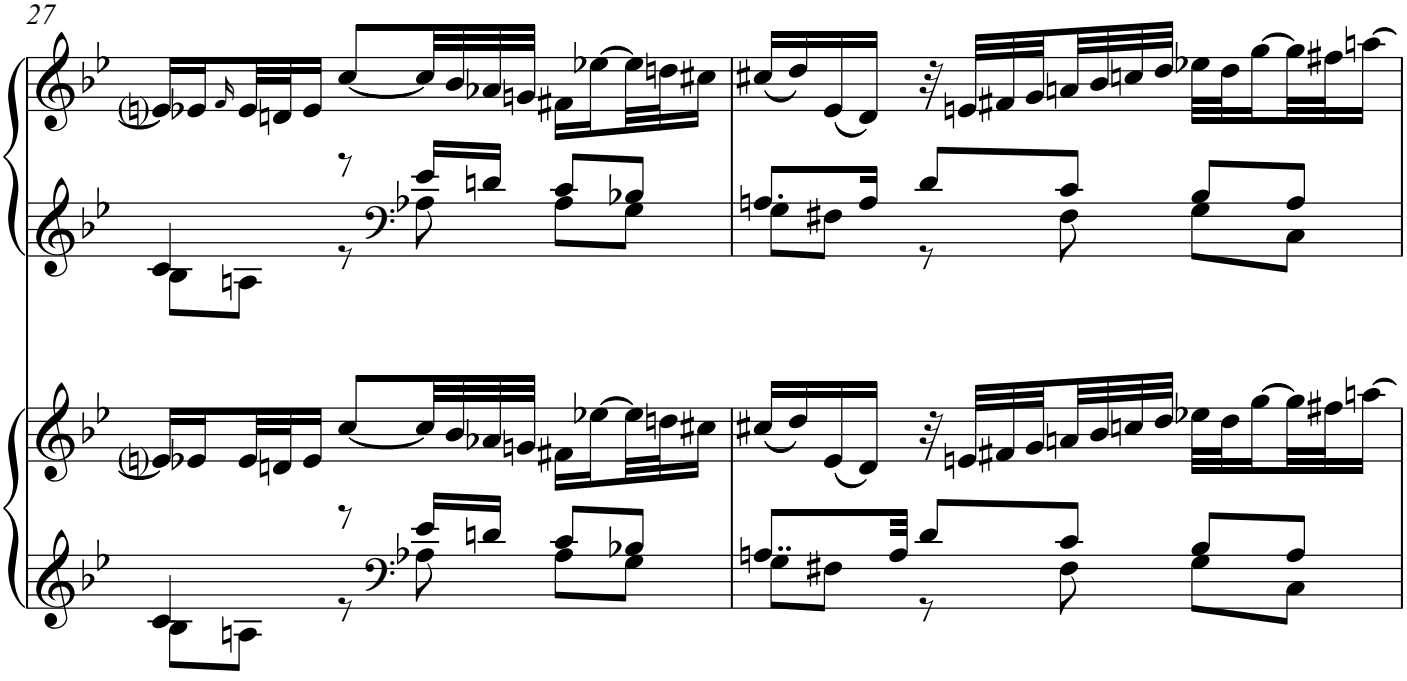
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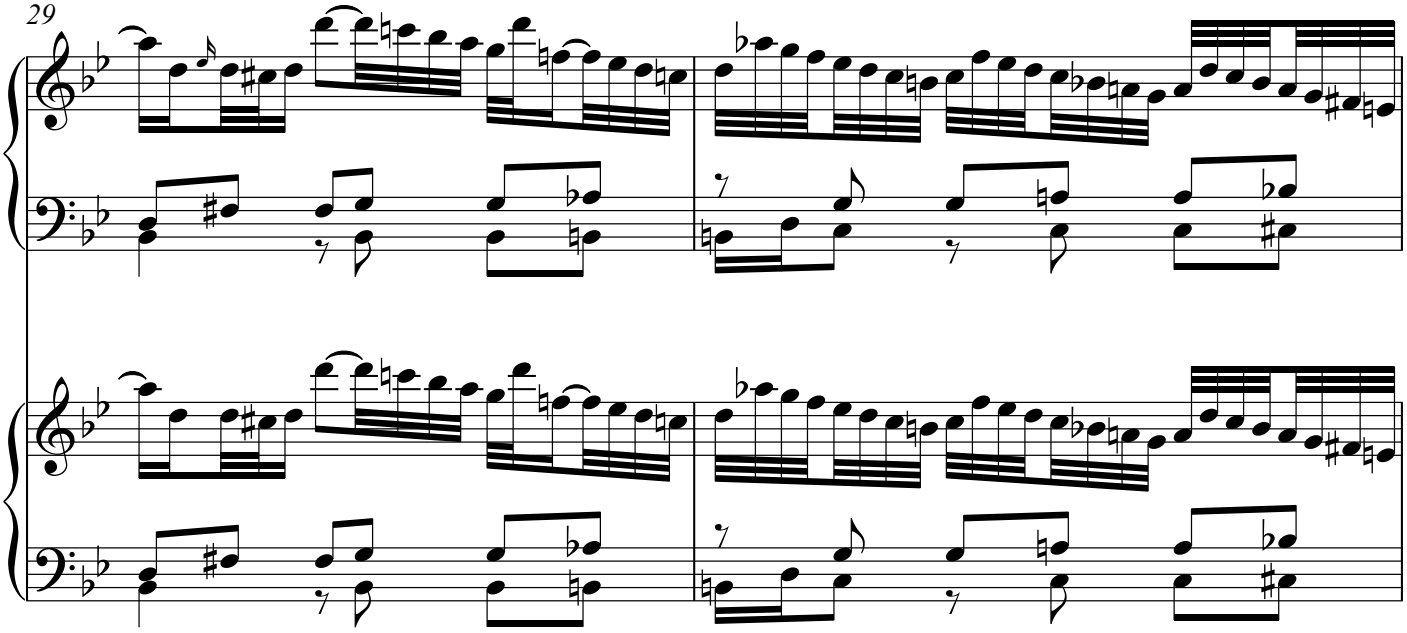
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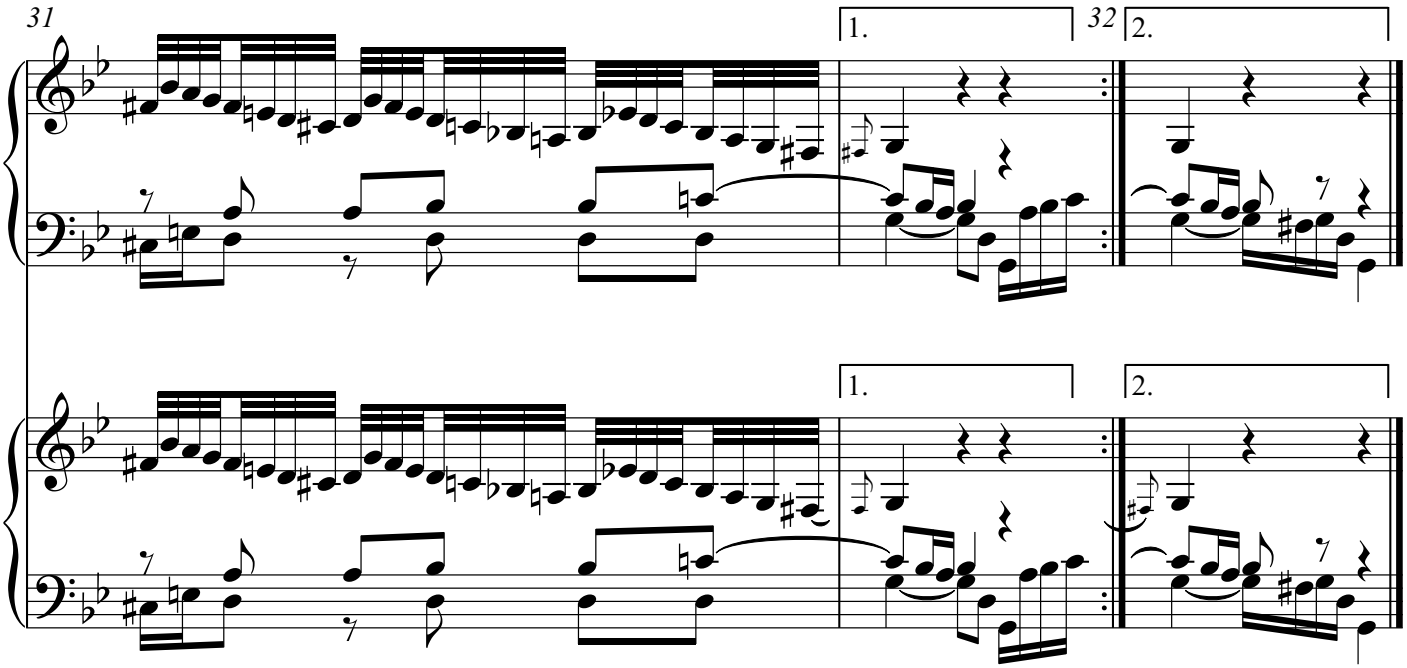
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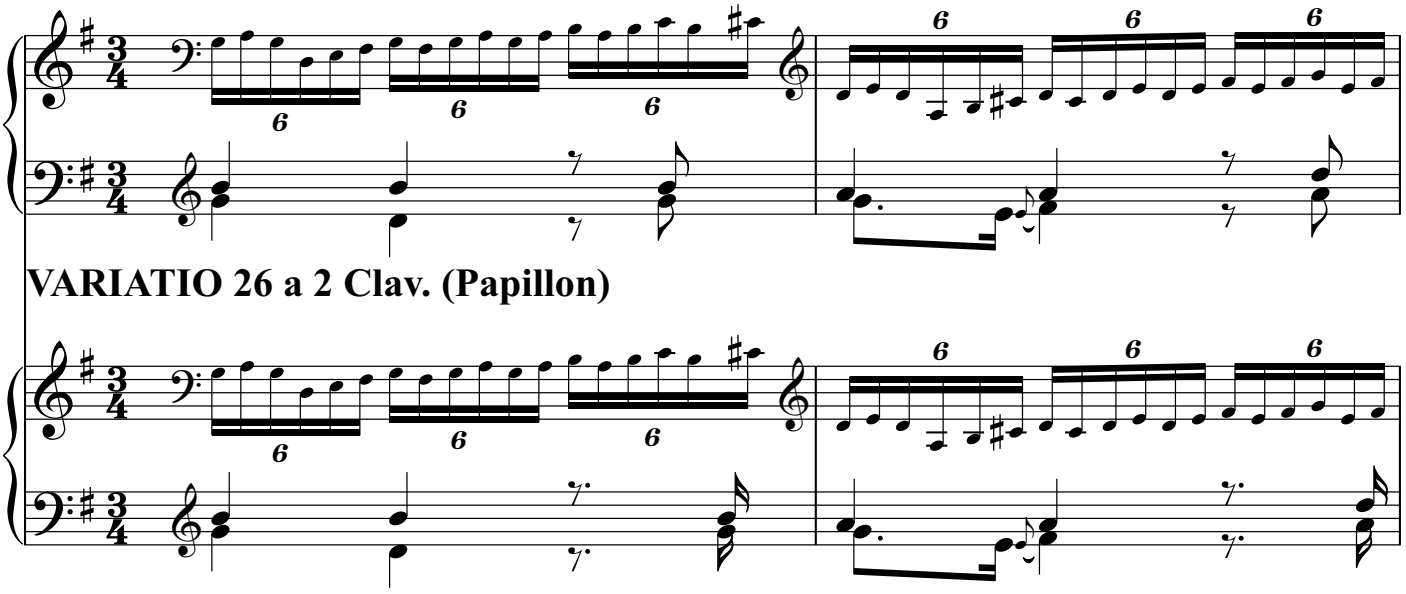
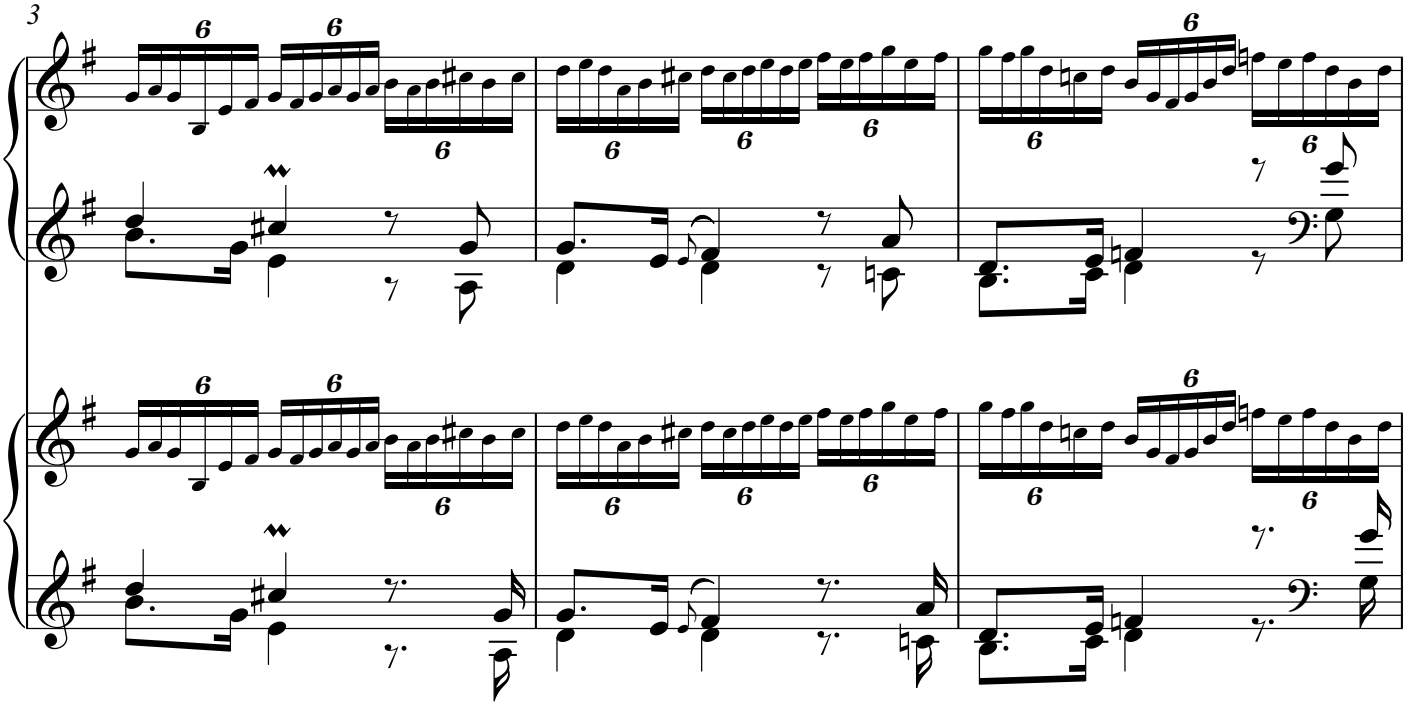
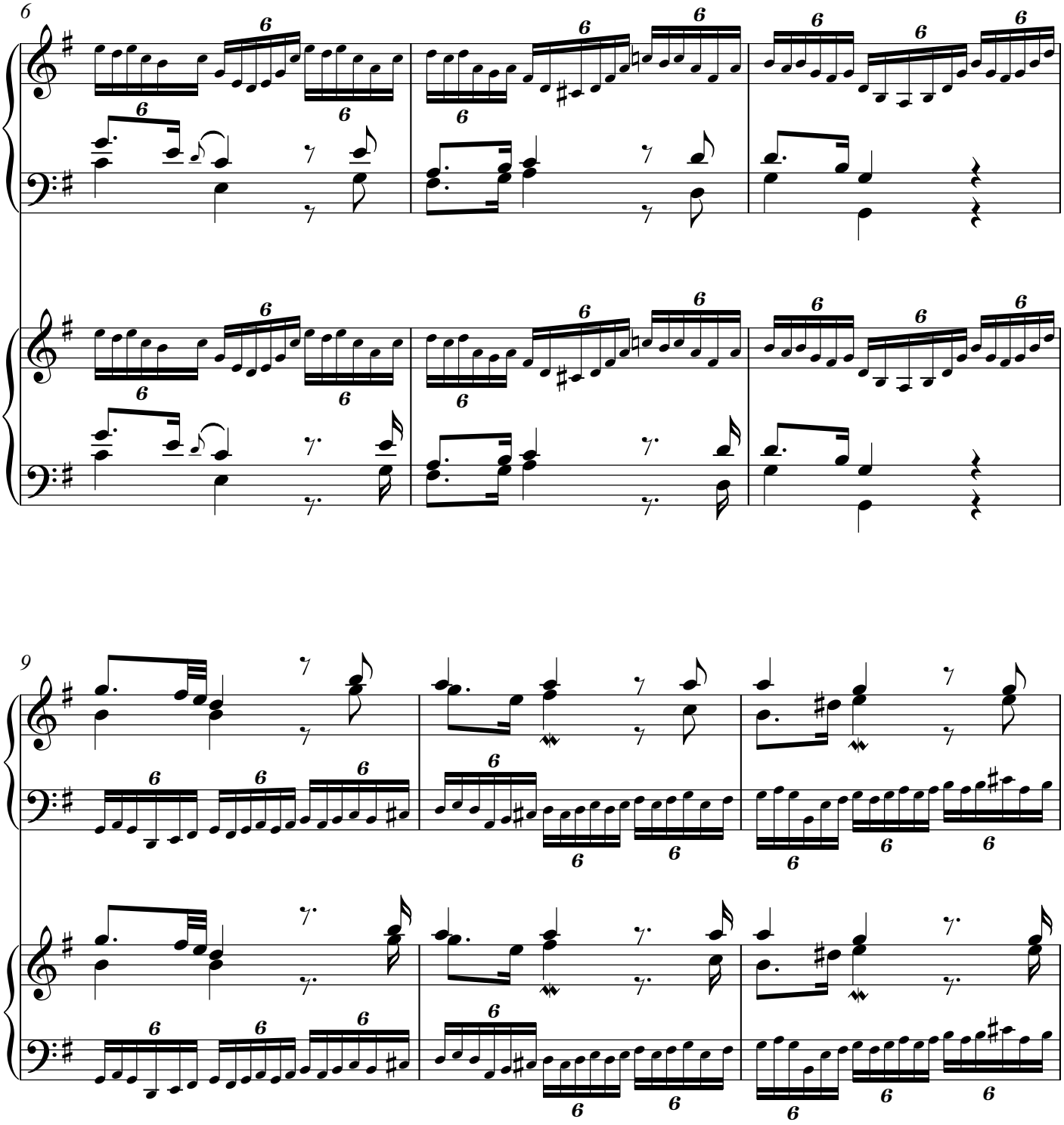
1.
2.

VARIATIO 26 a 2 Clav. (Bach)



VARIATIO 26 a 2 Clav. (Papillon)

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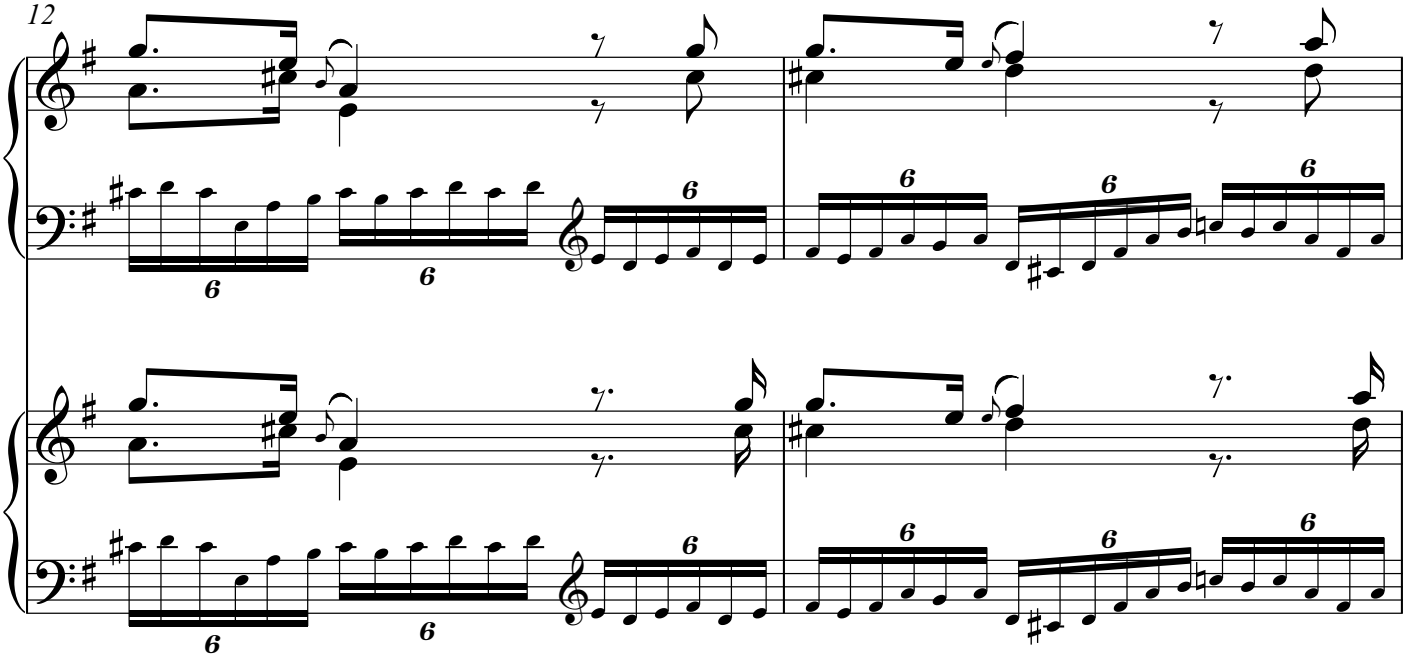
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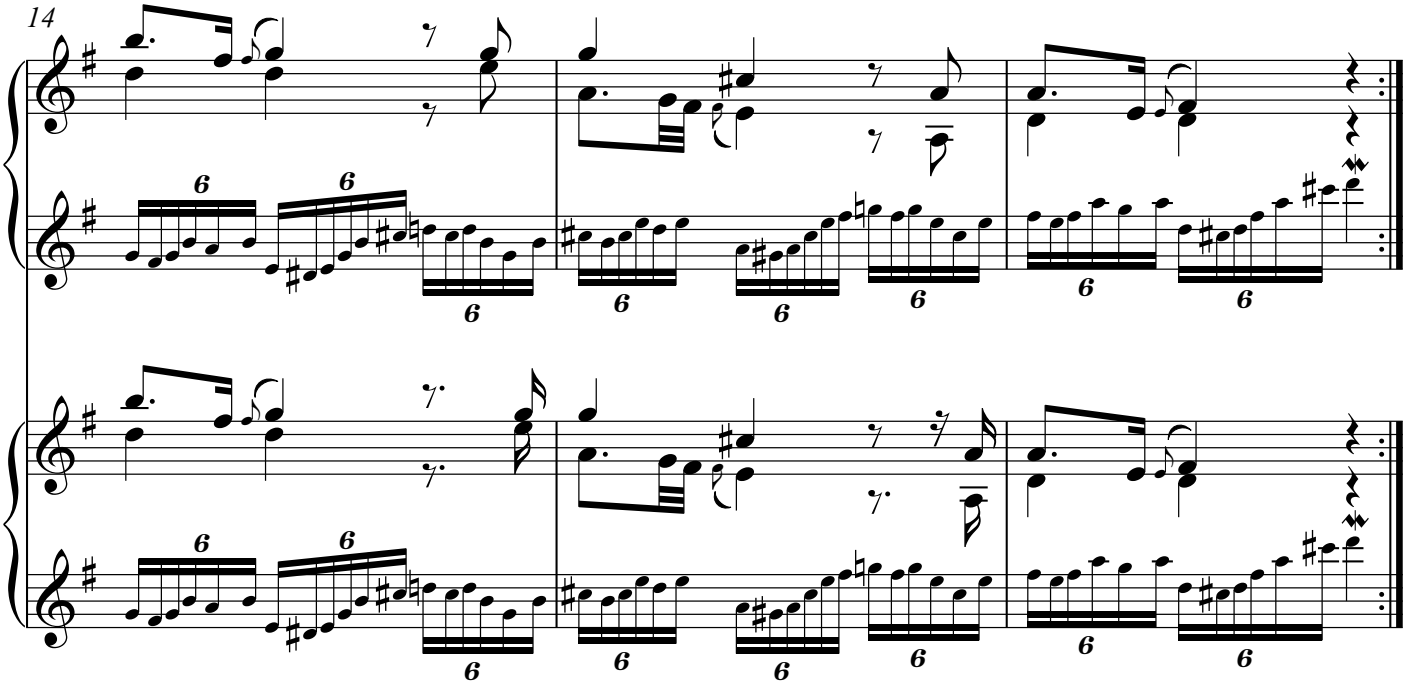
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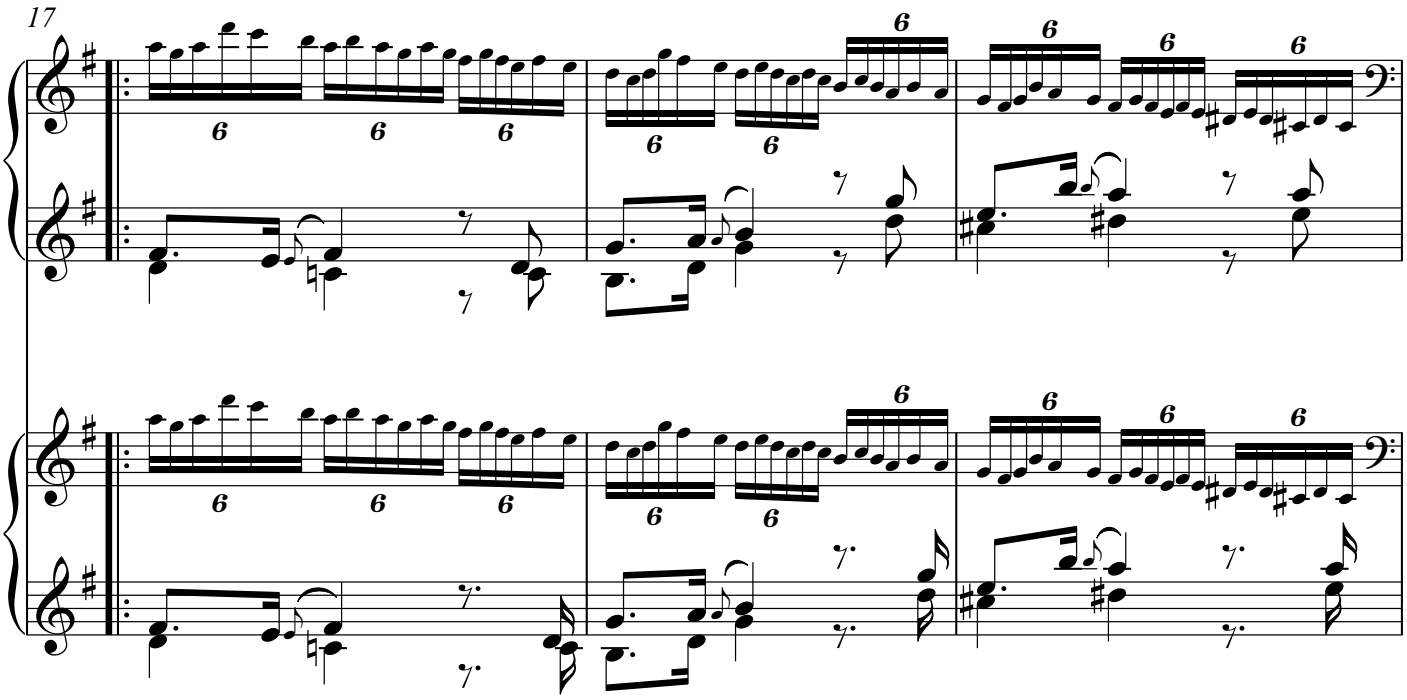

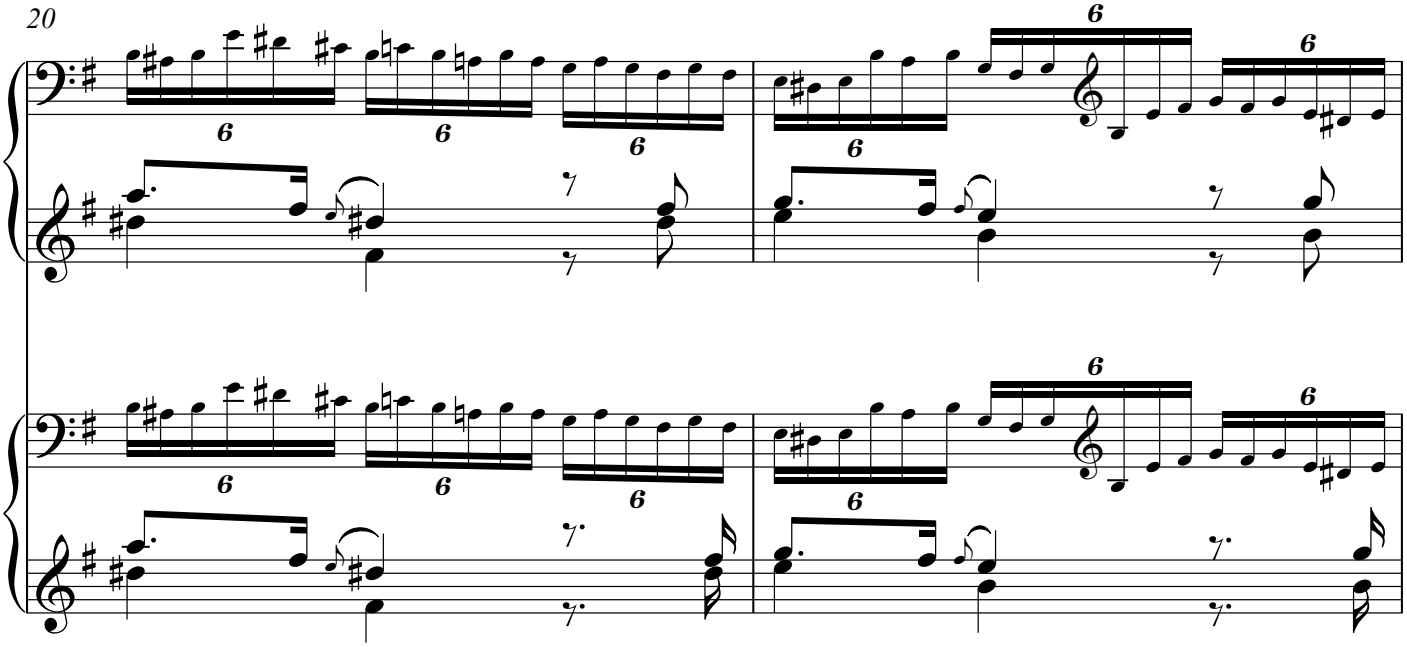

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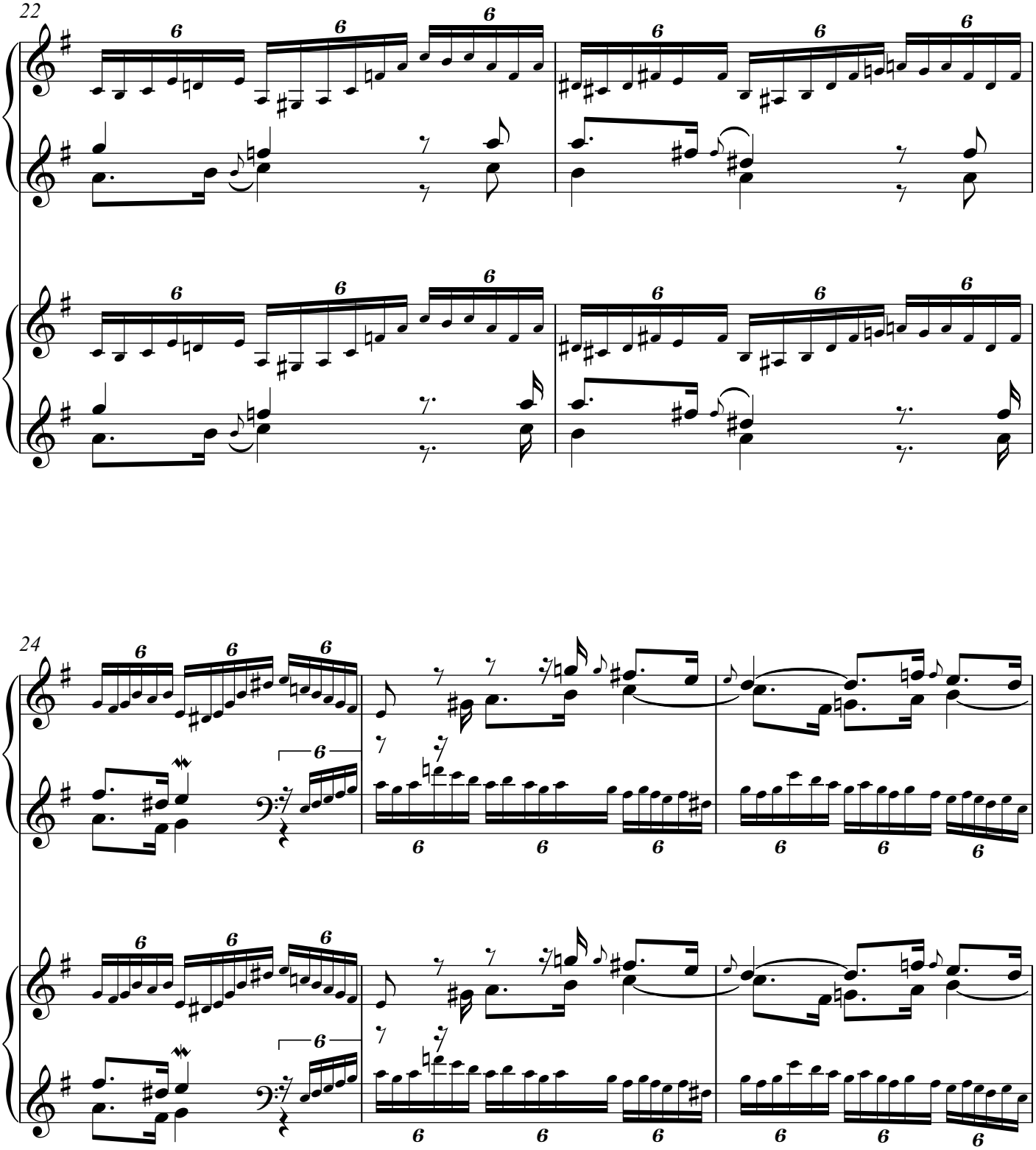
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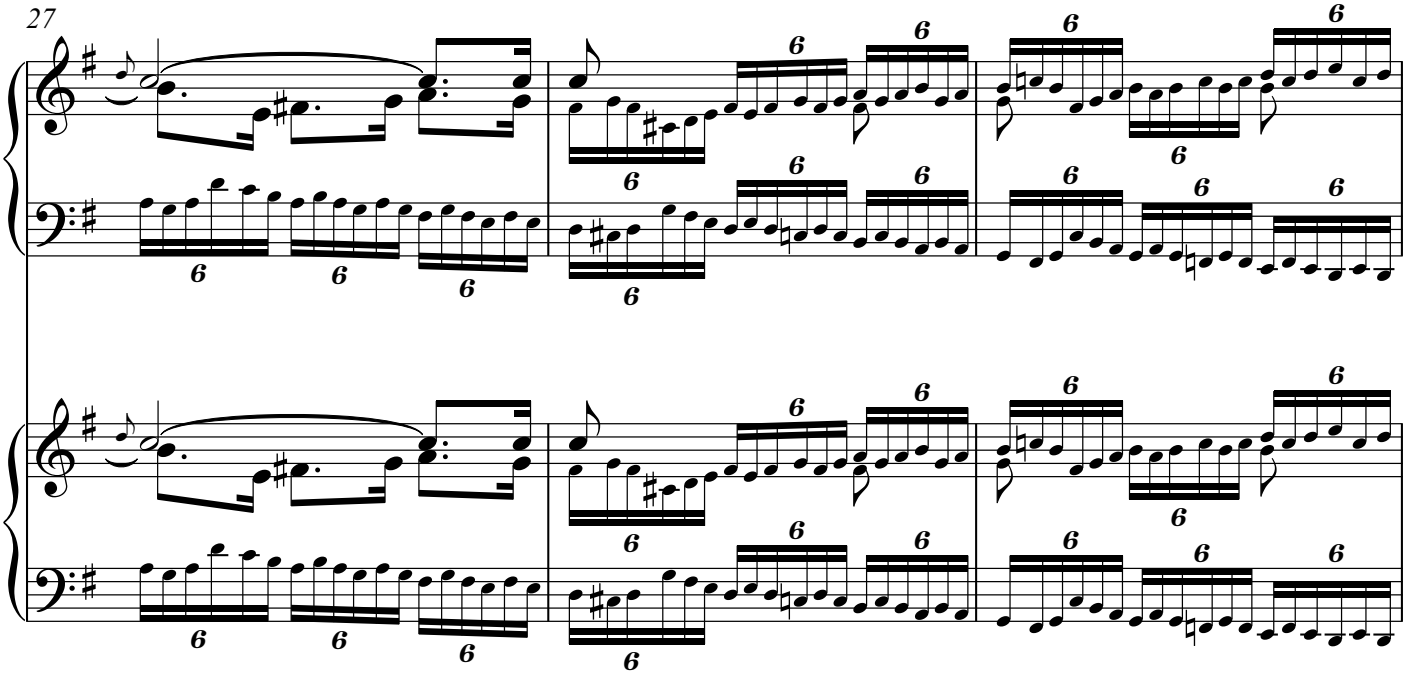
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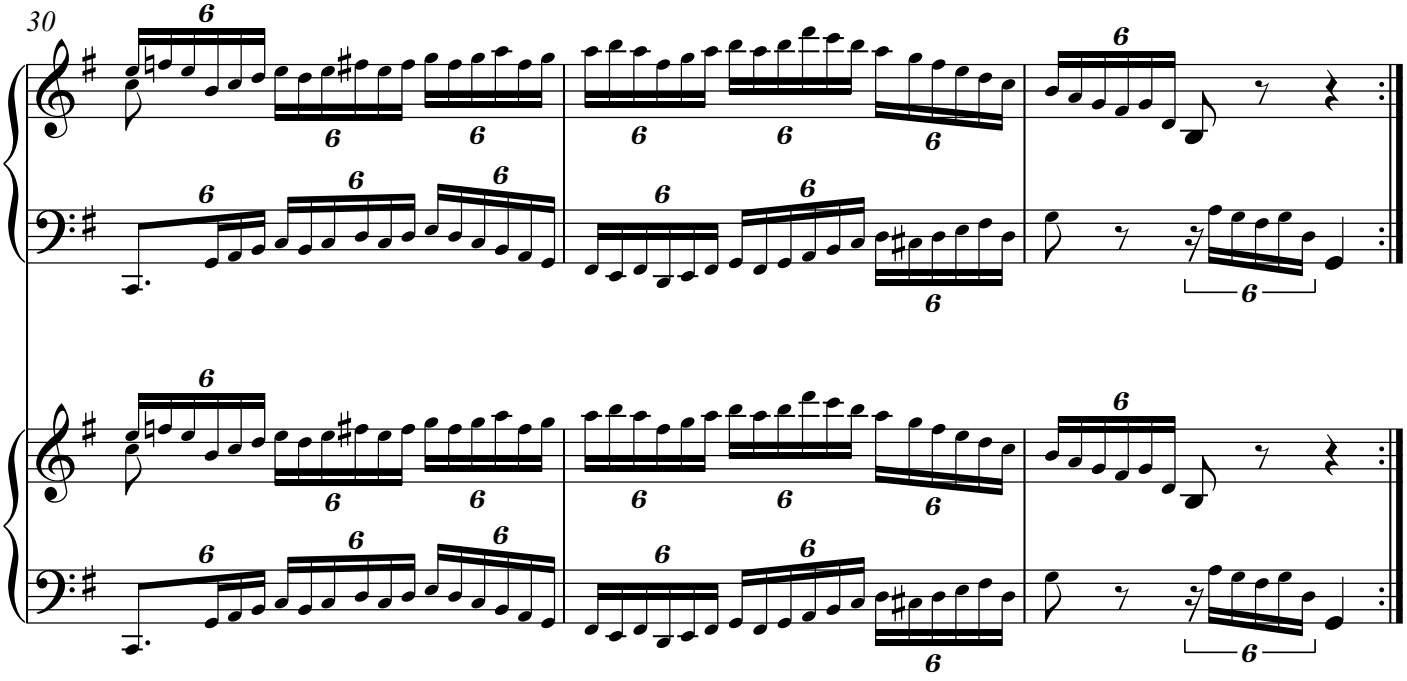
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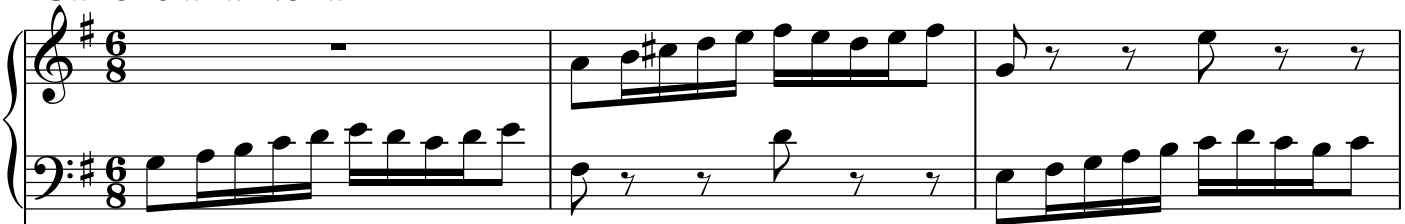
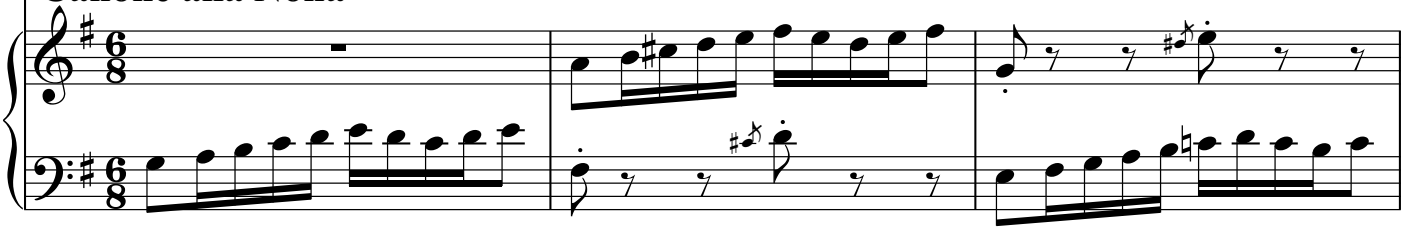
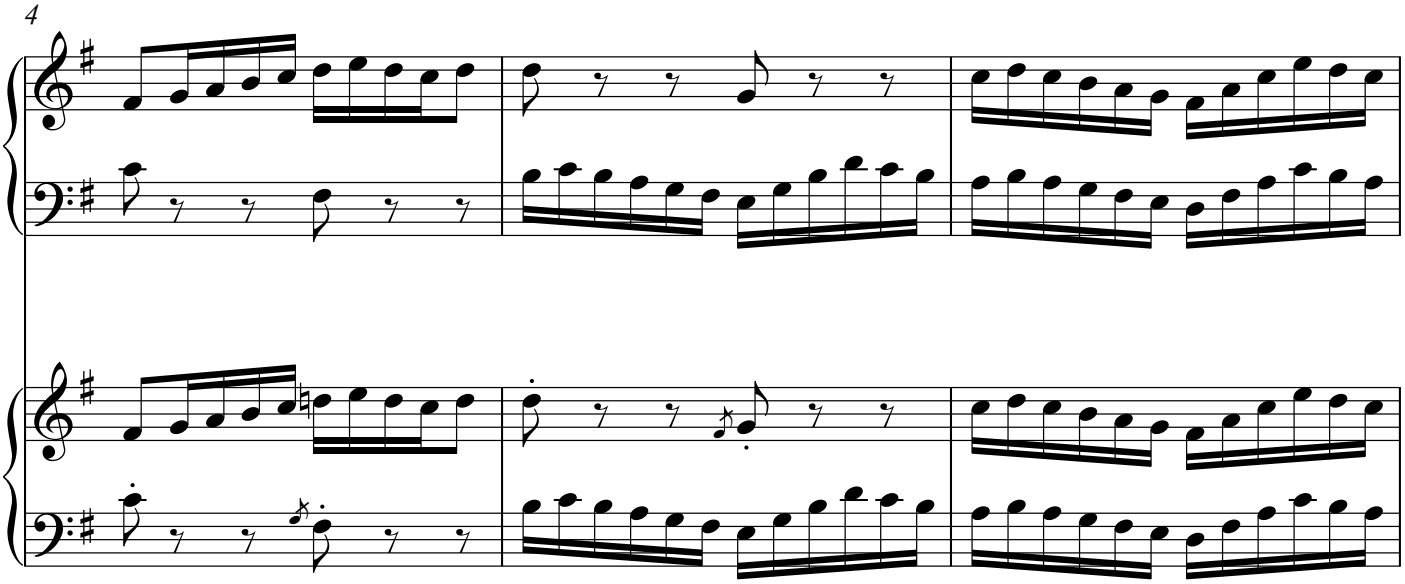
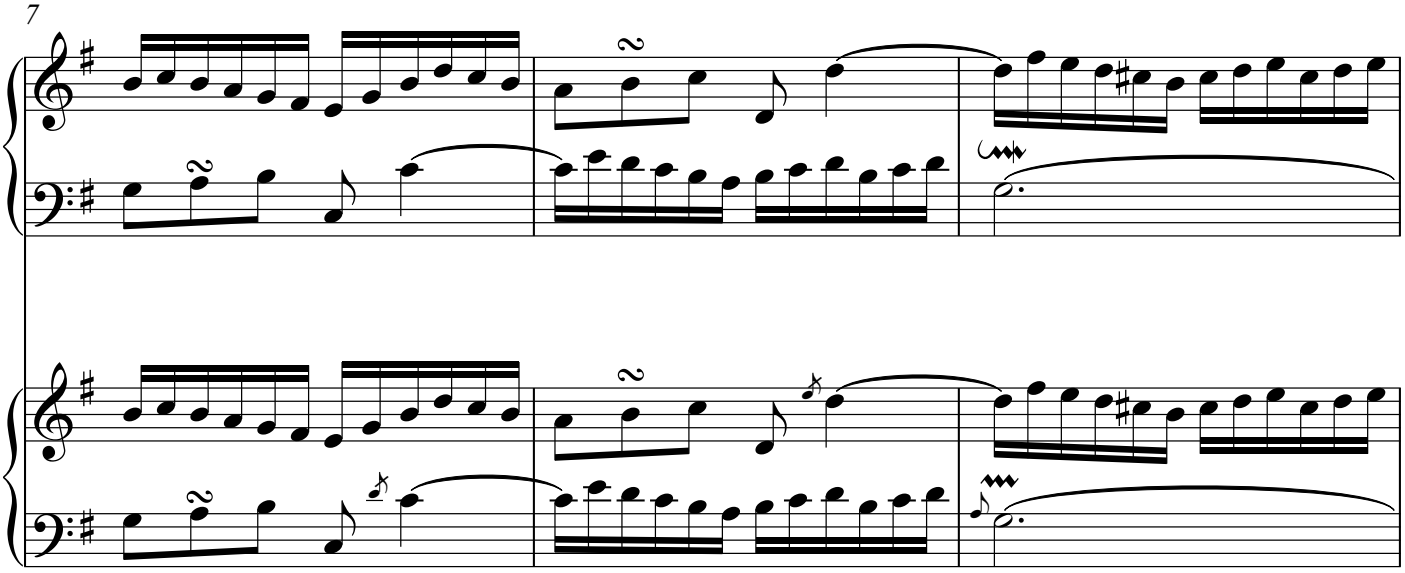
VARIATIO 27 a 12 Clav. (Bach)
Canone alla Nona



VARIATIO 27 a 12 Clav. (Papillon)
Canone alla Nona



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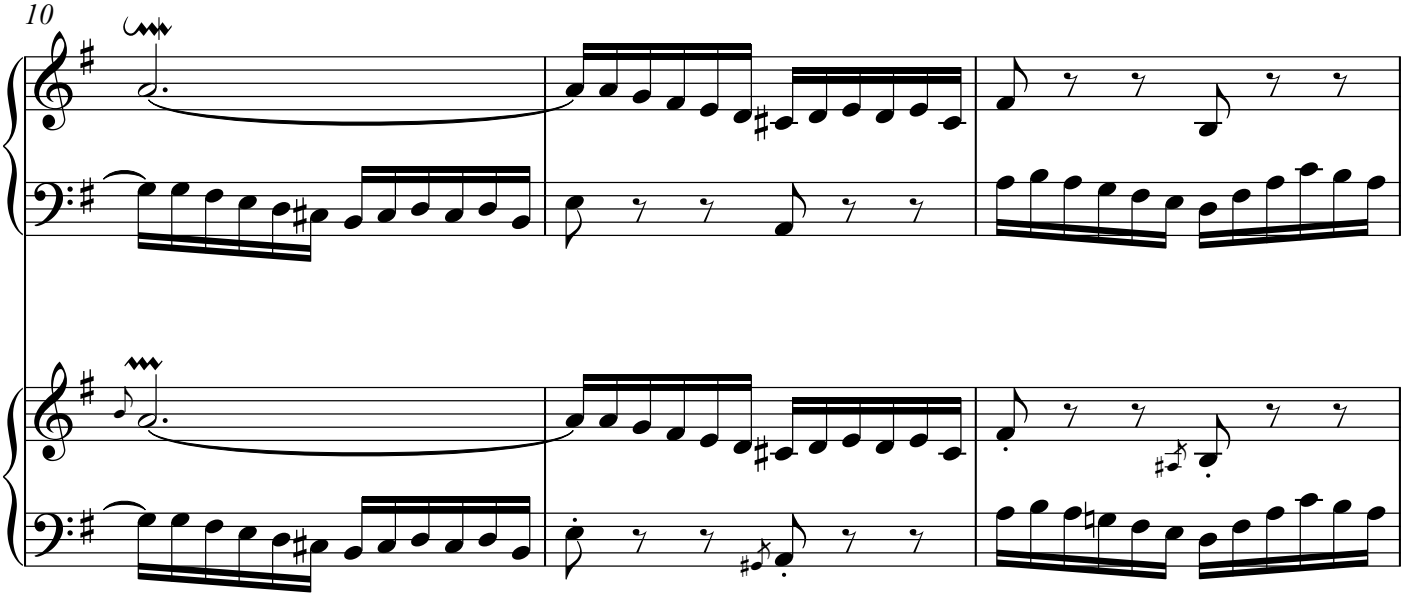
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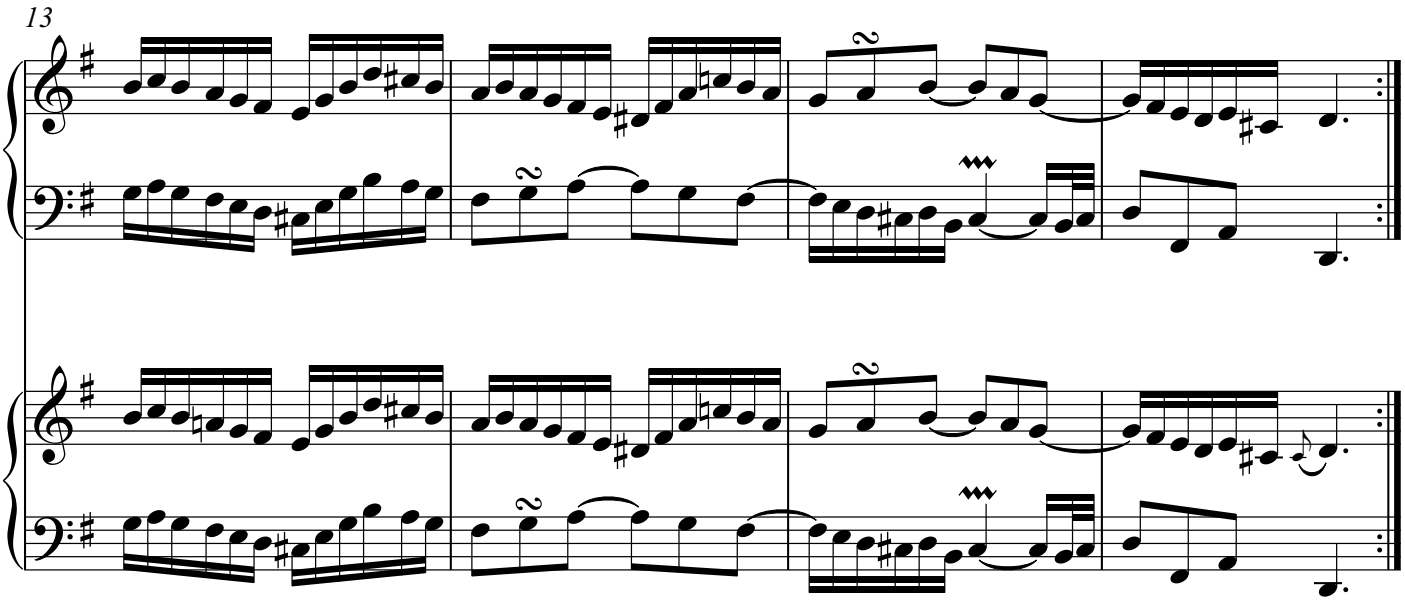
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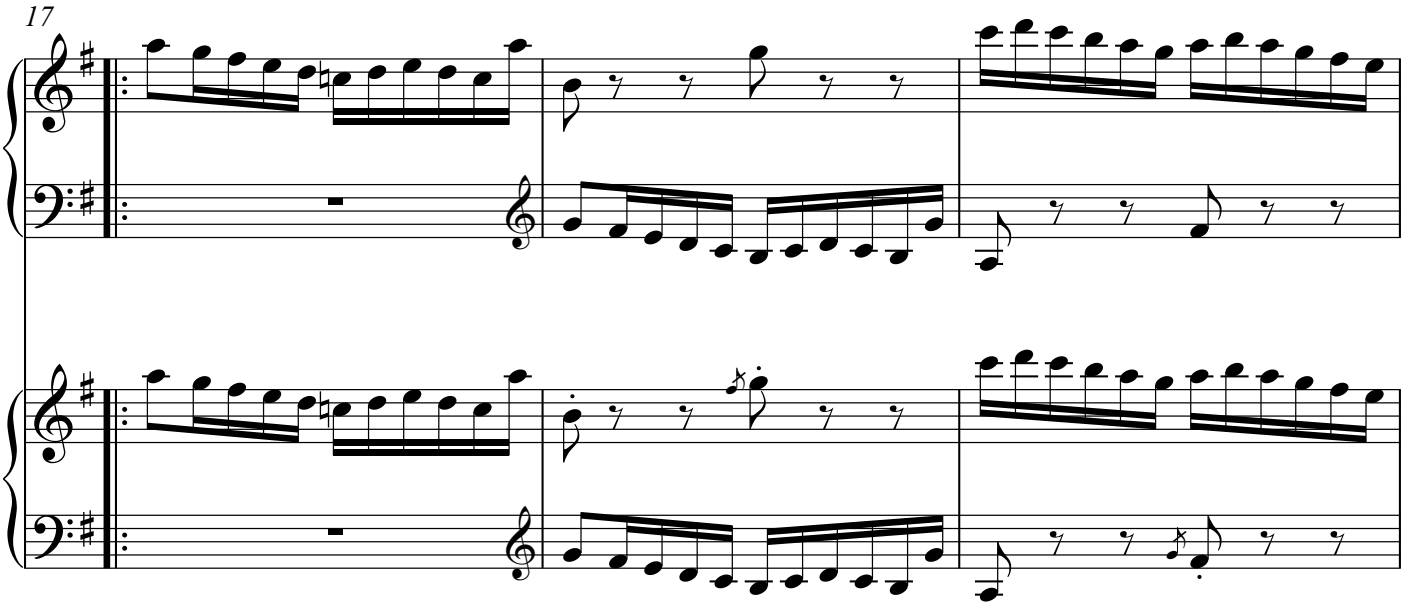
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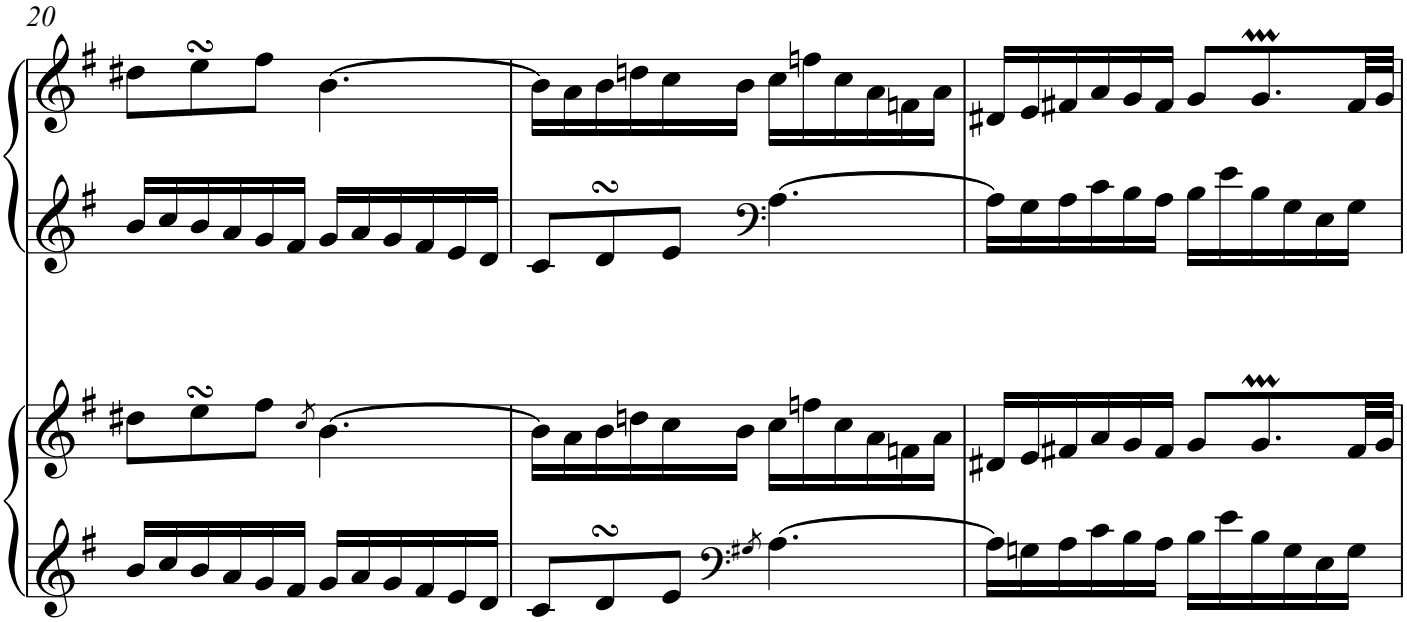
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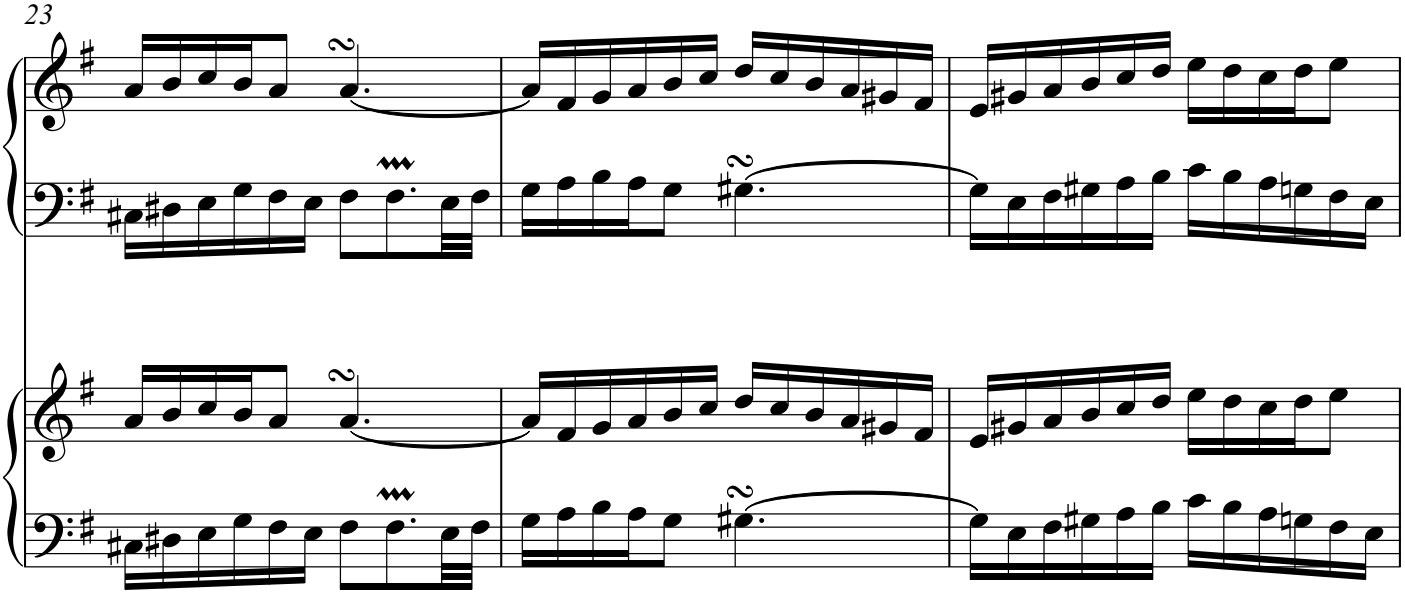
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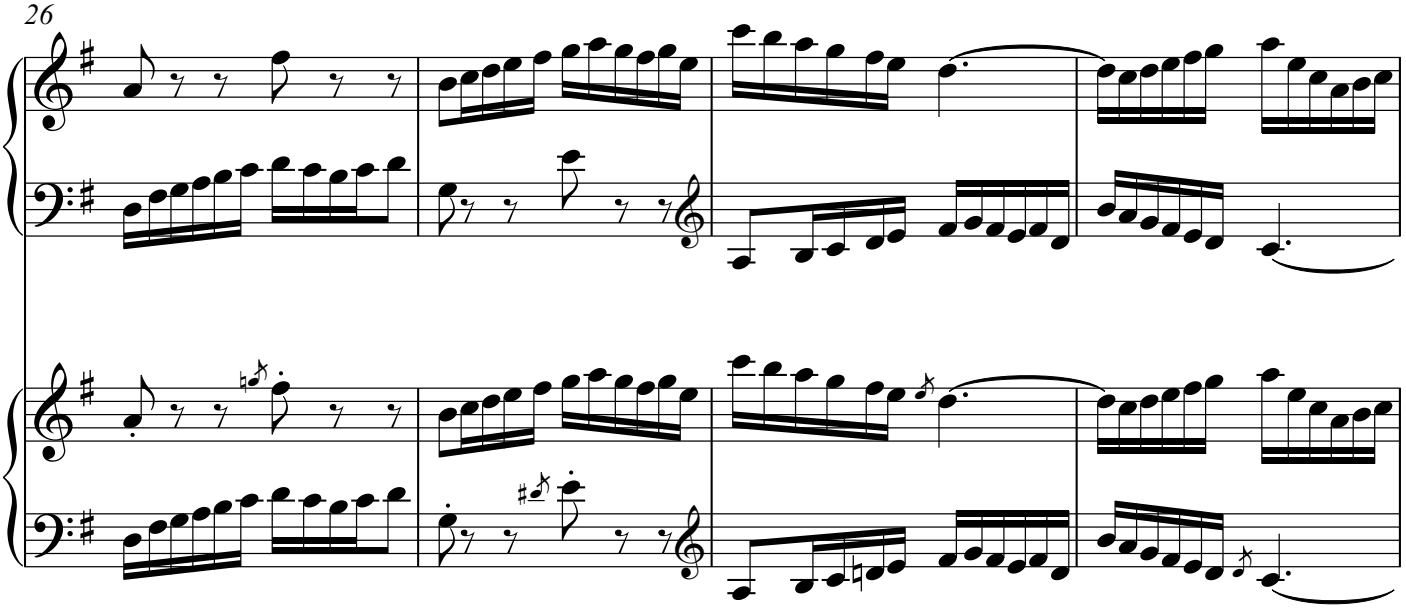
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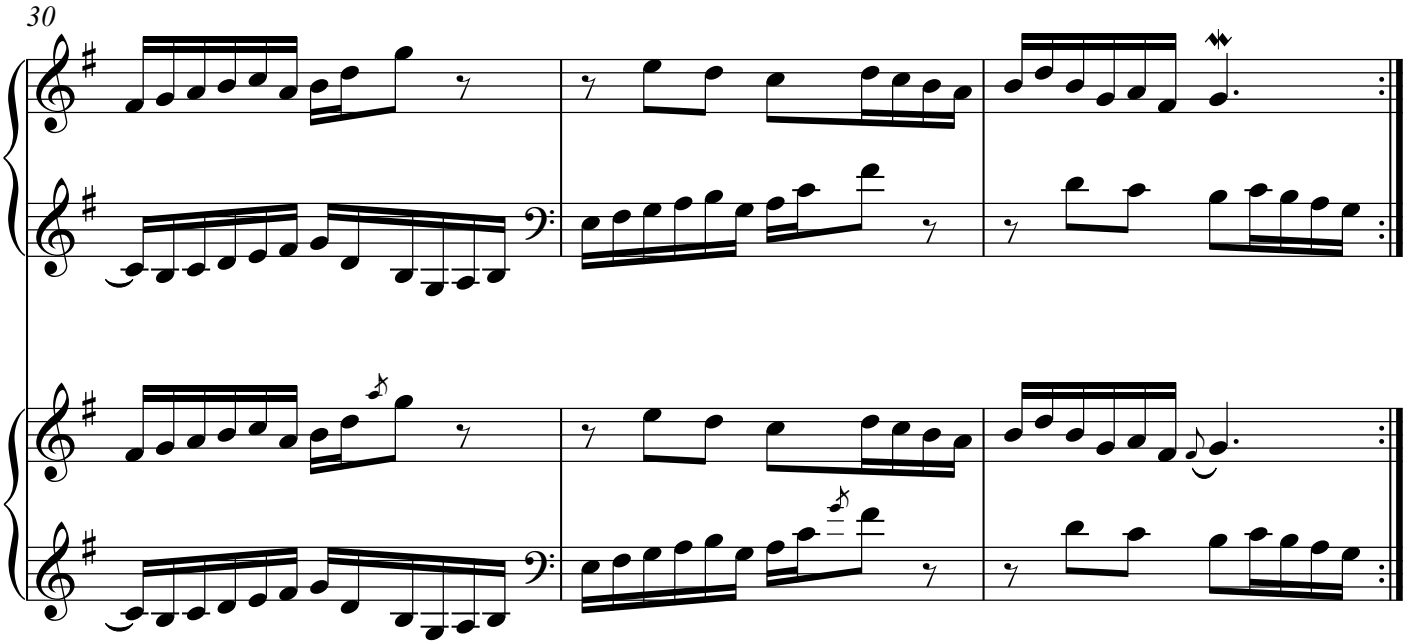
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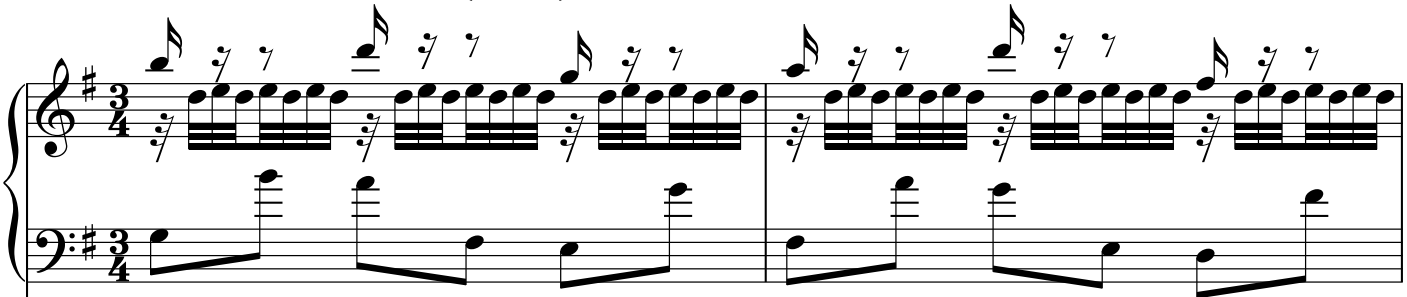
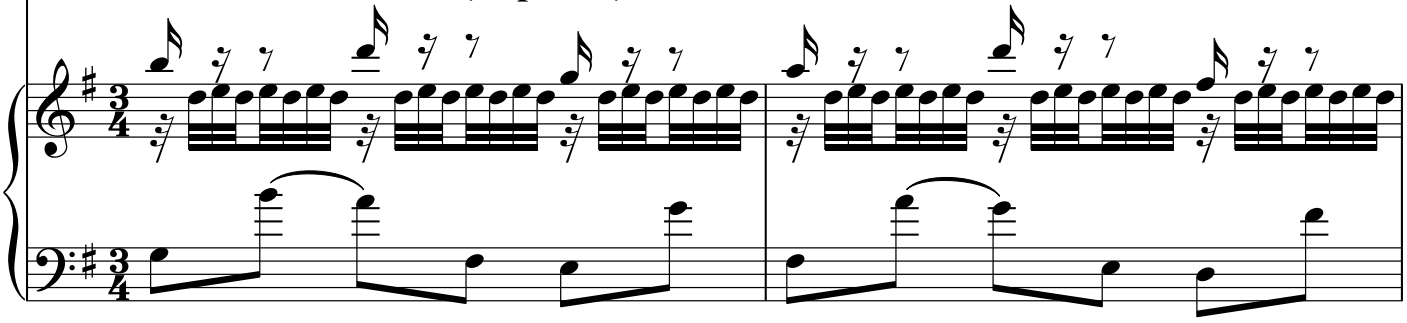
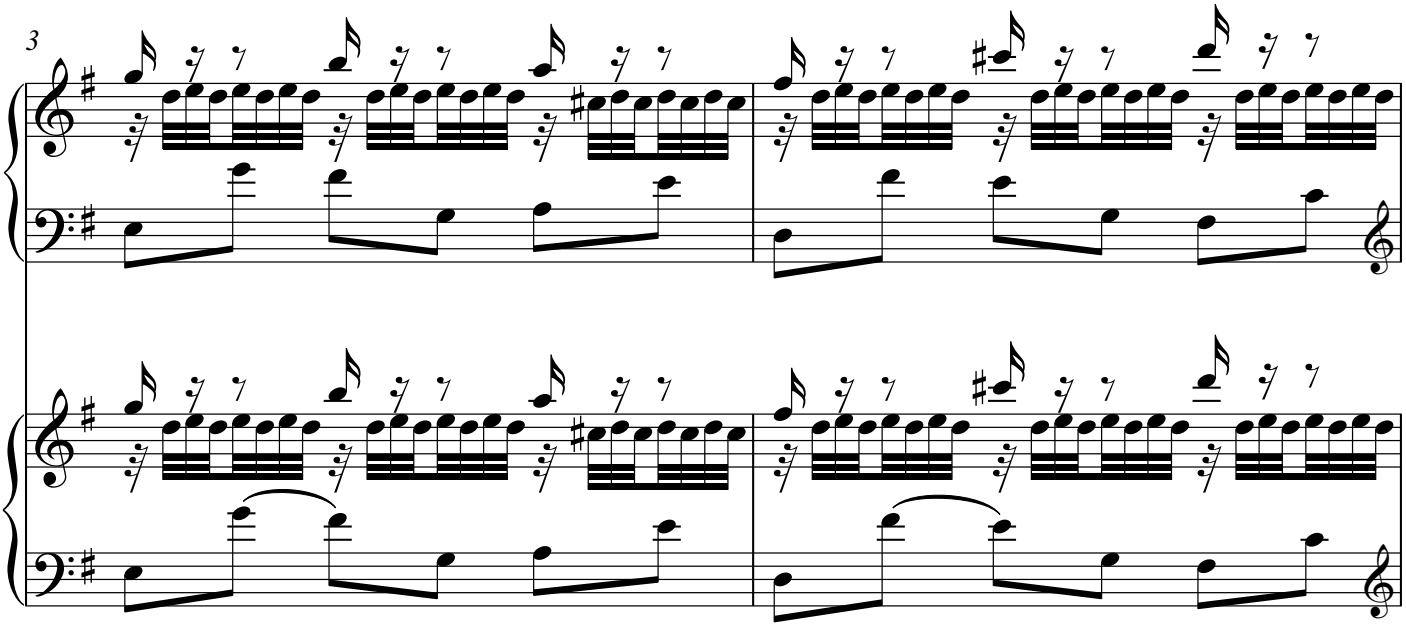
VARIATIO 28 a 2 Clav. (Bach)



VARIATIO 28 a 2 Clav. (Papillon)





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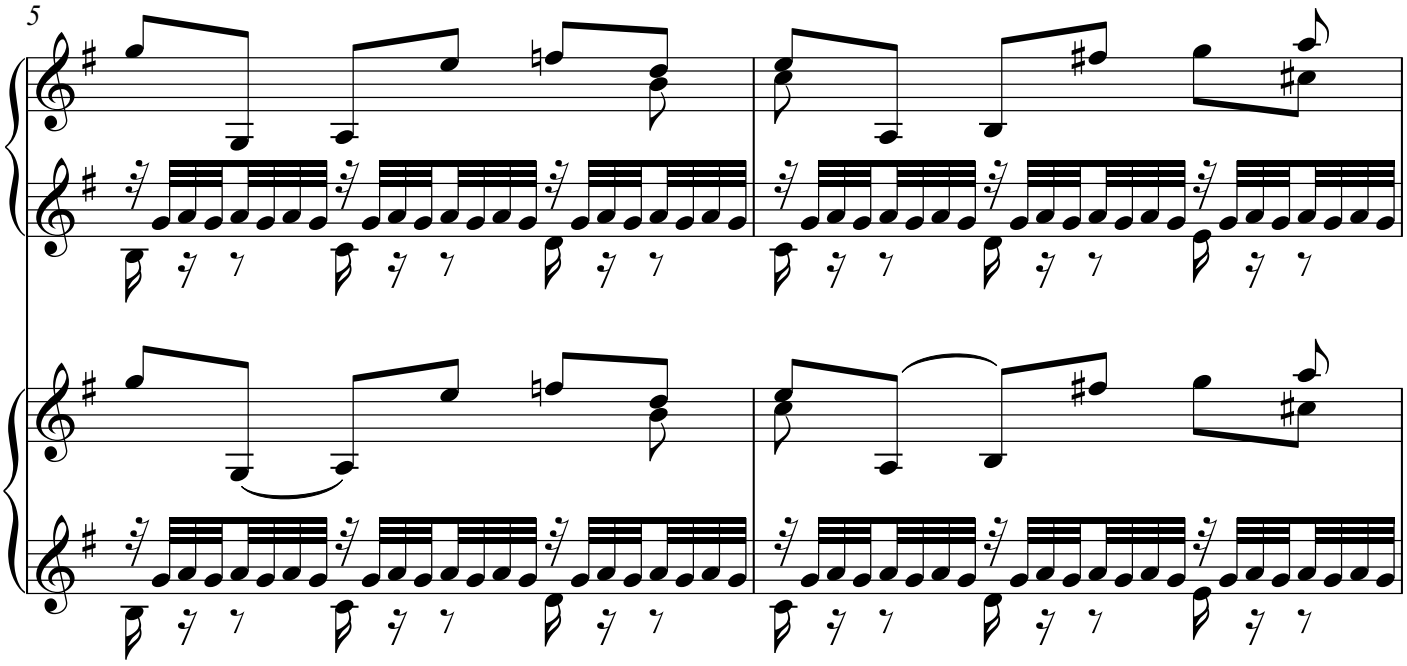
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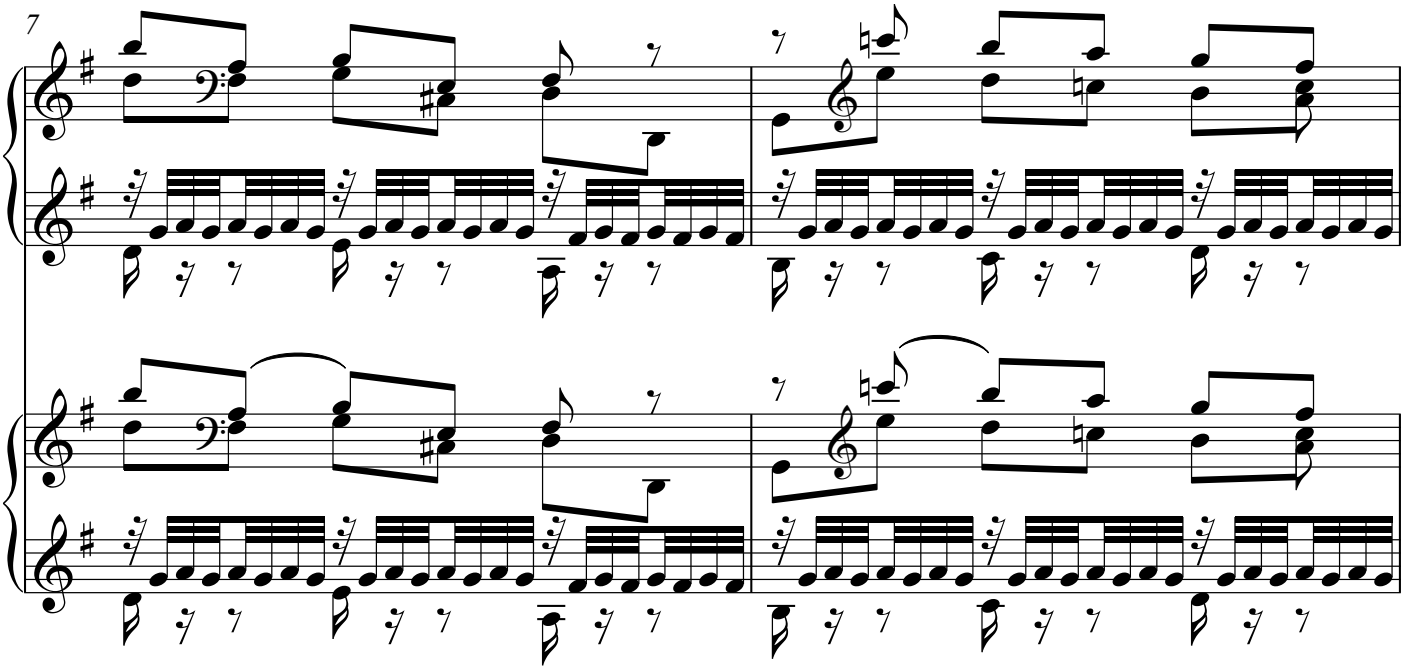
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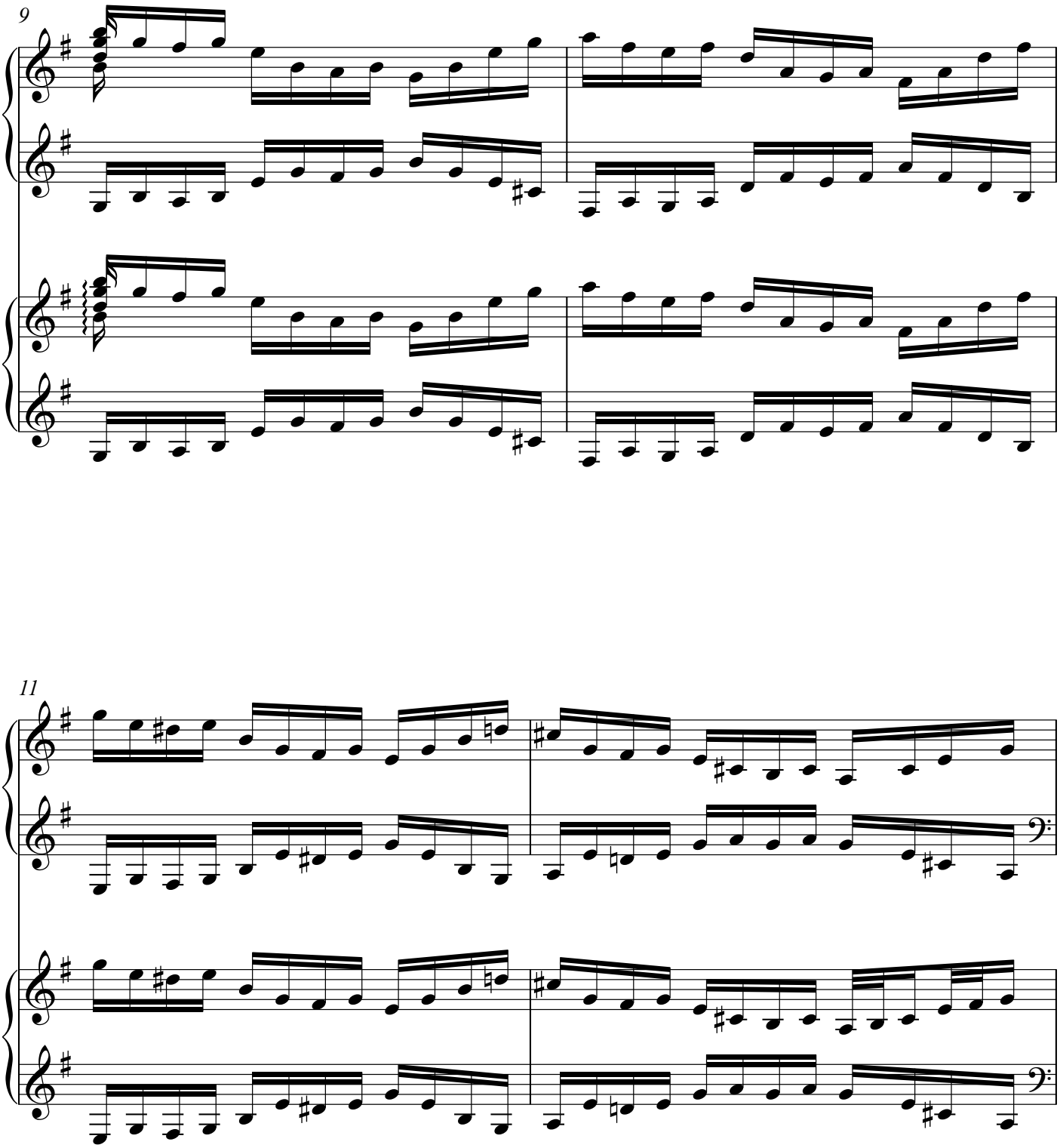
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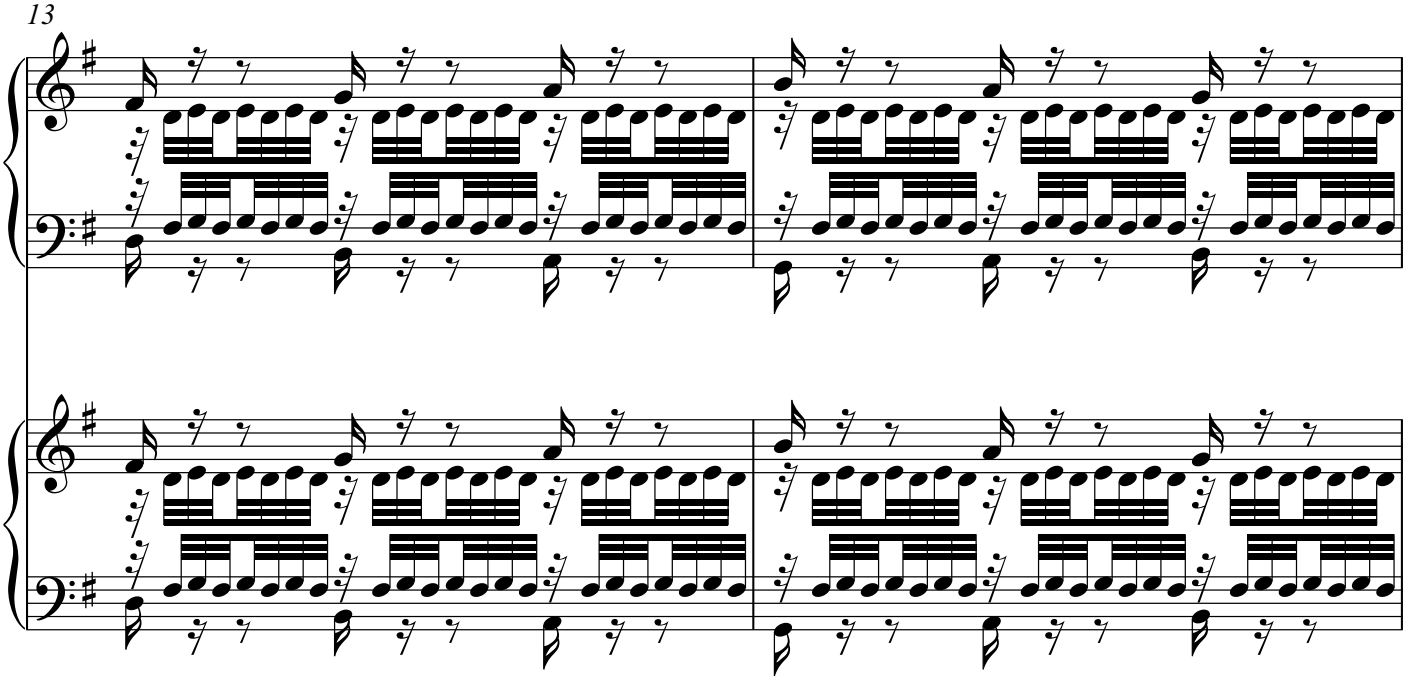
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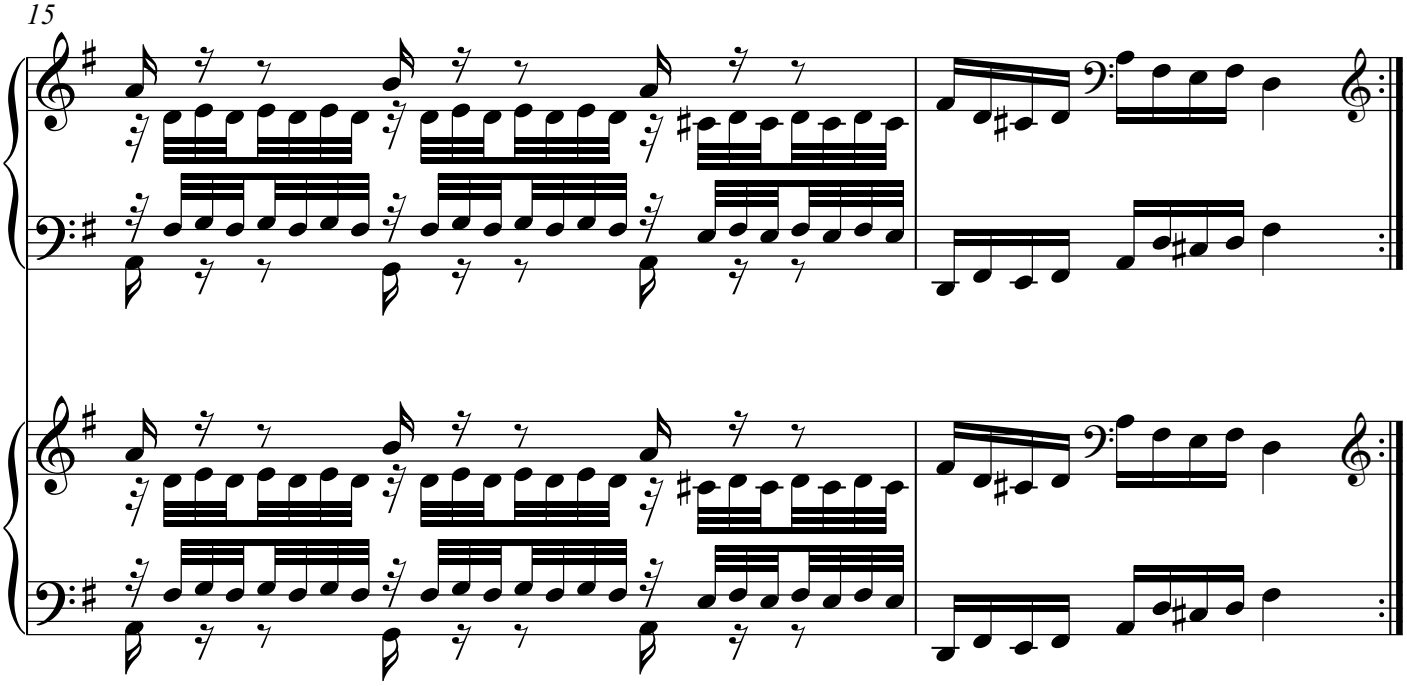
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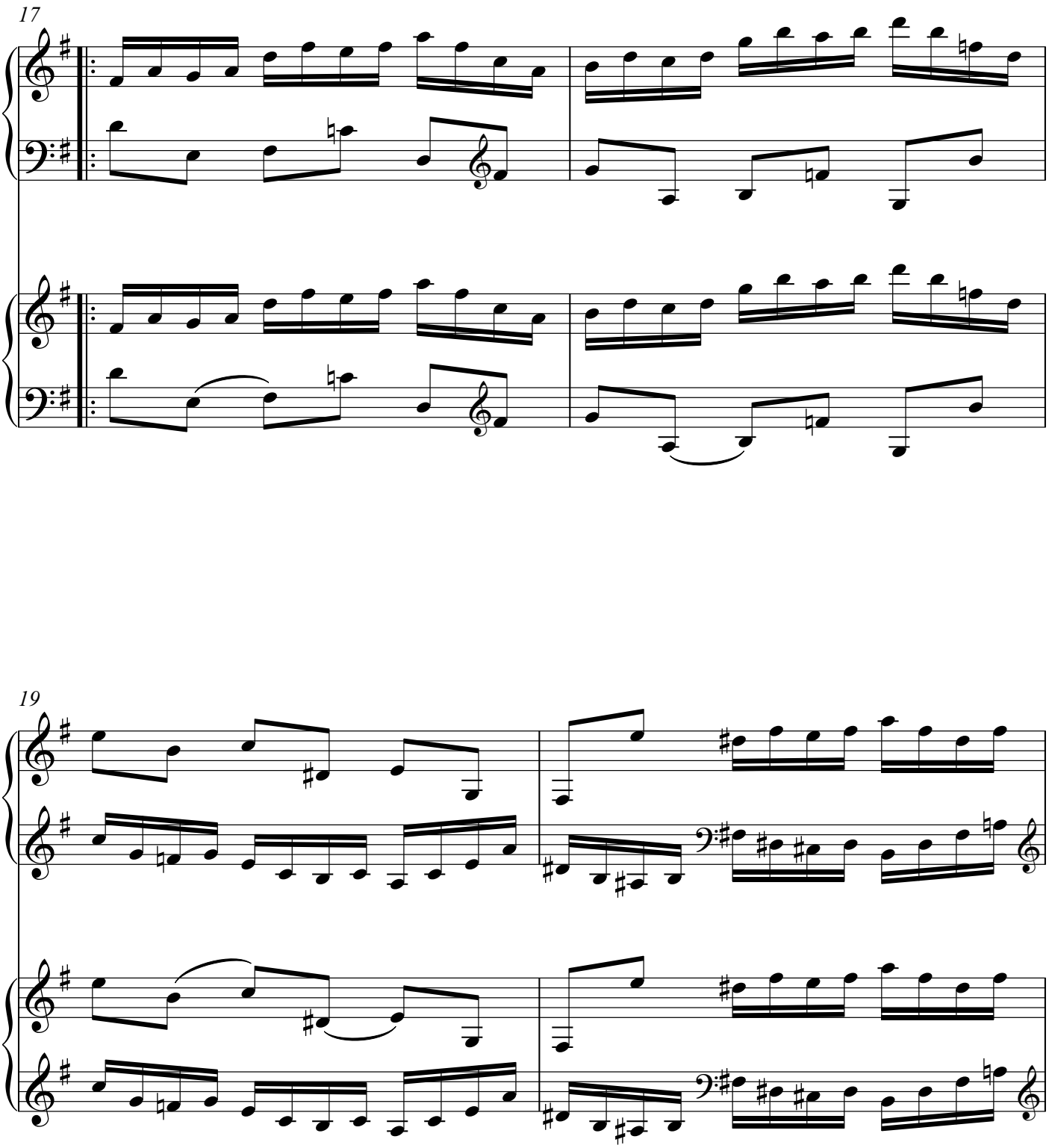
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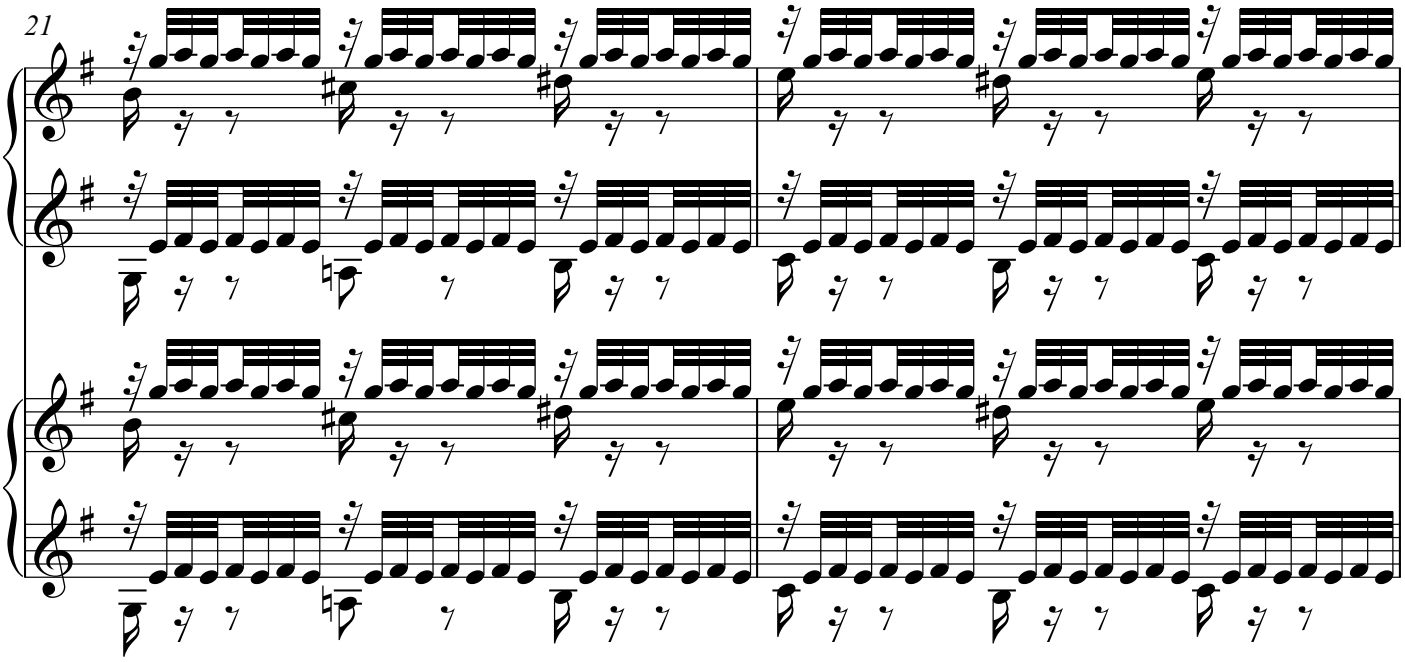
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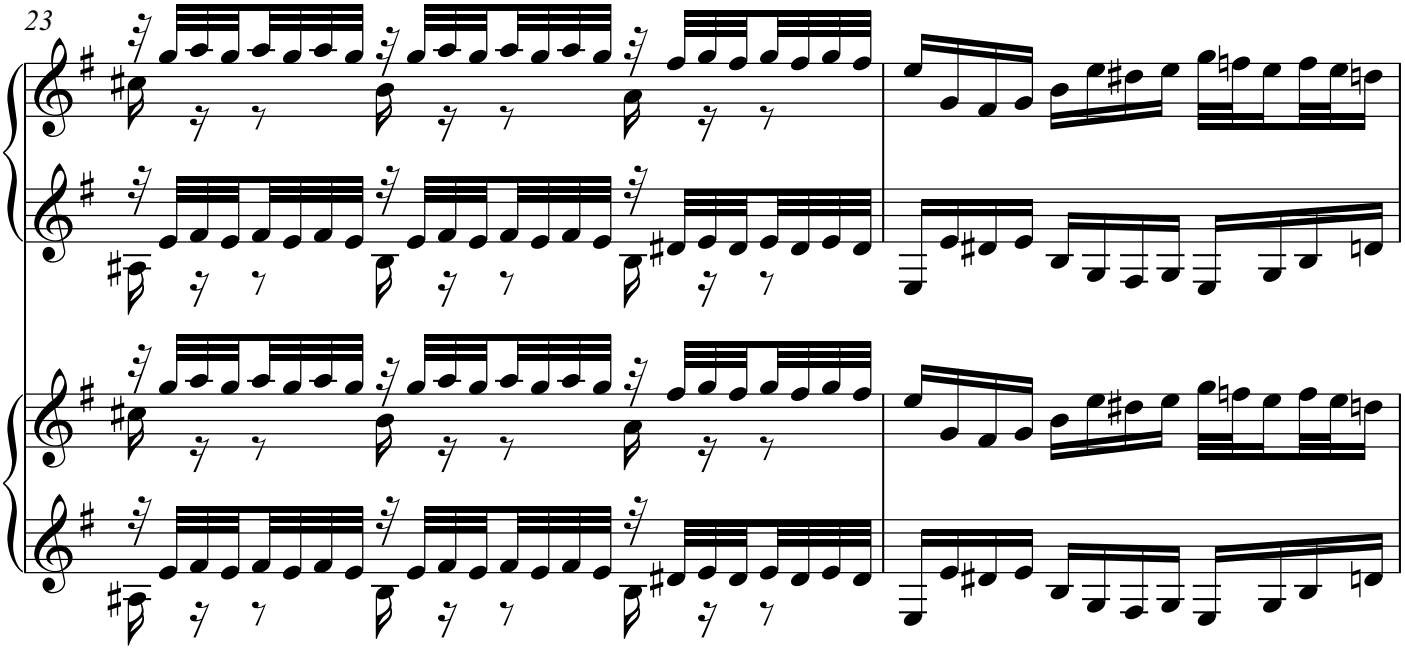
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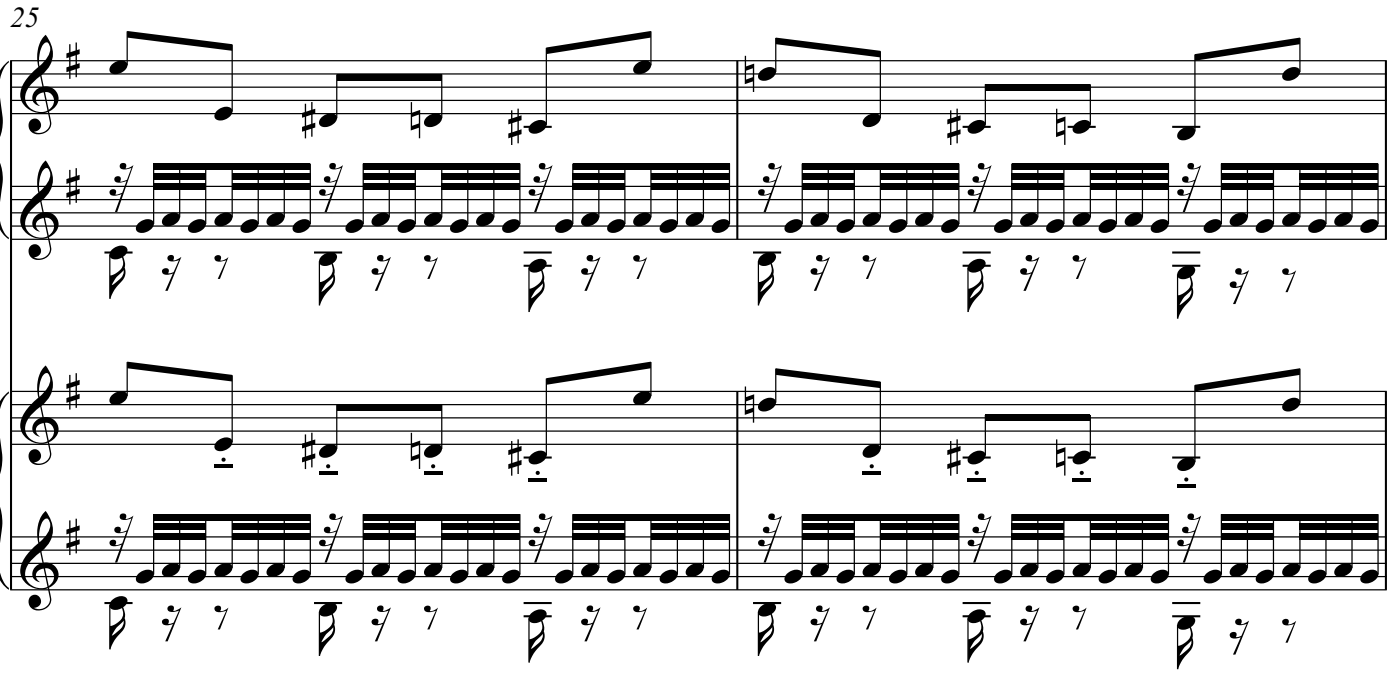
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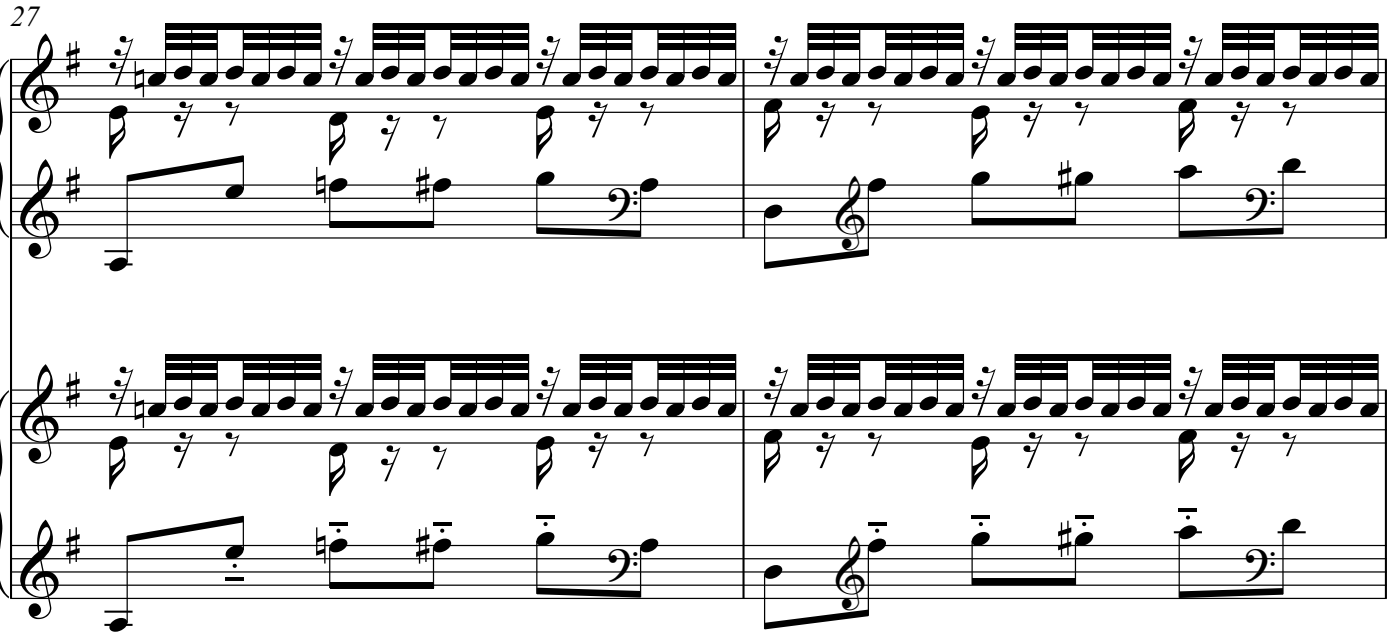
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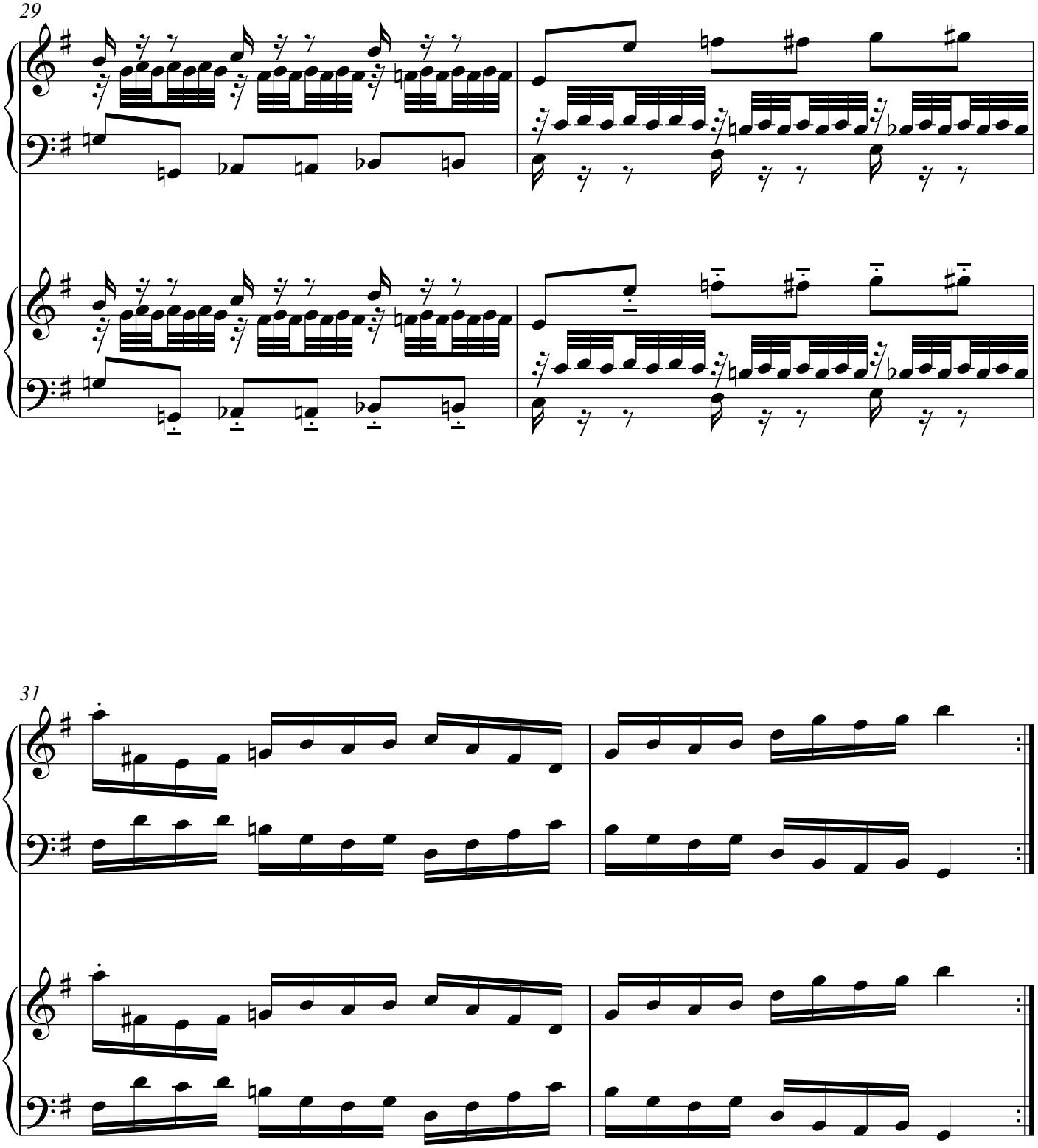
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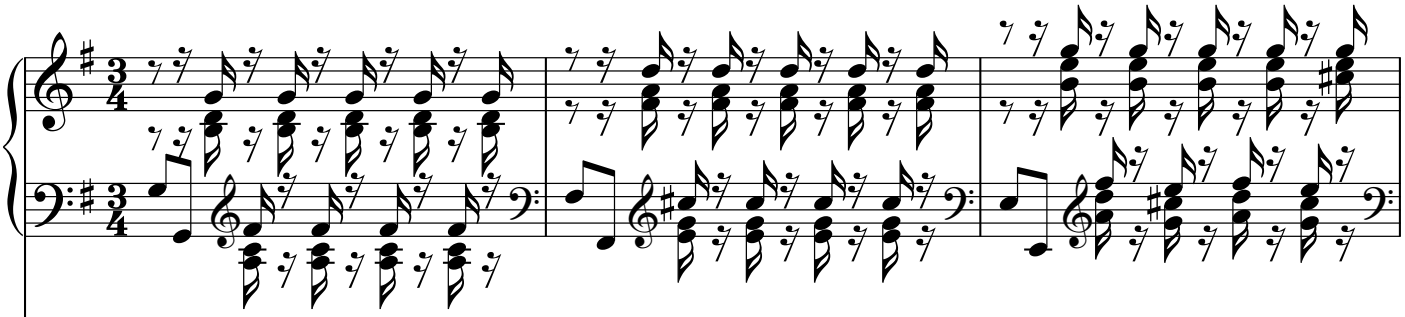
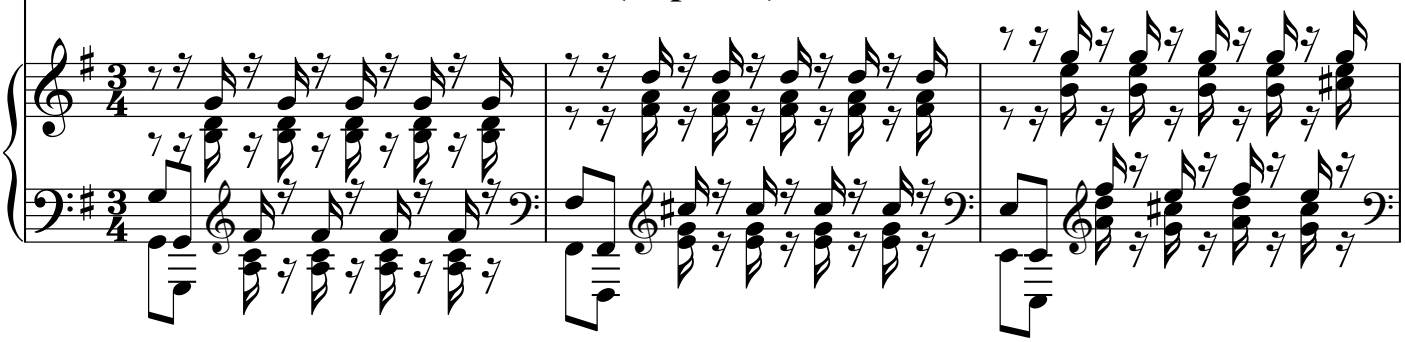
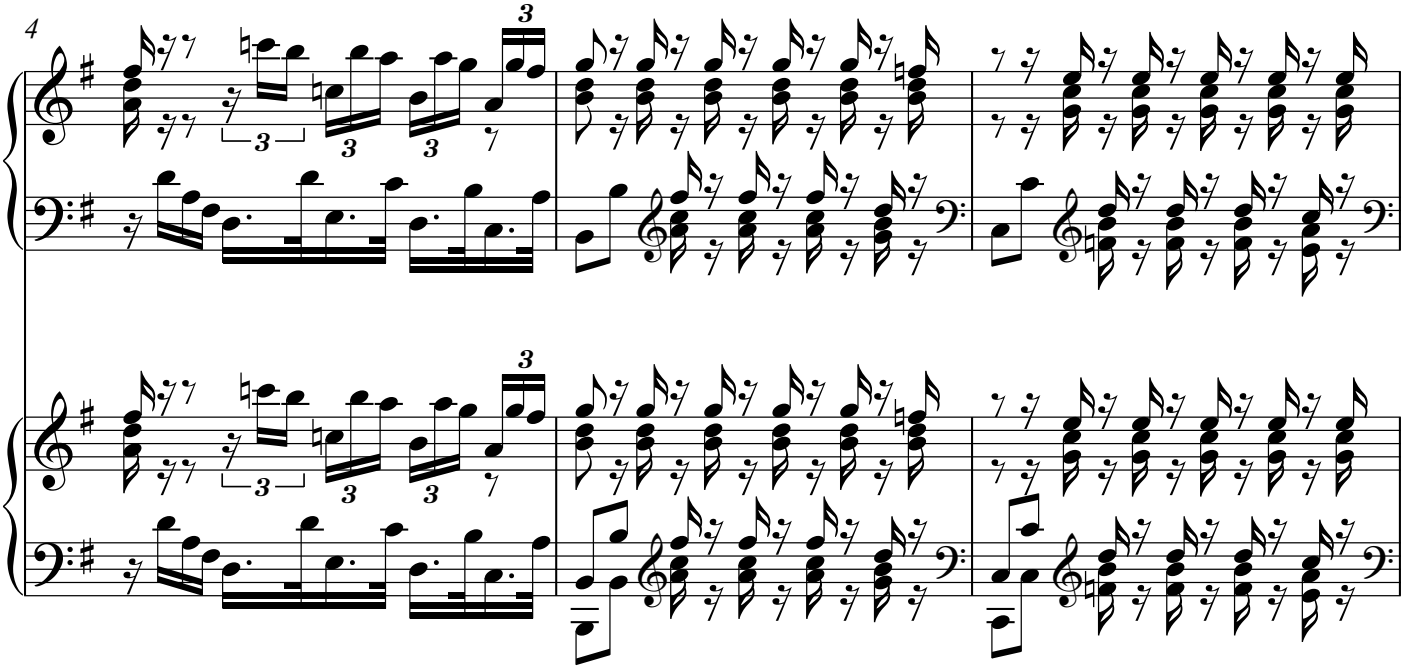
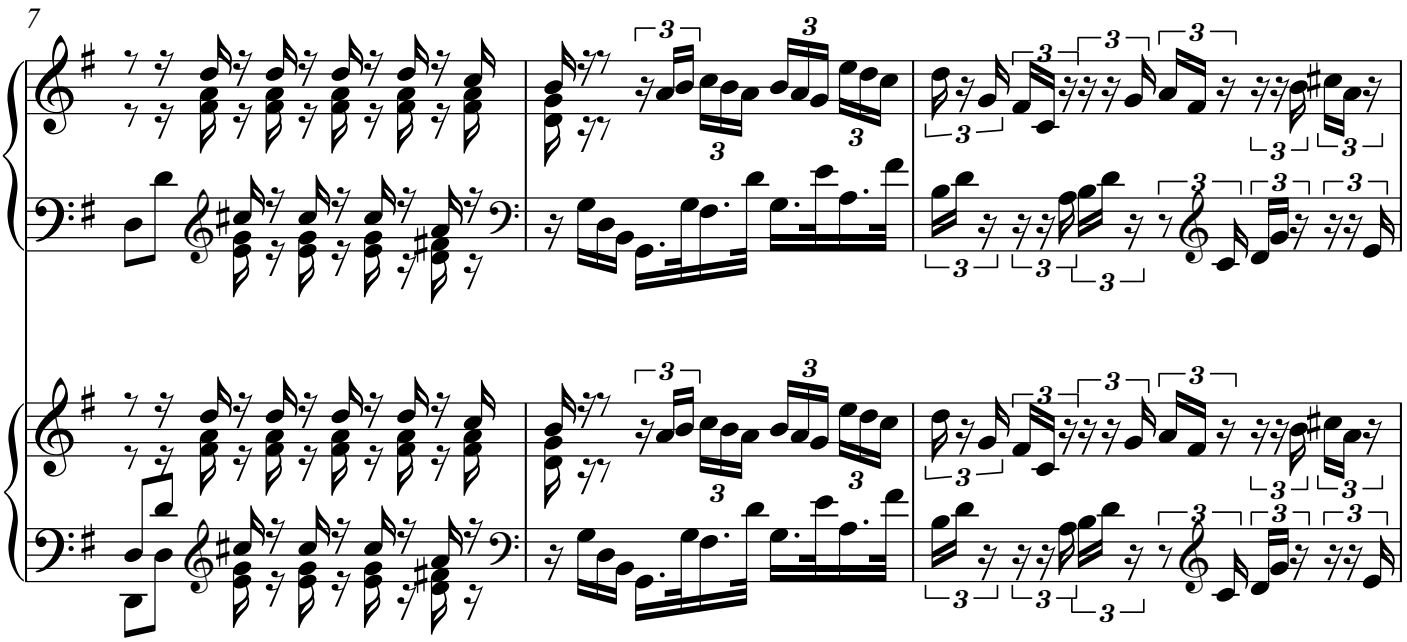
VARIATIO 29 a 1 ovvero 2 Clav. (Bach)



VARIATIO 29 a 1 ovvero 2 Clav. (Papillon)



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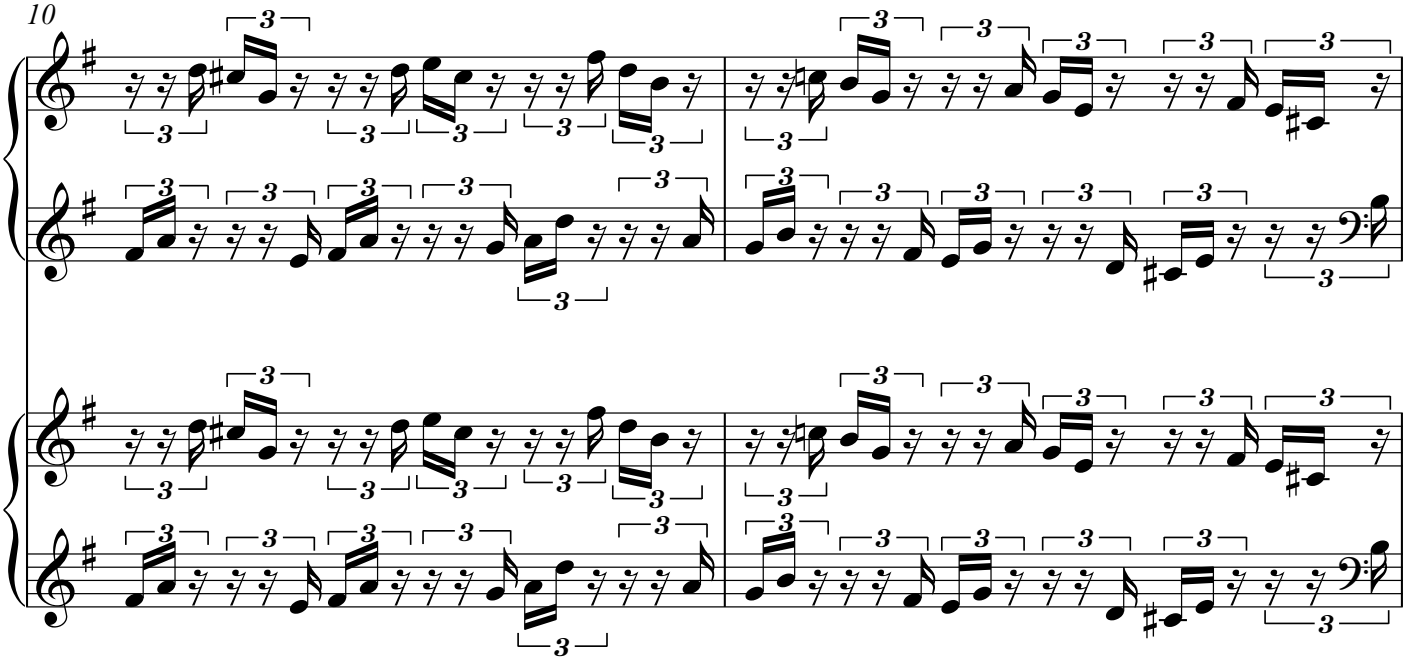
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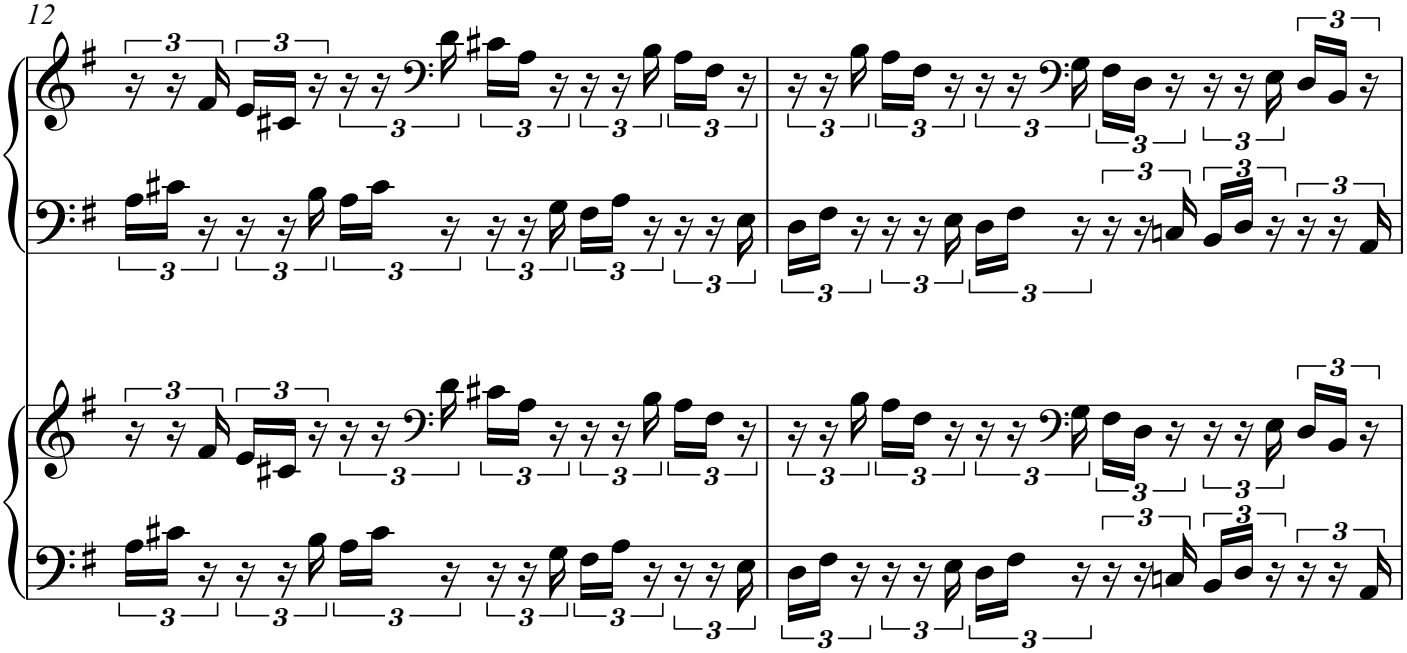
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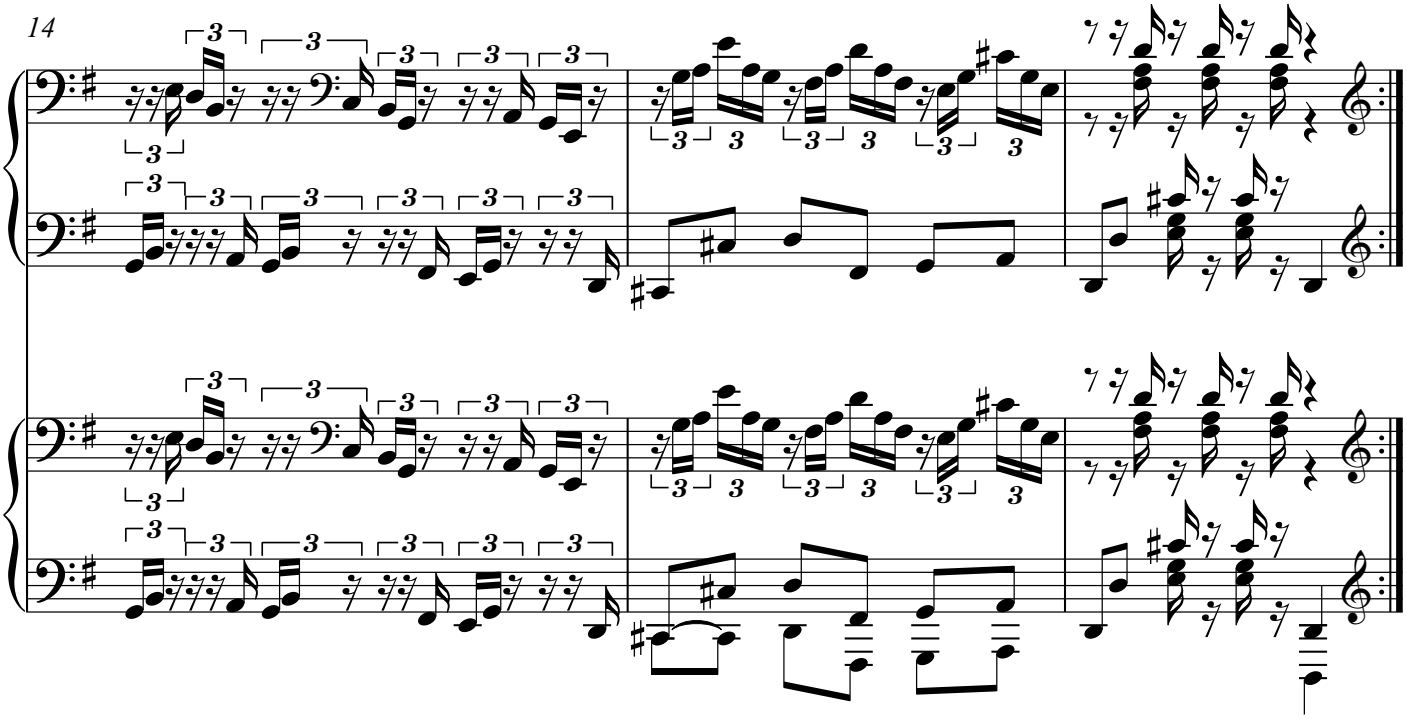
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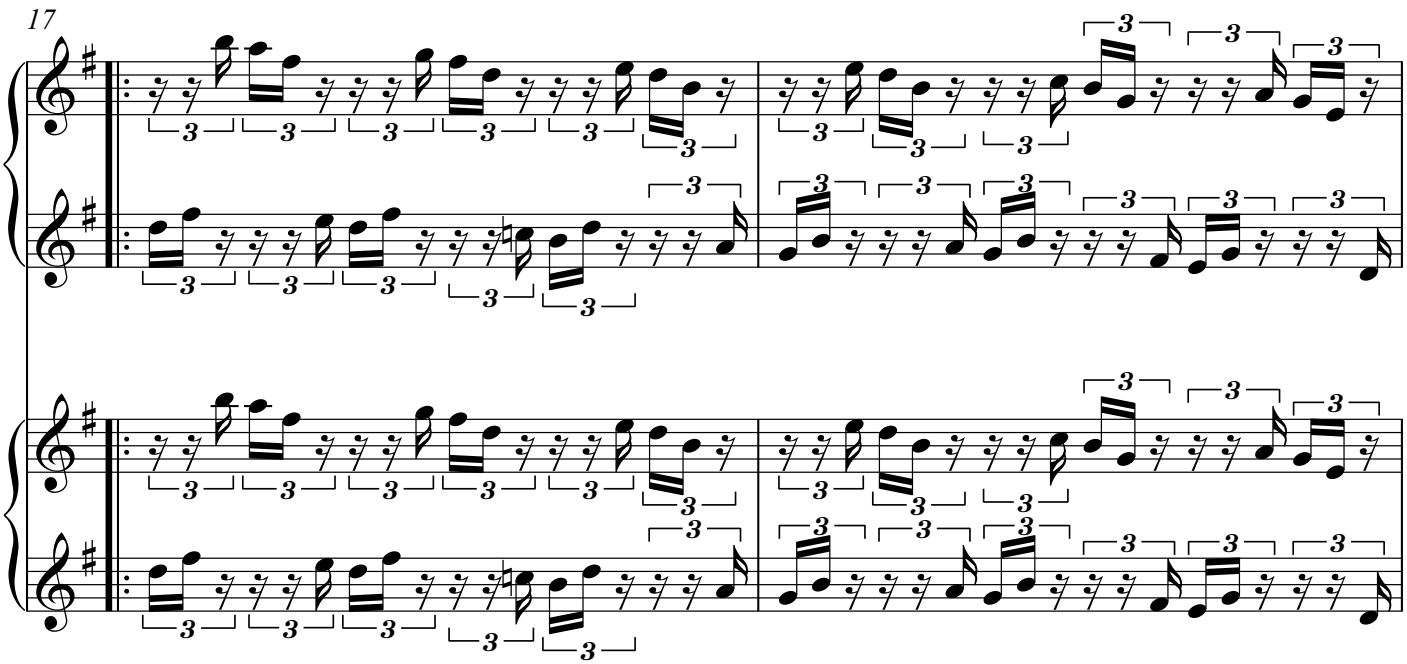
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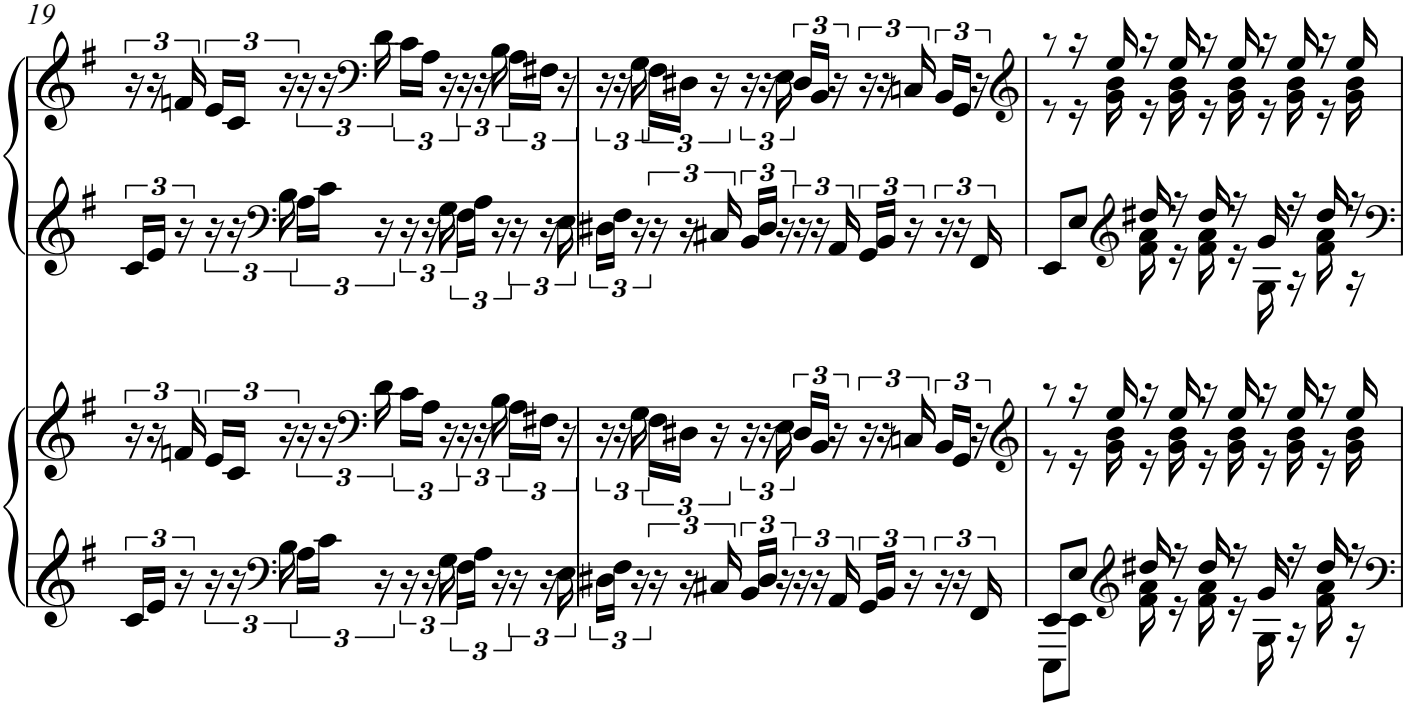
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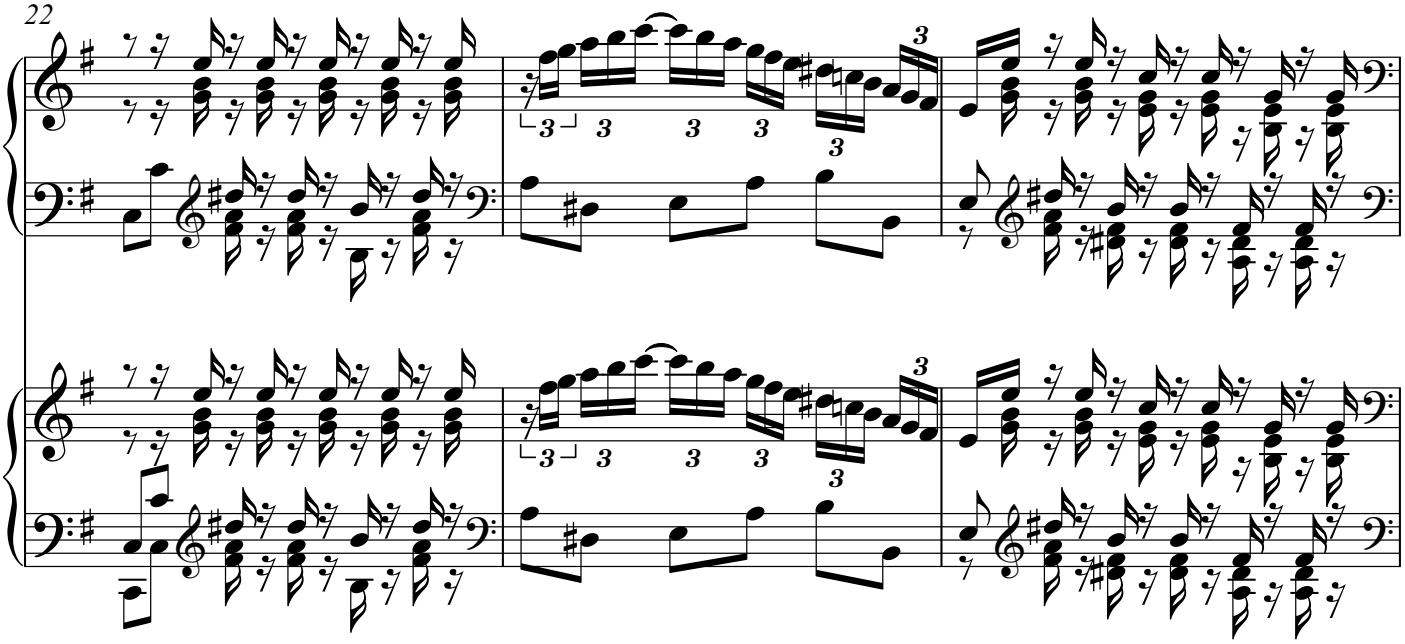
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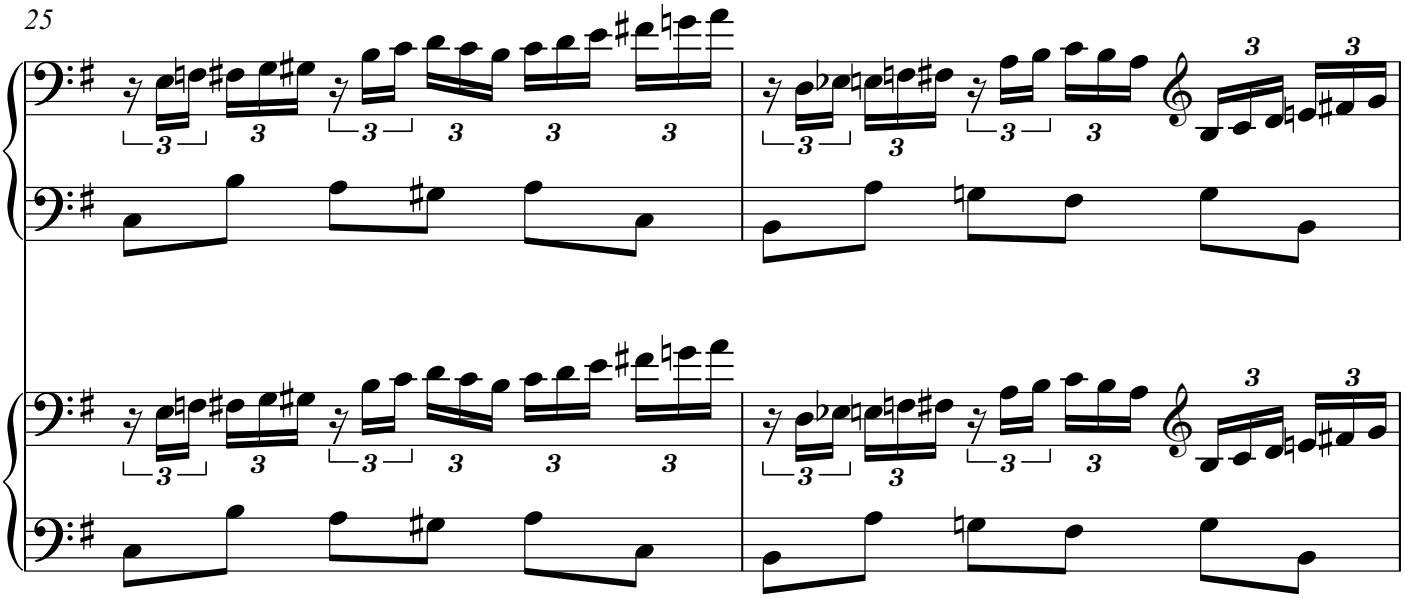
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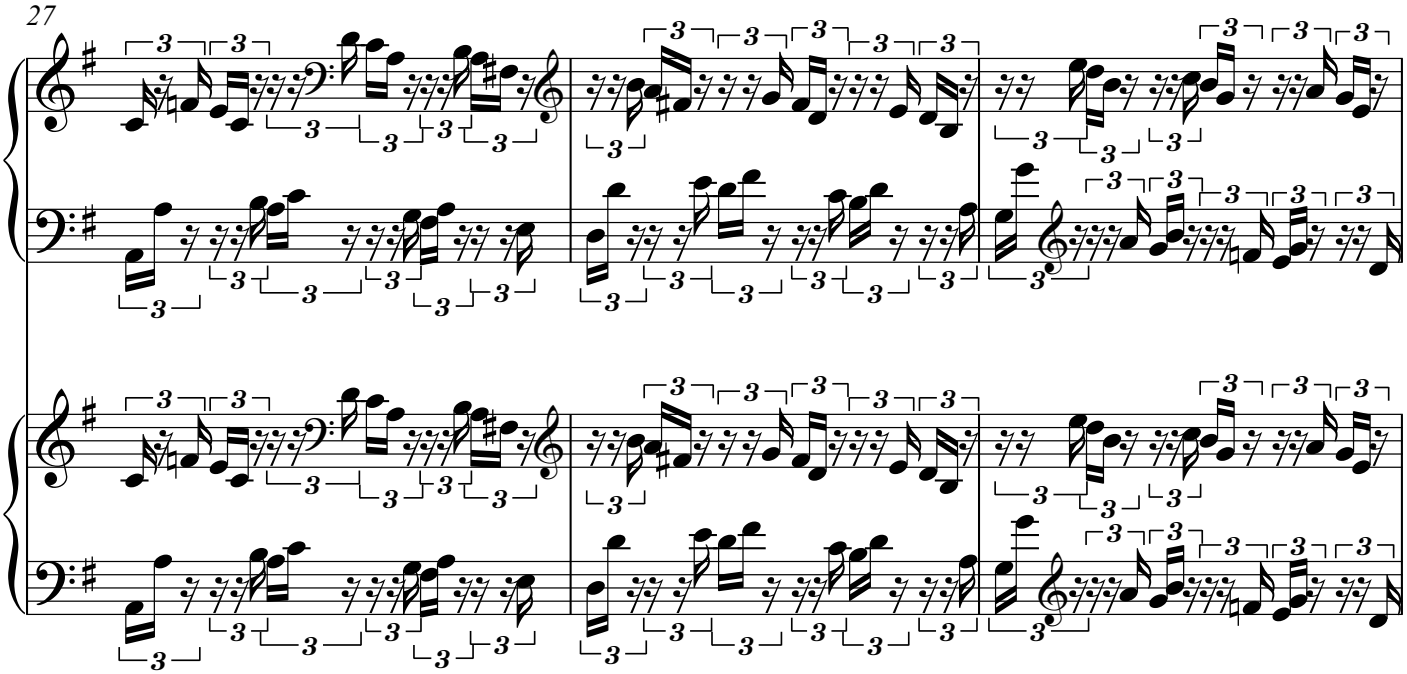
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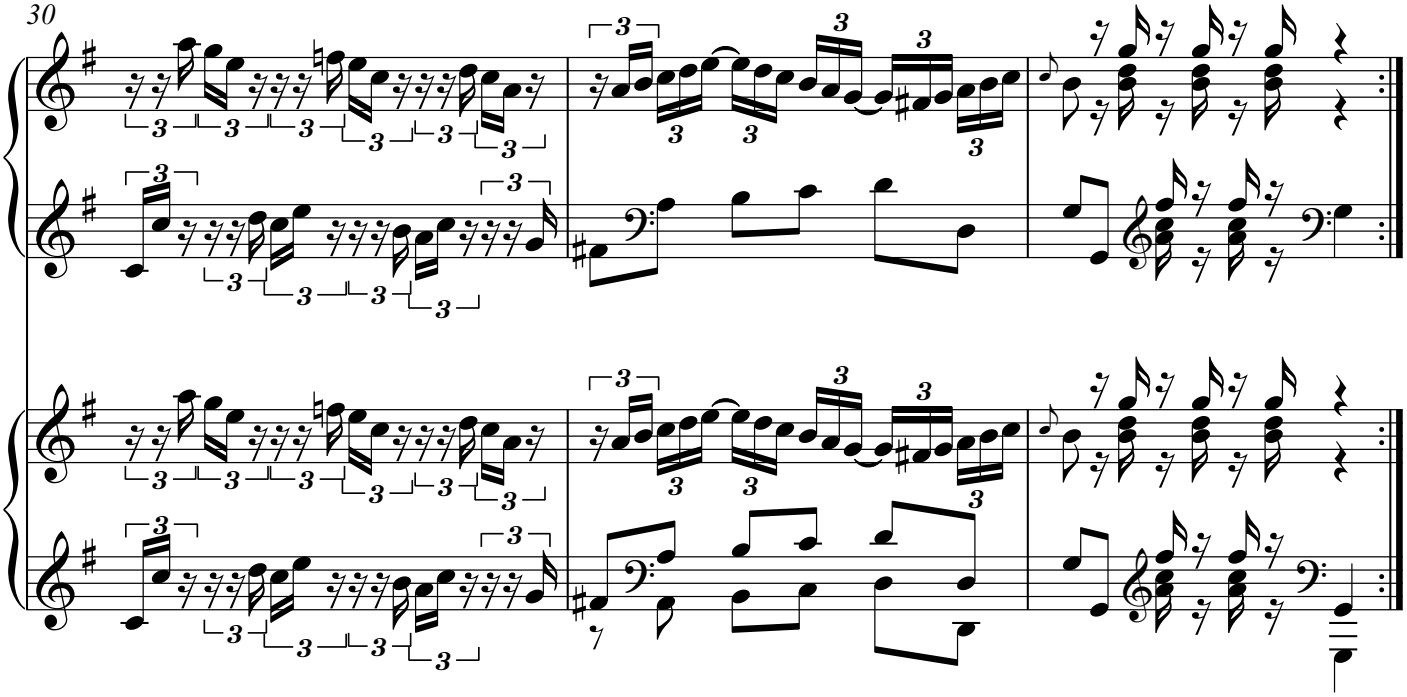
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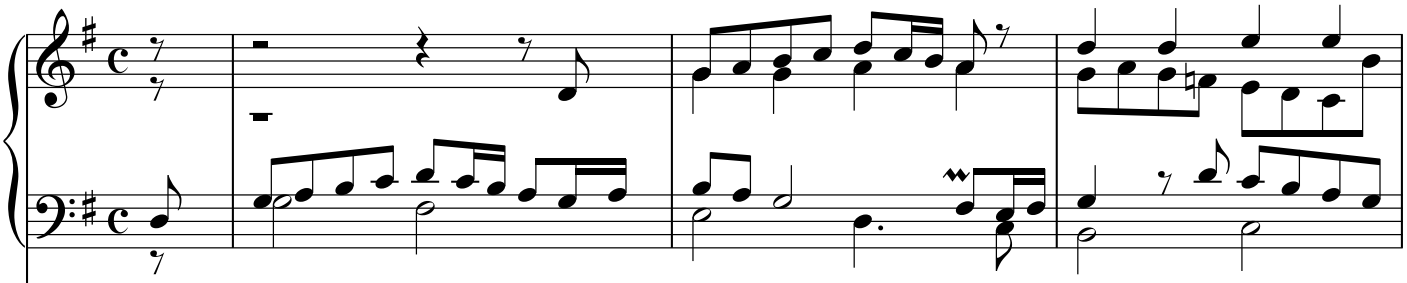
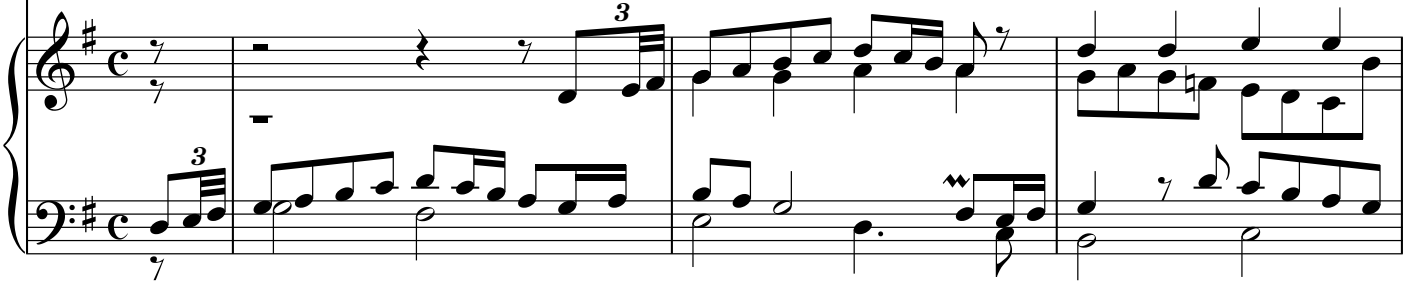
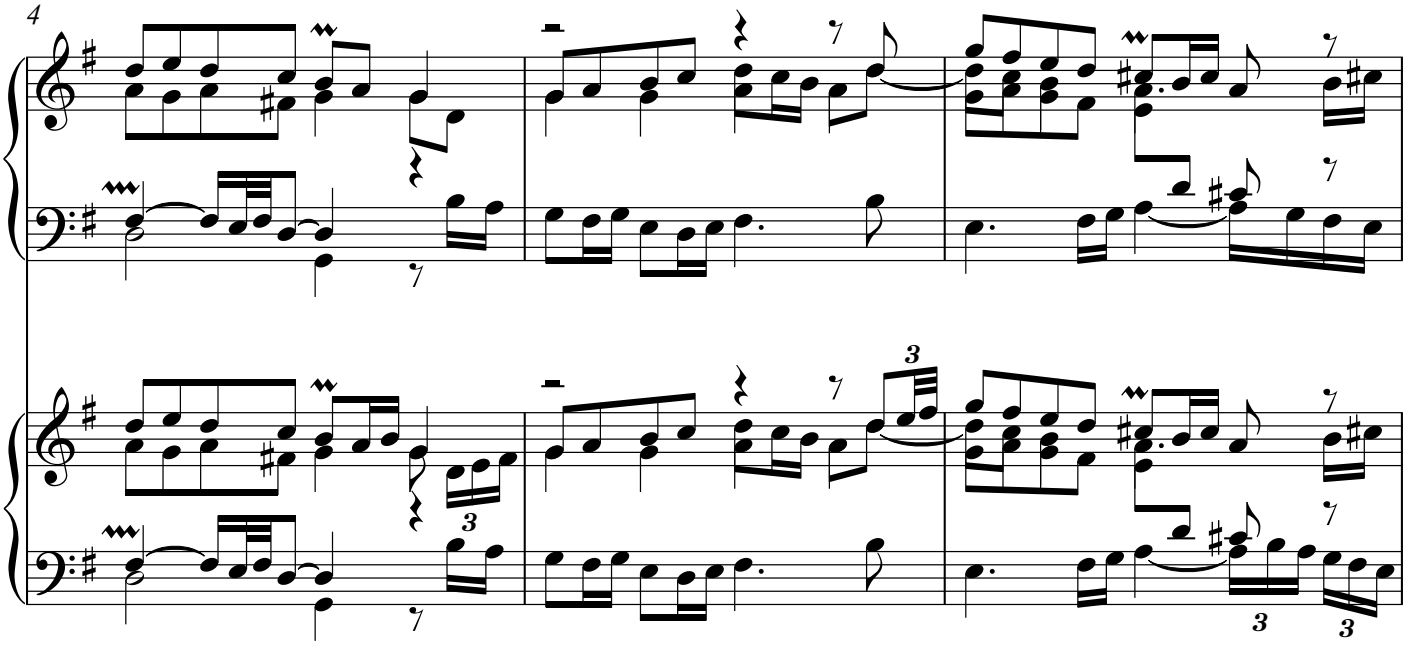
VARIATIO 30 a 1 Clav. (Bach)
Quodlibet

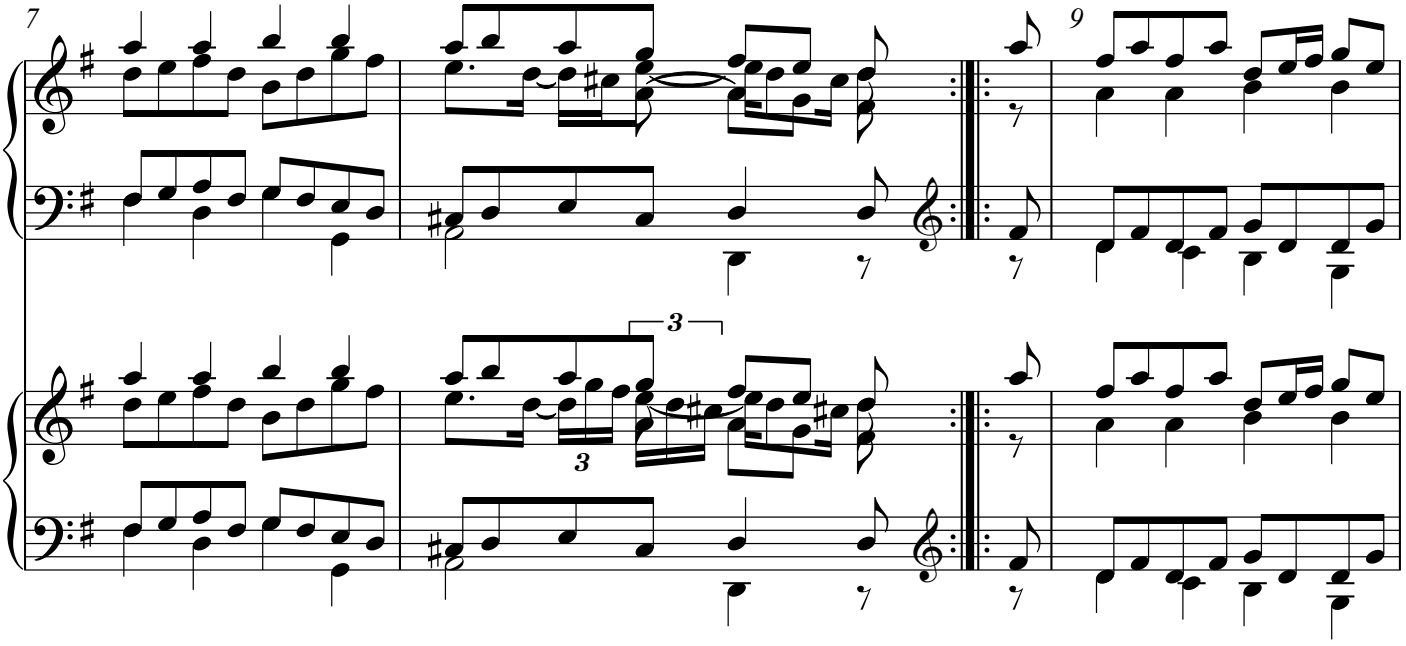


VARIATIO 30 a 1 Clav. (Papillon)
Quodlibet





V.S.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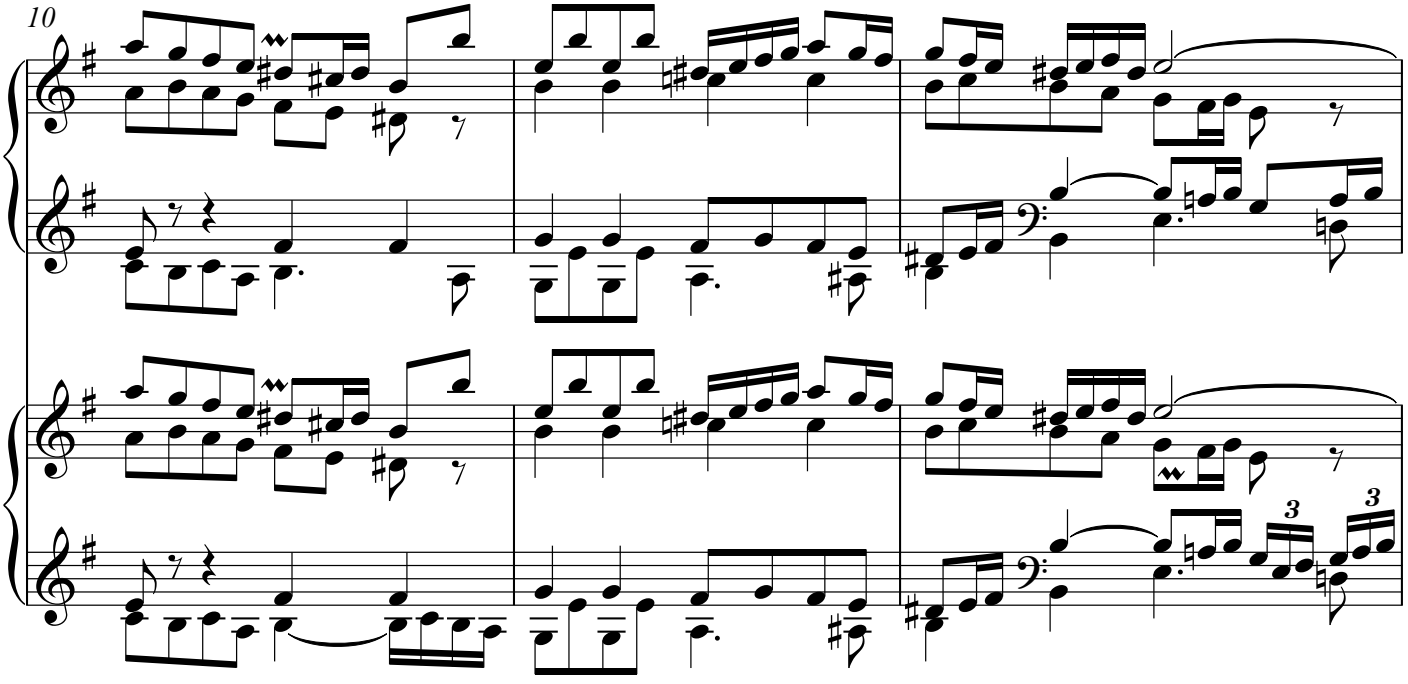
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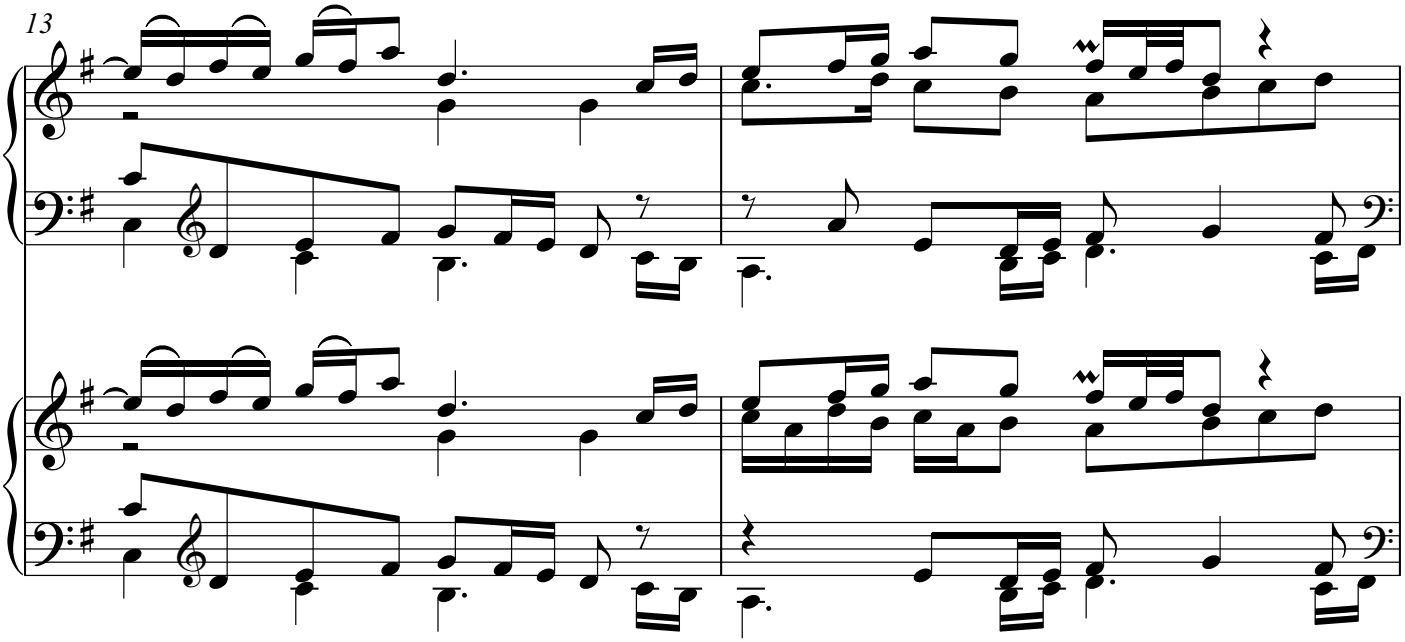
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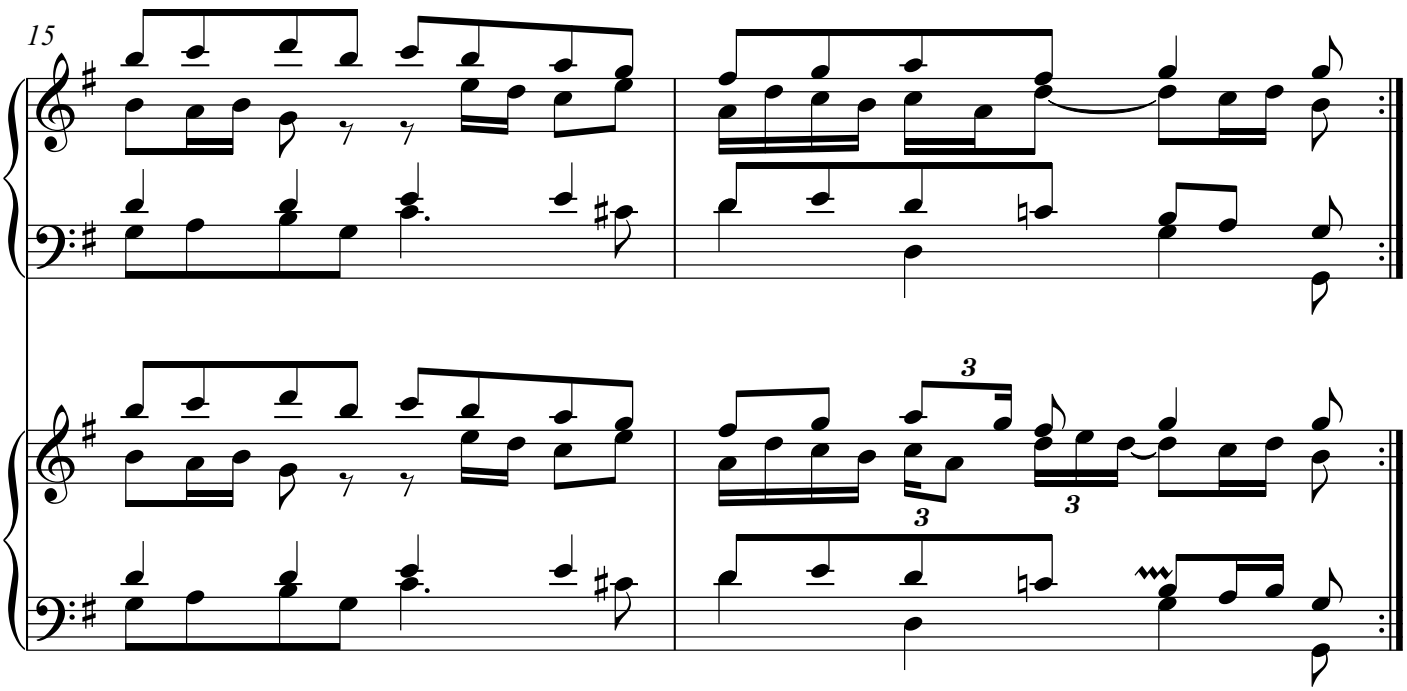
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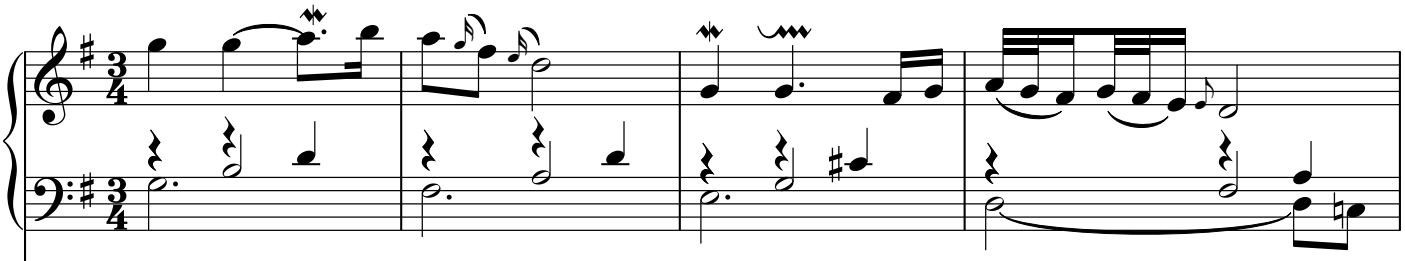
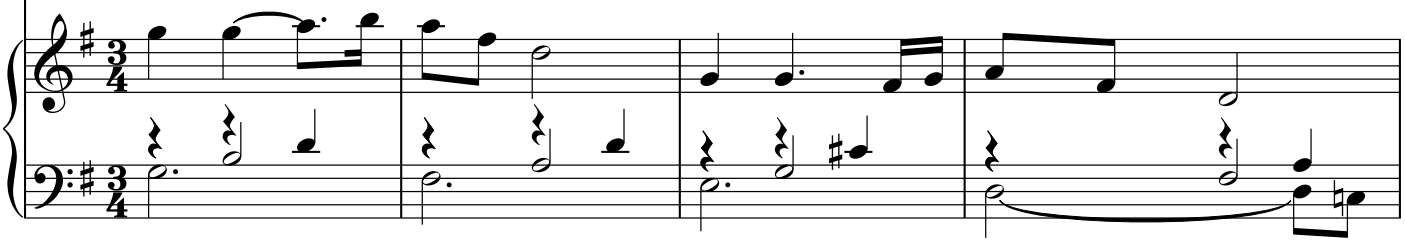
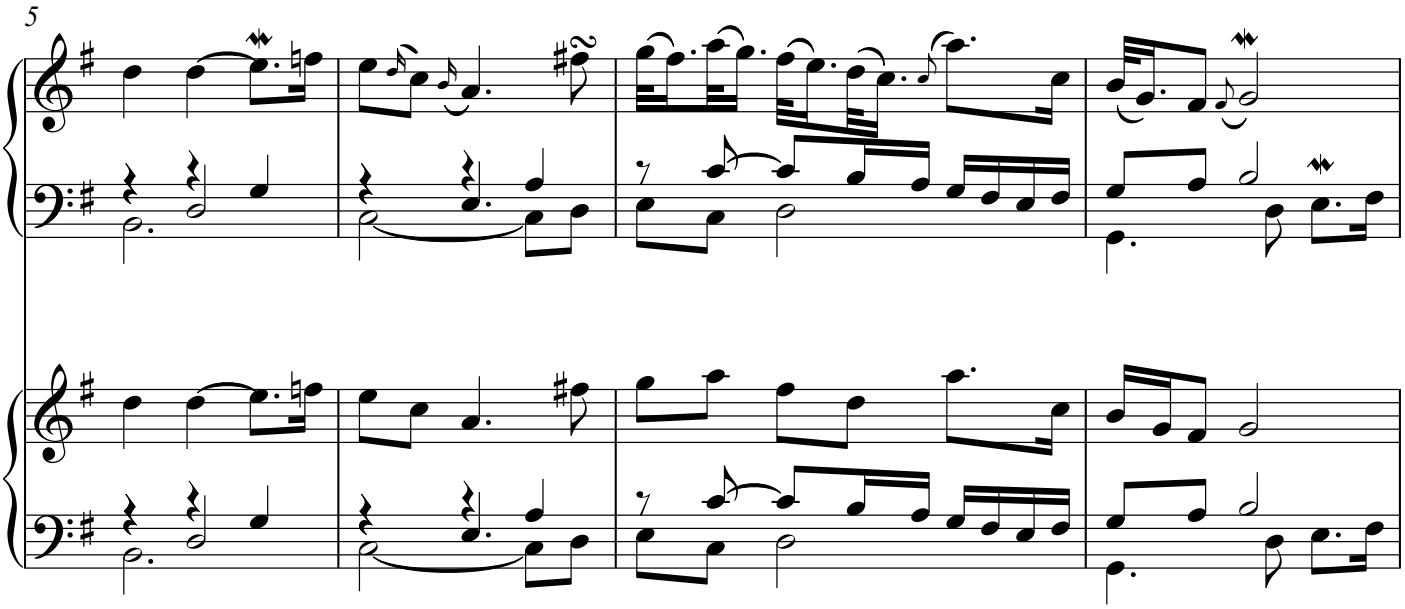
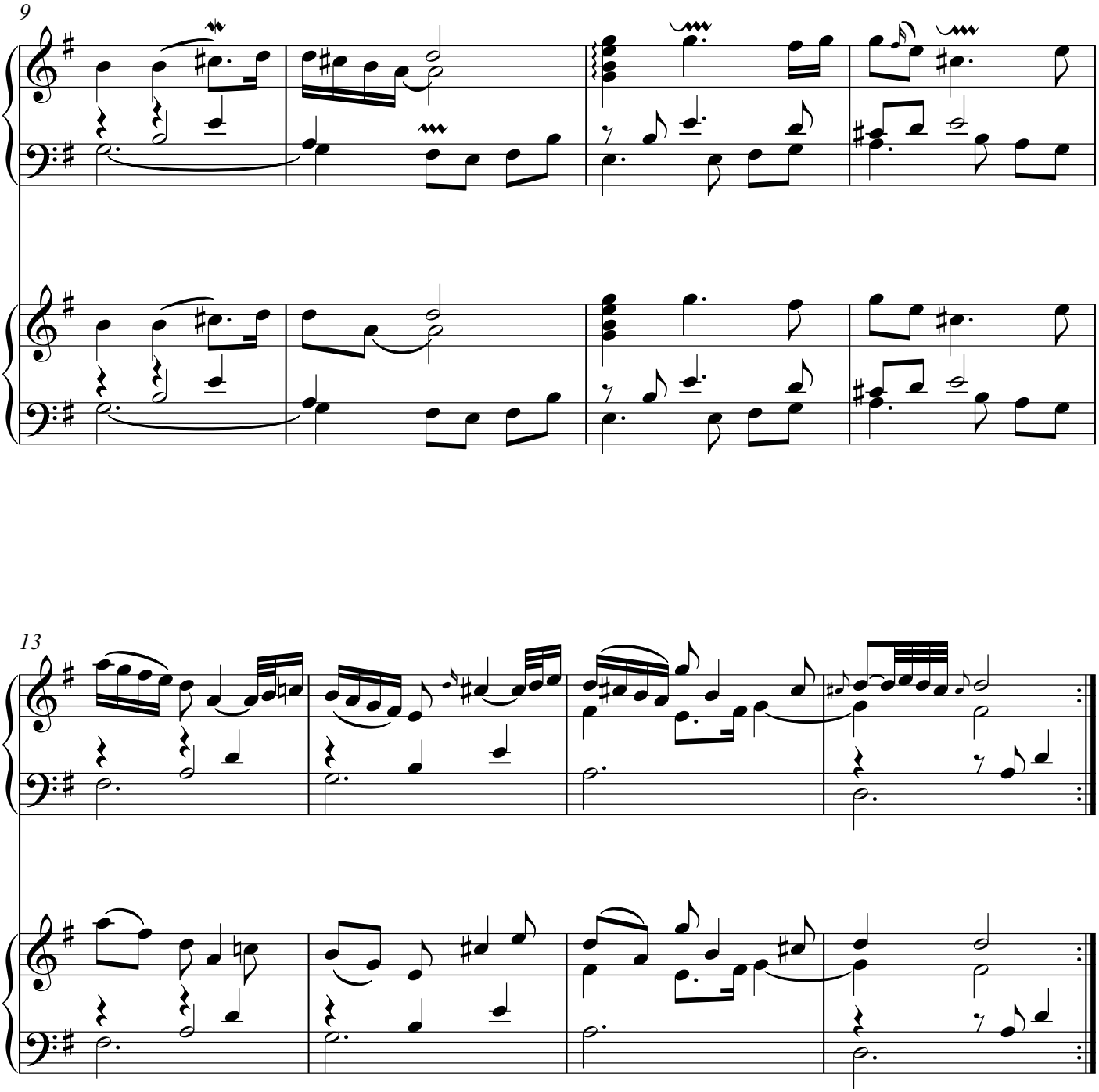
Aria (Bach)



Aria (without ornamentation)



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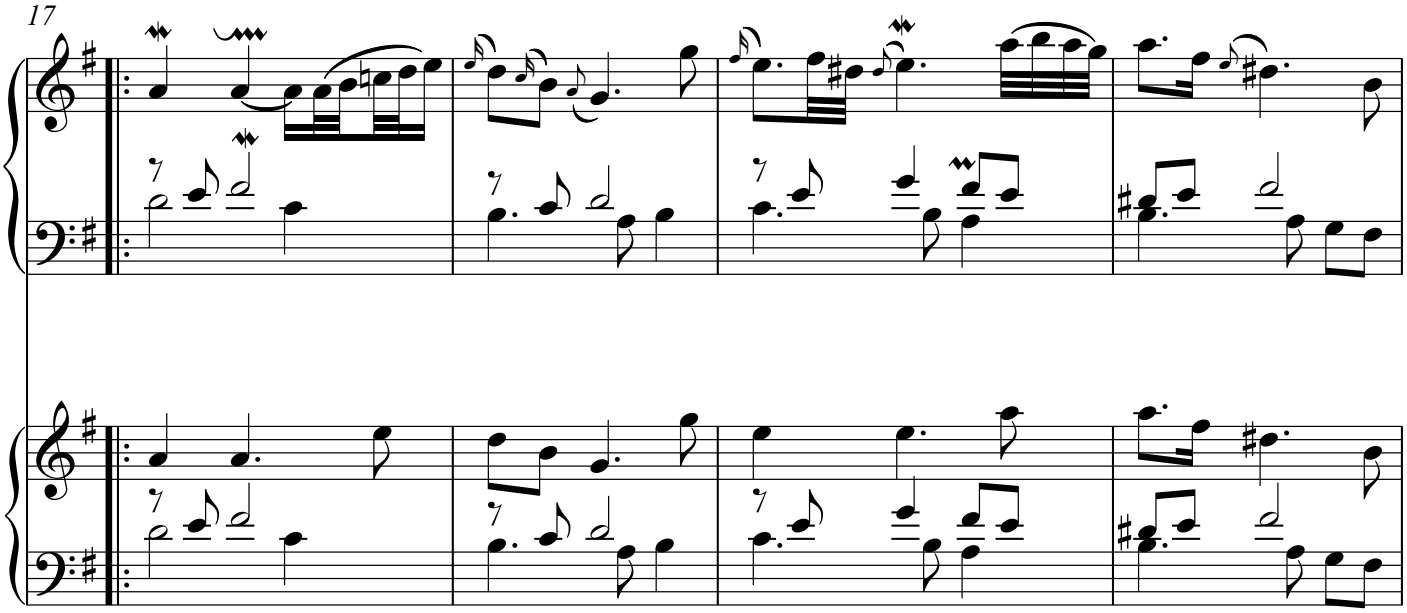
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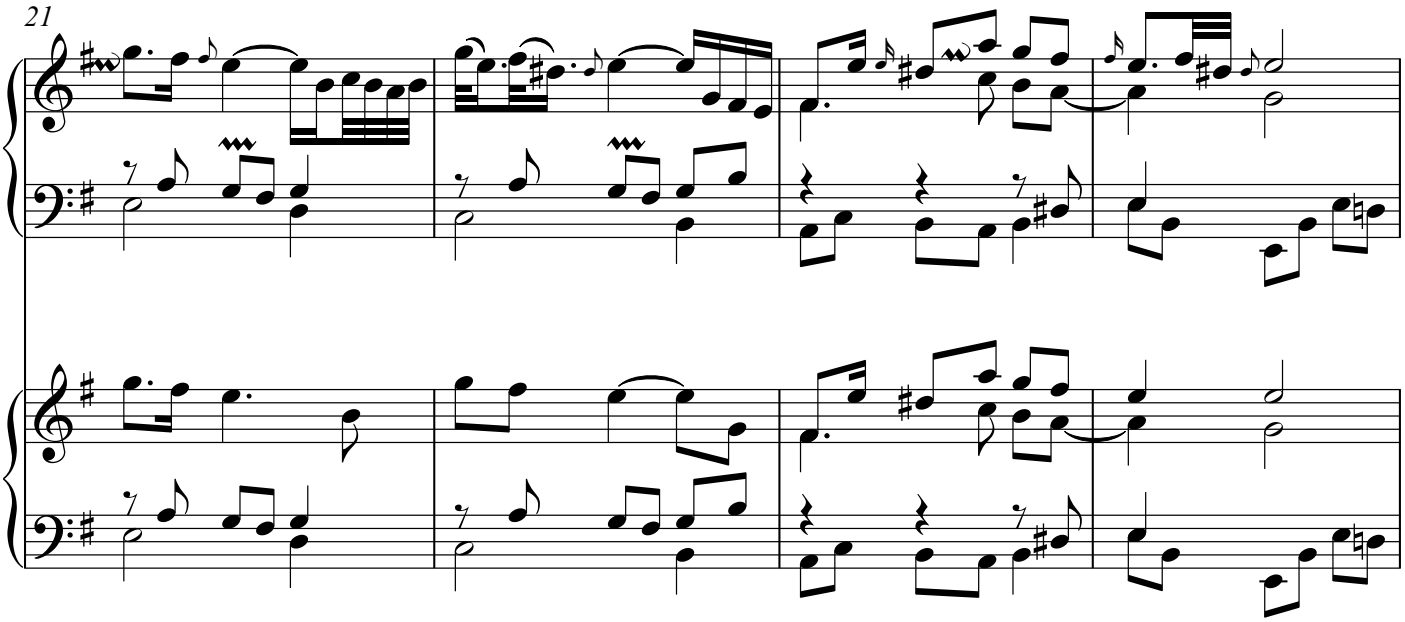
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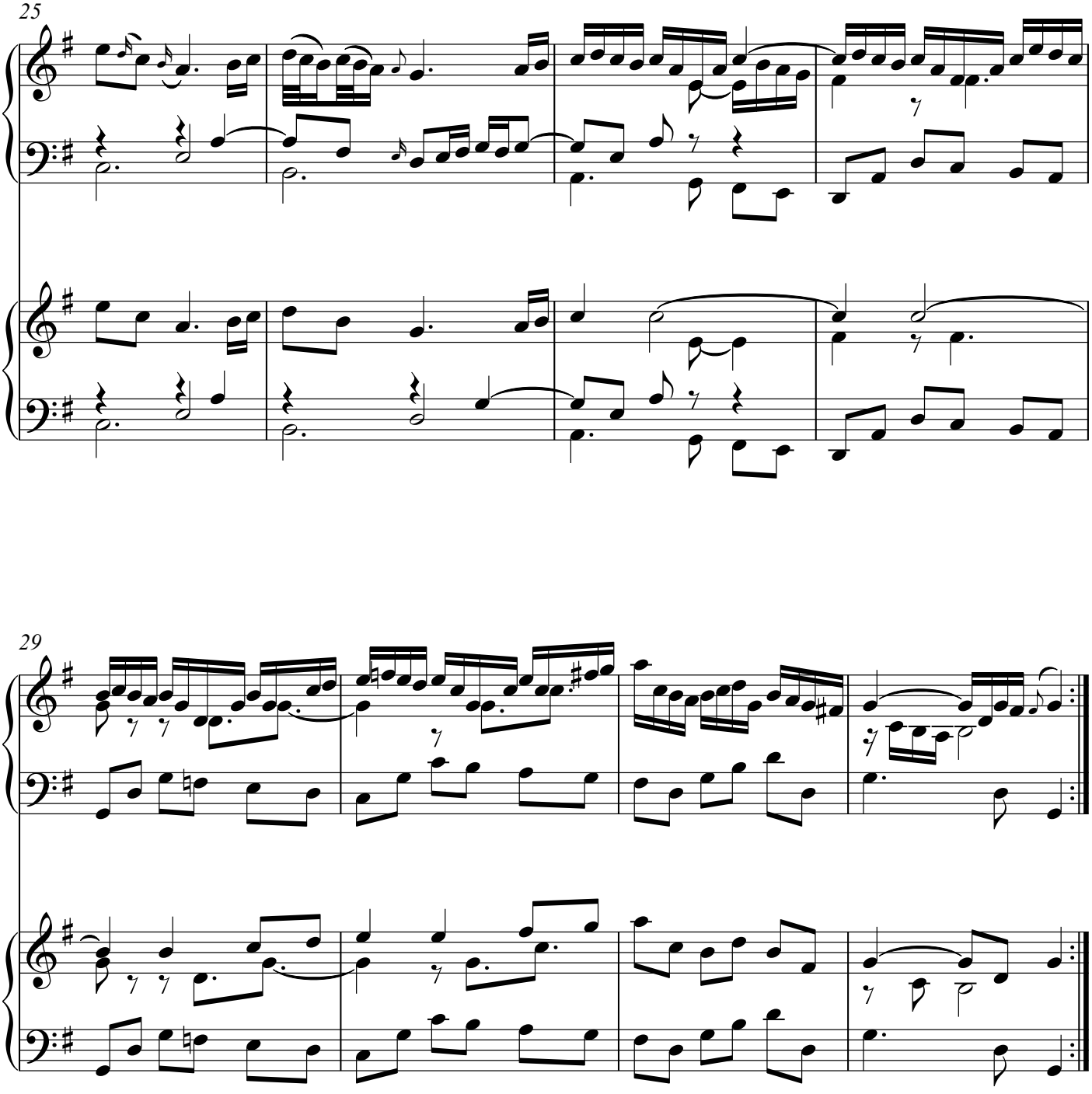
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