The Cello Suites of J. S. Bach: A Critical Edition for Marimba

by

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A Research Paper Presented in Partial Fulfillment
of the Requirements for the Degree
Doctor of Musical Arts

ARIZONA STATE UNIVERSITY

December 2010

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has been approved

October 2010

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ABSTRACT

The music of Johann Sebastian Bach has long been used for keyboard percussion pedagogy and performance. The cello suites (BWV 1007-1012), in particular, are popular choices for marimbists. As with many transcriptions for marimba, performers are challenged to transfer Bach's musical genius onto an instrument whose timbre, range, mode of execution and acoustic properties are distinctly different from the original. To date, there is no concise and relevant edition of the suites for study and performance at the marimba. The edition contained herein solves most, if not all, of the problems normally confronted by marimbists. In addition to synthesizing the most salient information from early manuscript sources and modern performances, this edition corrects the harmonic and voiceleading problems that are caused by the polyphonic limitations of the cello. This edition also eliminates performance notations found in most cello editions which are of little use to a marimbist.

ACKNOWLEDGEMENTS

No project of this size can be accomplished alone. Thanks to Drs. J. B. Smith and Mark Sunkett for their guidance about Bach performance at the marimba, among many other things. Thanks to Dr. Glenn Hackbarth for his expertise, support, and wisdom regarding a wide range of issues, professional and otherwise. Thanks to Dr. Jeff Bush for his sage advice, always delivered with clarity and speed. Many thanks to all of the other people who have directly advanced my understanding of Bach through their teaching: Kay Stonefelt, Larry Snider, Jean Geoffroy, Leigh Howard Stevens, and Doug Walter. Thanks also to those whose work on Bach influenced me through print media, recordings, and observation: Stanley Richie, Anner Bylsma, Pieter Wispelwey, Paul O'Dette, Paul Galbraith, Carter Brey, John Holloway, Keith Jarrett, and many others. Less abstract thanks go to Director Cindy Stillings, Dance Division Director Andrea Shearer, and the rest of my faculty colleagues in the School of Theatre and Dance at Kent State University, who supported the completion of this project with advice, allowances for time away from University work, and unfettered use of the departmental laser printer. Thanks to Scott Farkas for invaluable help with music engraving. Thanks to my parents and my sister, whose support is strong and unswerving. Elizabeth DeLamater's love, encouragement, and intercessory good cheer mean more than words can convey. Lastly, thanks to anyone who deserves to be mentioned here but, because of a lapse on my part, is not.

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> Bach's instruments often feel beside the point, as if he composed ideal music, music that transcends instruments, music that was invented to reinvent itself.
>
> —Eric Siblin, *The Cello Suites*

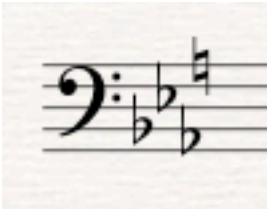
Introduction

In his 2009 book *The Cello Suites: J. S. Bach, Pablo Casals, and the Search for a Baroque Masterpiece*, Eric Siblin devotes a significant portion of one chapter to a discussion of the ease and fluidity with which Bach's music moves from one instrumental medium to another. In his survey of the history of Bach transcription and arrangement, he includes Bach's transcriptions of his own work; arrangements by Charles Gounod, Robert Schumann, Leopold Godowsky, Leopold Stokowski, Jacques Loussier, and the Swingle Singers; and a failed 1938 lobbying effort by the president of the Bach Society of New Jersey "urging the FCC to suspend or revoke the licences [*sic*] of offending radio stations [that broadcast Bach arrangements for jazz ensembles]" (Siblin 2009, 212). He concludes his discussion with a reminiscence of a 2003 symposium that focused on contemporary Bach transcription and arrangement, and specifically mentions "a mind-blowing rendition" of BWV 1009 by marimbist She-e Wu, who "gave the suite a wonderful velvety, percussive quality" (Siblin 2009, 216). According to Siblin, the culture of Bachian musical cross-pollination is alive and well.

However, a marimbist who wishes to approach Bach's cello suites (BWV 1007-1012) faces some obstacles, not the least of which is finding an edition of the sheet music that provides a maximal amount of useful information and a

minimal amount of unhelpful information. Some commonly-encountered problems are little more than mere annoyances: bow markings, small numbers above or below noteheads to indicate suggested cello fingerings, and the like. Some of these problems, however, will range in magnitude from the significant to the confounding: dynamic markings placed at an editor's whim, slurs that (if taken as phrasing indications) suggest a fragmentary interpretation, and passages requiring realization or arpeggiation (such as the last five measures of the Prélude from BWV 1008) where an editor or performer may write their own version of the passage in the normal course of the music, giving no indication that other possibilities are not only possible, but plentiful. And no matter how well-informed a marimbist may be about Baroque performance practice, he or she will be particularly frustrated if his or her edition of BWV 1011 is written in scordatura-tablature notation, whereby notes on the A-string (tuned down to G for this suite) are notated not at their sounding pitch, but at their erstwhile pitch if they were fingered on a cello in normal tuning. In some editions (e.g. Gaillard 1937), this is the only option presented, and the marimbist is faced with the need to re-notate the entire suite, not least because of the unconventional key signature required in such notation.

Figure 1. Key signature from scordatura-tablature version of BWV 1011



Another option for the marimbist is to use a critical edition such as the one published by Bärenreiter (Schwemer and Woodfull-Harris 2000). Such editions certainly offer an improvement over the previous example, but the marimbist will again encounter difficulties: the Bärenreiter edition's notation breaks into separate staves to show variances between manuscript sources (making sight-reading particularly difficult), and the version of BWV 1011 written at sounding pitch is included only as an appendix. Moreover, no edition of the cello suites addresses idiomatic issues that arise in the transcription process, particularly the correction of the many open-fifth sonorities that were required of Bach because of the polyphonic limitations of the cello. In short, the marimbist who wishes to perform the cello suites is forced, at the outset of their endeavor, to choose between the lesser of two problems: on the one hand, practicing from a cello performance edition littered with unhelpful markings and possible half-truths, or, on the other hand, using a critical edition which is designed for reference, not for practical learning and performance. The correction of this situation is the goal of the edition contained herein.

Literature Review

The use of Bach's music as a source of repertoire for mallet keyboard pedagogy and performance is not new; collections such as Thomas McMillan's *Masterpieces for Marimba* (1971) have long used the music of Bach (as well as that of Handel, Corelli, Clementi, and others) as a source of fodder for mallet

keyboard instruction. However, most published mallet keyboard collections do not treat the six cello suites (or violin sonatas and partitas, or lute suites) as a unified cycle of material, despite the richly-supported argument that Bach conceived of the cello suites as just such a cycle.

> The qualities that set Bach's suites apart from all others have nothing to do, strictly speaking, with the history of the suite. The choice of pieces, their order and any techniques of unification all have their precedents and counterparts. What is unique is Bach's use of the suite as a building-block in a larger structure….It is a matter of arranging each suite to do something different – or the same thing in a different way – so that the set as a whole becomes a kind of thesaurus of the suite for that particular medium. (*The New Grove Dictionary of Music and Musicians* 2nd ed., s.v. "Suite")

Each of the six cello suites follows a skeletal plan that Bach used for many of the suites that he composed throughout his life: prélude, allemande, courante, sarabande, a pair of additional dance movements (in the cello suites, these are menuets, bourrées, or gavottes), and a concluding gigue. Structurally, the cello suites have the English Suites for harpsichord (BWV 806-811) as their closest relation, though the English Suites expand on the general plan by containing *doubles* for various movements and including the passepied among the available options for the movement between the sarabande and gigue (*The New Grove Dictionary of Music and Musicians* 2nd ed., s.v. "Suite"). Bach's conception of the six cello suites as a larger cycle is evidenced not only by the thematic unity within (and contrast between) individual suites—such as the emphasis on French

dance styles in BWV 1011, or the use of a five-string instrument for BWV 1012 —but the patterns that emerge when one considers each suite as if it were a single 'movement of a large work. For example, there is a clear pattern of the dance types used in the movements between the sarabande and gigue: BWV 1007 and 1008 have menuets, BWV 1009 and 1010 have bourrées, and BWV 1011 and 1012 have gavottes. Moreover, the modes of the suites follow a specific pattern: (major-minor-major)-(major-minor-major). A similar pattern of modes exists as a unifying feature in the six sonatas and partitas for violin solo (BWV 1001-1006), although slightly modified: (major-major)-(minor-minor)-(major-major), instead of (major-minor-major)-(major-minor-major).[1]

As recently as 1995, a collection of individual movements of Bach was published (Cirone 1995) which not only treated the movements as wholly autonomous pieces of music, but which served to obfuscate their relationship to the suites (or sonatas or partitas) of which they were a part by titling each movement with the name of the large form from which it was drawn (suite, sonata, or partita) and assigning it a number according to its sequence as presented in the collection. For example, the Cirone collection's third selection is titled "Suite No. 3," even though the movement in question is the Prélude from BWV 1007, and is thus neither a suite nor the third of anything beyond the

[1] The sonatas and partitas for violin also contain a binary organizational pattern—(sonata-partita), three times over—that is roughly analogous to the binary pattern of the dance types found immediately preceding the gigue in the cello suites.

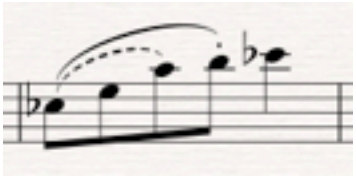
confines of the collection itself. One wonders if a student with the wherewithal to track down Bach's "Suite No. 3" would not be utterly confused when, having found such a third suite, they find not the selection from the Cirone collection but instead find BWV 1009, or the third English Suite (BWV 808) or French Suite (BWV 814) for harpsichord.

The one published effort that comes closest to treating the six cello suites as a single cycle is a set published in stages by Musikverlag Zimmermann from 1984 to 1993. The series was edited by German percussionist Siegfried Fink and contains six volumes; each volume consists of a single suite transcribed by a different percussionist: BWV 1007 is transcribed by Günter Kamp (1984), BWV 1008 by Michael Ort (1986), BWV 1009 by Peter Sadlo (1987), BWV 1010 by Paul Mootz (1985), BWV 1011 by Mark Christopher Lutz (1992), and BWV 1012 by Xavier Joaquin (1993). The six volumes show many outward signs of being conceived as a large cycle—they share similar cover designs, engraving, and typography—but their inconsistent treatment of slurs, stickings, and execution and notation of ornaments makes them unsuitable for informed study and performance.

Each volume contains many solid-line and dashed slurs, but nowhere is there an explanation of what the slurs are supposed to signify or what the difference in meaning might be between the solid-line and dashed slurs. Some slurred groups of notes are quite short (as they might be if they were indicating

cello bowings), while other slurred note groups are longer, and sometimes contain smaller nested slurs. The Menuet II from BWV 1007 contains a measure that serves as an example of this pervasive problem (Kamp 1984, 7). (It should be noted that neither the staccato marking nor the nested slurs shown here appear in manuscript sources.)

Figure 2. Menuet II from BWV 1007, m. 18, Kamp transcription



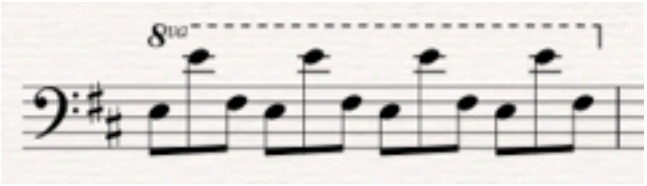
Sticking indications are similarly inconsistent throughout the six volumes. Every notehead in the Sadlo transcription of BWV 1009 (1987) receives a sticking indication, while most of the remainder of the collection contains sticking indications only where the individual transcriber seems to feel that such markings are necessary. Moreover, the style of stickings is inconsistent throughout; the Mootz transcription of BWV 1010 (1985) contains a preponderance of sticking suggestions that rely heavily on the second and fourth mallet, suggesting an approach to the keyboard similar to that of jazz vibraphonist Gary Burton, while the other volumes divide responsibilities more or less equally between the performer's four mallets.

Ornaments also receive an uneven and confusing treatment throughout the collection. The Ort (1986) and Lutz (1992) volumes each contain an explanatory table giving suggested realizations for trills and other ornaments, while the Kamp

(1984) volume writes out the execution of the ornaments as groups of thirty-second and sixty-fourth notes in the course of the music, forgoing the use of ornament signs. The Mootz (1987) and Sadlo (1987) volumes alternate, seemingly at random, between writing the execution of the ornaments into the music, using ornament signs, or doing both in a single instance. (The Kamp and Mootz volumes are also inconsistent within themselves in terms of starting notated series of trilled notes on the main pitch or its upper neighbor.)

While the collection seems to be mostly accurate with regard to pitches, the Joaquin transcription of the Prélude from BWV 1012 contains a measure that is pure fiction (Joaquin 1994, 3).

Figure 3. Prélude from BWV 1012, m. 22, Joaquin transcription



Editorial Features of the Critical Edition

Sources for the Critical Edition

Because there is no extant copy of the cello suites in Bach's hand, research on the cello suites has relied to varying degrees on four early manuscripts and one early printed edition (Schwemer and Woodfull-Harris 2004, 2:4). Bound facsimile copies of these five sources are included with the Bärenreiter edition of the cello suites. Generally, the greatest authoritative weight is placed on the manuscripts made by Anna Magdalena Bach (Source A of the Bärenreiter edition), Johann

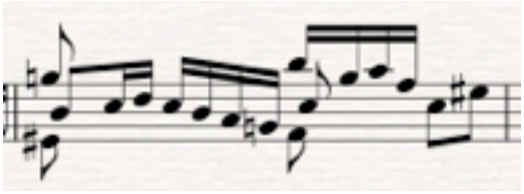
Sebastian's second wife, and Johann Kellner (Source B of the Bärenreiter edition), a cantor and "one of the most important copyists of Bach's music" (Schwemer and Woodfull-Harris 2004, 2:4). The two other manuscripts contain valuable information, but because their authors are unknown, they do not necessarily carry the same authority as the Anna Magdalena Bach or Kellner manuscripts. The first of these (the "Westphal" manuscript, Source C of the Bärenreiter edition) was found in the collection of German organist Johann Christoph Westphal; the second of these (the "Viennese Anonymous" manuscript, Source D of the Bärenreiter edition) has been traced back to the shop of Johann Traeg in Vienna, where it was an item offered for sale (Schwemer and Woodfull-Harris 2004, 2:5). The fifth early source consulted for this edition (the "1824 Paris" edition, Source E of the Bärenreiter edition) is the volume "published by Janet et Cotelle in Paris in or around 1824, [which] is the first [printed] edition of the suites" (Schwemer and Woodfull-Harris 2004, 2:5). While the Bärenreiter edition synthesizes the most salient parts of these five sources into a single volume, the individual facsimile copies were consulted whenever a particular instance of clarification was needed.

General Engraving Principles

The engraving principles found in the Bärenreiter edition of the cello suites (Schwemer and Woodfull-Harris 2000) were taken as the model for the edition contained herein, particularly regarding stem direction and beams. Among

early manuscript sources, the 1824 Paris edition of the cello suites is unique in its consistent reliance on multiple-stopped notes sharing a single stem; in many cases, this leads to a certain amount of visual confusion when more than one polyphonic voice is present (Schwemer and Woodfull-Harris 2000, 7:27). The Anna Magdalena Bach and Kellner manuscripts contain many more instances where individual notes in chords receive their own stem, and stem direction and horizontal placement are used to clarify individual lines within a polyphonic texture. This edition (like the Bärenreiter) follows that example.

Figure 4. Allemande from BWV 1008, m. 11



This edition makes a priority of not using tenor clef; marimbists encounter tenor clef so rarely that the few passages of the cello suites that use it are instead notated on a treble staff or a grand staff.

Courtesy accidentals (in parentheses) are included at most points where two different chromatic inflections of a single pitch are present in close proximity but separated by a barline. This is a departure from the Bärenreiter edition, which includes many accidentals that function as courtesies, but which are not enclosed in parentheses. Having the appearance of normal accidentals, these can sometimes confuse the performer because they appear to be deviations from the key signature, when in fact they are not.

The engraving was accomplished using version five of the computer program Sibelius.

Movement Titles

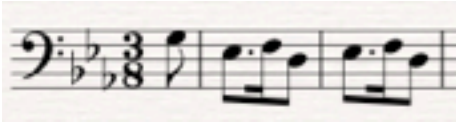
Early manuscript sources differ mildly over spellings of different dances (gigue/gique, bourrée/bourée, etc.), but, unlike the case with certain pitches or ornaments, there is little to no substantive disagreement in the manuscripts over what each movement is supposed to be titled. The Bärenreiter edition goes so far as to unify the movement titles across all six cello suites (Schwemer and Woodfull-Harris 2000, 1:VII).

Problems arise, however, when corresponding movements from different cello suites are actually different types of dances, each with distinct rhythmic characteristics. For example, while the Anna Magdalena Bach manuscript contains six "courantes," and the 1824 Paris edition contains six "correntes," Meredith Little and Natalie Jenne (2001) insist that the courante and the corrente are entirely distinct dances, and devote separate chapters of their book to each. In fact, even though there is a preponderance of references to "courantes" in early manuscripts, only one of the six cello suites contains a true French courante: BWV 1011 (Little and Jenne 2001, 126). The other five cello suites contain instances of the Italian corrente, whose hallmarks—including "continuous elaboration[s] in eighth or sixteenth notes," a "fast triple meter," and a "simple

texture"—contrast starkly with the nobility and complicated nature of BWV 1011's true courante (Little and Jenne 2001, 129).

Little and Jenne make similar distinctions between the French gigue and the Italian giga, and, as was the case with courantes/correntes, only BWV 1011 contains a true French gigue, while the other five cello suites contain gigas (Little and Jenne 2001, 151-152). One of the strong identifying characteristics of the French gigue is the heavy reliance on the *sautillant* rhythm, which is indeed only present in BWV 1011 (Little and Jenne 2001, 145).

Figure 5. *Sautillant* rhythm (Gigue from BWV 1011, mm. 1-2 with anacrusis)



Little and Jenne make a further distinction between two different types of gigas, which they call Giga I and Giga II (Little and Jenne 2001, 143). The hallmark of Giga I is that its quickest rhythmic units occur in groups of three per pulse; the only Giga I in the cello suites is in BWV 1010 (Little and Jenne 2001, 161). The four remaining cello suites contain examples of Giga II, which is characterized by complex rhythmic interplay between sixteenth notes and eighth notes that is not reliant on the *sautillant* figure, as well as a pulse that is much slower than Giga I (Little and Jenne 2001, 168).

The edition contained herein recognizes these distinctions between different dance types without interfering with the structural unity of the six cello suites. Movement titles are the same as those given in the Bärenreiter edition, and

in cases where the actual dance type is in conflict with the movement title, that dance type is indicated in parentheses immediately after the movement title and before the tempo marking.

Tempo Markings

Tempo markings for this edition were derived from an extensive study of marimba and cello recordings of the cello suites. The cello recordings used for the tempo study are by Anner Bylsma (1978a; 1978b), Pablo Casals (1988a; 1988b), Pierre Fournier (1997), Maurice Gendron (1964), Steven Isserlis (2007), Yo-Yo Ma (1998), Janos Starker (1991), and Paul Tortelier (2004).[2] The marimba recordings of the cello suites used for the study are by Jean Geoffroy (1998; 2001), Ivan Mancinelli (2006), Fernando Meza (2006), Christian Roderburg (2000), and Gwendolyn Burgett Thrasher (2007), as well as recordings of the author's live performances of some of the cello suites (January 12, 2005, at Glidden Hall, Ohio University, Athens, OH; February 3, 2007, at Katzin Concert Hall, Arizona State University, Tempe, AZ). The results of this tempo study can be found in Appendix G.

One may argue that the analysis of recordings is not an appropriate means by which to divine optimal tempi for pieces of music from the eighteenth century. Since the suites consist of Preludes and dance movements, perhaps an investigation of Baroque dance and choreography would yield better period-

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[2]Many thanks to Professor Thomas Landschoot of the Arizona State University School of Music for his assistance in selecting recordings for the study.

specific results. “As soon as dancer-scholars began reviving French Court dancing in the 1960s they were besieged by musiciologists, who were not interested in dance style or phrase lengths or affect or the beauty and grace of the dances, but in tempo” (Little and Jenne 2001, 19). One person who pursued this avenue of investigation with regard to the cello suites specifically is the cellist and author Tim Janof, who discussed his work with Baroque dance specialist Anna Mansbridge in an article (2002) for the Internet Cello Society. Therein, Janof describes not only the difficulties in reconciling modern cello performance tempi with the requirements of different Baroque dance types, but also the frustrations of Ms. Mansbridge in being able to dance to the suites at all, because of irregular phrase lengths and occasional figures that, while having very satisfying musical effects, served to interrupt the rhythmic regularity of the music. (Mr. Janof cites m. 9 of the D minor Allemande as being particularly disruptive.) Janof also discusses a similar investigation made by the Norwegian cellist Truls Mørk, who remembered that “[n]obody could dance to the Bach Cello Suites as they are traditionally played because the cellist's tempos would be much too fast. I’m not sure that it's appropriate to think of the Bach Suites in terms of dances" (Janof 2002). Janof, Mørk, Little, and Jenne all reach the same approximate conclusion regarding the use of Baroque dance styles as barometers of tempo: by the time that Bach composed the cello suites, stylization of Baroque dance music had become so extreme that the finished pieces had little practical use as dance music.

The tempo derivation process began by importing each recorded movement into version eight of the Ableton Live digital audio workstation. Once imported, a measurement was taken of the amount of time elapsed (in seconds, to the hundredth of a second) from the first note of the first full measure to the first note of the fifth or ninth measure. The beginning of the fifth measure was used as an endpoint for most measurements, except in the case of particularly fast movements or movements with time signatures that create very short measures (e.g., 3/8), in which case the start of the ninth measure was used as the endpoint. In either case, the number of beats contained in the passage was divided by the amount of time elapsed, yielding a result in beats per second. This result was then multiplied by 60 to obtain a corresponding value in beats per minute. In most cases, the result was expressed in quarter notes per minute, except in cases where a different note-value was taken to represent the beat; such cases are indicated in the left-hand column of each page in Appendix G.

Once these calculations were made, the mean tempo (M) and its standard deviation (SD) were calculated for each movement on each instrument. Each standard deviation value was then divided by the mean value of the same set of data so that it might be expressed as a standard deviation percentage value rather

than a simple standard deviation.[3] These standard deviation percentages are numerical expressions of the degree of disagreement among cellists and marimbists as to what he appropriate tempo for each movement might be. These mean values and standard deviation percentages form the basis of the suggested tempo markings in the edition contained herein.

Finally, the mean marimba tempo value for each movement was divided by its corresponding mean cello value to obtain a percentage difference in mean tempi between instruments. Values in this column that are higher than one show a tendency for marimbists, on average, to play that movement faster than ‘cellists; values below one show a tendency for marimbists, on average, to play that movement more slowly that cellists.

One significant modification was made to the data before it was used to derive tempo markings. Mr. Meza’s recording (2006) includes three sarabandes with rolled notes. By rolling, a marimbist can take a significantly slower tempo than a marimbist who strikes notes with a single stroke, because rolls fill in the space that would normally be left by the decay of a single marimba stroke. In the author’s opinion, however, rolls are not appropriate in marimba performances of the cello suites, because the marimba roll is not analogous to the continuous tone

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[3]This last step is valuable insofar as it allows direct numerical comparisons between standard deviation percentages. Direct comparisons between standard deviations can be misleading: a set of data with a mean of fifty and a standard deviation of six has much greater variance within it than a set with a mean of 150 and the same standard deviation.

obtained by drawing a bow across a string in one direction. Instead, because the roll's sequence of mallet attacks cannot be entirely hidden, the rolled marimba pitch most closely resembles a tremolo. The author can find no record of successful cello performances of Bach that incorporate the tremolo as a tone-sustaining device, and so the tempo measurements for Mr. Meza's performance of these three movements were not included in mean and standard deviation calculations. In Appendix G, the columns for these adjusted mean and standard deviations (marked "(adj)") give calculated values that do not include Mr. Meza's performance of the sarabandes.

In the edition contained herein, each movement of each suite (with one exception) contains three numbers in its tempo marking. The middle number (enclosed in parentheses) is an arithmetic mean value derived from the tempo study. In cases where the mean marimba tempo for that movement deviated from the corresponding mean cello tempo by five percent or more, the mean marimba tempo was used. In cases where the mean marimba tempo for that movement deviated from the corresponding mean cello tempo by five percent or less, the mean cello tempo was used. The other numbers in the tempo markings give the lowest and highest suggested effective tempi for each movement. For movements with high standard deviations, these outer tempo markings are farther away from the mean. Movements with low standard deviations have tempo extremes that are closer to the mean. It should be noted that the upper and lower suggested tempo

bounds for any given movement are not necessarily the same distance away from the mean tempo for that same movement.

The one exception to the format given above is found in the tempo marking for the Allemande from BWV 1012. Here, the marimbists' collective tempi clustered very tightly around a mean of 48 beats per minute. (The author admits to some embarrassment that the tempo value calculated from his own recorded performance deviates significantly from this strong consensus, and that upon reflection, he prefers the other marimbists' tempi to his own.) The most effective solution was to simply mark the movement "c. 48" quarter-note beats per minute.

Articulation Markings

One of the great complications for marimbists who perform the music of Bach is the profusion of articulation, bowing, and fingering marks in various Bach editions. (This is also a major weakness of the Musikverlag Zimmermann edition discussed above.) In contrast, the Bärenreiter edition of the cello suites does not include any legato slurs. "As the legato slurs in the four handwritten sources are neither entirely readable or given throughout, the editors [of the Bärenreiter edition] have made no attempt to interpret them" (Schwemer and Woodfull-Harris 2000, 1:VI). Given that slurs in string music are usually indications of bowings, they are even less useful to the marimbist. With the exception of ornamental appoggiaturas, the edition contained herein does not use slurs. The lack of slurs

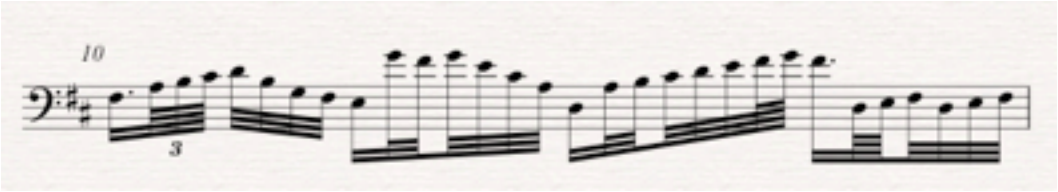
does not indicate that a performer should not consider issues of phrasing; it does indicate, however, that manuscript sources for the cello suites offer very little consistent advice on the issue.

Some staccato markings are present in the edition contained herein. In all cases, articulations are only included if they are consistently present in manuscript sources.

Ornaments

In Bach's music, as in German Baroque music in general, ornamentation practices are a synthesis of Italian and French traditions. Italian ornamentation practice consists of the free addition of florid passing-tone figures, arpeggios, and melismas between one sonority and another, while French practice focuses on the addition of ornament signs (*agrèments*) to already-composed music (*The New Grove Dictionary of Music and Musicians* 2nd ed., s.v. "Ornaments"). Usually, Bach explicitly wrote any Italianate ornamentation that he desired to be included in his works; examples include the second movement of the Italian Concerto (BWV 971), the first movements of the violin sonatas in G minor and A minor (BWV 1001 and 1003, respectively), and the Allemande from BWV 1012.

Figure 6. Allemande from BWV 1012, m. 10



With regard to French ornamentation, early manuscript sources of the cello suites differ regarding the type, frequency, and location of various ornamentation signs; in particular, there are more (and more varied) ornamentation signs found in the Westphal, Viennese Anonymous, and 1824 Paris versions of slow movements (such as the Sarabande from BWV 1010) than in the corresponding versions found in the Anna Magdalena Bach or Kellner manuscripts (Schwemer and Woodfull-Harris 2000, 1:38). The edition contained herein makes an effort to simplify issues of ornamentation for the performer; in this regard it is less comprehensive than the Bärenreiter edition, but much more legible and less cluttered.

The only ornamentation sign used in the vast majority of this edition is the conventional sign for the trill. Trill signs that are not enclosed in parentheses are those that are either practically compulsory (that is, they are ornaments whose absence would leave obvious and undesirable sonic gaps) or those that are included so consistently in modern recorded performances that one can infer an informal consensus regarding their inclusion.[4] Broad agreement between early manuscript sources is also a consideration in favor of including a seemingly mandatory trill, as is the avoidance of an unornamented cadential dominant open fifth, as in m. 25 of the Courante from BWV 1010.

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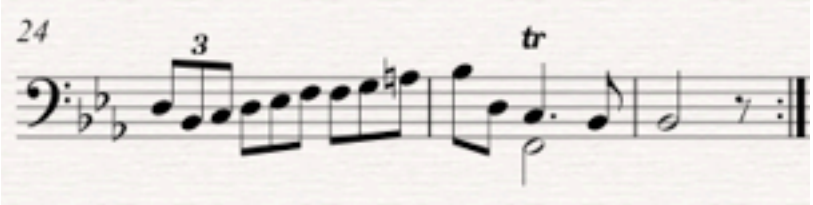
[4]Statements about modern recorded performances are based on the recordings used for the tempo study (Appendix G) as well as recordings made by Anner Bylsma (1992), Jean-Guihen Queyras (2007), and Pieter Wispelwey (1998).

Figure 7. Courante from BWV 1010, mm. 24-26



Parenthetical trill signs are included at points of potential musical effectiveness, and are often borrowed from a particularly impressive recorded performance. For example, in the Courante from BWV 1010, the trills marked in mm. 21 and 59 are inspired by the performances found on the Starker (1991) and Ma (1998) recordings used in the tempo survey.

This edition includes versions of the Prélude and Allemande from BWV 1011 that contain additional ornaments. The additional ornaments are inspired by recordings of lute and guitar performances of BWV 995, the lute transcription of BWV 1011 (O'Dette 2007; Galbraith 2000). While it is not the goal of this edition to incorporate the additional harmonies and textures found in BWV 995 into BWV 1011, the additional ornamentation possibilities provide an interesting opportunity for the marimbist.[5] Mordents, turns, and appoggiaturas are included in addition to trills, and the Prélude contains a small additional staff giving suggested realizations of these ornaments as well as possibilities for the double-dotted rhythmic execution of certain figures. (Even though the additional staff extends only through m. 6 of the Prélude, the performer can apply the principles

[5]Those who are interested in marimba performances of BWV 1007-1012 with expanded harmonies and textures would do well to listen to Gwendolyn Burgett Thrasher's 2007 recording, released on Blue Griffin Records.

of the suggested realizations to the Prélude and Allemande in their entirety.) Small additional staves also give suggested realizations for turns and inverted turns at the first appearance of each. In addition, the Courante from BWV 1011 contains several parenthetical mordents and appoggiaturas; the performer should take note that while the parenthetical ornaments in the Courante are optional, appoggiaturas in the same movement that are not enclosed in parentheses are found in early manuscript sources and should be performed as written.

In all cases, the performer should not feel obligated or driven to include all of the ornamentation possibilities presented herein. In fact, since the edition's ornamentation suggestions are assembled from several different sources, a performance that included all of them would not reflect mainstream practice and would likely sound excessively ornate and crowded. Instead, the performer should use his or her personal taste to determine, on a case-by-case basis, whether to include any single ornament.

Dynamics

Passages where performers may choose to terrace dynamics are marked with dynamics in brackets. Such passages were selected either because of the presence of dynamic markings in manuscript sources or because some modern performers choose to terrace dynamics in recorded performances. Only points of dynamic change are marked, i.e., in any terraced passage the first antecedent *forte* iteration is not marked, but the change to *piano* in the consequent iteration is

marked, as is the return to *forte* at the end of a terraced passage. The dynamic markings are not meant to reflect absolute volume; a performance does not necessarily need to alternate between a true *forte* and a true *piano* to be effective. In all instances, terraced dynamics are optional.

Substantive Editorial Changes

The editorial changes described in this section are largely a continuation and expansion of work initially presented by the author in an article published in *Percussive Notes* (Sallak 2005).

Open Fifths

Four times in the cello suites, Bach wrote an open fifth where a close-position triad would have been preferable. While this preference cannot be decisively confirmed in all four cases, it can be confirmed in one case. In m. 10 of the Prélude from BWV 1011, Bach wrote an open fifth on the pitches G and D, while at the corresponding point in the manuscript of BWV 995 (found in the *Pièces Pour la Luth à Monsieur Schouster*, housed in the Royal Library of Belgium), Bach wrote a complete triad.

Figure 8. Prélude from BWV 1011, m. 10

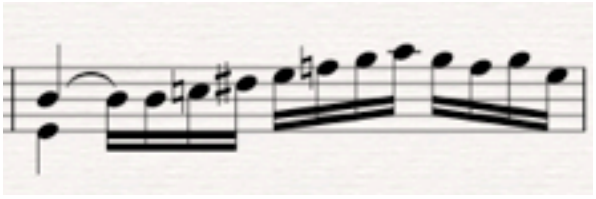
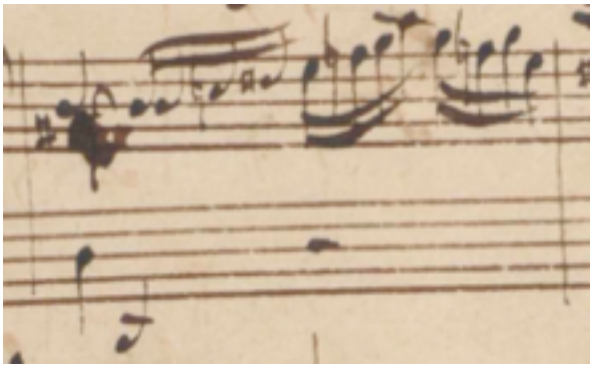


Figure 9. Prélude from BWV 995, m. 10 (autograph)

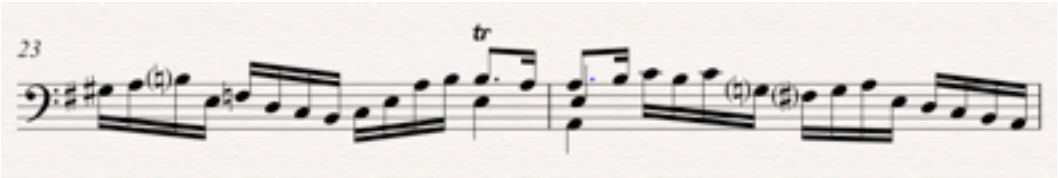


This edition adds thirds to open fifths in similar circumstances throughout. In addition to the above example, such instances are found in BWV 1007 (Allemande m. 17), BWV 1008 (Menuet I m. 9), and BWV 1012 (Gigue m. 29).

Cleared Octaves

Seven times in the cello suites, Bach wrote a three-note sonority consisting of a bottom pitch with additional notes a perfect fifth and an octave above. Like other open-fifth sonorities in the cello suites, one must conclude that the polyphonic limitations of the cello forced Bach to use these sonorities rather that an octave or a complete triad. The downbeat of m. 24 of the Allemande from BWV 1007 is just such an instance.

Figure 10. Allemande from BWV 1007, mm. 23-24, showing uncleared octave



If one were to apply basic voiceleading principles to the pitches found on the last beat of m. 23, it is readily apparent that the E on the downbeat of m. 24 is

unnecessary—the B in m. 23 resolves down by step to the upper A in m. 24, and the E in m. 23 resolves down by fifth to the lower A in m. 24. This edition deletes the middle note in such instances. These cleared octaves occur in BWV 1007 (Allemande m. 24), BWV 1008 (Allemande m. 2, Menuet I m. 24), BWV 1010 (Courante m. 64, Menuet II m.12), and BWV 1011 (Gavotte I mm. 12 and 24).

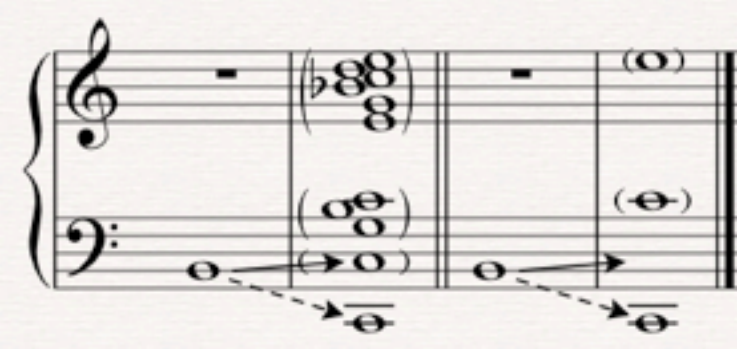
Ghost Octaves

Eight times in the cello suites, Bach resolved a leading tone by a major-seventh leap downward instead of the expected minor-second step upward. Each of these instances is markedly less satisfying when played at the marimba instead of the cello. At each of these points, this edition adds a "ghost octave"—a note one octave above the original note, enclosed in parentheses and sharing the original note's stem.

The acoustical differences between the marimba and the cello are largely to blame for the relative musical ineffectiveness of these downward resolutions at the marimba. First, the overtone spectrum of a marimba bar is quite different than that of a bowed string. Within the first dozen harmonics (counting the fundamental pitch as the first harmonic), the bowed string overtone spectrum is complete, whereas the overtone spectrum for a vibrating marimba bar contains only the fourth and tenth harmonic (Rossing 1990, 195; Rossing 1990, 262). When these overtone structures are written in musical notation, it is readily apparent that even though the fundamental pitches of the two successive notes in

question descend by a major seventh, the bowed string contains the expected resolution pitch as an overtone, while the marimba bar does not. The ghost octave adds the pitch that is necessary for a satisfying resolution.

Figure 11. Descending resolution of leading tone, with overtone spectra



a. bowed string b. marimba bar

Second, when a cellist moves from a leading tone to its downward resolution, the leading tone stops resonating quite quickly, usually because the finger that had stopped it is lifted. At the marimba, the leading tone will continue to resonate as the bar continues to vibrate, and if the leading tone is not finished sounding by the time the resolution note is played, an dissonant major seventh will be heard at a point that is supposed to be consonant. By adding the ghost octave, the marimbist can mask the undesired dissonant resonance of the leading tone.

The added note in each ghost octave is enclosed in parentheses, indicating that it is a note that has been added by the editor and is optional. The parentheses are also meant to suggest that the added note does not need to be played at full volume; the performer may find success in lowering the volume of the ghost-

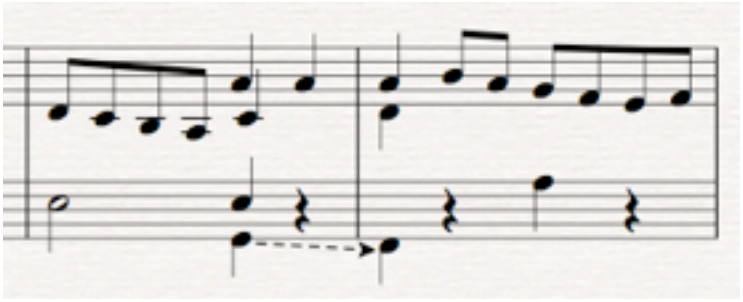
octave note, making the added note sound like an additional overtone of the lower note rather than a separate polyphonic voice. That the two notes share a stem is also meant to suggest that two separate voices are not present at these points. Ghost octaves exist in BWV 1007 (Courante mm. 18 and 42, Menuet I m. 16, and Menuet II m. 24), BWV 1009 (Courante m. 40), BWV 1011 (Sarabande m. 8) and BWV 1012 (Courante mm. 28 and 72).

Other Voiceleading Changes

Similar to the ghost octaves discussed above, there are two instances in BWV 1012 where an expected stepwise resolution is instead achieved by an inverted leap of a major seventh. Rather than involving leading tones, though, these two instances involve the upward resolution by leap of the bass note in a third-inversion dominant seventh chord. Under normal circumstances, the seventh of a chord resolves down by step, and in the case of a third-inversion chord, this note is in the bass (Kostka and Payne 1995, 206). A third-inversion dominant seventh chord in D major would have a bass-voice resolution from G to F-sharp. In the lowest octave of a normally-tuned cello, this resolution requires utilizing the C-string, and if other pitches are present on the D- and A-strings, the cellist would have to awkwardly skip over the G-string in multiple-stopped chords. Resolving the bass voice up a major seventh to the higher F-sharp solves this idiomatic problem at the expense of smooth voiceleading. This edition corrects

such disjunct voiceleading in BWV 1012 (Sarabande m. 10, Gavotte I mm. 4 and 23).

Figure 12. Gavotte from BWV 1012, mm. 3-4, with corrected voiceleading



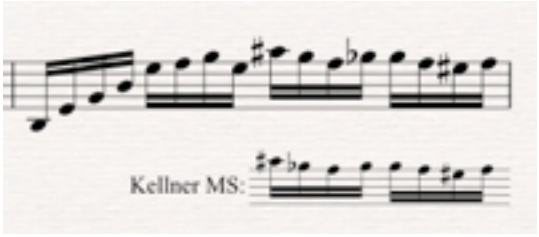
Performance Suggestions

Disagreements Between Manuscripts

The five early sources of the cello suites differ from one another in many material ways; in areas where scholars and performers have not been able to resolve an ambiguity, the edition contained herein strives to present all viable options, at times commenting on which options are more popular among modern performers. When referring to the Anna Magdalena Bach manuscript, the edition contained herein sometimes abbreviates her name to “A. M. B.”

In cases where two manuscripts differ materially over notes or rhythms, and no modern consensus exists, the most common option is presented in the normal course of the written music, and alternatives are presented on a small staff below the corresponding passage. Such a staff is labeled with the source of its contents, using the abbreviation “MS” for manuscript.

Figure 13. Prélude from BWV 1007, m. 26, showing Kellner MS alternative



If the difference between two sources is a matter of additional pitches, those additional pitches may appear in parentheses in the normal course of the written music. Any such parenthetical pitches are accompanied by an explanatory note.

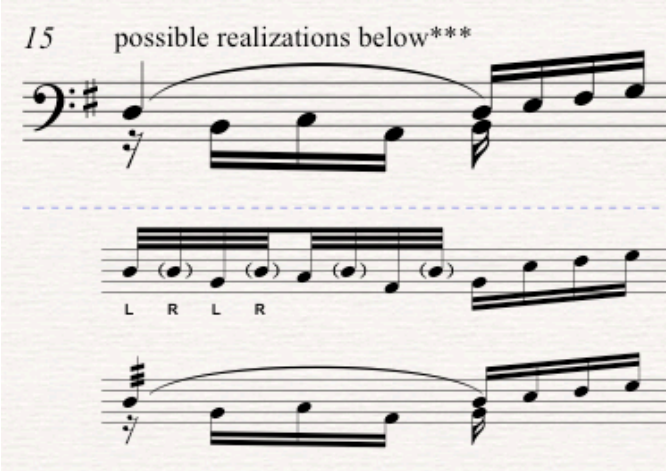
If the difference between two sources is a matter of the chromatic inflection of a particular pitch, the disagreement may be indicated by a ficta above the pitch in question. Each such ficta is accompanied by an explanatory note.

Suggested Realizations of Ornaments and Specific Figures

Suggested realizations of ornaments may be written on a small staff below the corresponding passage in the music. In addition, passages where the performer may be expected to arpeggiate certain sonorities, or otherwise embellish the given material, may be marked with suggested realizations on a small staff.

Suggested realizations are also given at points where normal marimba performance may fail to project a desired polyphonic or other musical effect. The most obvious example of this is measure 15 of the Sarabande from BWV 1007, where the performer may wish to find ways to prolong the upper-voice D to harmonize the melodic figure below it.

Figure 14. Sarabande from BWV 1007, m. 15, with realizations



Particularly effective embellishments by modern performers are similarly marked, either on a small staff below the main one, or with an explanatory note.

Performance of Three- and Four-Note Chords

Because of the curved bridge of cello and the relatively high tension of modern bows, cellists are not able to play the notes of most three- and four-note chords simultaneously. Even the lower tension of Baroque bows does not entirely alleviate the problem. Marimbists, on the other hand, have the capacity to choose the specific degree of desired attack synchrony in three- and four- note chords. While one may desire a marimba performance that is so faithful to the idiom of the cello that one arpeggiates all three- or four-note chords to a certain extent, one may choose to employ an alternative strategy whereby the spacing of the chord tones is chosen to maximize its musical effect while minimizing any disruption to the rhythmic progress of the surrounding music. To this end, several considerations may be taken into account.

First, the speed and density of the musical passage should be considered. Dense, fast material suggests a relatively simultaneous attack of all notes in a chord; any time spent in breaking such a chord will need to be recouped by delaying the next metric pulse, or may even cause the broken chord members to be perceived as having distinct metric values in relation to the surrounding musical material. Slow or sparse musical passages may benefit significantly from breaking or arpeggiating chords, in that the successive resonances of each note can help to fill musical space that may have otherwise been left empty by the quicker decay of a simultaneously-struck chord.

Second, one should consider whether breaking the chord will help to emphasize one or more of its individual members, and if such emphasis could serve a useful musical purpose. If one member of the chord begins a melodic figure that follows the chord immediately, breaking the chord so as to play that member last will help maintain the aural cohesion of such a figure.

Third, given the long resonances and distinctly audible overtones of the marimba's low register, the breaking of certain low-register chords can significantly increase their intelligibility. This is particularly true of diminished chords, low-register chords in close position, and low-register chords containing minor tenths whose overtones clash audibly.

Once these considerations have been addressed, the performer can begin examining the purely expressive possibilities of breaking an individual sonority.

These guidelines suggest a certain degree of interpretive and expressive freedom while maintaining the importance of musical clarity and intelligibility.

Other Performance Suggestions

The Sarabande from BWV 1010 contains dashed ties in some places. These dashed ties are present to reflect the difficulty of maintaining melodic lines at a slow tempo at the marimba. The note at the beginning of the movement reads:

> Given the relatively short sustain of the marimba, some performers find that re-articulating a note at the end of a dashed tie helps maintain the melodic line. Some marimbists prefer to remain faithful to the ties in most cello editions by observing the dashed ties. The performer should use his or her taste in deciding whether to observe all, none, or some of the dashed ties.

The Prélude from BWV 1011 contains an alternate passage from BWV 995, the version of BWV 1011 that Bach wrote for lute. The four-measure passage does not contain additional polyphonic voices or different harmonies, but is instead an altered ordering of pitches in a single melodic line. Marimbists might be interested to explore the passage from BWV 995 as an option in performance.

One significant idiomatic difficulty is present in the Gigue from BWV 1012. The chordal figures in measures 25 and 65 cannot be played at the marimba as written without an extremely awkward crossing or inversion of mallets. An easier voicing/sticking pattern is presented, and marked *ossia*.

Conclusion

Bach's music has provided insight and pleasure to listeners and performers for centuries. It is the hope of the author that this edition will help each marimbist

craft performances that bear his or her individual signature while maintaining an awareness of the bounds of established Baroque interpretation.

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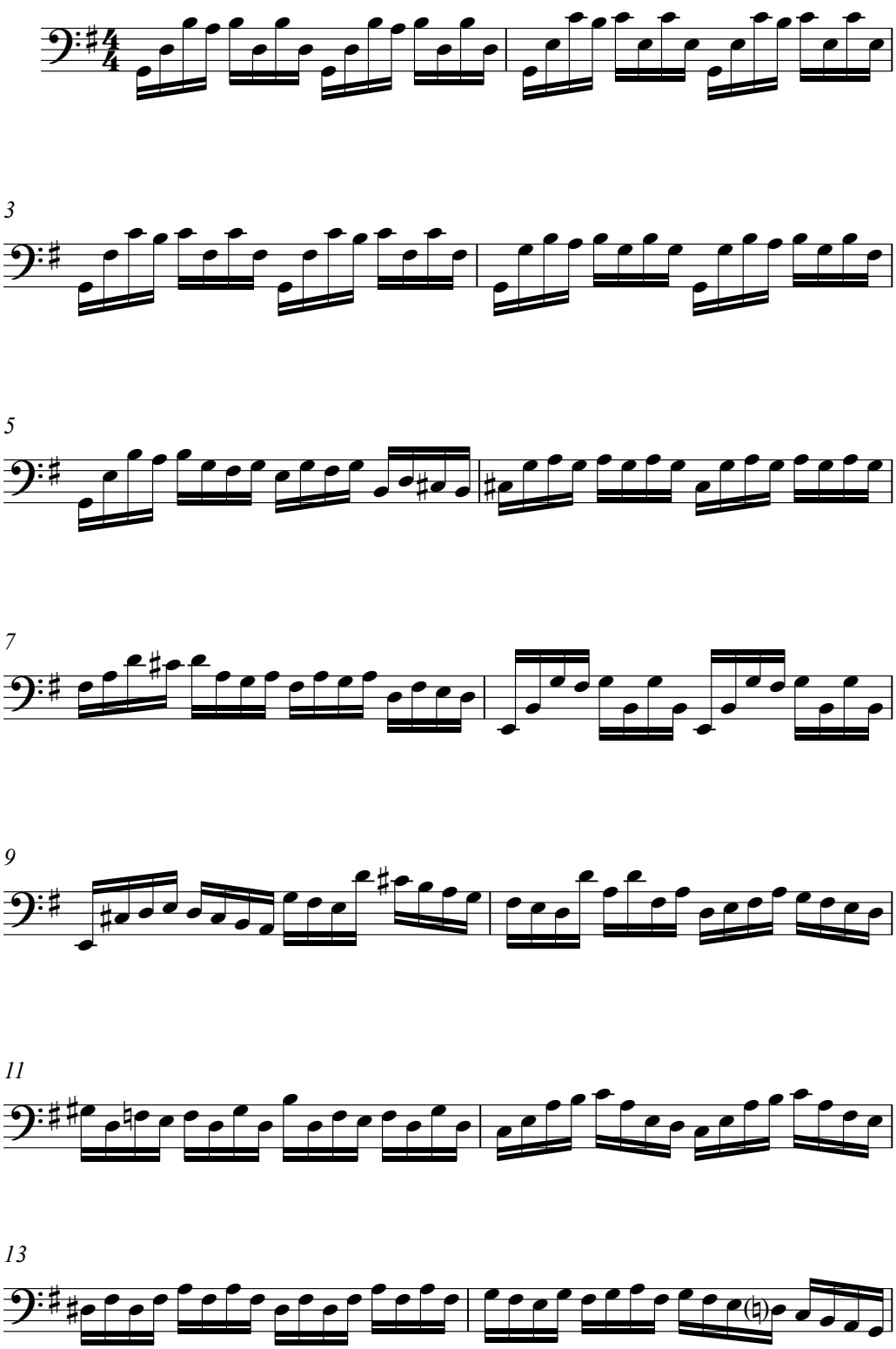
APPENDIX A

BWV 1007

Suite I (BWV 1007)

J. S. Bach
edited by Bill Sallak

Prélude ♩ = 64-(72)-88



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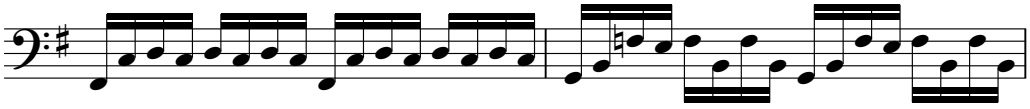

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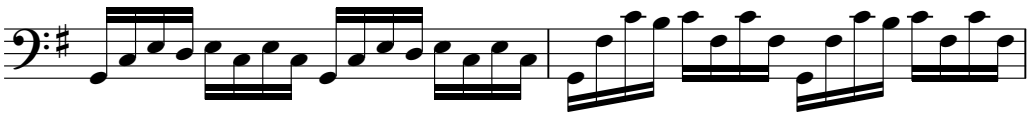

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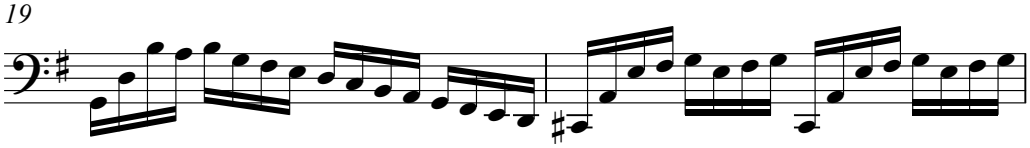

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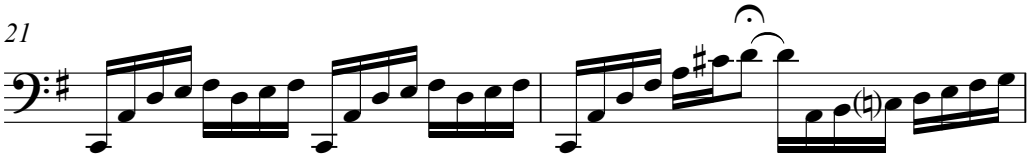

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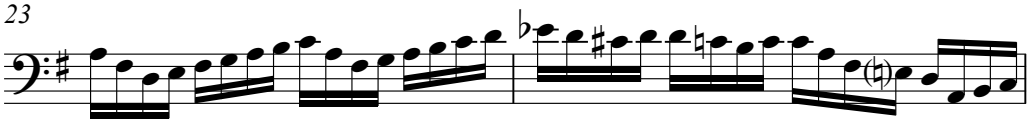

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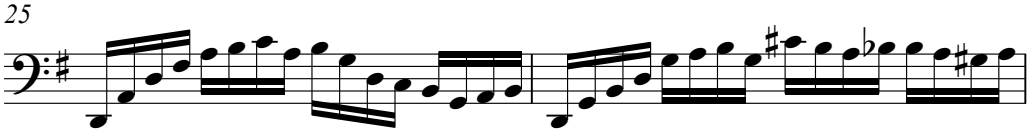

Kellner MS:

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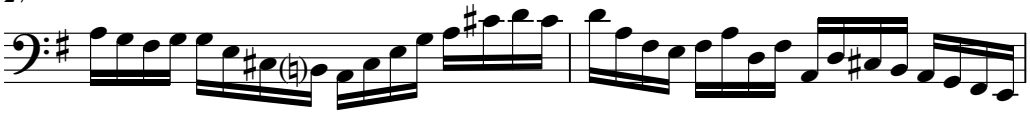

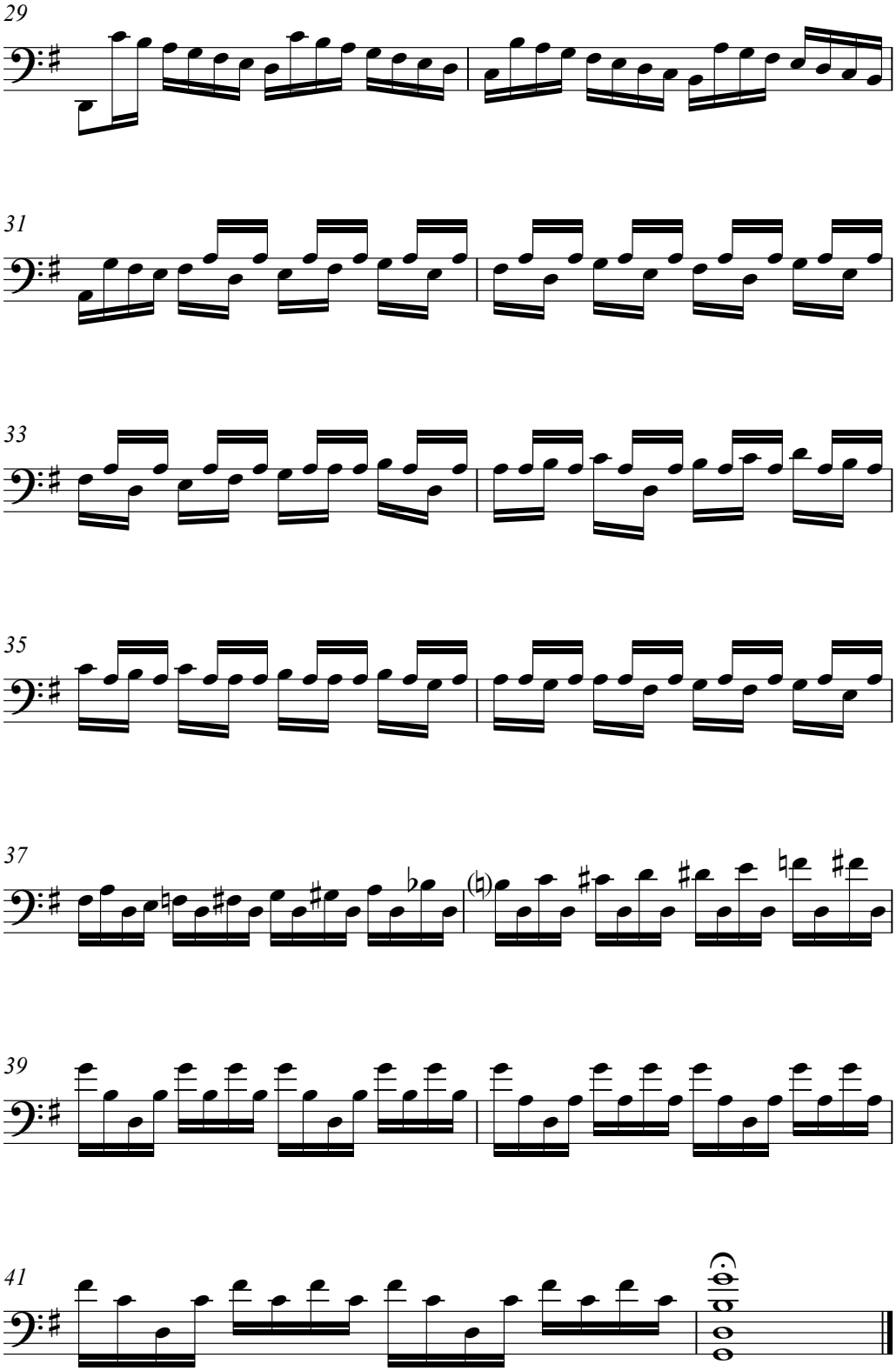
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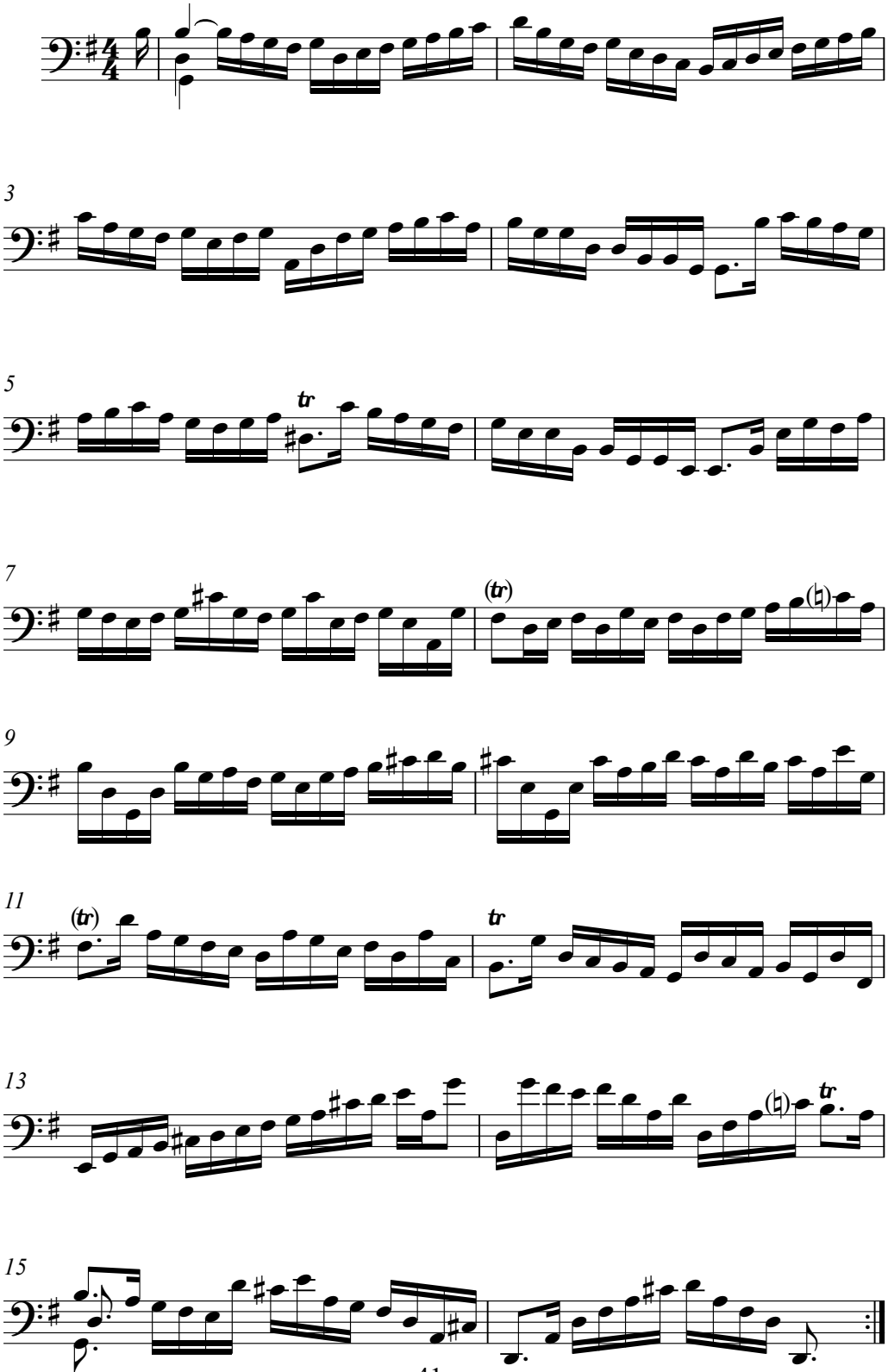
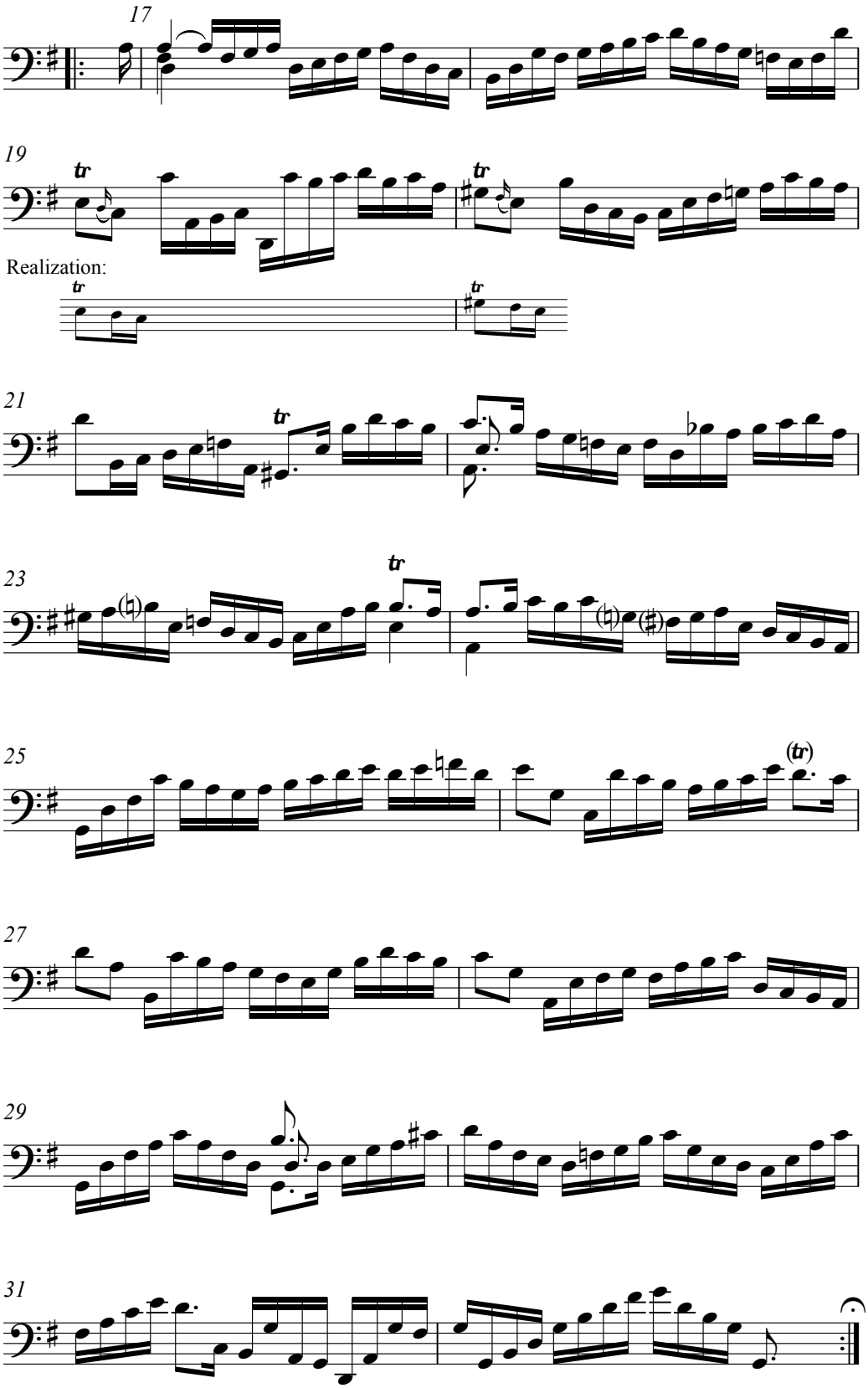
Allemande ♩ = 66-(72)-92

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Realization:
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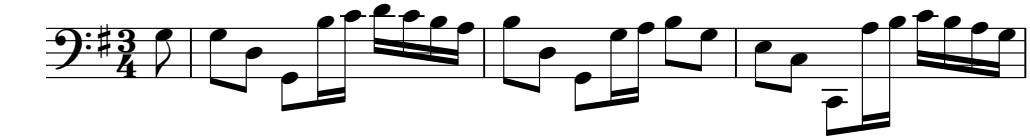
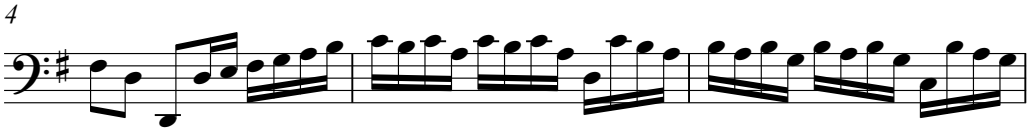
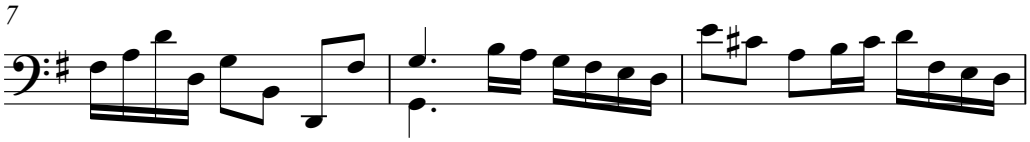
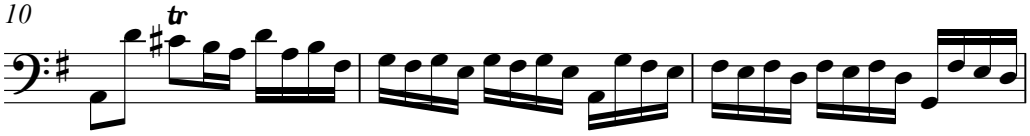
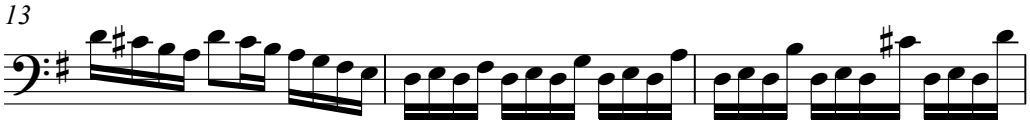
Courante (Corrente) ♩ = 96-(107)-120

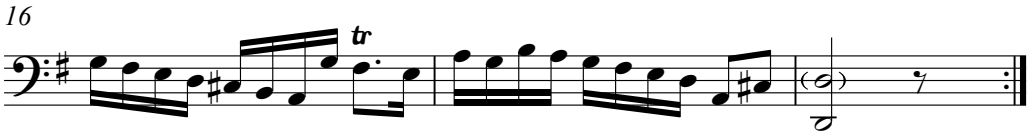


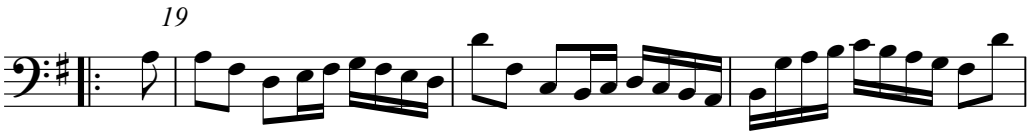


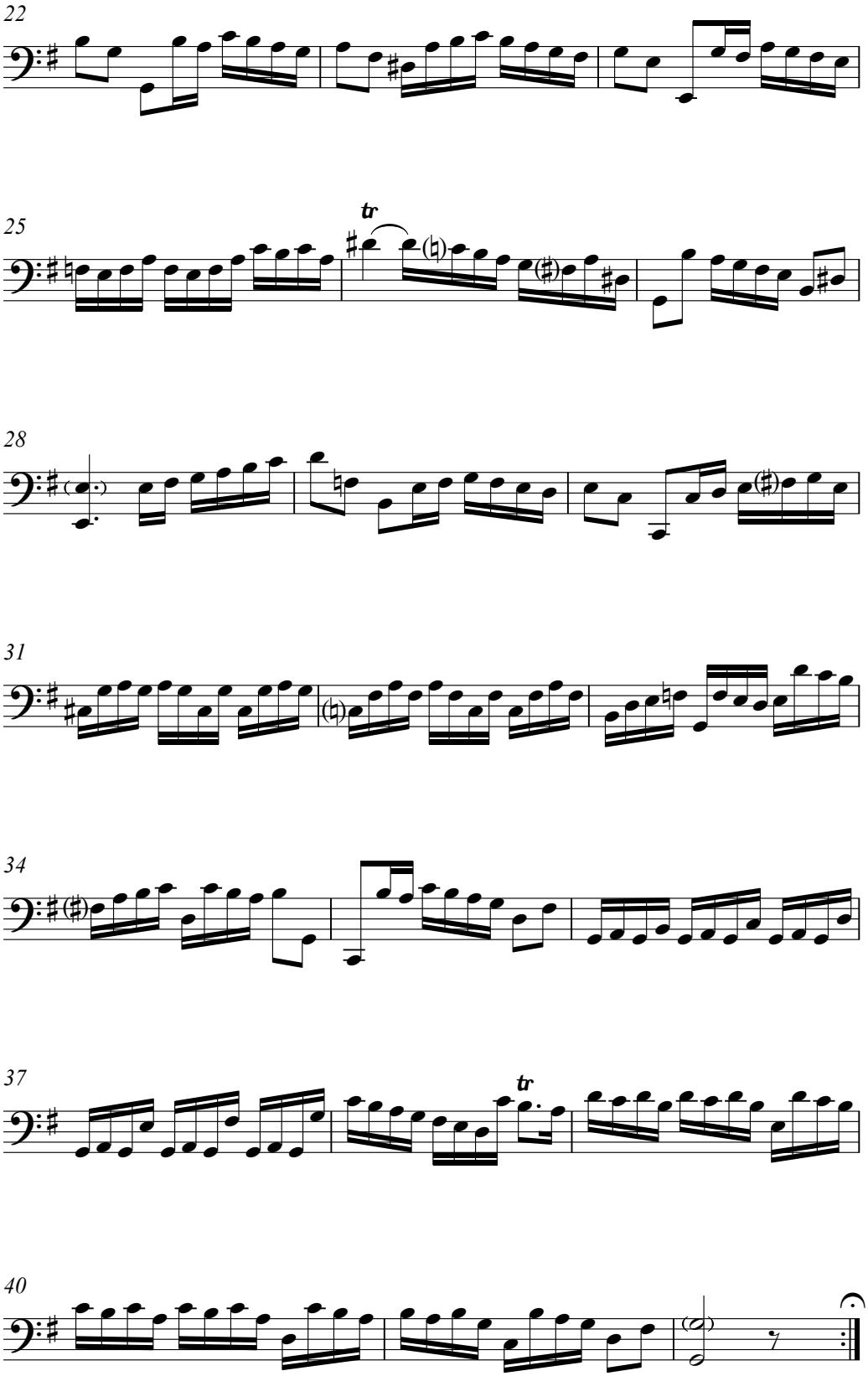








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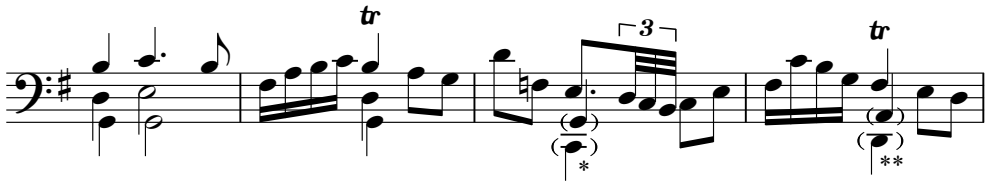
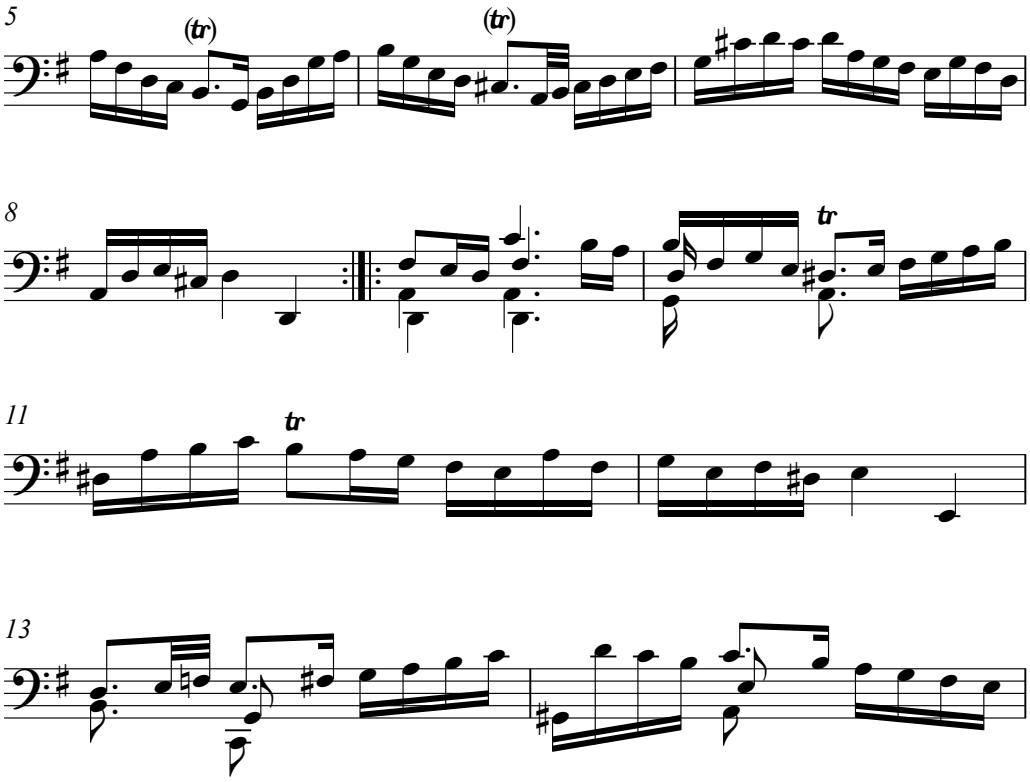
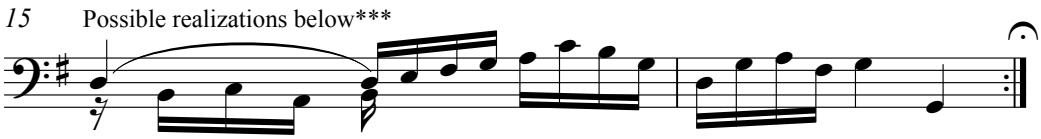
Sarabande ♩ = 40-(44)-54



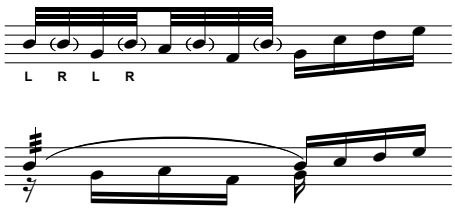
*Dutch 'cellist Pieter Wispelwey adds this C-G fifth in his performances; marimbists may also wish to include it, provided that the optional notes in the following measure are also included.

**This D-A fifth is included in neither the Anna Magdalena Bach nor the Kellner manuscript. However, it does appear in the Westphal and Viennese Anonymous manuscripts, and its inclusion is quite common in modern performances.

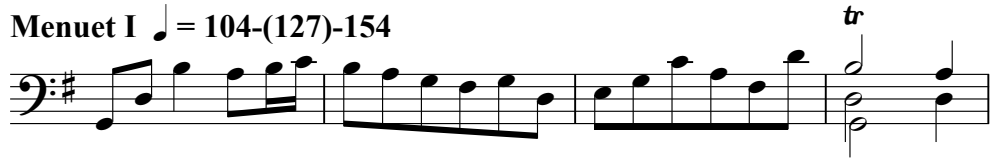




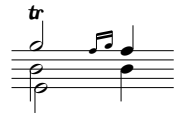
***It is also common to play the D with a single stroke.

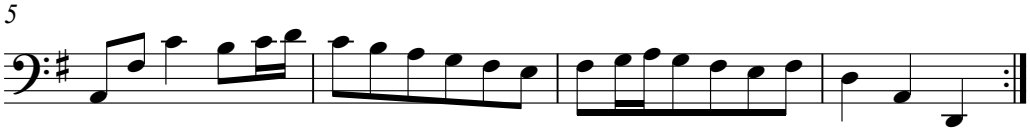


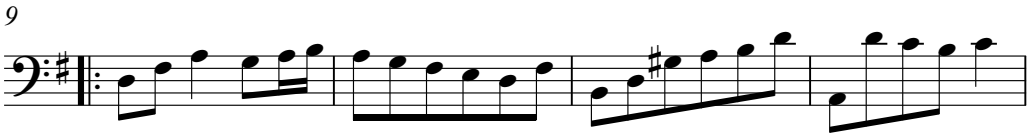
Menuet I ♩ = 104-(127)-154

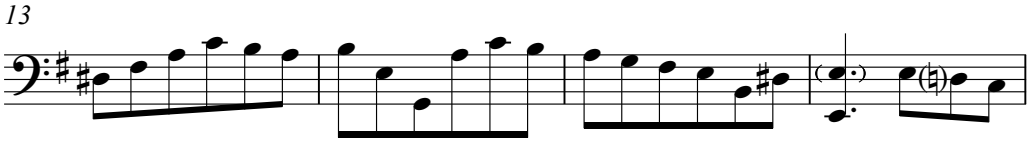


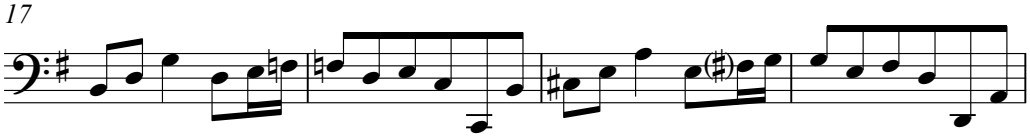
optional *trillo und mordant*:

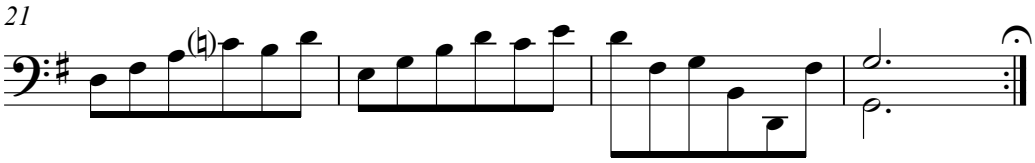




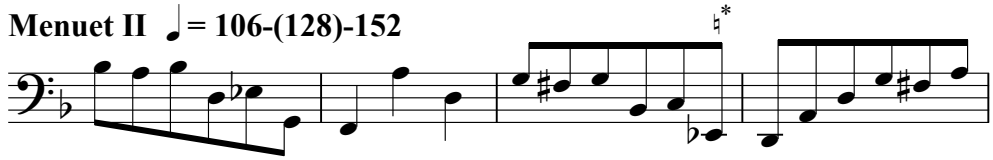




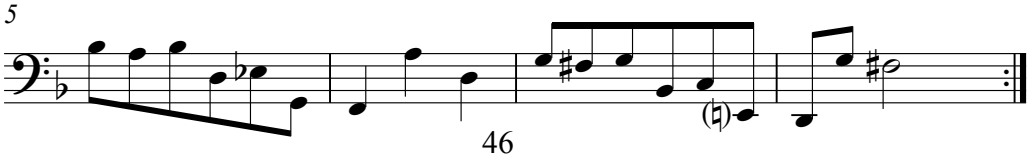


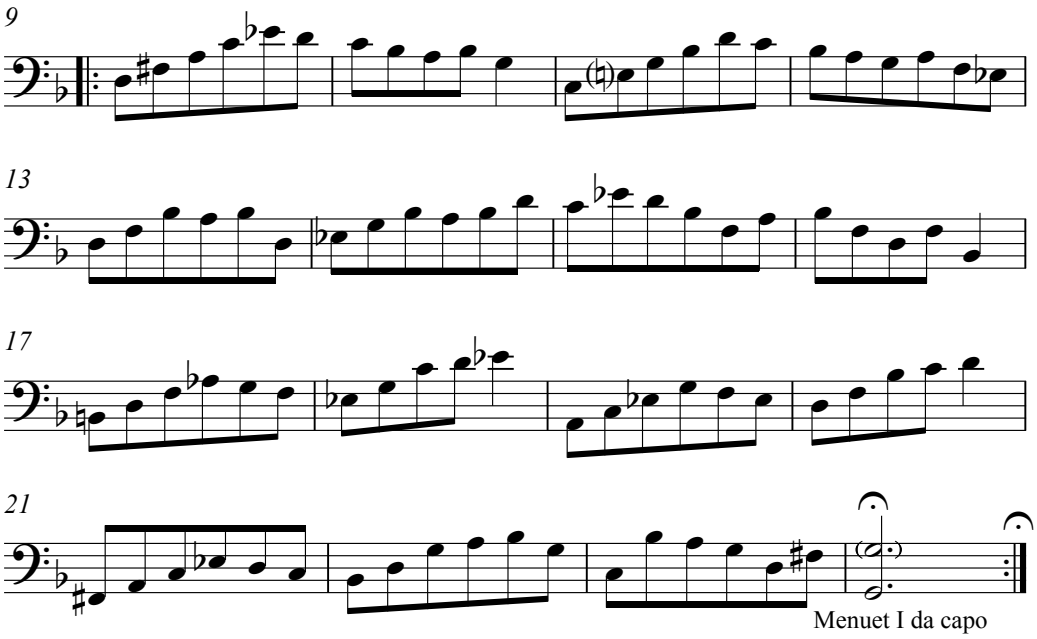


Menuet II ♩ = 106-(128)-152

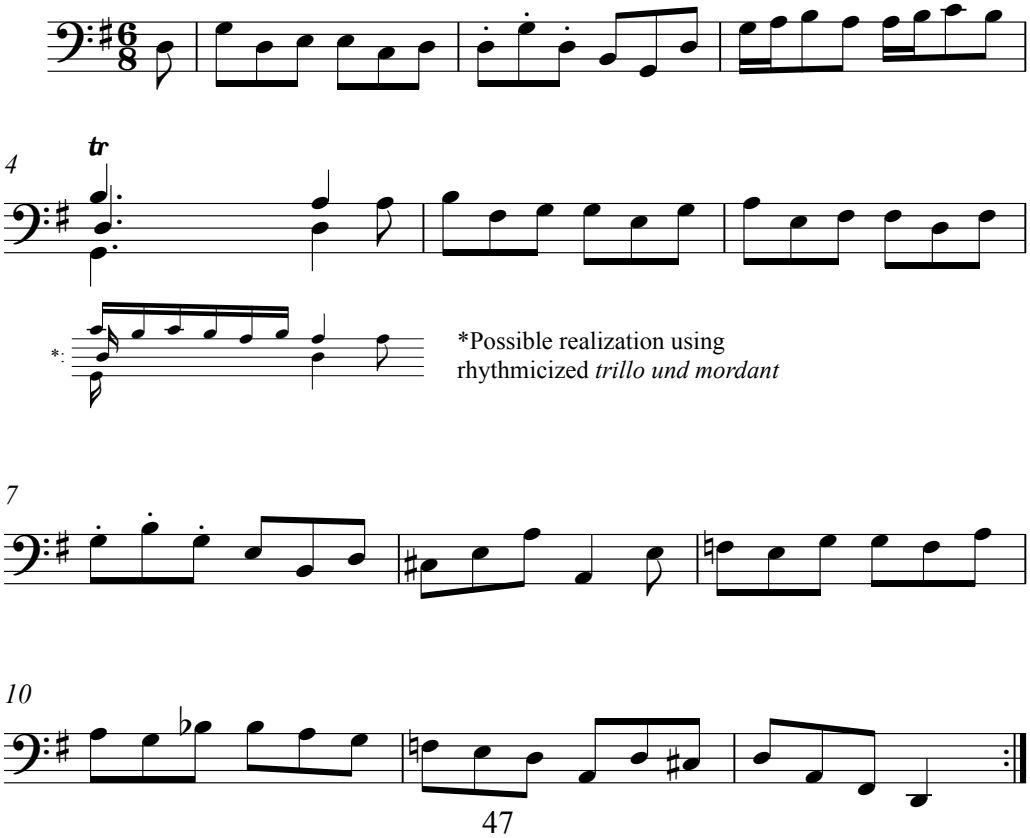


*Manuscript sources and modern recorded performances are both divided over whether this note is an E-flat or an E-natural. The author's preference is E-flat; either is acceptable.





Gigue (Giga II) ♩. = 80-(88)-98



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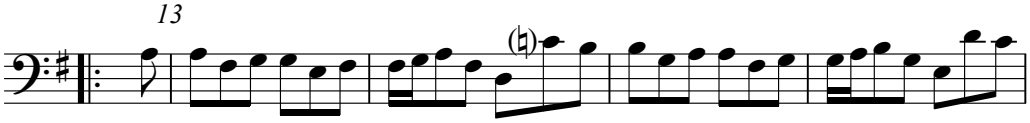

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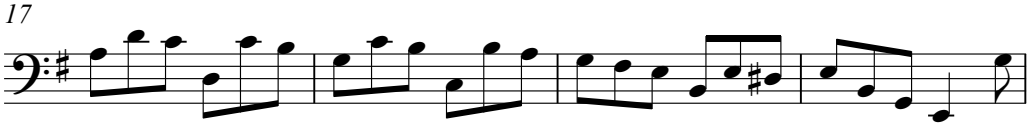

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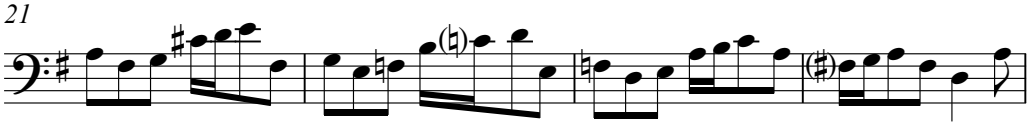

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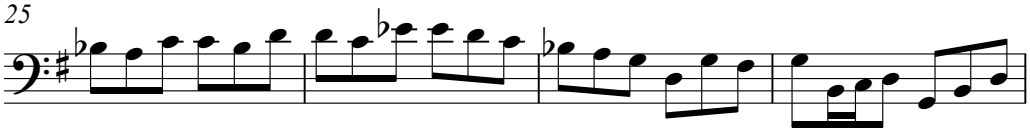

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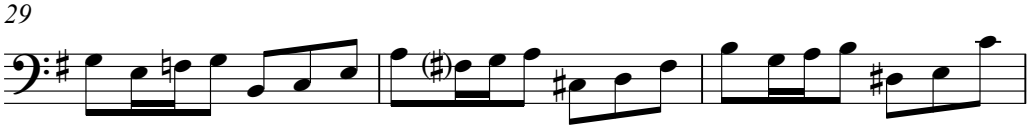

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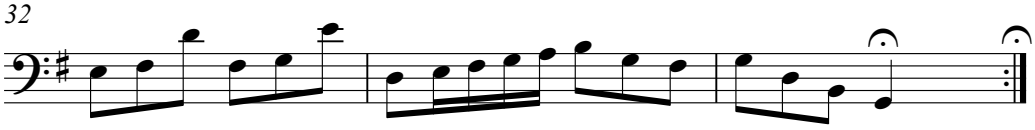


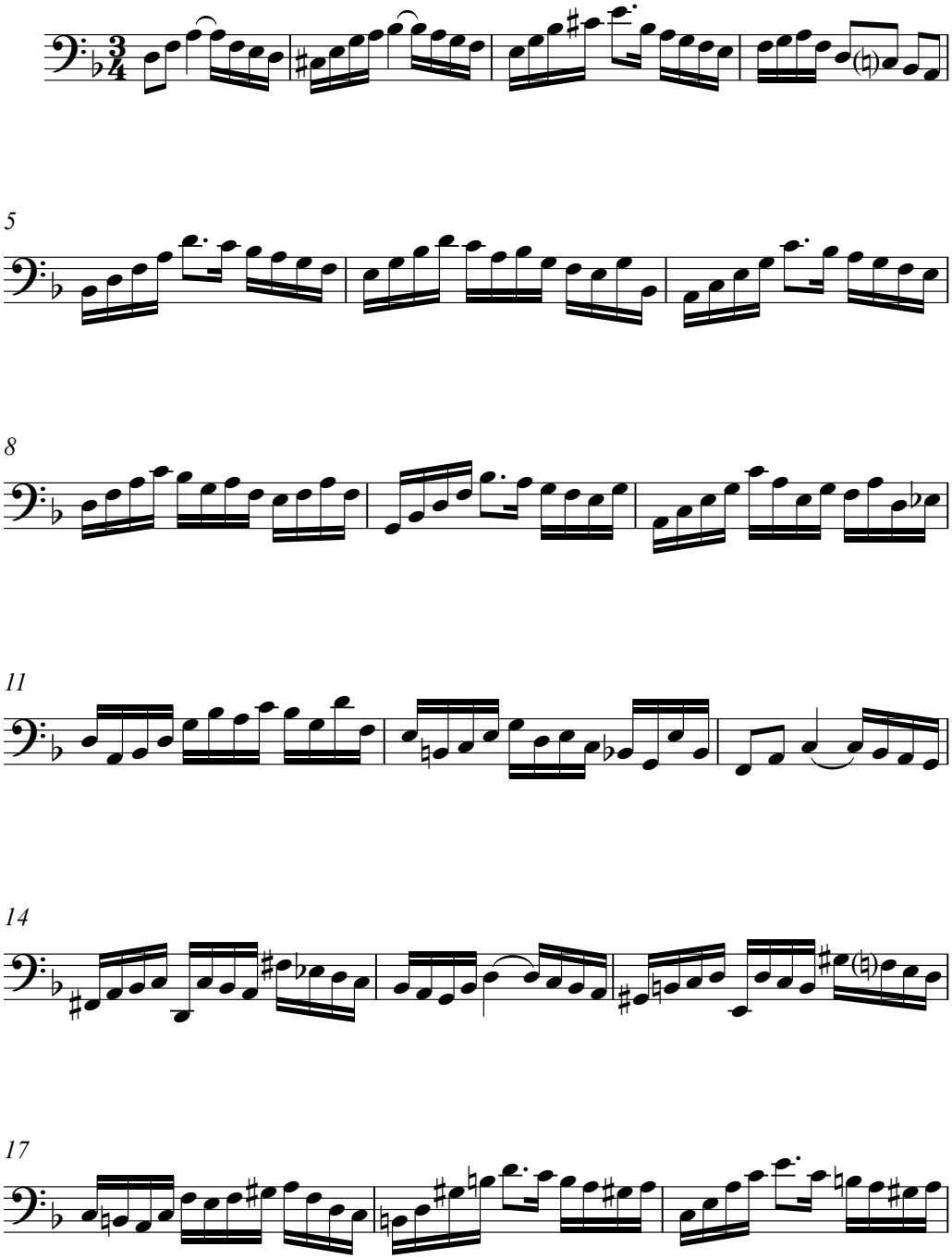
APPENDIX B

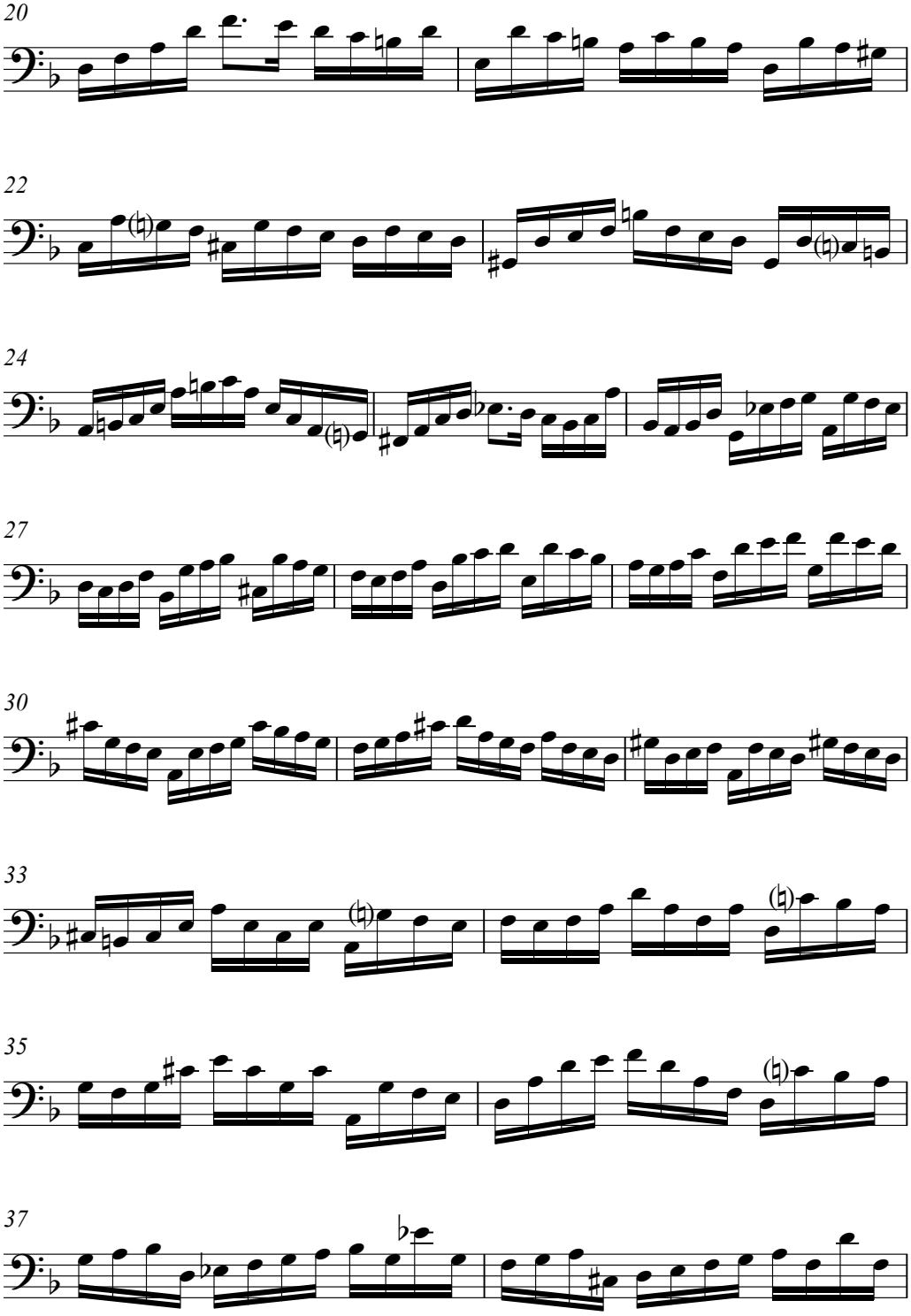
BWV 1008

Suite II (BWV 1008)

J. S. Bach
edited by Bill Sallak

Prélude ♩ = 52-(56)-70

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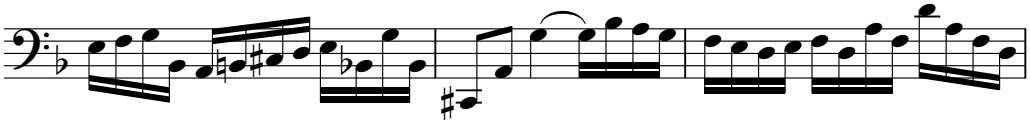

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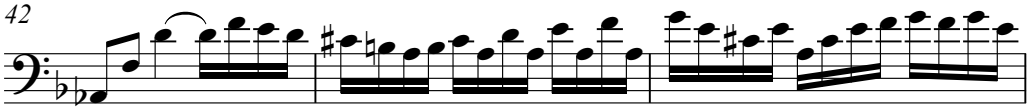

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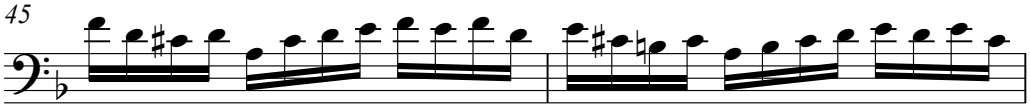

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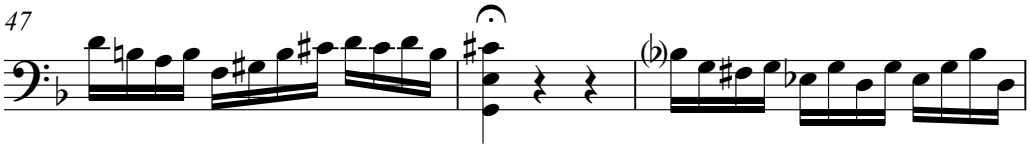

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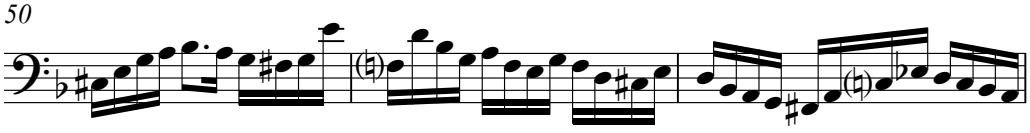

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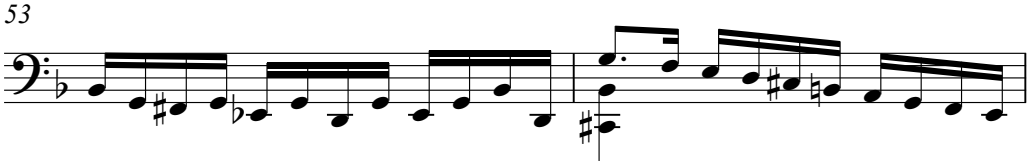

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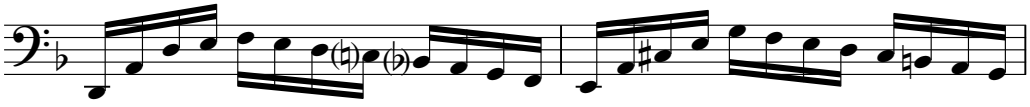

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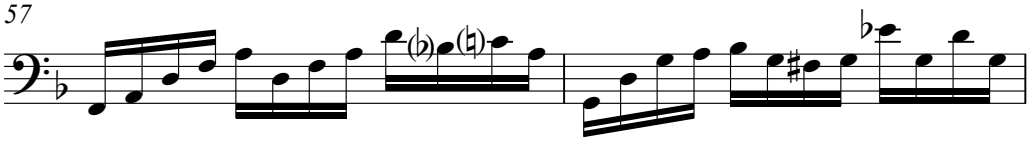
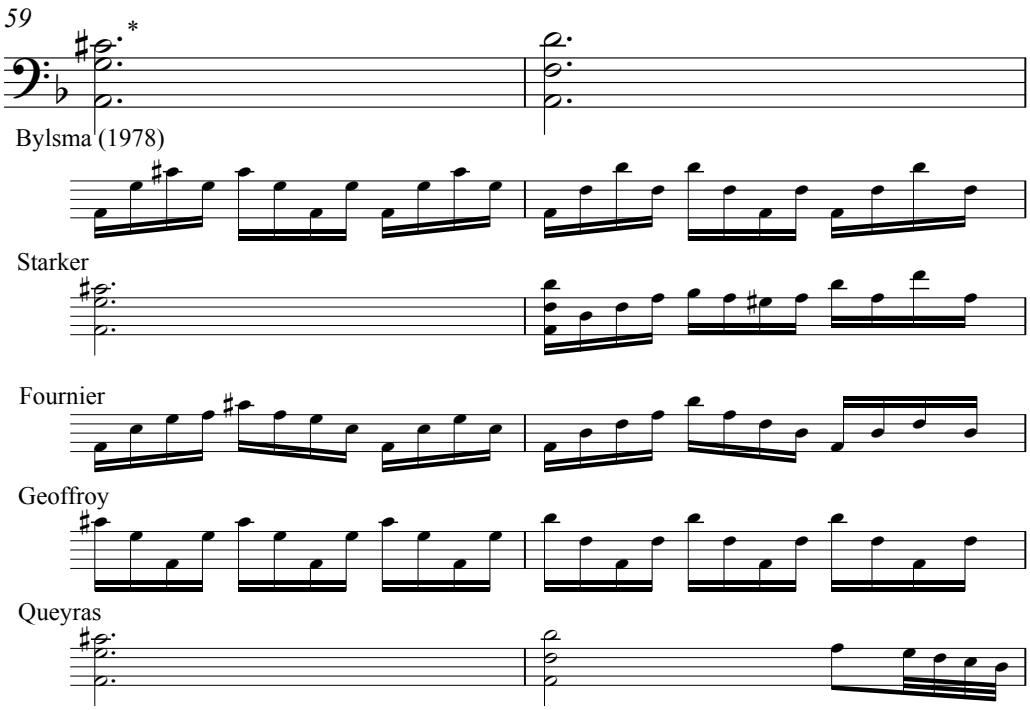
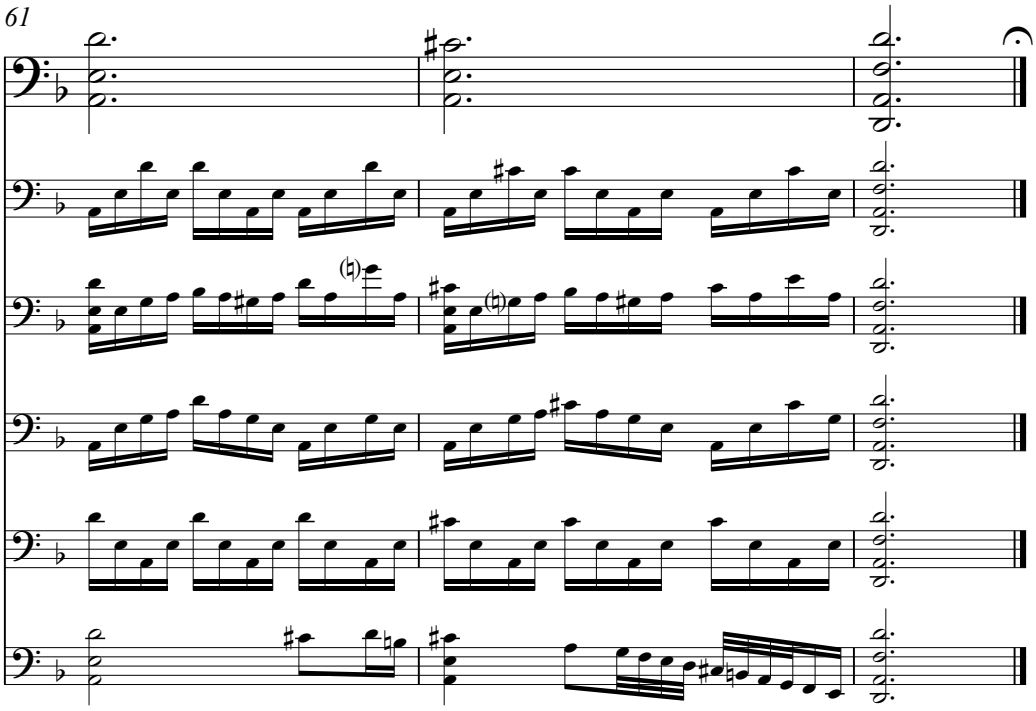
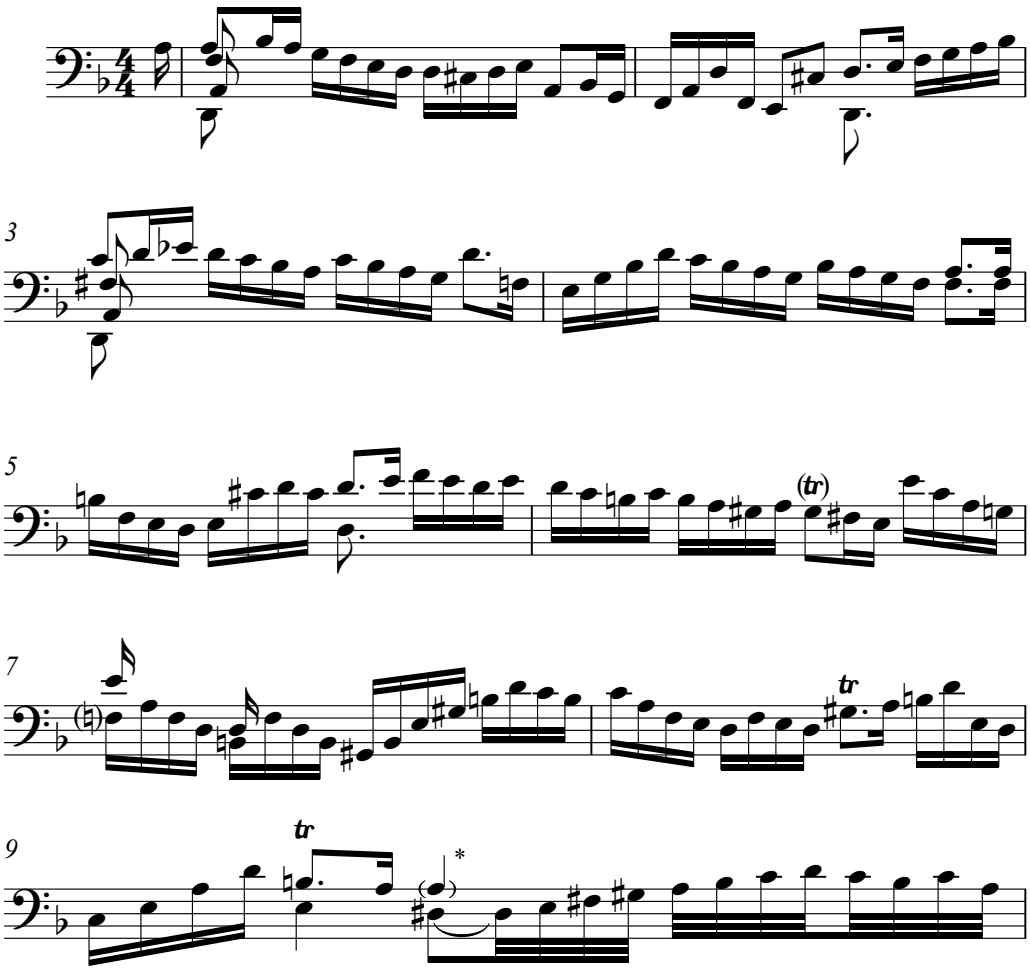




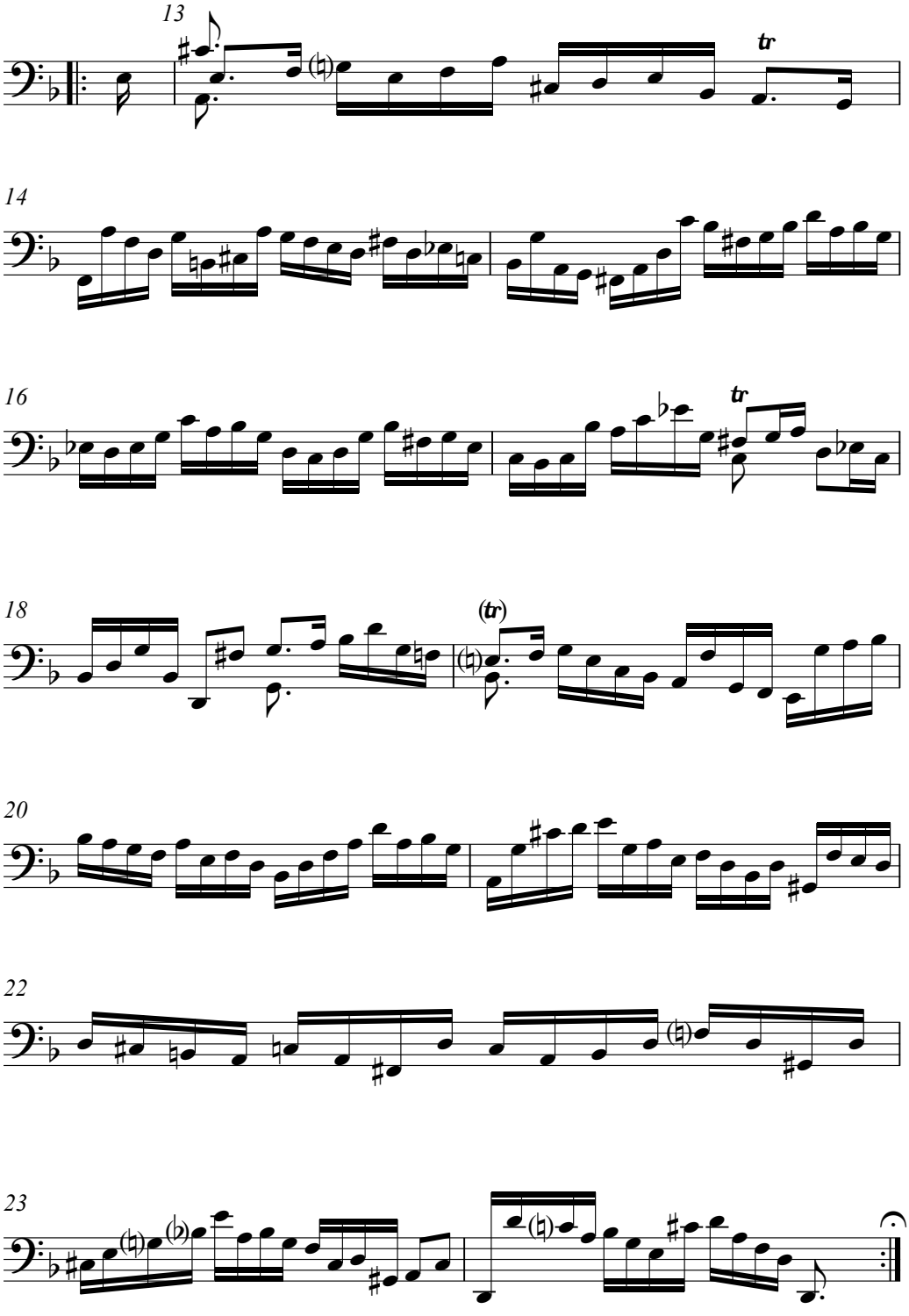
*The five small staves show realizations of this passage from recordings by cellists Anner Bylsma, Janos Starker, Pierre Fournier, Jean-Guihen Queyras, and marimbist Jean Geoffroy. All but one of these realizations maintain the prevailing sixteenth-note rhythm. The exception is Mr. Queyras, who ornaments the passage more freely; the rhythms on his staff are approximate. It is also common to play the chords as written.



Allemande ♩ = 56-(70)-84



*The A in parentheses is usually played, but not always. Anna Magdalena Bach's manuscript includes it; Johann Kellner's does not. Most modern recordings contain the note; exceptions include Steven Isserlis's recording and Anner Bylsma's 1992 recording. (Bylsma's 1978 recording includes the note.) Either option is acceptable.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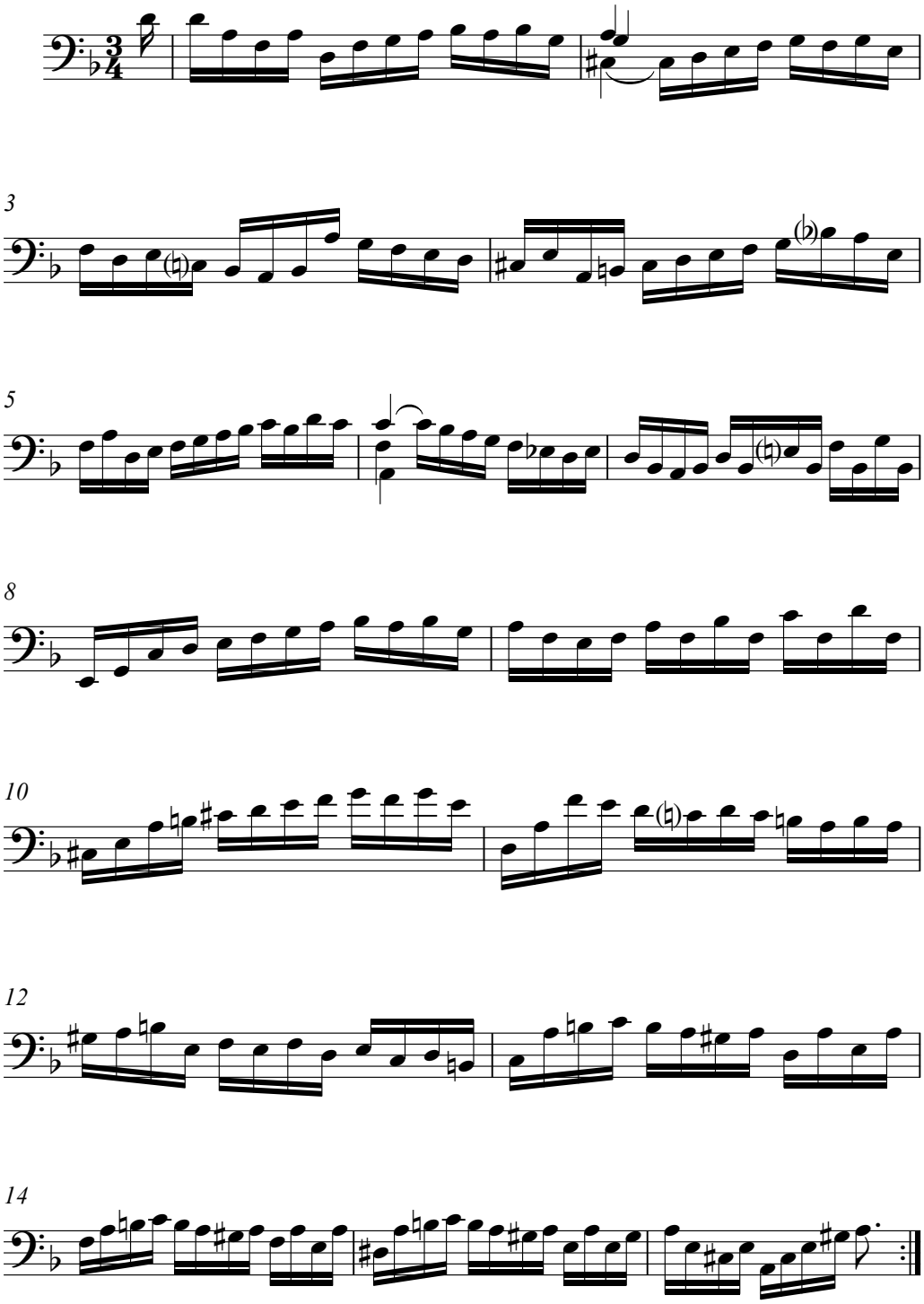
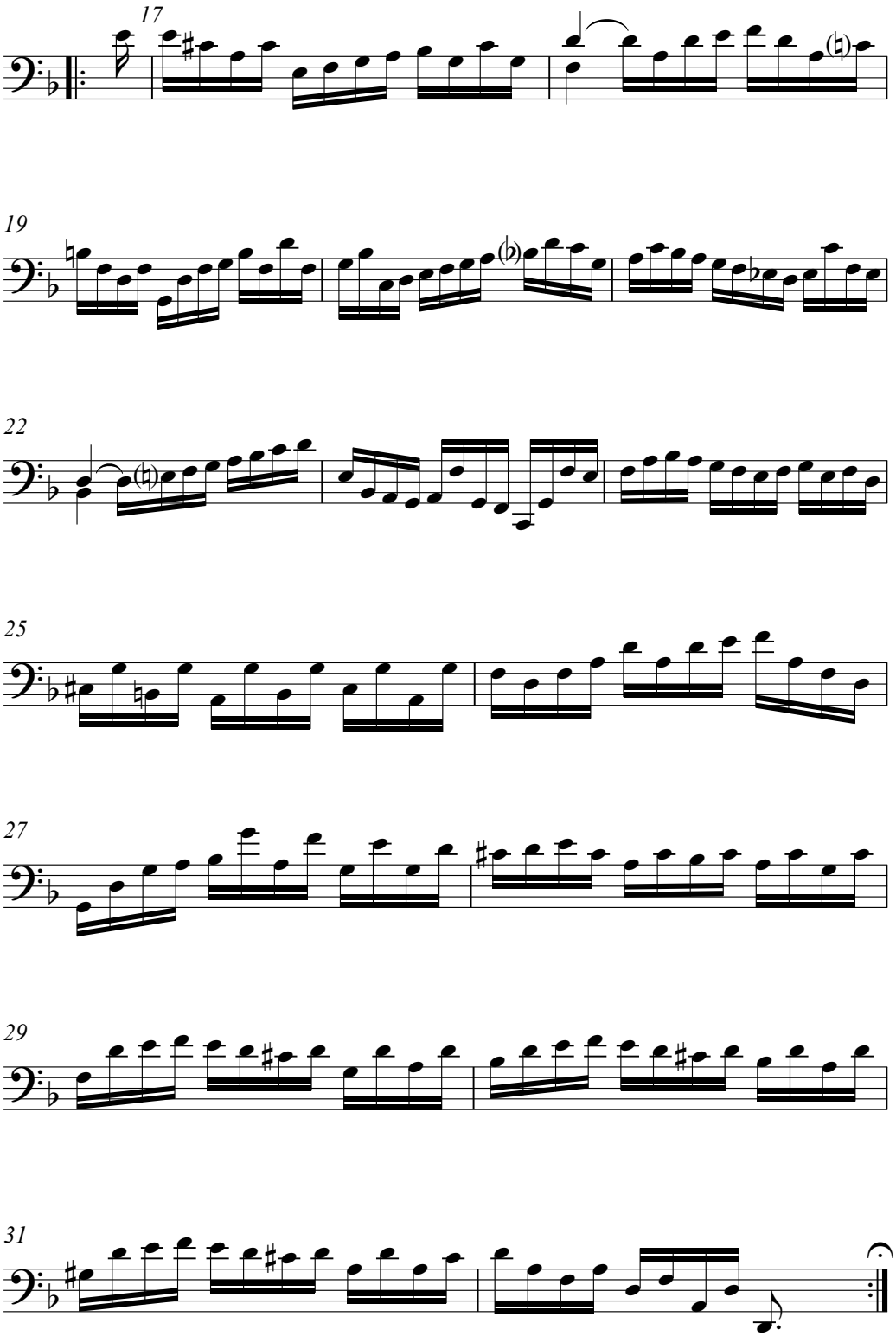
Courante (Corrente) ♩ = 90-(101)-116

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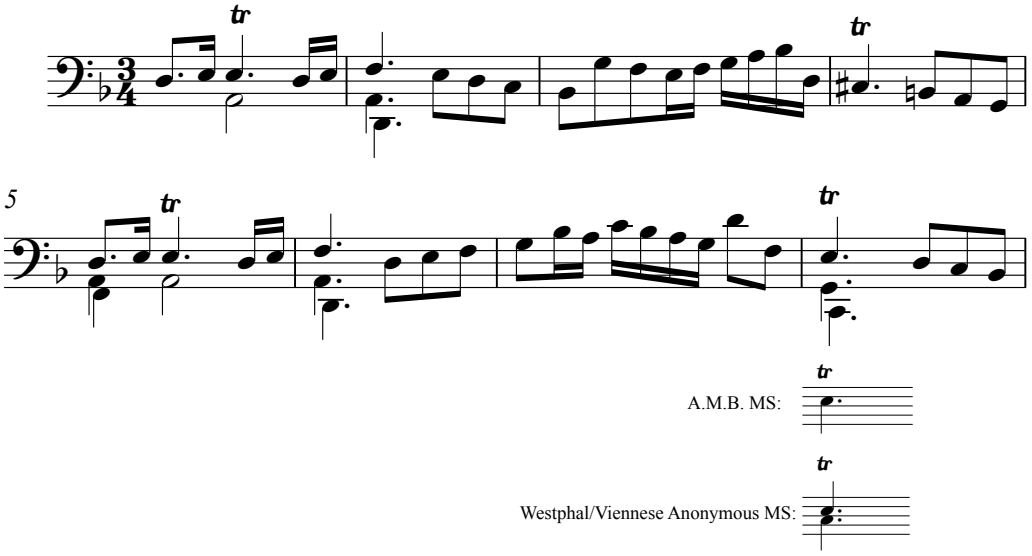
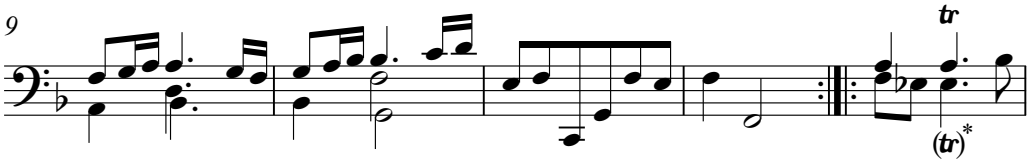
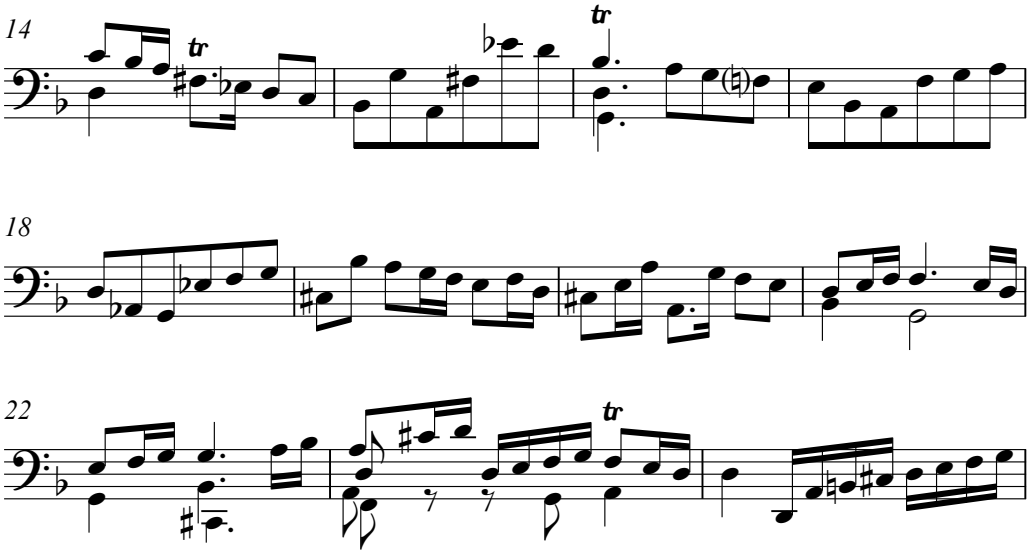
Sarabande ♩ = 50-(52)-58

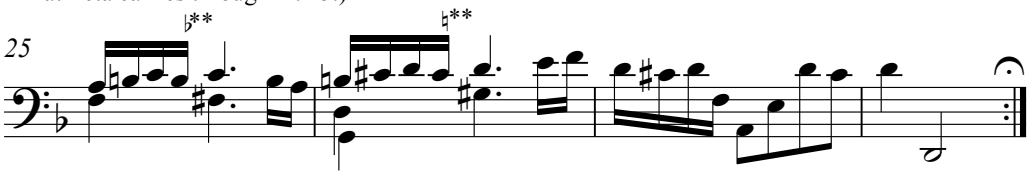




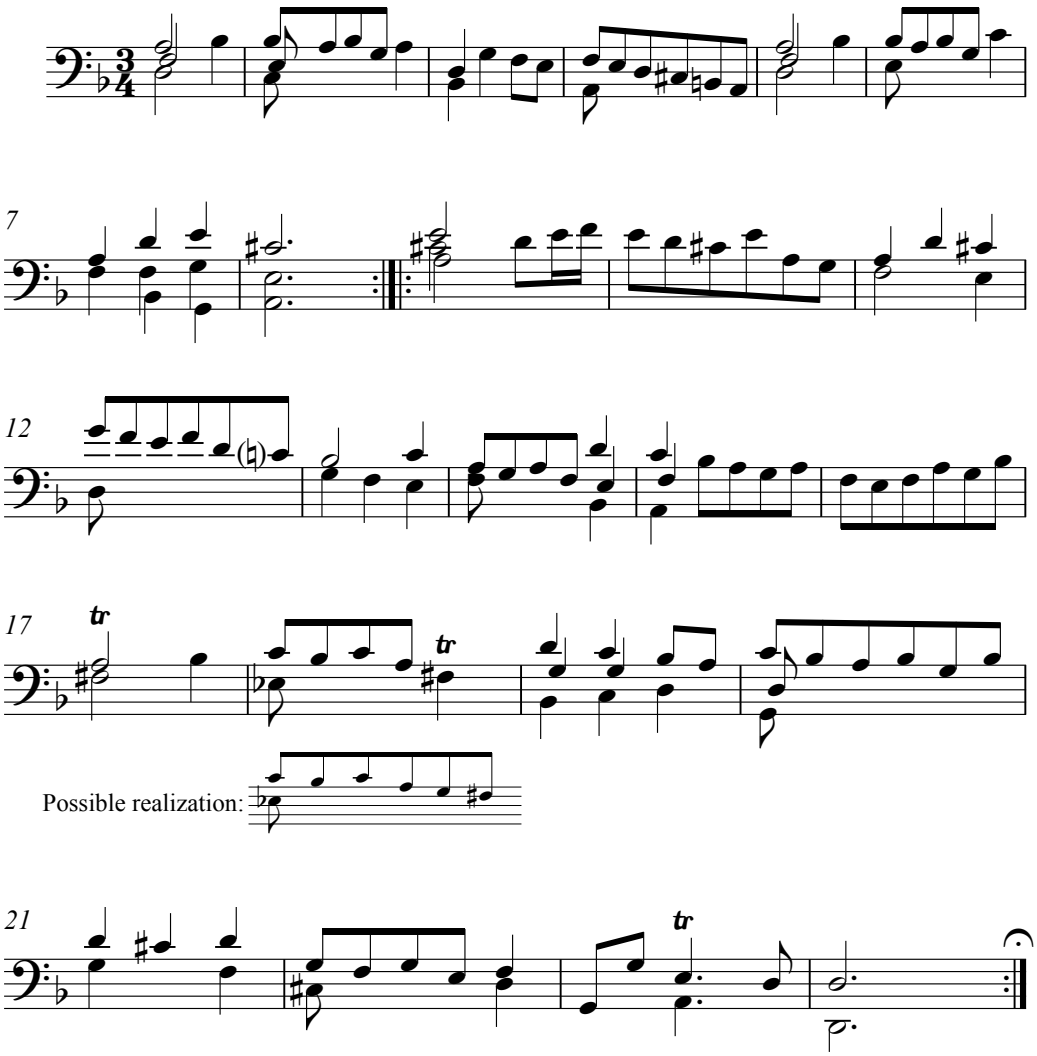
*Either the E-flat or the A may be trilled, but not both. Most modern performers trill the A.



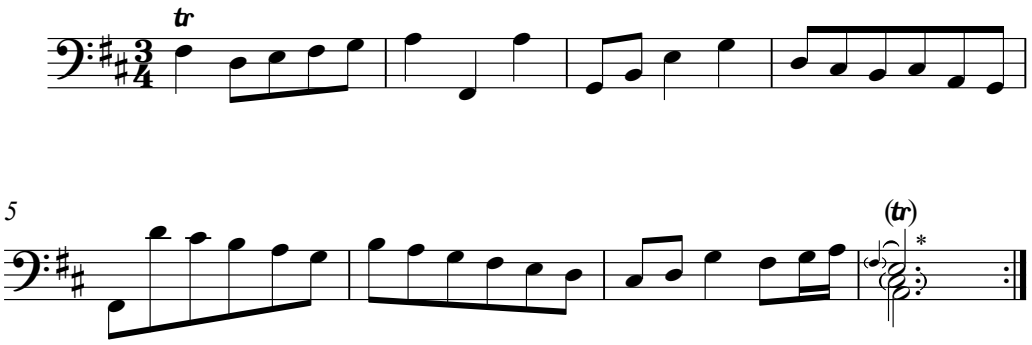
**These accidentals appear in Anna Magdalena Bach's manuscript as well as several other early sources. However, most modern performances maintain the B-natural through m. 25 and the C-sharp through m. 26. (Jean-Guihen Queyras is one of a very few modern performers who plays this passage with the fictae shown here.) Playing these fictae would be unusual, but acceptable. (If played, the B-flat ficta carries through m. 25.)



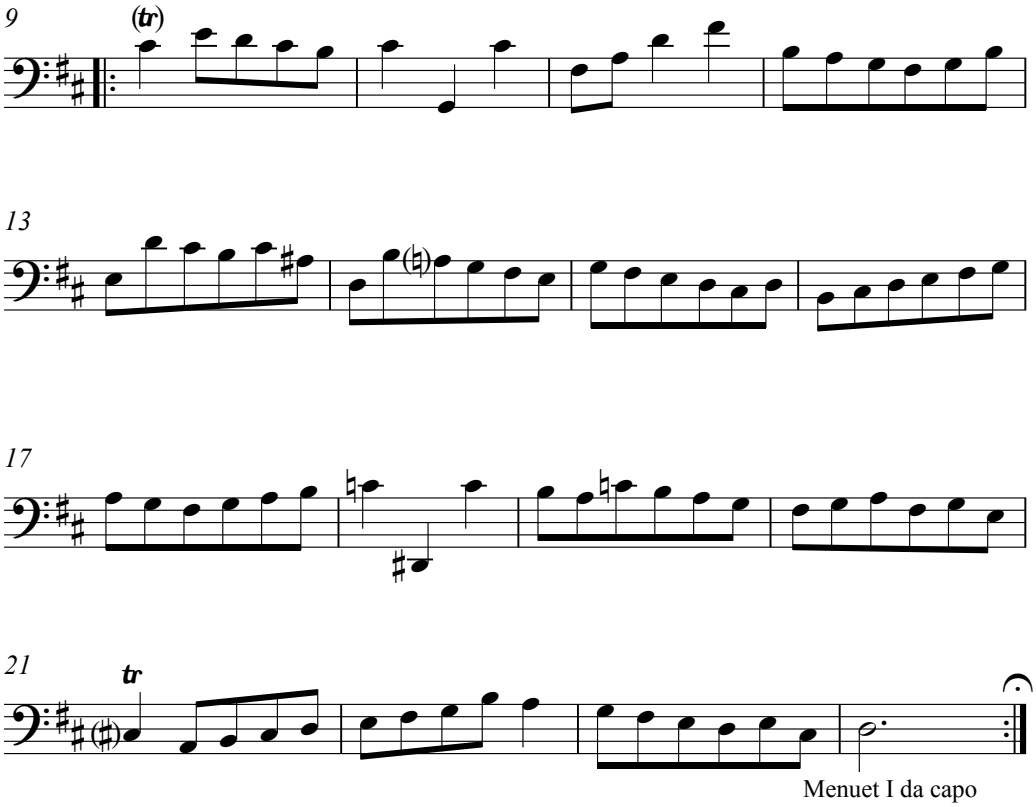
Menuet I ♩ = 102-(143)-174



Menuet II ♩ = 120-(150)-184

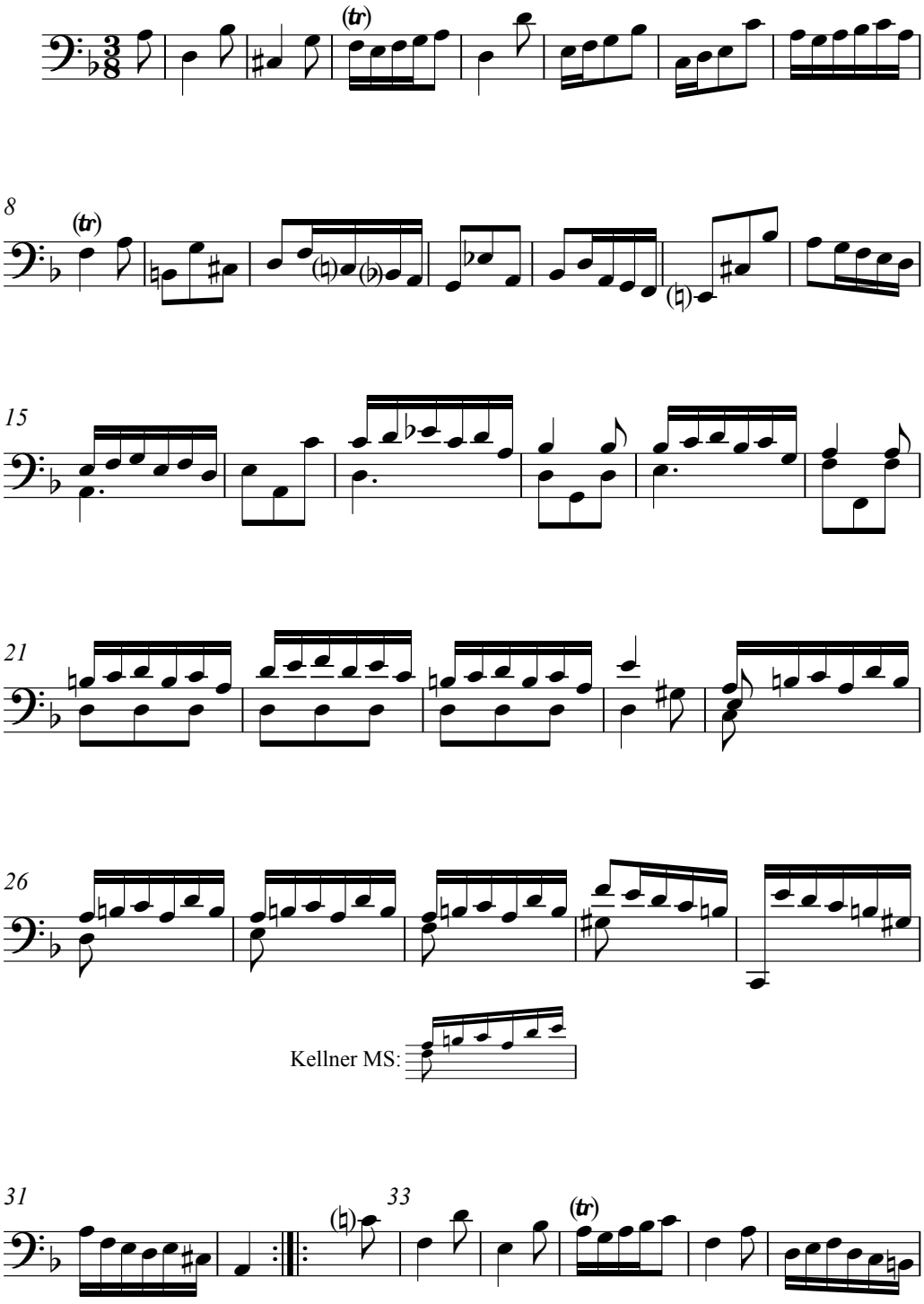


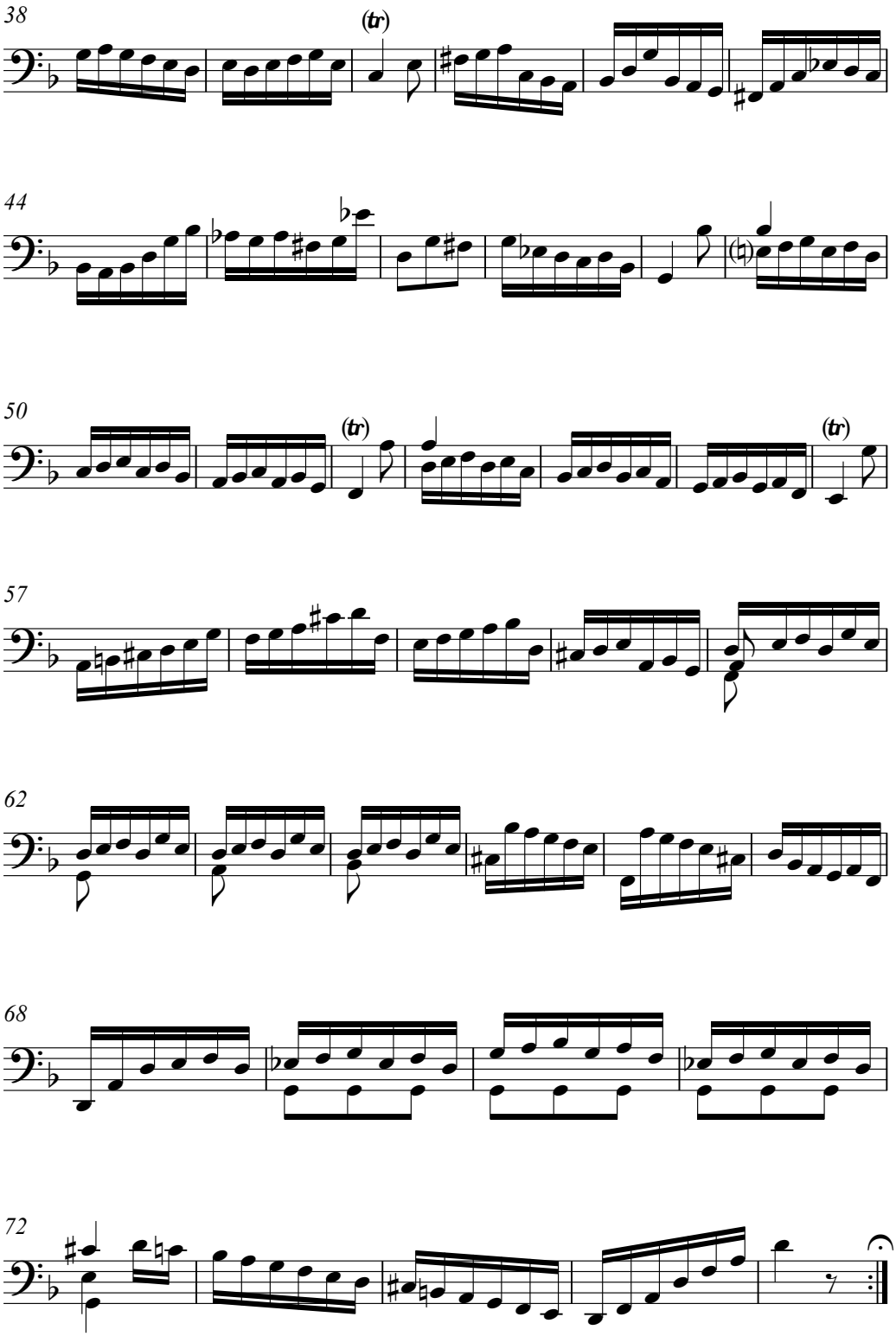
*The trill, appoggiatura, and C-sharp are all in parentheses to reflect their possible use in avoiding an exposed open fifth. The performer should feel free to use them singly or in combination, according to his or her taste.



Menuet I da capo

Gigue (Giga II) ♩. = 60-(65)-74




38
(tr)
44
50
(tr)
(tr)
57
62
68
72

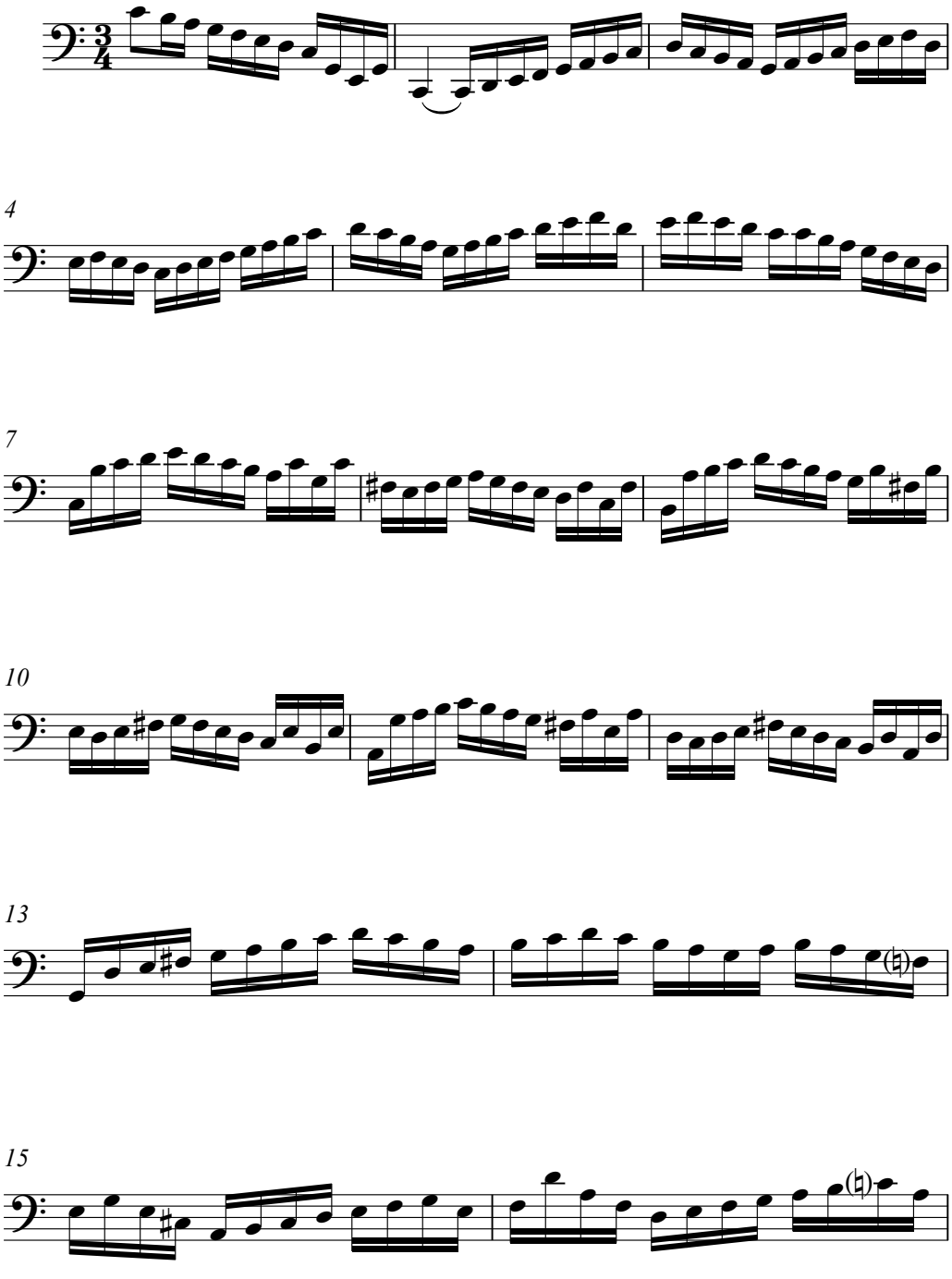
APPENDIX C

BWV 1009

Suite III (BWV 1009)

J. S. Bach
edited by Bill Sallak

Prélude ♩ = 66-(76)-108



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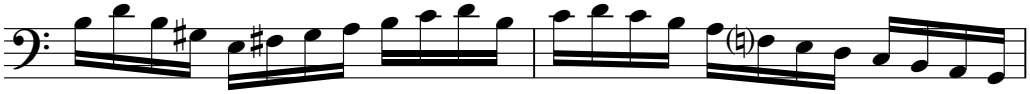

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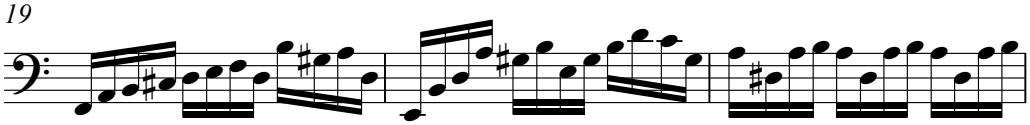

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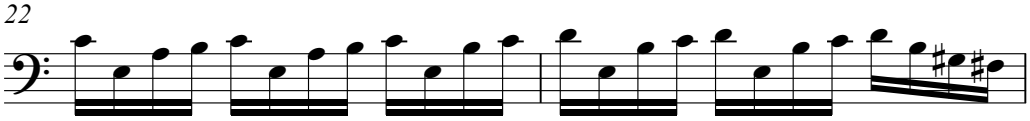

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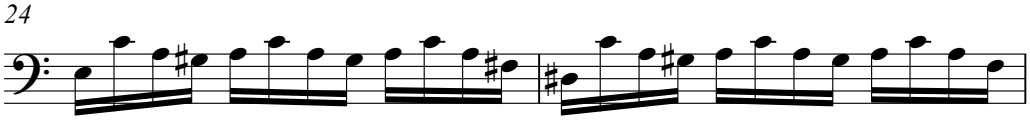

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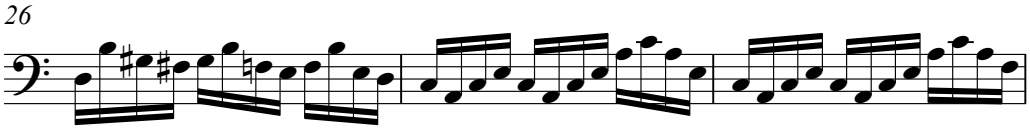

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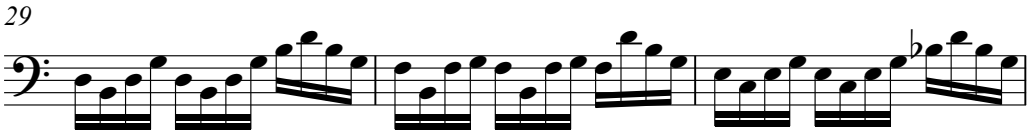

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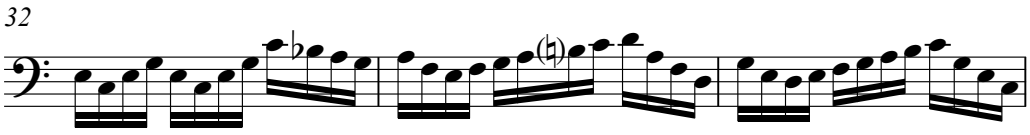

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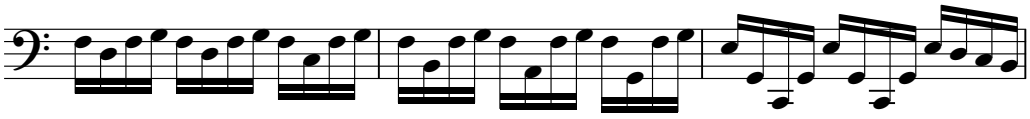

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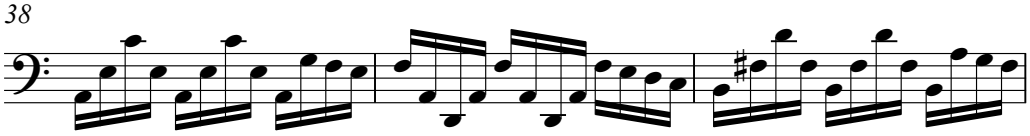

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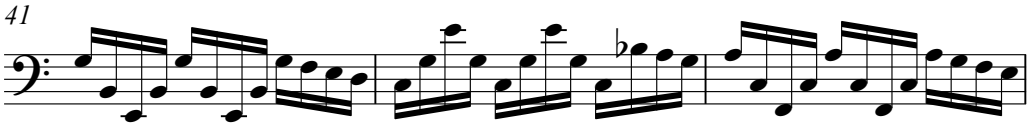

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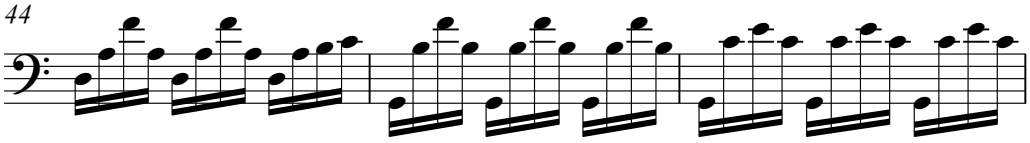

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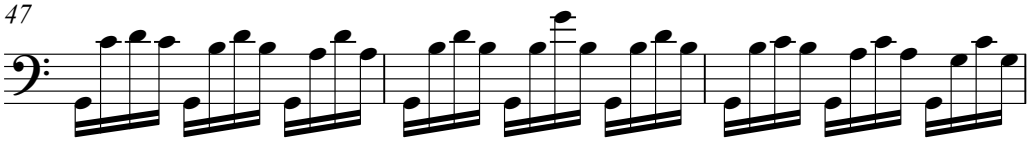

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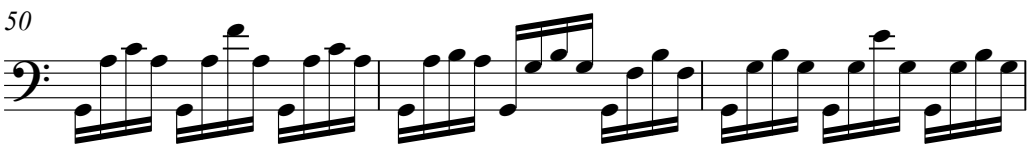

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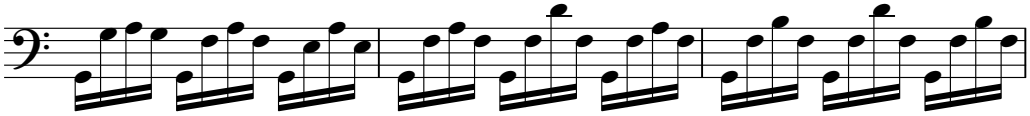

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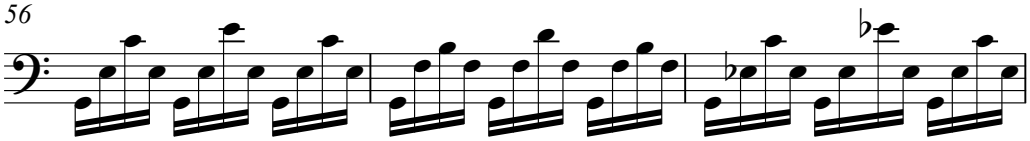

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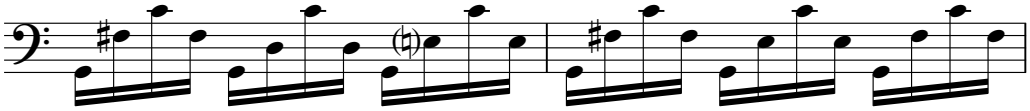

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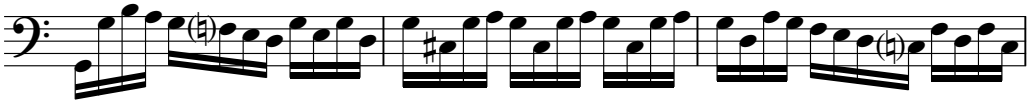

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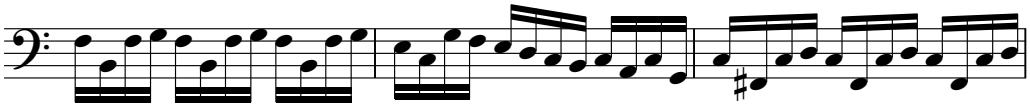

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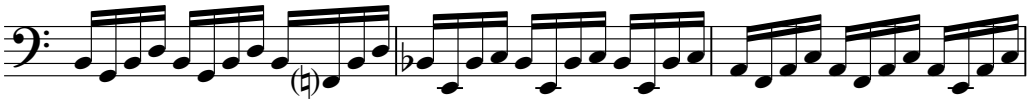

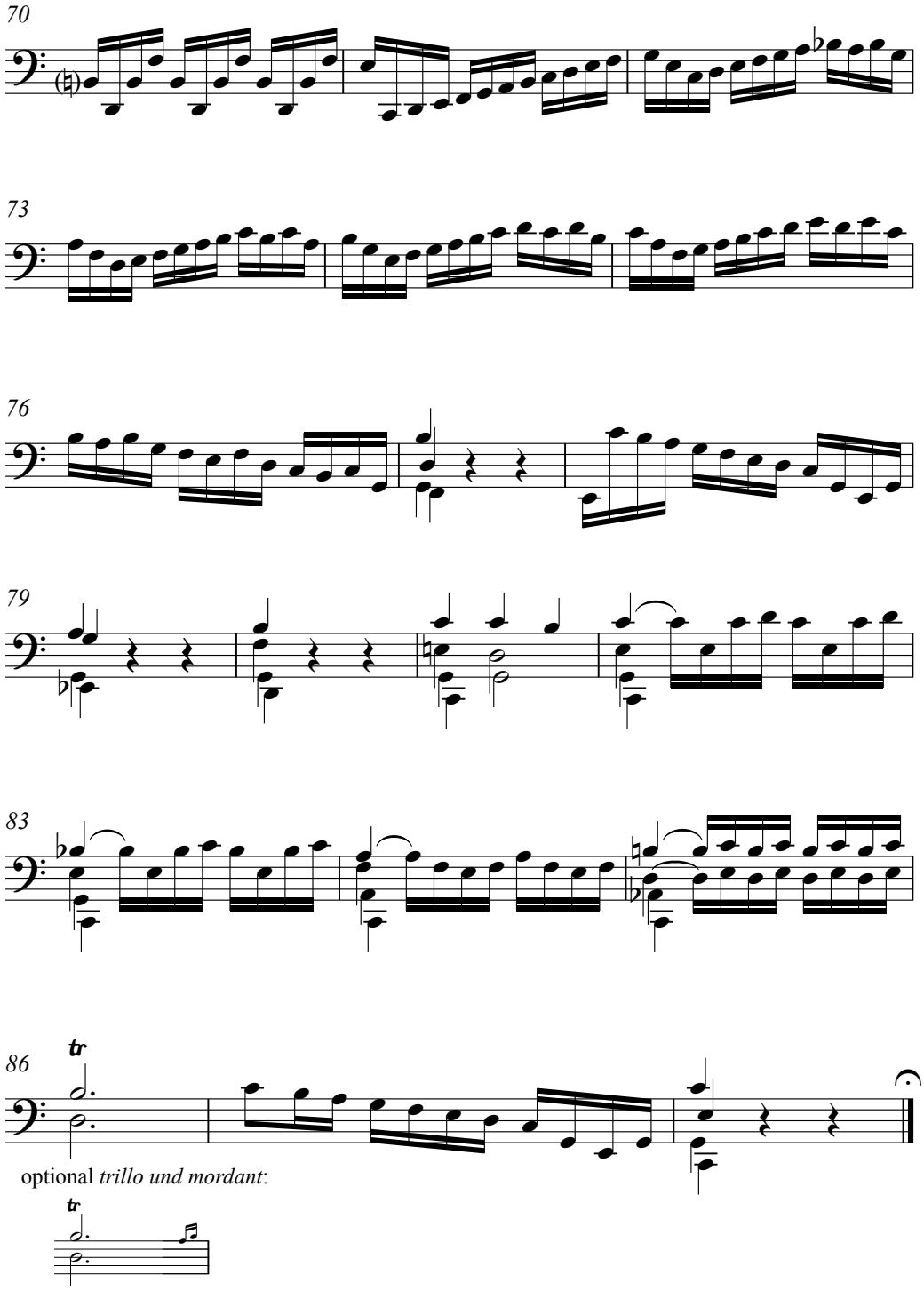
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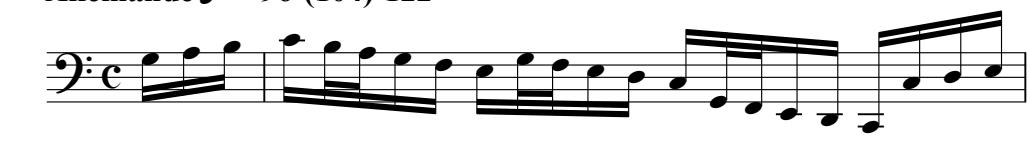
Allemande ♪ = 96-(104)-122



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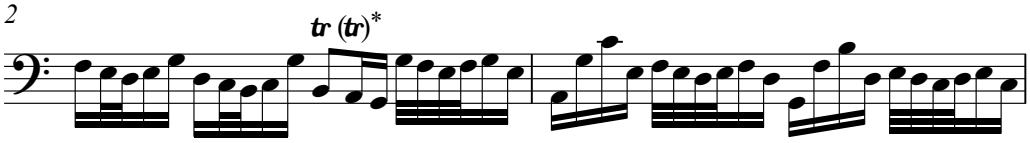
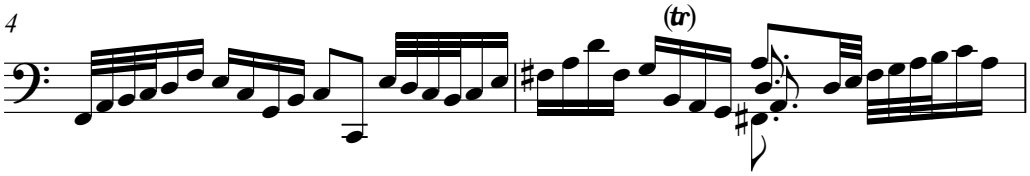


*If the second trill is performed, the first trill should be omitted.

4



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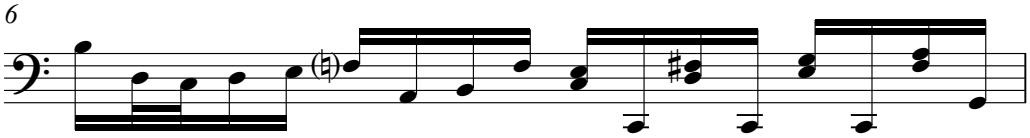

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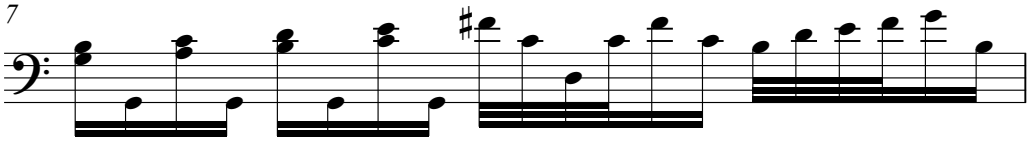

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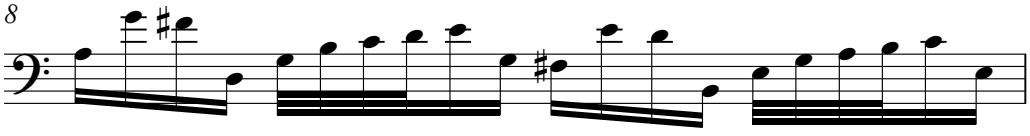

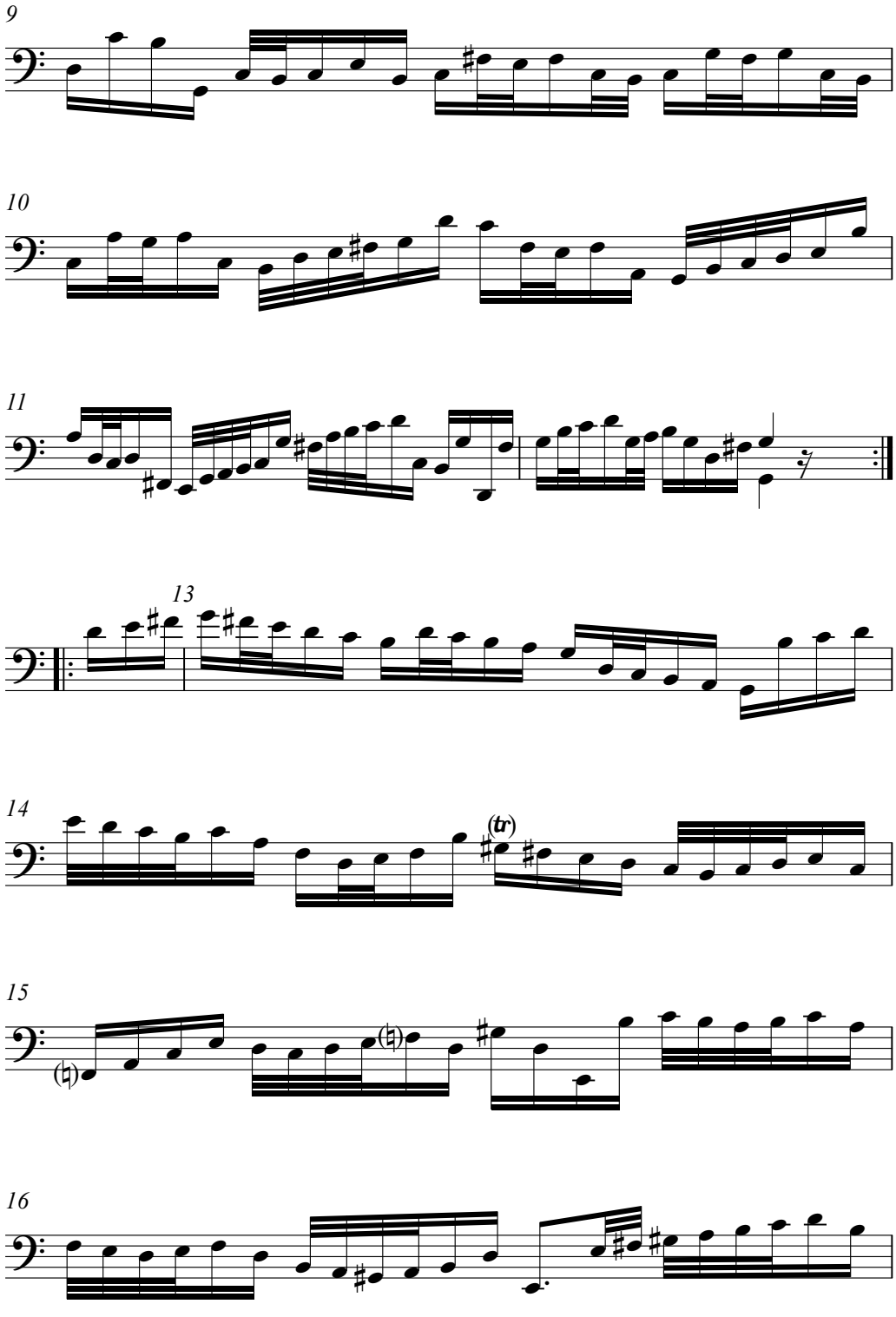
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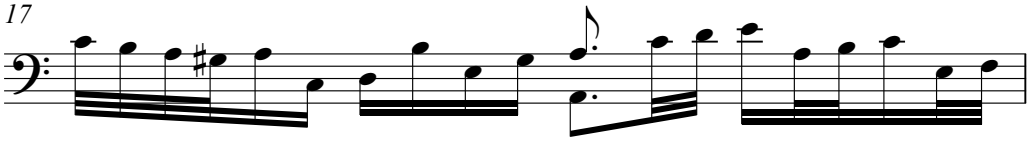

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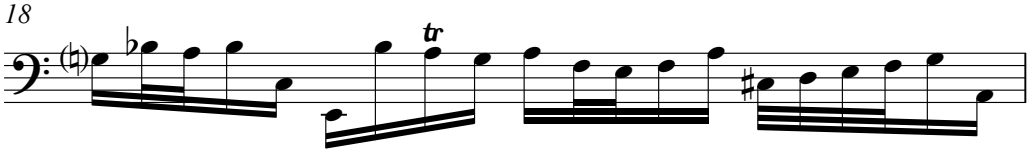

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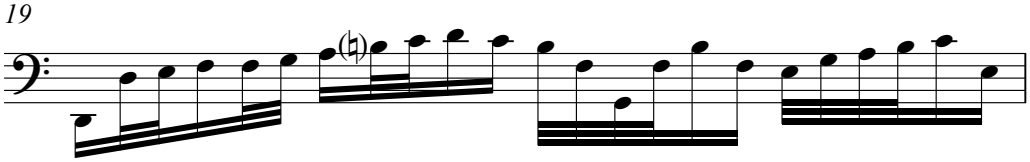

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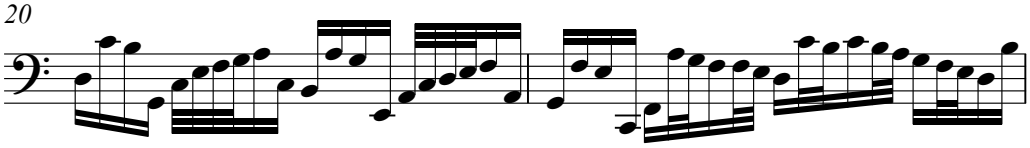

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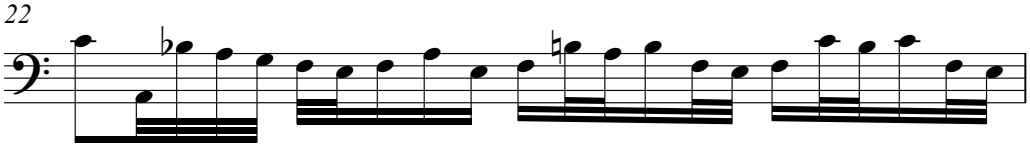

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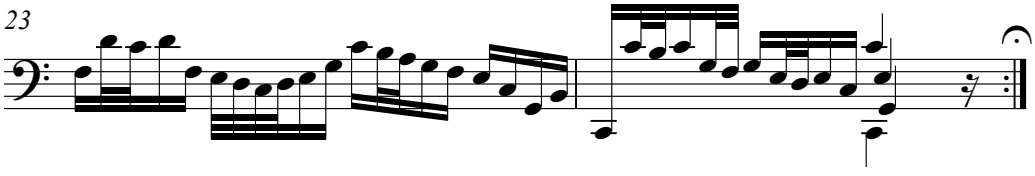
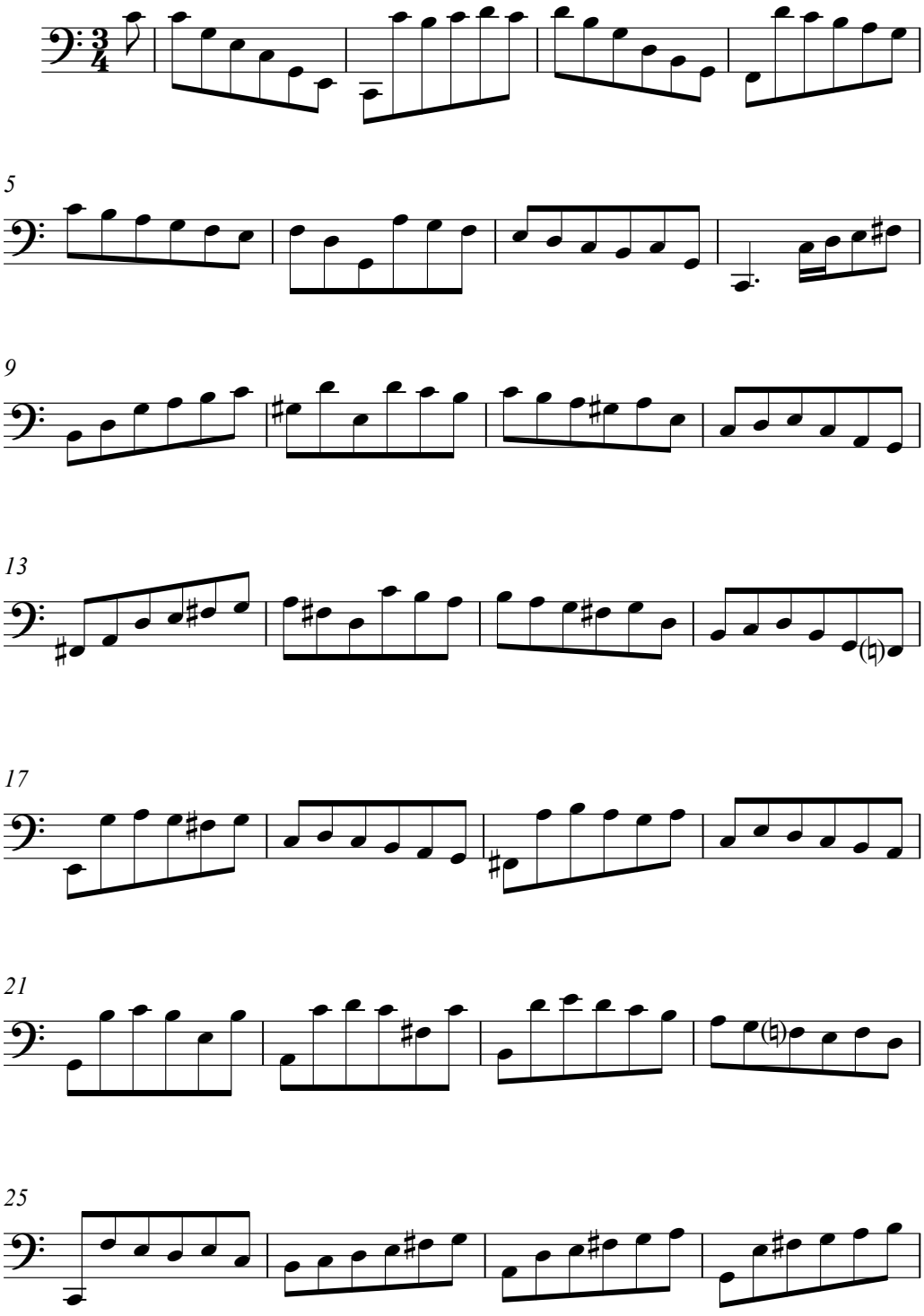
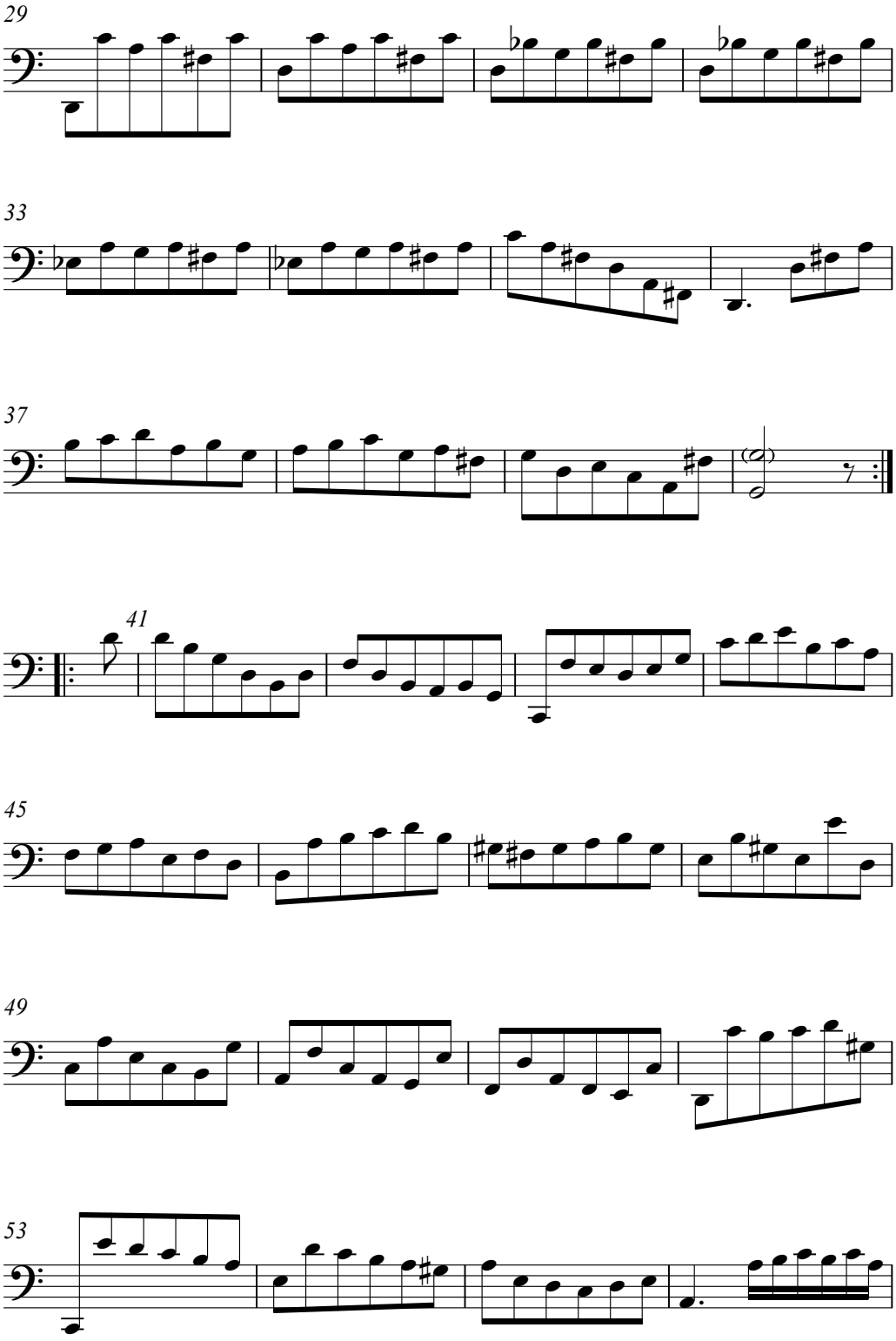


Courante (Corrente) = 148-(160)-184

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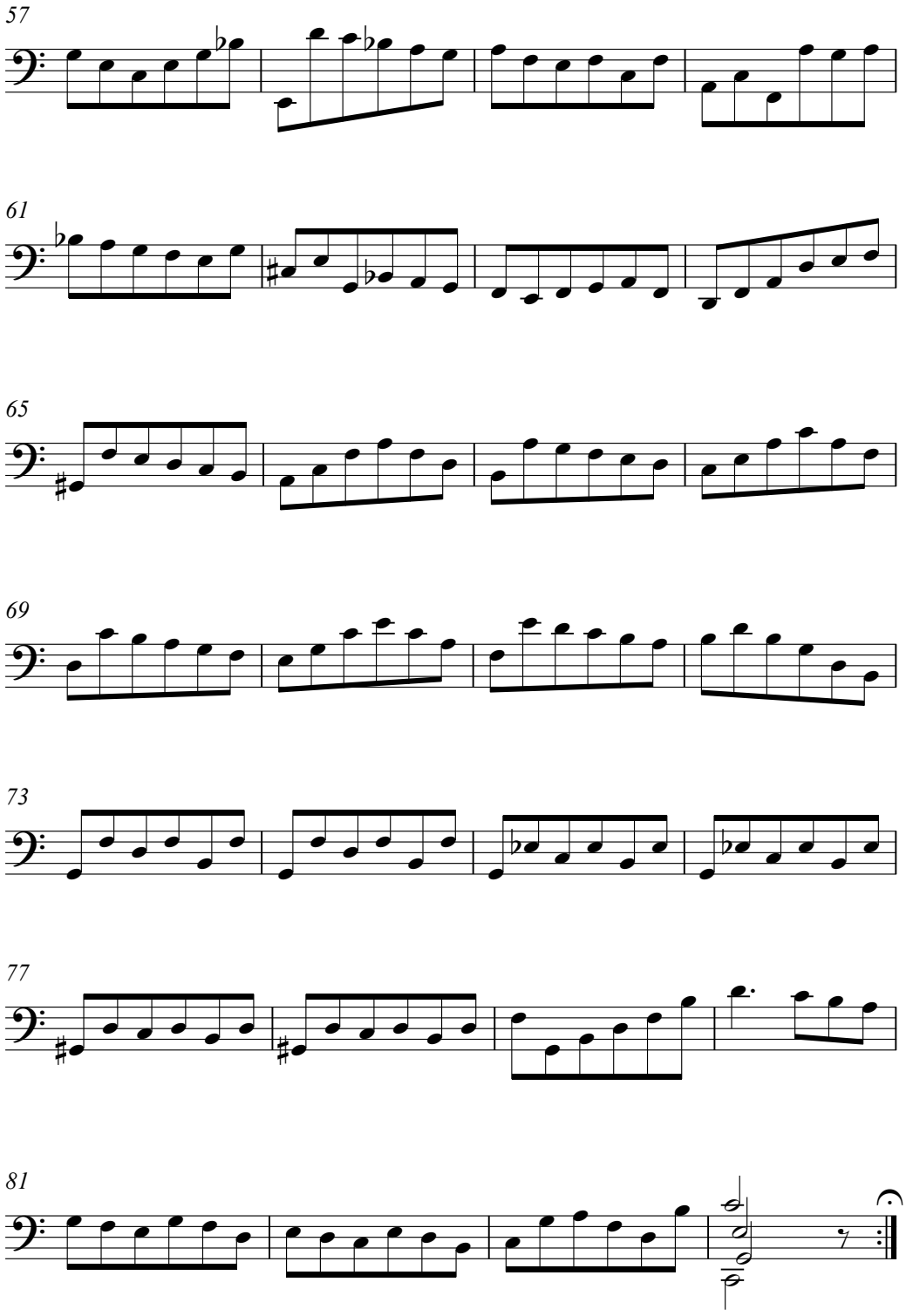
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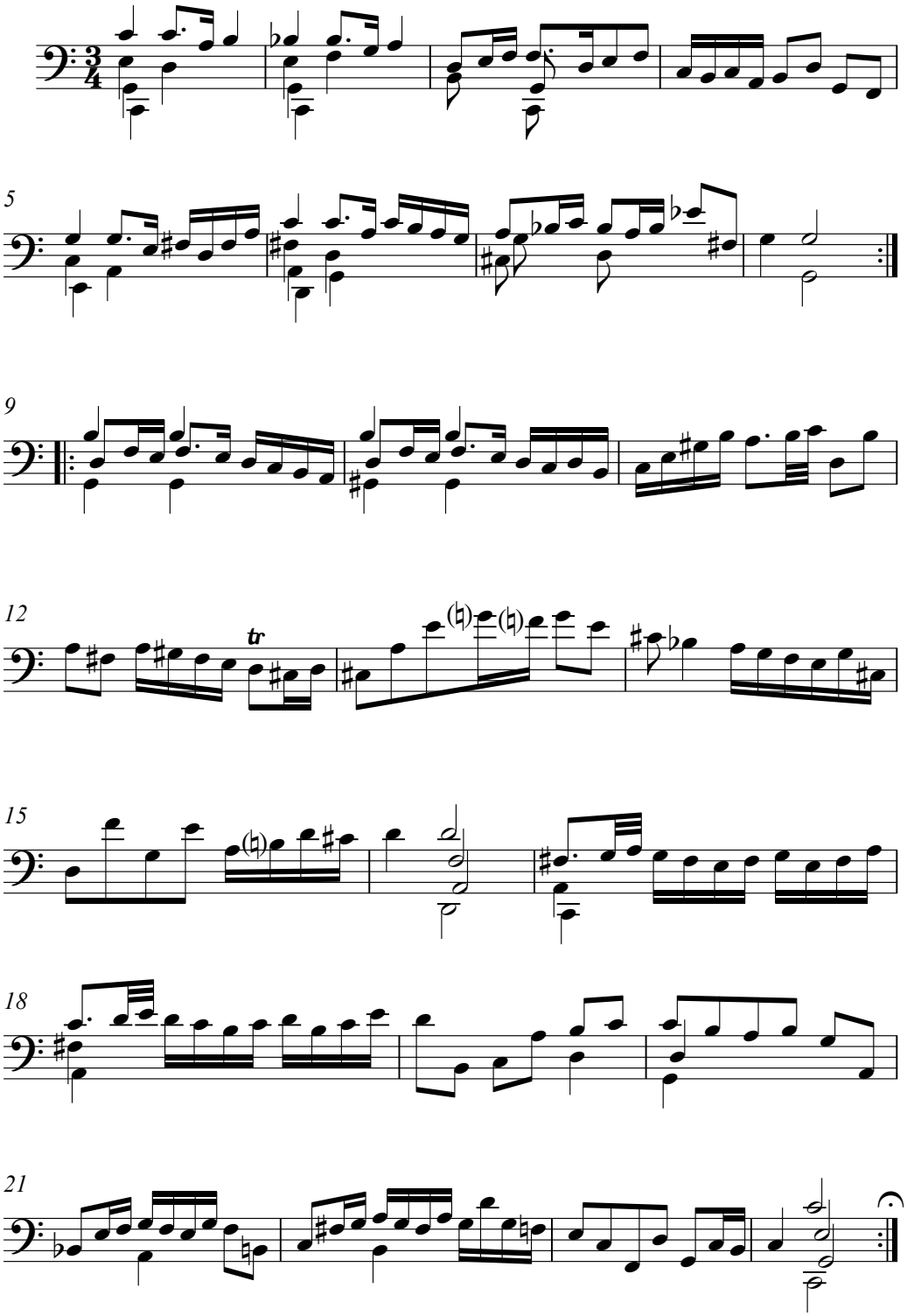
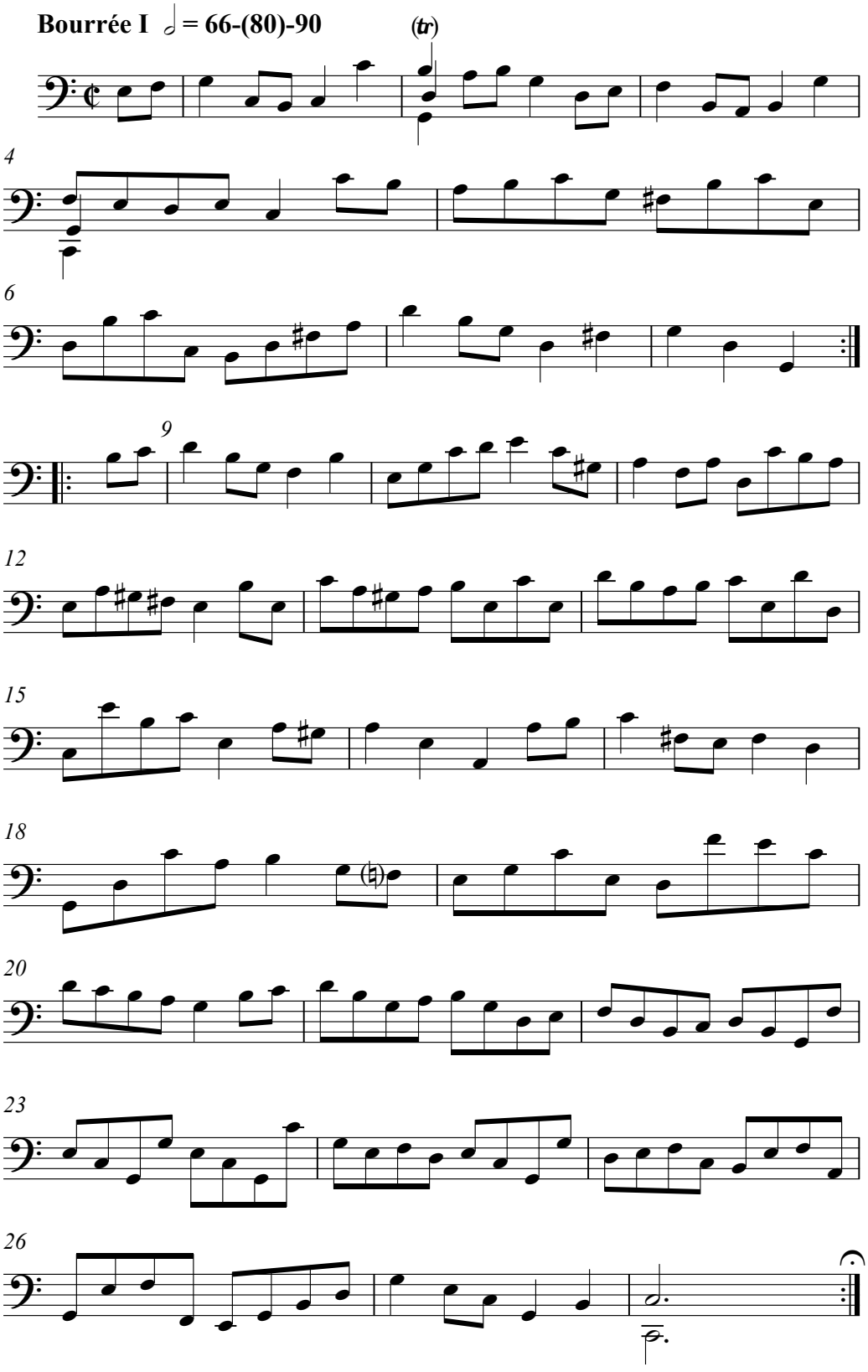
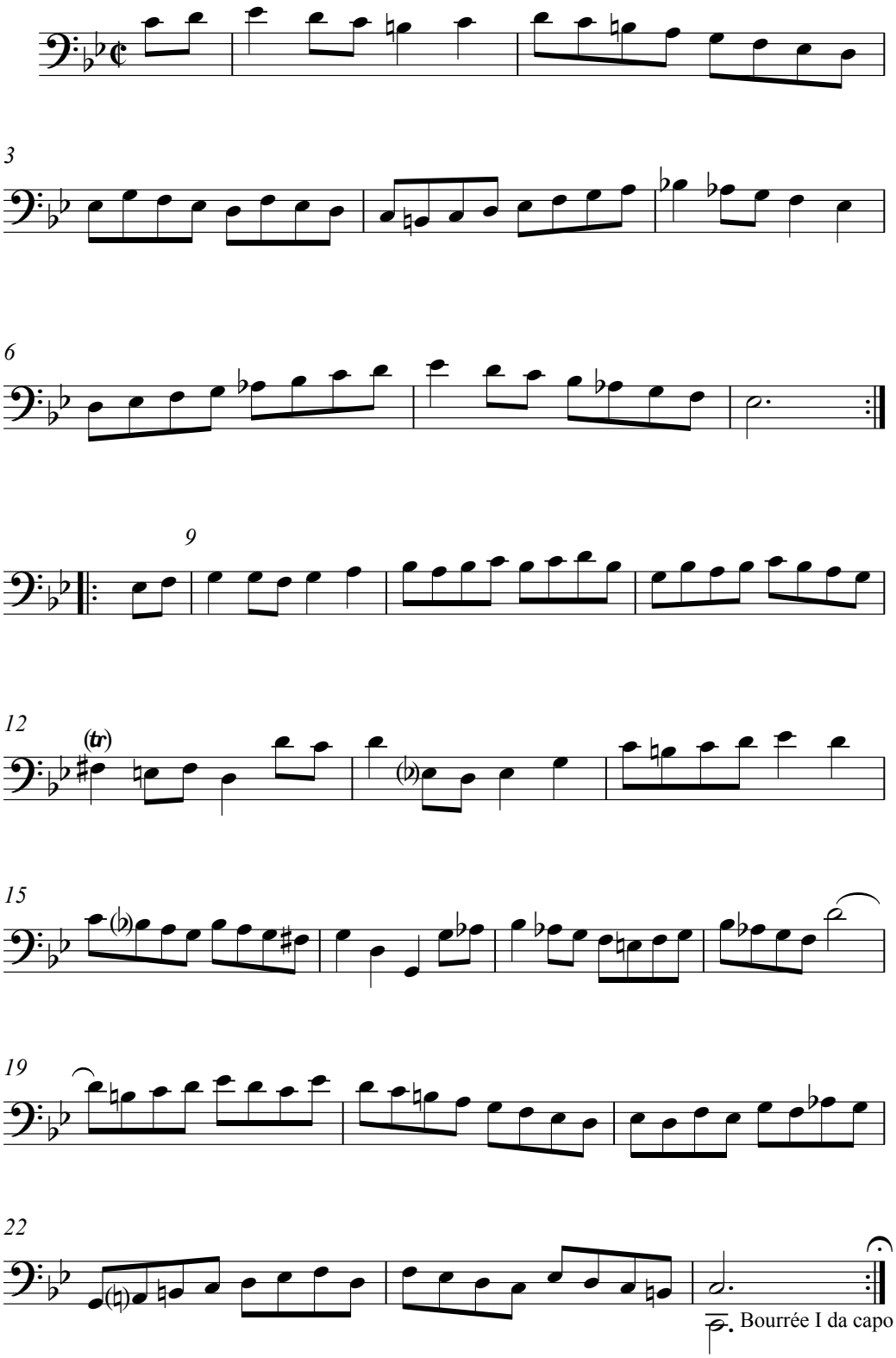
Sarabande ♩ = 48-(52)-56



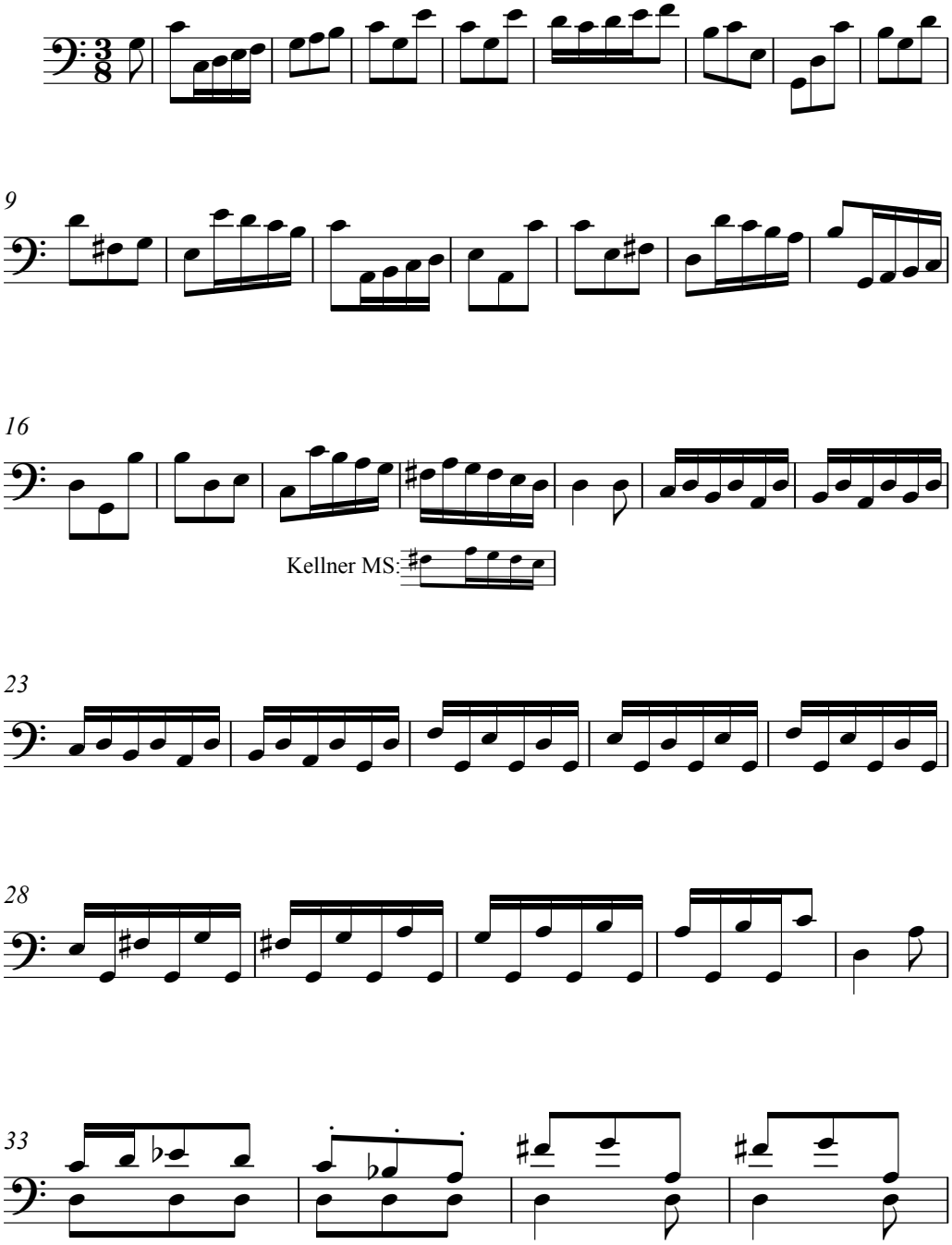
Bourrée I 𝅗𝅥 = 66-(80)-90

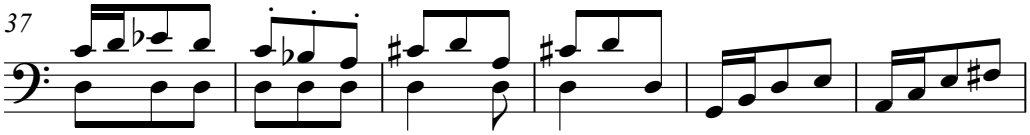


Bourrée II 𝅗𝅥 **= 60-(78)-90**



Gigue (Giga II) ♩. = 68-(74)-86

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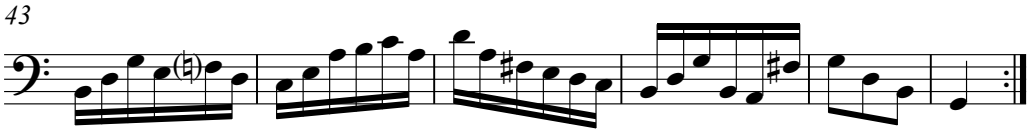
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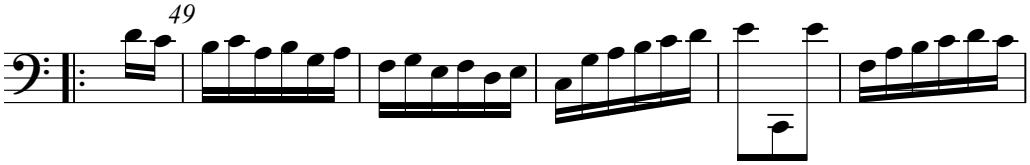
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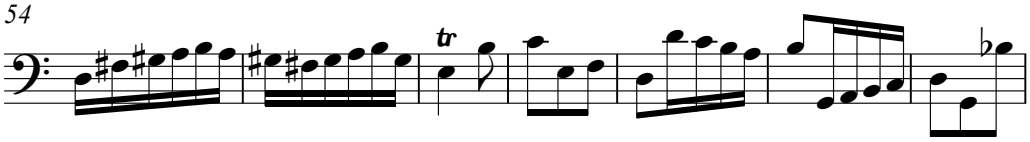
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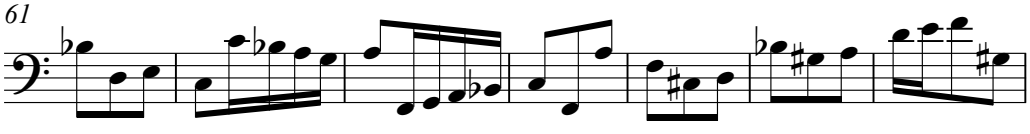
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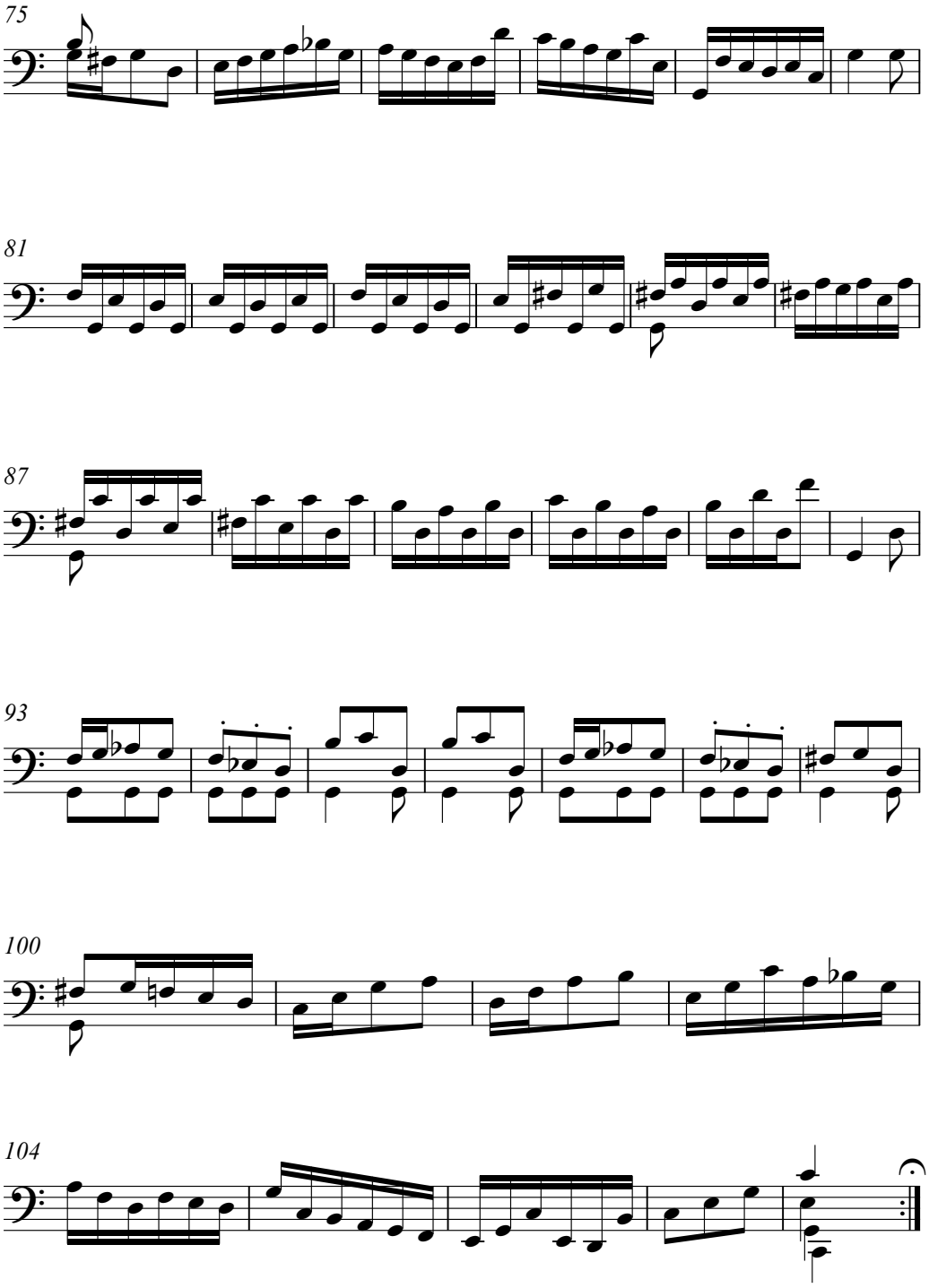

75
81
87
93
100
104

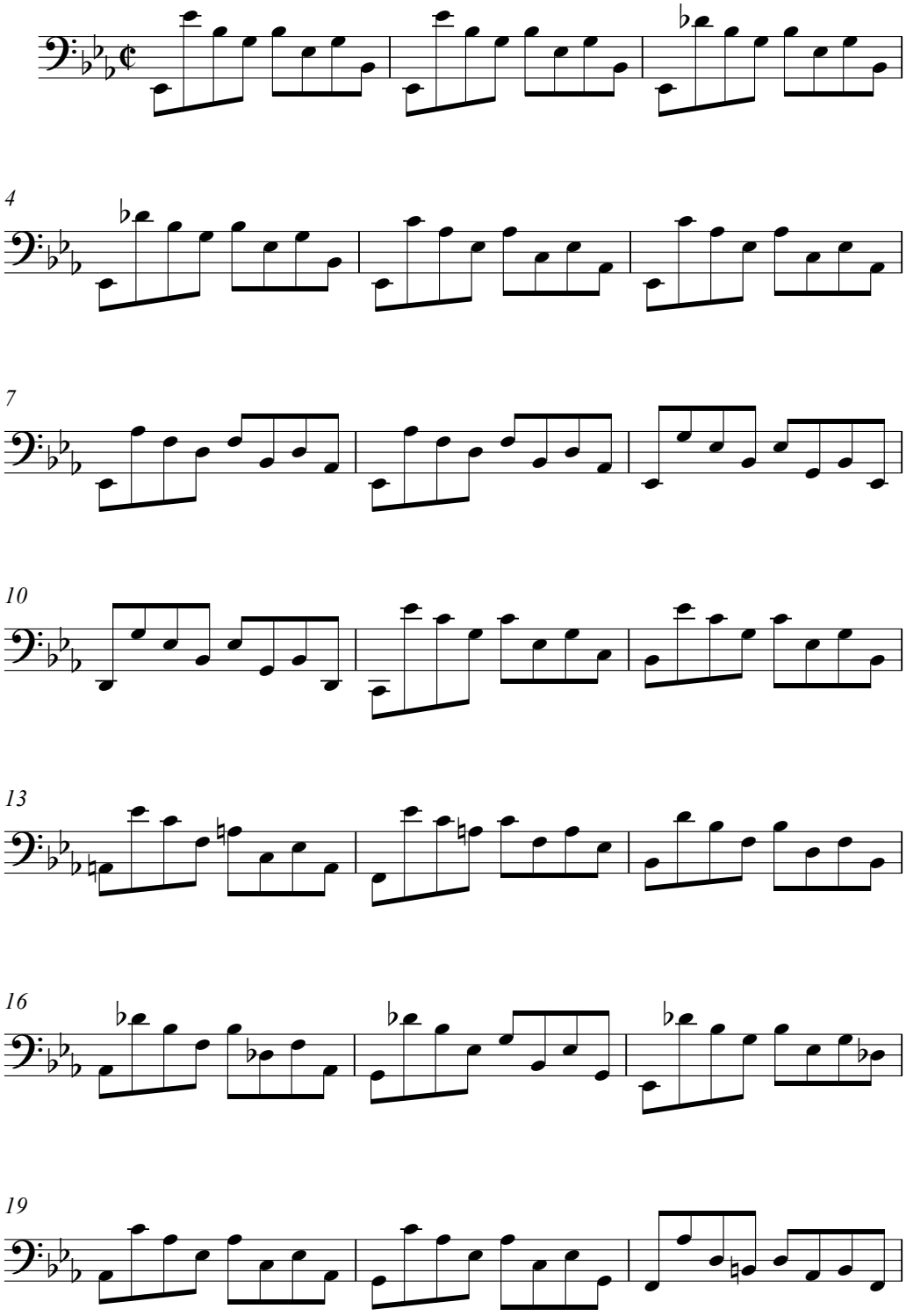
APPENDIX D

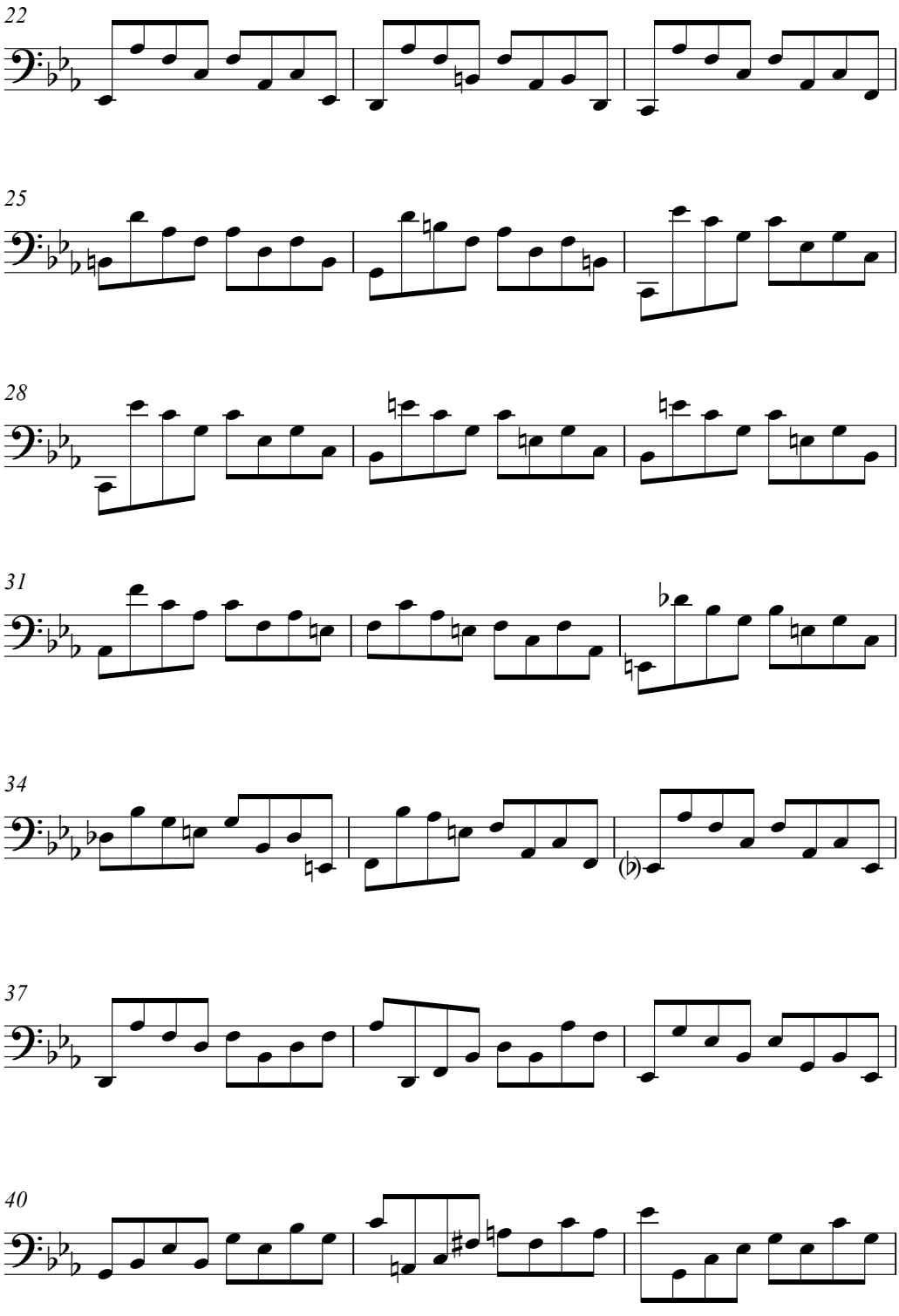
BWV 1010

Suite IV (BWV 1010)

J. S. Bach
edited by Bill Sallak

Prélude 𝅗𝅥 **= 48-(60)-70**

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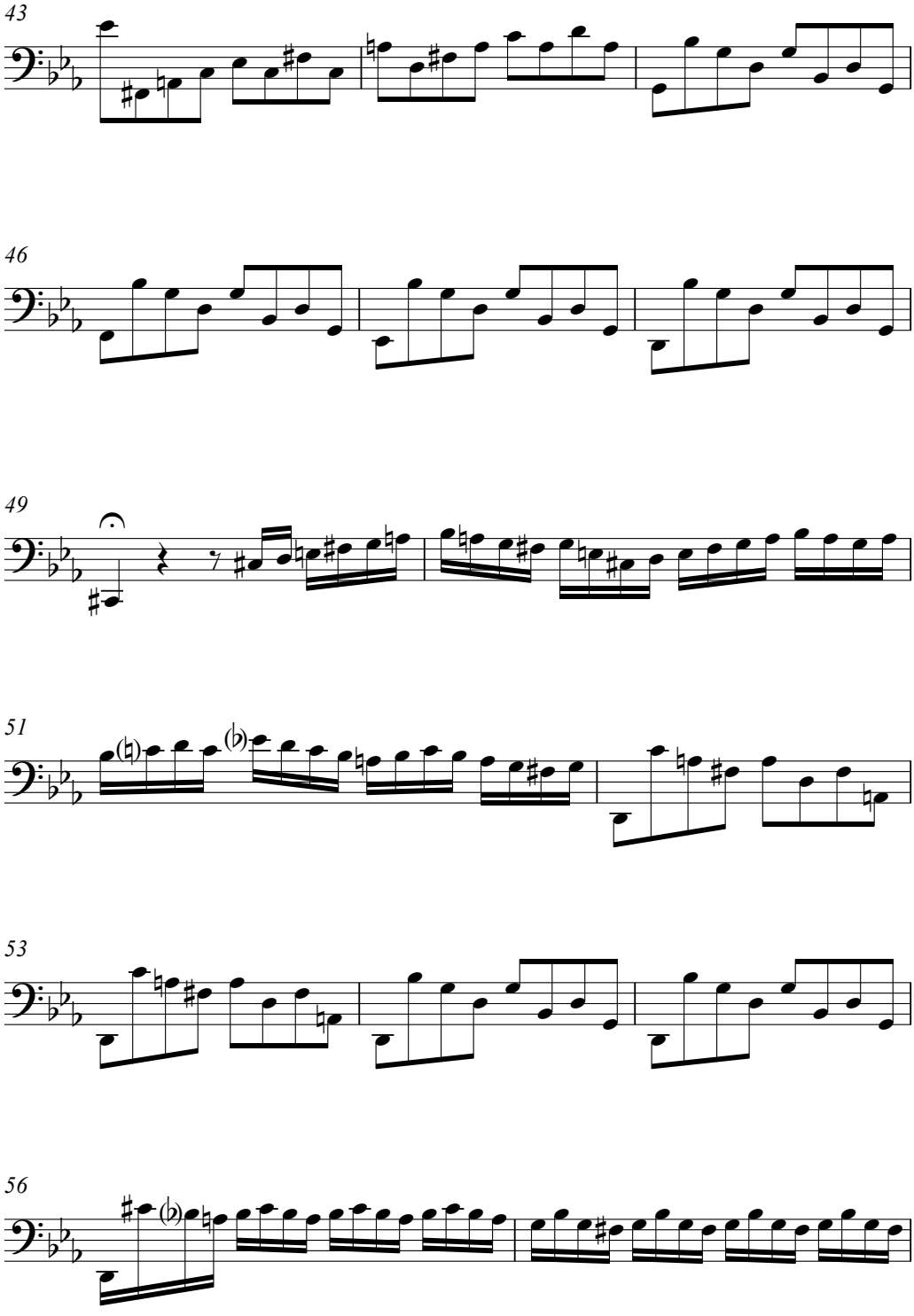
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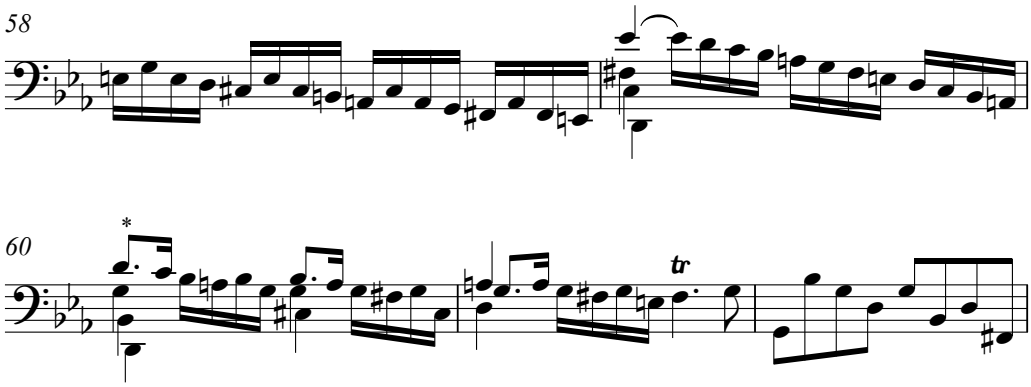
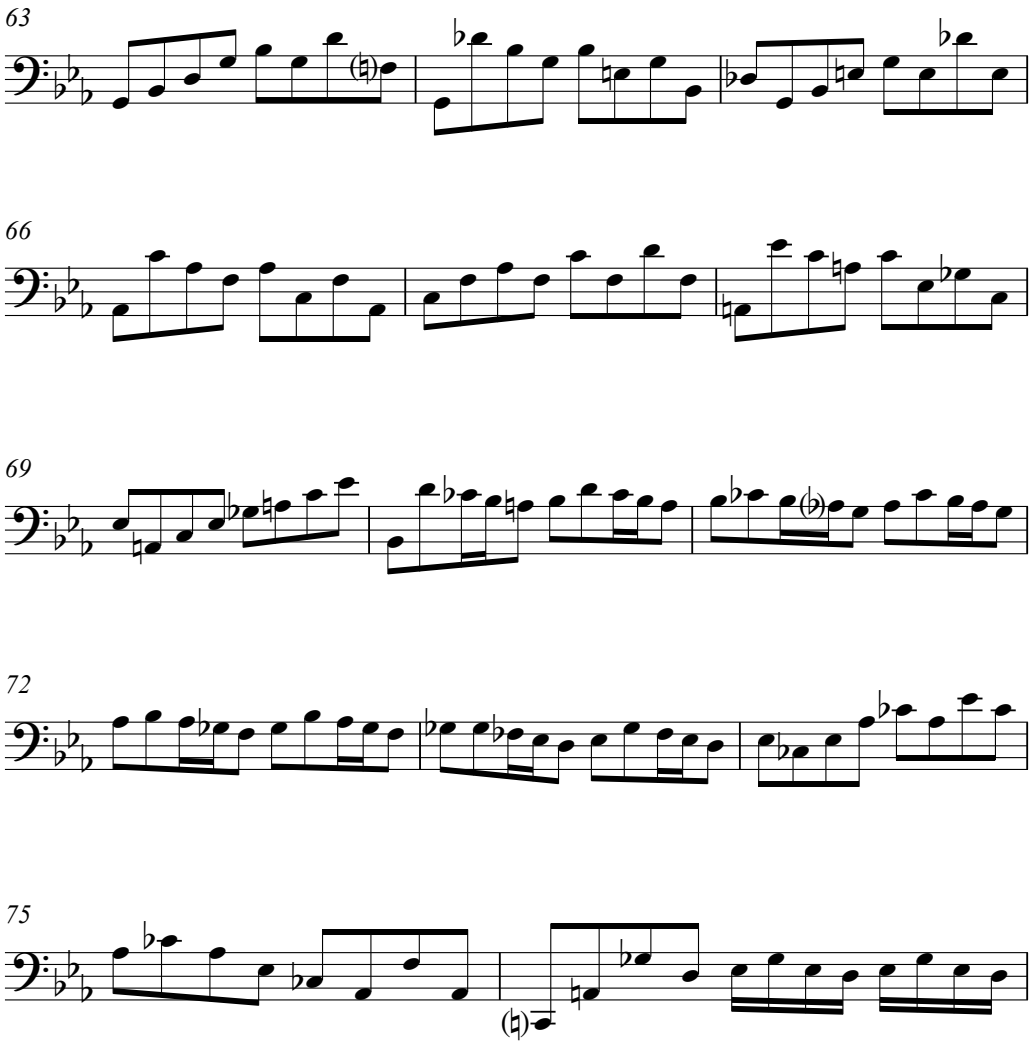
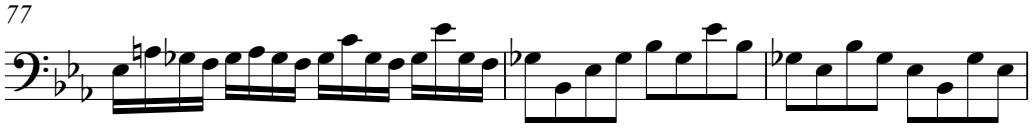
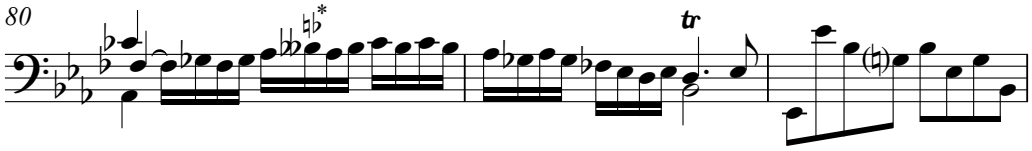


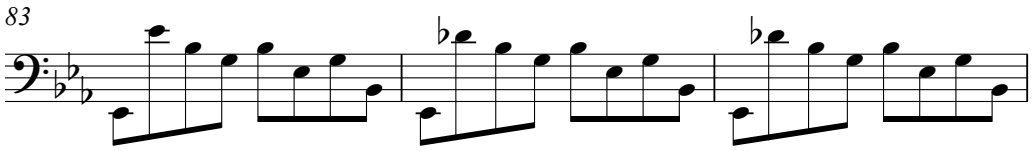
*The chord on the downbeat of m. 60 is taken from the Kellner manuscript. The Anna Magdalena Bach manuscript substitutes a D for the B-flat, tripling the fifth and removing the third.

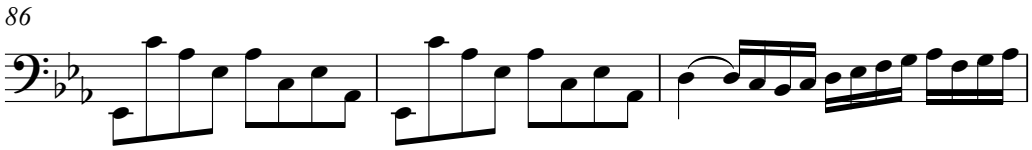


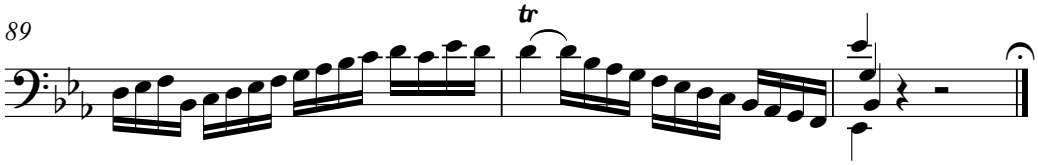


*Both the Kellner and Anna Magdalena Bach manuscripts contain a B-flat here, but many modern editions contain a B-double-flat. (The first appearance of the B-double-flat seems to be in a printed edition of the Suites published in 1824 in Paris.) Modern recorded performances tend to favor the B-double-flat, but a significant minority contain the B-flat, including recordings by Paul Tortelier and Anner Bylsma (1978). (Bylsma's 1992 recording contains a B-double-flat here.) Either is acceptable.

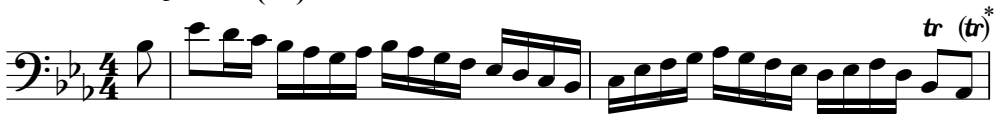




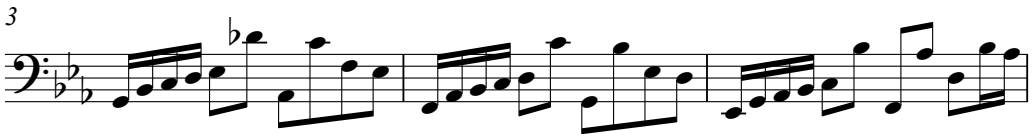


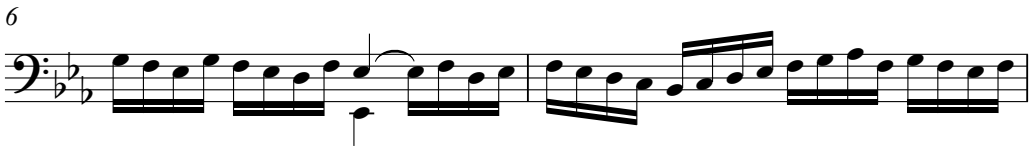


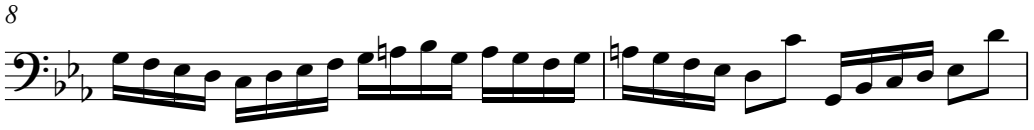
Allemande ♩ = 76-(90)-102

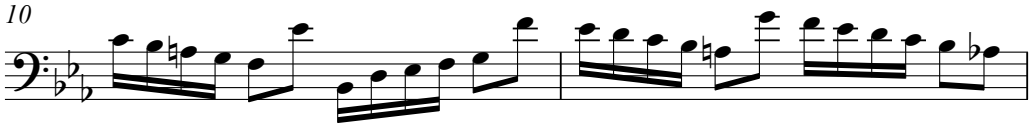


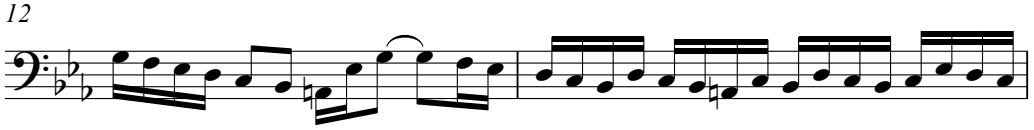
* If the second trill is performed, the first trill should be omitted.

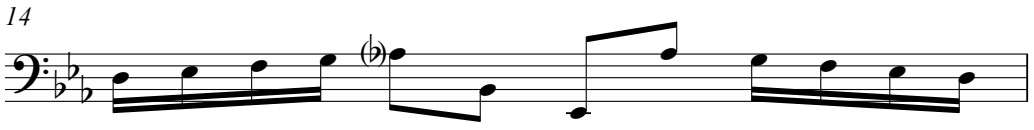


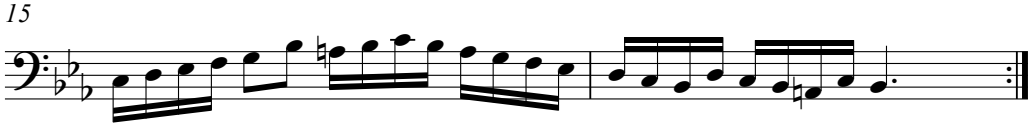


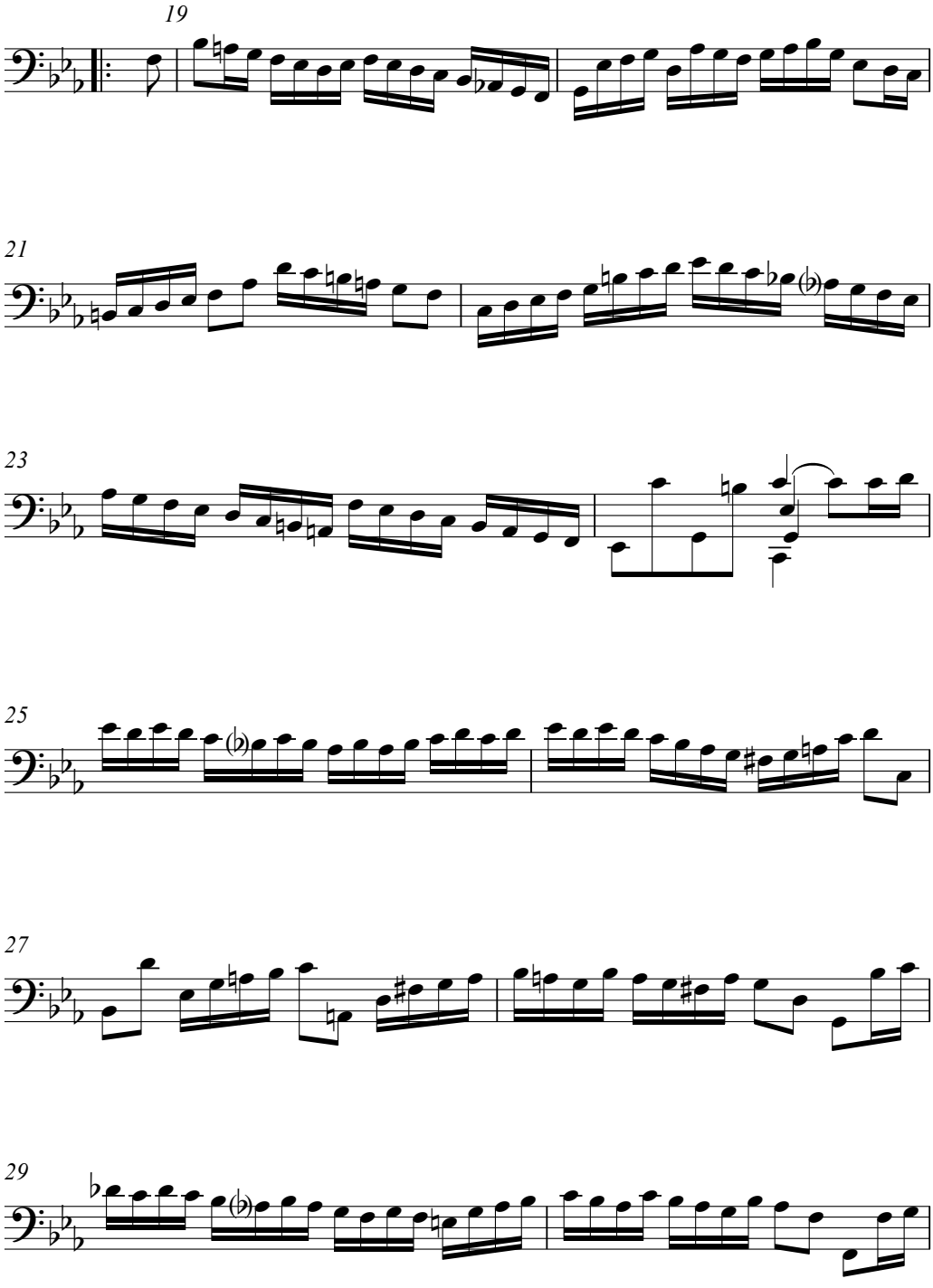








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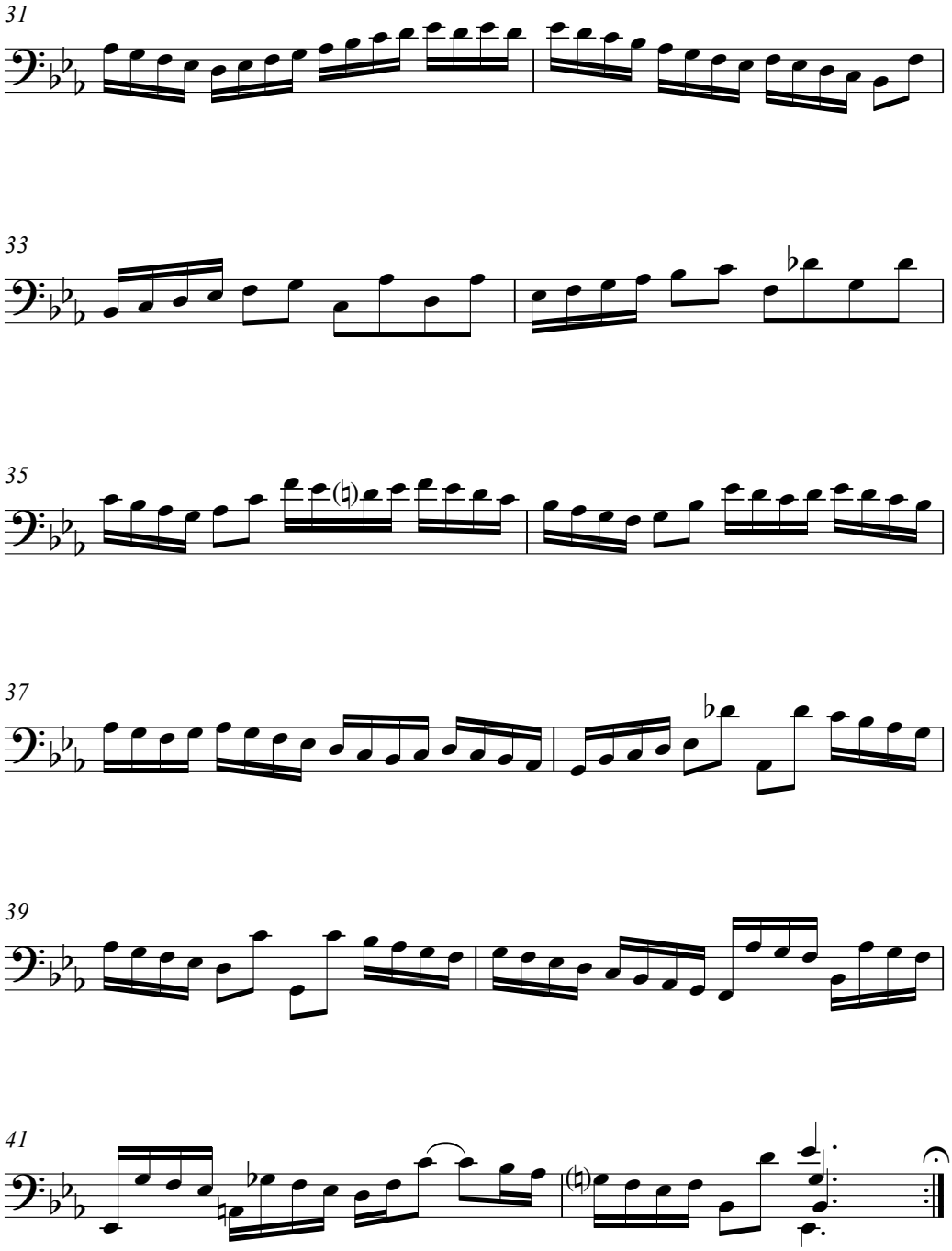
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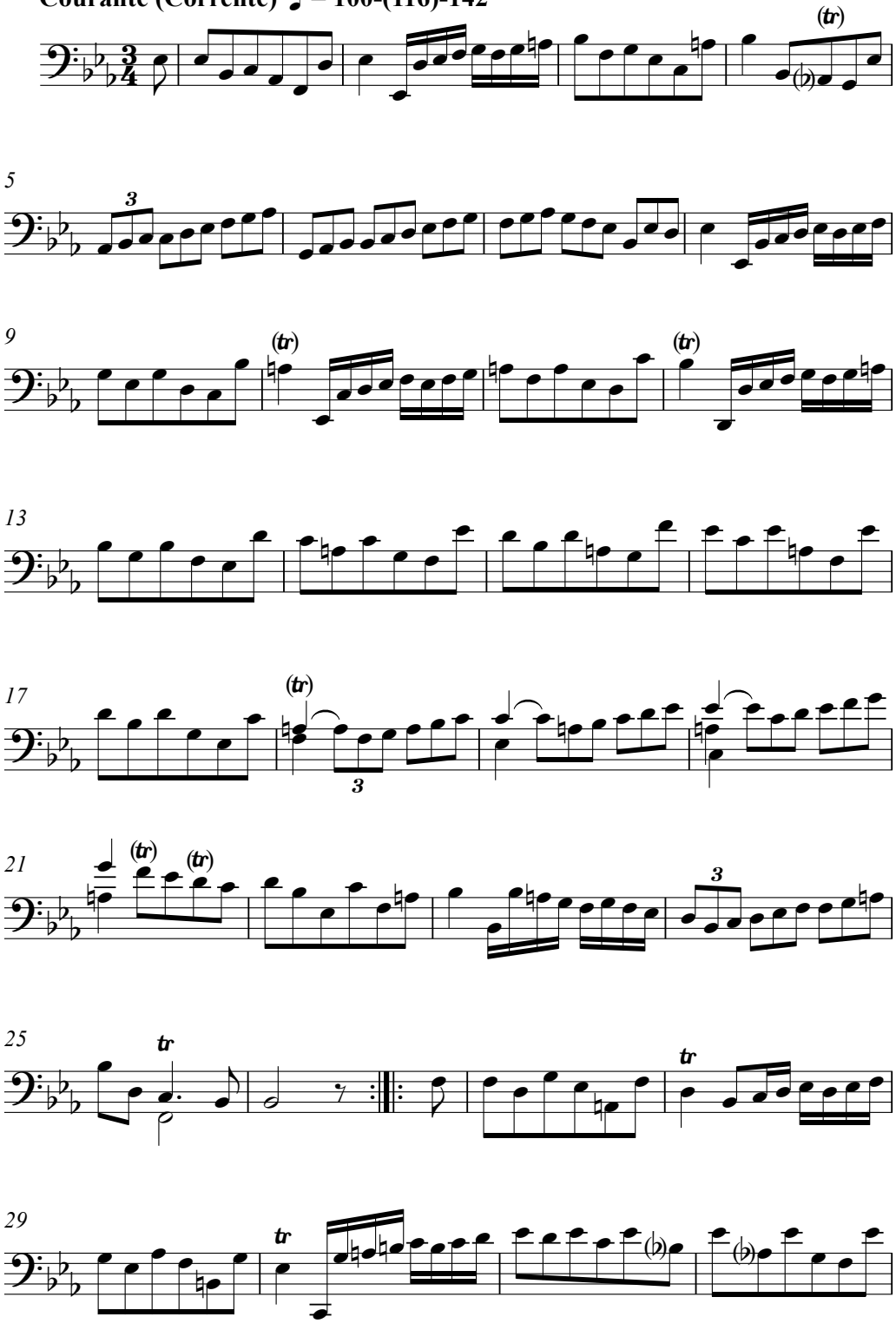
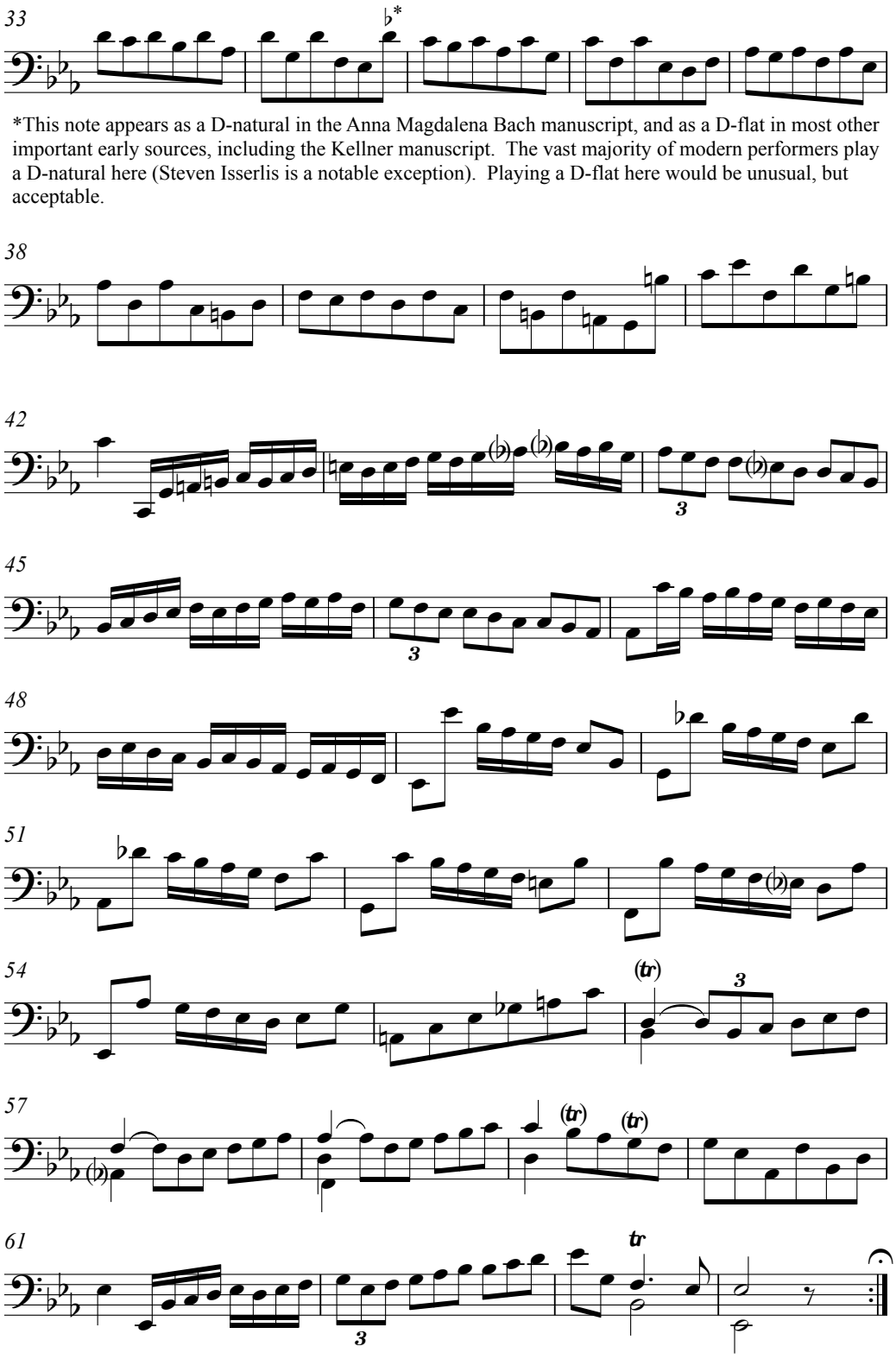
Courante (Corrente) ♩ = 100-(116)-142

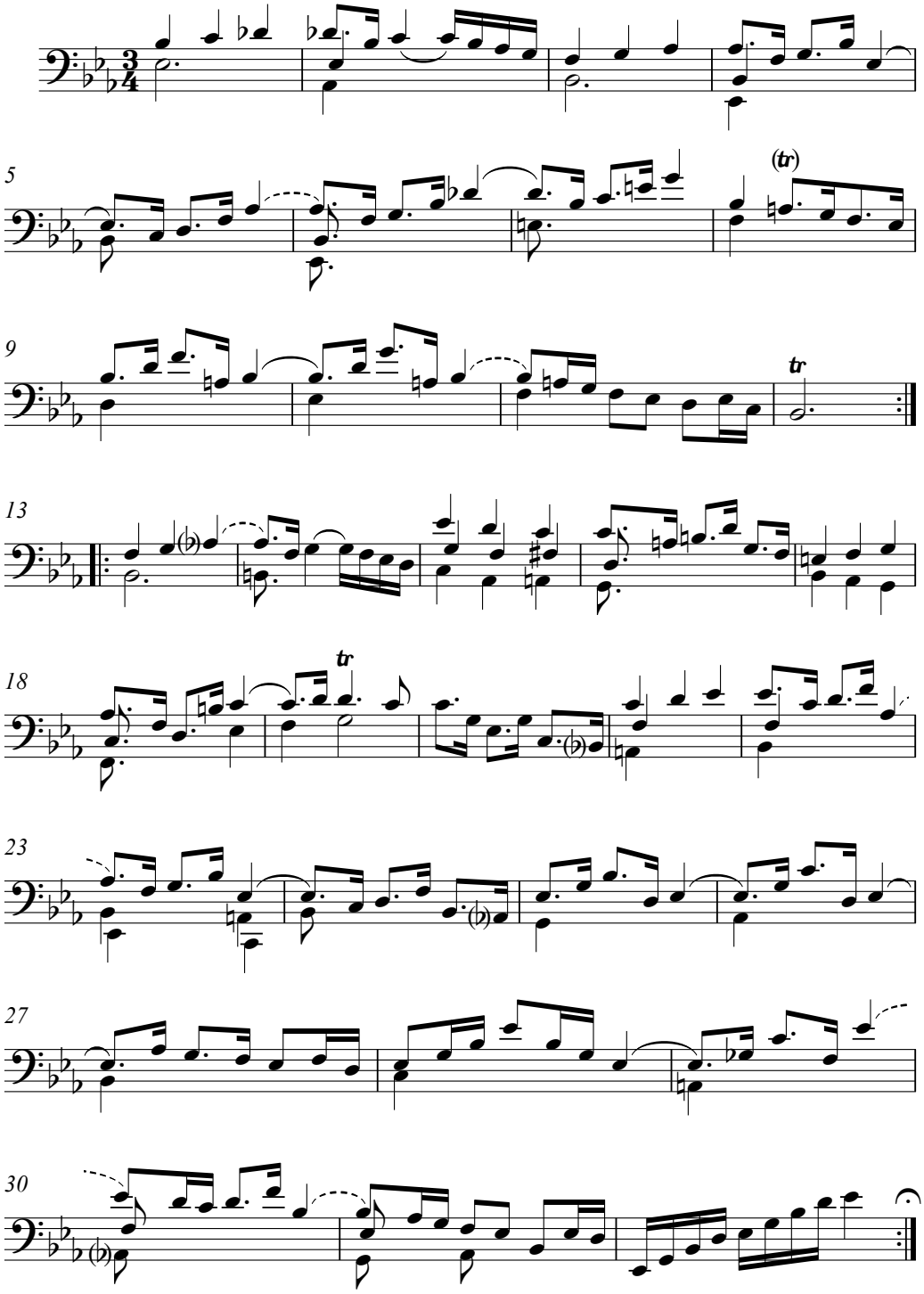




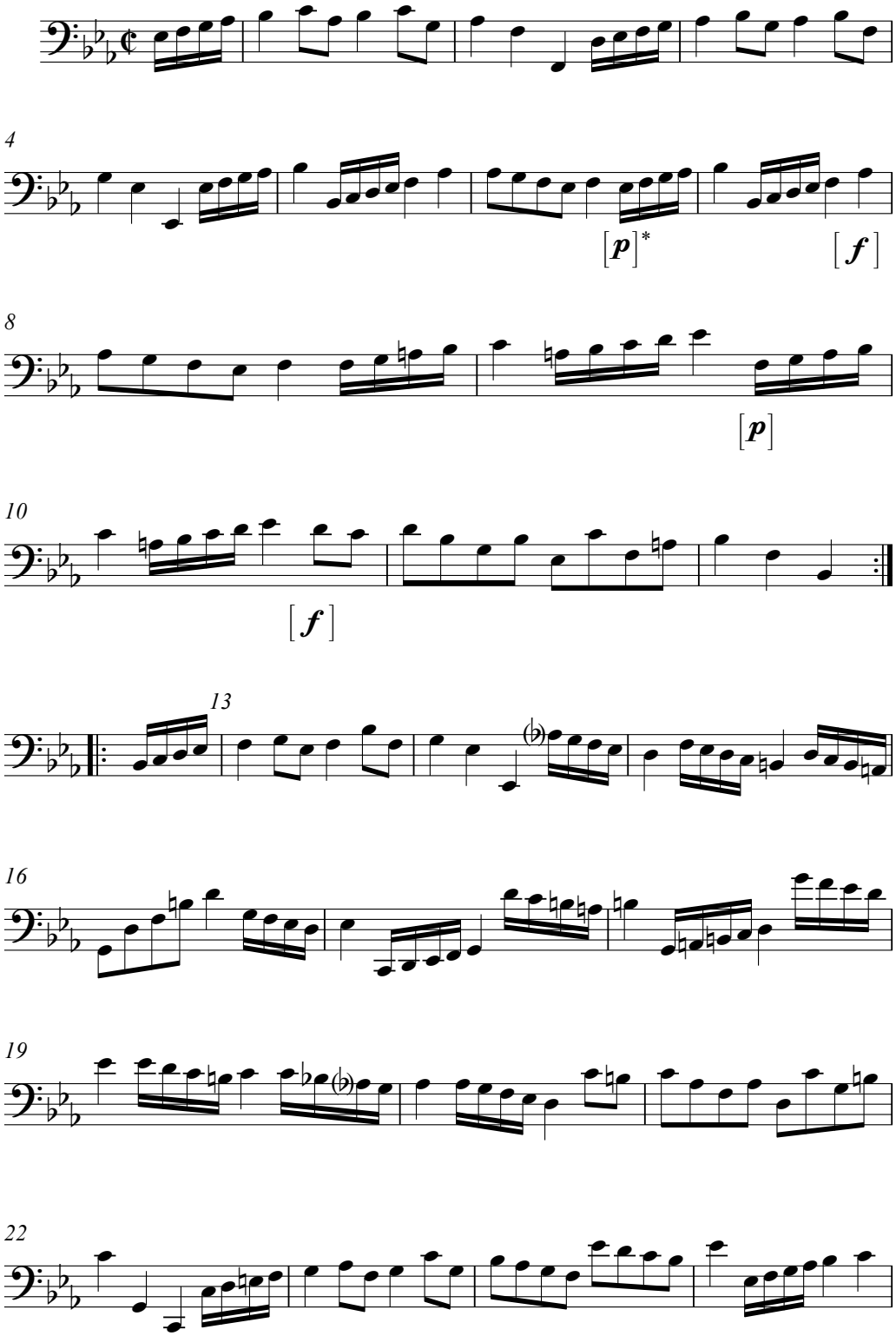
*This note appears as a D-natural in the Anna Magdalena Bach manuscript, and as a D-flat in most other important early sources, including the Kellner manuscript. The vast majority of modern performers play a D-natural here (Steven Isserlis is a notable exception). Playing a D-flat here would be unusual, but acceptable.

Sarabande ♩ = 56-(64)-70

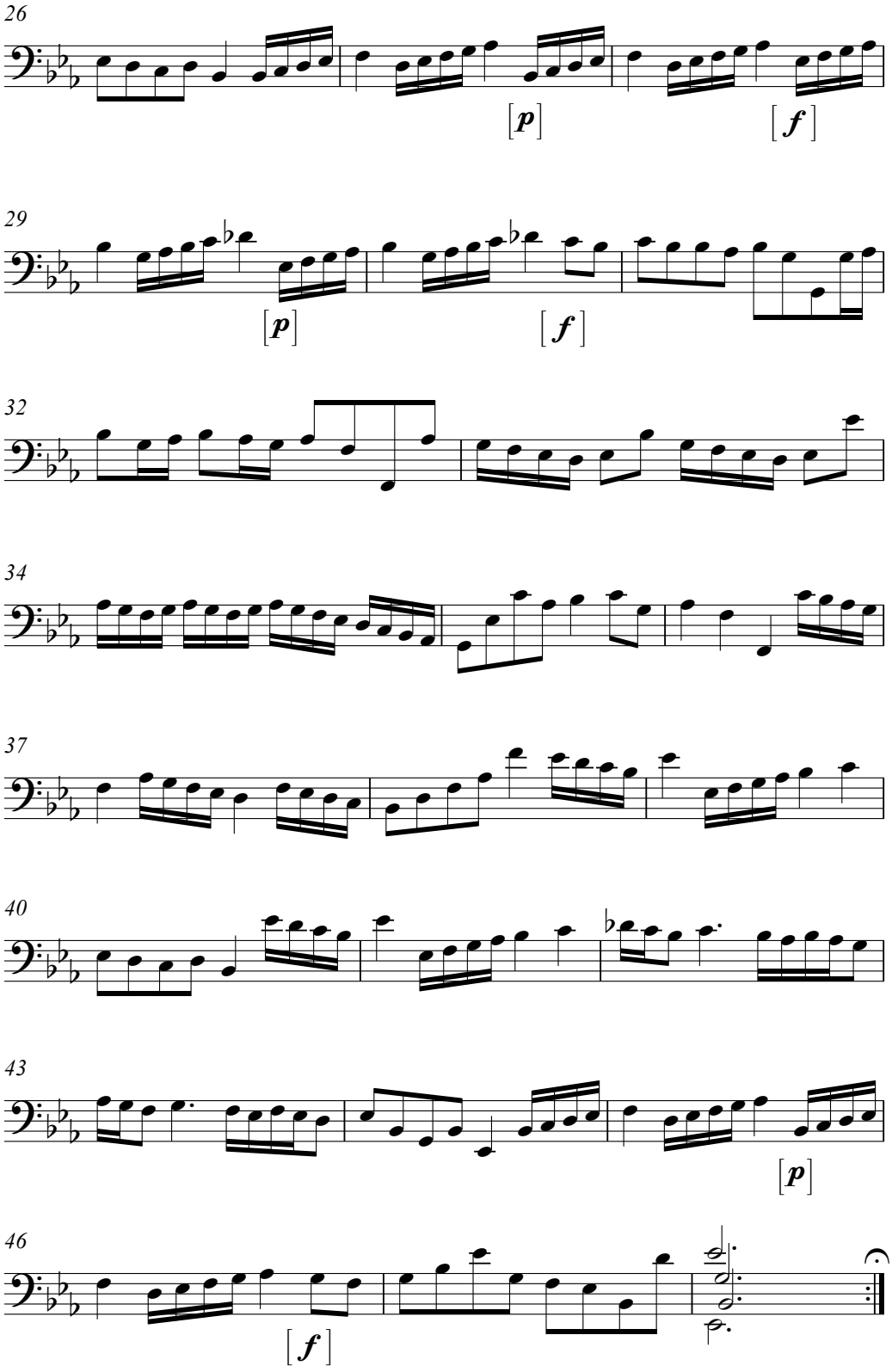
(Dashed ties are optional. Given the relatively short sustain of the marimba, some performers find that re-articulating a note at the end of a dashed tie helps maintain the melodic line. Some marimbists prefer to remain faithful to the ties in most cello editions by observing the dashed ties. The performer should use his or her taste in deciding whether to observe all, none, or some of the dashed ties.



Bourrée I 𝅗𝅥 **= 66-(72)-80**



*All bracketed dynamics are optional.


26
[p]
[f]
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46
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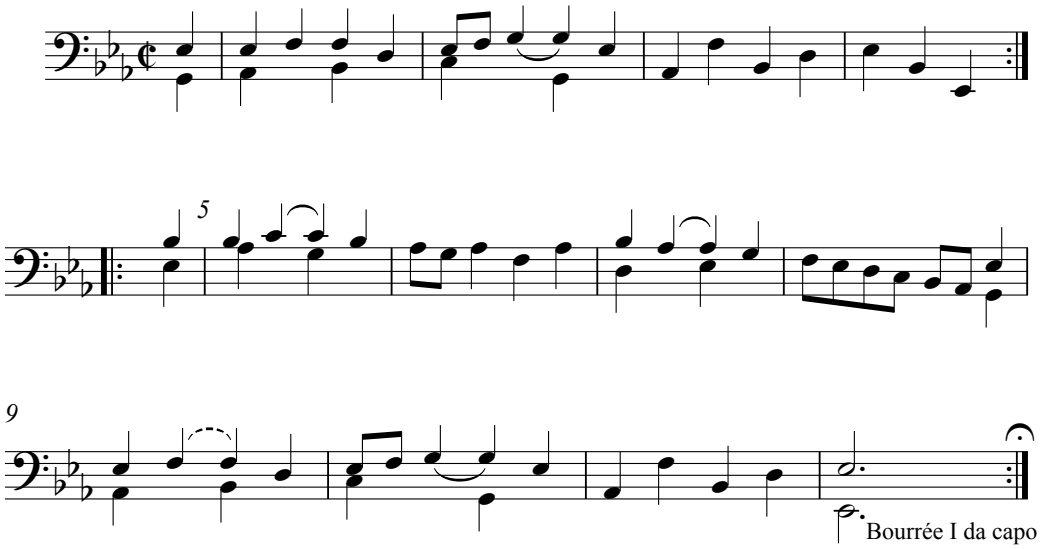
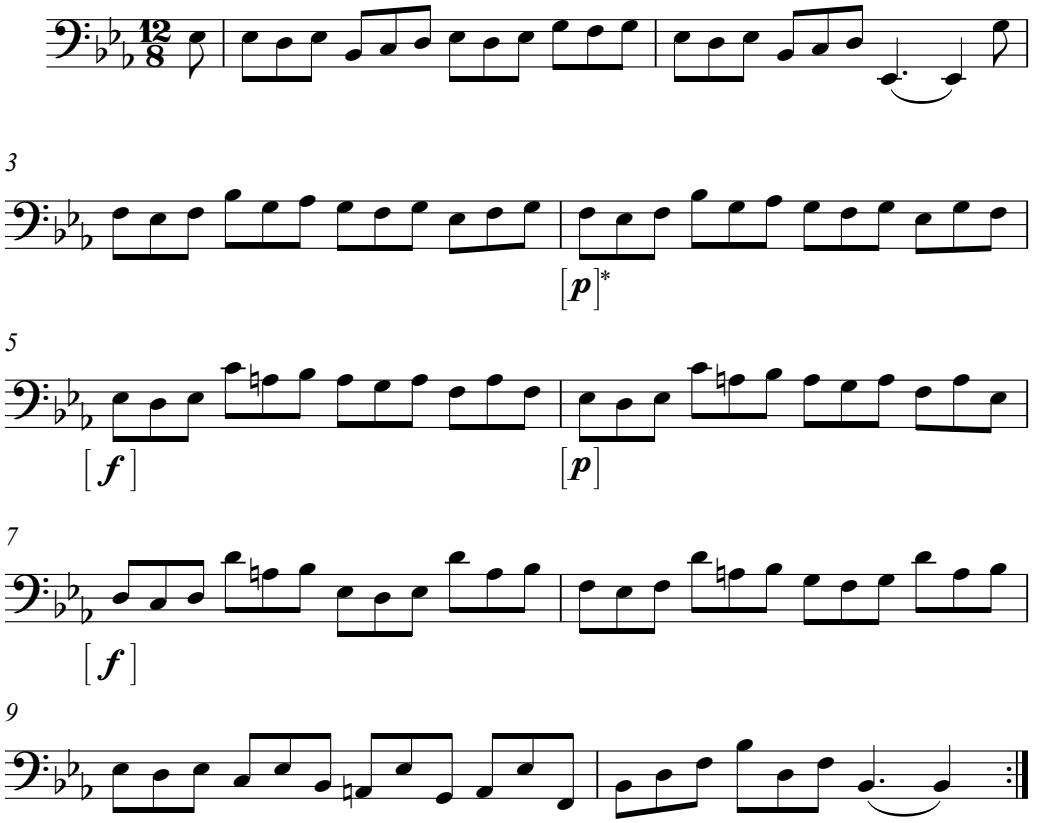
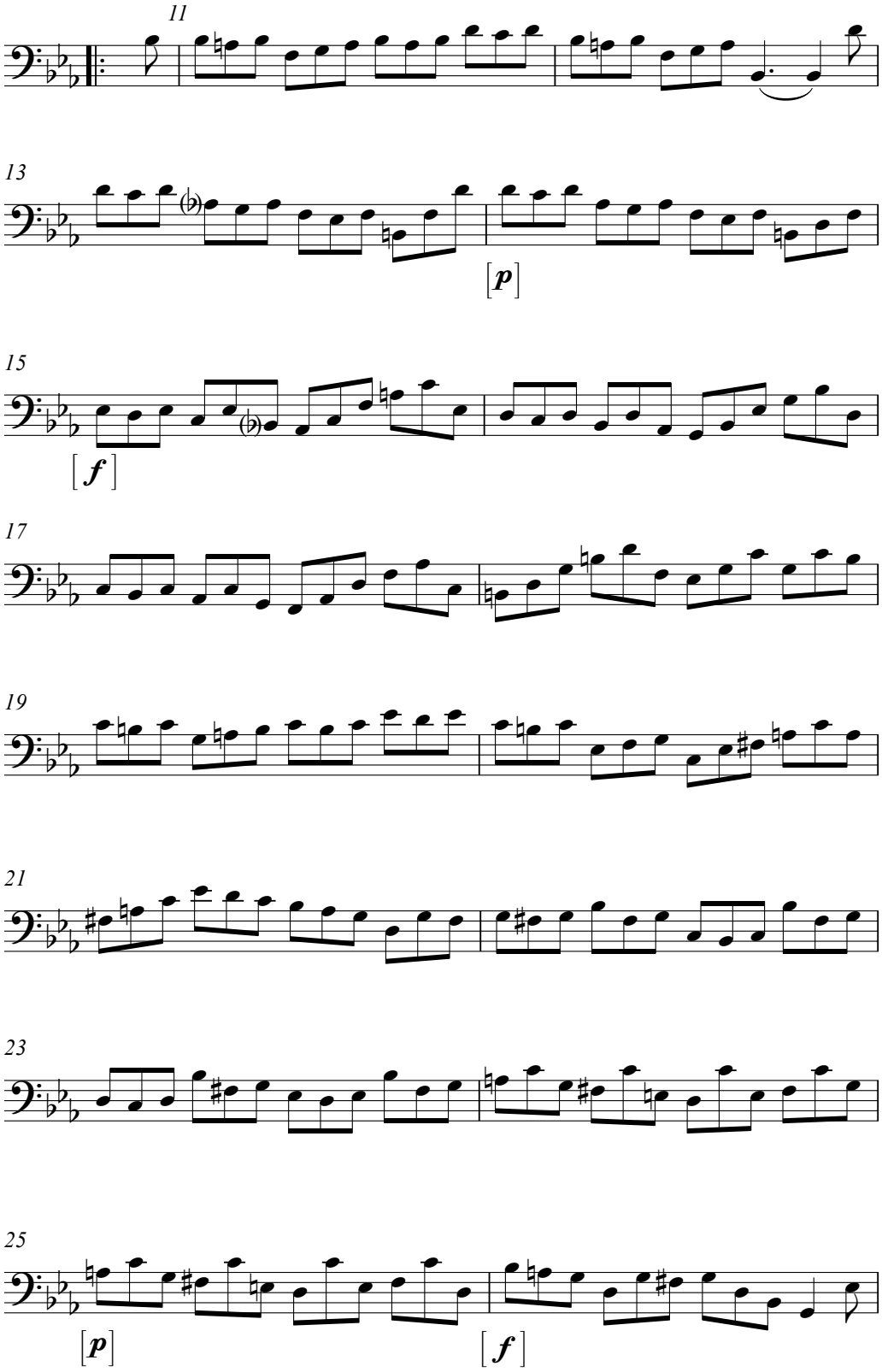
Bourrée II 𝅗𝅥 **= 64-(66)-86**



Gigue (Giga I) 𝅗𝅥. **= 114-(138)-166**



*All bracketed dynamics are optional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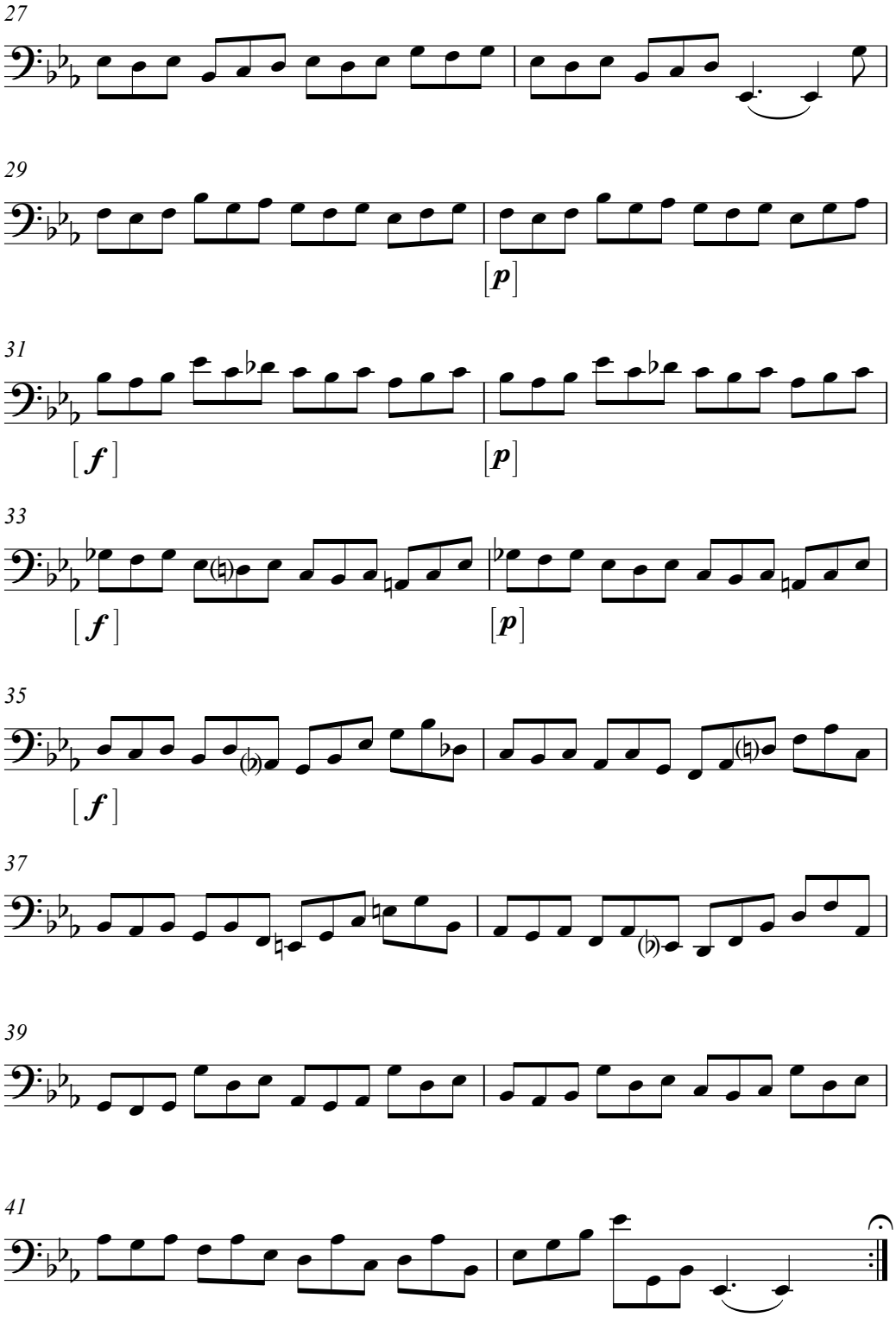
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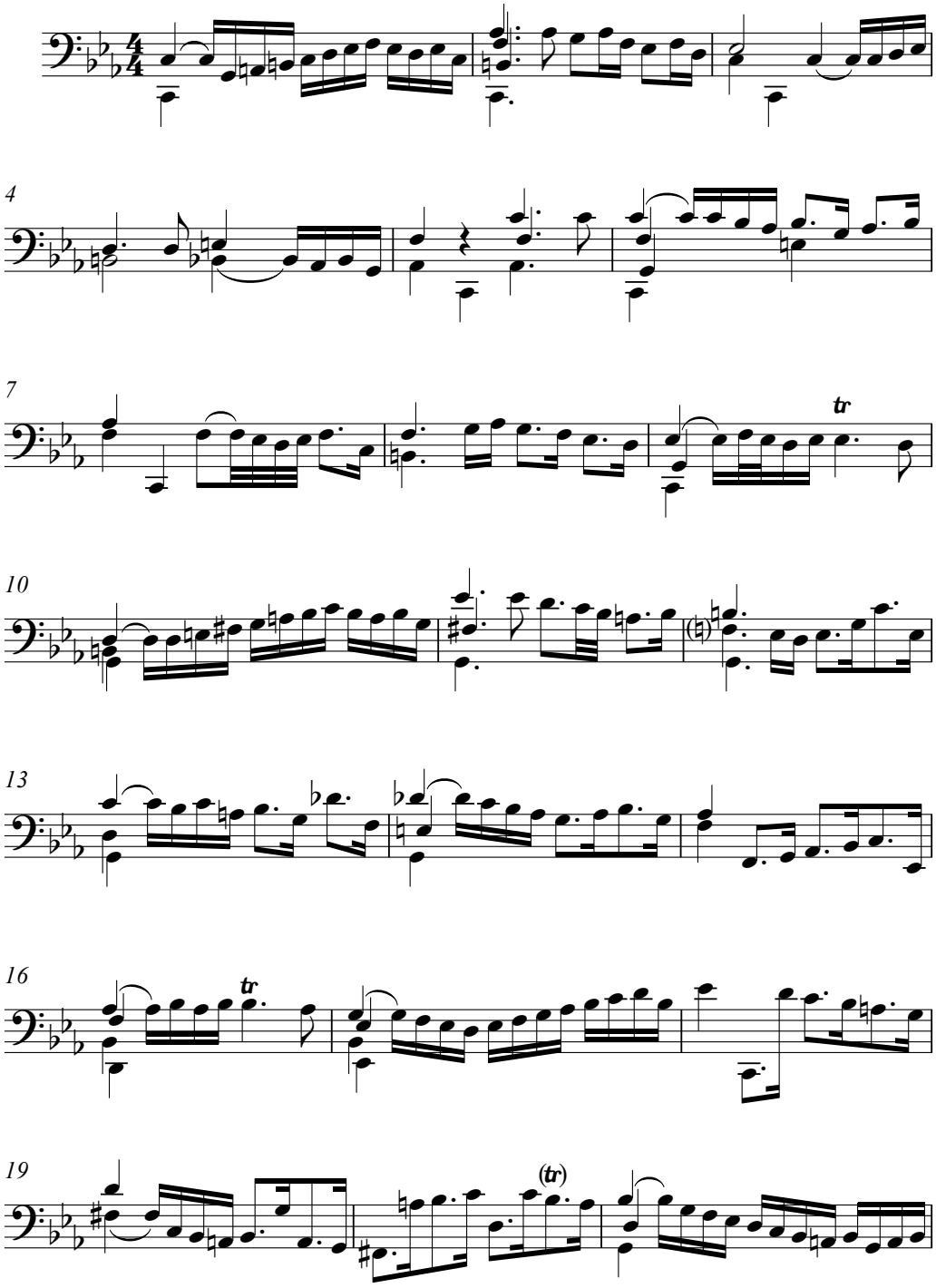
APPENDIX E

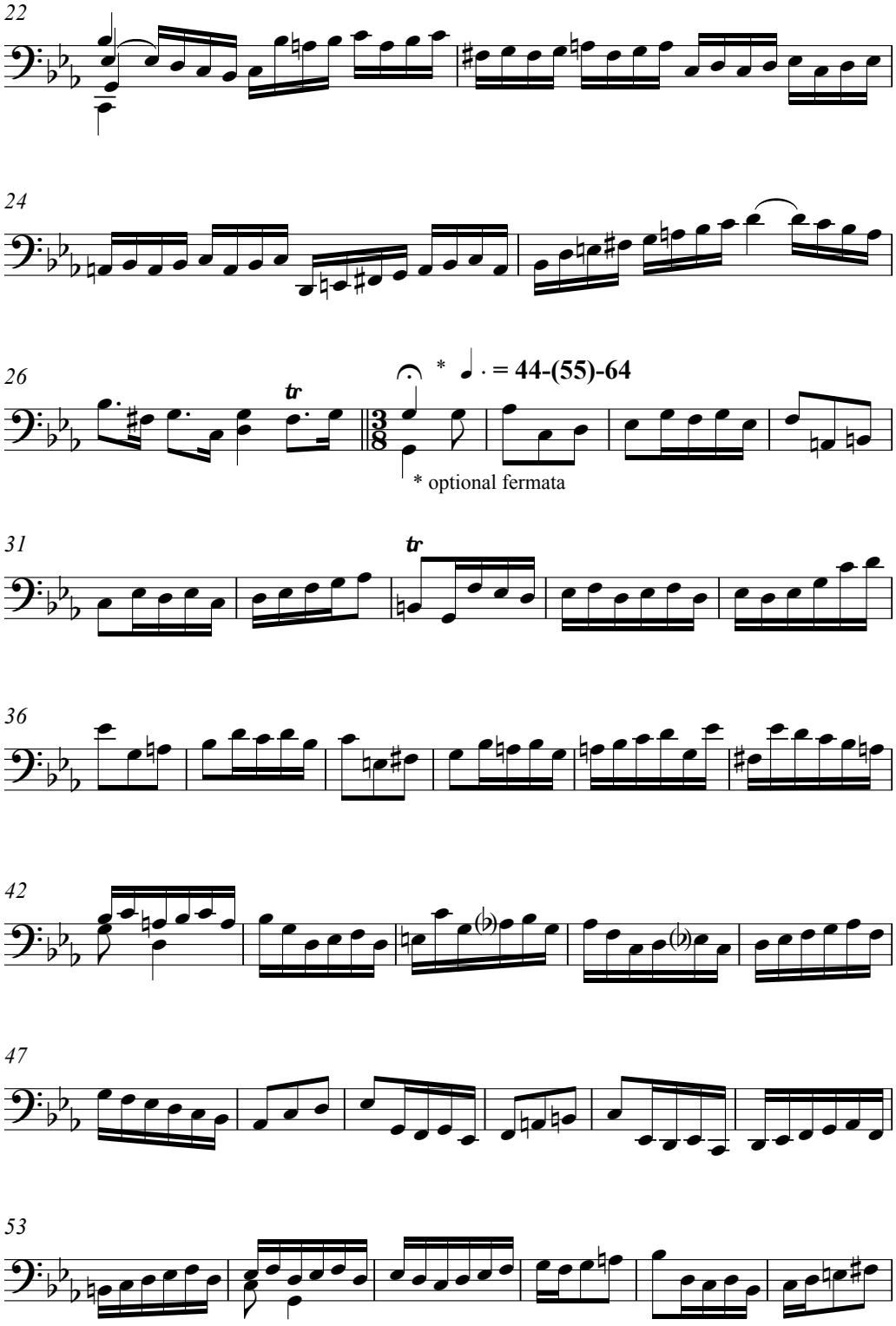
BWV 1011

Suite V (BWV 1011)

J. S. Bach
edited by Bill Sallak

Prélude ♩ = 52-(58)-74




22
24
26
tr
* ♩. = 44-(55)-64
* optional fermata
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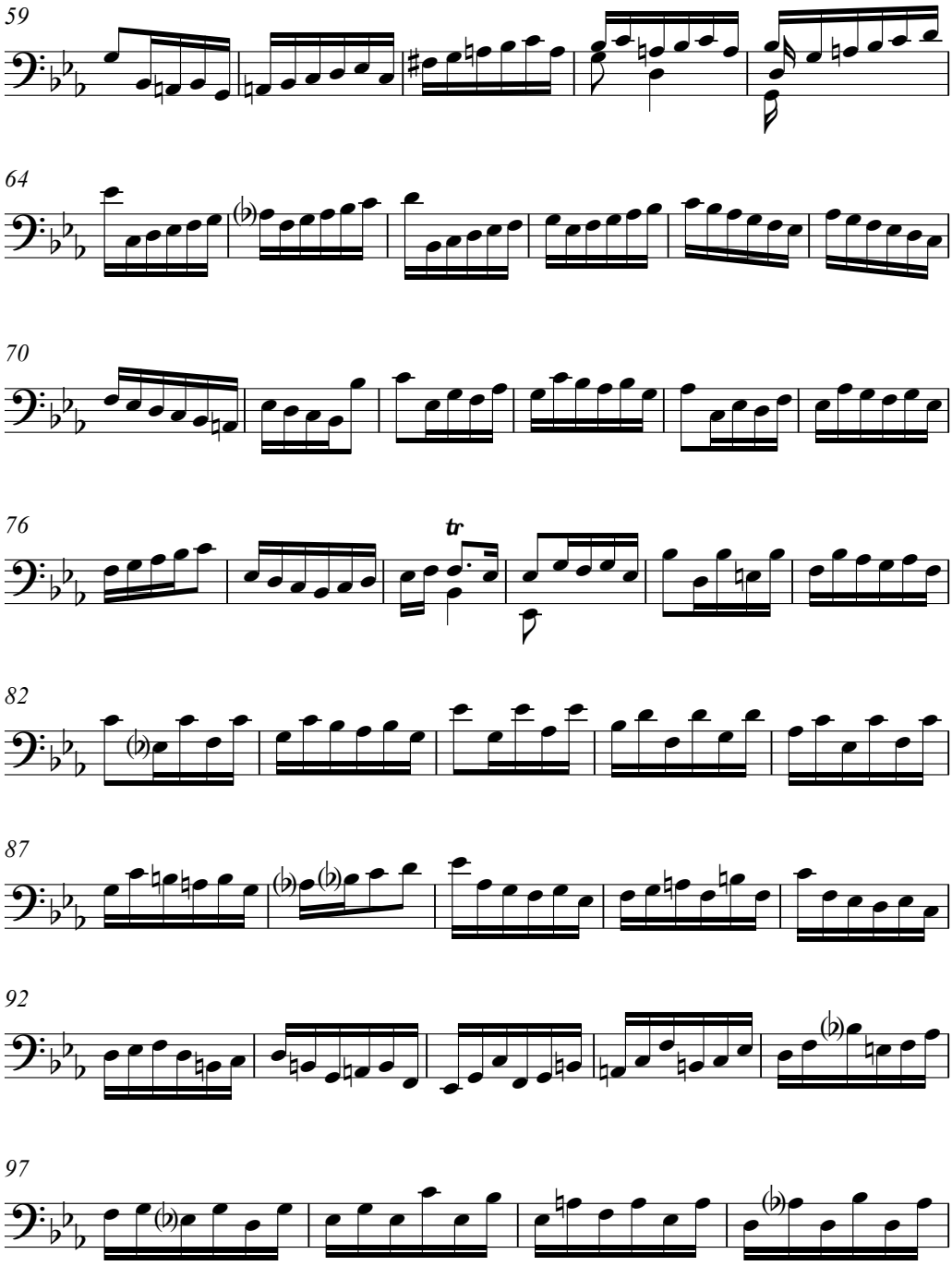
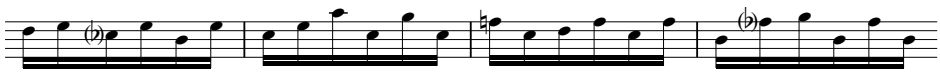
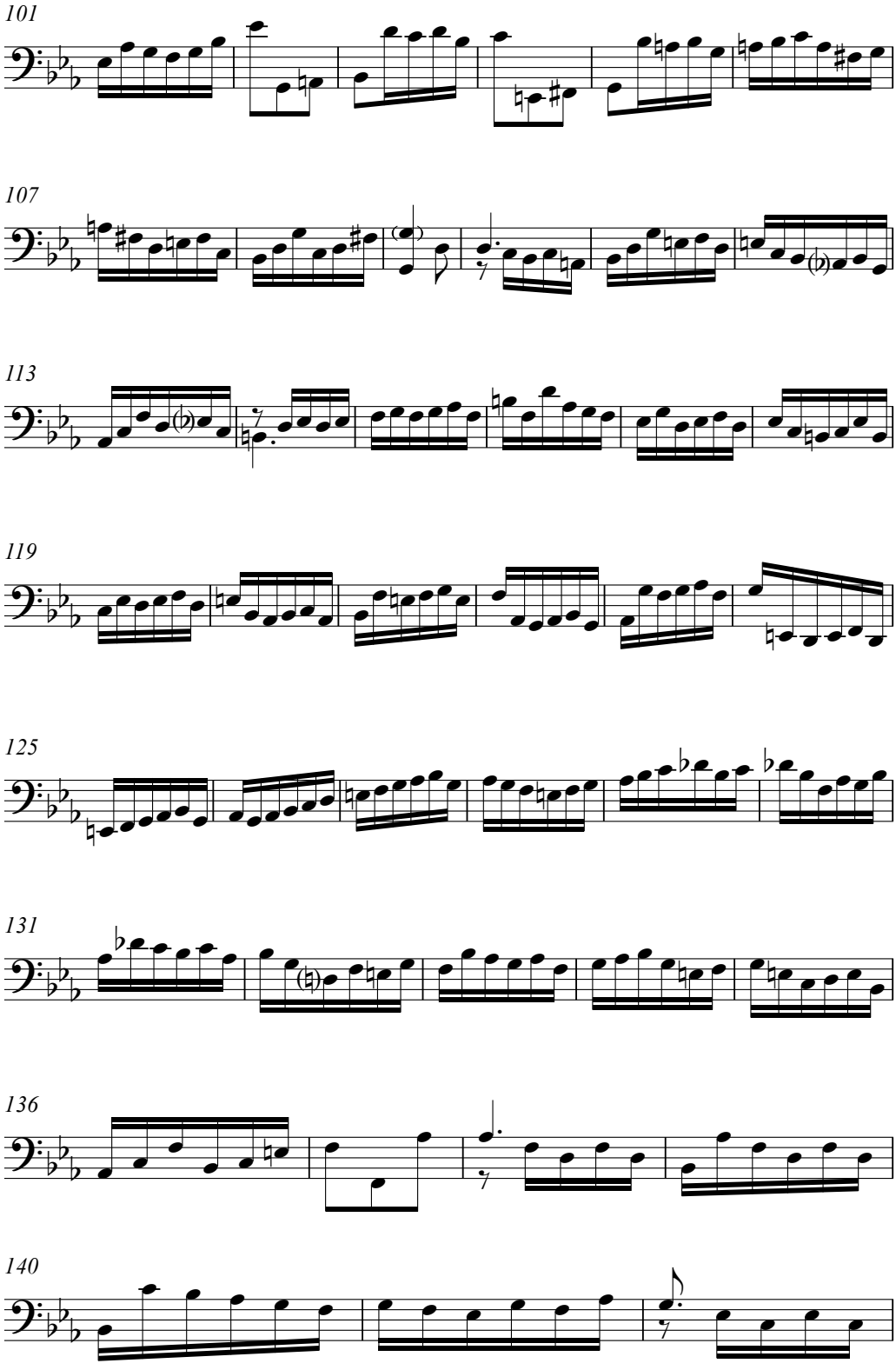
tr
36
42
47
53



mm. 97-100 from BWV 995 (transcription for lute):

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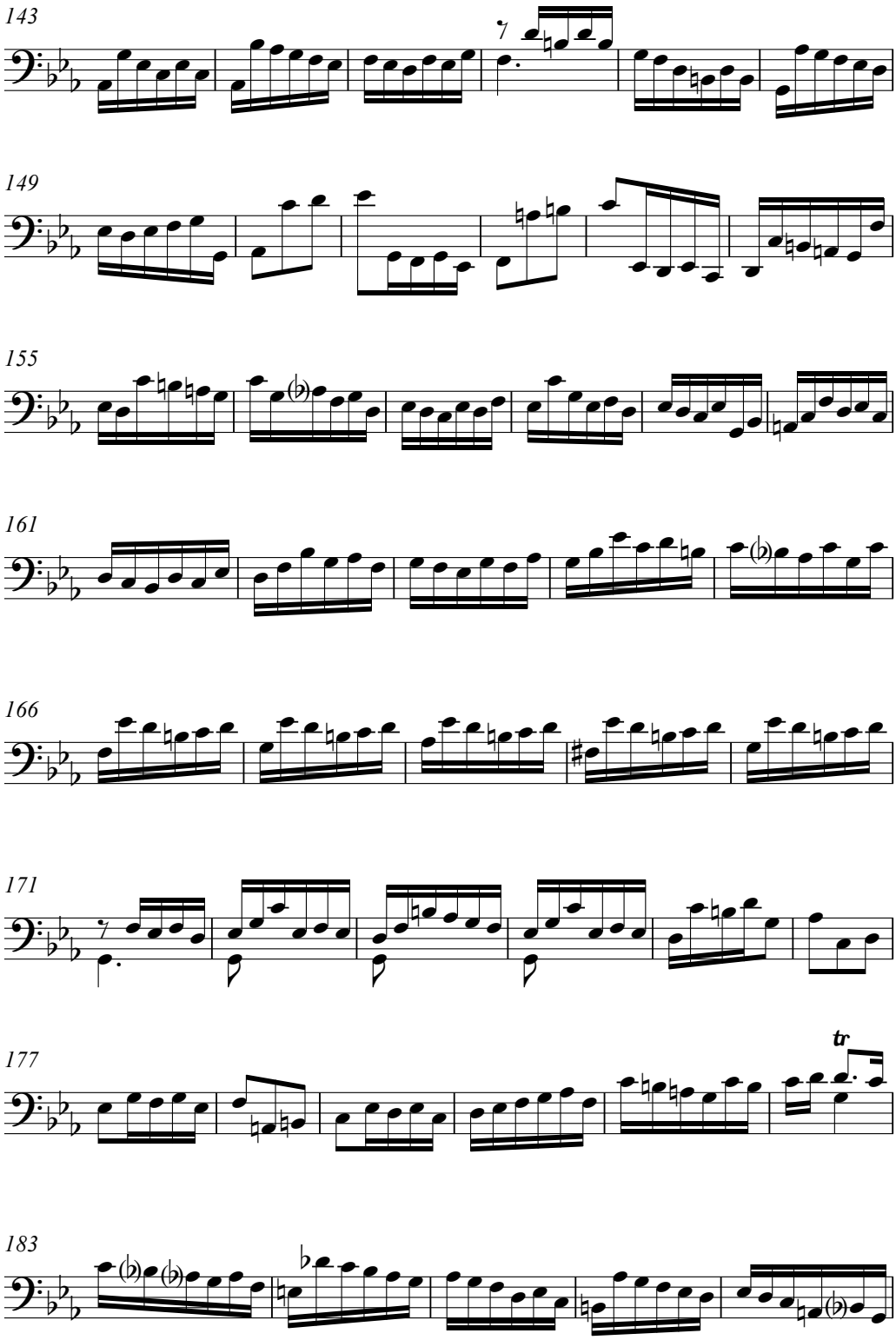
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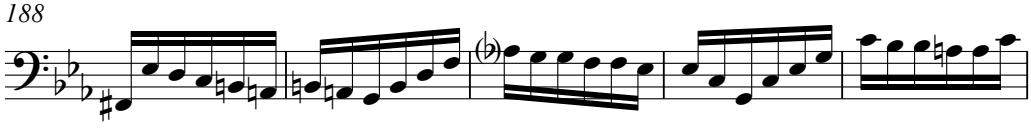
188



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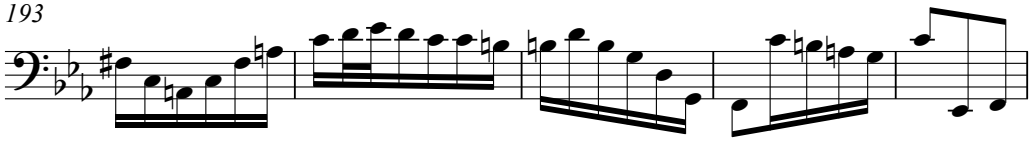

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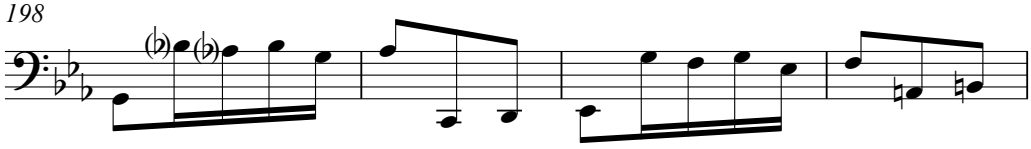

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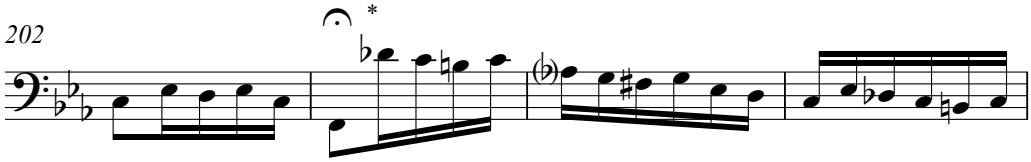
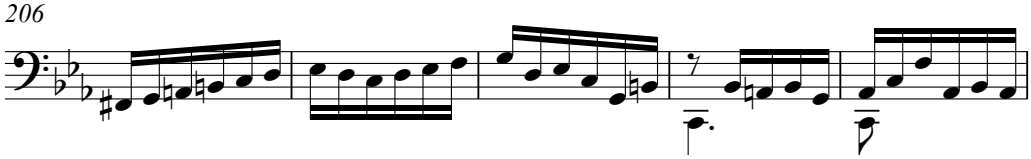


* optional fermata

206



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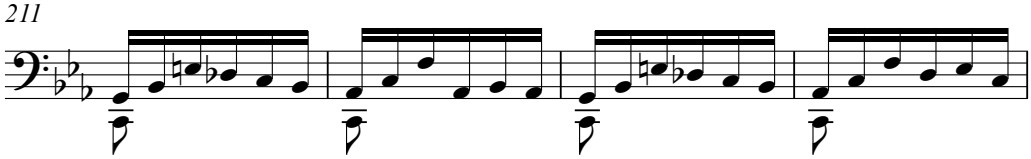

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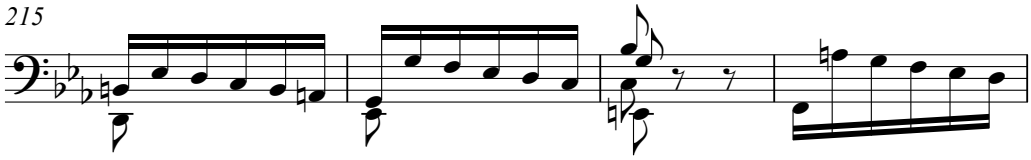

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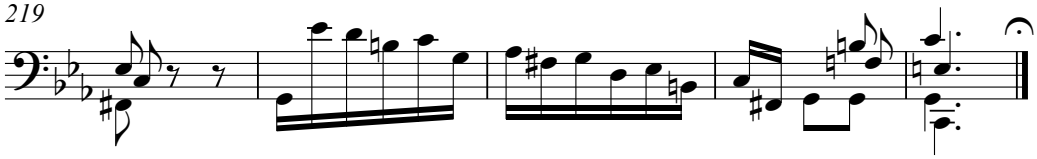
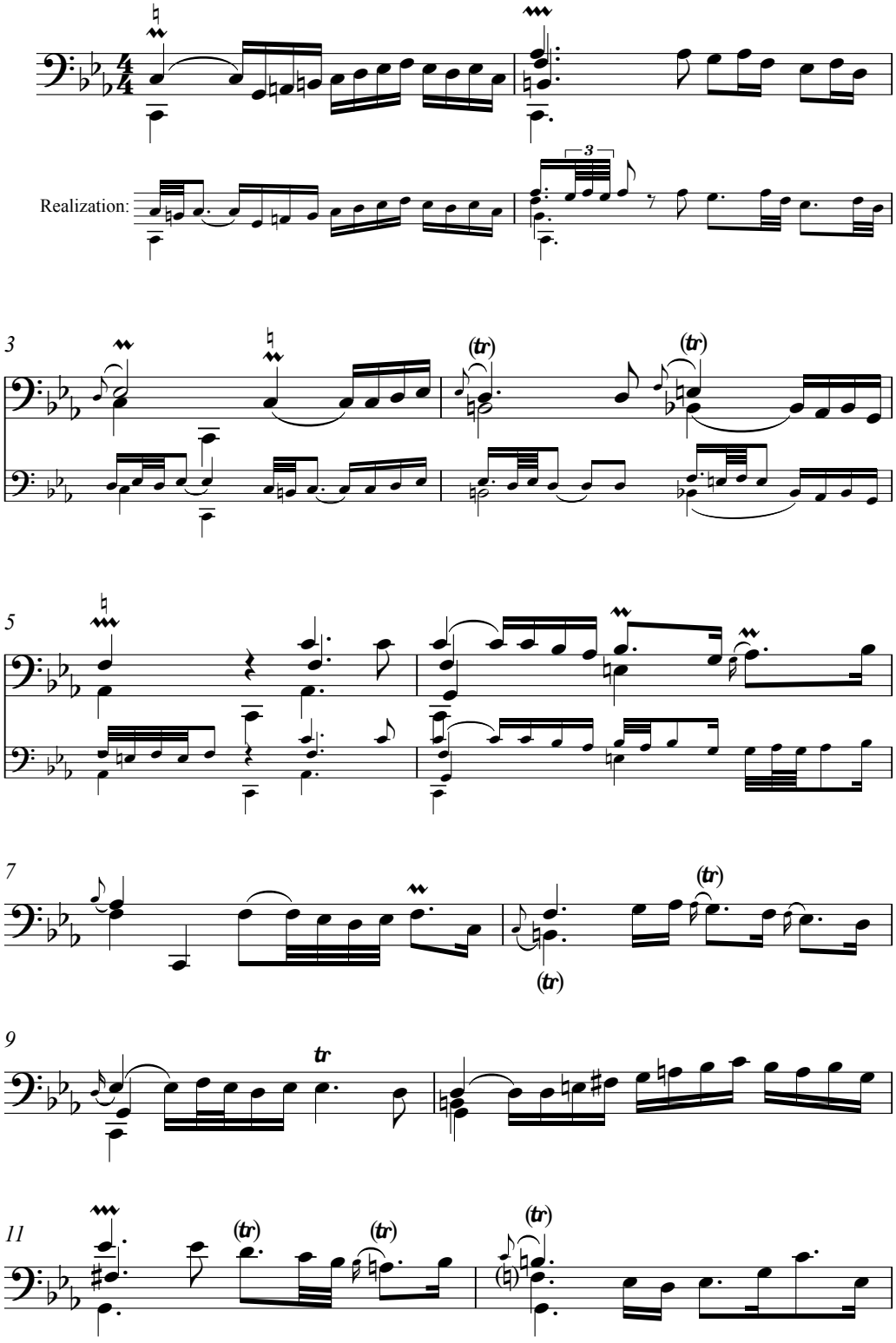
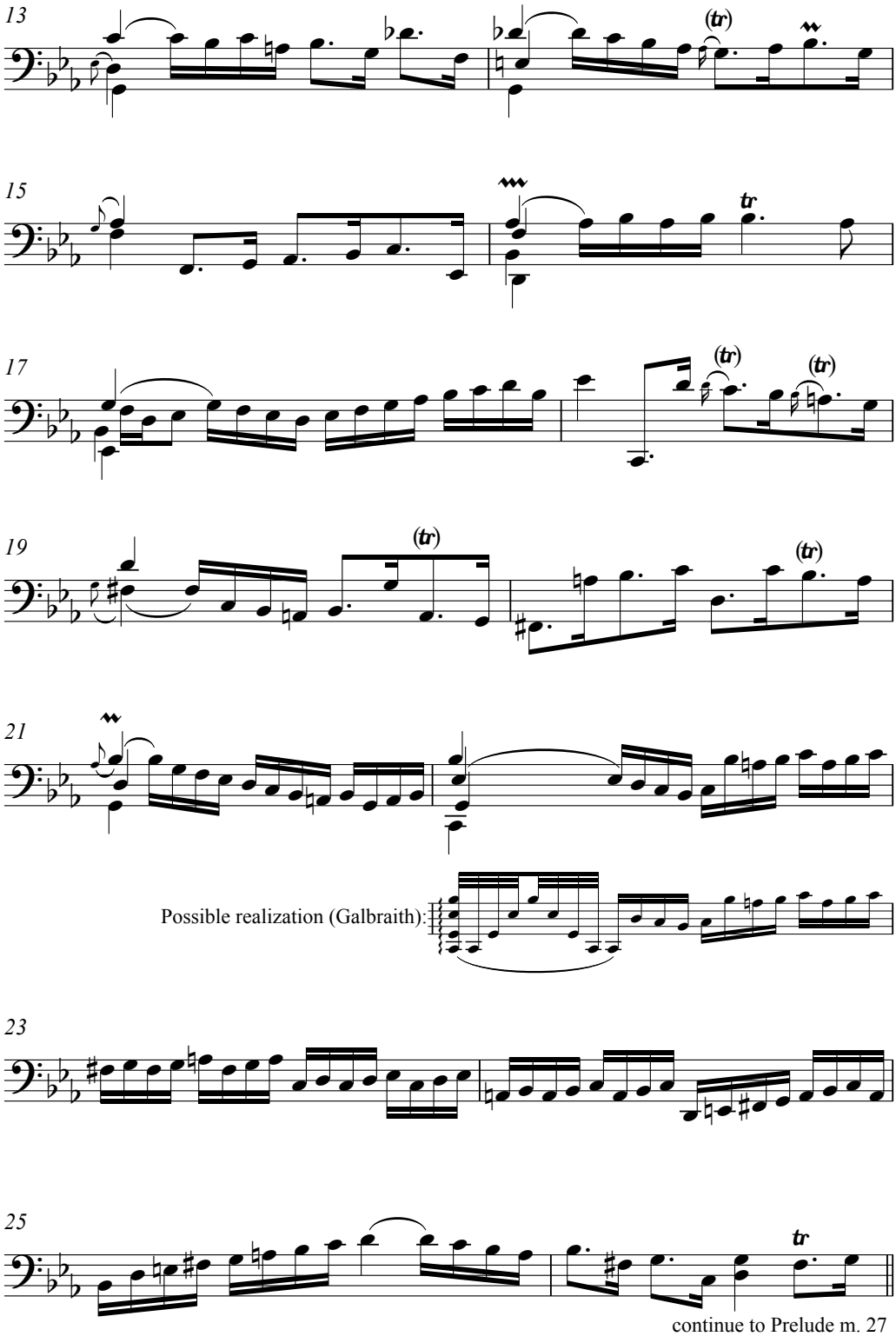


Prélude, mm. 1-26 (w/additional ornaments)

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Possible realization (Galbraith):
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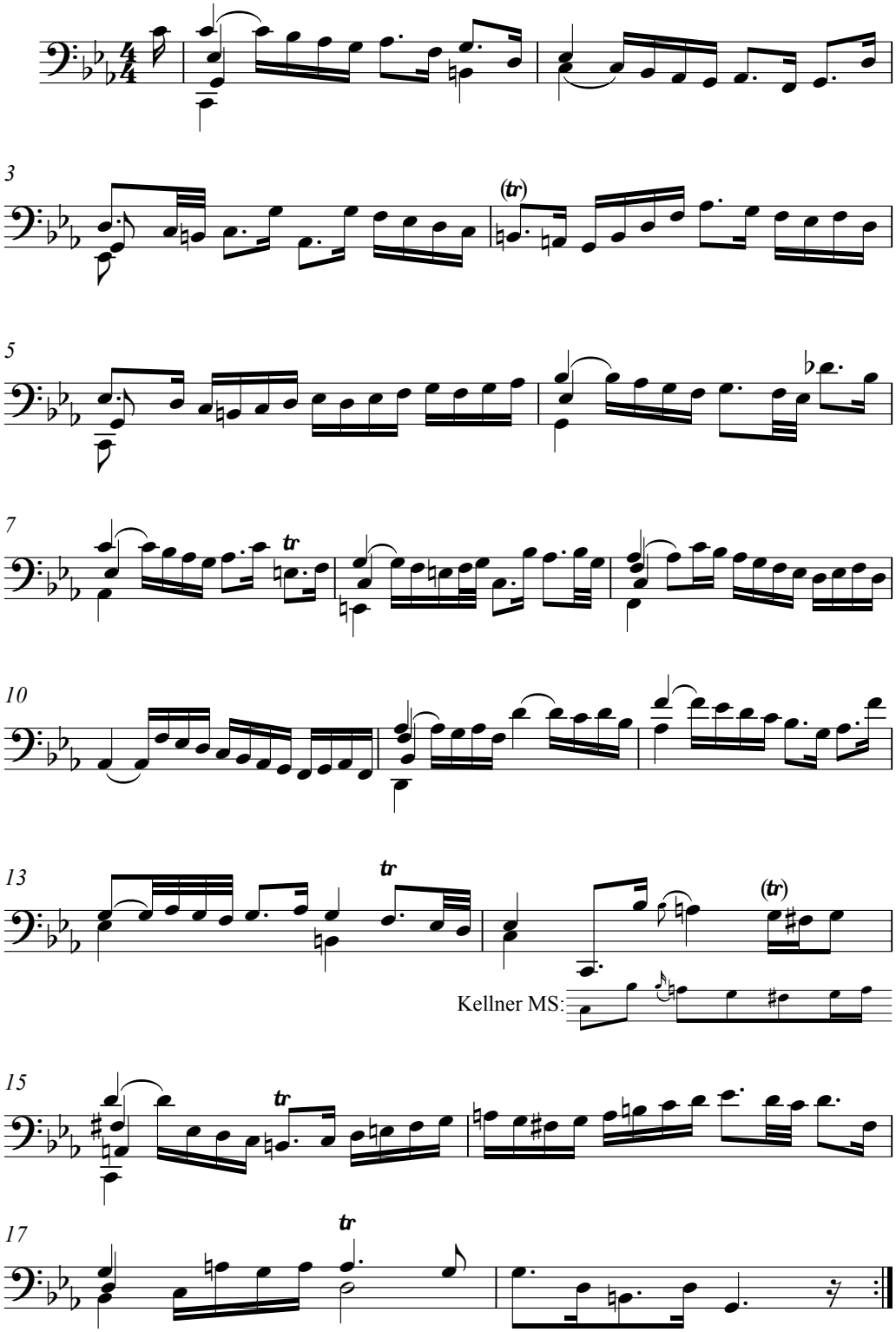
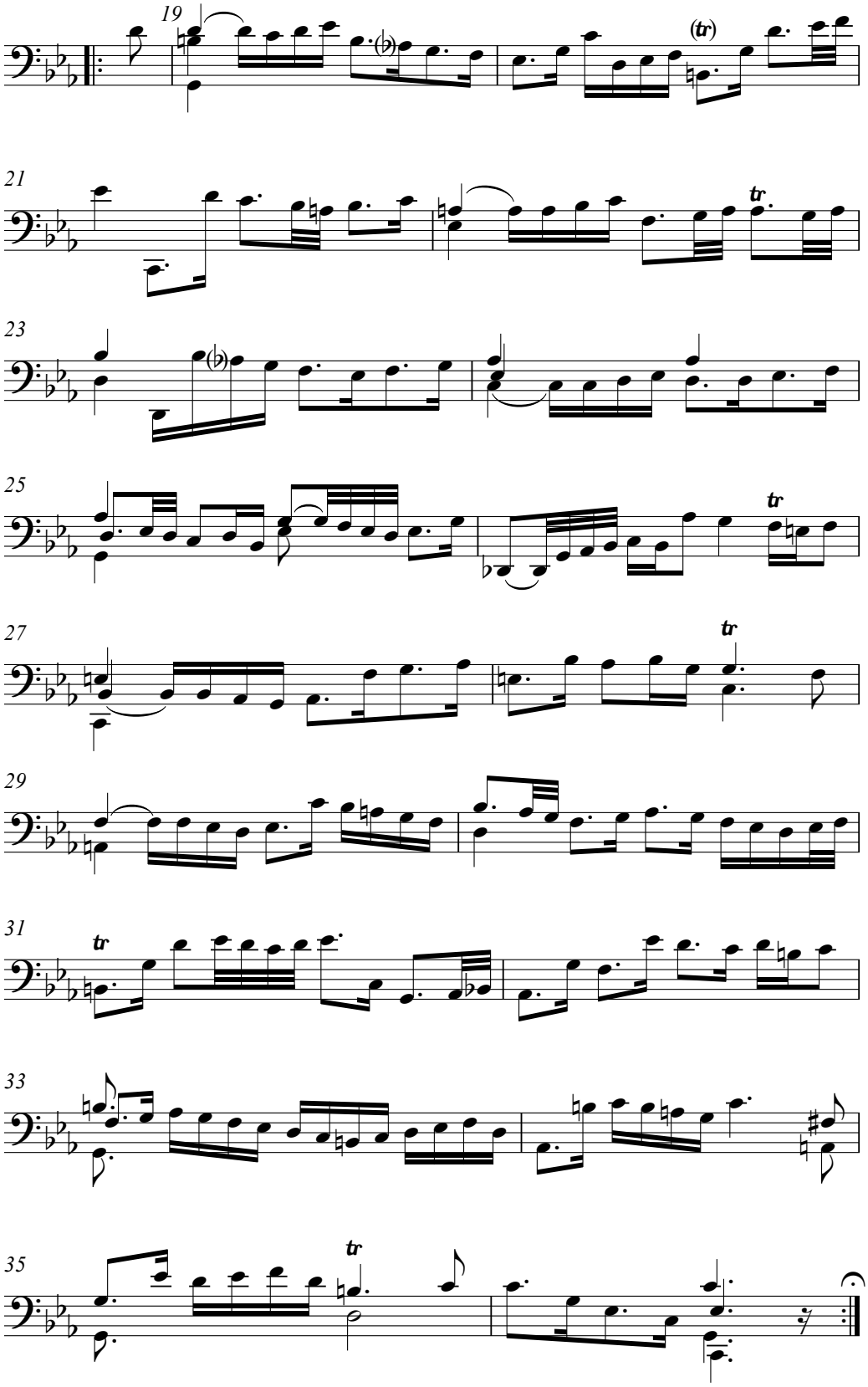
continue to Prelude m. 27

Allemande ♩= 58-(70)-82

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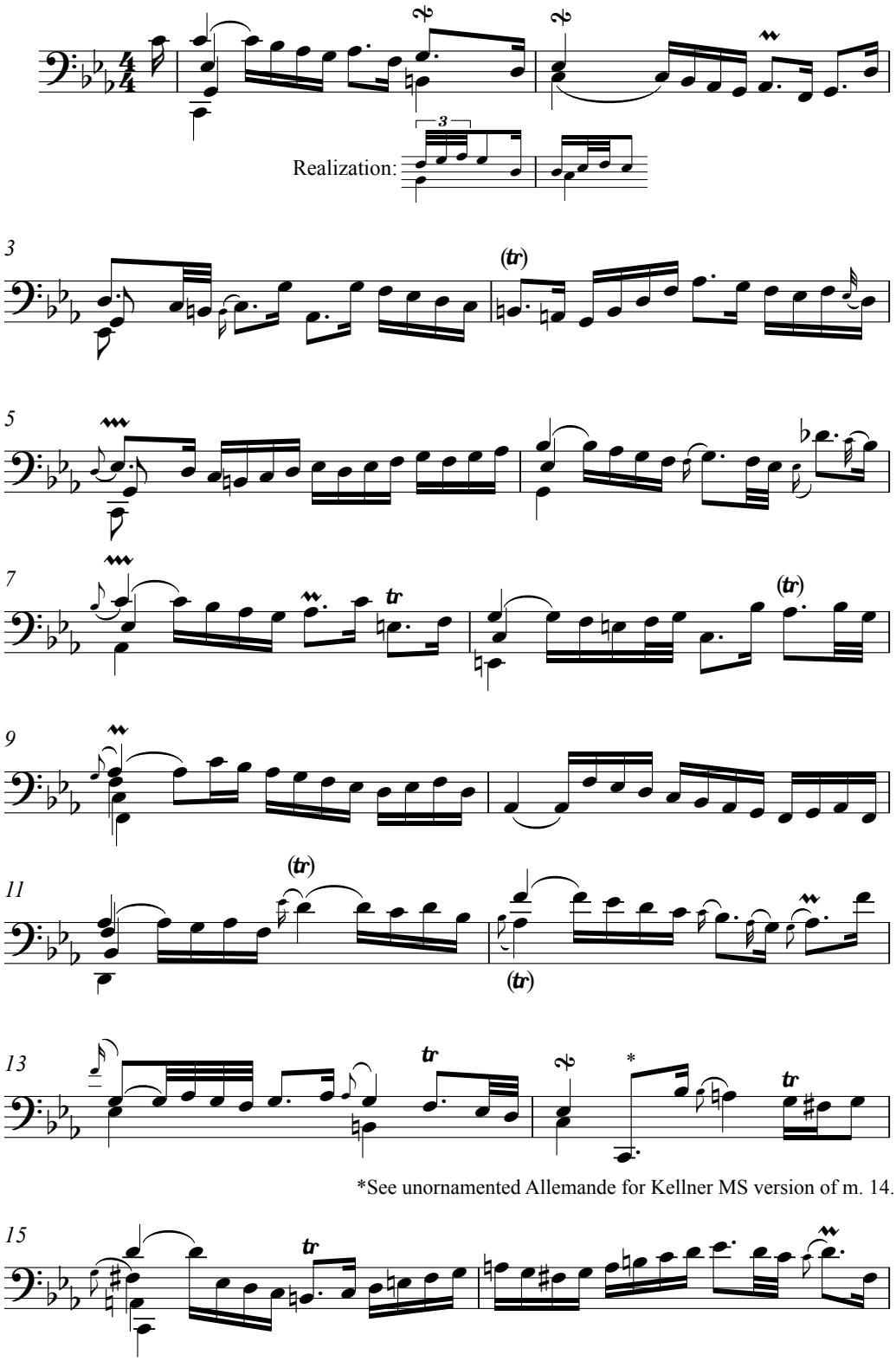
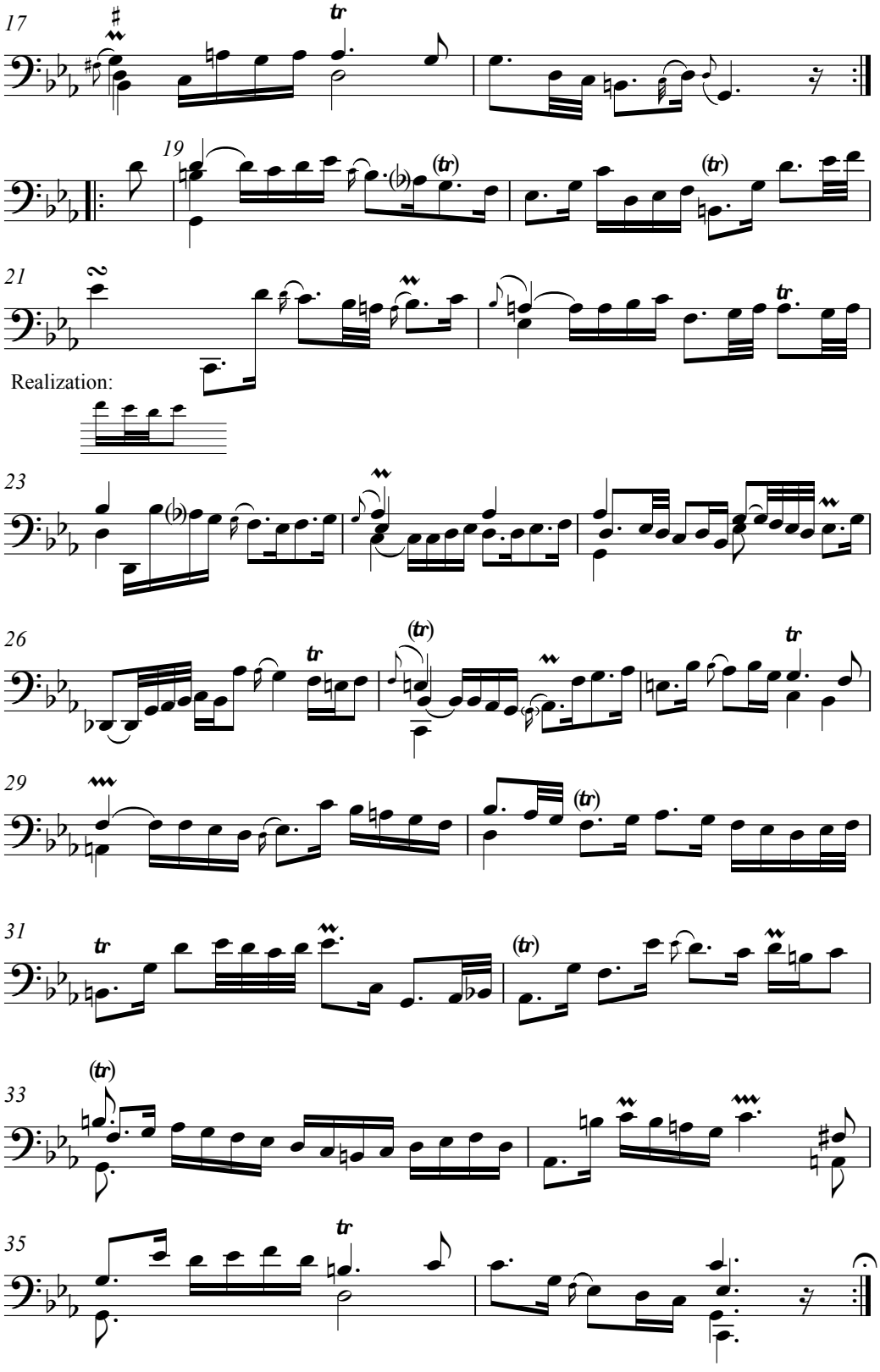
Allemande (w/additional ornaments)



*See unornamented Allemande for Kellner MS version of m. 14.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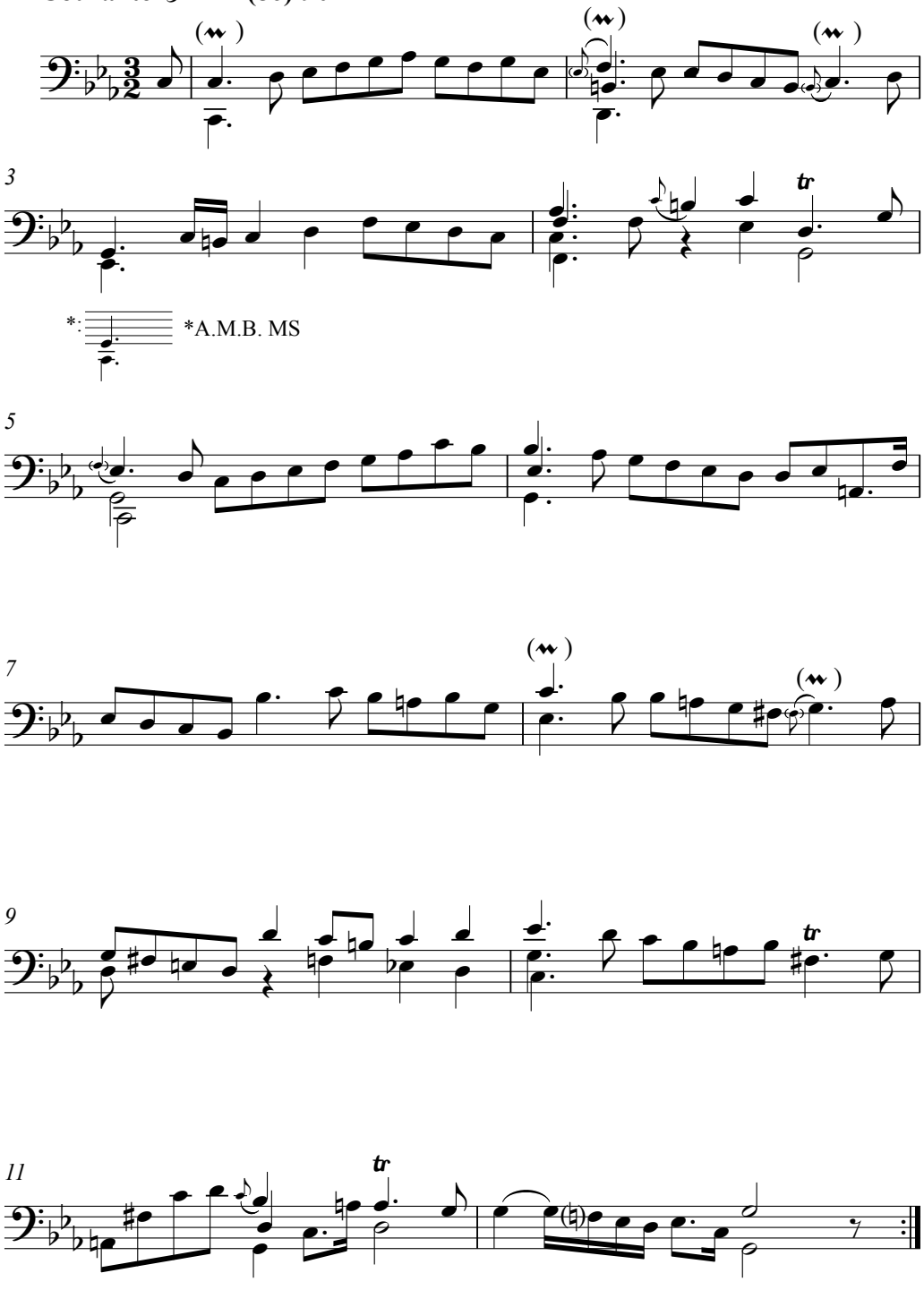
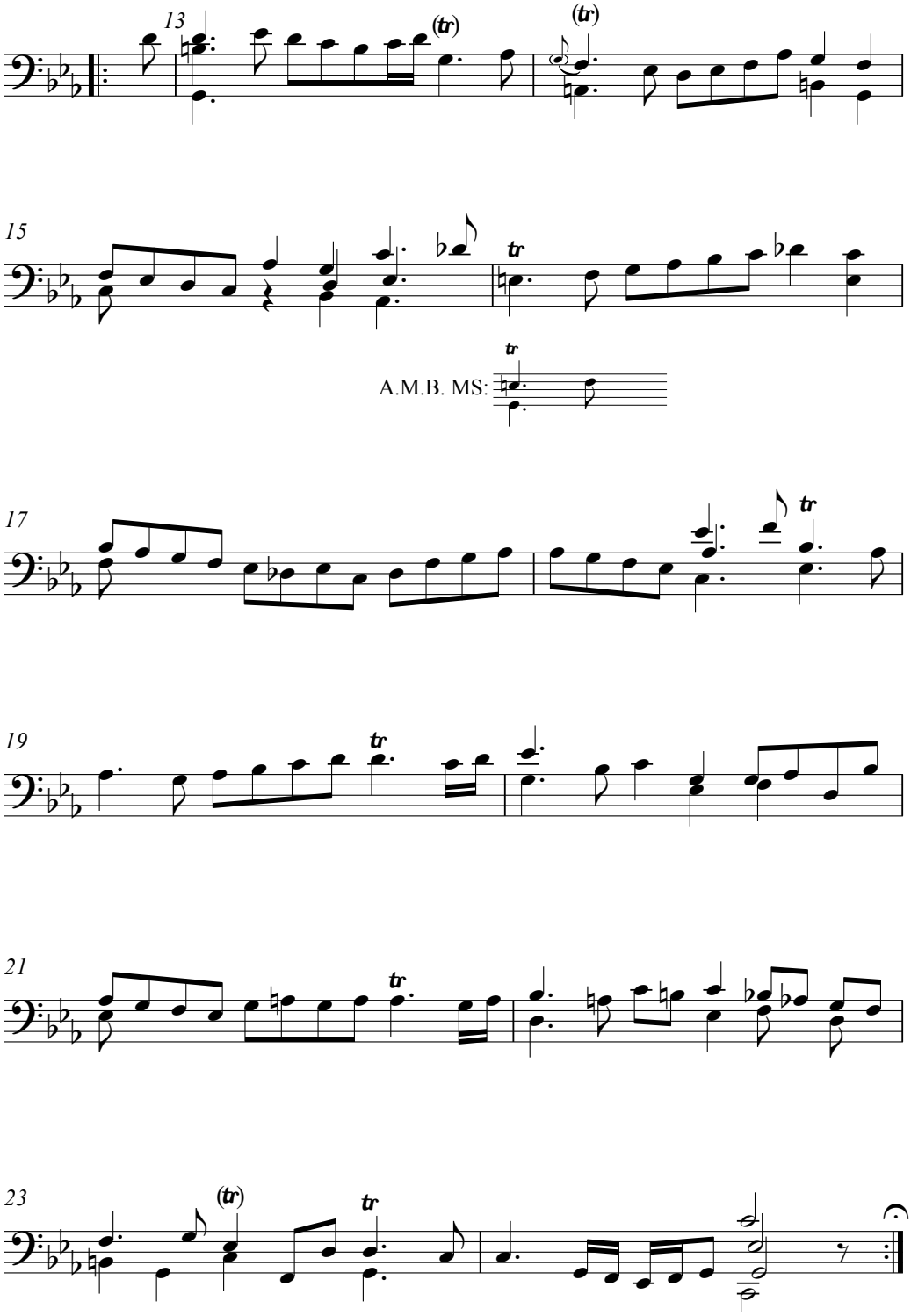
Courante 𝅗𝅥 = 72-(86)-90

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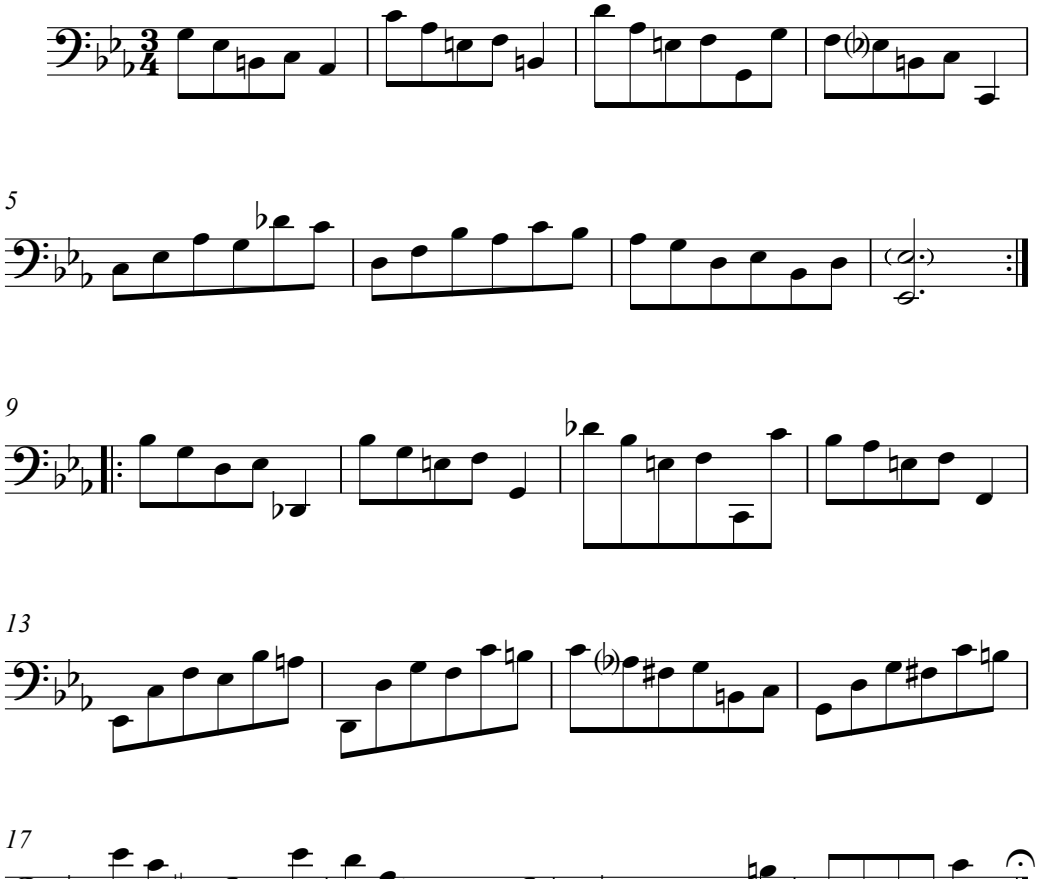
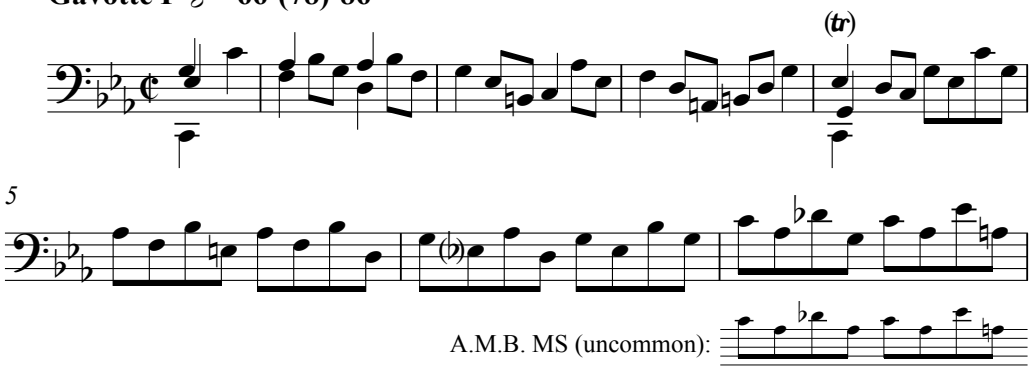
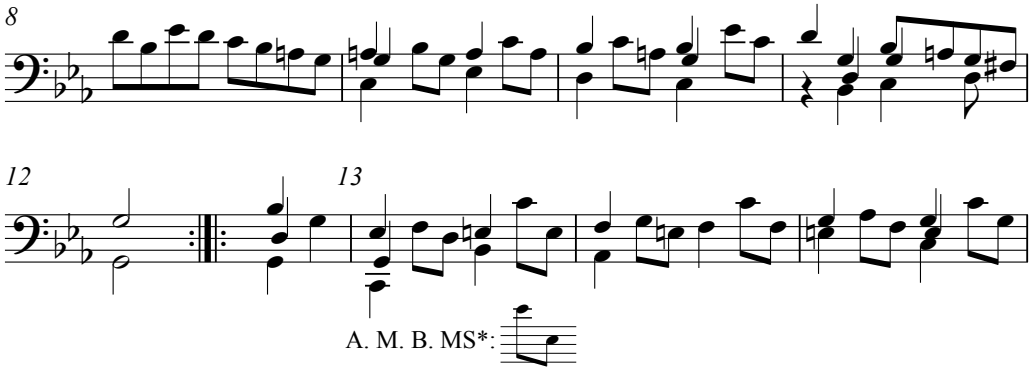
Sarabande ♩ = 48-(54)-74



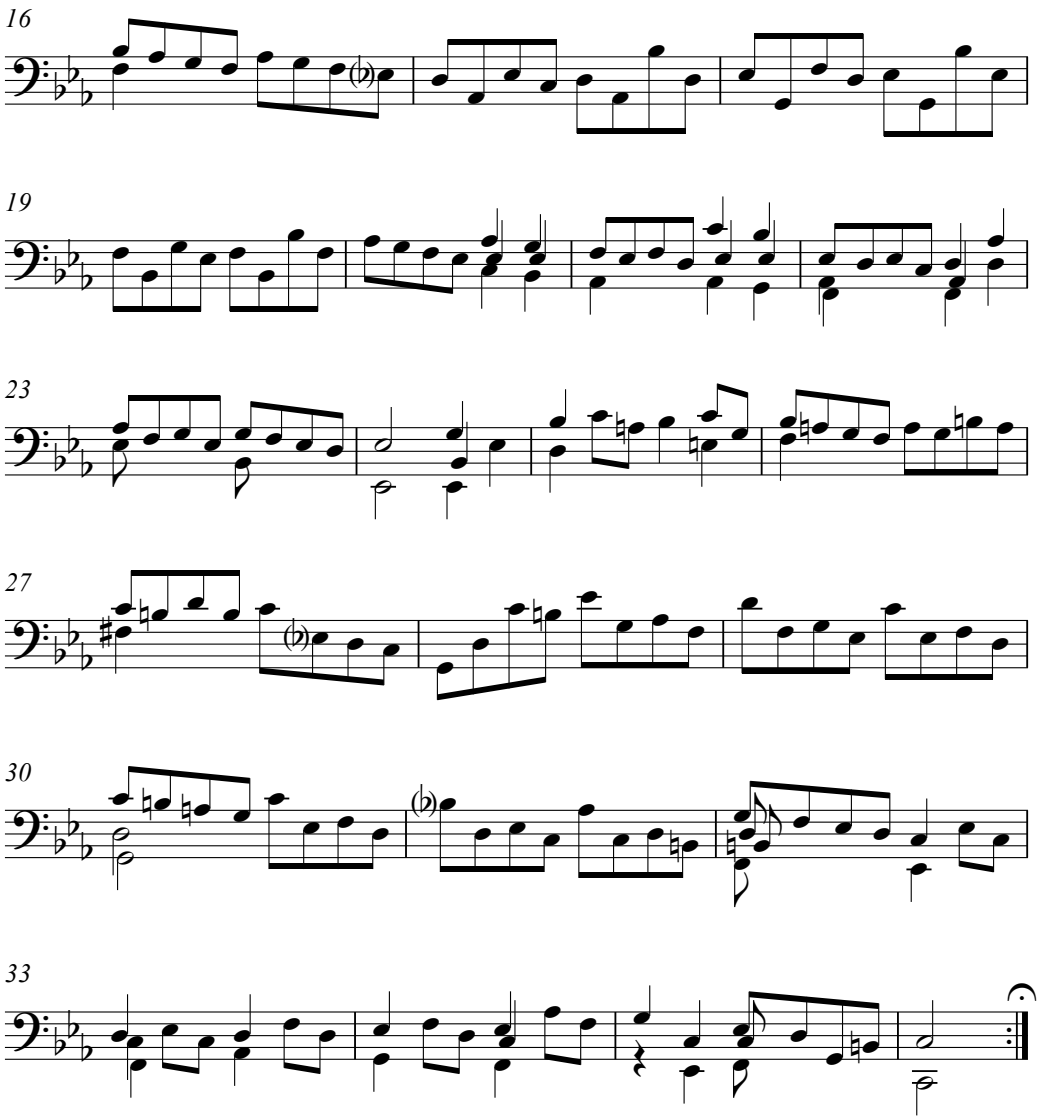
Gavotte I 𝅗𝅥 = 66-(78)-86



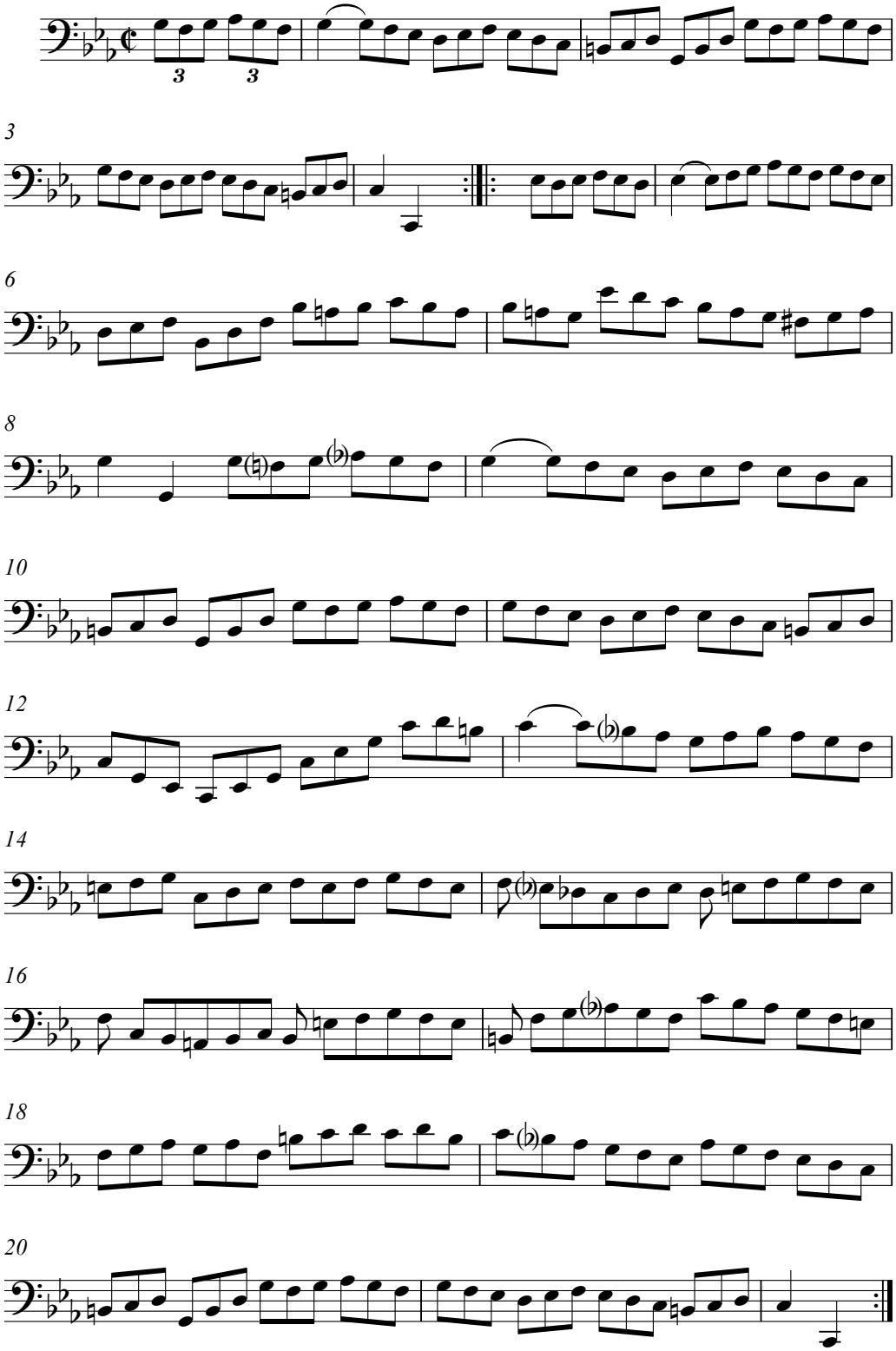
A.M.B. MS (uncommon):



*The E-flat also appears in other early manuscripts. The Kellner MS and the autograph of BWV 995 have a C, which is found in the vast majority of modern recordings and is the author's preference.

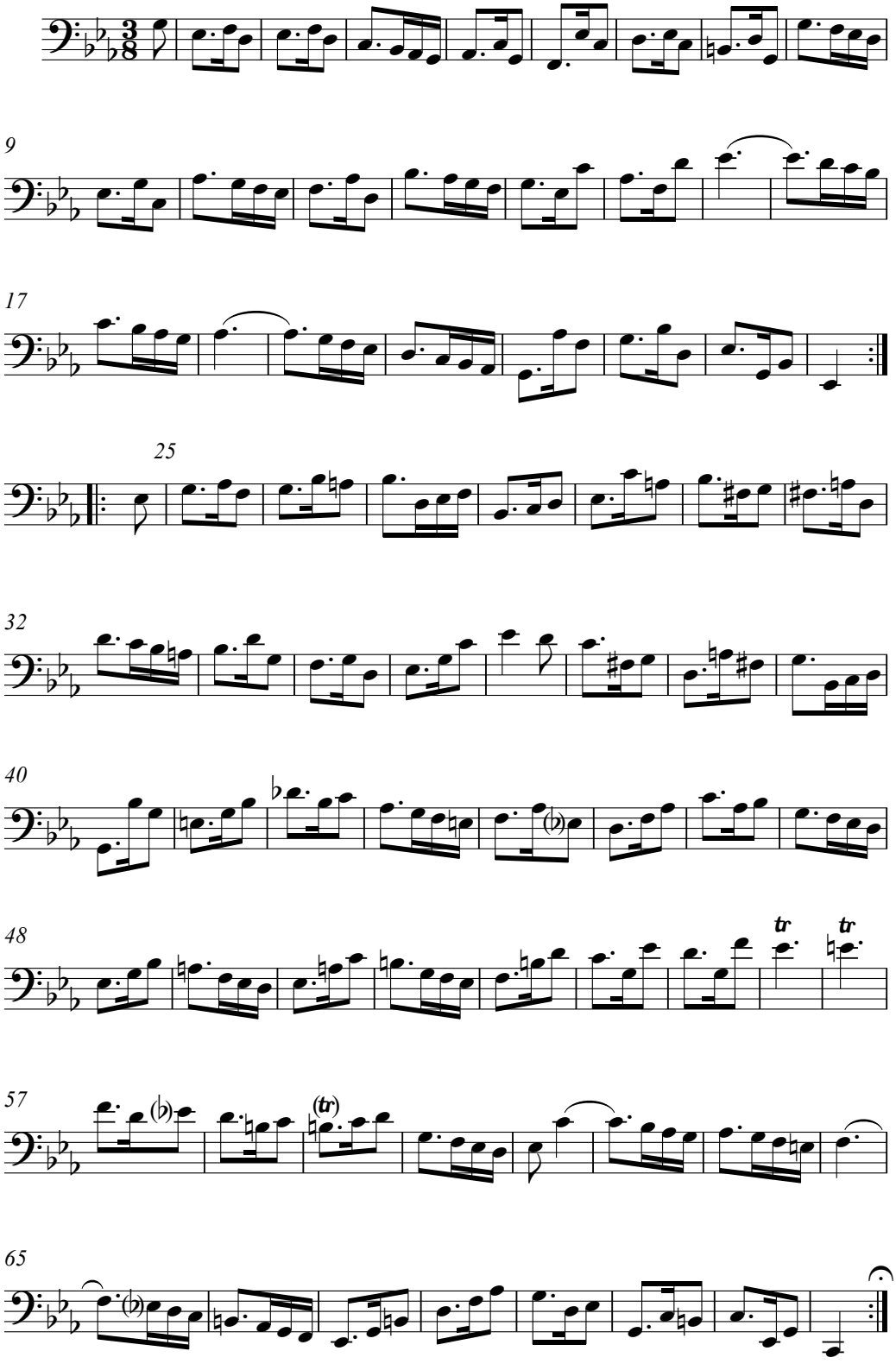


Gavotte II 𝅗𝅥 **= 61-(72)-88**



Gavotte I da capo

Gigue ♩ = 70-(80)-88



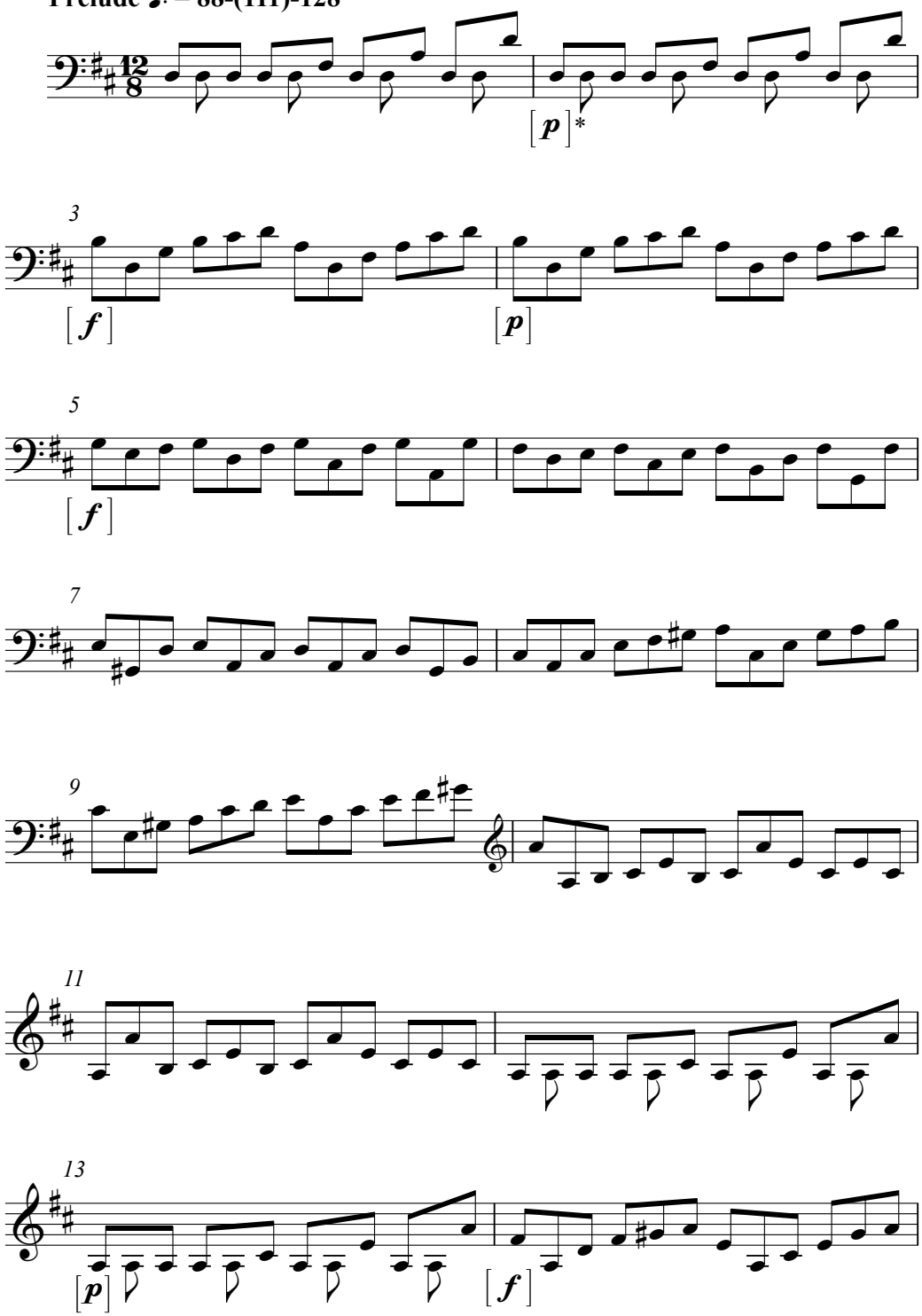
APPENDIX F

BWV 1012

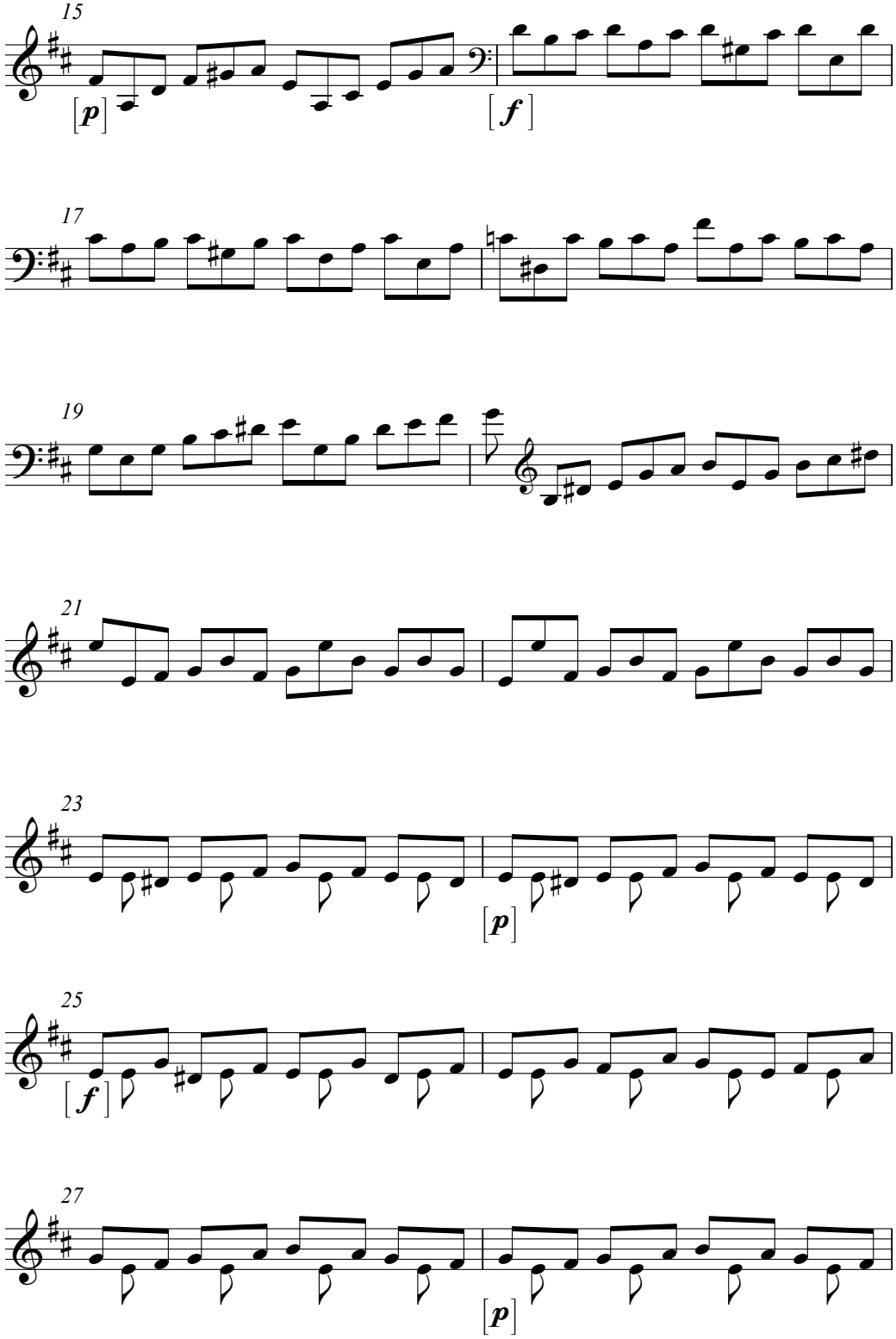
Suite VI (BWV 1012)

J. S. Bach
edited by Bill Sallak

Prélude ♩. = 88-(111)-128



*All bracketed dynamics are optional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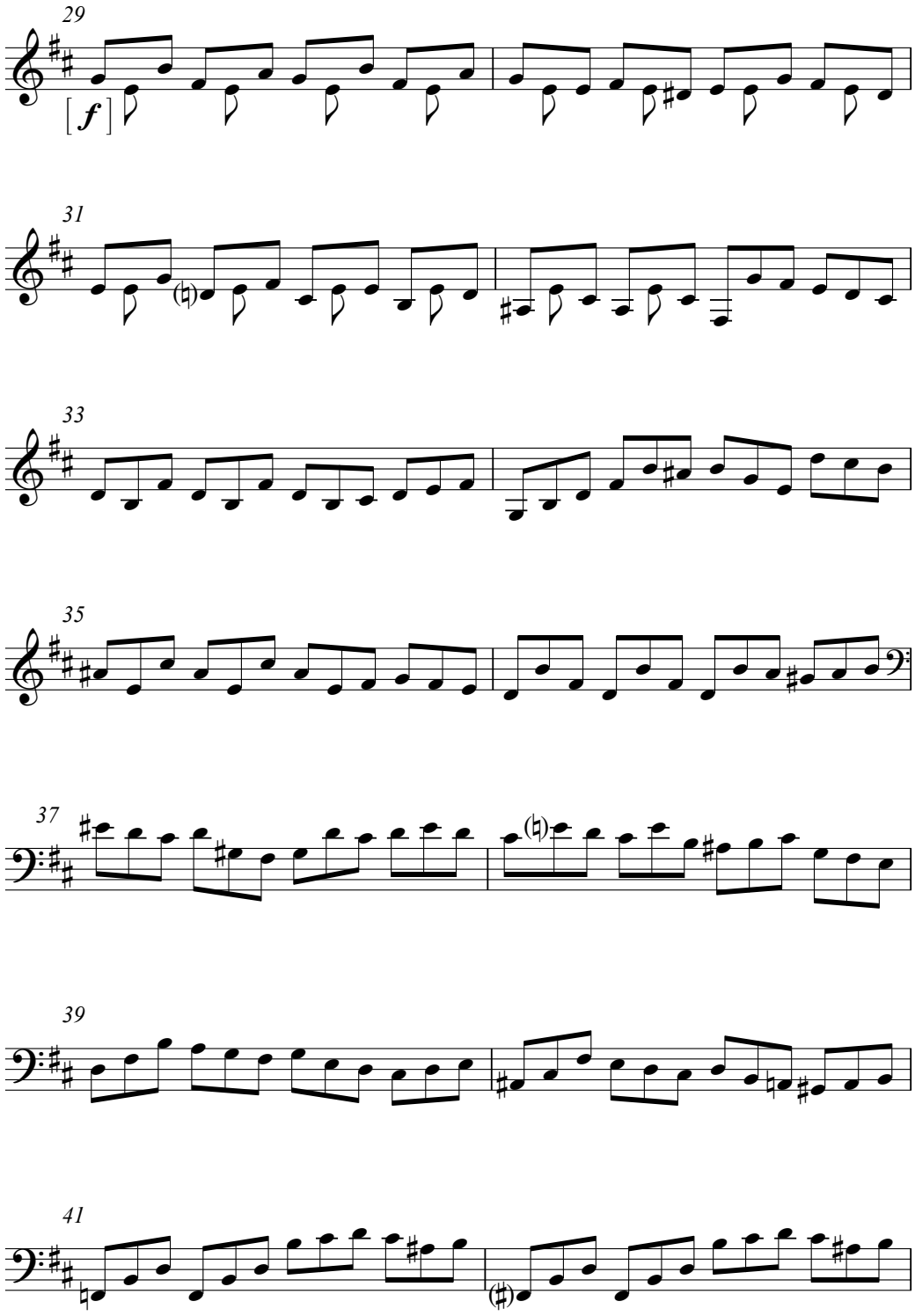
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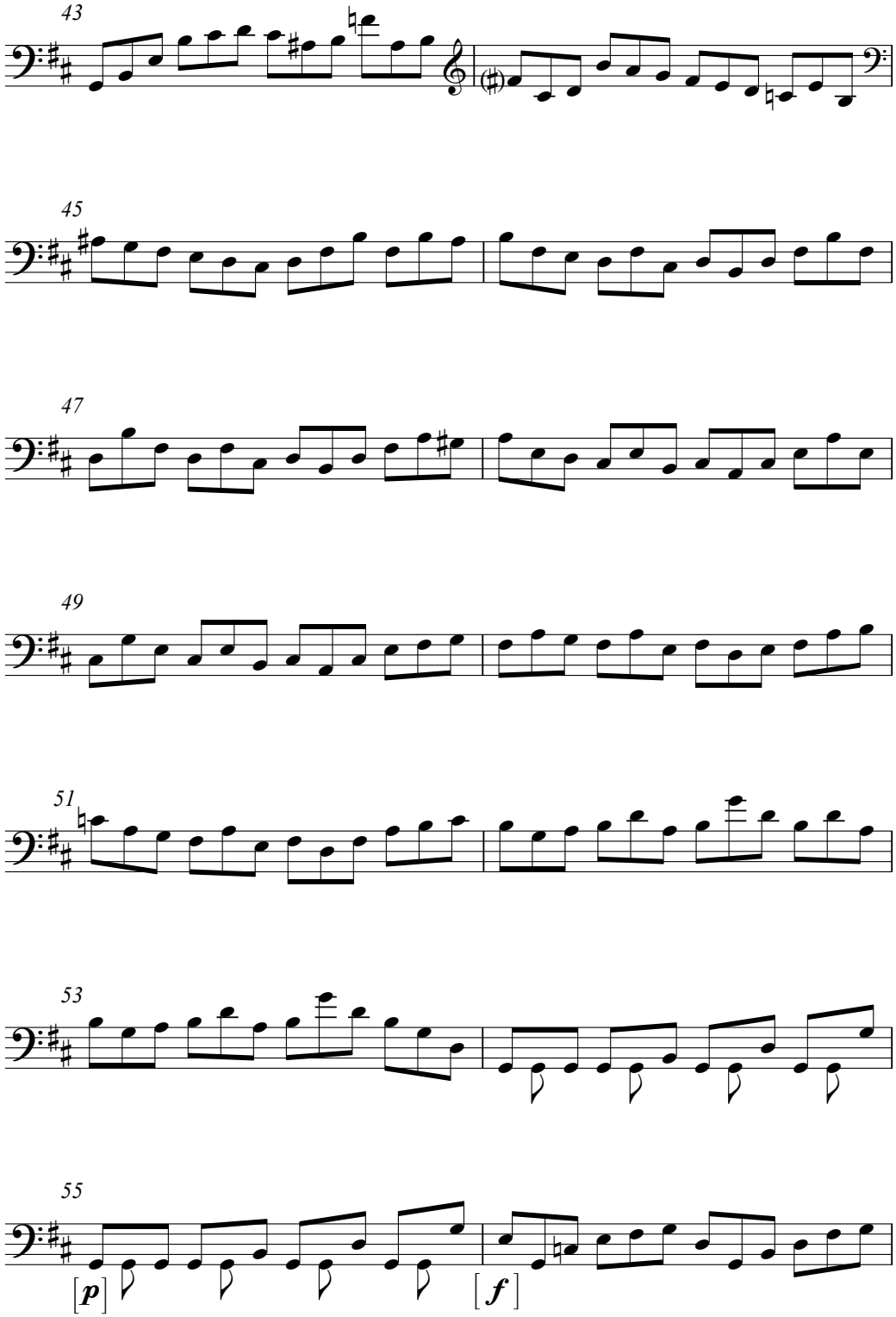
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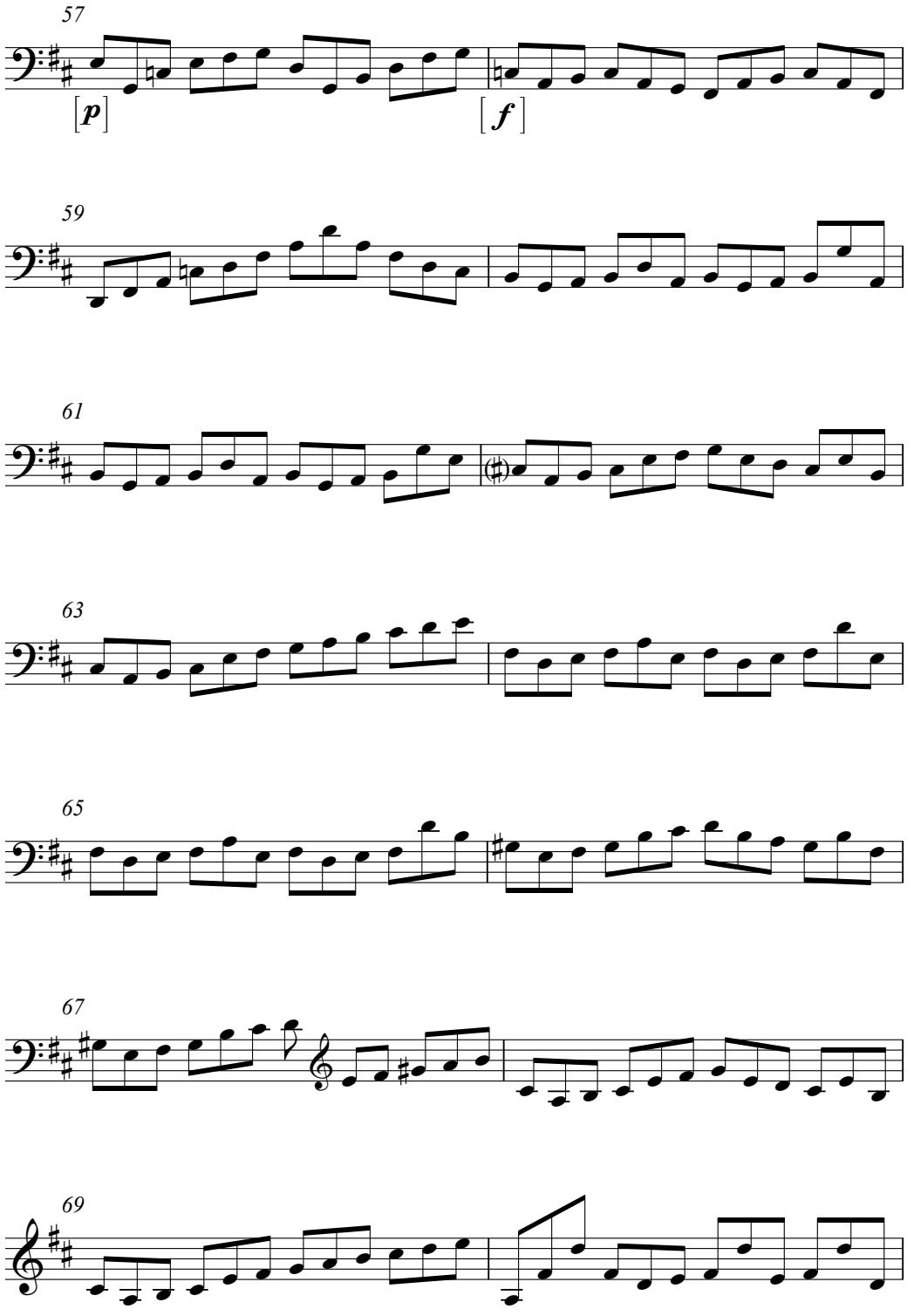
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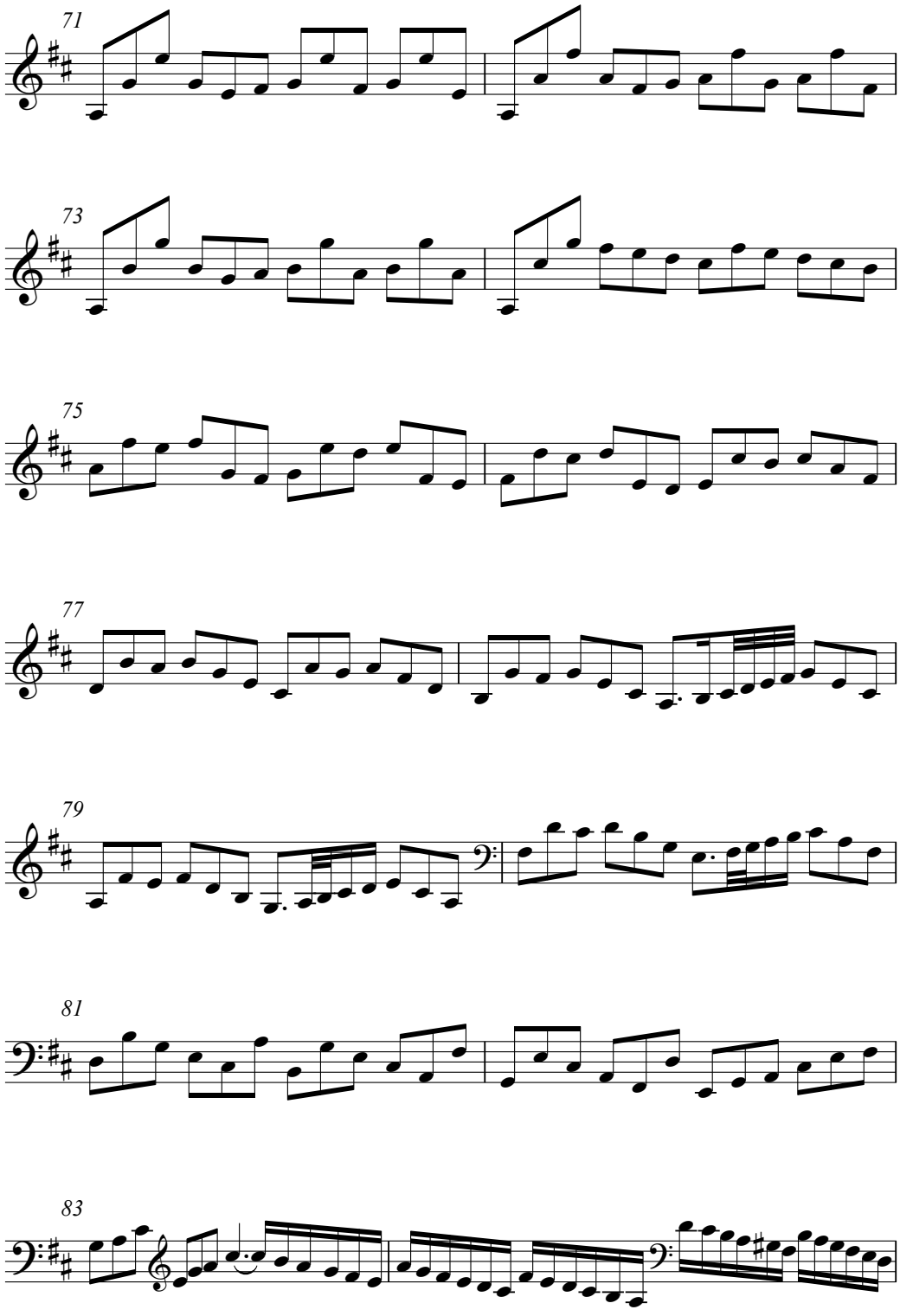
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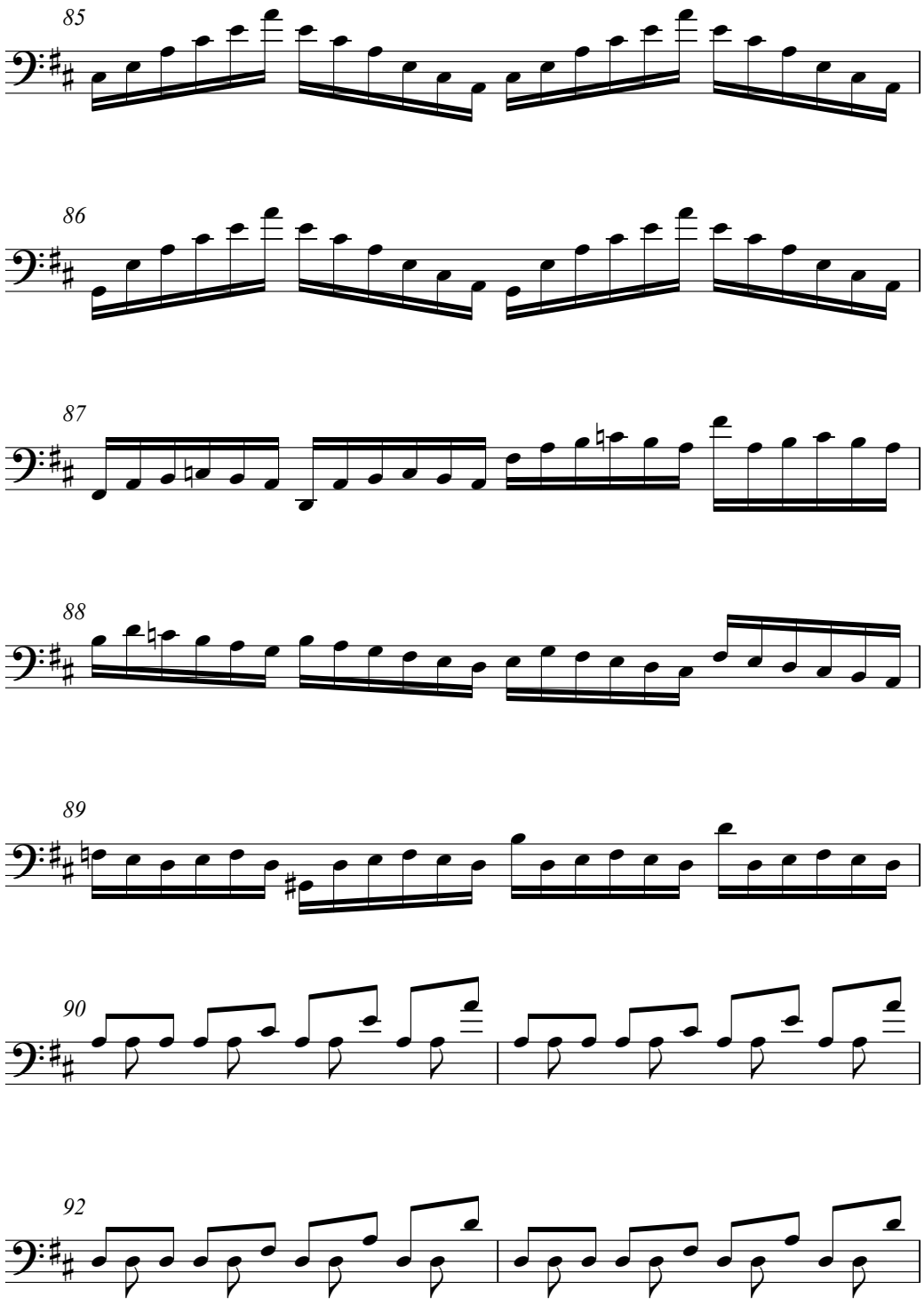
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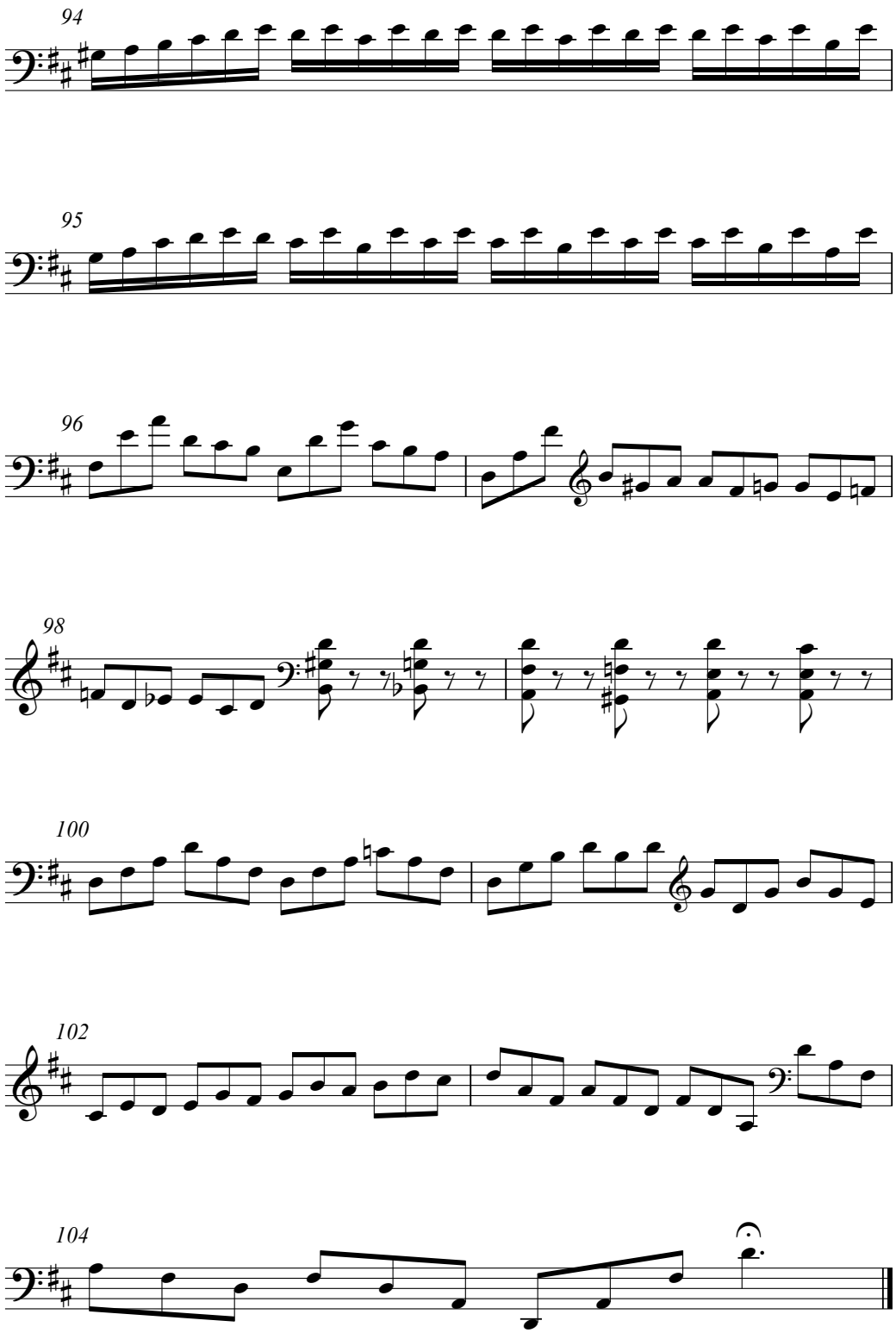
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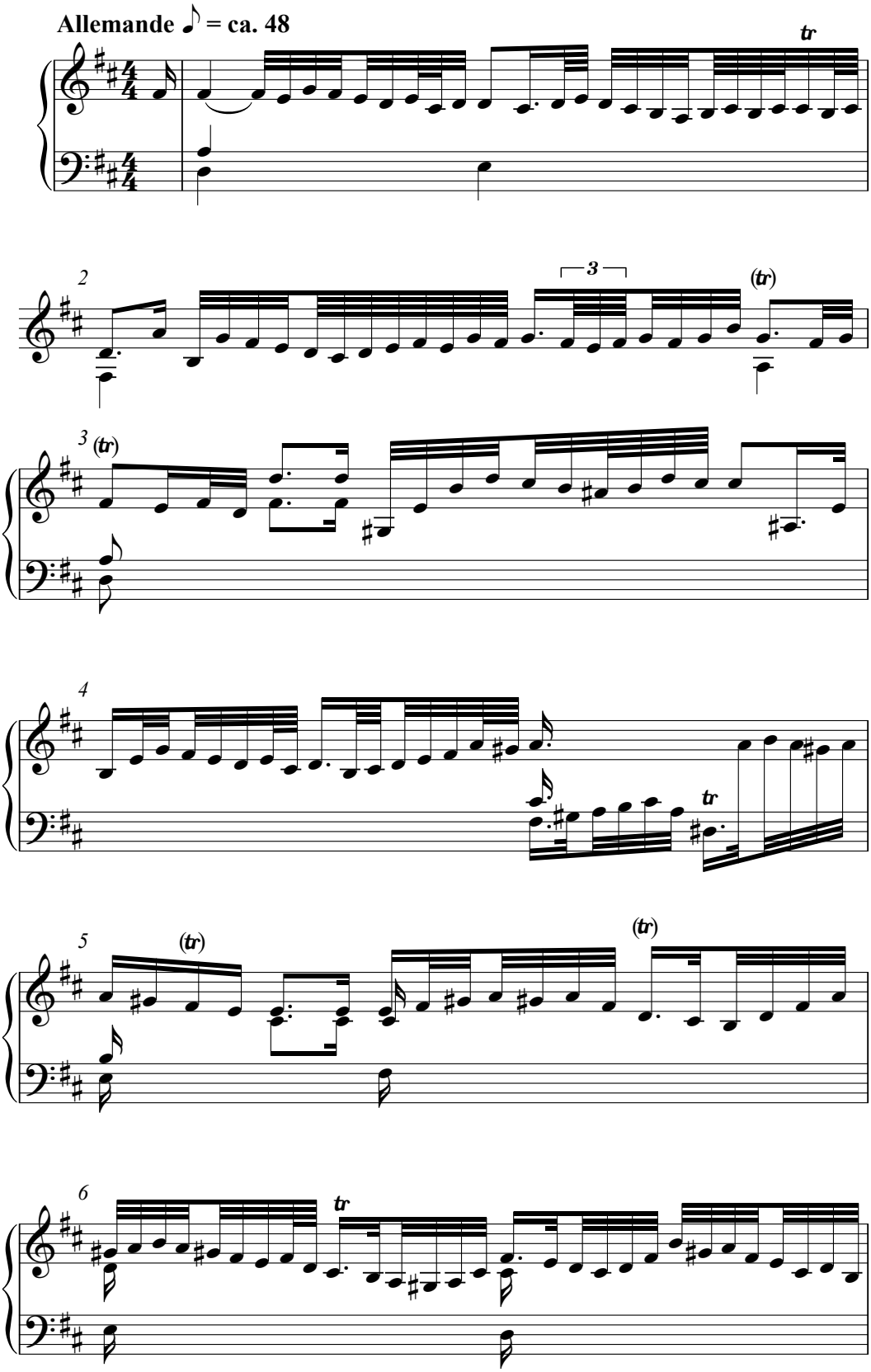
Allemande ♪ = ca. 48
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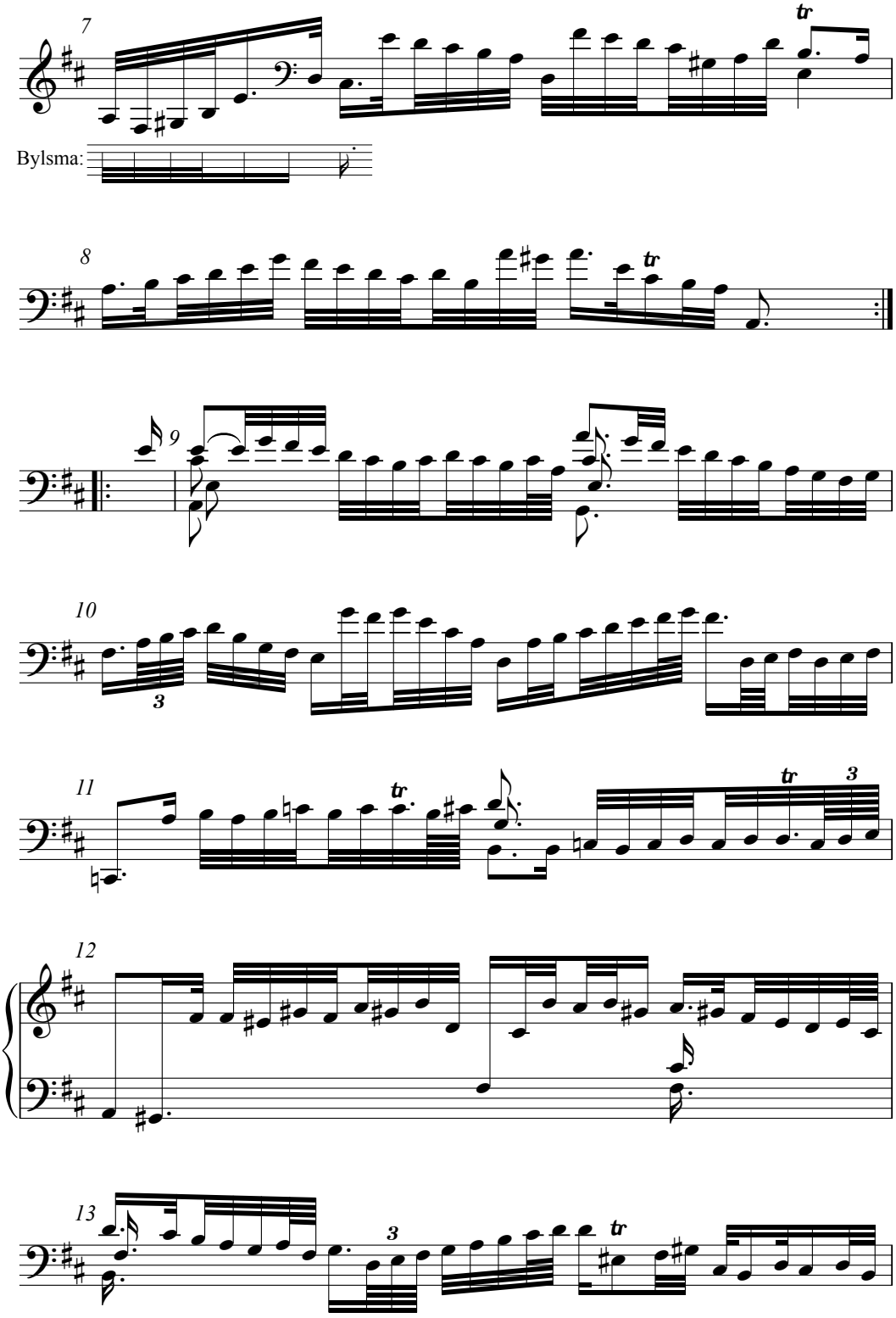
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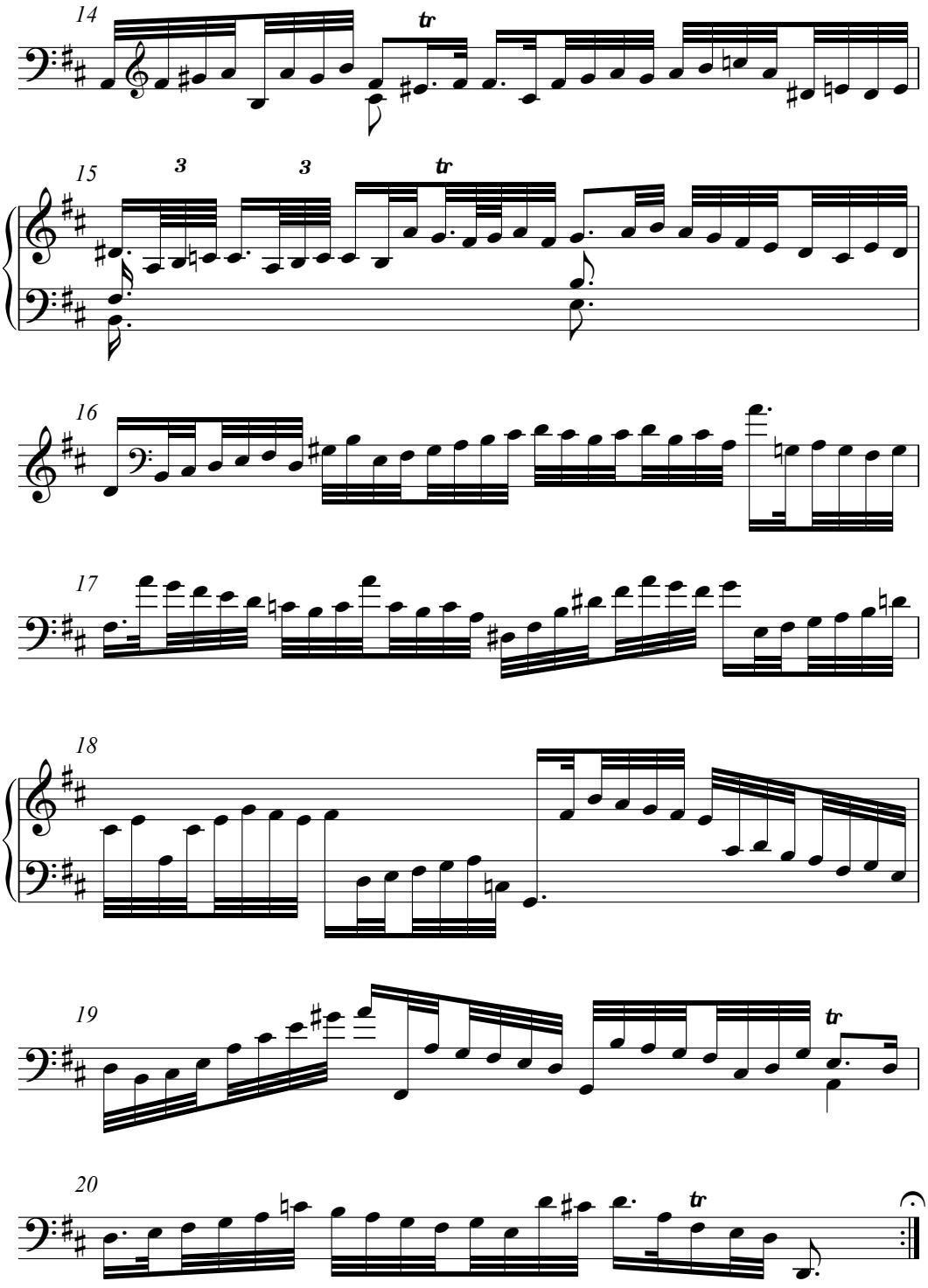
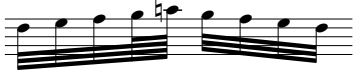
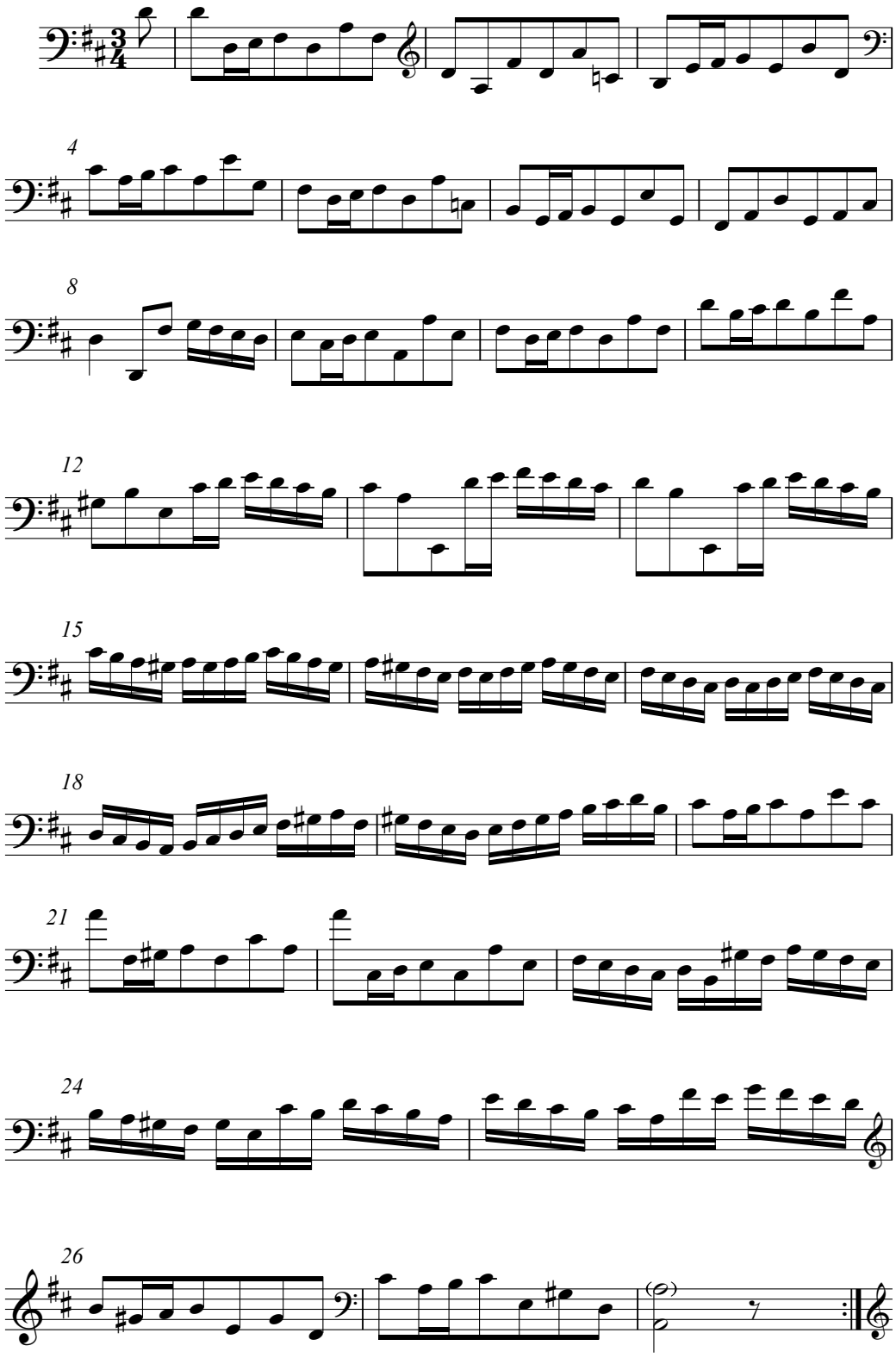
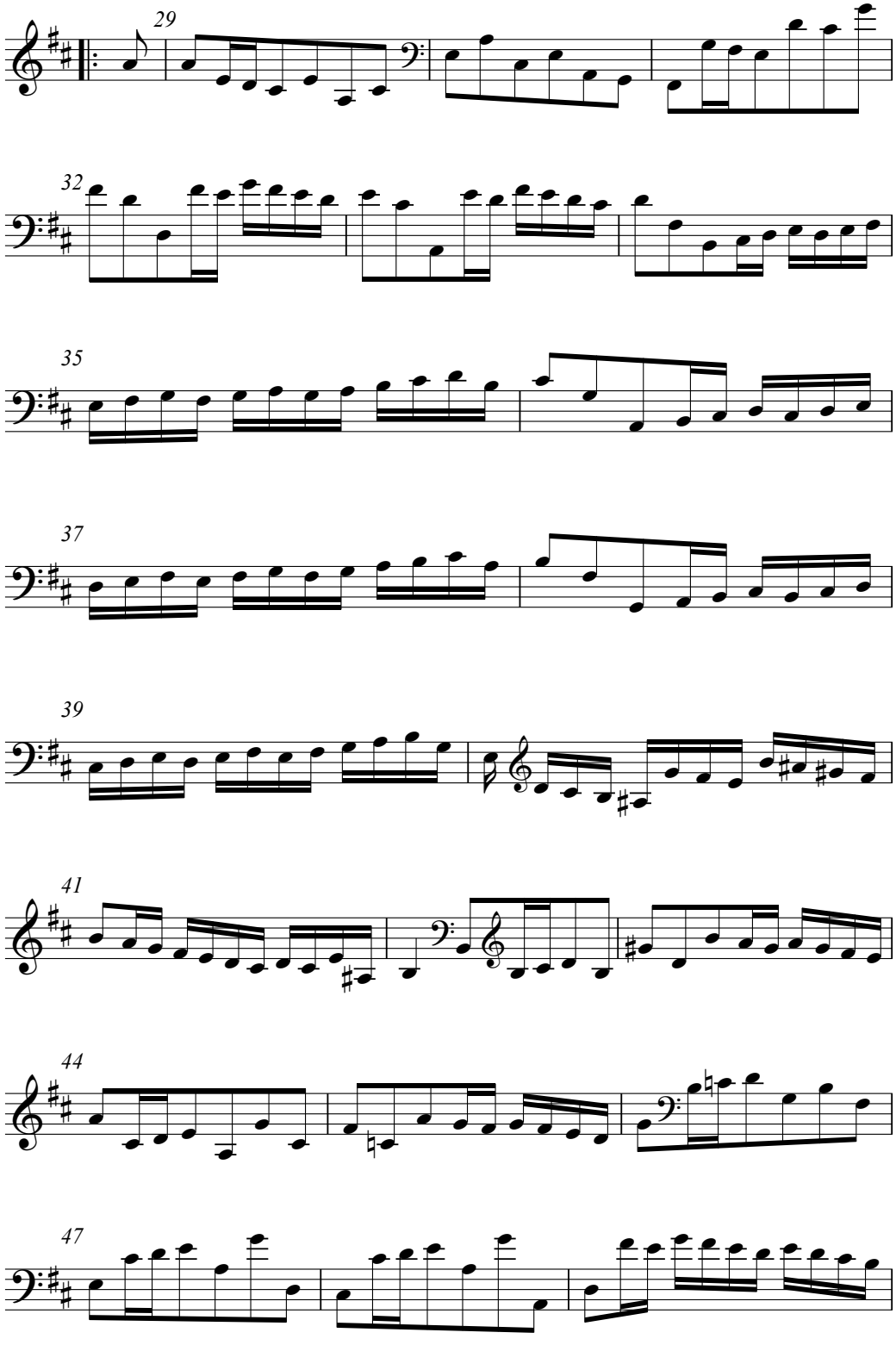


Viennese Anonymous MS:



Courante (Corrente) ♩ = 112-(122)-152

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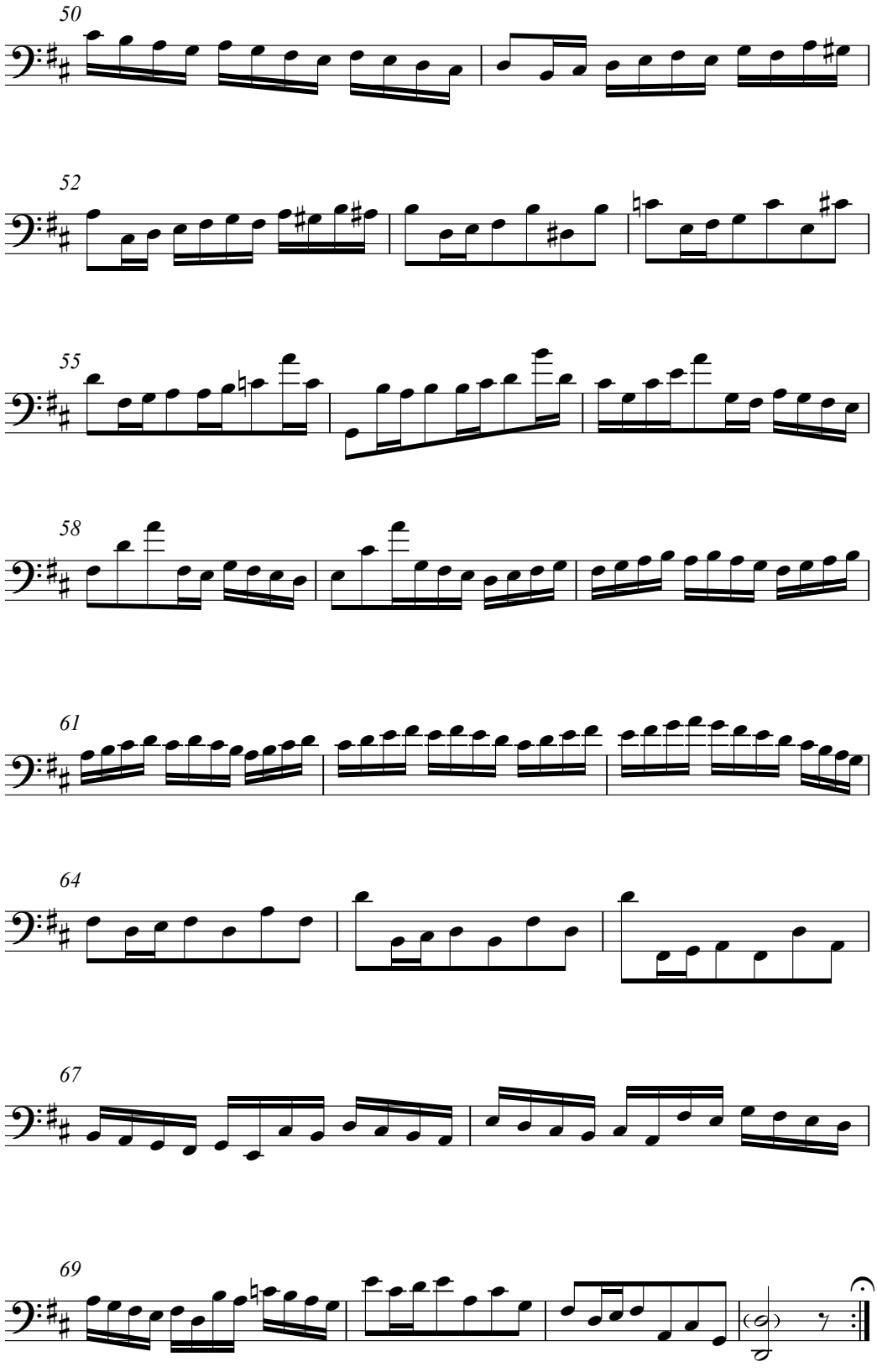
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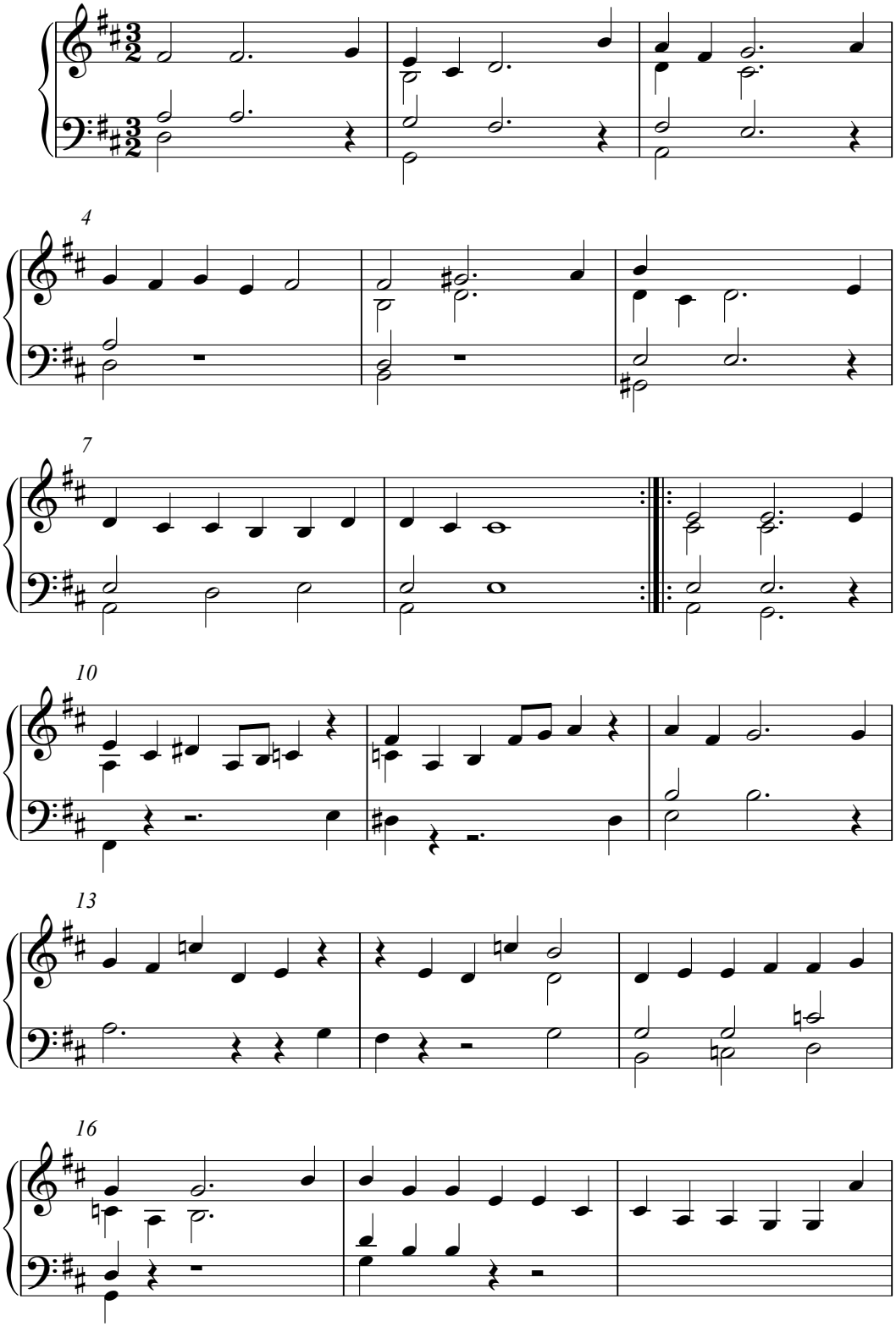
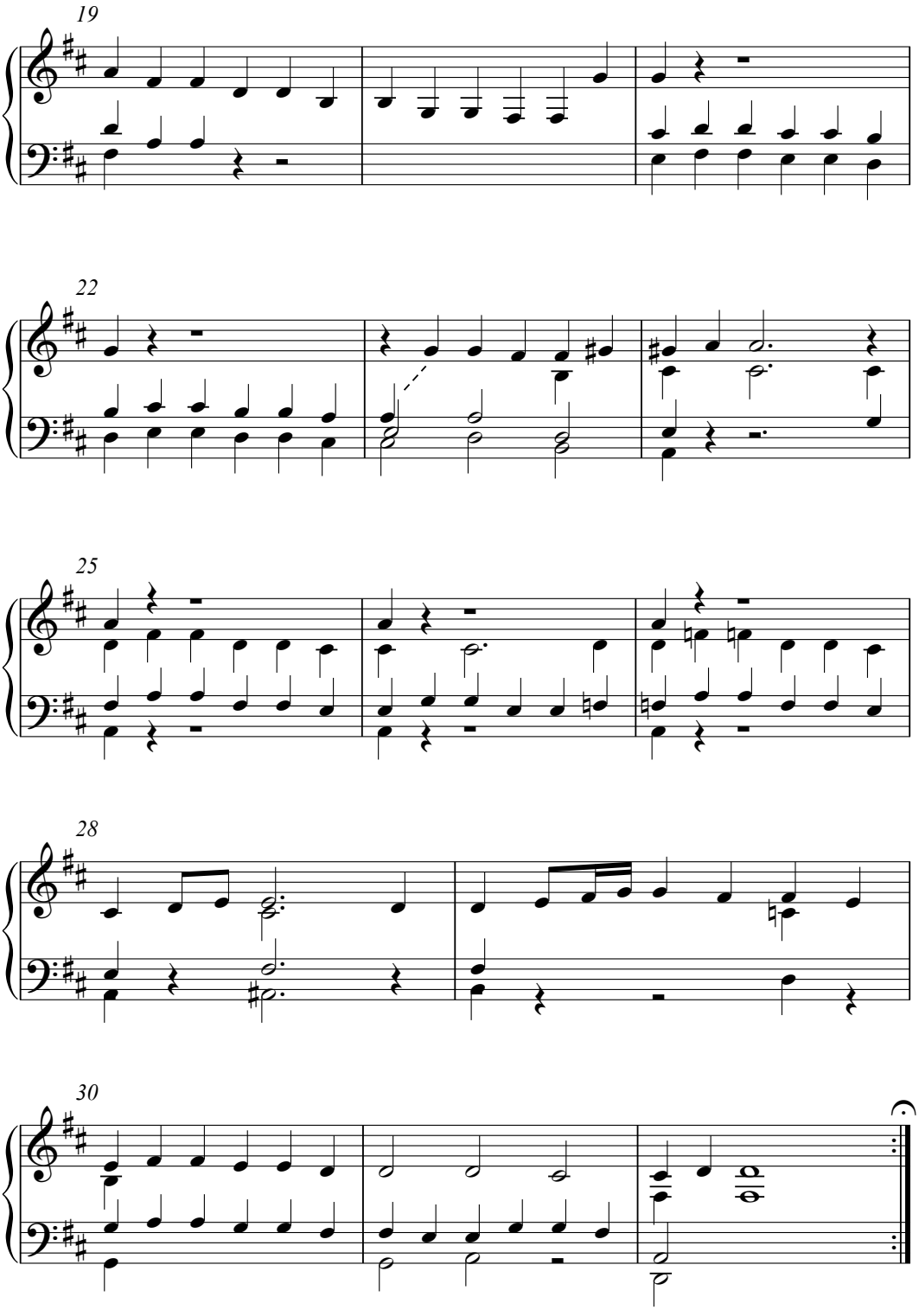
Sarabande 𝅗𝅥 = 48-(53)-70

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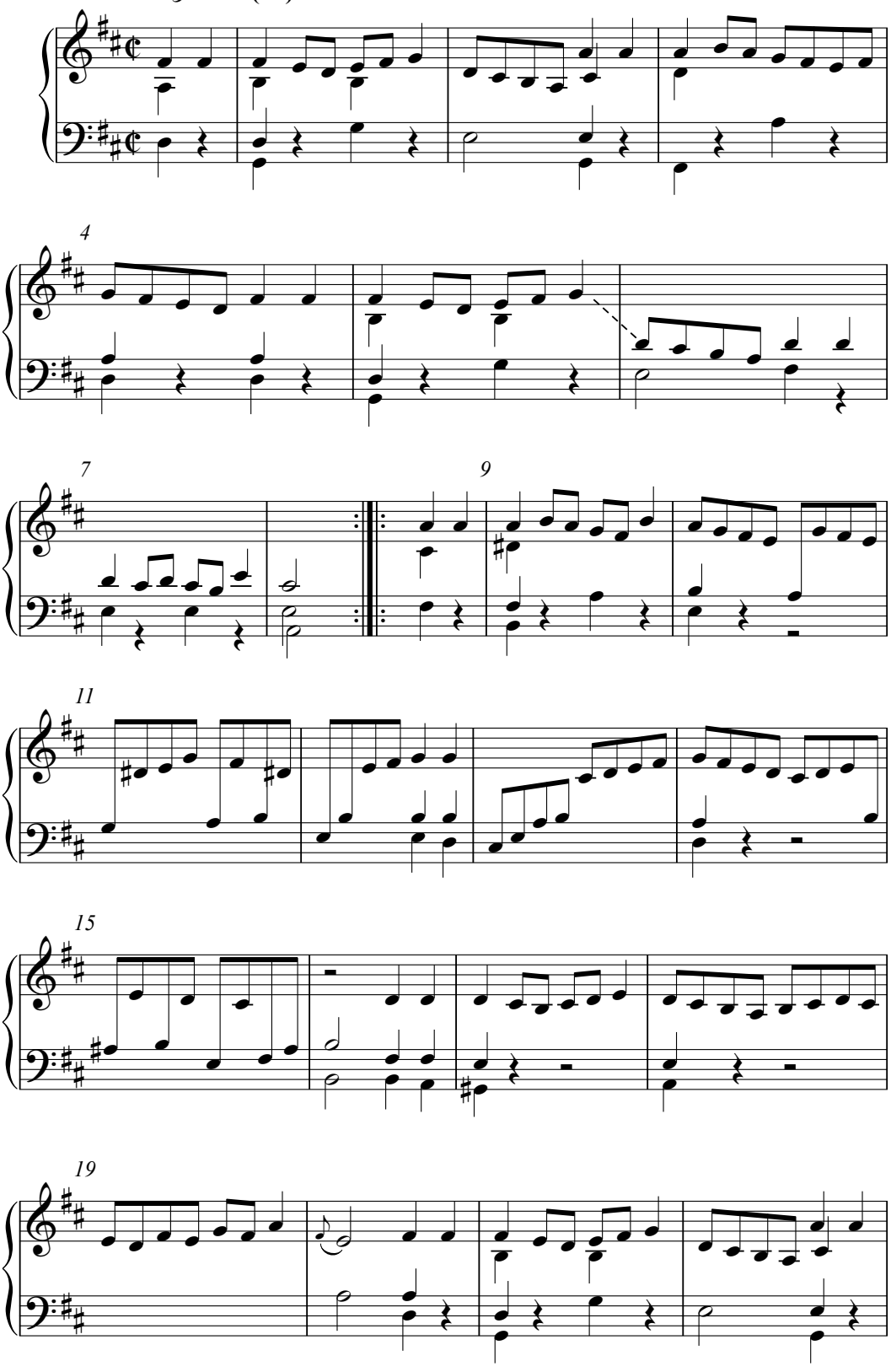
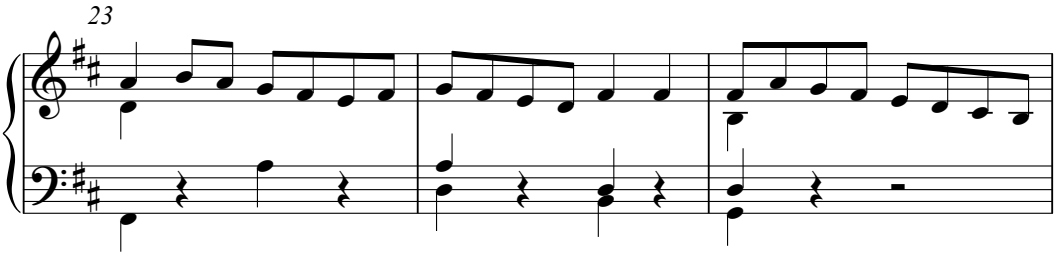
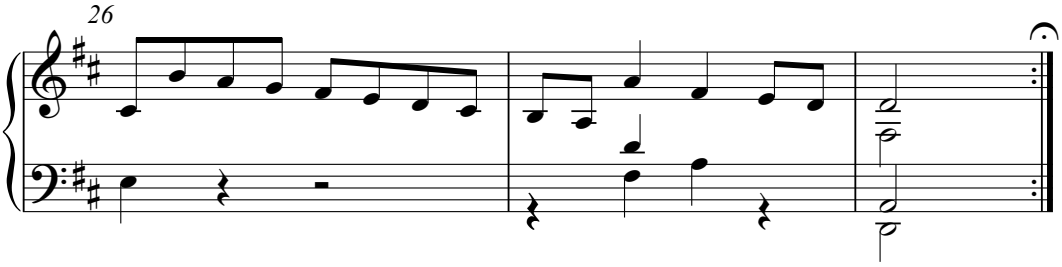
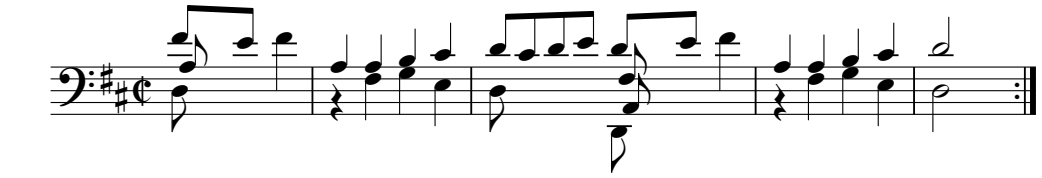
Gavotte I 𝅗𝅥 **= 68-(72)-80**

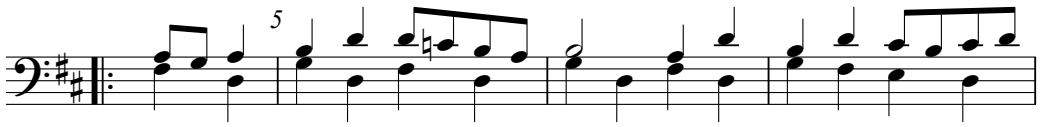


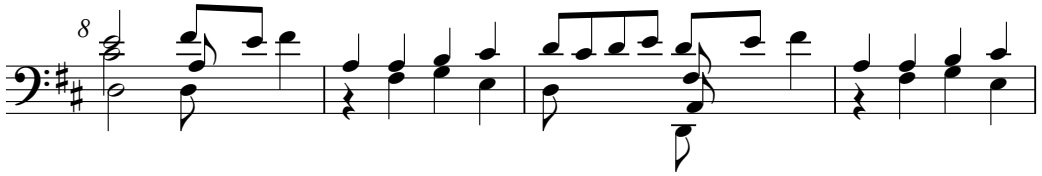


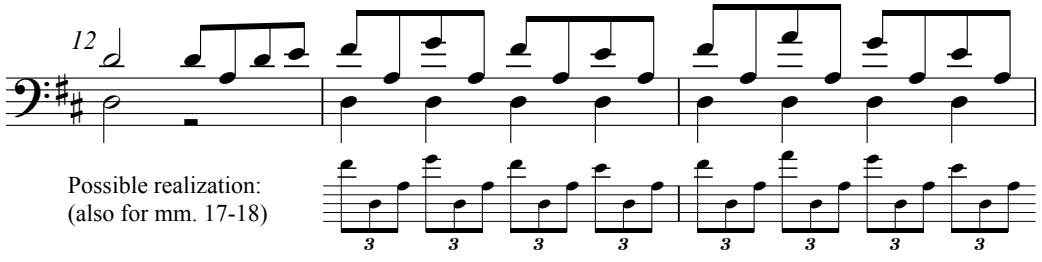


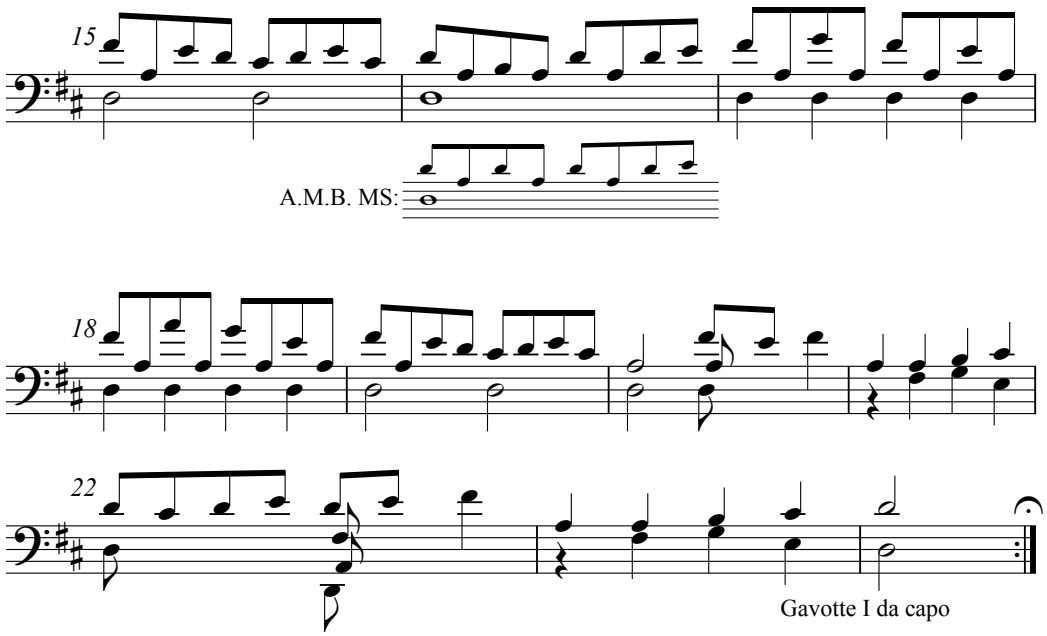
Gavotte II $\mathbb{d}$ **= 66-(72)-84**



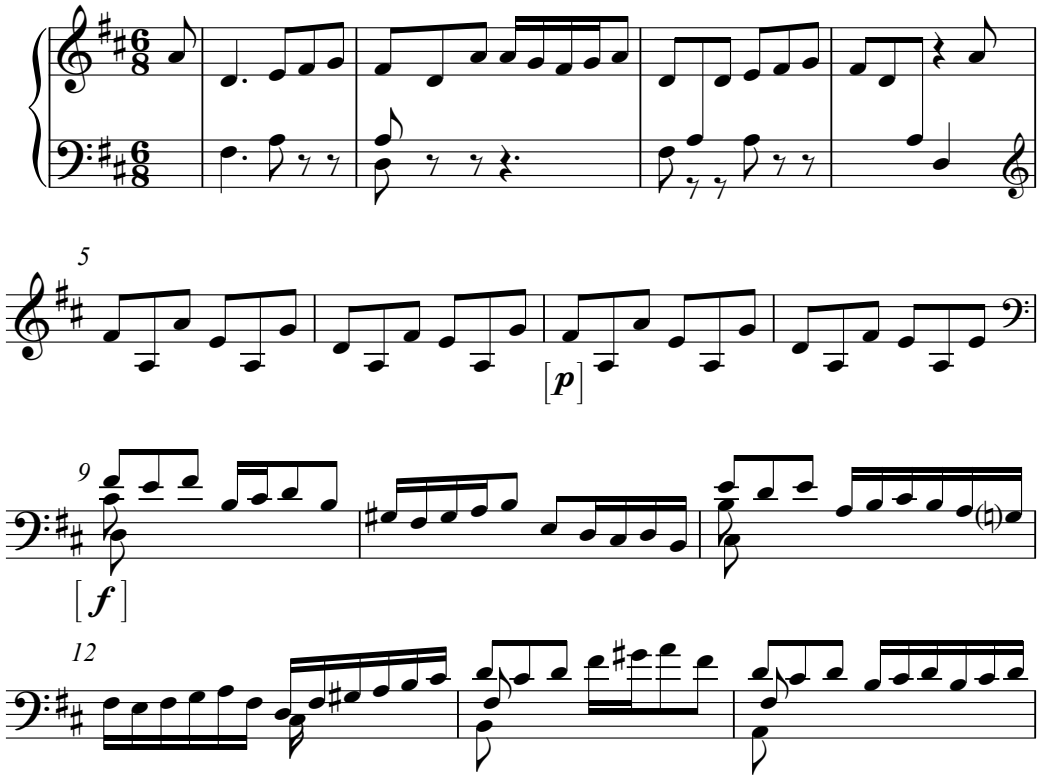


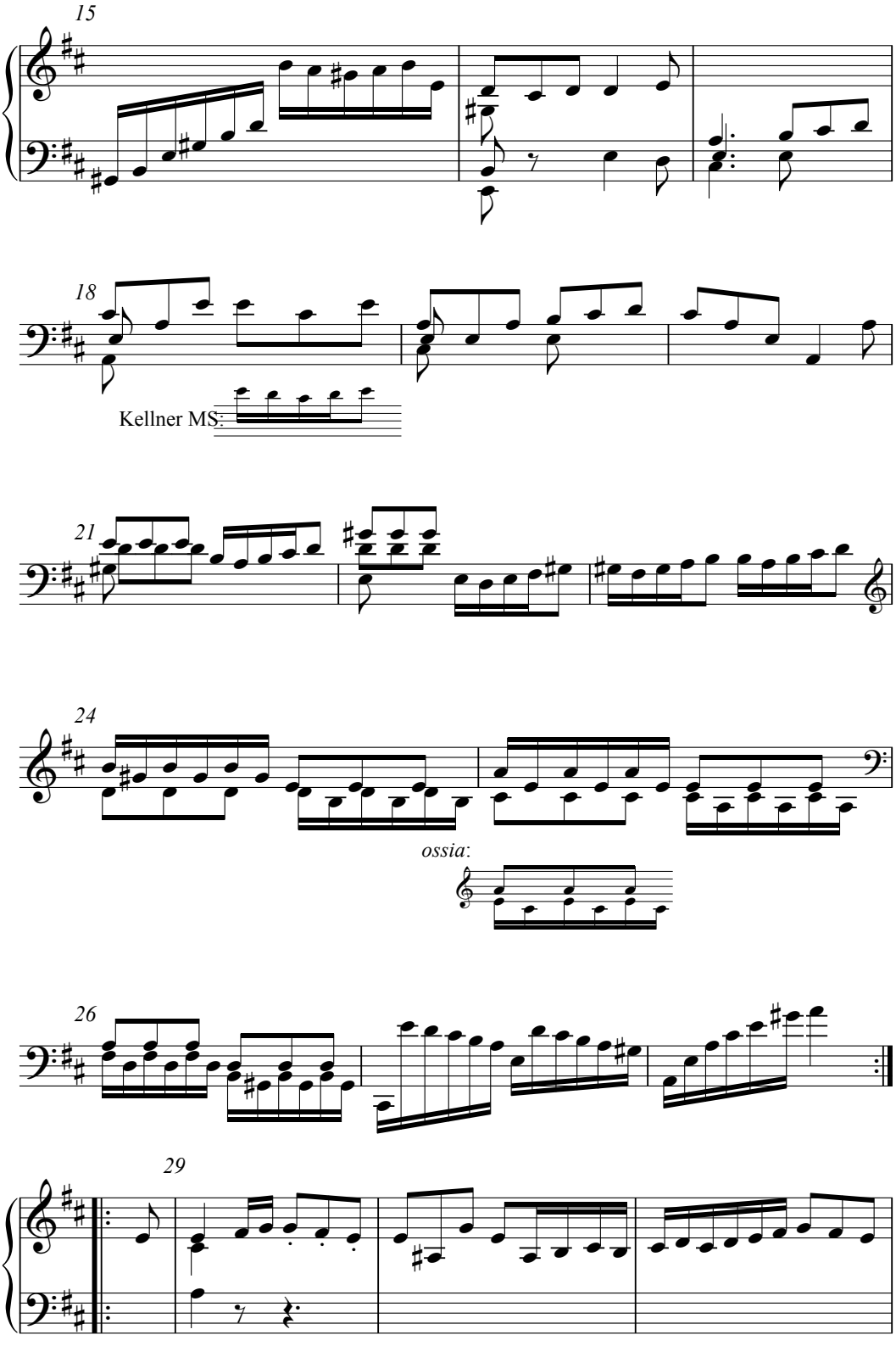






Gigue (Giga II) ♩. = 66-(71)-74

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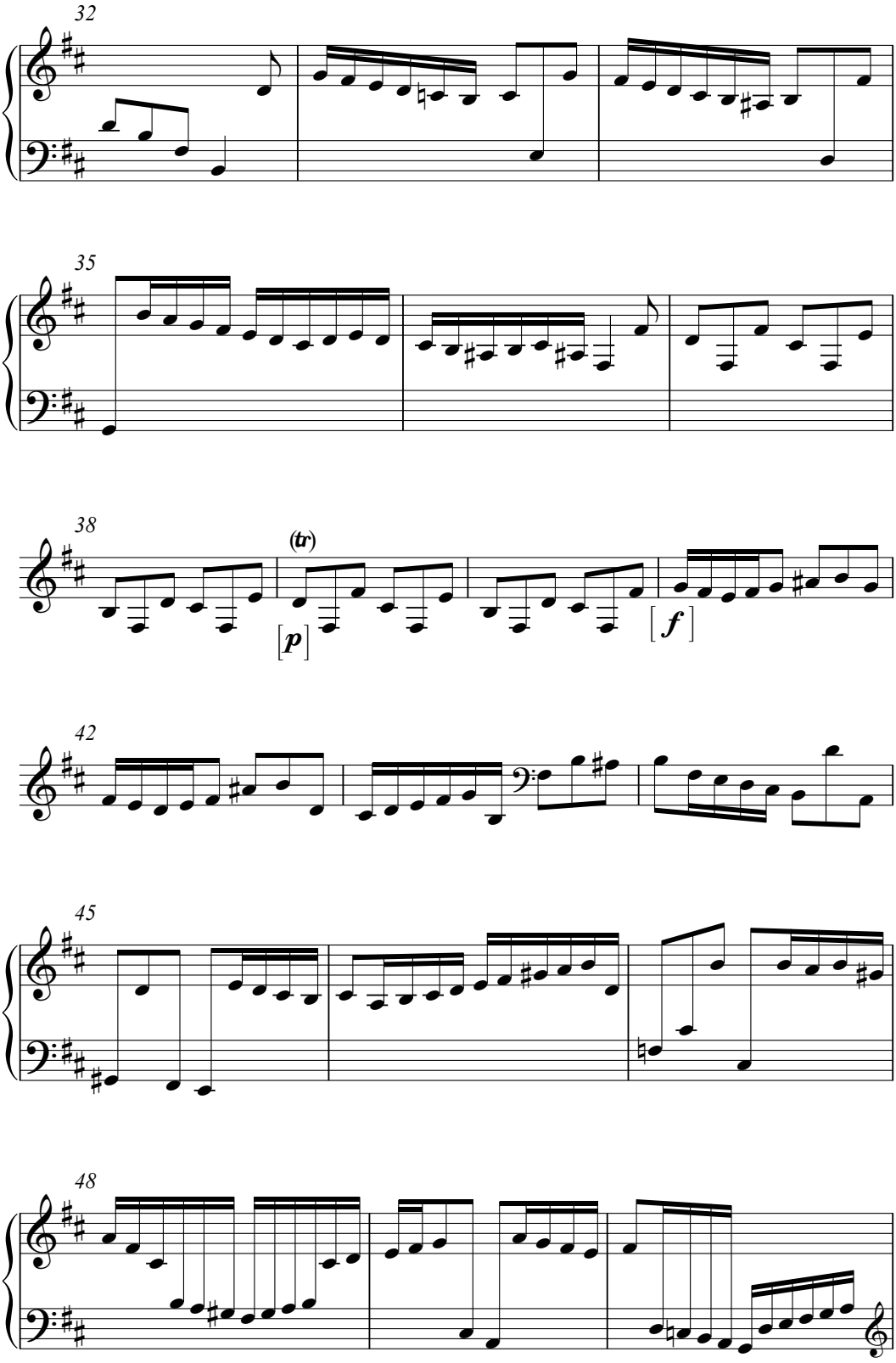
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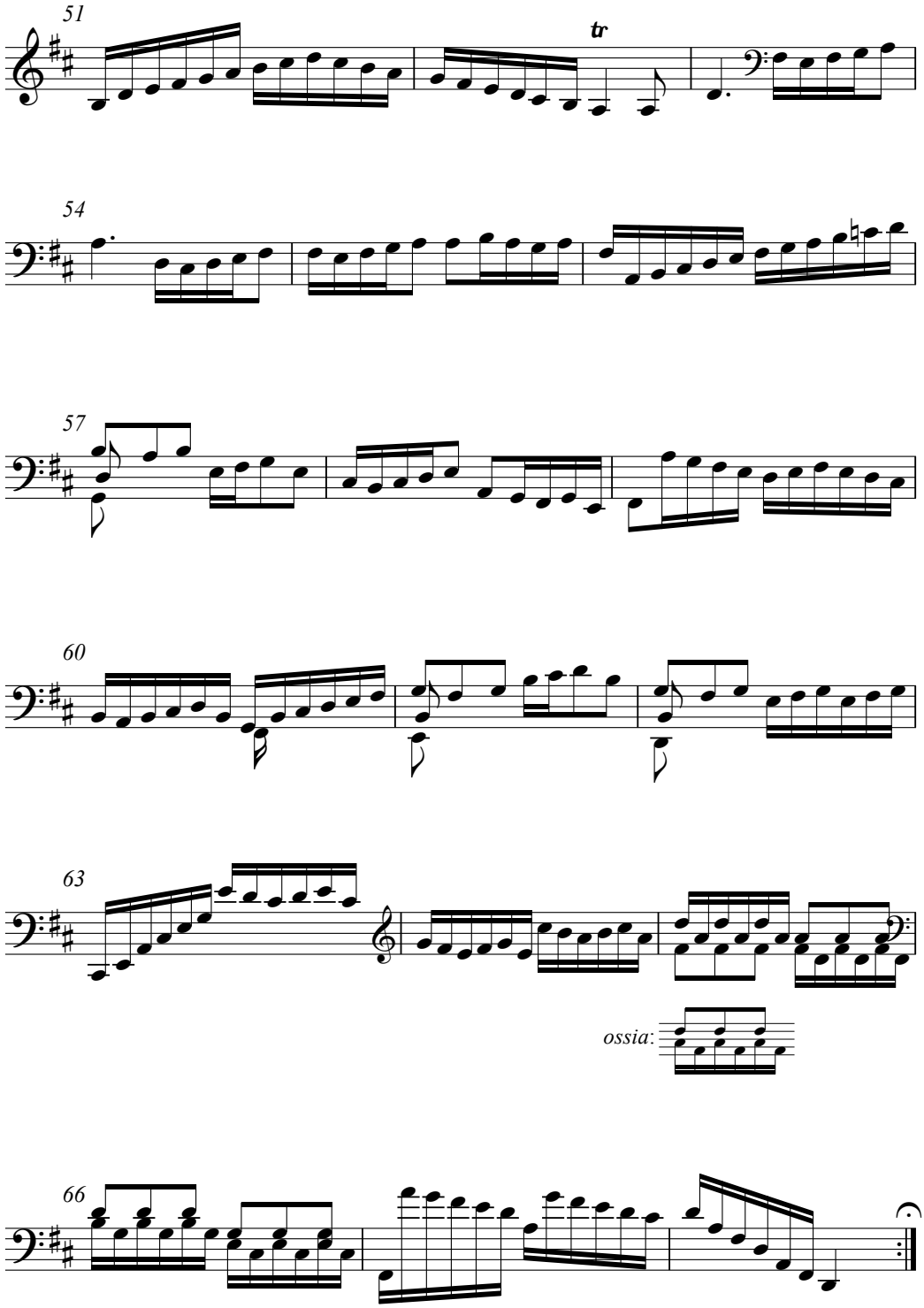
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APPENDIX G

TEMPO STUDY

	Casals	Starker (Mercury)	Ma (1998)	Fournier	Tortelier
I/Prélude	62.6	66.4	82.5	58.5	74
I/Allemande	78.1	44.3	62.8	65.2	61.9
I/Courante	101.1	108.1	96.9	96.2	100.5
I/Sarabande	36.3	27.1	35	23.5	33.3
I/Menuet I	116	129	106.5	116.5	107.1
I/Menuet II	112.3	124.1	102.1	97.6	110.2
I/Gigue [dq]	73.9	91.8	80.7	70	71.9
II/Prélude	40.9	58.3	39.2	48.1	43
II/Allemande	51	57.3	54.1	60.1	51.5
II/Courante	88.6	108.9	107.1	103	96.1
II/Sarabande	40.2	34	41.8	39.4	39.9
II/Menuet I	96.9	142	126.5	115.2	105.2
II/Menuet II	125.4	136.9	127.4	123.3	120.2
II/Gigue [dq]	58.4	74	69.4	64.4	57.6
III/Prélude	59.1	49.3	75.2	62.3	70.9
III/Allemande	53	49.4	55.7	49.4	50.8
III/Courante	153.5	166.7	175.4	167.8	178.2
III/Sarabande	36.4	26.5	31.7	30.3	28.5
III/Bourrée I [h]	78	83.3	82.2	66.5	61.9
III/Bourrée II [h]	77.9	87.4	85.7	71.2	65.9
III/Gigue	71.3	81.8	77	69.5	71.7
IV/Prélude [h]	37.5	48.6	35.9	44	30.6
IV/Allemande	82.2	85.3	68.1	75.3	84.5
IV/Courante	101.1	114.8	95.2	114.8	115.4
IV/Sarabande	44.7	34.7	47.7	34.1	39.8
IV/Bourrée I [h]	74.6	71.5	68.4	71.9	66.3
IV/Bourrée II [h]	70.7	67.1	63.2	67.8	68
IV/Gigue [dq]	132.6	140.7	117.8	136.3	128.8
V/Prélude (a)	35.3	30.5	38.5	39.1	36.5
V/Prélude (b) [dq]	44.8	52.3	52.1	46.4	43
V/Allemande	46.5	39.6	49.5	44.9	41.2
V/Courante [h]	75.7	75.7	69.5	75.2	72
V/Sarabande	40.2	34	36.6	33.1	37.4
V/Gavotte I [h]	70.8	80.9	67.8	59.7	66.2
V/Gavotte II [h]	67.2	80	77.6	65.6	78.2
V/Gigue [dq]	66.3	60.5	55.5	62.2	59.7
VI/Prélude [dq]	74.5	86.2	87.8	76.9	76.8
VI/Allemande [e]	37.8	39.3	38.2	37.2	35.7
VI/Courante	119.6	121	111.4	122	128.1
VI/Sarabande	39.4	36.6	39.6	35.2	34.6
VI/Gavotte I [h]	69.1	79.5	69.6	62.2	69.4
VI/Gavotte II [h]	72.6	73.3	78.9	57.5	71
VI/Gigue [dq]	73.4	77.2	73.9	71.5	67
	Unless noted, all tempi are in quarter-notes per minute.				
	[h] = half-notes [dq] = dotted quarter-notes [e] = eighth-notes				

	Gendron	Bylsma (1978)	Isserlis	Cello M	Cello SD	Cello SD/M (%)
I/Prélude	74.4	77.6	76.5	71.6	8.21	11.48
I/Allemande	69.9	60.1	86.3	66.1	12.58	19.03
I/Courante	99.4	91	112.5	100.7	6.81	6.76
I/Sarabande	37.4	46.1	36	34.3	6.82	19.87
I/Menuet I	121.2	103.6	120.6	115.1	8.73	7.59
I/Menuet II	113.4	110.1	105.1	109.4	8.04	7.35
I/Gigue [dq]	73.5	85.8	89.9	79.7	8.58	10.77
II/Prélude	57	60.1	52.8	49.9	8.28	16.58
II/Allemande	60.8	50.2	82.7	58.5	10.61	18.15
II/Courante	101.4	100.8	108.6	101.8	6.91	6.79
II/Sarabande	44.1	56.3	45.1	42.6	6.48	15.22
II/Menuet I	121.6	120.6	131	119.9	14.27	11.91
II/Menuet II	121	133.1	133	127.5	6.18	4.85
II/Gigue [dq]	53.8	68.7	66.6	64.1	6.91	10.78
III/Prélude	66.8	75	85.3	68.0	11.16	16.41
III/Allemande	55.3	44.4	60	52.3	4.81	9.20
III/Courante	149.7	159.1	213.6	170.5	20.05	11.76
III/Sarabande	35.5	47.3	38.4	34.3	6.64	19.35
III/Bourrée I [h]	83.6	86.4	90.9	79.1	9.97	12.60
III/Bourrée II [h]	84.8	93.3	80.7	80.9	8.96	11.08
III/Gigue	64.5	70.7	80.2	73.3	5.84	7.96
IV/Prélude [h]	34.8	49.1	60	42.6	9.70	22.79
IV/Allemande	96.6	81.3	99.1	84.1	10.20	12.13
IV/Courante	100	111.4	117.8	108.8	8.66	7.96
IV/Sarabande	45.4	54.4	52.6	44.2	7.56	17.12
IV/Bourrée I [h]	62.9	77.3	76.7	71.2	5.08	7.13
IV/Bourrée II [h]	60.4	72	62.8	66.5	4.04	6.07
IV/Gigue [dq]	117.2	111.6	137.1	127.8	10.85	8.49
V/Prélude (a)	49.2	72.4	45.4	43.4	13.10	30.20
V/Prélude (b) [dq]	53.6	62.1	56.3	51.3	6.37	12.40
V/Allemande	63.1	73.9	55.6	51.8	11.79	22.76
V/Courante [h]	62	82	79.5	74.0	6.21	8.39
V/Sarabande	36.9	38.2	32.5	36.1	2.68	7.41
V/Gavotte I [h]	68.8	79.7	78.4	71.5	7.48	10.46
V/Gavotte II [h]	61	82	61	71.6	8.77	12.25
V/Gigue [dq]	56.3	76.4	62.2	62.4	6.62	10.62
VI/Prélude [dq]	77.7	90	91.7	82.7	6.90	8.34
VI/Allemande [e]	46.7	48.7	42.1	40.7	4.72	11.59
VI/Courante	113.5	127.9	134.1	122.2	7.65	6.26
VI/Sarabande	44.8	46.4	40.7	39.7	4.27	10.78
VI/Gavotte I [h]	70.4	76.6	75.5	71.5	5.44	7.61
VI/Gavotte II [h]	65.9	76.6	69.8	70.7	6.66	9.42
VI/Gigue [dq]	61.8	74	72.9	71.5	4.85	6.78
	Unless noted, all tempi are in quarter-notes per minute.					
	[h] = half-notes [dq] = dotted quarter-notes [e] = eighth-notes					

	Geoffroy	Mancinelli	Thrasher	Roderburg	Meza*	Sallak	Marimba M
I/Prélude	89.5	66.3	63.5	70.3	70.6	77.8	73.0
I/Allemande	96.4	65.3	62.6	75.5	59.6	75.5	72.5
I/Courante	107.8	99	101.1	104.5	109.1	121.4	107.2
I/Sarabande	51.7	35.8	45	34.3	30.3	53.6	41.8
I/Menuet I	153.8	122.8	94	106.5	133.8	152.2	127.2
I/Menuet II	132	127.2	101.7	117.2	123.6	135.1	122.8
I/Gigue [dq]	82.5	91.6	88	81.3	98.6	88.9	88.5
II/Prélude	58.8	51.9	53	55		59	55.5
II/Allemande	78.3	57.4	66.7	62.2		79	68.7
II/Courante	130.9	86	97.8	104.3		86.7	101.1
II/Sarabande	44.7	42.8	48.6	45.1		57.5	47.74
II/Menuet I	174.7	98.6	121.2	135.1		184.8	142.9
II/Menuet II	194.3	109.9	137.6	143		169.4	150.8
II/Gigue [dq]	70.8	62	63.7	61		66.4	64.8
III/Prélude	100.5	82.4	60.9	72.1	63.7		75.9
III/Allemande	60.4	53.3	47.3	47.2	50.8		51.8
III/Courante	173.5	143.7	142.8	165.9	181.6		161.5
III/Sarabande	50.6	38.1	49.6	40.5	28.2		41.4
III/Bourrée I [h]	80.4	74	81.3	79.6	79.3		78.9
III/Bourrée II [h]	81.9	71.2	77	82.3	76.5		77.8
III/Gigue	76.8	68.6	74	73.3	81.2		74.8
IV/Prélude [h]	77	61.5	47		56.7		60.6
IV/Allemande	106	80.2	88.9		84		89.8
IV/Courante	136.9	109.4	103.7		113		115.8
IV/Sarabande	66.7	53.3	56.3		33.8		52.5
IV/Bourrée I [h]	80	69.6	73		69.8		73.1
IV/Bourrée II [h]	84.6	66.9	62.3		55.4		67.3
IV/Gigue [dq]	175.8	123.5	131.5		121.8		138.2
V/Prélude (a)	48.8	65.2	59.2			56.1	57.3
V/Prélude (b) [dq]	45.2	64.6	52			59.8	55.4
V/Allemande	82	73.4	48.7			79.3	70.9
V/Courante [h]	93.3	79.1	78.2			89.6	85.1
V/Sarabande	102.4	39.2	53.2			53.7	62.1
V/Gavotte I [h]	72.7	79.6	73.8			87.9	78.5
V/Gavotte II [h]	74.5	88	63			67.6	73.3
V/Gigue [dq]	83.8	77.9	66.8			93.3	80.5
VI/Prélude [dq]	129.4	106.6	108.1			99.8	111.0
VI/Allemande [e]	48	48.9	48.7			39.3	46.2
VI/Courante	154.5	106.6	107.9			137.4	126.6
VI/Sarabande	66.1	40.2	50			56.5	53.2
VI/Gavotte I [h]	83.2	59	68.6			80.5	72.8
VI/Gavotte II [h]	84.2	60.4	73			72.6	72.6
VI/Gigue [dq]	73.2	70.2	69.5			64	69.2
	Unless noted, all tempi are in quarter-notes per minute.						
	[h] = half-notes [dq] = dotted quarter-notes [e] = eighth-notes						
	*Mr. Meza's sarabande tempi were not used to calculate means or						
	standard deviations.						

	Marimba SD	Marimba SD/M (%)**	Marimba M (adj)	Marimba SD (adj)	Marimba M/ Cello M
I/Prélude	9.42	12.90			1.020
I/Allemande	13.46	18.57			1.097
I/Courante	7.97	7.44			1.064
I/Sarabande	9.72	20.09	44.08	8.86	1.217
I/Menuet I	24.19	19.02			1.105
I/Menuet II	12.10	9.86			1.123
I/Gigue [dq]	6.32	7.15			1.110
II/Prélude	3.26	5.88			1.112
II/Allemande	9.65	14.04			1.175
II/Courante	18.33	18.13			0.993
II/Sarabande	5.84	12.24			1.121
II/Menuet I	36.27	25.38			1.192
II/Menuet II	32.20	21.34			1.183
II/Gigue [dq]	3.94	6.08			1.010
III/Prélude	16.09	21.19			1.117
III/Allemande	5.45	10.51			0.991
III/Courante	17.56	10.88			0.947
III/Sarabande	9.19	14.15	44.7	6.33	1.206
III/Bourrée I [h]	2.86	3.62			0.998
III/Bourrée II [h]	4.55	5.85			0.962
III/Gigue	4.64	6.21			1.020
IV/Prélude [h]	12.52	20.67			1.423
IV/Allemande	11.39	12.68			1.068
IV/Courante	14.61	12.62			1.064
IV/Sarabande	13.74	11.97	58.8	7.03	1.189
IV/Bourrée I [h]	4.86	6.64			1.027
IV/Bourrée II [h]	12.46	18.52			1.012
IV/Gigue [dq]	25.45	18.42			1.081
V/Prélude (a)	6.82	11.90			1.322
V/Prélude (b) [dq]	8.56	15.44			1.079
V/Allemande	15.20	21.45			1.368
V/Courante [h]	7.55	8.88			1.150
V/Sarabande	27.68	44.55			1.720
V/Gavotte I [h]	6.96	8.87			1.097
V/Gavotte II [h]	10.90	14.87			1.024
V/Gigue [dq]	11.09	13.79			1.290
VI/Prélude [dq]	12.80	11.54			1.342
VI/Allemande [e]	4.63	10.02			1.135
VI/Courante	23.41	18.49			1.036
VI/Sarabande	10.90	20.49			1.341
VI/Gavotte I [h]	11.19	15.36			1.018
VI/Gavotte II [h]	9.72	13.40			1.026
VI/Gigue [dq]	3.84	5.54			0.969
	Unless noted, all tempi are in quarter-notes per minute.				
	[h] = half-notes [dq] = dotted quarter-notes [e] = eighth-notes				
	**Where appropriate, values in this column were calculated from the				
	adjusted values in the following columns.				