st154.1.51

sumtone

:

michael edwards

24/7: freedom fried

for viola d'amore and computer

michael edwards

24/7: freedom fried

for viola d'amore and computer

michael edwards
24/7: freedom fried
for viola d'amore and computer

st154.1.51

sumtone
Neckarhalde 38
D-72070 Tübingen
Germany
info@sumtone.com
www.sumtone.com

programme note

Busy, busy, busy. If we're shopping for food at 3am, is this a testament to modern convenience or an indictment of our over-crammed lives? If we have time to think, will it be about our career, family, i.e. the serious stuff, or about art (which should be a pleasant distraction, not yet another challenge, right?)?

But art and entertainment are not synonyms.

> "The pleasures of urban populations have become mainly passive: seeing cinemas, watching football matches, listening to the radio, and so on. This results from the fact that their active energies are fully taken up with work; if they had more leisure, they would again enjoy pleasures in which they took an active part."
>
> (In Praise of Idleness, Bertrand Russell)

If true in 1932, when Russell wrote this essay, then it is perhaps even more so today. An important question is: to what extent this phenomenon occurred naturally as opposed to being manipulated, and if at all the latter, then by whom? Russell in the same essay writes:

> "In the West, we ... have no attempt at economic justice, so that a large proportion of the total produce goes to a small minority of the population, many of whom do no work at all... We keep a large percentage of the working population idle, because we can dispense with their labour by making the others overwork. When all these methods prove inadequate, we have a war: we cause a number of people to manufacture high explosives, and a number of others to explode them, as if we were children who had just discovered fireworks. By a combination of all these devices we manage, though with difficulty, to keep alive the notion that a great deal of severe manual work must be the lot of the average man."

No news there. Many people would recognise this social structure as fundamental to our modern 'democratic' societies. Others see it rather as oligarchy, plutocracy. Whichever it is, the distractions of over-work and a media system offering more cud for the chew than that which is our due seem to be working well:

> "What the democratic mind requires, above all, is time; time to consider its options. Time to develop the democratic virtues of independence, orneriness, objectivity, and fairness. Time, perhaps ... to ponder the course our unelected captains have so generously set for us, and to consider mutiny when the iceberg looms.
>
> Which is precisely why we need to be kept busy. If we have no time to think, to mull, if we have no time to piece together the sudden associations and unexpected, mid-shower insights that are the stuff of independent opinion, then we are less citizens than cursors, easily manipulated, vulnerable to the currents of power."
>
> (Quitting the Paint Factory, on the virtues of idleness, Mark Slouka)

So what has all this to do with my piece of music? Everything and nothing. Everything because both my imagination and indignation are fueled by social injustice and this feeds the creative urge. Everything because I do not want to be "putting art to the service of suppression and the propagation of a false sense of security" (Helmut Lachenmann). Nothing because (diminuendo...) the driving generative and structural force of the piece relates to the title in another, infinitely more abstract way:

A viola player uses the four fingers of the left hand to stop the strings; there are 24 possible permutations of the four fingers; of these 24 there are 620448401733239439360000 permutations, only seven of which are used in this piece (thankfully, you might say), memorised by the performer and superimposed—generally as fast as possible: busy, busy, busy—onto various transpositions of seven basic tetrachords on each of the seven strings of the viola d'amore...

And "freedom fried"? From the embarrassingly childish jingoism of the US House of Representatives in renaming their French Fries as Freedom Fries after France's refusal to join the 2003 Iraq crusade. From the perversion of the very idea of freedom, something which can now apparently include frying innocent Fallujahns in burning white phosphorus: not, according to the military and the media, a chemical weapon, and certainly not remotely as wicked as the infamous chemical attacks Saddam inflicted on Halabja. Of course not; on the contrary, simply a fair price to pay for good ol' democracy.

24/7: freedom fried was written for Garth Knox.

performance requirements

essential equipment

- the Max/MSP audio programming environment (version 4.5 or above) running on a suitable Macintosh or PC computer
- multi-channel sound card (minimum 2 channels mic/line-in, 8 channels line-out)
- the Max/MSP performance patches supplied by the publisher on CDROM (email hire@sumtone.com, order online at http://www.sumtone.com/performance-materials.php, or write to the address at the front of this score)
- A 16 fader MIDI controller plugged into the computer's sound card or other port recognised by Max/MSP. The faders should send volume messages to Max/MSP on separate MIDI channels. If controller numbers must be sent instead of MIDI channels, then the "midi-faders" patcher in Max will have to be suitably reprogrammed
- A pedal attached to the MIDI controller and to be used to trigger through the programmes in the performance patch; when pushed, the pedal should cause the controller to send a MIDI Mute signal on channel 2. If this is not possible then either the Max/MSP patch must be reprogrammed to use the available pedal/controller interface or the down arrow on the computer keyboard can be used to trigger instead
- one condenser and one clip-on microphone for the viola d'amore, connected to the sound card either directly or via a mixing desk. These should be pre-mixed into one live signal and come into Max/MSP via Input 1. In some cases a clip-on microphone alone will suffice
- a pickup on the resonance strings of the viola d'amore; this should come into Max/MSP via Input 2
- sound system: eight loudspeakers are preferred. They are fed directly from outputs 1–8 on the sound card and are to be placed around the audience as follows:

  1 2
  3 4
  5 6
  7 8

  In addition, two sub-woofers would be ideal. A separate stereo mix is sent from outputs 17 and 18 of the sound card (if available) to the sub-woofers.

  Performances with less loudspeakers are possible by combining two or more channels onto one speaker via the mixing desk or in software (the outputs of Max/MSP or the sound card configuration).

For more details about the software/hardware necessary for this piece, please send email to info@sumtone.com or write to the address at the front of the score.

performance directions

computer

the computer's functions

The computer performs the following functions:

- dynamic compression and diffusion of the viola d'amore signals
- 4-channel sound file playback triggering
- real-time granular synthesis of filtered viola d'amore signal
- real-time looping of filtered viola d'amore signal
- independent level control and mixing of live signals, real-time granular synthesis, real-time looping, sub-woofers, and master levels

Amplification/diffusion of the viola d'amore is thus performed by the computer operator and not separately at the mixing desk (though this may also be desirable, depending upon the performance situation).

MIDI fader level control

The function of each MIDI Fader is given below. An asterisk indicates that, once set in advance, it is not envisaged that this fader will need to be moved much or at all during the performance.

3 Level control of the main viola d'amore signal

4 Level control of the viola d'amore's resonance strings pickup

5 Level control of sound file playback

6 Level control of real-time granular synthesis

7 Level control of real-time looper

8 Master level control

* 9 Filter Centre Frequency for input to granulation/looping
* 10 The front/back signal placement depth of the viola d'amore (fully up = only front 2 speakers, fully down = only back 2 speakers)
* 11 Level control for all electronics (sound files, granulation, loops)
* 12 Granular Synthesis objects' amplitude
13 Level control for separate sub-woofer mix
* 14 Control of the mix of main viola d'amore and resonance strings signals that are sent to the granulators and loopers (fully down = only main, fully up = only resonance)

performing the computer part

The Max/MSP patch is programmed to step through a series of 4-channel sound files and real-time processing parameter changes. These, perhaps many simultaneous, instructions are performed upon one click of the MIDI controller pedal (or computer keyboard down arrow key) thus limiting the demands on the computer performer to clicking the pedal at the points indicated in the score, and controlling signal levels via the MIDI faders.

The score shows—always in blue—little more than the computer trigger points (an arrow) and a basic (and necessarily incomplete) indication of what happens upon each trigger. The numbers next to the arrow are simply the bar number in which the trigger occurs: this can be compared, for reassurance during the performance, with the "next trigger bar number" seen in the upper left part of the Max/MSP patch. "loop" indicates that a loop of the filtered viola d'amore signal is triggered at this point. "gran" indicates an important change in granular synthesis parameters (real-time granular synthesis runs throughout most of the piece and so is almost always available to be mixed in). The particular sound files that are triggered are indicated in square brackets; these are given for debugging/interest purposes only and do not require any particular action on the part of the computer performer beyond the trigger itself.

As subtle mixing of signals demands different actions in each performance situation it is very difficult to specify and notate exactly what must be done to achieve a good result. Moreover, as the musical usefulness of the real-time granular synthesis and looping depends partly on the live signals present and the accuracy of the triggering, it is not even possible to specify when either of these real-time processes should (or sometimes even could) be audible. For this reason the computer performer is left to improvise the fader movements.

Of course, the aim is to have a good balance between viola d'amore and computer sound, where the instrument is always audible but the computer is also a strong and multi-voiced partner. The most important part in the computer then is the sound file playback. Real-time granular synthesis and looping play a secondary role and in fact for perhaps large parts of the piece can be faded down to zero. Points in the score where "gran" and "loop" appear indicate the possibility for their introduction (perhaps domination even); a $<$ or $>$ sign indicates crescendo/diminuendo respectively: this should be followed if signal is present in the mix at that point.

As "gran" and "loop" indications also imply changes to the parameters of these processes it is important to realise that a sudden change in sound quality and perhaps level may occur at such trigger points. Depending on how much processed signal is present, it may be better to fade down granulation and/or looping before these trigger points so as to avoid undesirable changes of texture. However, exactly the opposite may also be the case: perhaps the change would work effectively and musically. To reiterate, due to the complex interactions of the performance environment, the live signals, the exactness of trigger points etc. it is impossible to fix the actions necessary. Only through rehearsing the piece and getting to know the patch and its interactions with the live player can one learn to handle the faders and pedal.

To aid this learning process, a sound file or CD of a recording of the live viola signal can be provided: this can be fed through the patch allowing the computer performer to rehearse alone. In addition, a recording of the piece with electronics can also be provided; this will help enormously in orienting the computer performer as to the correct balance of all the various signals involved.

prior to performance begin

Before starting the piece, the checklist at the bottom right of the Max/MSP patch should be worked through (this may of course be modified for different performances). Most important here are the fader levels which need to be set once the "reset" button (top left) is pressed.

If desirable (for example, if this piece is first on a concert programme or after an interval) the opening looping sound may be running quietly before the viola d'amore performer comes on stage (perhaps even before the audience enters the hall). This sound begins once the "reset" button is pressed; its levels can be controlled by the two linked faders towards the middle right of the patch; it is automatically stopped upon the first trigger in the piece.

computer monitor display

The Max/MSP patch was programmed assuming a minimum screen resolution of 1680x1050 pixels. This allows for side-by-side presentation of the score and the main patch. The pages of the score can be "turned" by pressing the space bar on the computer keyboard.

If this screen resolution is not possible, then the main Max/MSP patch should be brought into view on-screen (i.e. on top of the score pages) and a paper score used instead for following the performance.

viola d'amore

The viola d'amore (both sympathetic/resonance strings and main strings) should be tuned as in Figure **??**.

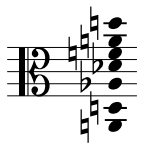


Figure 1: viola d'amore tuning

Because of this scordatura, some harmonic chords are spelled awkwardly (e.g. node F-sharp 3 on string VI with node D-flat 4 on string V—see bar 44). Rather than notate nodes on G-flat/D-flat or F-sharp/C-sharp, this perhaps unsightly chord was preferred as it makes the intended harmonic for each individual string clearer (i.e. a fourth harmonic on D-flat with a major third harmonic on D).

Given fingerings are suggestions only. To ease the performance of multiple stops, any notes in a chord may be doubled by open strings.

Tempo changes are to be strictly observed, i.e. a tempo increase/decrease should always occur where indicated. However, the actual tempi may deviate from those given, as deemed necessary by the performer.

Accidentals carry throughout the bar but are repeated in parentheses as necessary.

Except where otherwise indicated, meter changes necessitate rhythmic units to retain the same temporal duration, i.e., when changing from 2/4 to 5/8, an eighth note is equal in both meters.

fingering permutations

The background structure of *24/7: freedom fried* is partly based on permutations of the order of the four left-hand fingers. There are 24 possible permutations of the fingers 1 2 3 4. Applied to various note groups (see below), these 24 permutations are to be played through in any of the many billions (620448401733239439360000) of their possible permutations (see below for more details) as fast as possible, unless otherwise notated in the score.

The notes used for the four fingers range over a perfect fourth, reflecting both the natural stretch of fingers 1–4 and the tuning system of the viol. Though notes (fingers) 1 and 4 are fixed, notes 2 and 3 microtonally interpolate between tetrachords of the phrygian, dorian, and lydian (or rather ionian) modes as illustrated in Figure **??**.

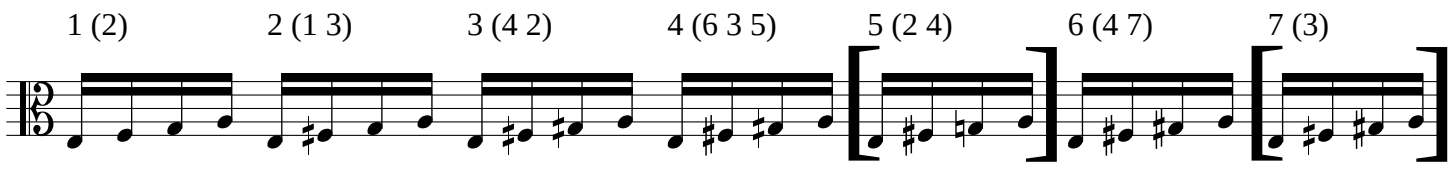


Figure 2: Tetrachordal interpolation

In choosing the note groups to permutate, the player should wander forwards and backwards along this line. In the graphic, each of the seven four-note groups are given a number. The numbers in parentheses represent the groups that may follow the current group, hence after group 1 only 2 can follow; after group 2 may come 3 or 1, depending on whether we are reading forwards or backwards. The basic pattern is 1 2 3 4 6 4 3 2 1 2 3 4 etc. Groups 5 and 7 are given in square brackets and represent alternative progressions that should be used to vary the basic pattern. Thus a constantly varying but basically static microtonal meandering through the various tetrachords is possible, as in, for example, Figure **??**.

1 2 3 4 6 4 3 2 1 2 3 4 5 2 1 2 3 2 1 2 3 4 6 7 3 2 1 2 3 4 3 2 1 2 3 4 5 4 6 4 3 2 1 2 3 4

Figure 3: Tetrachord sequences

(As can be seen from the above example, it is quite acceptable to turn back almost as soon as you have has started, as in 1 2 1 2 3 2...)

When this tetrachordal interpolation is combined with the finger permutations mentioned above, we end up with such structures as those found in the appendices. These are given for the purpose of practice. In Appendix A seven orderings (permutations)[1] of the 24 permutations are given on the low E of string VI and combined with the tetrachordal interpolation. It is assumed that the player will practise these pages in order to get the non-repetitive yet nevertheless "learnable" nature of the structure "under their fingers." Any other ordering of the 24 permutations may be used but the idea is of course that no single permutation should be repeated until at least several (ideally all 23) others have been played. It is envisaged that once the seven (or less perhaps) orderings of Appendix A are memorised, they will suffice for the whole piece.

Once this is achieved, Appendix B should be examined and practised. This is a set of twelve transpositions of the tetrachordal interpolation and ordering found in Appendix A (any other ordering could be used of course as long it follows the rules given above). For each of the strings I–VI then, the first ordering of Appendix A is stated twelve times, once per transposition. The tetrachordal interpolation varies, however, so as to reflect expected performance practice. The subsequent six orderings that are found

[1] Whereas both the ordering of the four fingers and of the 24x4-note blocks that arise from this are both, technically speaking, permutations, to distinguish between the two I have called the former "permutations" and the latter "orderings."

in Appendix A are assumed to follow ordering 1 in each given case of Appendix B, but for the sake of brevity are not written out. The lowest notes (i.e. finger 1) for each of the 12 transpositions are given in Figure **??**. for string II.[2]

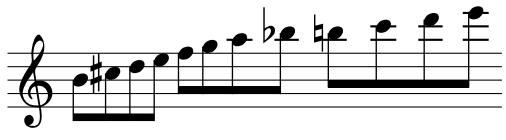


Figure 4: First-finger notes on string II for the 12 transpositions

Thus, to reiterate, each single ordering in Appendix B represents nothing more than the first ordering of Appendix A, only transposed onto different notes on different strings. If the fingering sequence of all seven orderings of Appendix A were memorised, it could simply (or not: see below) be transfered to the different notes and strings of Appendix B and this would suffice for the use of this structure in the piece. However, some players might wish to proceed through the tetrachordal interpolations more freely, and this is also to be encouraged (hence the rules of progression are given in Figure (**??**) above).

There are two further points to consider. First of all, it won't have gone unnoticed that there are no examples in Appendix B of permutations on string VII. This is because this string is never used alone with the permutations. We take advantage in this piece of the viola d'amore's potential to have two strings stopped with one finger. So, any of the permutations in the appendices should be playable stopping both the indicated notes on their respective string in conjunction with the one *below* (never above). This is indicated in the score by, for example, "IV+V" . The player should practise both this and stopping just one string (so far as this is possible on the middle strings).

Secondly, the fingering permutations are complicated one level further. The player will no doubt have noticed and remarked that transfering fingering permutations from one transposition to another is not as simple as implied, as the natural shortening of finger-stretch distance for similar interval size as we progress up the string makes finding microtonal intervals, for instance, considerably more difficult. The piece does not attempt to obviate this but instead takes advantage of the fact that the player will have mastered this in practice (!) by calling for the superimposition of, for example, lower transposition finger stretches onto higher transposition permutations (thus stretching the basic perfect fourth tetrachord out to something considerably larger) and vice-versa (making the range of the lower transposition tetrachord considerably less than a perfect fourth and thus the quarter tones even smaller). Once the player has perfected the seven basic orderings of the permutations in combination with the tetrachordal interpolation, and this on all twelve transpositions of strings I–VI, they should then practise the superimposition of "foreign finger stretches" on any given ordering/transposition/string. In the score these are indicated above the starting note of a permutation with the indication, for example, "S9" (S for stretch), and meaning: use finger stretches associated with a tetrachord on transposition 9 instead of those that we would use for a "normal" perfect fourth tetrachord in, for example, transposition 3. Of course, the exact finger stretches of foreign transpositions are not expected here, rather, the extremity of the effect is proportional to the distance from the actual transposition to the foreign transposition indicated (e.g. playing in transposition 4 and demanding finger stretches associated with transposition 5 will result in only a slight shortening of the perfect fourth range of the tetrachord, whereas playing in transposition 7 with finger stretches associated with transposition 1 will result in a very considerable expansion of the tetrachord).

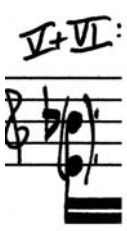
[2]It probably won't go unnoticed that the 12 transpositions themselves fall into three disjunct tetrachords (dorian, lydian (ionian), and phrygian), each separated by a semitone.

key to symbols

mv	molto vibrato
sp	sul ponticello
spe	sul ponticello estremo
cl	col legno
hair	With the hair of the bow (arco normale); used to cancel col legno and to clarify when ord. might incorrectly imply, for example, the cancellation of sul ponticello.

Quarter-tone flat

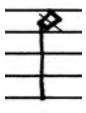
Quarter-tone sharp



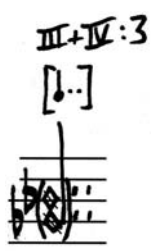
Permutations with full-toned notes (ord). Whenever notes in parentheses are given, then permutations whose lowest notes (finger 1) these represent, are to be inserted as fast as possible (unless otherwise indicated) for the full duration of the indicated rhythm. The strings on which the permutations are to be made are always indicated and the transposition corresponding to the given notes are also given. See "fingering permutations" at the beginning of the score for details.

In order to reduce notational complexity, permutations are often tied to headless rhythms: in this case the permutations are to continue over the duration of the tied note. If headless rhythms are preceded by rests, then the previous permutation (or other playing technique) is intended. Where headless notes may cause rhythmic confusion, the intended duration is given in square brackets above the stave.

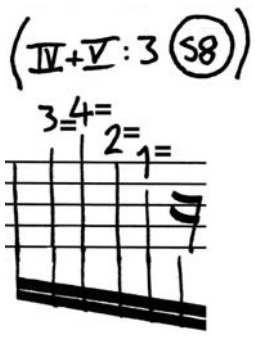
Permutations on non-bowed strings (tap-downs): this of course produces only a tapping noise on the finger board but the fingerings should generally be exaggerated to ensure microphone capture of the effect—lateral pulling of the strings may in some contexts also be appropriate. The dynamic in square brackets indicates the dynamic at which this should be executed, although the resultant sound will naturally be considerably quieter.



Half-flageolet: Finger pressure is somewhere between normal and flageolet; senza vibrato, the tone produced is spectrally a little flatter and duller than a normal tone. If the half-flageolet happens to be on a harmonic node, then placing a second finger behind the main finger could help damp the harmonic.



Half-flageolet permutations: the notes in these permutations should be executed as half-flageolets. If a finger touches a nodal point on the string, it should be depressed enough to avoid a harmonic sounding. Where open diamond note heads create rhythmic confusion, the intended rhythm is placed in square brackets above the staff.

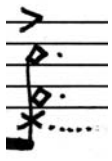


Rhythmicised permutation: in the given transposition on the indicated string(s), perform a permutation in the notated rhythm (i.e. one note per rhythm) using the fingers indicated for each note. The '=' sign indicates that one finger is used to stop two strings simultaneously. The circled S8 refers to a "foreign finger stretch" (see "fingering permutations" at the beginning of the score for details). For the sake of notational simplicity, resultant pitches are not indicated; these will of course be microtonal but it is not necessary in this instance to be concerned with which exact microtones should be heard.

When an open-string note is in square brackets, then the indicated event (pizz, bowed note etc.) takes place on the indicated string but because of a simultaneous permutation taking place on that string, the resultant pitch is not known in advance.

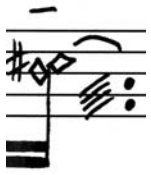
key to symbols continued

A cross through the stem indicates a battuto attack.

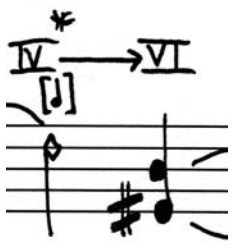


A dotted line to the right of the battuto cross indicates that the bow should bounce several times on the string (jeté).

Bow the bridge.



"Harmonic trill": A tremolo between the open strings and the indicated harmonics should be executed. This creates a pulsating harmonic; the fundamental comes out more when the tremolo is slower (as sometimes indicated).



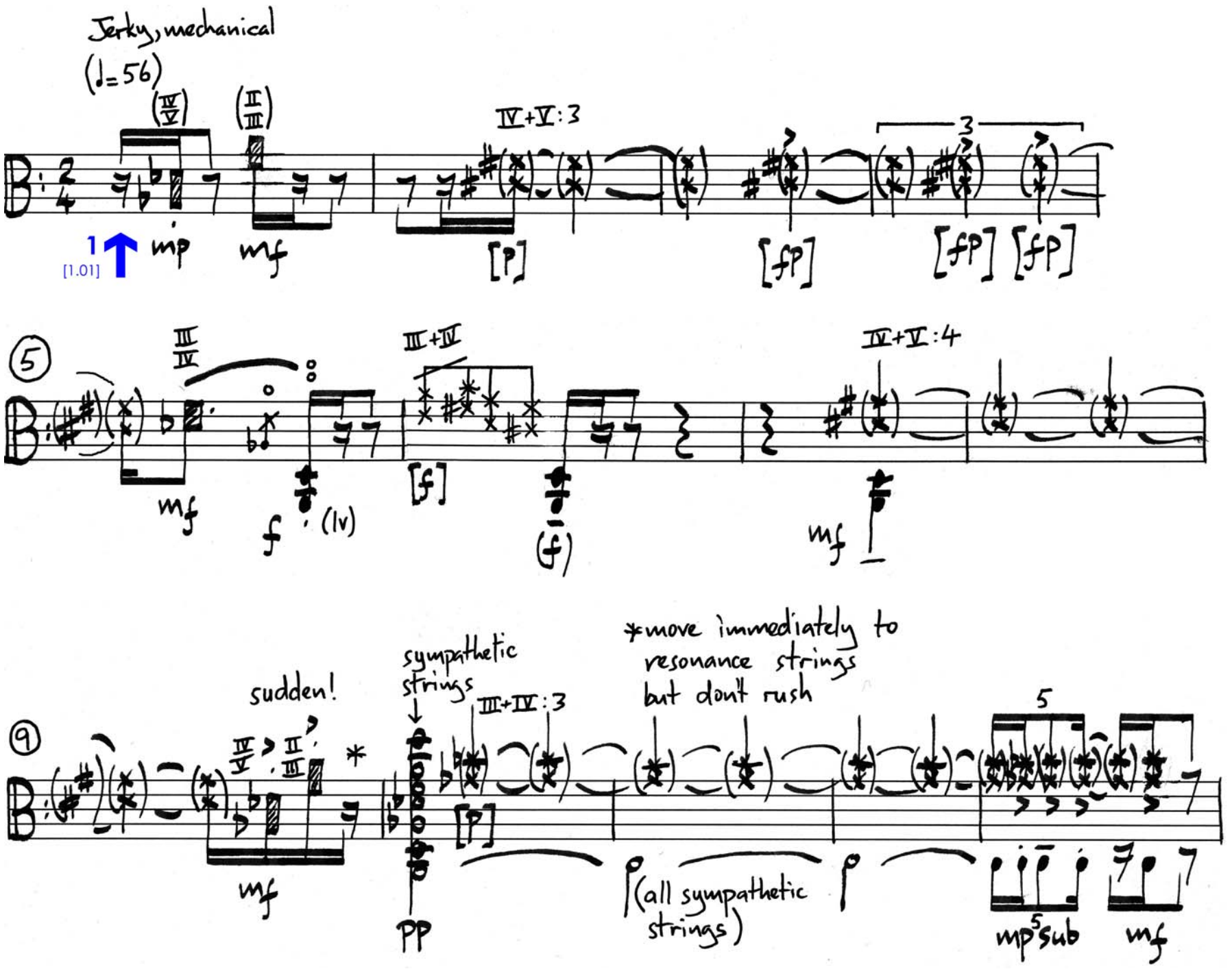
"String fade": in this instance the flageolet is on string IV, C4 is on string V, and F#3 is on VI: over the duration of these two rhythms the bow should gradually move from IV alone to include V, then VI whereupon string IV is no longer being bowed at all. The result is a "fade-out" of IV and "fade-in" of V and then VI.

Scratch tone: lightly damp the indicated string(s) at a non-nodal point and draw the bow flatly across the string(s) with a continuous downward pressure.

24/7: freedom fried

duration c. 14:43

michael edwards 2004–5



con bravura; rapidly changing character

14 poco sp sul tasto

16 [2.01]

17 poco sp sul tasto

18 poco sp poco sp

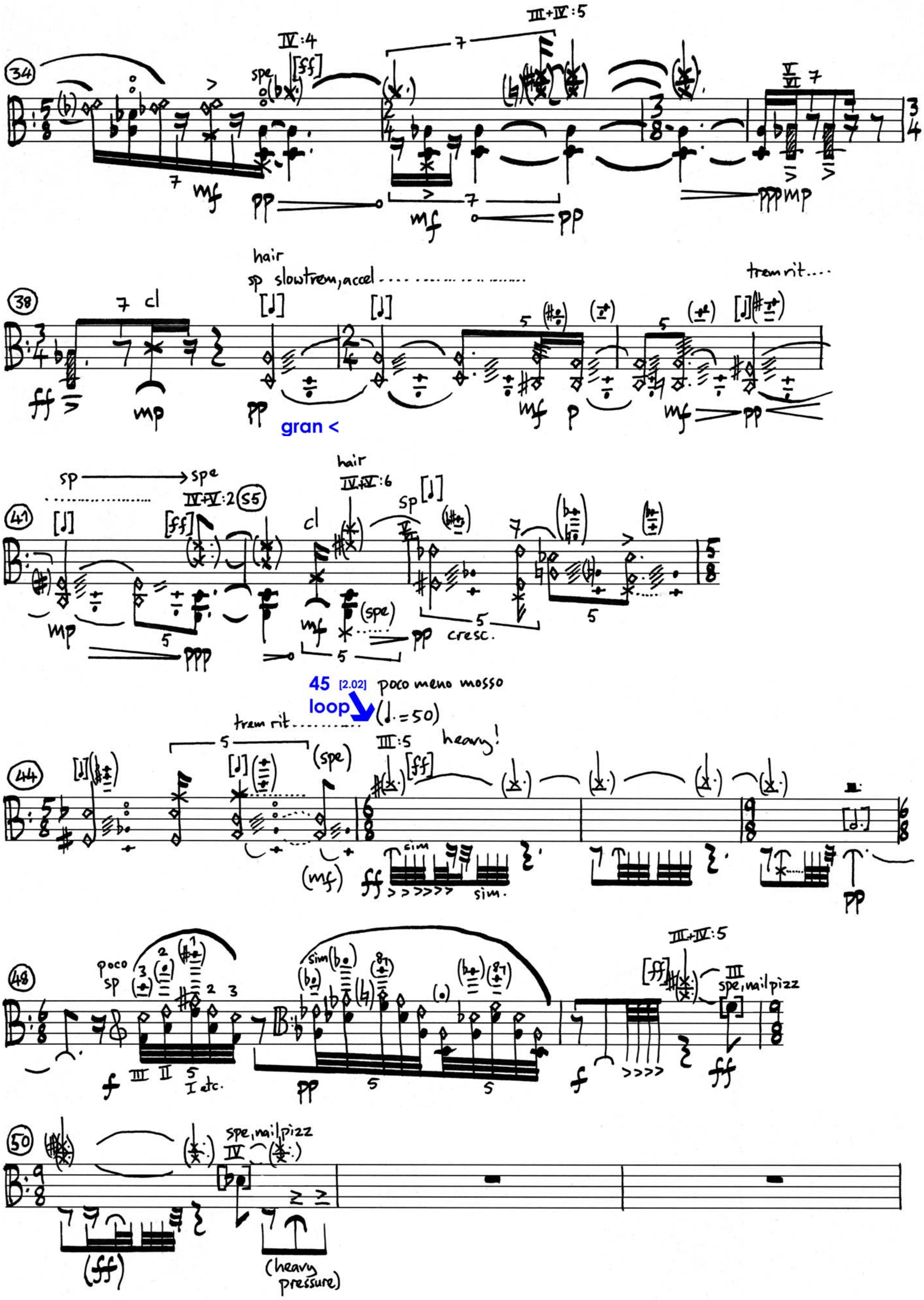
21 poco meno mosso, grandioso (d=52) Fluent, surging più mosso (d=60) sul tasto → trem rit....

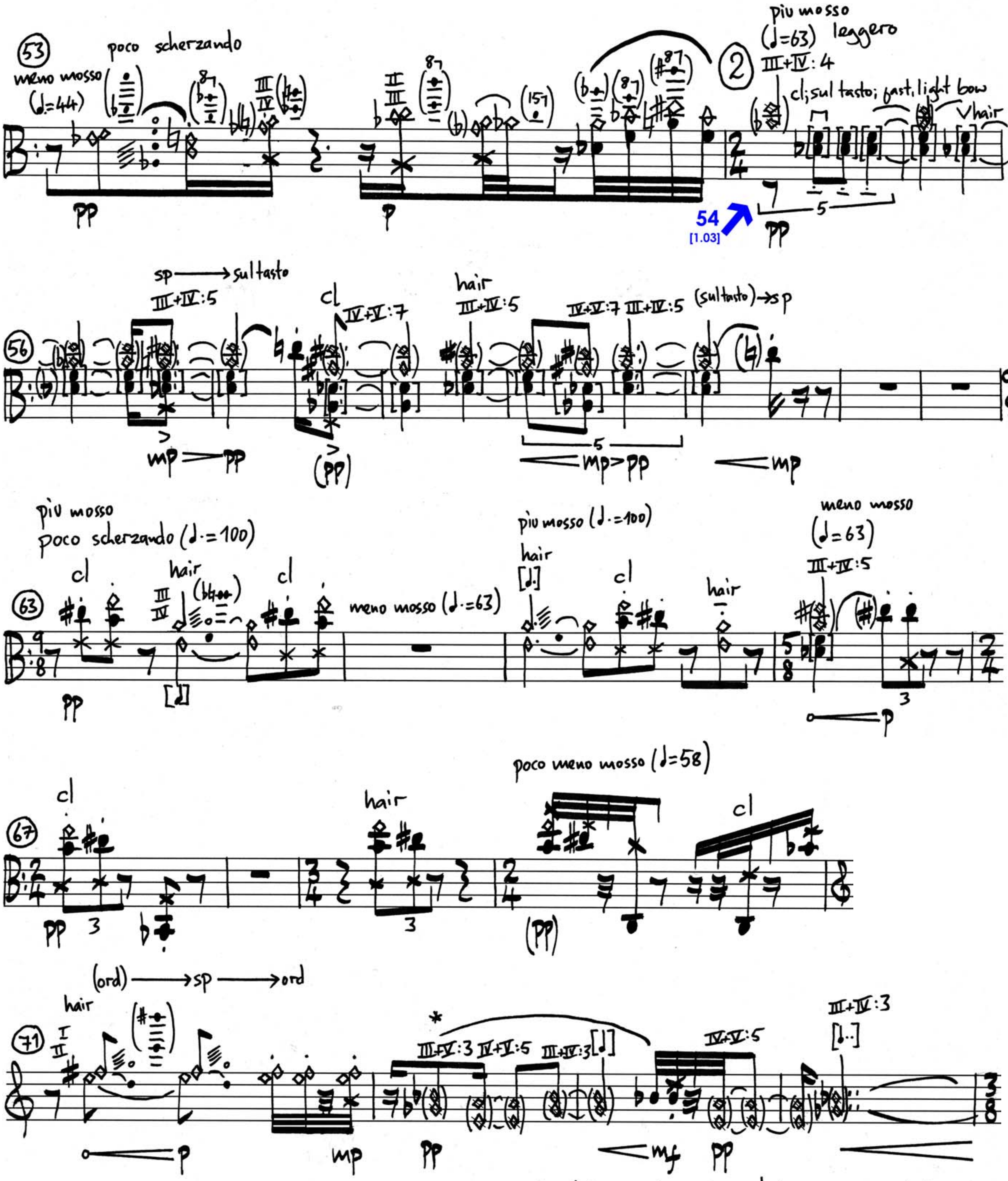
24 (trem rit)..... spe slo trem, accel..... (spe) → sul tasto → spe (spe)

27 [1.02]

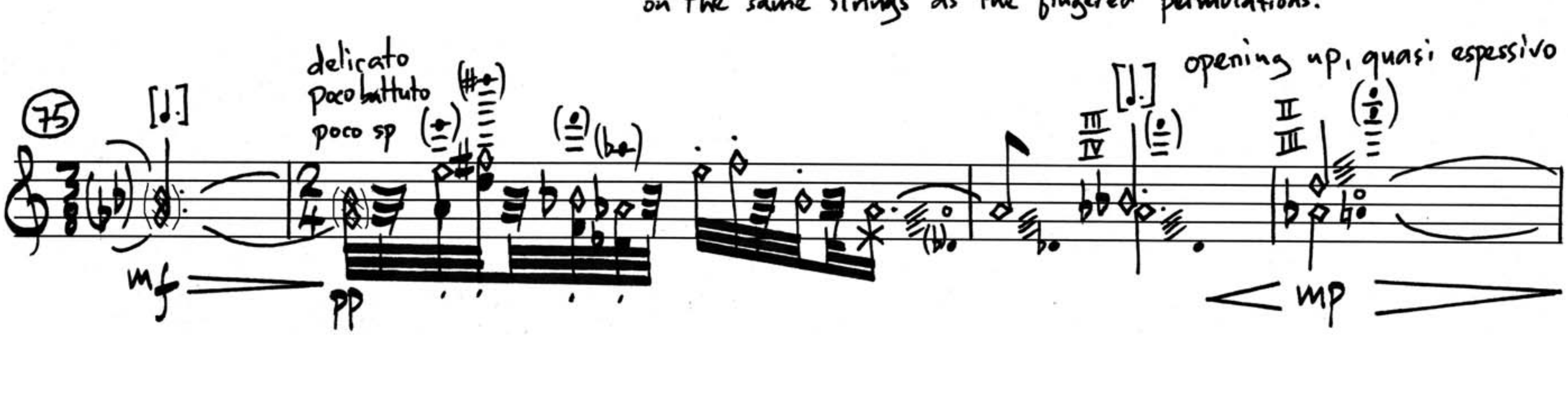
28 sul tasto spe

31 meno mosso (d=54) ord spe → ord. spe → ord sp → spe ord trem rit.....


34
IV:4
spe
[ff]
III+IV:5
mf
pp
mp
ppp
38
7 cl
ff
hair
sp slowtrem, accel
gran <
trem rit....
41
sp → spe
IV+V:2
55
cl
IV+V:6
sp
(spe)
cresc.
45 [2.02]
loop
poco meno mosso
(♩. = 50)
trem rit
III:5
heavy!
44
(spe)
(mf)
sim
sim.
48
poco sp
f
III II I etc.
III+IV:5
III
spe, nailpizz
50
IV
spe, nailpizz
(ff)
(heavy pressure)



* Unless otherwise directed, from here onwards bowing is implicitly on the same strings as the fingered permutations.



79 80 loop 87 trem rit

83 poco sp → sul tasto poco sp → sul tasto S6 poco sp

88 Tranquillo sul tasto S6 91 loop, gran poco sp

93 sul tasto S6 light bounces! sim.

97

101 S7 spe → ord. cl hair cl

106 * see notes 107 gran, loop

112 (no trem) pizz + (IV) cl pizz (arco) hair

poco meno mosso
(♩.=54) quazi-waltz

(arco) cl IV+V:4 spe III+IV:5 hair II III ord cl IV+V:4 spe

pp mf pp

118 gran

(cl) sp (detaché) ord mv! hair sp cl IV+V:4 spe hair II III (hair) sp ord cl IV+V:4

(pp) f pp mp mf pp

121 spe hair II III ord spe IV+V:4 cl ord hair clb IV+V:4 hair ord clb

(pp) < mp > < mp pp < mp pp

suddenly pressing, nervous
più mosso (♩=76)
→ spe →hair IV+V:9 ord IV+V:3 S6 broad, big

f sub pp mp f

126 gran, loop

* Where permutations are restated no attempt should be made to restart the sequence, rather, it should continue as if one long sequence, and any accents superimposed highlight mid-sequence notes

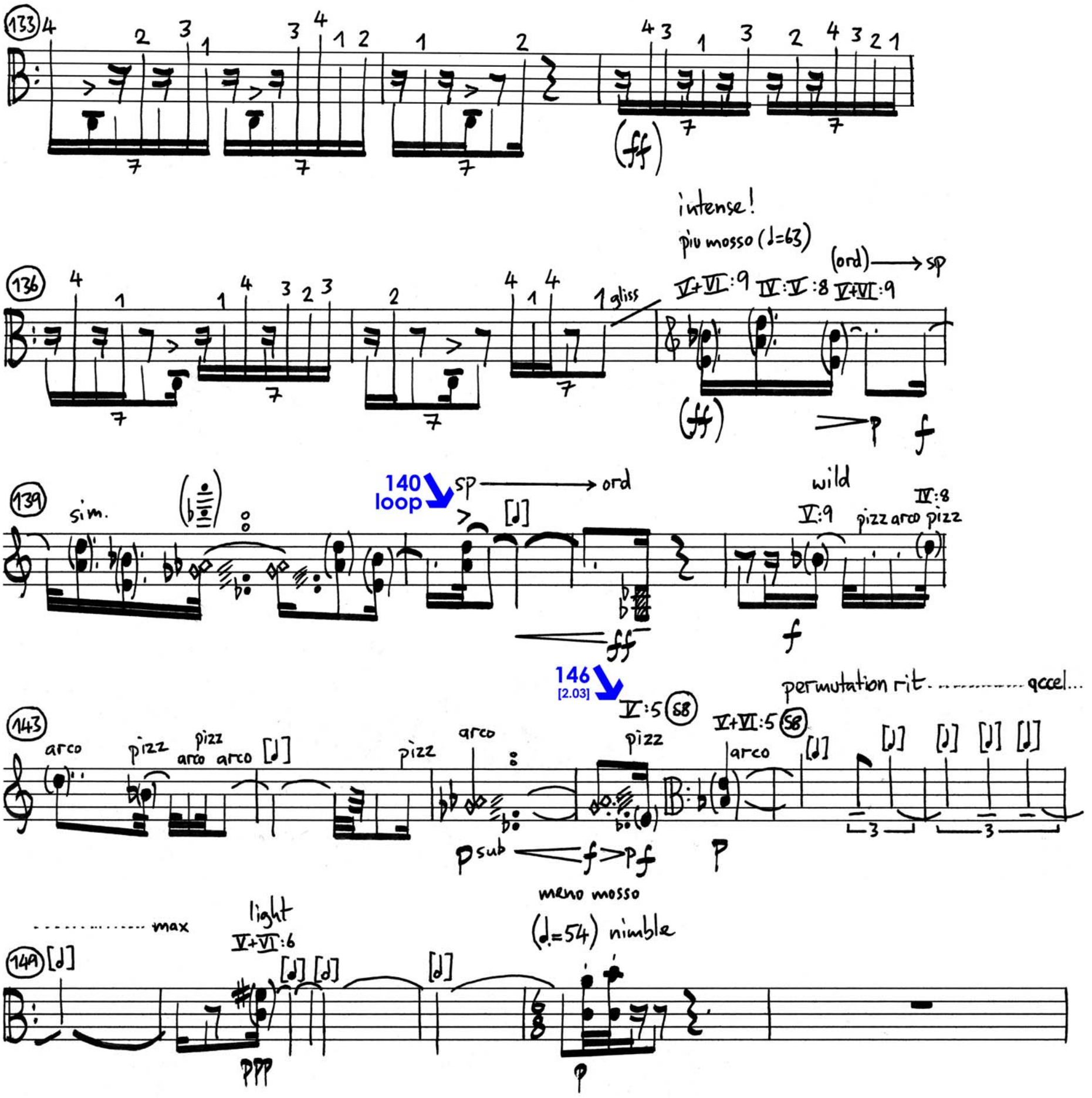
permutation rit.....

(S6) S8 meno mosso (♩=54)

meno mosso (♩=63) 132 [1.04] (IV+V:3 S8)

3=4= rough, biting, staccato, broken 2= 1= sim.

ff (ff)


133
(ff)
intense!
più mosso (♩=63)
136
(ord) → sp
V+VI:9
IV:V:8
V+VI:9
gliss
(ff)
p
f
139
sim.
140
loop
sp → ord
[♩]
wild
V:9
IV:8
pizz arco pizz
ff
f
146
[2.03]
permutation rit. ..... accel...
143
arco
pizz
pizz
arco arco
[♩]
pizz
arco
pizz
V:5 (58)
V+VI:5 (58)
arco
[♩]
[♩] [♩] [♩] [♩]
3
3
p sub
f > p f
p
meno mosso
(♩=54) nimble
..... max
light
V+VI:6
149
[♩]
[♩] [♩]
[♩]
ppp
p

155

V:6 (2,3,4)

VI

(P)

ppp

159

mv

V
VI:6(2,3,4)

(P) mf pp p ppp

162

= meno mosso

4 (♩=66) becoming threatening

III:5(2,3,4)
IV

163
[1.05]

(pp) mp

sim

IV:4(2,3,4)
V

mf>p

166

f p

III
IV
V
3
2
1

f >

168

III
IV:5(2,3,4)

pizz arco

pizz

arco
III:5

IV
V:5

p mf p

168, loop

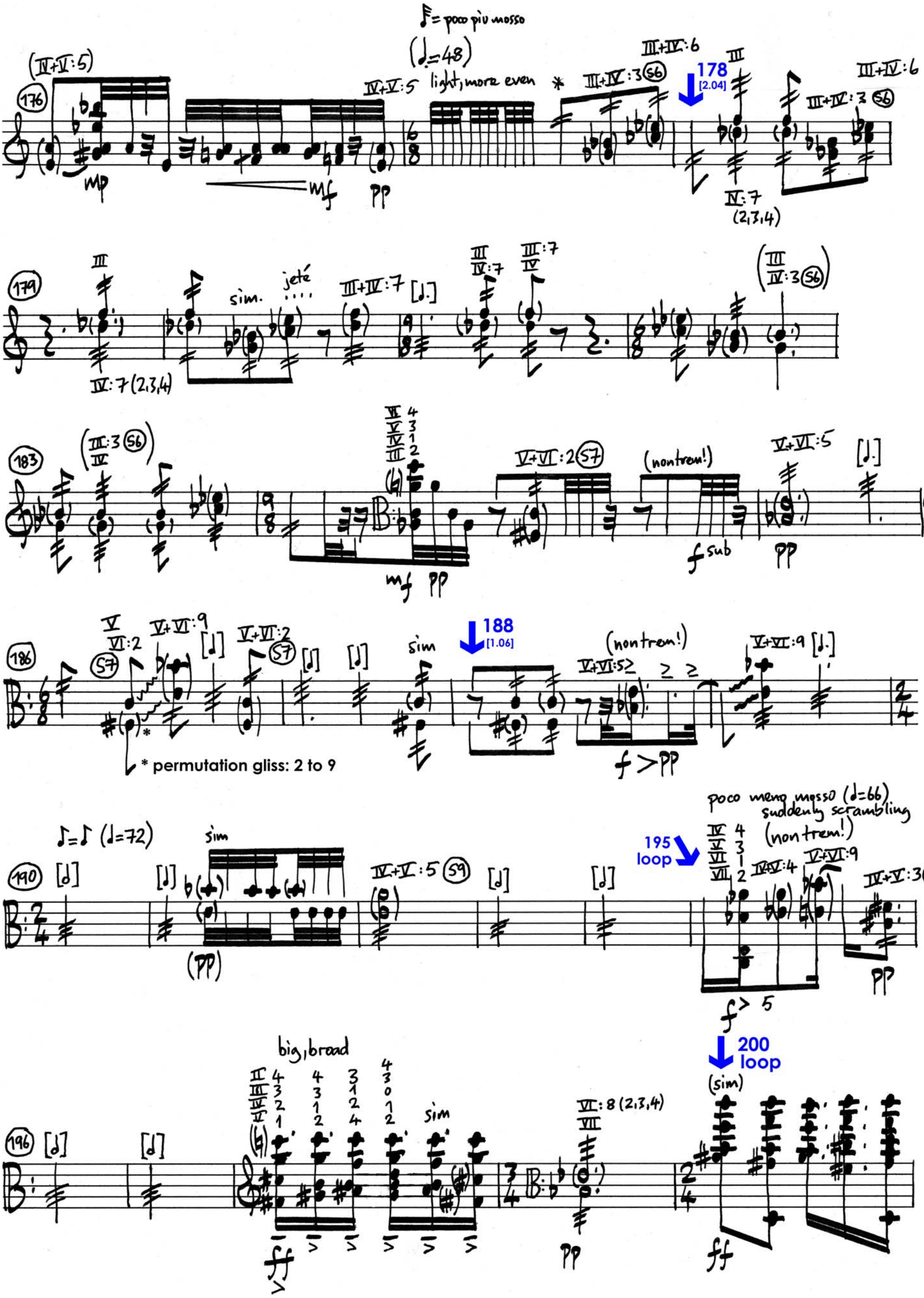
172

III
IV
V
4
3
1
2

IV+V:5

mp f mf pp

* measured tremolo: each bow stroke corresponds to one permutation note.


= poco più mosso
(♩.=48)
light, more even
178
[2.04]
mp
mf
pp
sim.
jeté
sim
188
[1.06]
* permutation gliss: 2 to 9
(non trem!)
poco meno mosso (♩=66)
suddenly scrambling
195
loop
♪=♪ (♩=72)
(pp)
200
loop
(sim)
big, broad
ff
f sub
f>pp
f> 5

201 V+VI : 6 (59) [𝅗𝅥] [𝅗𝅥] 3102400 IV+V : 9 III+IV : 7 pp ff (ff) (VI) pp

206 sul tasto III 4 IV 3 V 2 (measured trem. on triple stop!) (𝅗𝅥.=44) (pp) → ord III+IV : 7 [𝅗𝅥.] → sul tasto → ord (III IV : 7) III 4 IV 3 V 1 (III IV : 7)

209 210 [2.05] sul tasto III 4 IV 3 V 2 (5) IV 3 V 2 VI 1 𝅘𝅥𝅯=poco meno mosso (𝅗𝅥=60) (pp) ord (𝅘𝅥𝅯=𝅘𝅥𝅯) VII : 7

213 sul tasto ord VII : 7 cresc. sim. VII : 7

217 gliss (ord) mf

221 loop VI+VII : 5 [𝅗𝅥] (mf) pp VI+VII : 5 mf pp [𝅗𝅥] IV 4 V 3 VI 1 VII 2 mf

*Permutation gliss : 5→7

225 [1.07]

225 sim.

pp

(ord) → spe

poco meno mosso (♩=54)

IV+V:9 → ***

very light

(pp)

**Permutation gliss: 5→9

***Permutation continues over rests to end of bracket.

230 pizz

(pp)

Bow down

still pressing IV+V:9

(pizz)

236 IV+V:9

IV+V:9

240 IV+V:9

240 [2.06]

(sempre pp)

III+IV:5 59 →

*4-finger pizz tremolo!

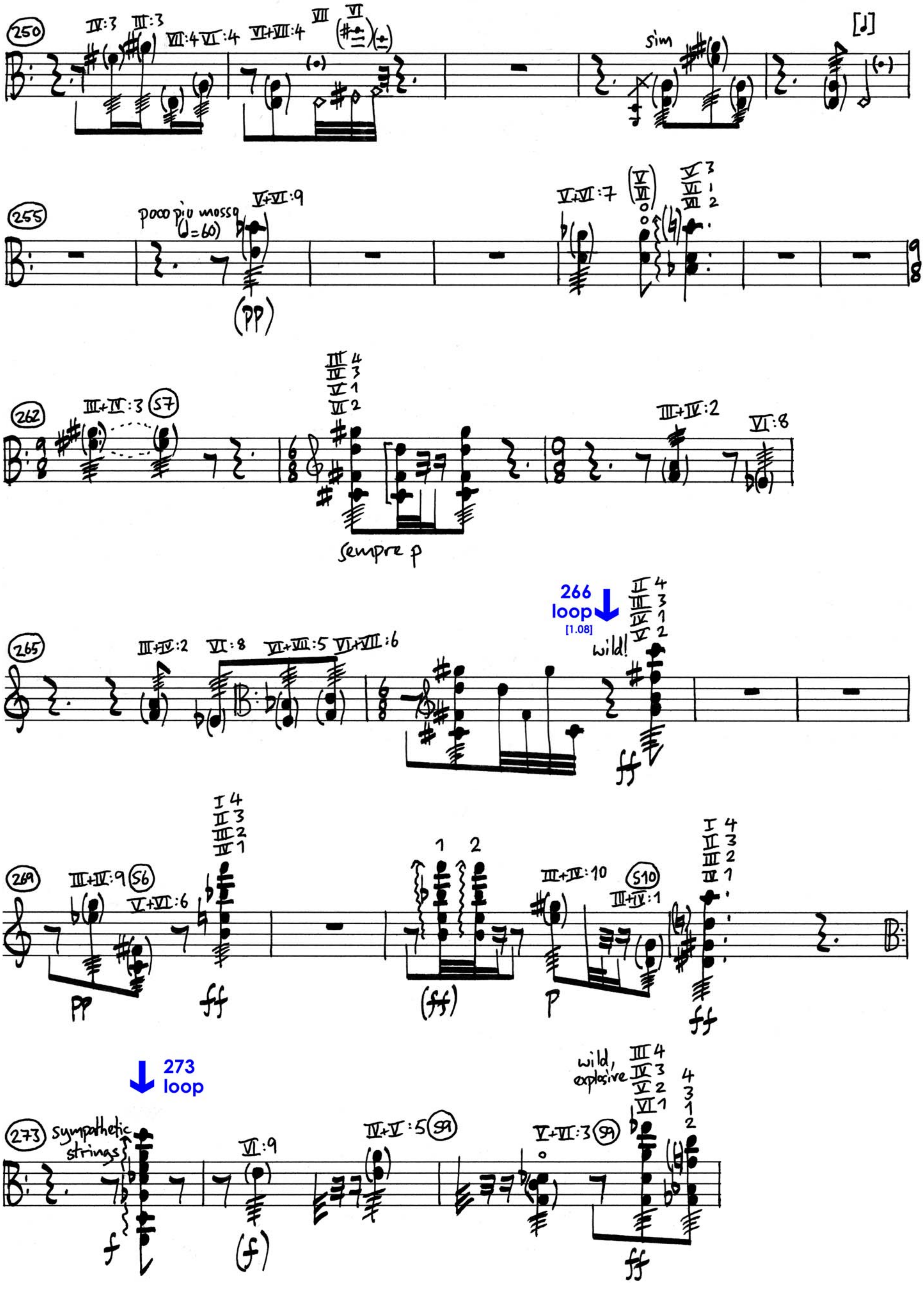
243 III+IV:5 59

(♩=♩.=54)

246 III+IV:3 7 III

sim III

IV


250
IV:3 III:3
VII:4 VI:4 VI+VII:4
VII VI
sim
[♩]
255
poco più mossa (♩=60)
V+VI:9
(pp)
V+VI:7
V VI
V 3 VI 1 VII 2
262
III+IV:3 S7
III 4 IV 3 V 1 VI 2
sempre p
III+IV:2
VI:8
265
III+IV:2 VI:8 VI+VII:5 VI+VII:6
266 loop [1.08]
II 4 III 3 IV 1 V 2
wild!
ff
269
III+IV:9 S6
V+VI:6
I 4 II 3 III 2 IV 1
ff
pp
1 2
(ff)
III+IV:10 S10
III+IV:1
I 4 II 3 III 2 IV 1
p
ff
273 loop
273
sympathetic strings
f
VI:9
(f)
IV+V:5 S9
V+VI:3 S9
wild, explosive
III 4 IV 3 V 2 VI 1
4 3 1 2
ff

276 6

279 (♩.=♩=60) (ff) gliss 6/8

still pressing arco VI/VII 5 VI+VII:5 VI+VII:7 [♩] VI+VII:3 S7

282 [2.07] f sempre

gran <

piu mosso (♩=100) bouncy, strongly rhythmic (simple)

284 [♩.] III+IV:3 III+IV:2 IV+V:12 IV+V:9 III+IV:11 [♩.] IV+V:4 S11

289 III+IV:11 V+VI:4 S11 VI+VII:3 S11 [♩.]

291 [1.09] (♩.=♩=100) 2/4 III+IV:5 S11 [♩] V+VI:9

5

293 [♩] IV+V:11 S9 [♩] VI+VII:7 [♩] V+VI:9 S7

297 [2.08] sim

5

(unmeasured trem)

298 V+VI:5 S7 II+III:9 III+IV:3 S9 sim VI+VII:6 [d]

303 permutation rit ..... accel ..... IV+V:10 S6 [d] [d] [d.] mp meno mosso (♩=76) pizz esstatic I:12 arco pizz arco VI:7 S12 ff 5

308 III IV V VII 309 [1.10] I:12 I:12 I:12 5

312 pizz sim arco permutation rit ..... accel ..... (max) VII:9 S12 V+VI:8 S12 III+IV:2 S12 IV+V:3 IV+V:8 S3 (f) p f sub

317 IV+V:3 III+IV:8 S3 spe permutation: slow, accel ..... max (spe) → sp rit. II:7 III+IV:4 S7 IV+V:10 p sub f p pp

322 permutation: min spe max (sub) 325 [1.11] permutation rit ..... accel ..... max (sp) → ord (ord) I II:12 V+VI:10 sp V VI I II:12 f p f

327 (♩=♩.=76) pizz III 4 IV 3 V 1 VI 2 arco V VI+VII:1 S12 328 [2.09] III+IV:6 S12 IV+V:11 II+III:6 S11 VI:7 S11

331 V VI+VII:1 S11 IV+V:11 [♩.] II+III:6 S11 VI:7 S11 V+VI:2 S11 328 [2.09] (♩.=♩=76) [♩] V VI+VII:1 S11

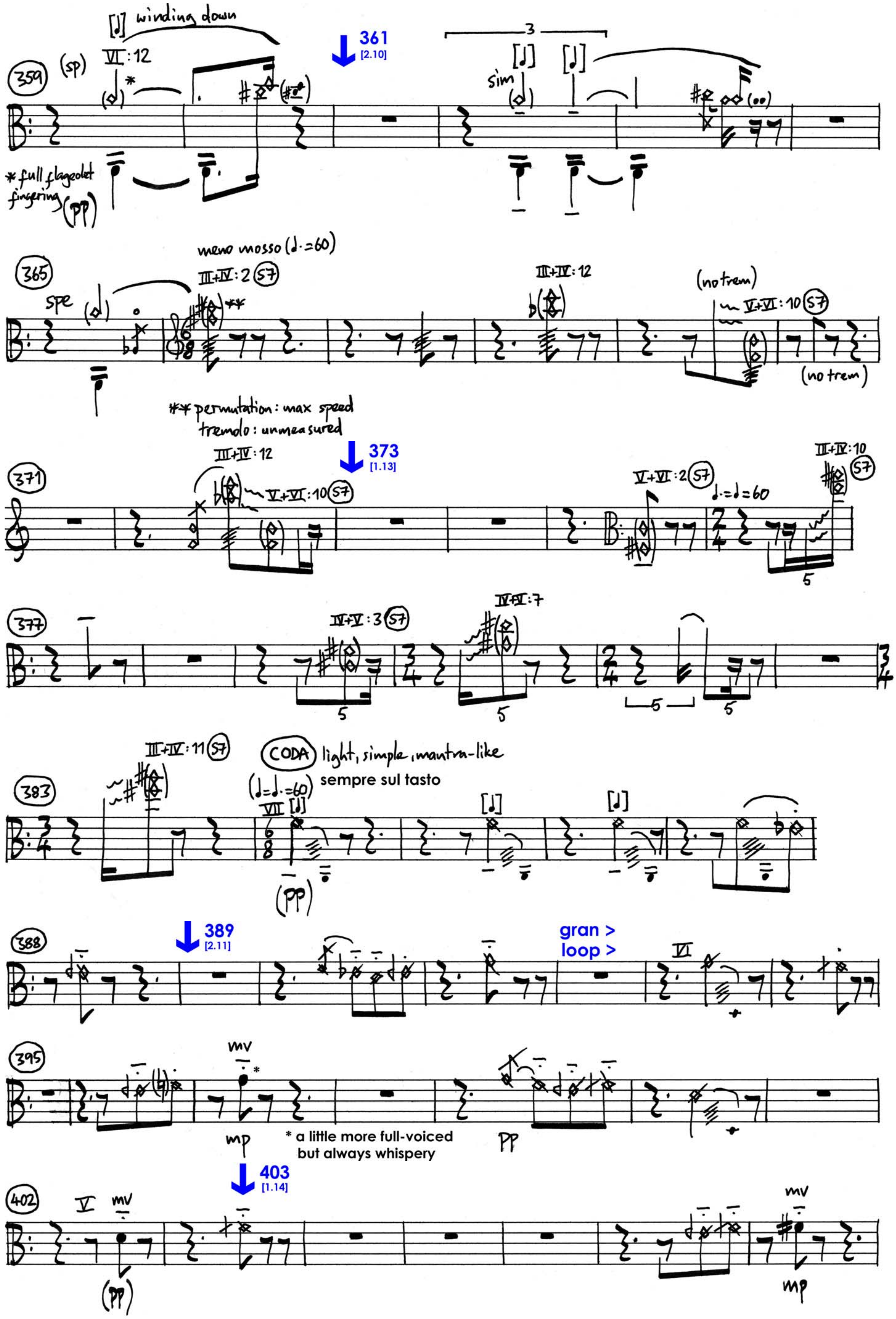
336 light, even permutation: slow, accel ..... max IV+V:10 S5 [♩] [♩] relaxed! sim pizz gran >

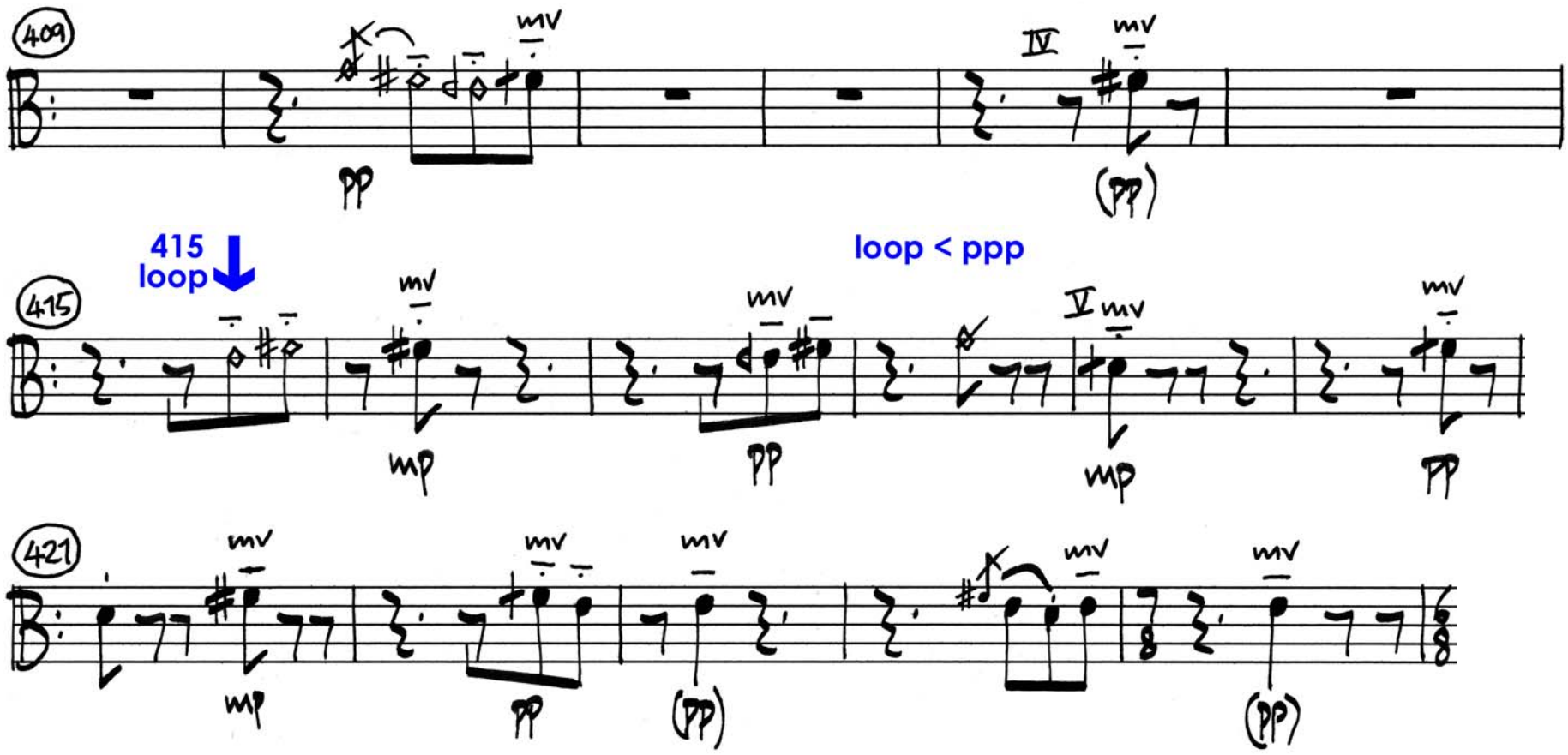
342 344 gran slightly enigmatic, still busy III+IV:2 S5 IV+V:5 S8 gran < sp VI:11 S5 III+IV:4 S8 III+IV:5 S8 IV+V:5 S8

* unmeasured trem, permutation medium fast (c. 𝅘𝅥𝅯) sempre
** ½ flageolets

348 III+IV:4 S8 III+IV:5 S8 VI:8 II+III:5 S1 (notrem) IV+V:5 S1 IV+V:1 sim

353 IV+V:6 S1 V+VI:9 S1 IV+V:1 IV+V:5 1

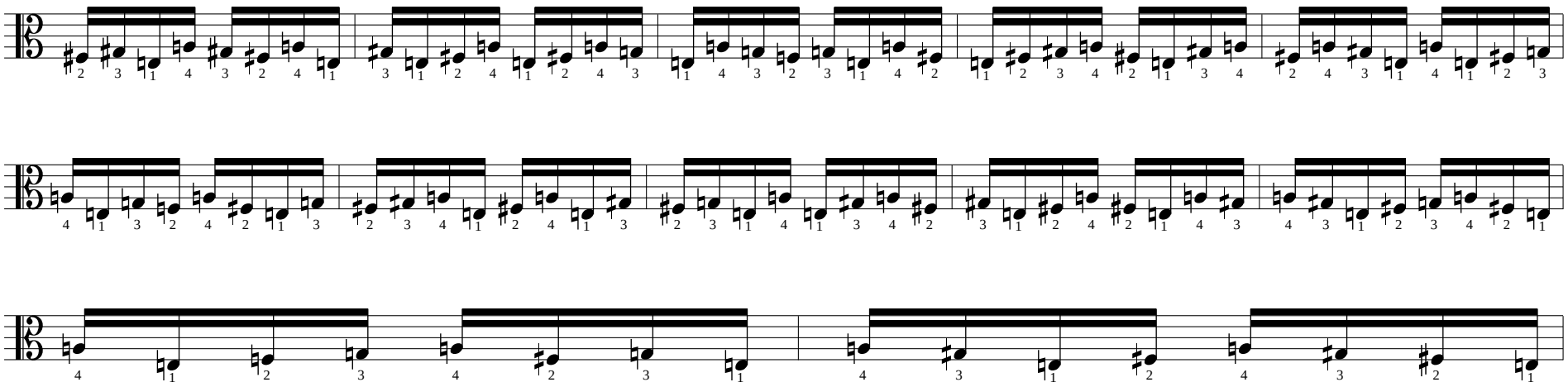

359
(sp)
VI:12
[♩] winding down
* full flageolet fingering
(pp)
361
[2.10]
sim
365
spe
meno mosso (♩. = 60)
III+IV:2 (S7)
** permutation: max speed
tremolo: unmeasured
III+IV:12
(no trem)
V+VI:10 (S7)
(no trem)
371
III+IV:12
V+VI:10 (S7)
373
[1.13]
V+VI:2 (S7)
♩. = ♩ = 60
III+IV:10 (S7)
377
IV+V:3 (S7)
IV+V:7
383
III+IV:11 (S7)
CODA light, simple, mantra-like
sempre sul tasto
(♩ = ♩. = 60)
VII
(pp)
388
389
[2.11]
gran >
loop >
VI
395
mv
mp
* a little more full-voiced
but always whispery
pp
402
403
[1.14]
V
mv
(pp)
mv
mp


409
mv
pp
IV
mv
(pp)
415
loop
loop < ppp
415
mv
mp
mv
pp
V
mv
mp
mv
pp
421
mv
mp
mv
pp
mv
(pp)
mv
(pp)
426
VI
mv
mv
mp
432
mv
pp
loop >
VII
mv
438
mv
(pp)
mp
pp

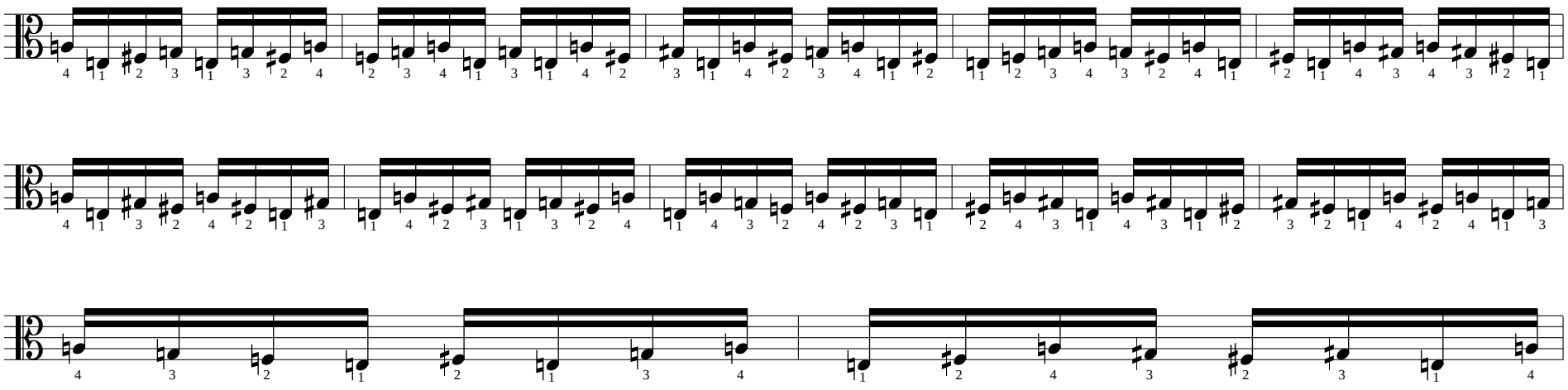
Appendix A

7 orderings of 1 transposition on string VI

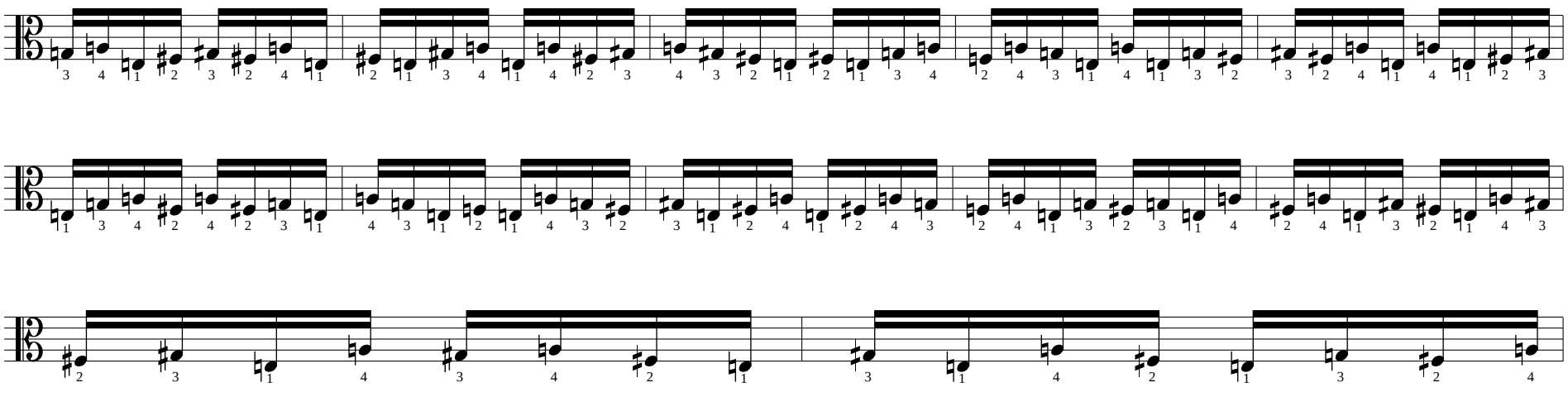
ordering 1



ordering 2

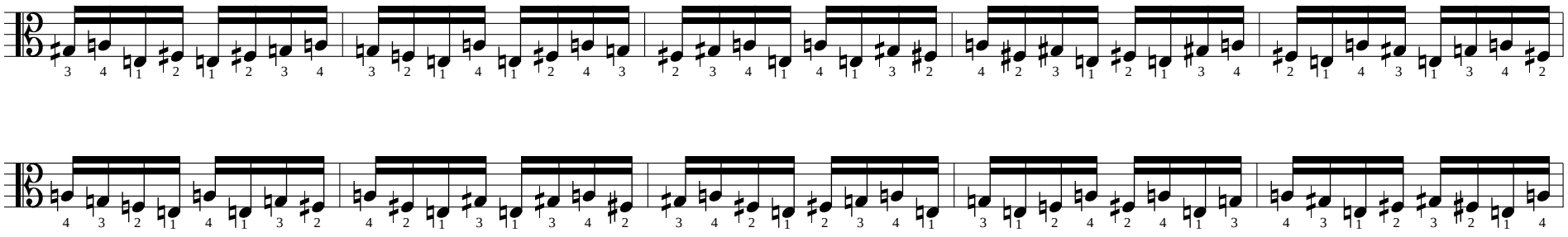


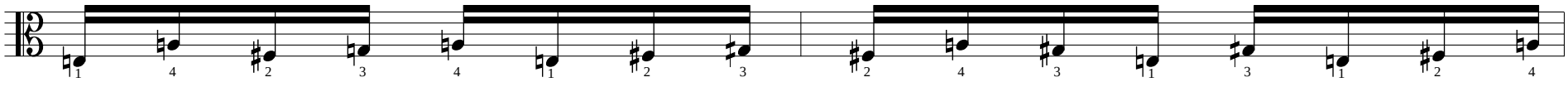
ordering 3



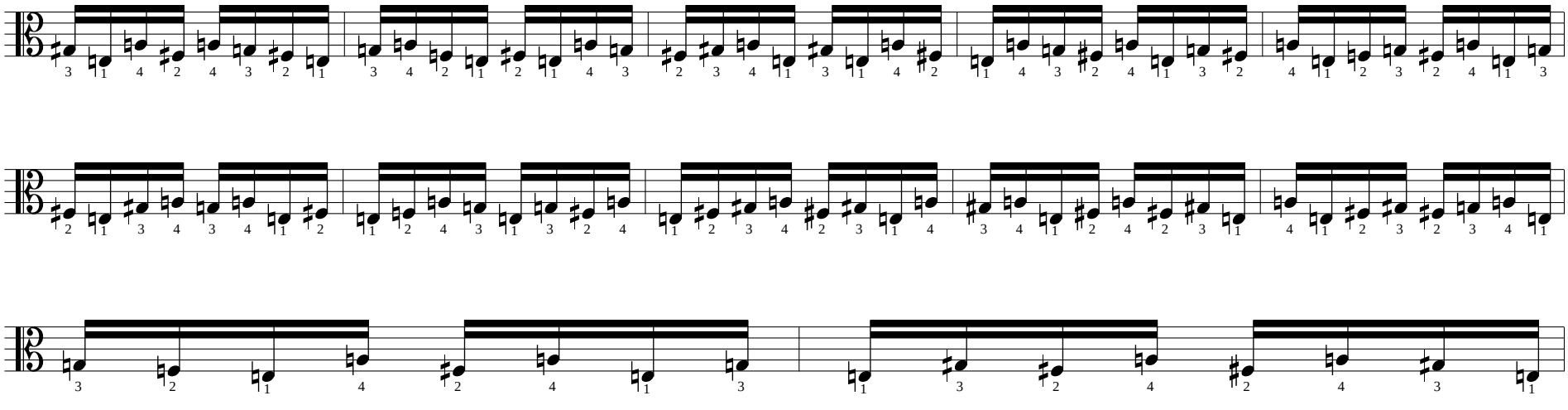
ordering 4

ordering 5

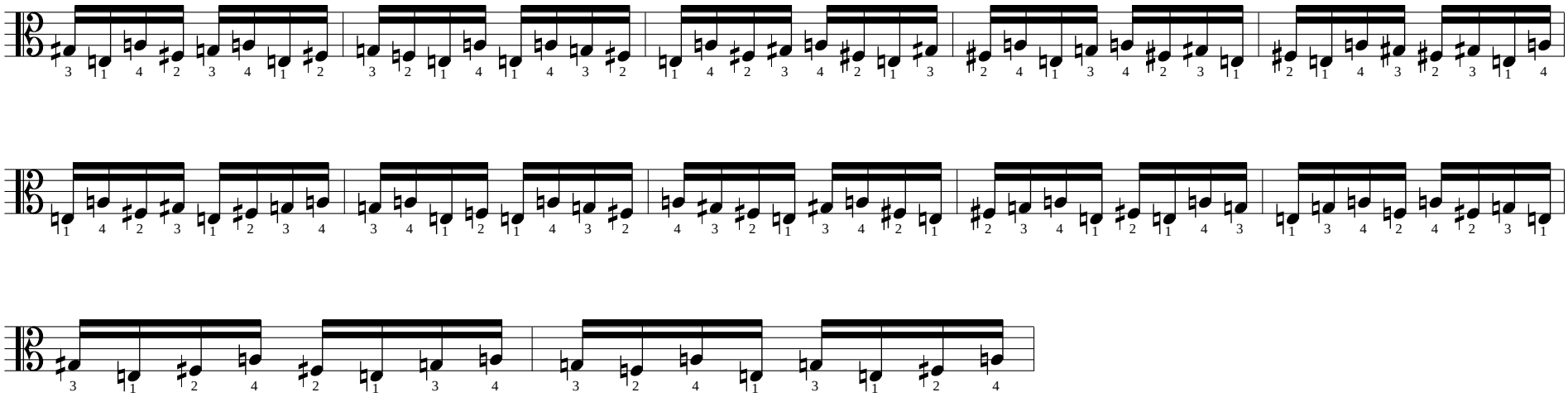




ordering 6



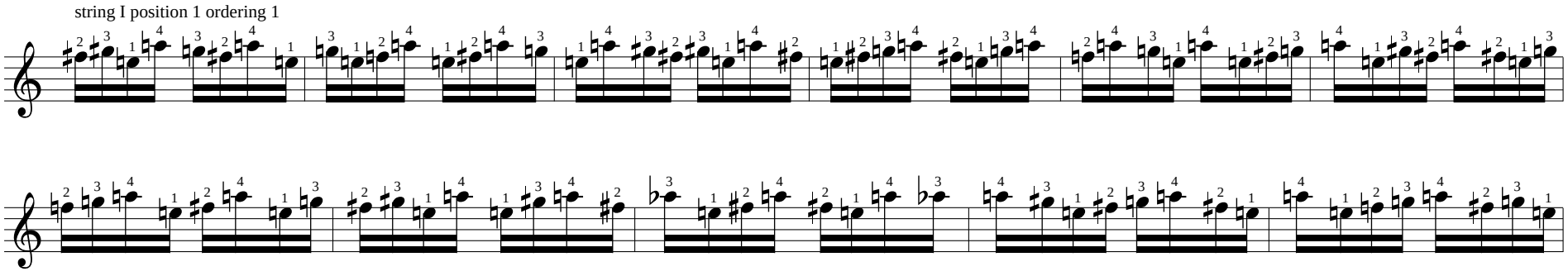
ordering 7



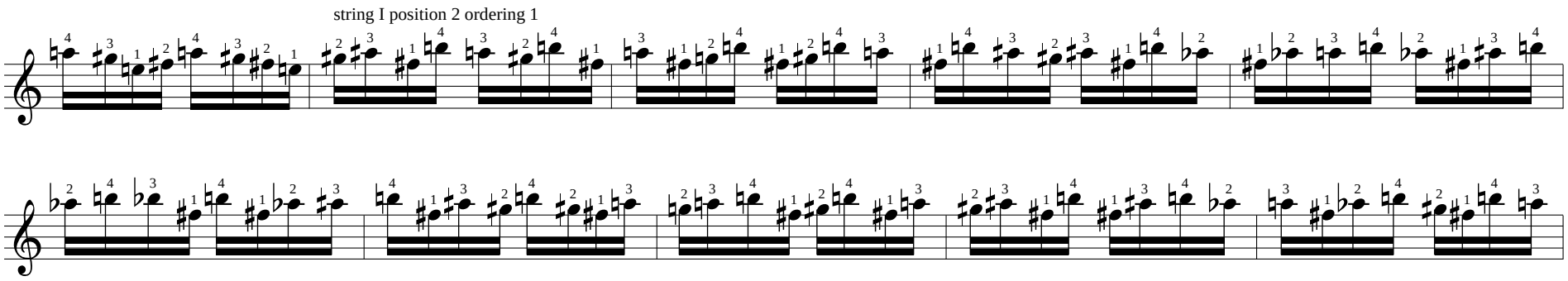
Appendix B

1 ordering on 12 transpositions on string I

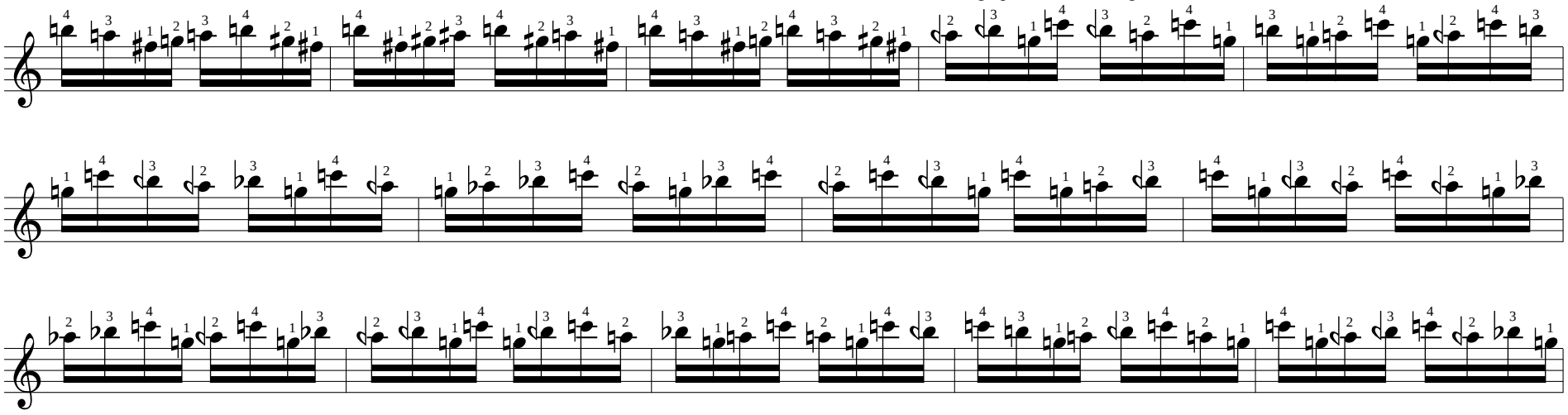
string I position 1 ordering 1



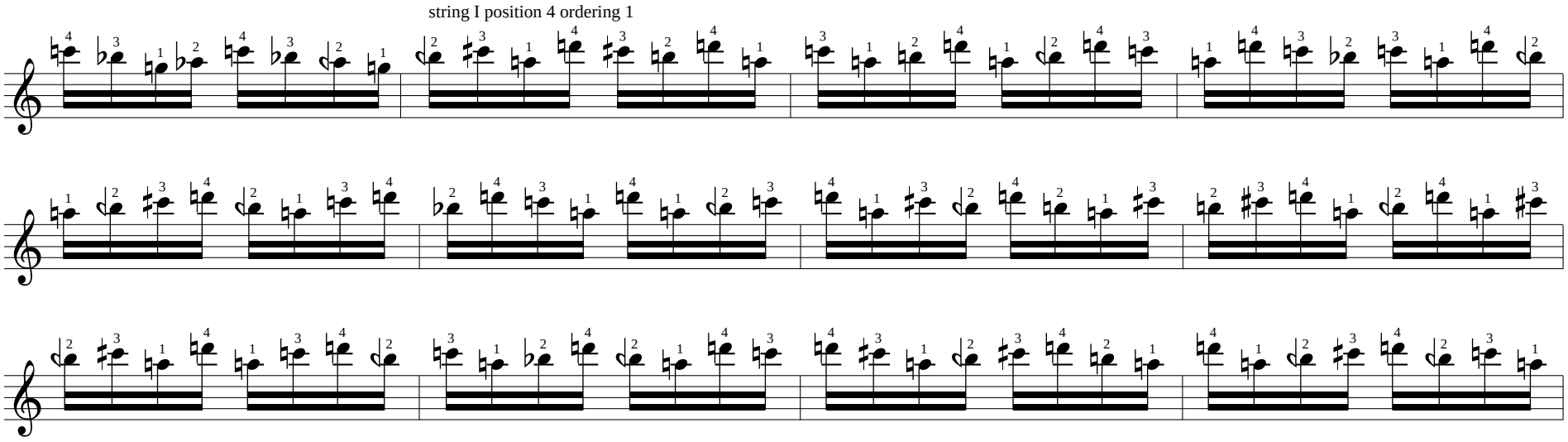
string I position 2 ordering 1



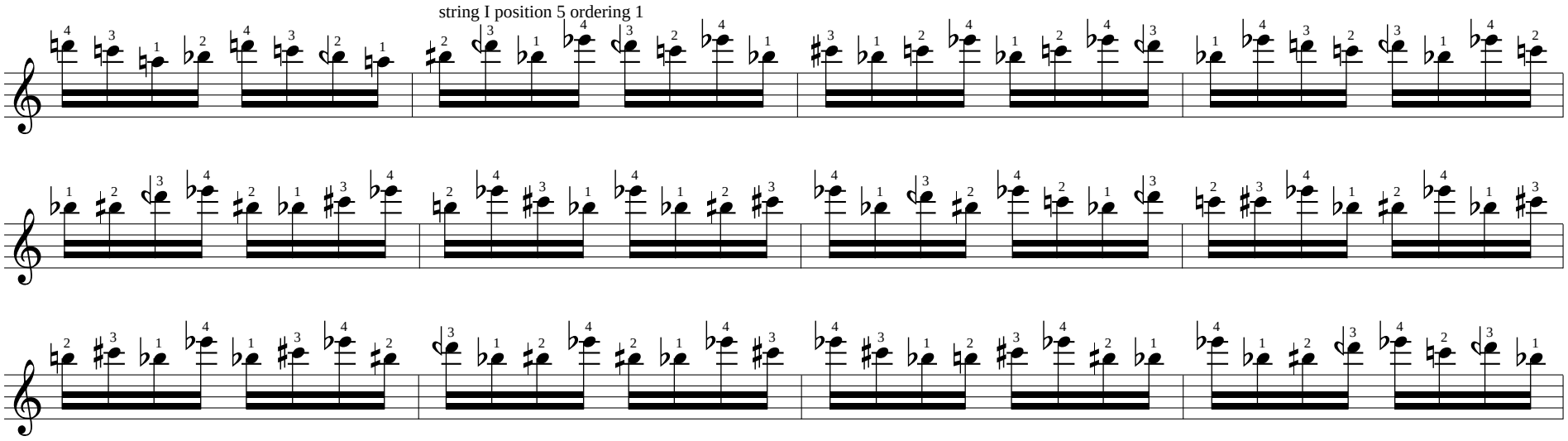
string I position 3 ordering 1



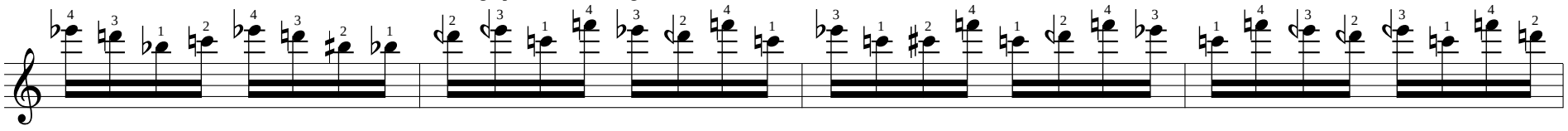
string I position 4 ordering 1

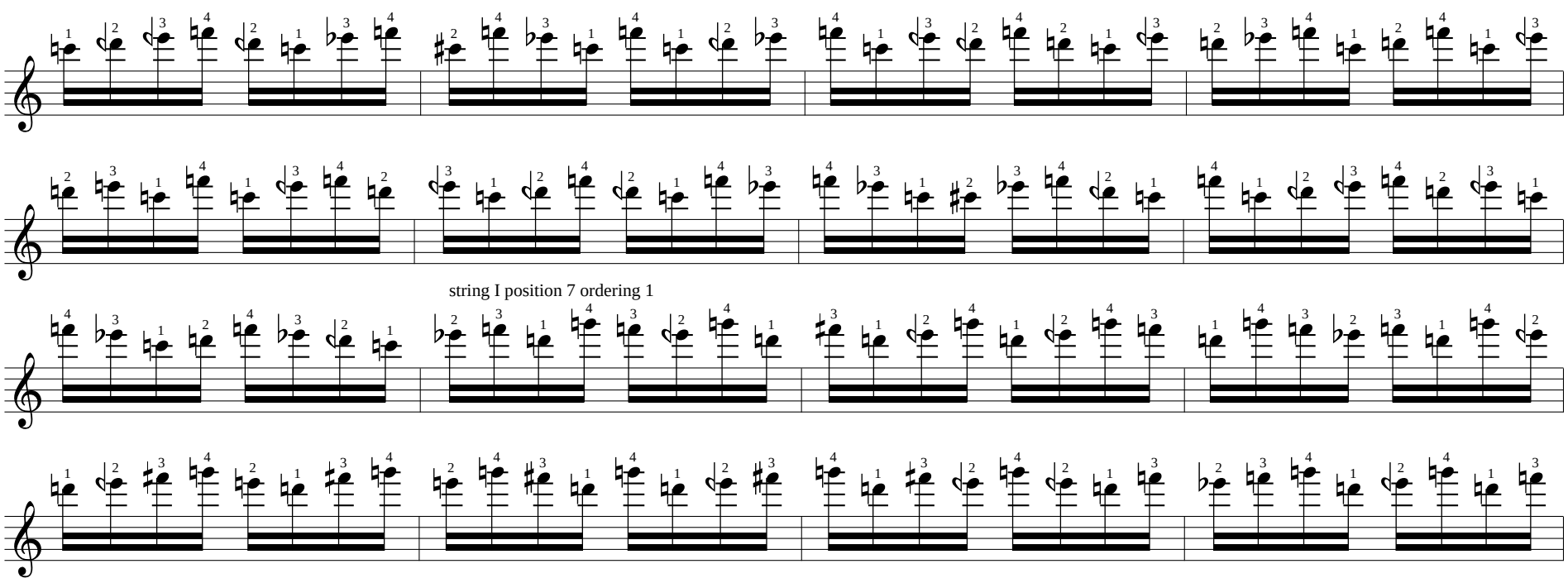


string I position 5 ordering 1

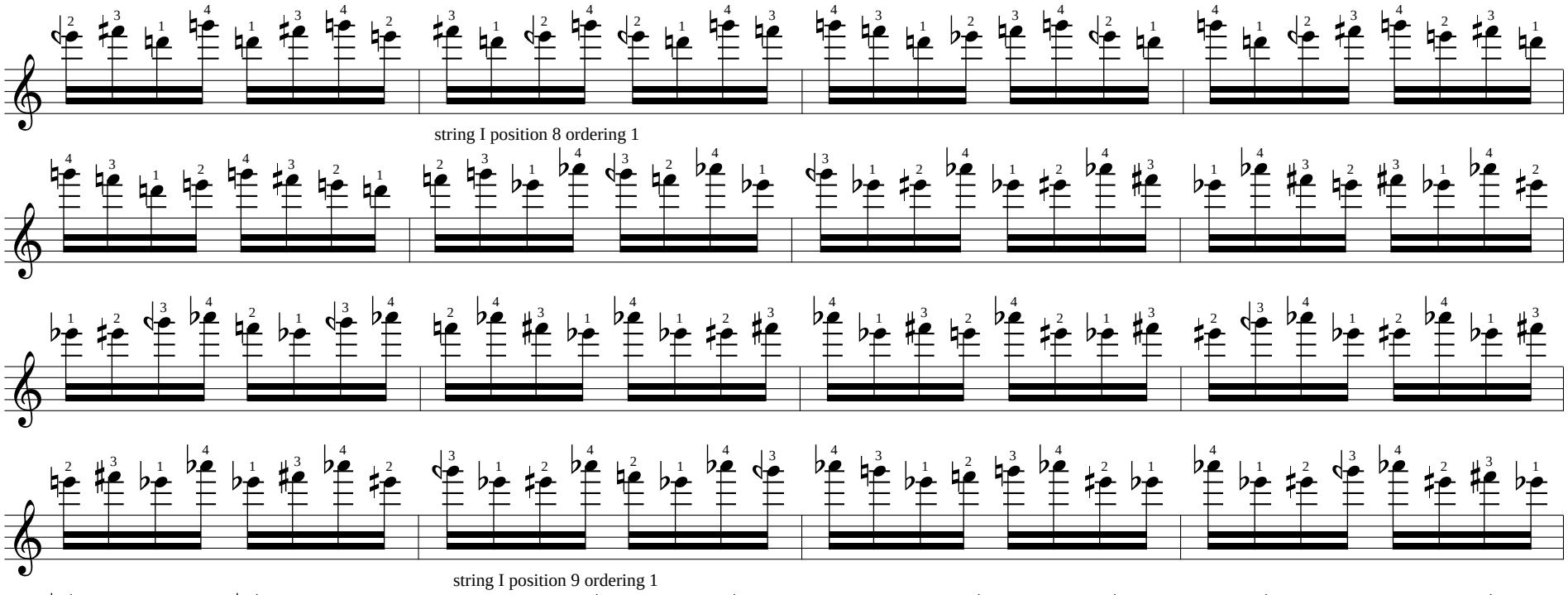


string I position 6 ordering 1



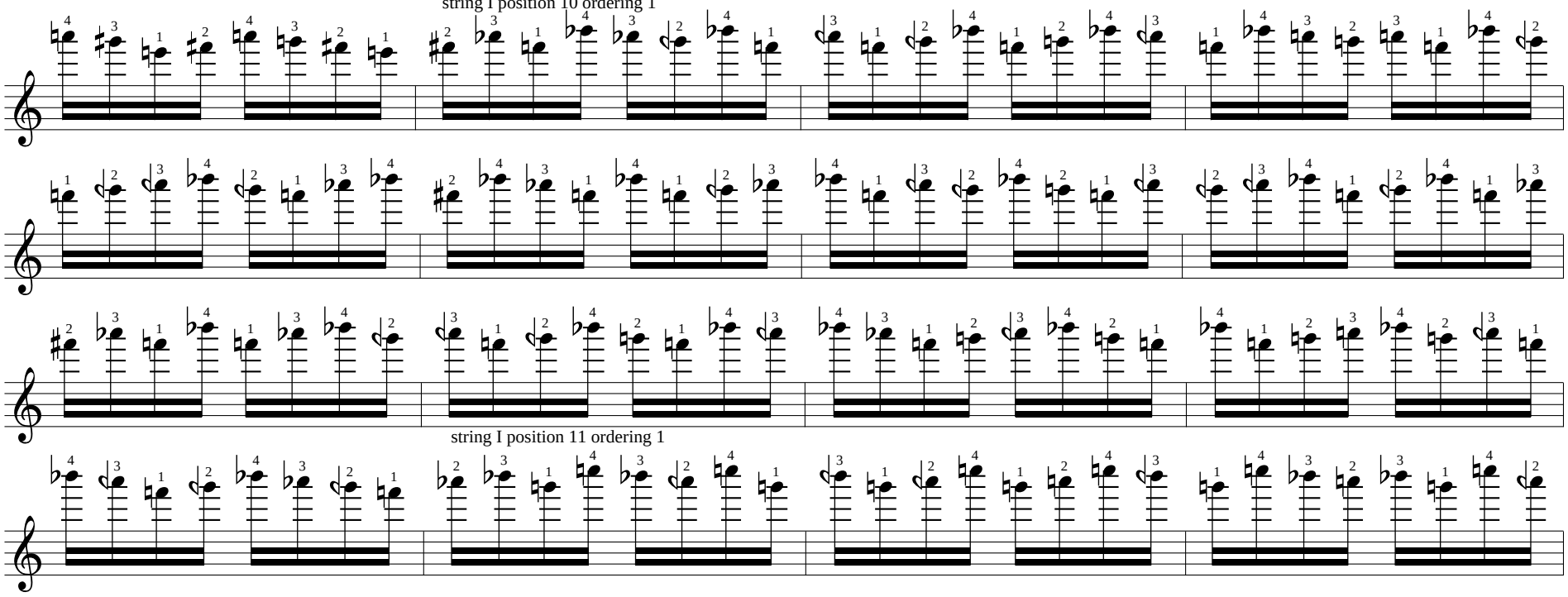


string I position 7 ordering 1



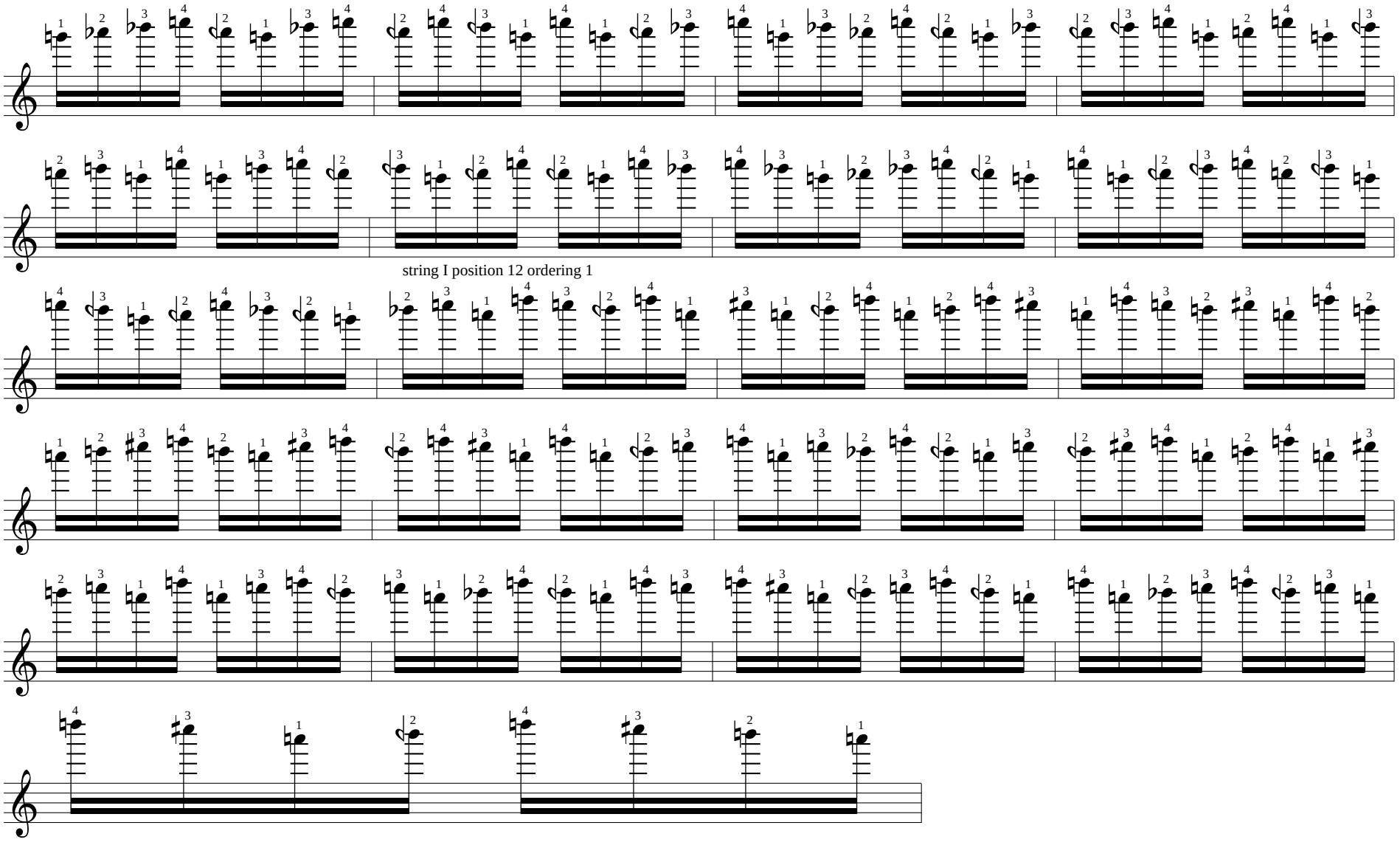
string I position 8 ordering 1

string I position 9 ordering 1



string I position 10 ordering 1

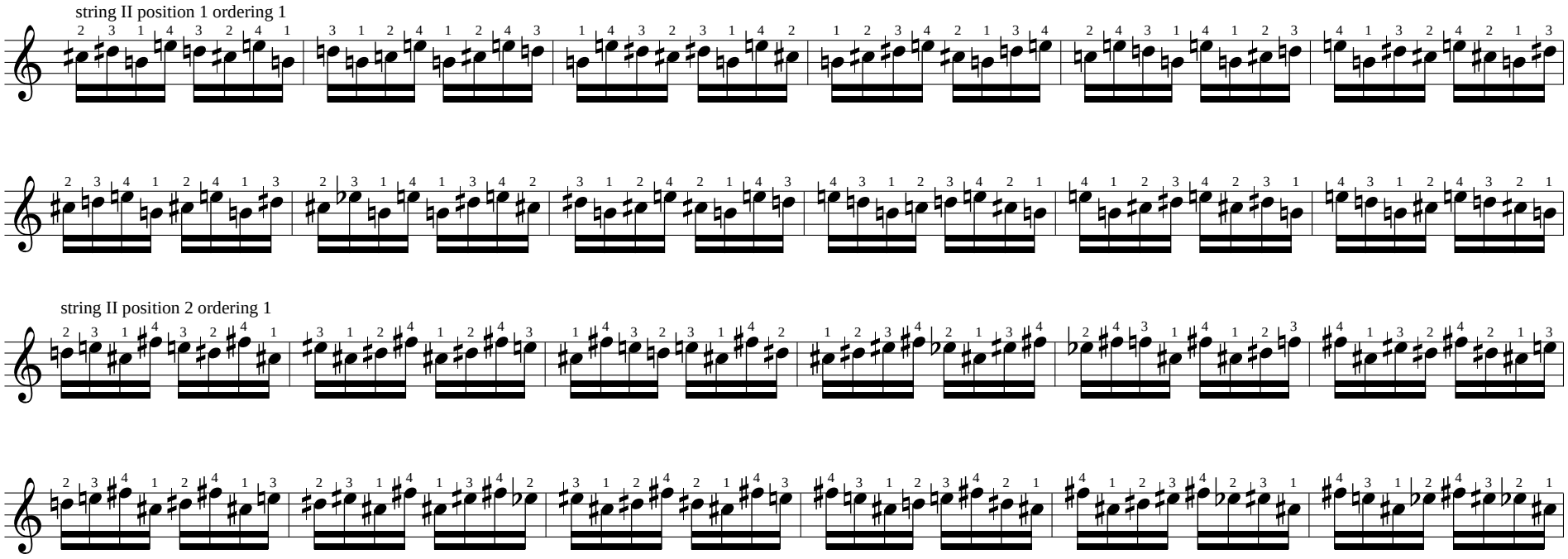
string I position 11 ordering 1

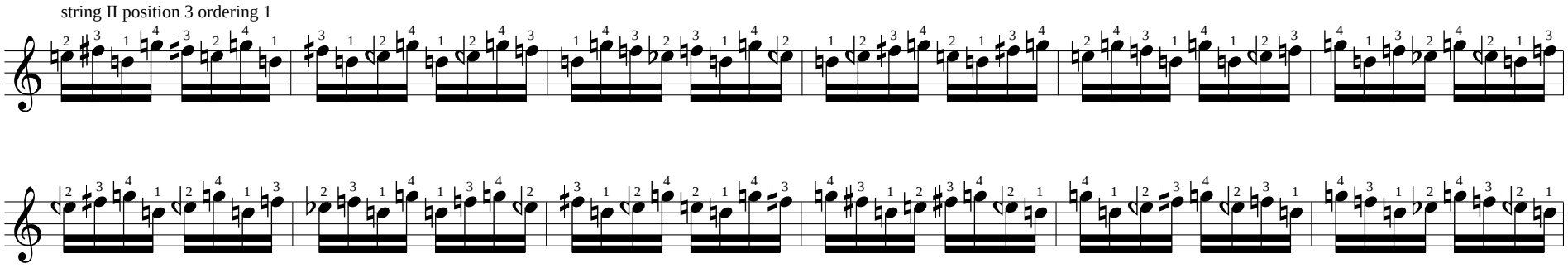


string I position 12 ordering 1

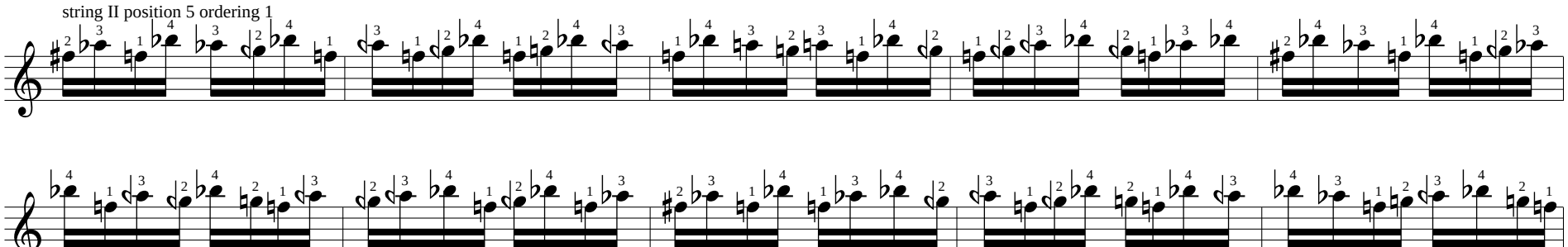
1 ordering on 12 transpositions on string II

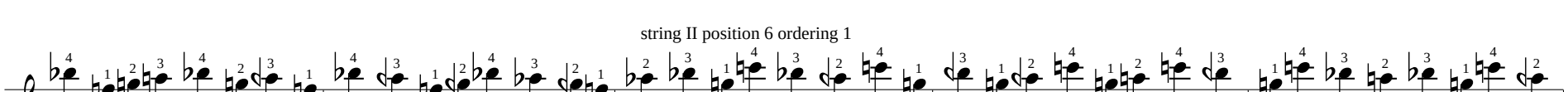
string II position 1 ordering 1



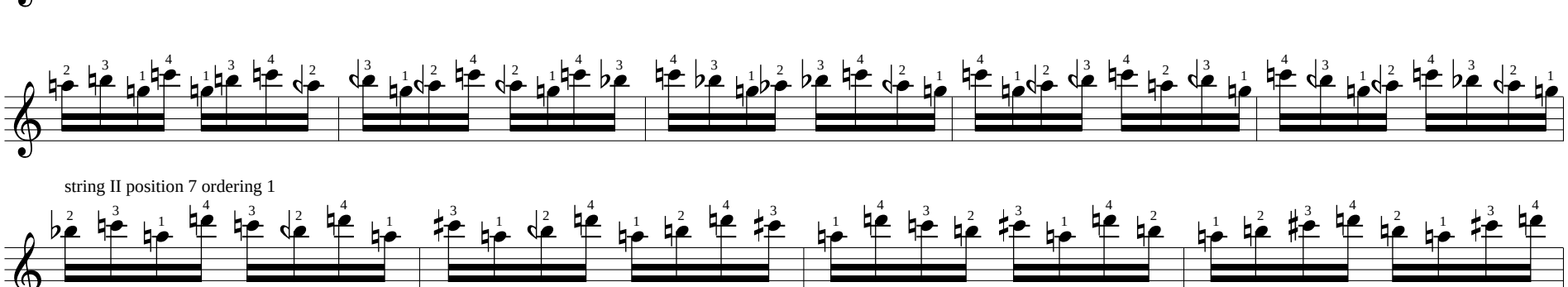


string II position 2 ordering 1

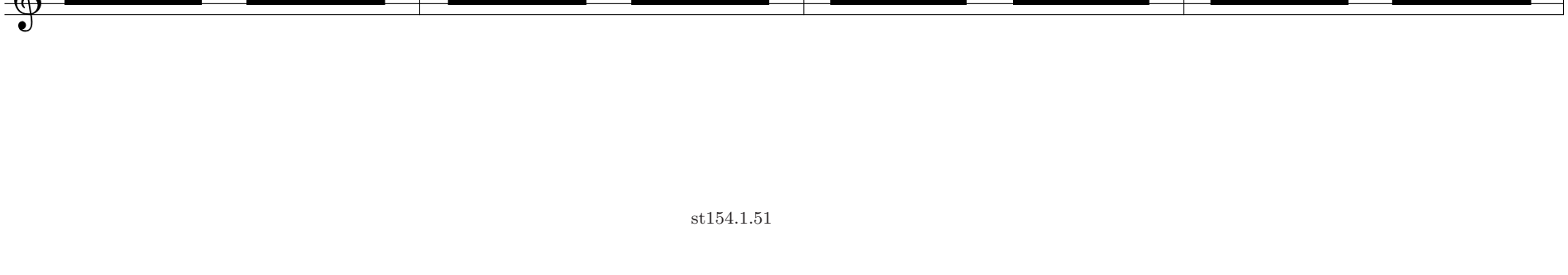




string II position 3 ordering 1



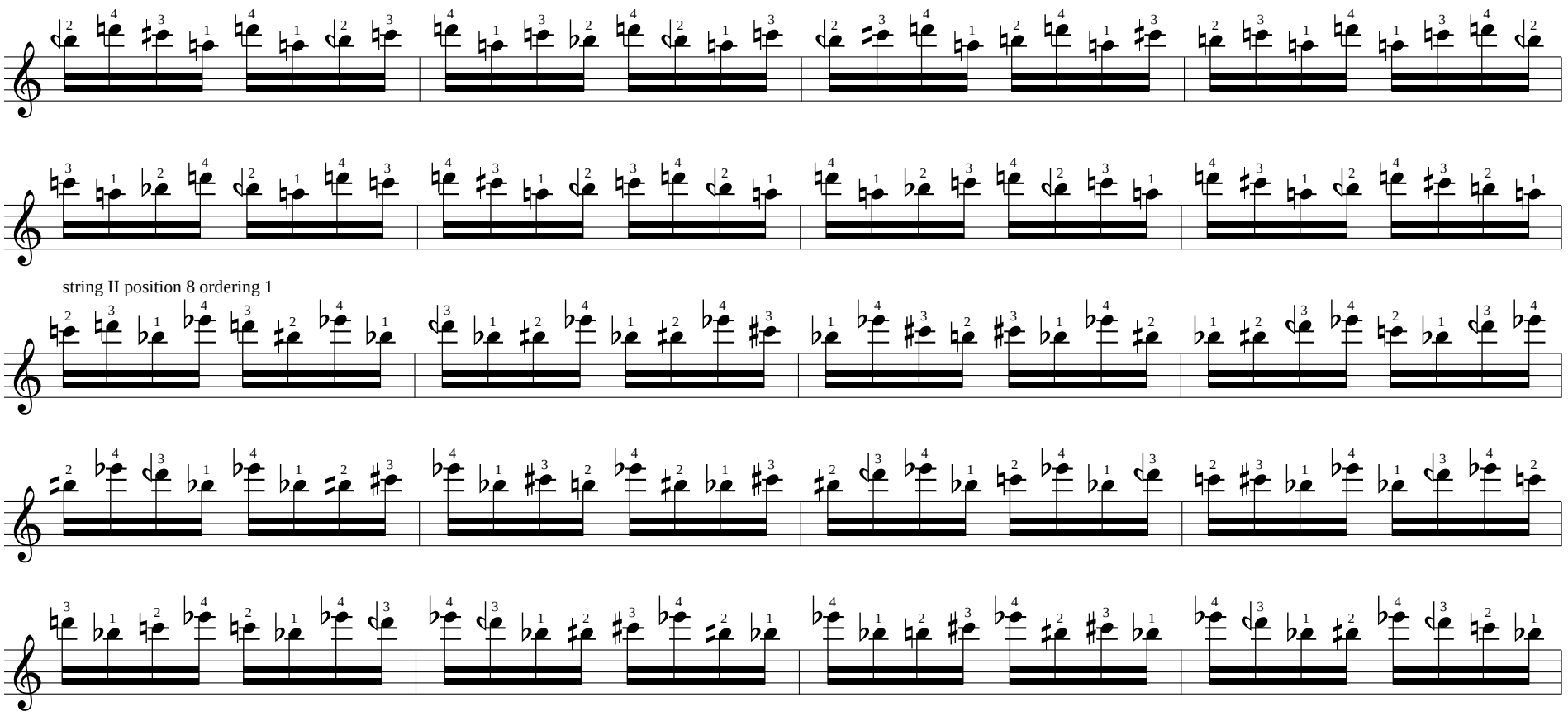
string II position 4 ordering 1



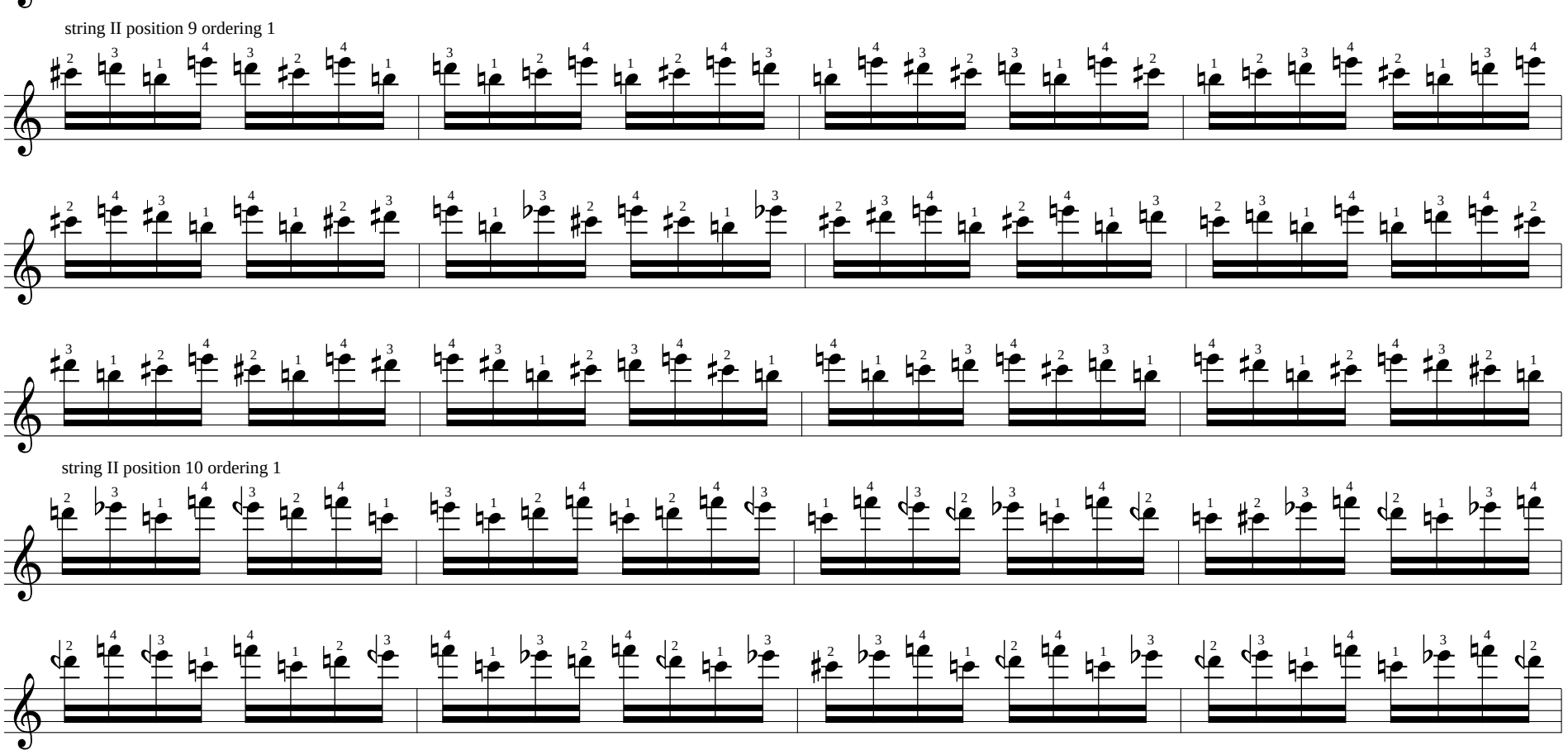
string II position 5 ordering 1

string II position 6 ordering 1

string II position 7 ordering 1



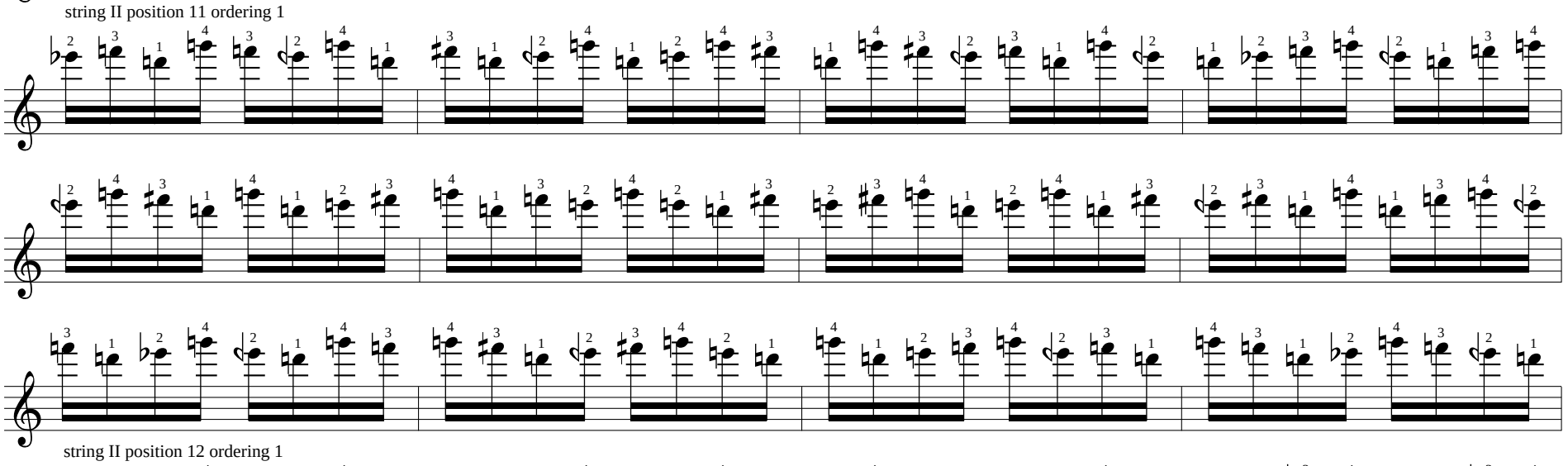
string II position 8 ordering 1



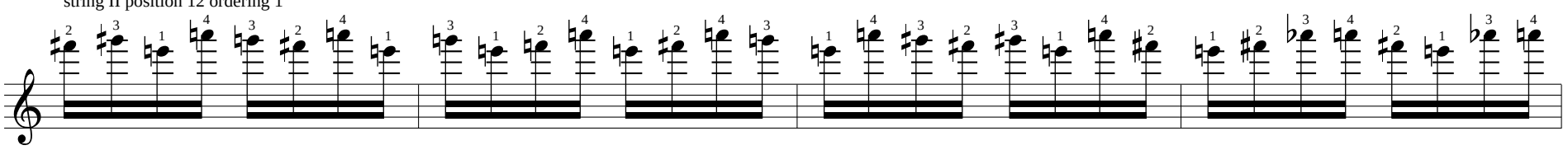
string II position 9 ordering 1

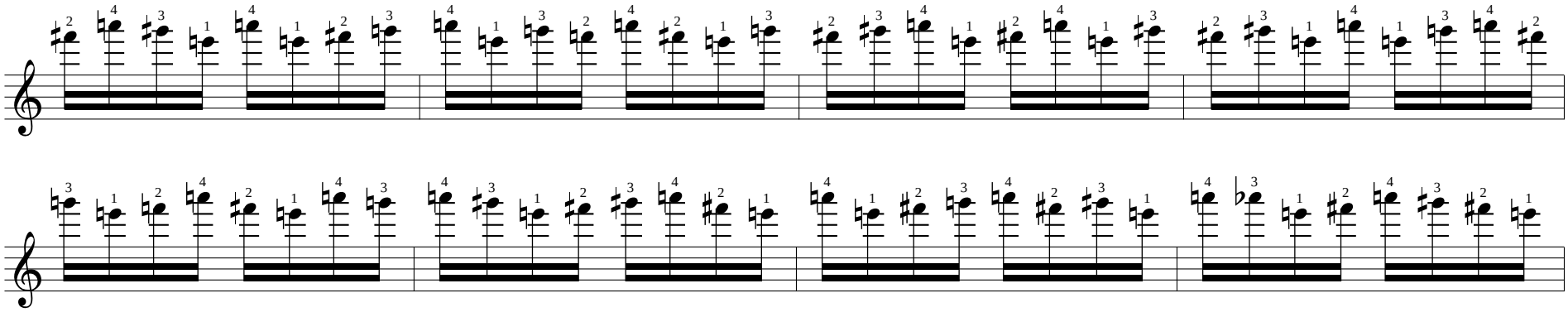
string II position 10 ordering 1

string II position 11 ordering 1



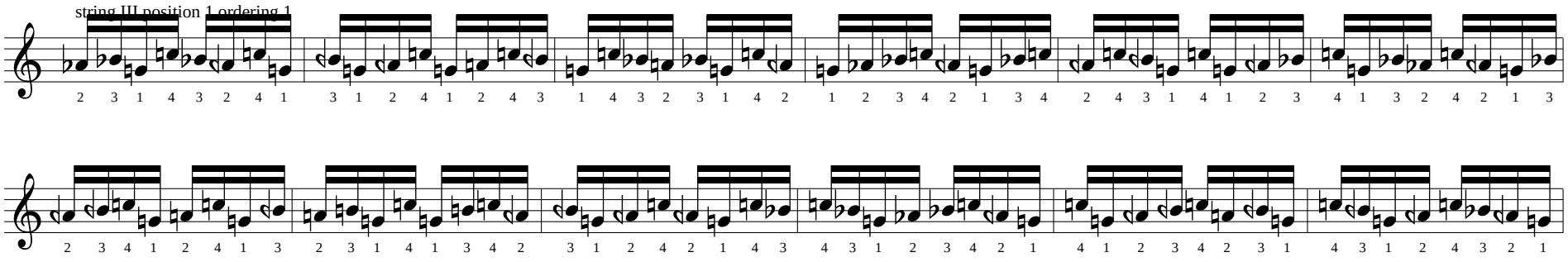
string II position 12 ordering 1

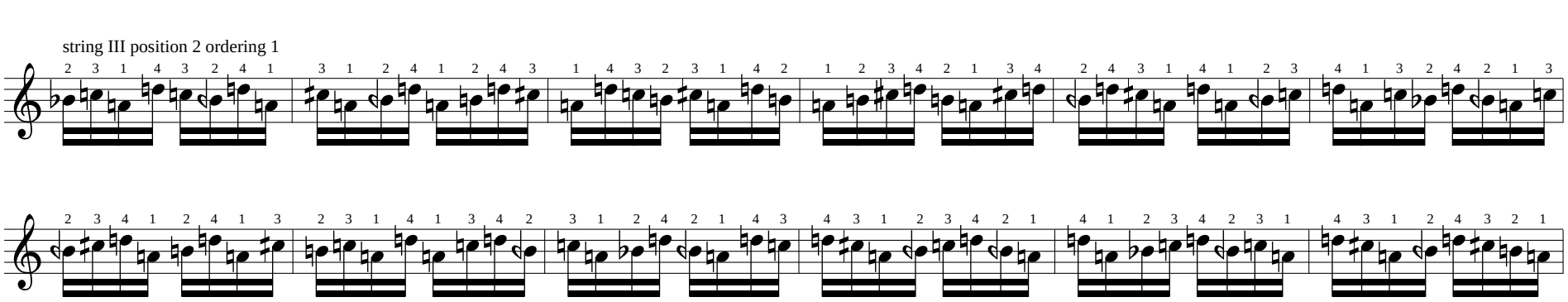




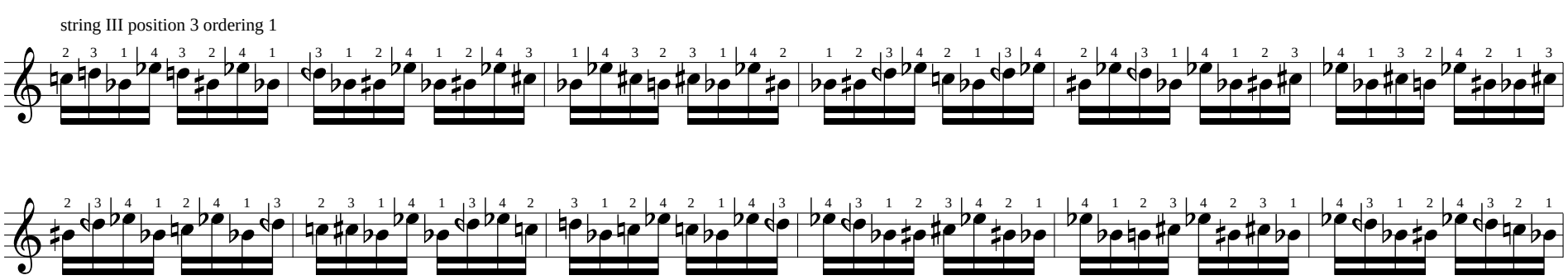
1 ordering on 12 transpositions on string III

string III position 1 ordering 1

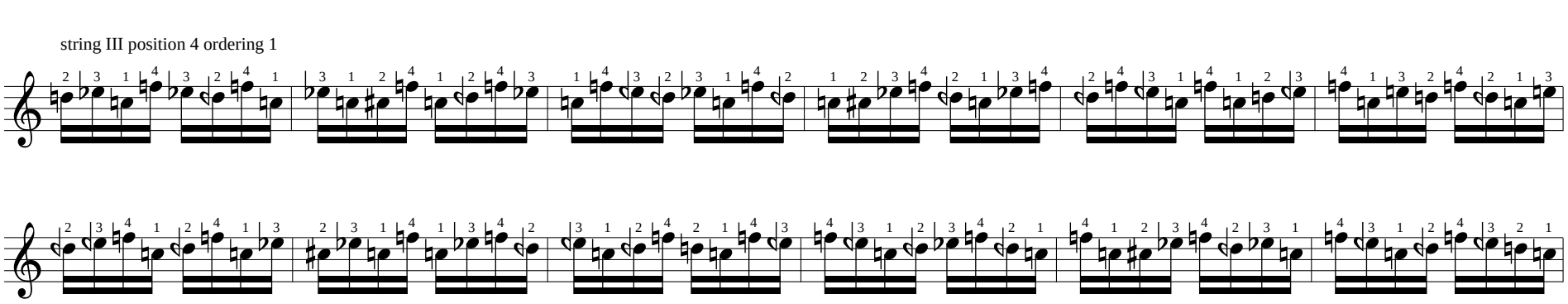




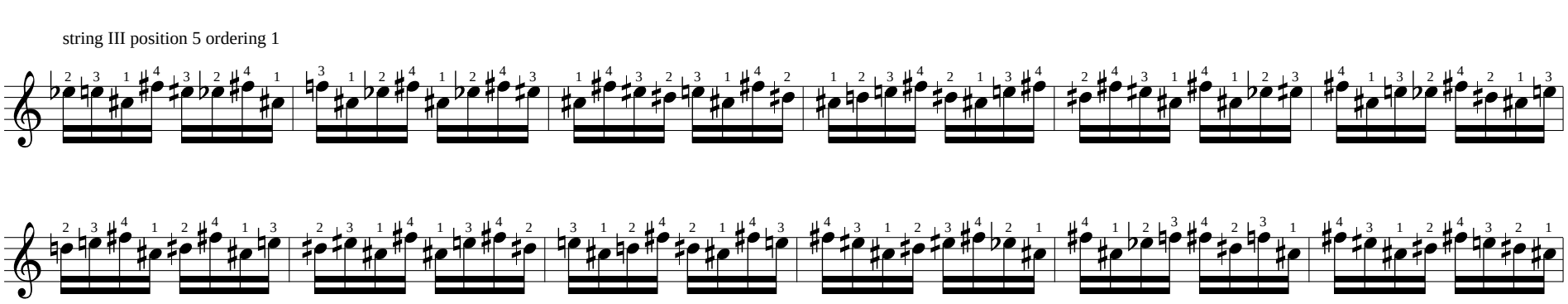
string III position 2 ordering 1



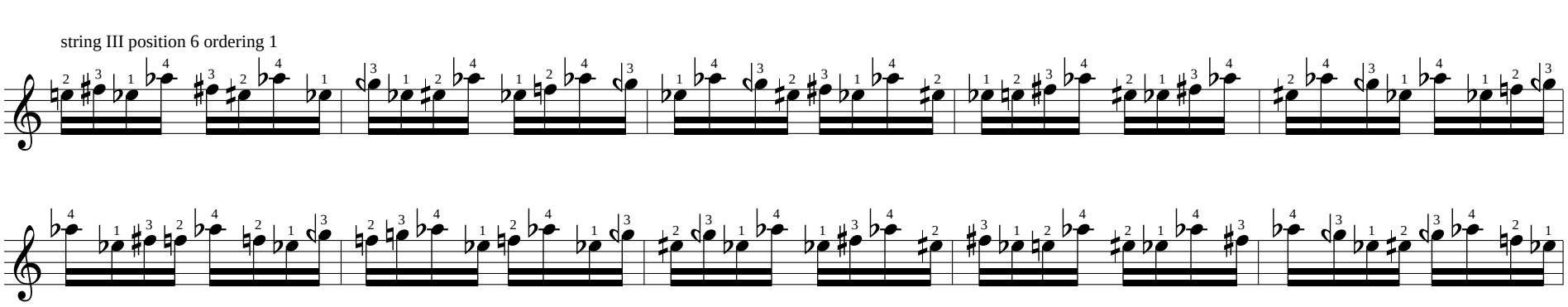
string III position 3 ordering 1



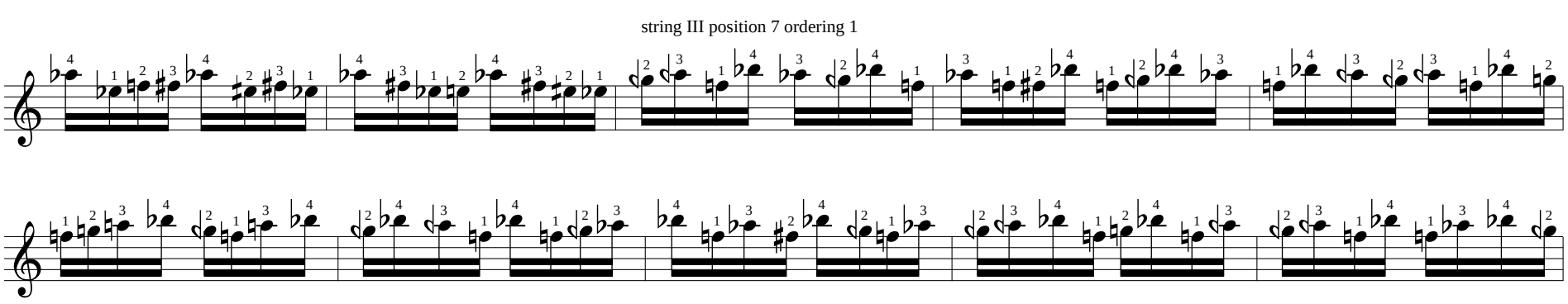
string III position 4 ordering 1



string III position 5 ordering 1

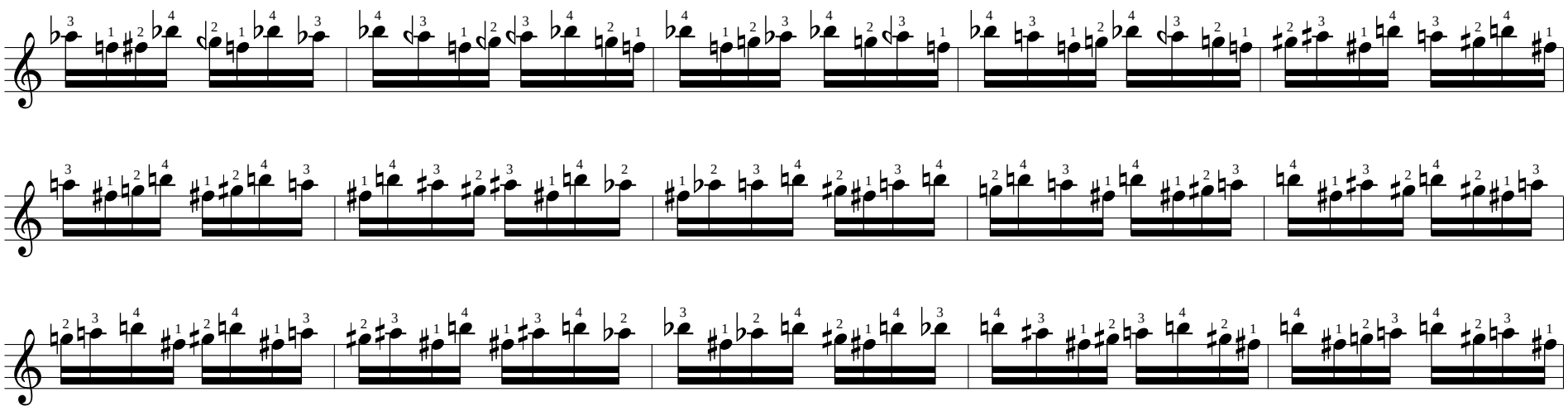


string III position 6 ordering 1

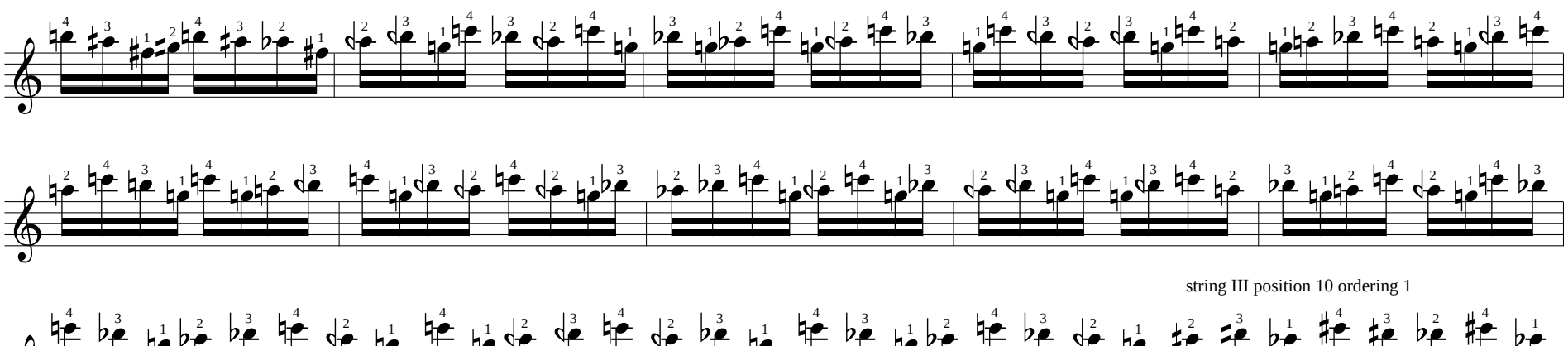


string III position 7 ordering 1

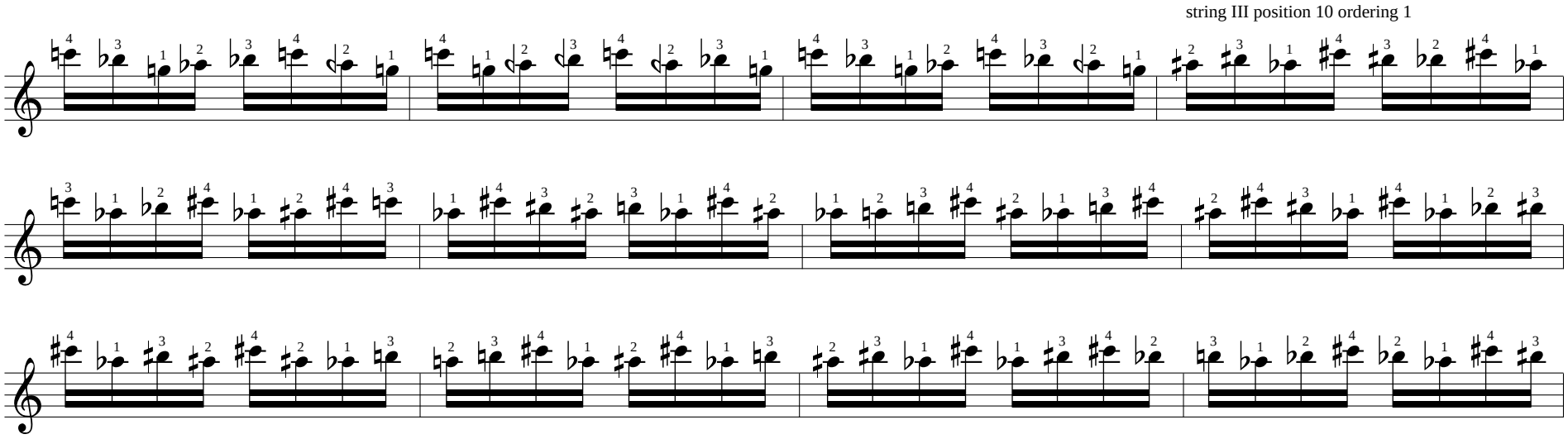
string III position 8 ordering 1



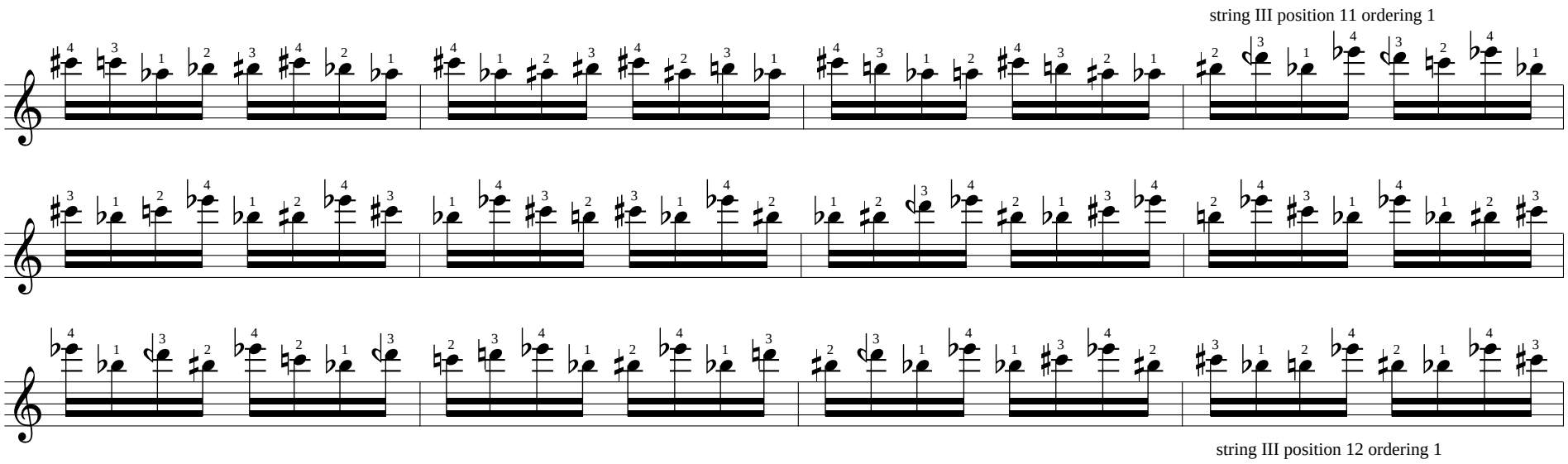
string III position 9 ordering 1



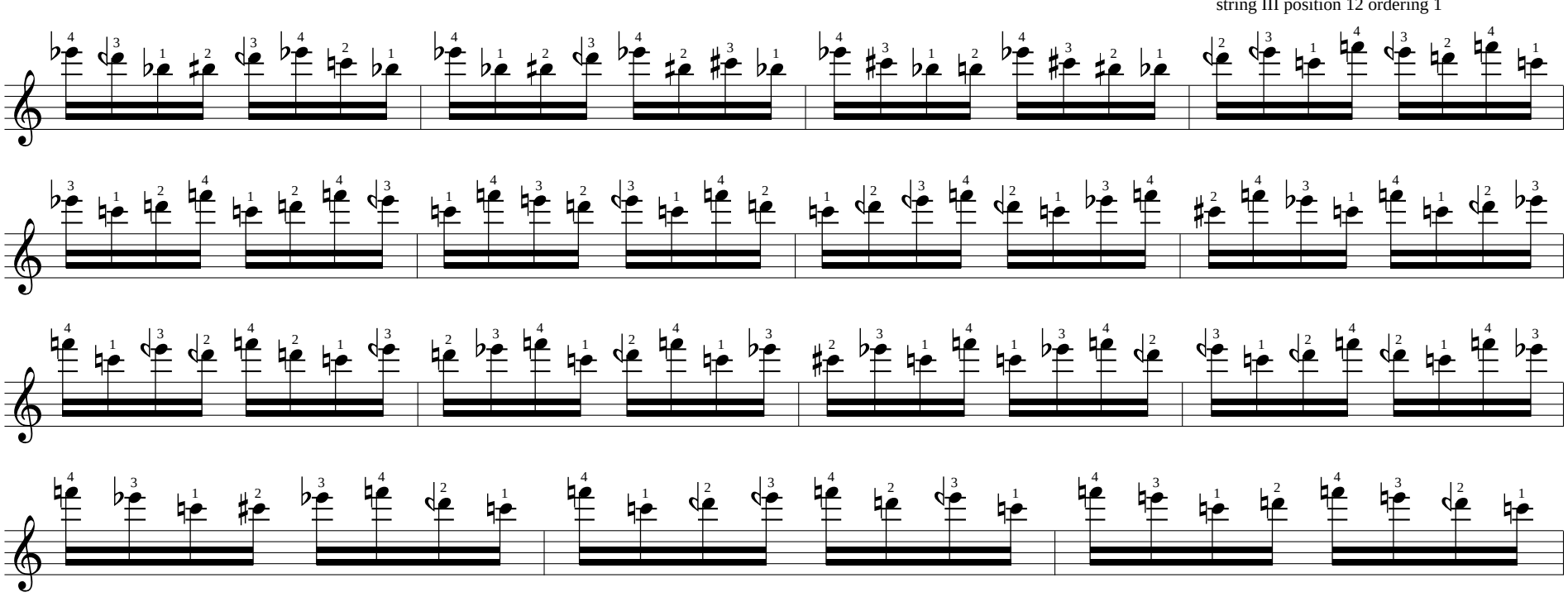
string III position 10 ordering 1



string III position 11 ordering 1

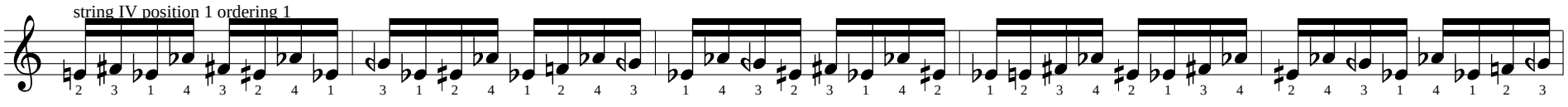


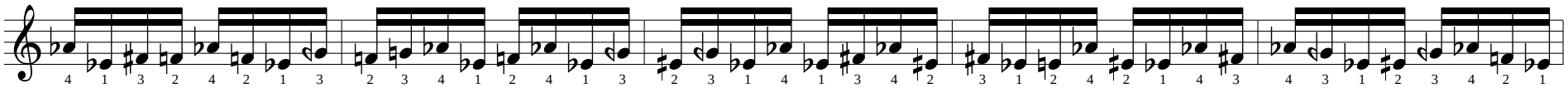
string III position 12 ordering 1



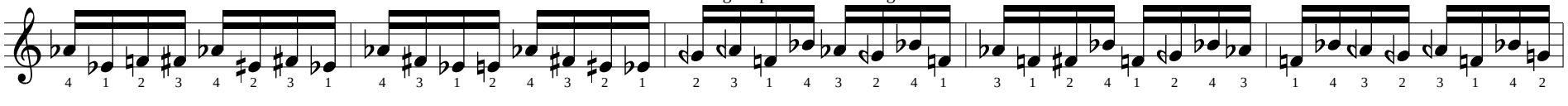
1 ordering on 12 transpositions on string IV

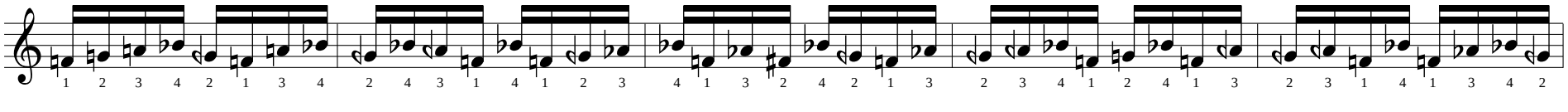
string IV position 1 ordering 1



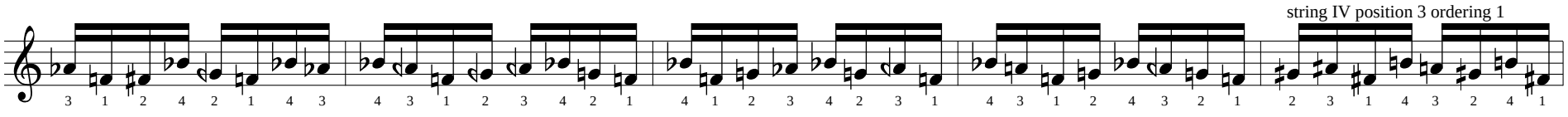


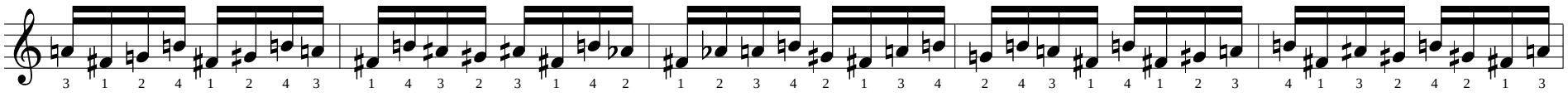
string IV position 2 ordering 1

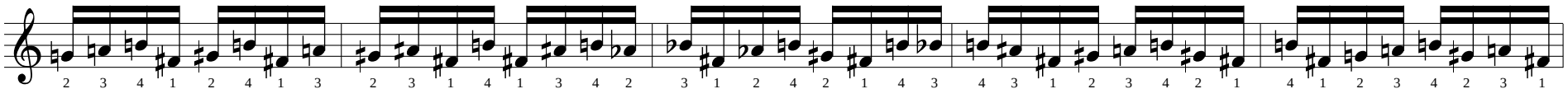




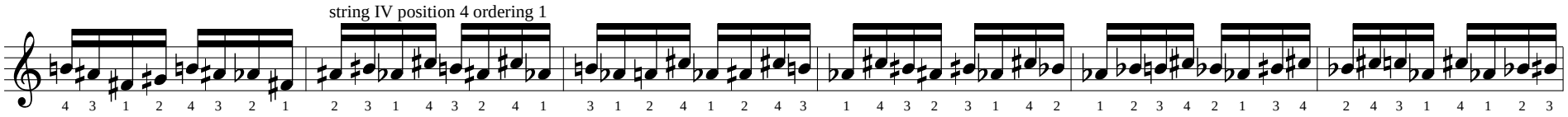
string IV position 3 ordering 1

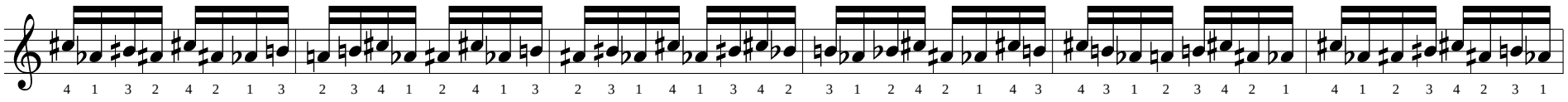




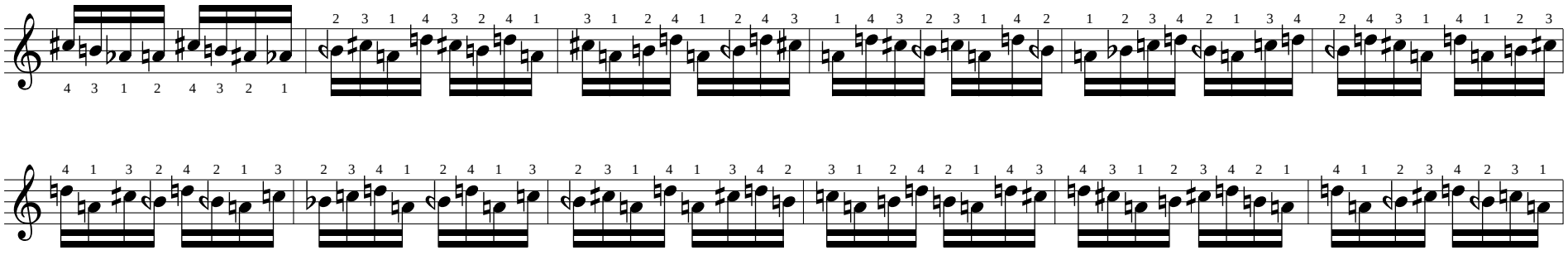


string IV position 4 ordering 1

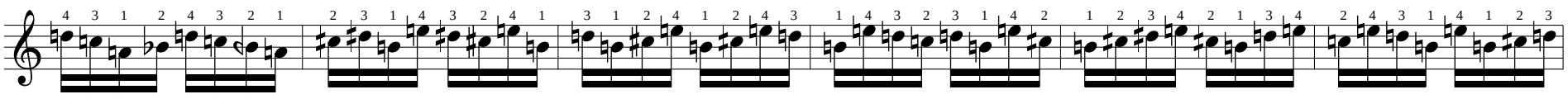


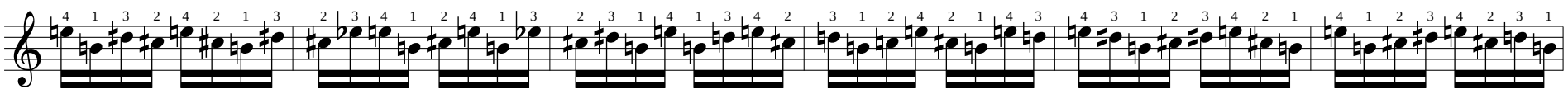


string IV position 5 ordering 1

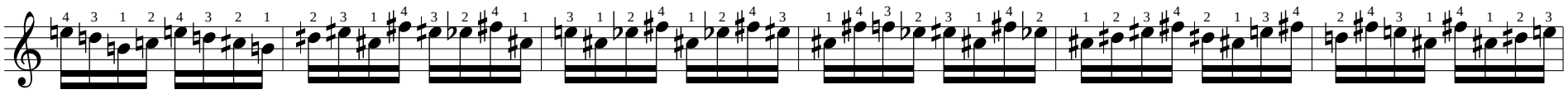


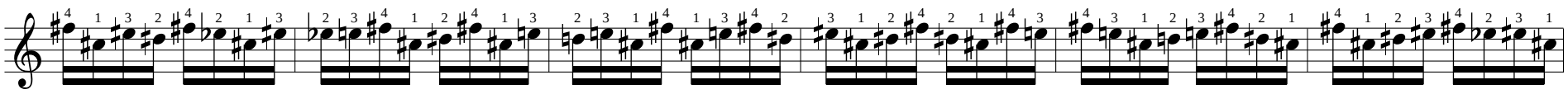
string IV position 6 ordering 1



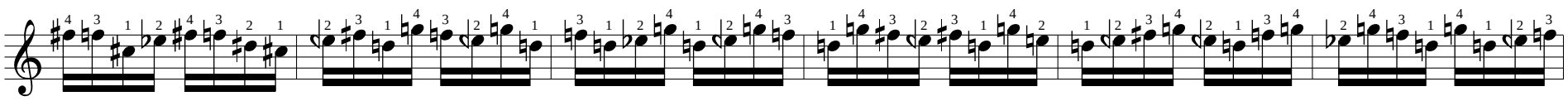


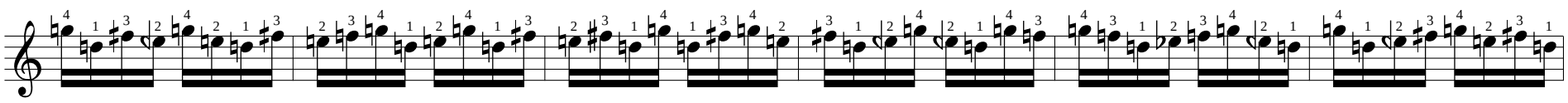
string IV position 7 ordering 1



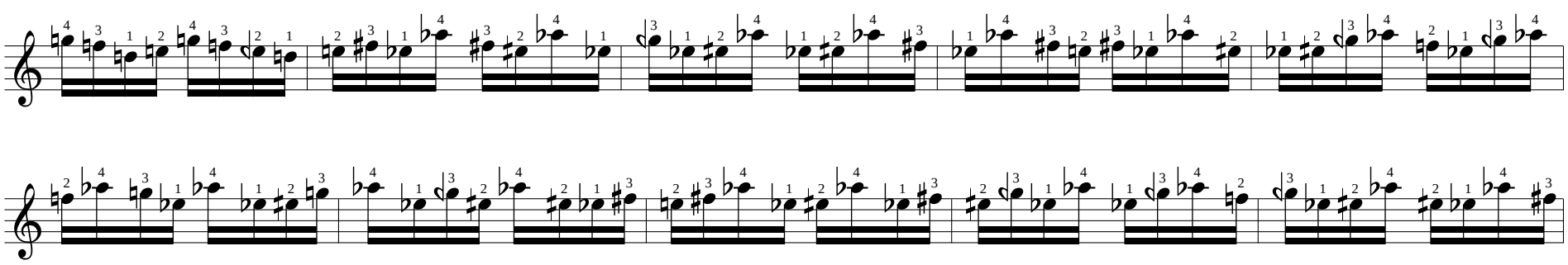


string IV position 8 ordering 1

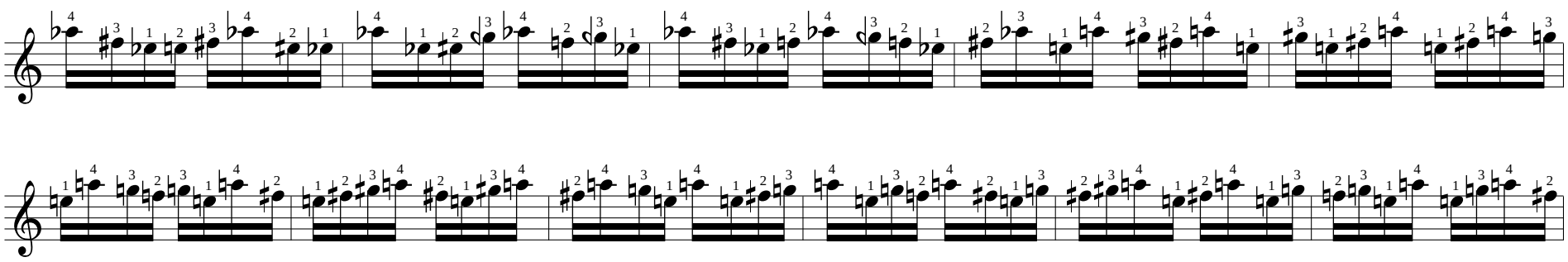




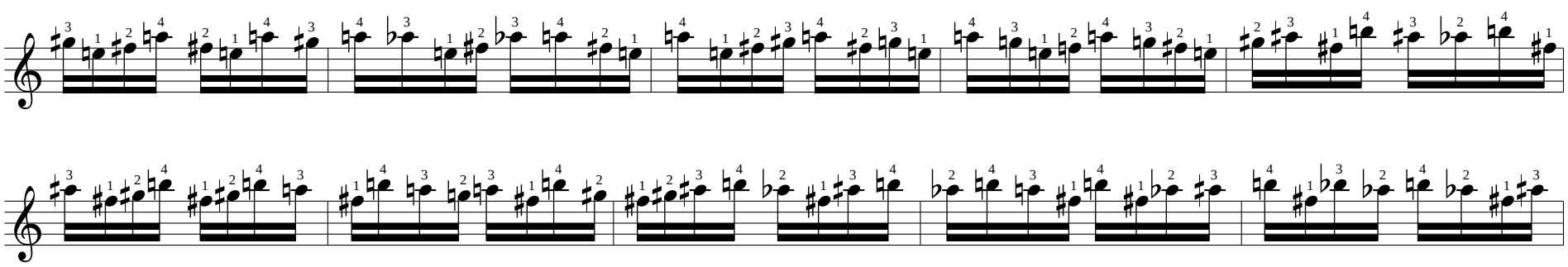
string IV position 9 ordering 1

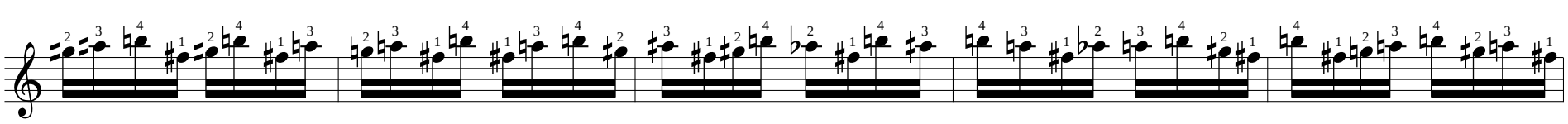


string IV position 10 ordering 1

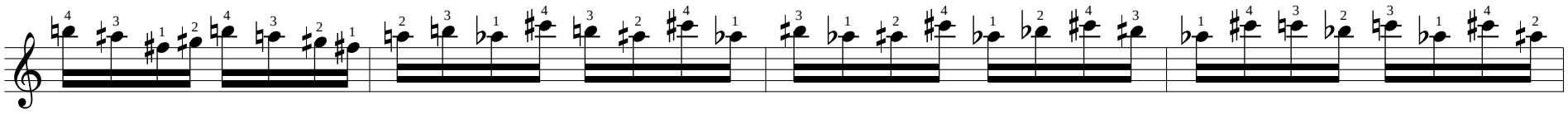


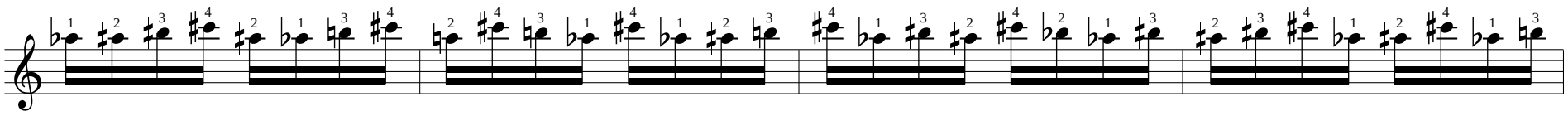
string IV position 11 ordering 1

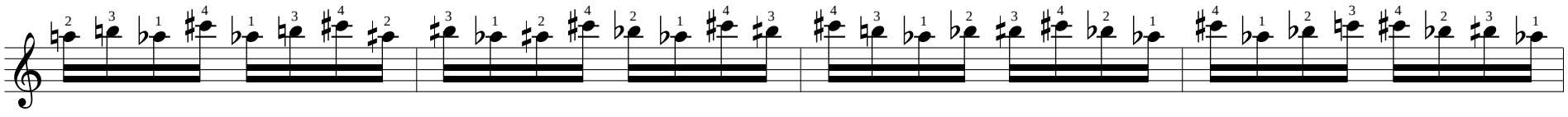


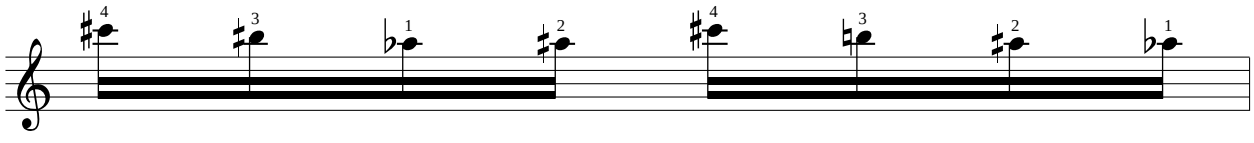


string IV position 12 ordering 1

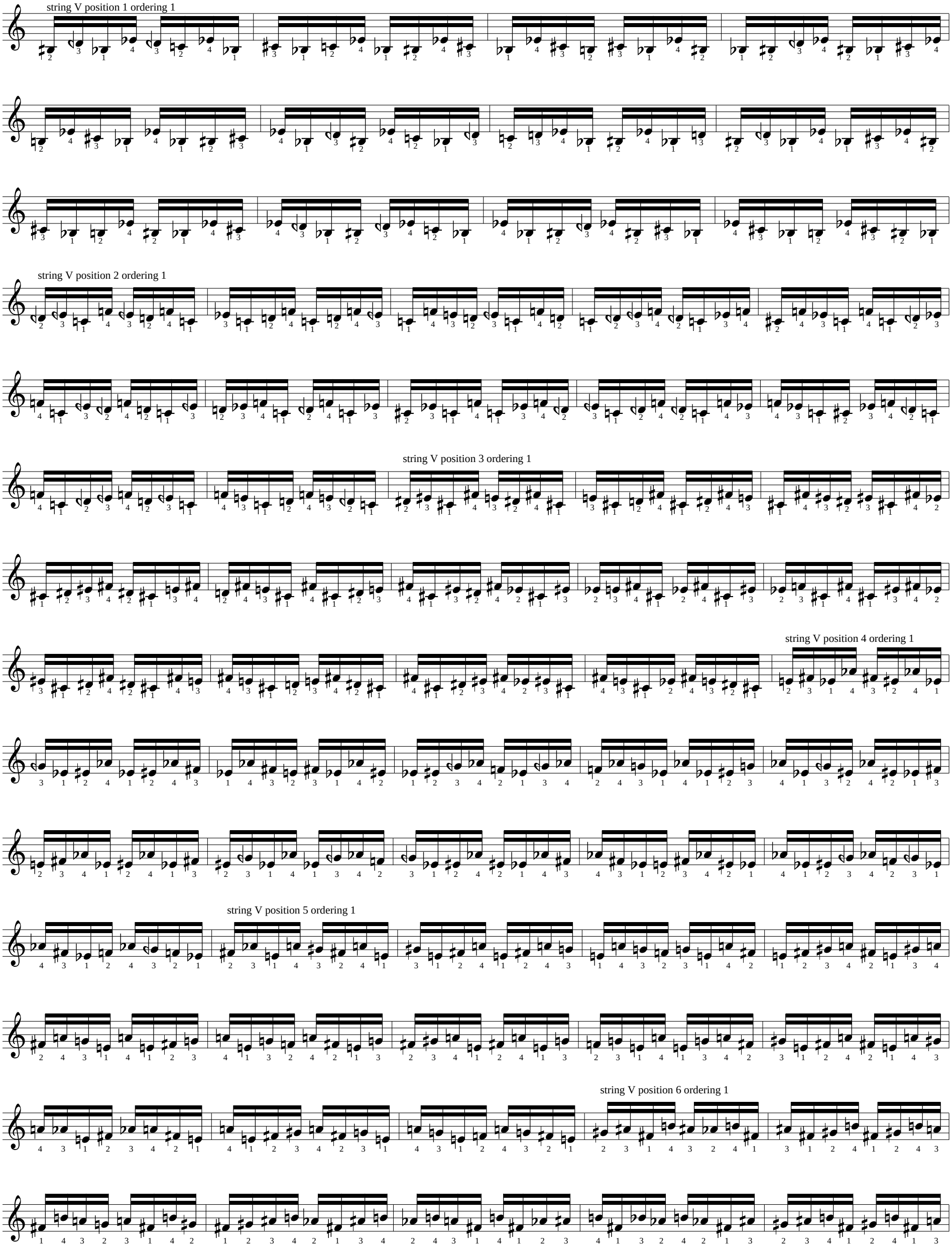


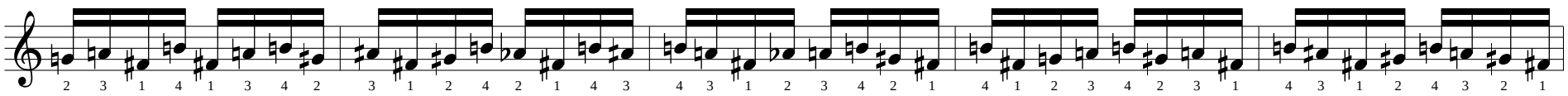




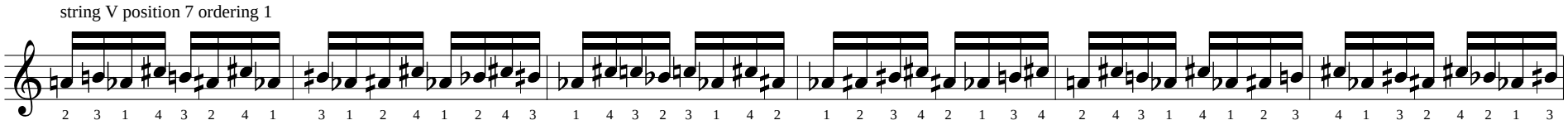


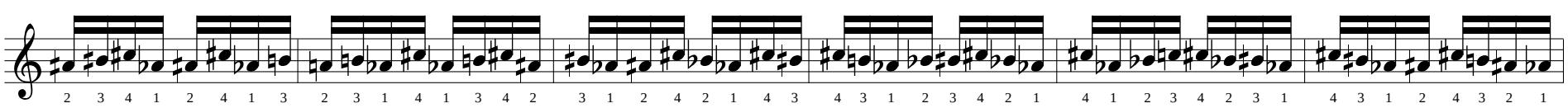
1 ordering on 12 transpositions on string V



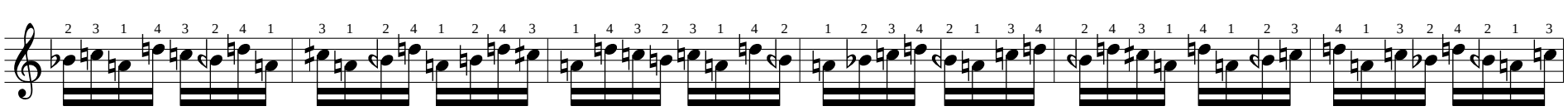


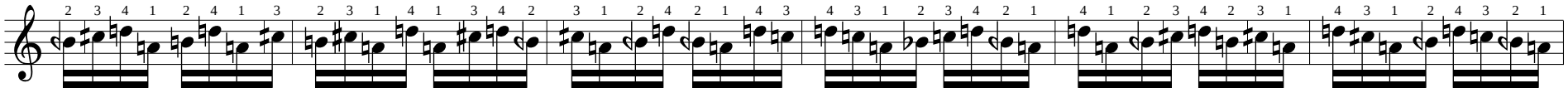
string V position 7 ordering 1



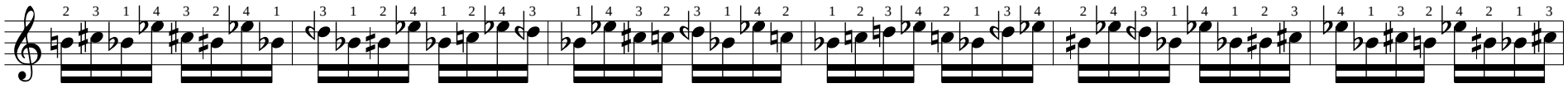


string V position 8 ordering 1

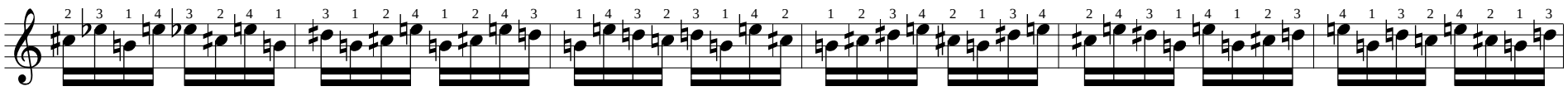


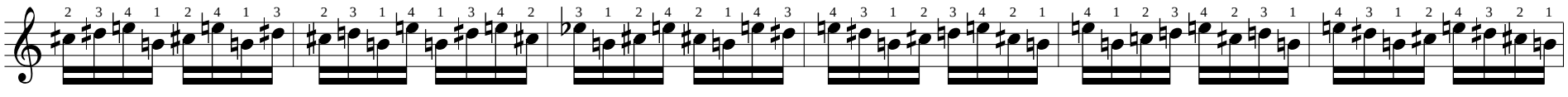


string V position 9 ordering 1

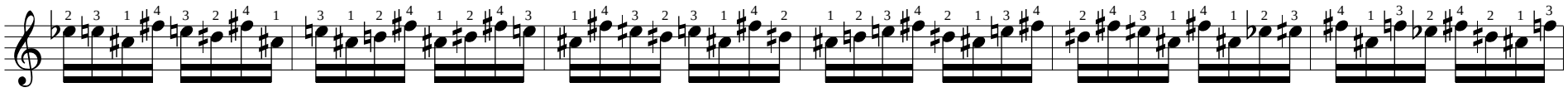


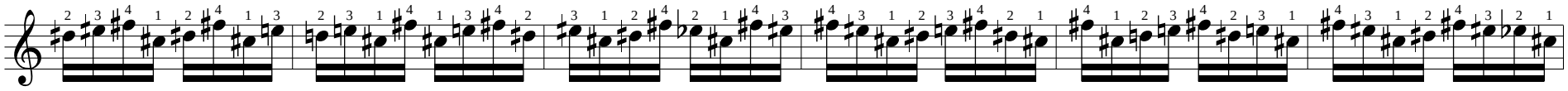
string V position 10 ordering 1



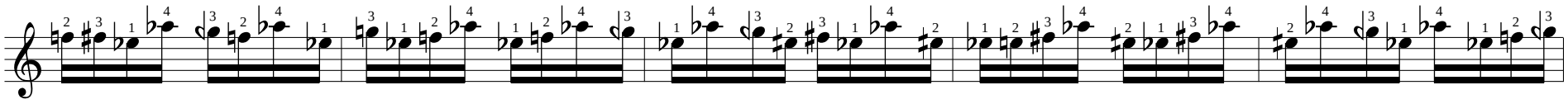


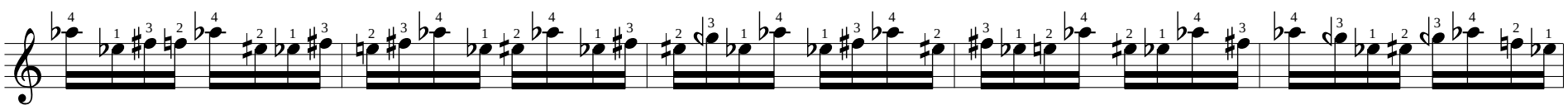
string V position 11 ordering 1

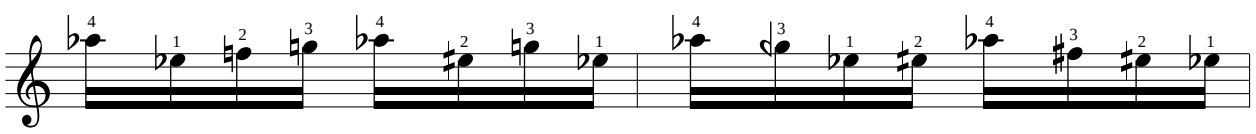




string V position 12 ordering 1

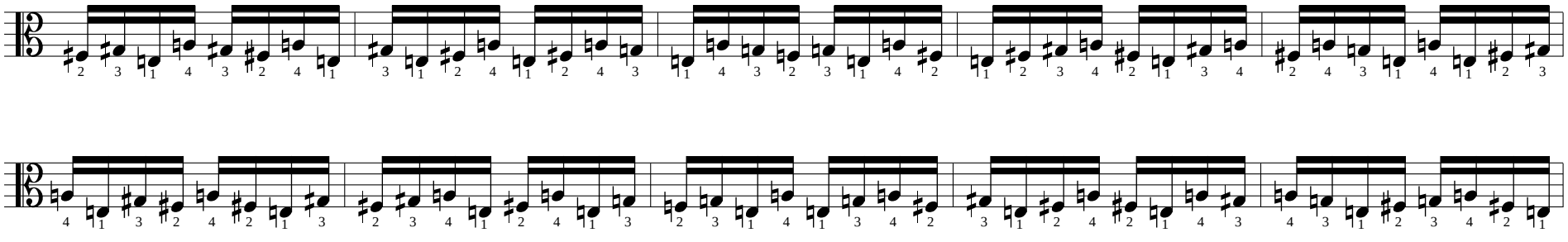




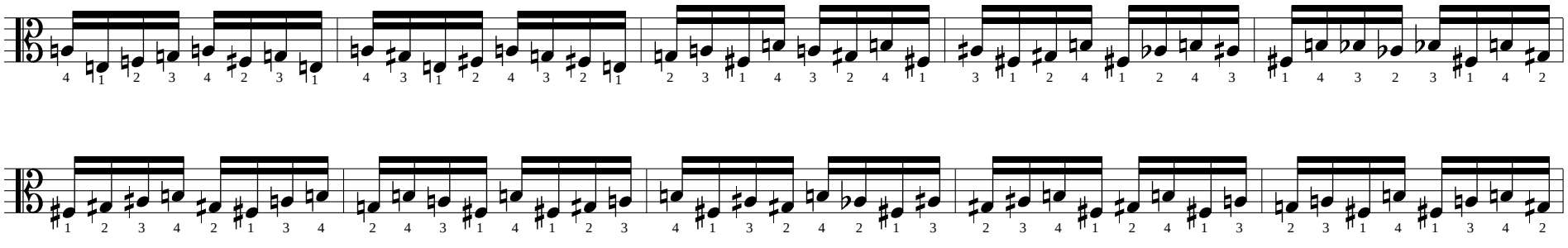


1 ordering on 12 transpositions on string VI

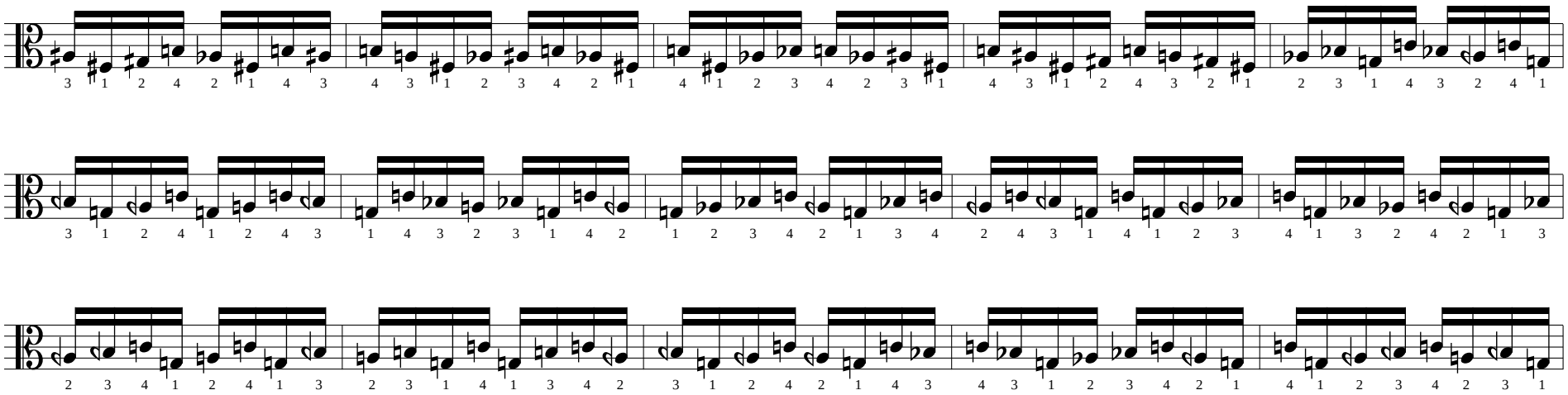
string VI position 1 ordering 1



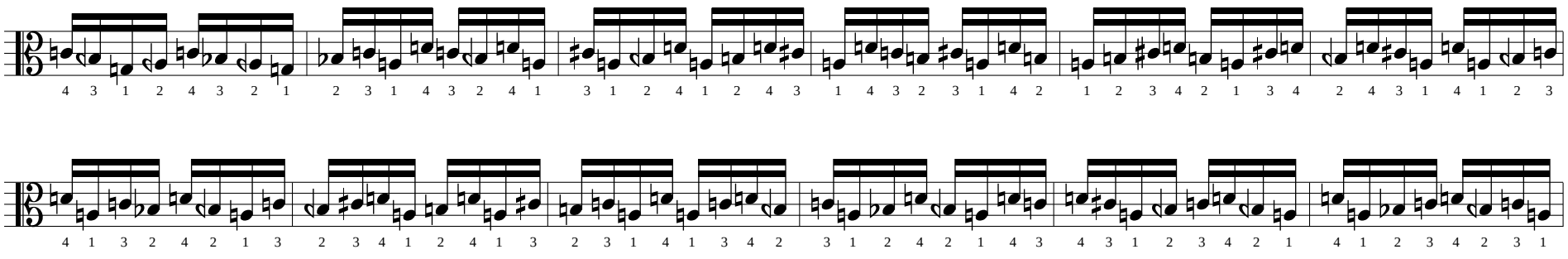
string VI position 2 ordering 1



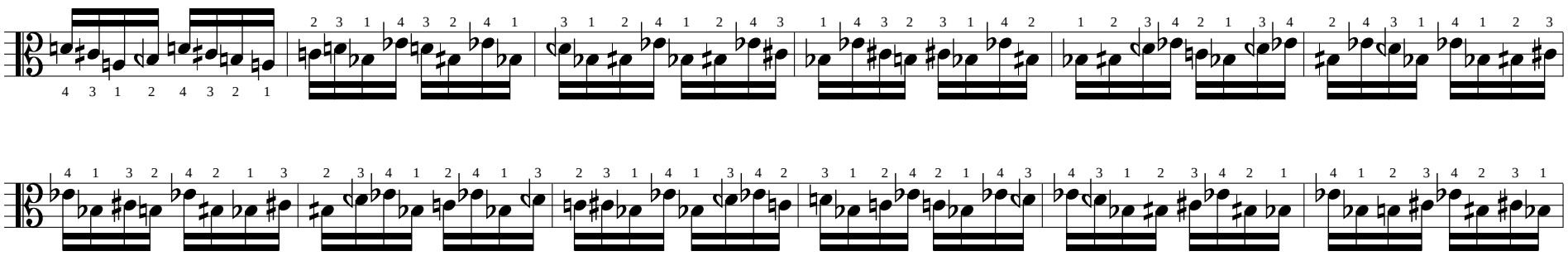
string VI position 3 ordering 1



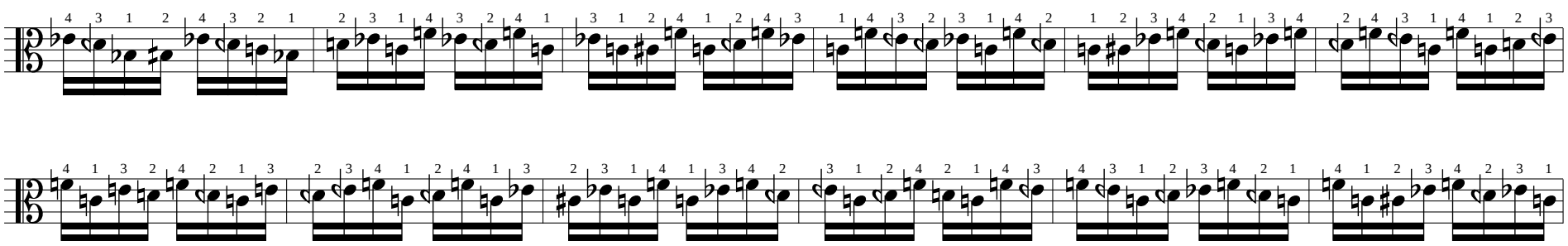
string VI position 4 ordering 1



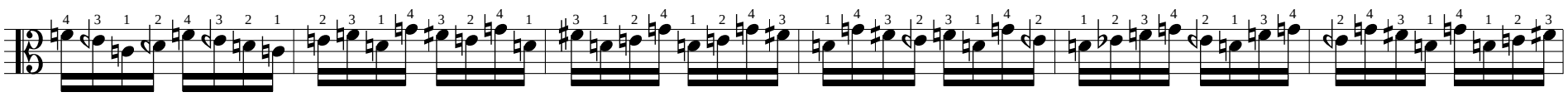
string VI position 5 ordering 1

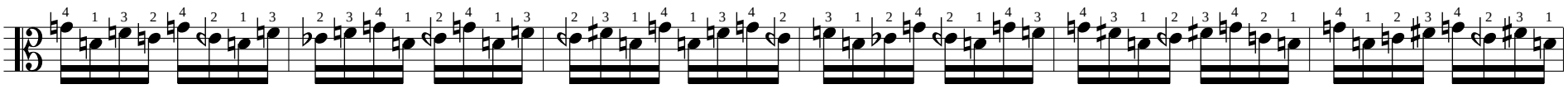


string VI position 6 ordering 1

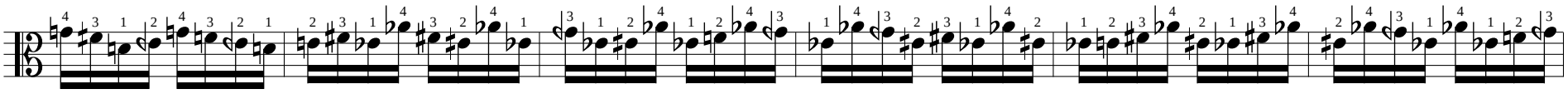


string VI position 7 ordering 1

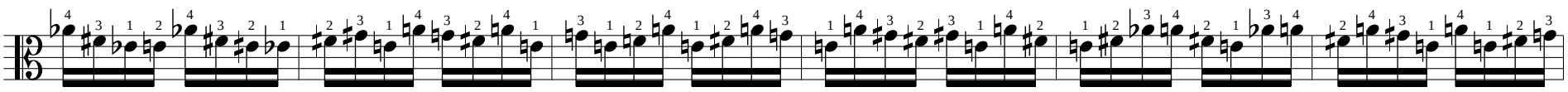




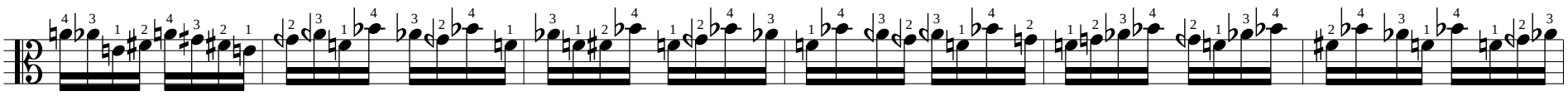
string VI position 8 ordering 1



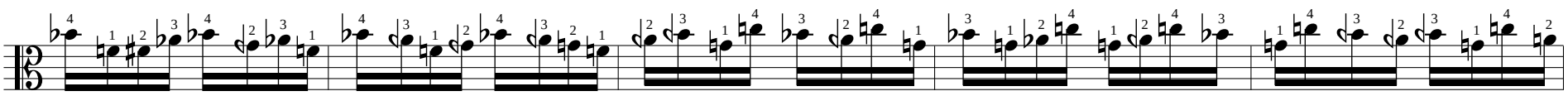
string VI position 9 ordering 1



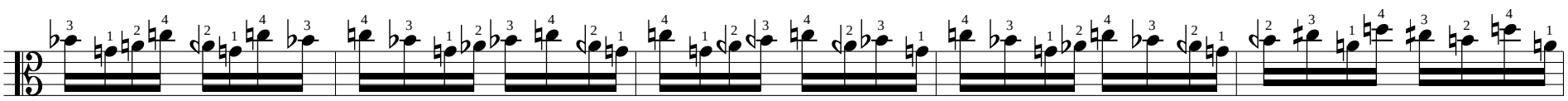
string VI position 10 ordering 1



string VI position 11 ordering 1



string VI position 12 ordering 1



13:13:28 Fri Oct 27 2006 GMT Standard Time