JOCELYN HEARS THE STARS

AD HONOREM

JOCELYN BELL BURNELL

JORDAN ALEXANDER KEY

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FOR

FORMOSA DUO

Violoncello – Piano

April, 2021

About Jocelyn Bell Burnell:

Dr. Dame Susan Jocelyn Bell Burnell (b. 1943) is a British astrophysicist from Northern Ireland who, as a postgraduate student in 1967, discovered the first radio pulsars. The discovery was recognized by the award of the 1974 Nobel Prize in Physics but, despite being the first person to discover the pulsars, she was not one of the recipients of the prize.

The paper announcing the discovery of pulsars had five authors. Bell's thesis supervisor Antony Hewish was listed first, Bell Burnell second. Hewish was awarded the Nobel Prize, along with the astronomer Martin Ryle. While many prominent astronomers criticized Burnell's omission from the Nobel Prize, she played down this controversy, saying, "I believe it would demean Nobel Prizes if they were awarded to research students, except in very exceptional cases, and I do not believe this is one of them." The Royal Swedish Academy of Sciences, in its press release announcing the 1974 Nobel Prize in Physics, cited Ryle and Hewish for their pioneering work in radio-astrophysics, with particular mention of Ryle's work on aperture-synthesis technique, and Hewish's decisive role in the discovery of pulsars. Nothing was said of Burnell's critical work and pivotal discovery, upon which her advisors', Ryle's and Hewish's, research was unquestionably founded.

That Bell did not receive recognition in the 1974 Nobel Prize in Physics has been a point of controversy ever since. She helped build the Interplanetary Scintillation Array over two years and initially noticed the anomaly, sometimes reviewing as much as 96 feet (29 m) of paper data per night. Bell later said that she had to be persistent in reporting the anomaly in the face of skepticism from Hewish, who was initially insistent that it was due to man-made radio interference.

Bell Burnell is currently Visiting Professor of Astrophysics at the University of Oxford, and a Fellow of Mansfield College. She was President of the Institute of Physics between 2008 and 2010. In February 2018 she was appointed Chancellor of the University of Dundee. In 2018, Bell Burnell was awarded the Special Breakthrough Prize in Fundamental Physics, worth three million dollars (£2.3 million), for her discovery of radio pulsars. She donated all of the money "to fund women, under-represented ethnic minority, and refugee students [seeking] to become physics researchers." These funds are to be administered by the Institute of Physics under the "Bell Burnell Graduate Scholarship Fund."

Note on Magnetic Tape Technique:

The tape technique first involves the pianist acquiring two to three feet of magnetic tape (like that found in cassette or VHS tapes – the composer recommends the thicker tape of a VHS, but either will suffice). If the pianist requires, the composer can be contacted for magnetic tape, though blank reels of tape can be easily purchased very cheaply online.

This tape will then by secured to the indicated string by gently tying the tape around the string. While the tape can be tied anywhere to the string's resonating length, the primary nodes are recommended (1st, 2nd, or 3rd partials). For this work, you will need to attached tapes to the lowest B string only. The loose end of the tape can either be tied (or taped - recommended) to the upper end of the piano's lid support peg (creating approximately a 45-degree angle against the piano's horizontal plane). The tape should be quite taught.

While depressing the sustain pedal, the pianist will run their fingers across the tape from the low end (near the strings) to the upper end. This should be a relatively slow and continuous motion with medium to heavy pressure on the tape (taking care not to unduly stretch or break the tape). The performer is encouraged to find their best grip, but the composer offers these suggestions:

1. One side of the tape is often more frictional. It is to this side that the most pressure should be applied.
2. The effectiveness of the technique is sometimes determined by the oil consistency on the hands. Often the technique is more difficult to execute after one wash their hands.
3. It might be helpful to apply counter torsion presser by pushing down on the tape with the index and/or middle finger while also applying upward pressure with the thumb, but slightly offset from the index/middle fingers.
4. More pressure will produce a fuller sound, but too much pressure will slowly stretch the tape, making it more difficult to work with over the course of the rehearsal/performance. The tape works best when taught. Should the tape be affixed to the peg and become loose in a performance due to stretching, one can use the free right hand (assuming it is free) to reign in the slack of the tape.
5. The tape can also the stroked from top-to-bottom as well as from bottom-to-top. Starting at the top will produce a more whiney timbre at the outset of the sound and move towards a broader low-pitched resonant sound, whereas the reverse is true should the tape be stroked bottom-to-top. One can execute the technique with a continue motion from bottom-top-bottom, but this may take some practice to satisfactorily execute. The more continuous the sound is over the sound's required duration the better. However, if one needs to start and stop, following a bottom-top + bottom-top motion, this is fine.

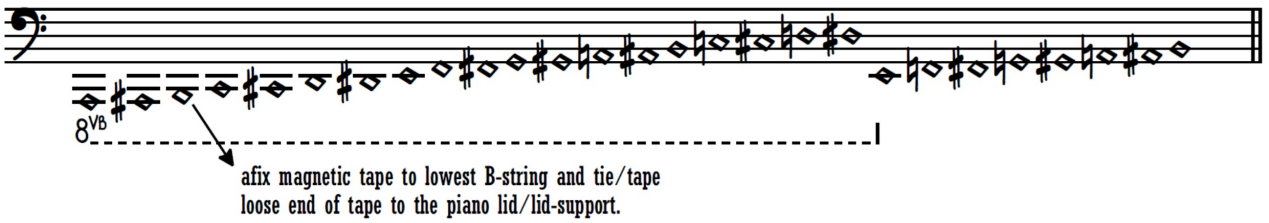
Have fun and experiment with the technique to find the sound that you like most within the sound world of this magnetic tape and the piano. This should sound somewhat like a sitar with extra whininess.

Jocelyn Hears the Stars

Ad Honorem Jocelyn Bell Burnell

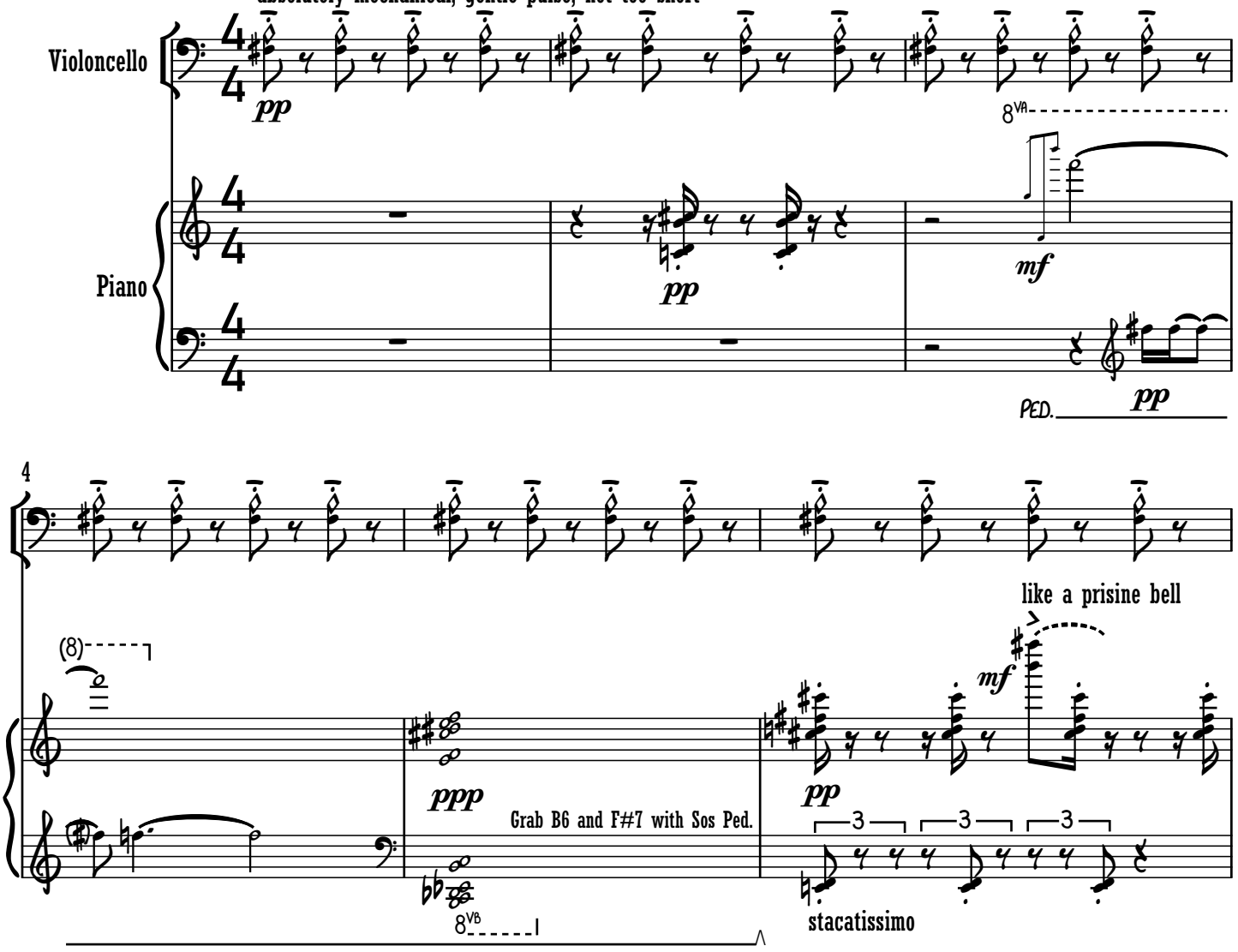
Jordan Alexander Key
April 2021

PIANO NOTE: At this sign ⊕
These tones keep off the damper by the middle-pedal (sotenuto-pedal) until the end of this piece.



Chasmous (♩ = ca. 40)

absolutely mechanical, gentle pulse, not too short



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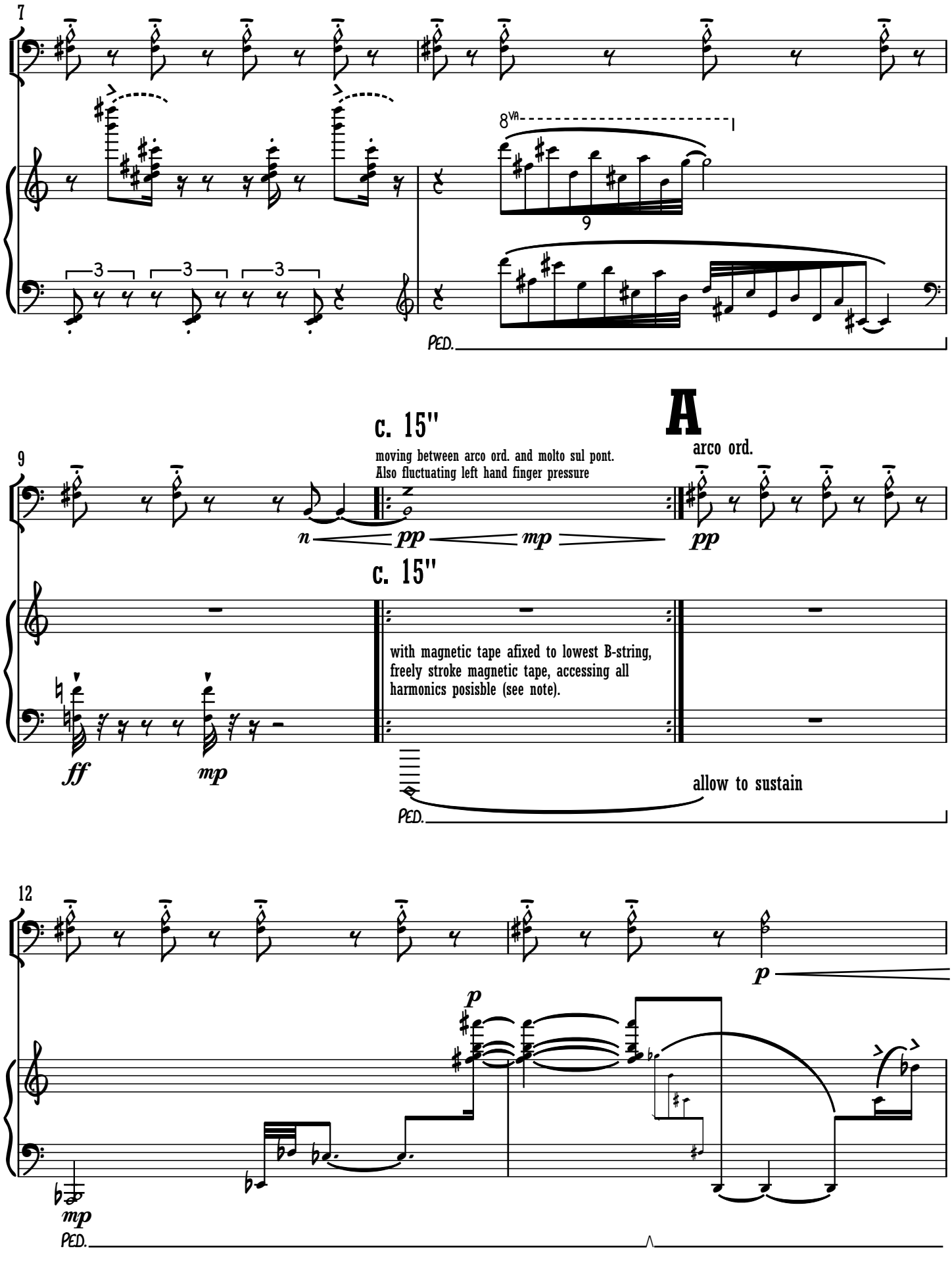
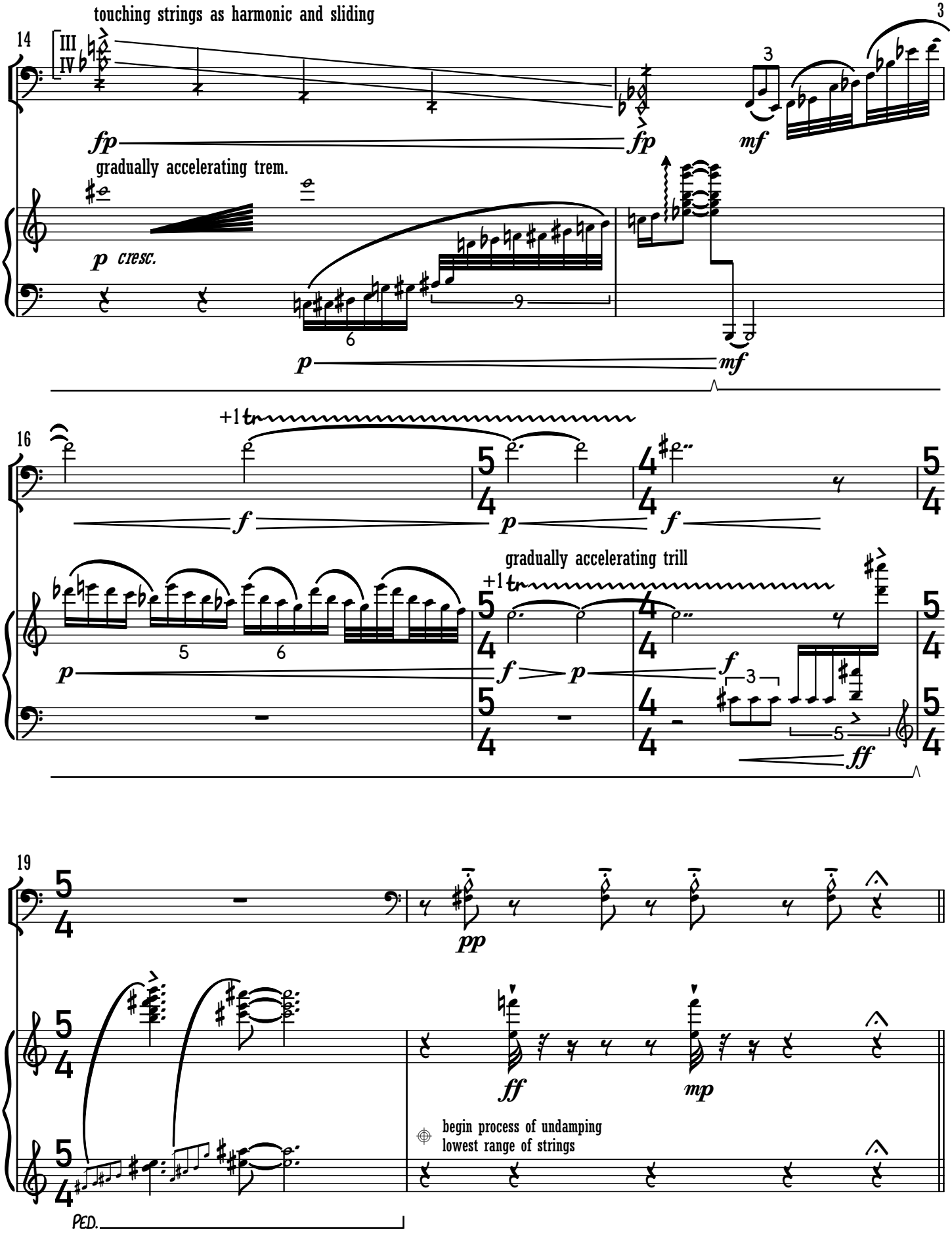
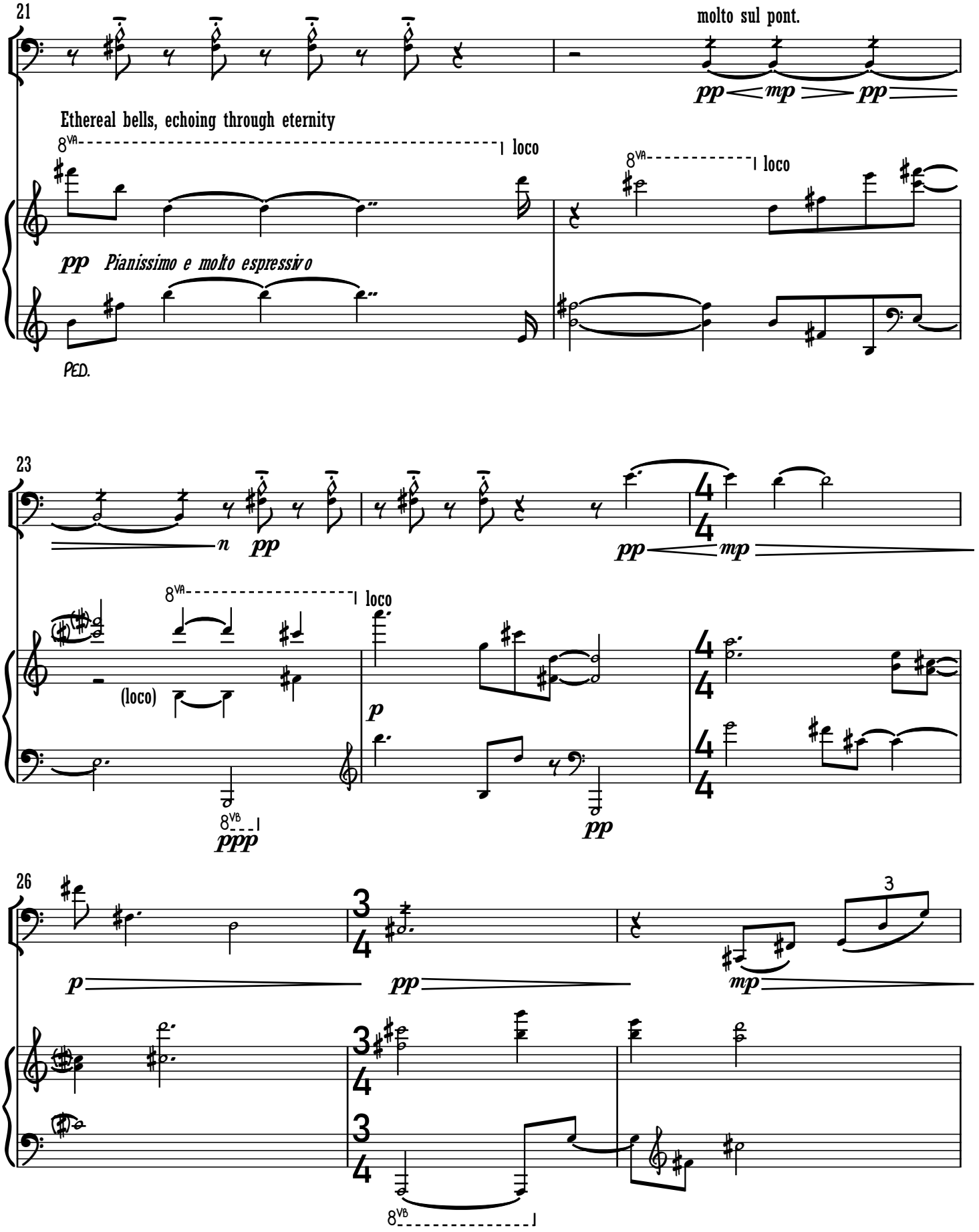
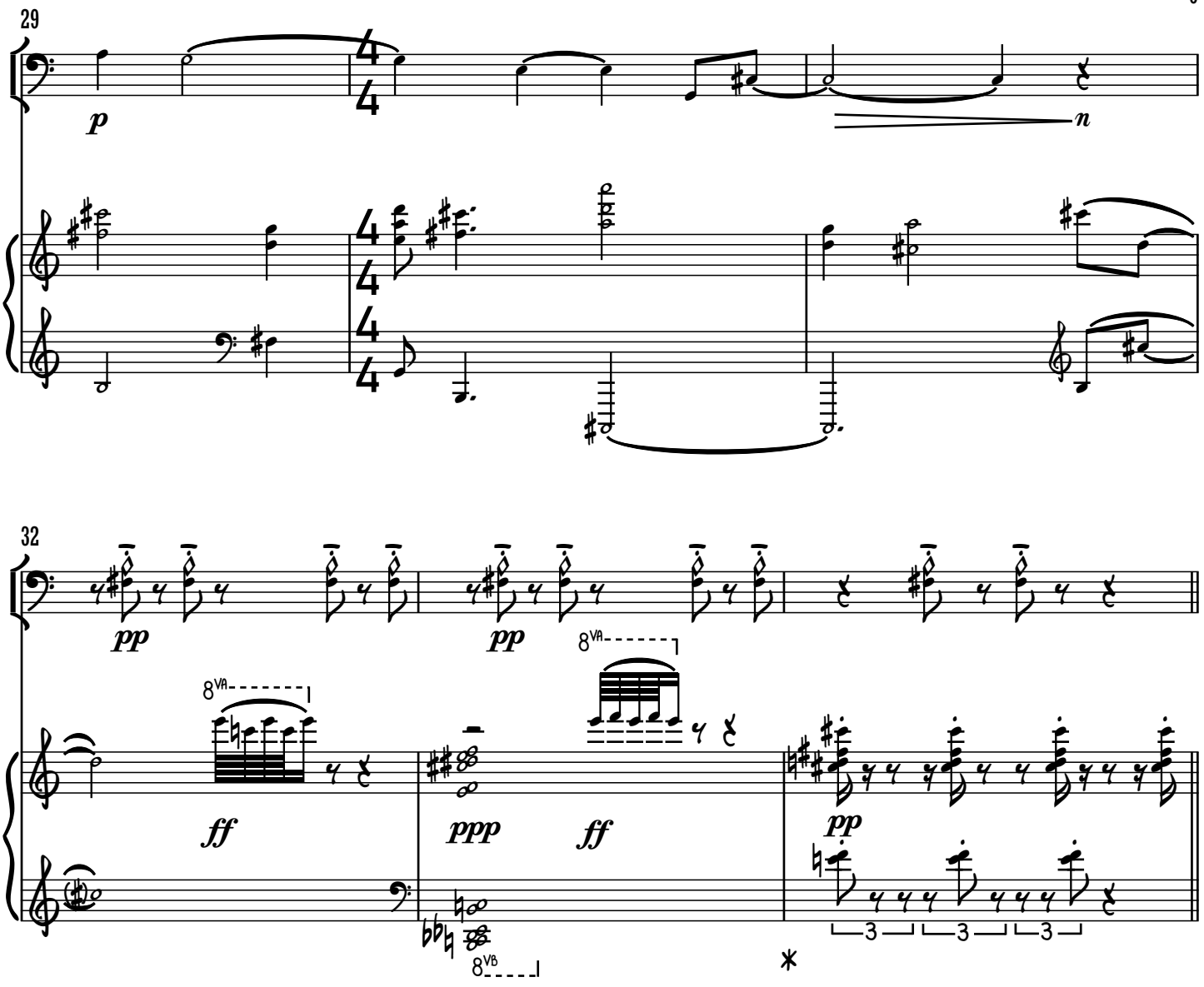

7
8va
9
3
3
3
PED.
A
c. 15"
moving between arco ord. and molto sul pont.
Also fluctuating left hand finger pressure
arco ord.
9
n
pp
mp
pp
c. 15"
with magnetic tape afixed to lowest B-string,
freely stroke magnetic tape, accessing all
harmonics posisble (see note).
ff
mp
allow to sustain
PED.
12
p
p
mp
PED.

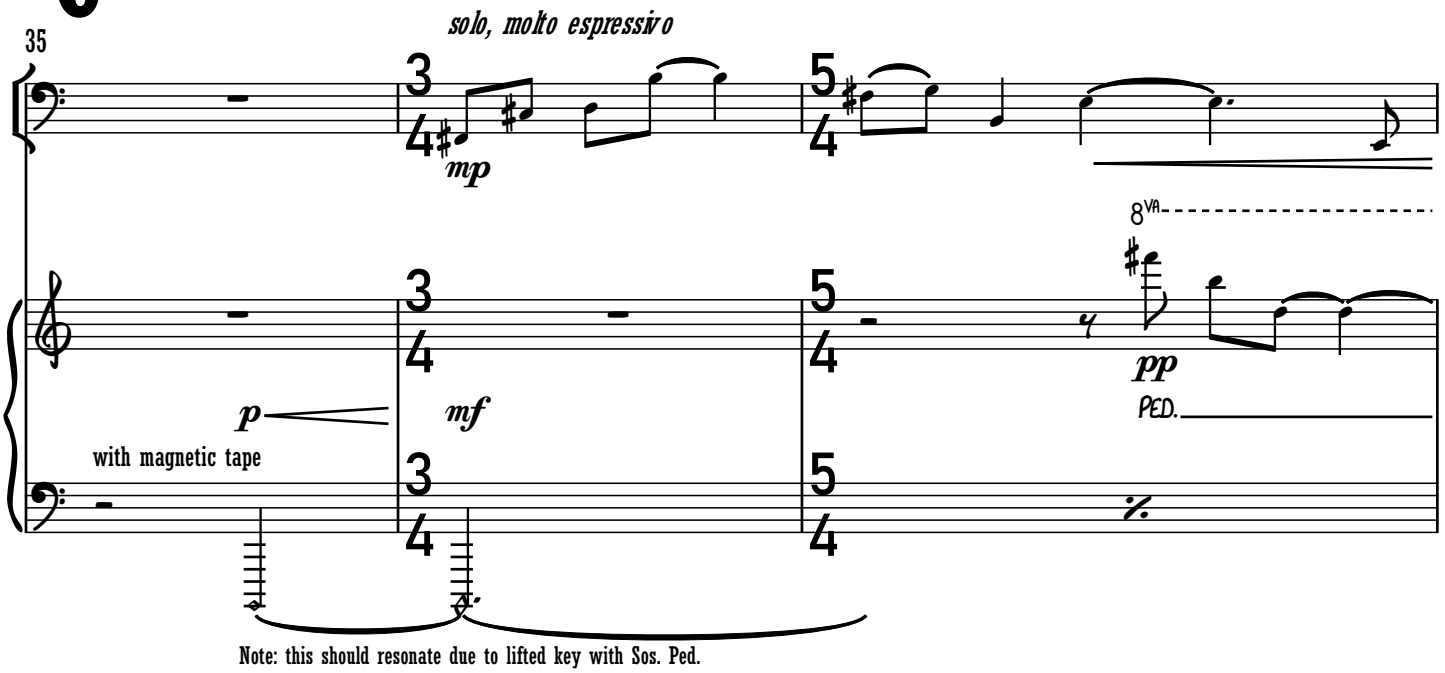

touching strings as harmonic and sliding
14
III
IV
fp
fp
3
mf
gradually accelerating trem.
p cresc.
6
9
p
mf
16
+1
f
p
f
gradually accelerating trill
+1
5
6
p
f
p
f
3
5
ff
19
pp
ff
mp
begin process of undamping
lowest range of strings
PED.

B

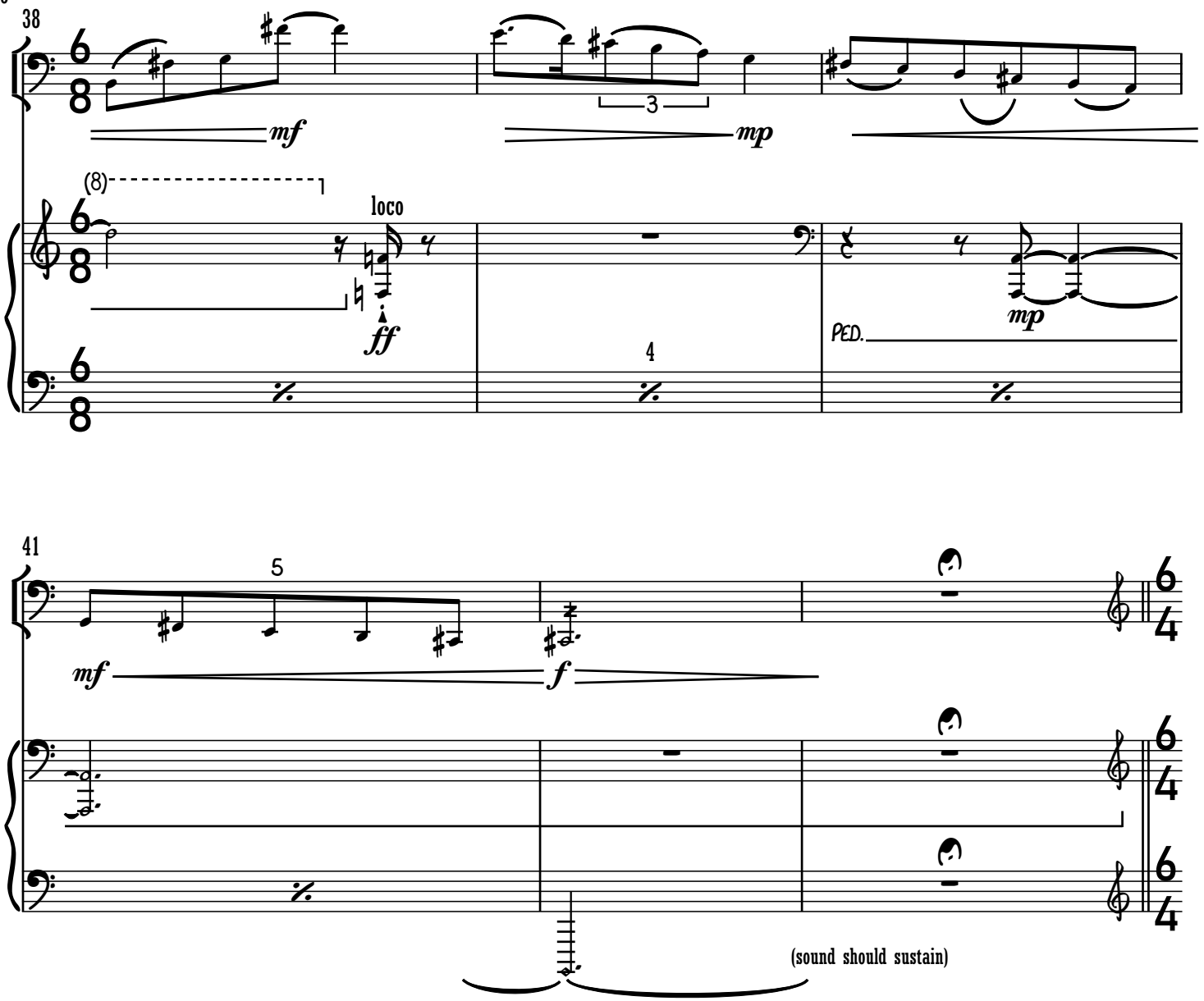

21
molto sul pont.
pp mp pp
Ethereal bells, echoing through eternity
8va
loco
pp Pianissimo e molto espressivo
PED.
23
n pp
pp mp
(loco)
p
8vb
ppp
pp
26
3
p
pp
mp
3
8vb



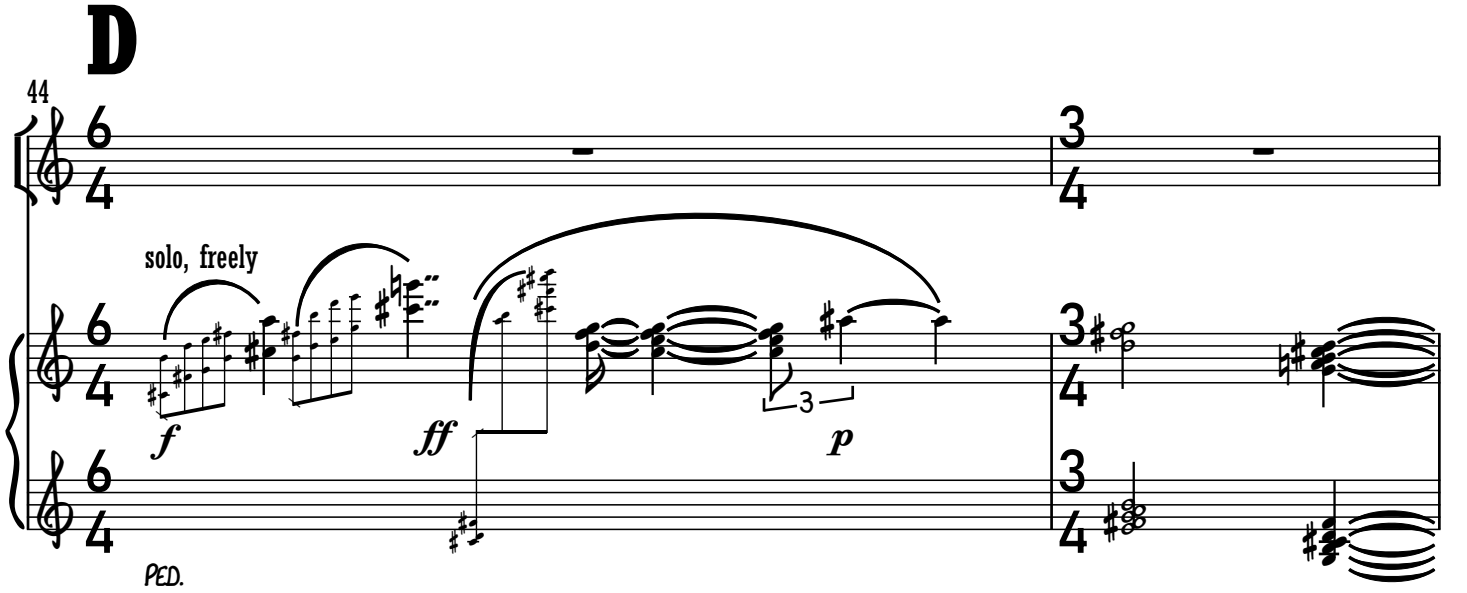
C

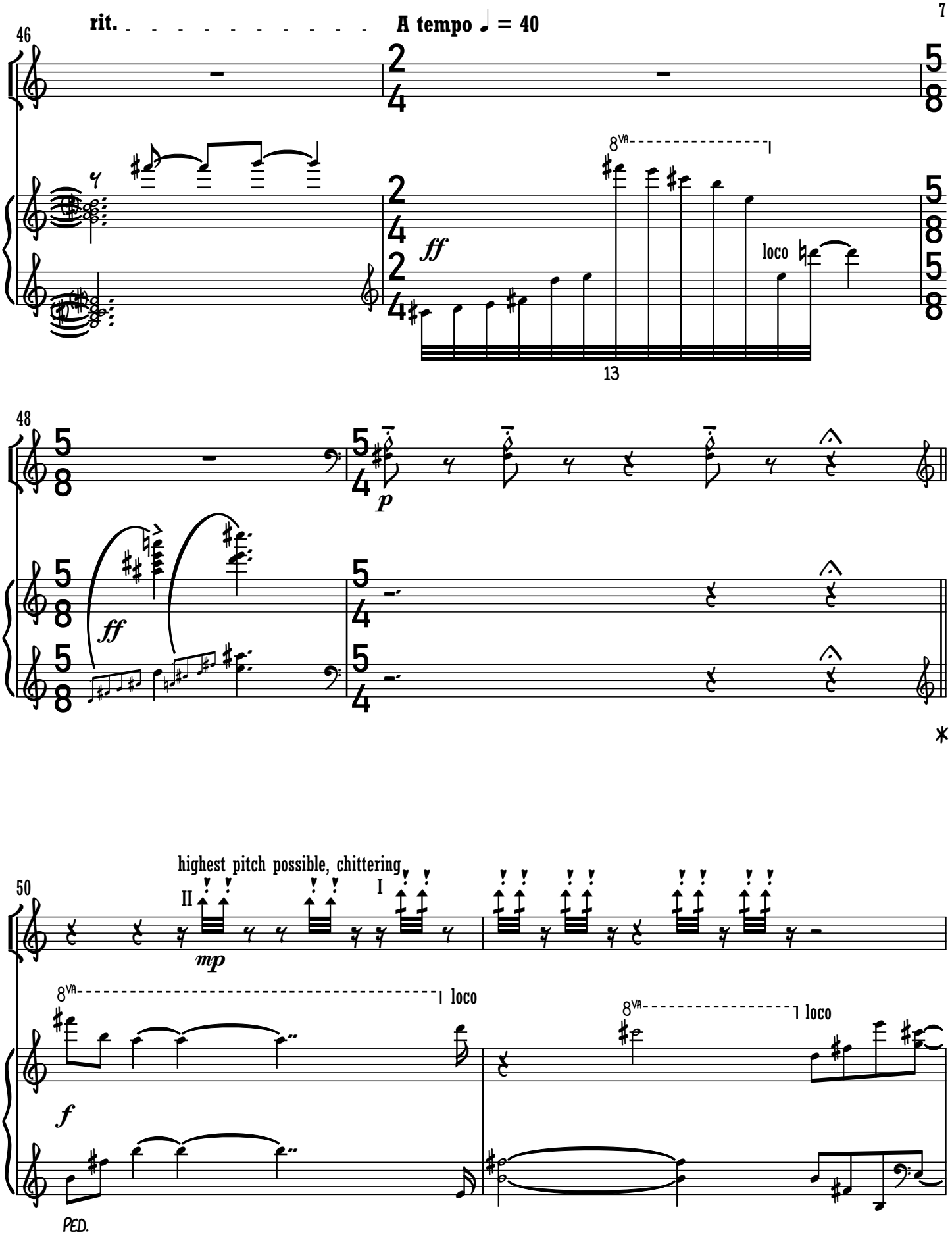


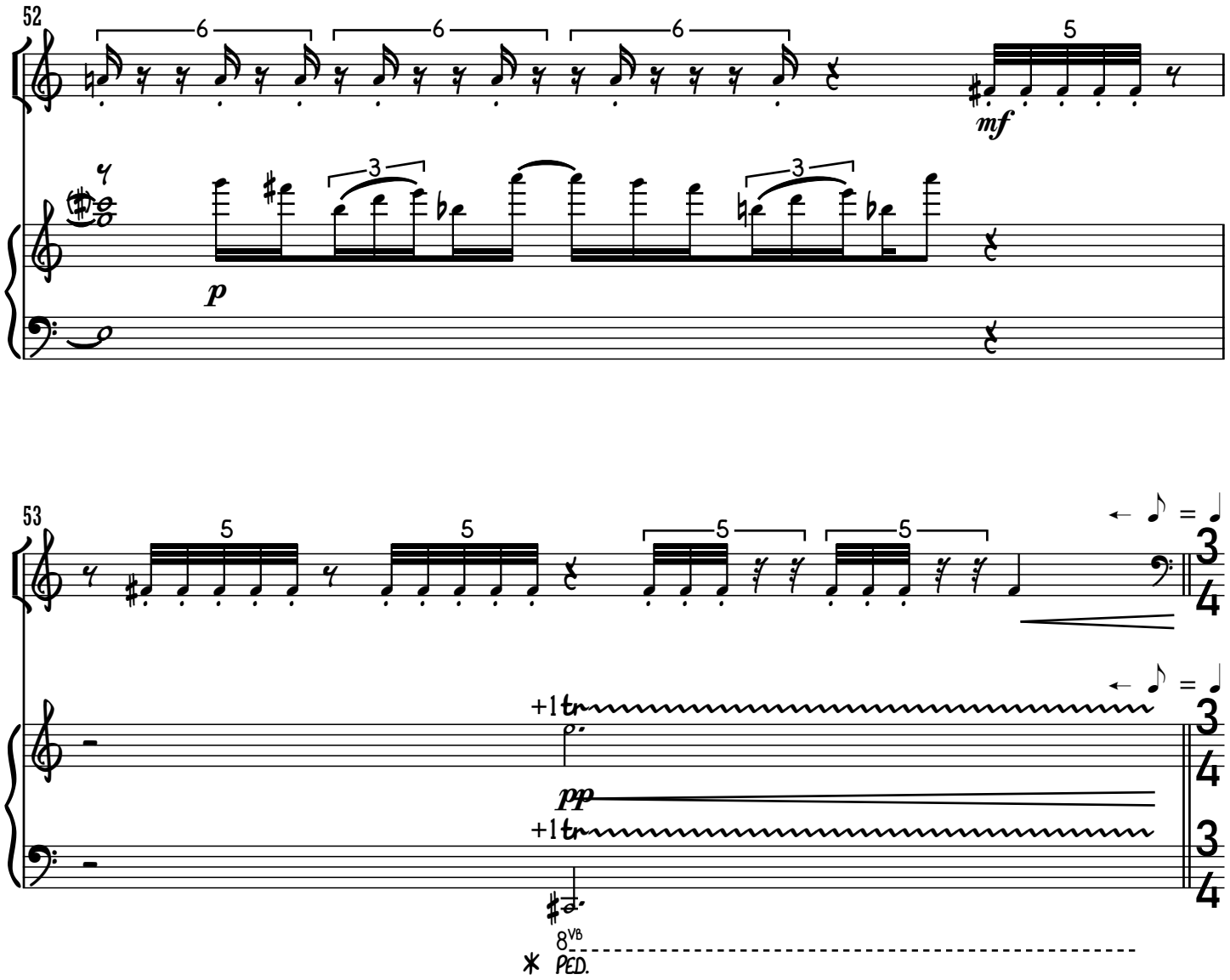
Note: this should resonate due to lifted key with Sos. Ped.


38
mf
3
mp
(8)
loco
ff
mp
PED.
4

41
5
mf
f
(sound should sustain)

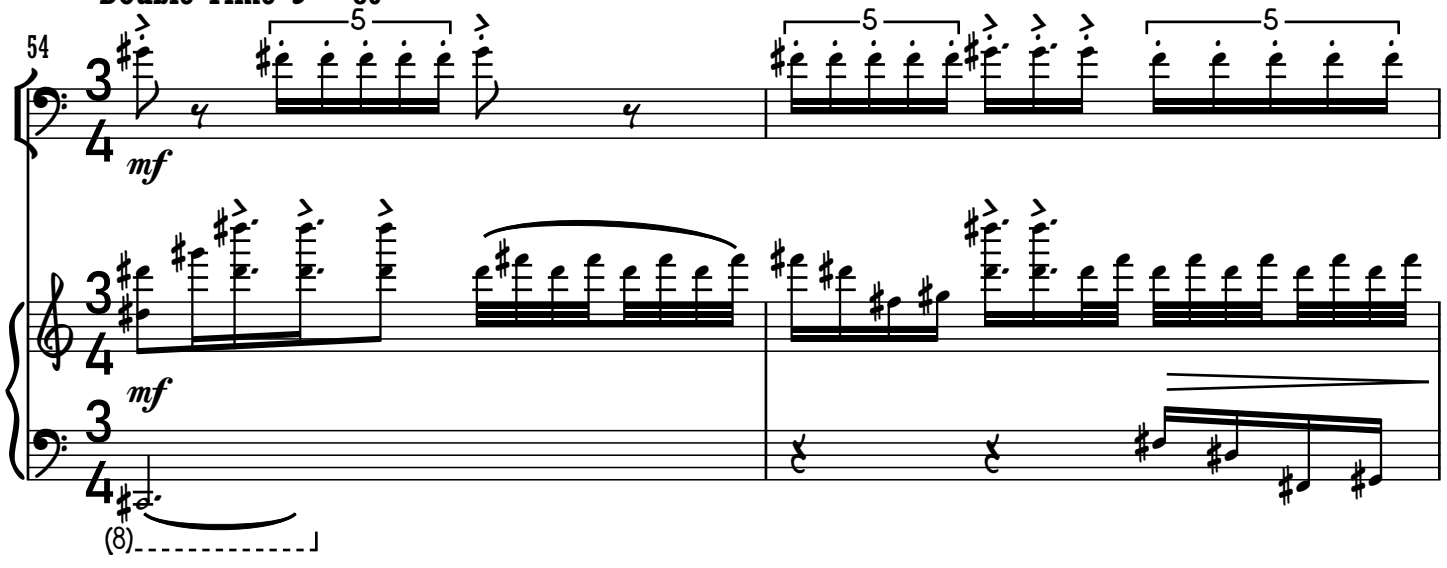

D
44
solo, freely
f
ff
3
p
PED.

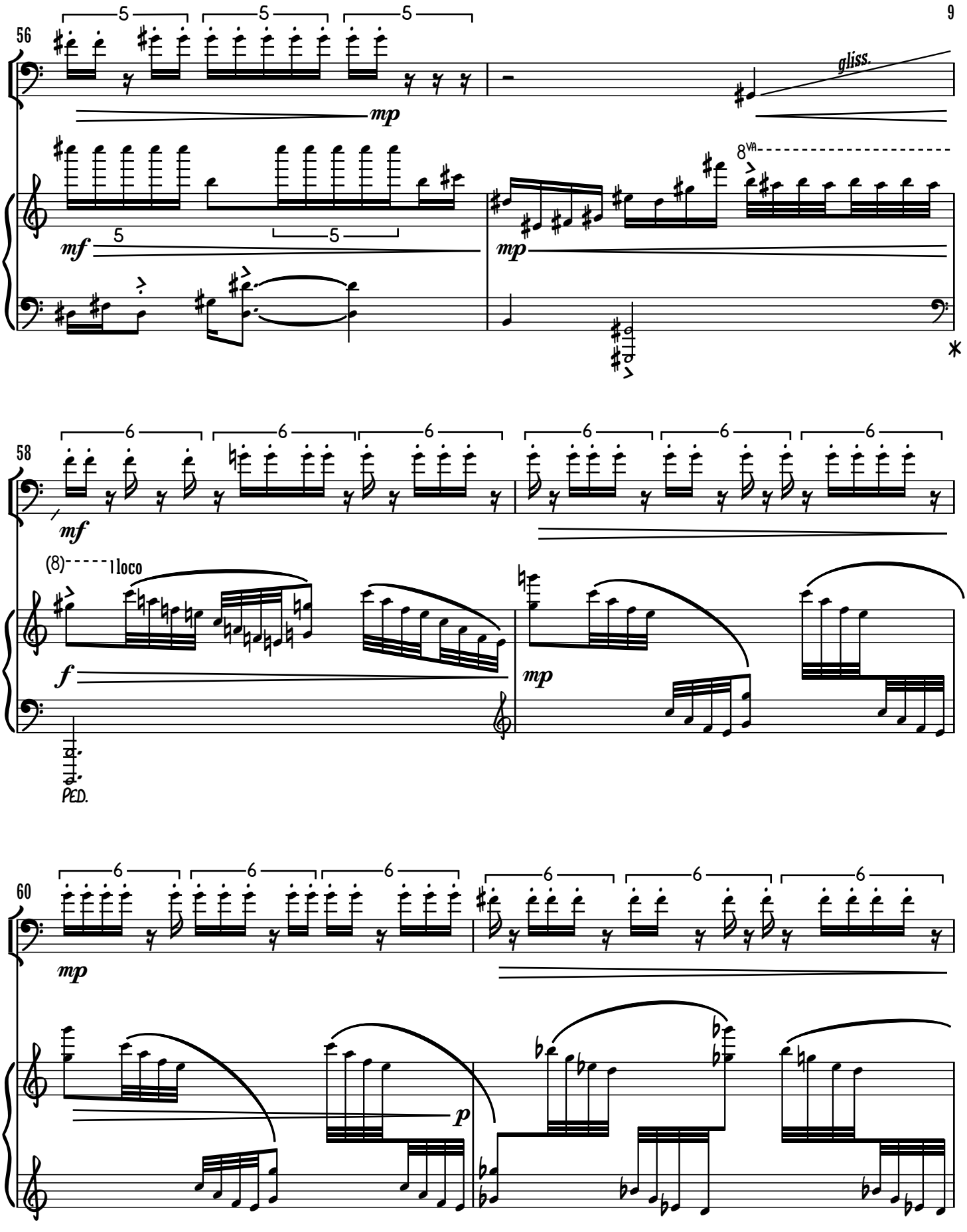

rit.
A tempo ♩ = 40
46
8va
loco
ff
13
48
p
ff
*
highest pitch possible, chittering
II
I
50
mp
8va
loco
f
PED.

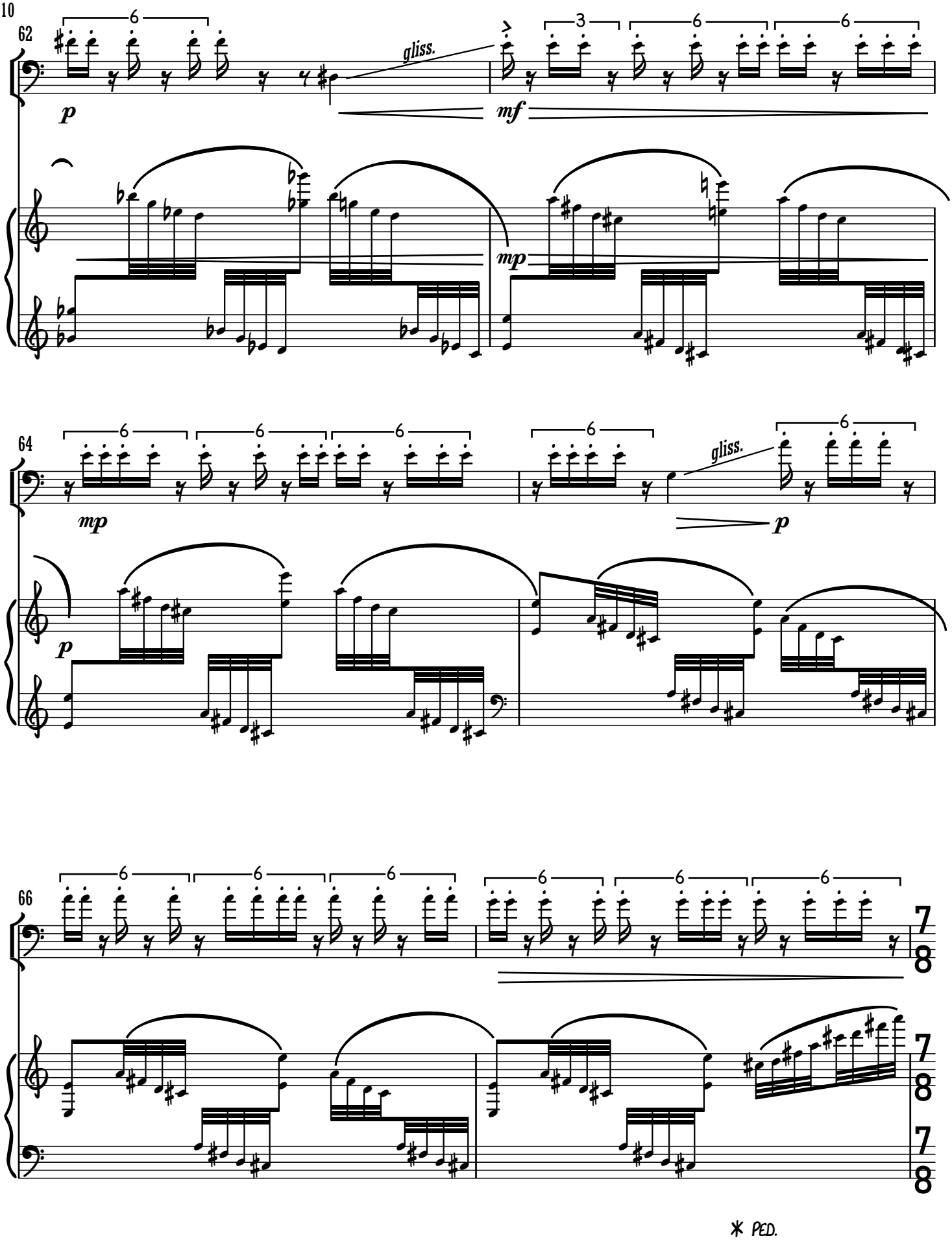


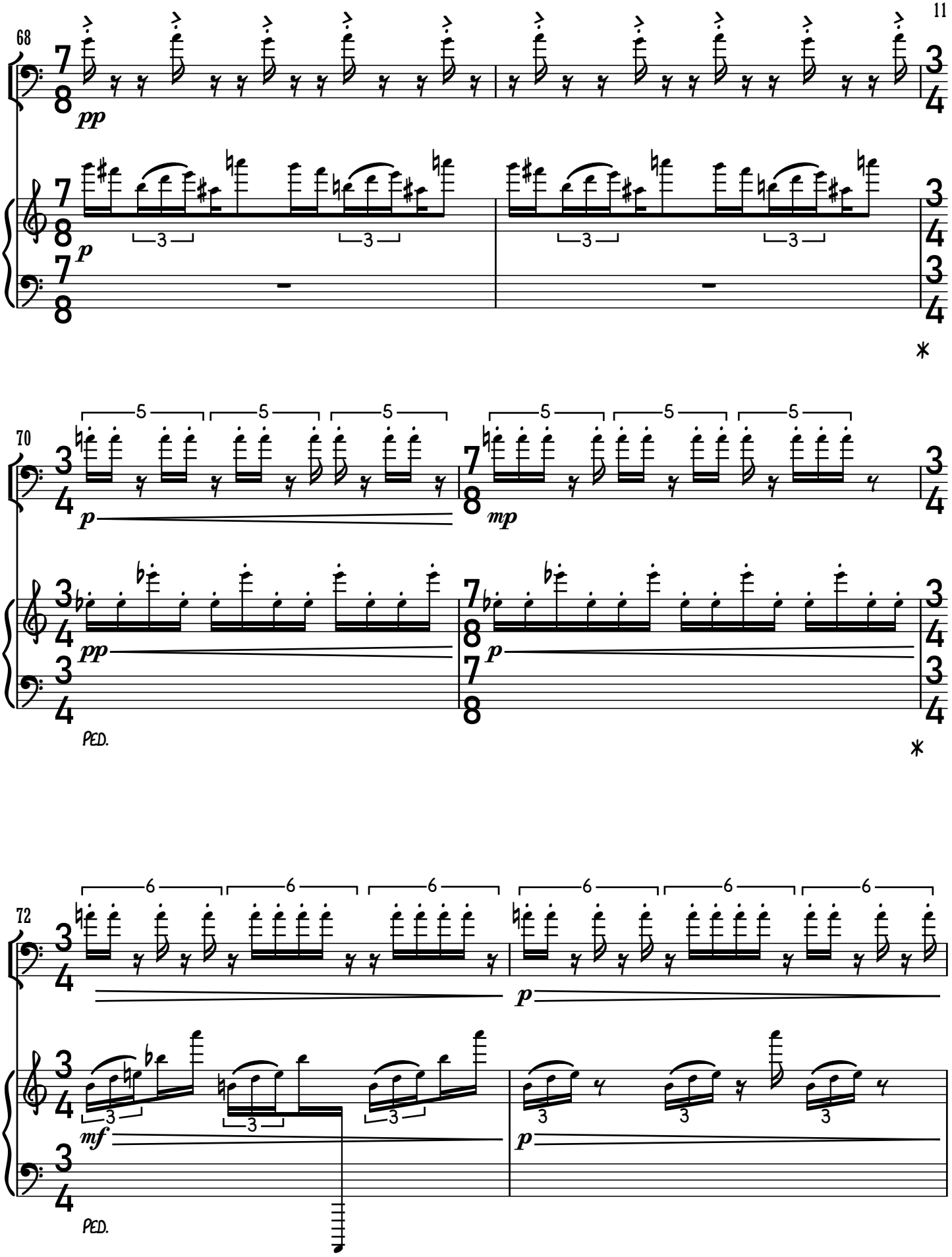
E

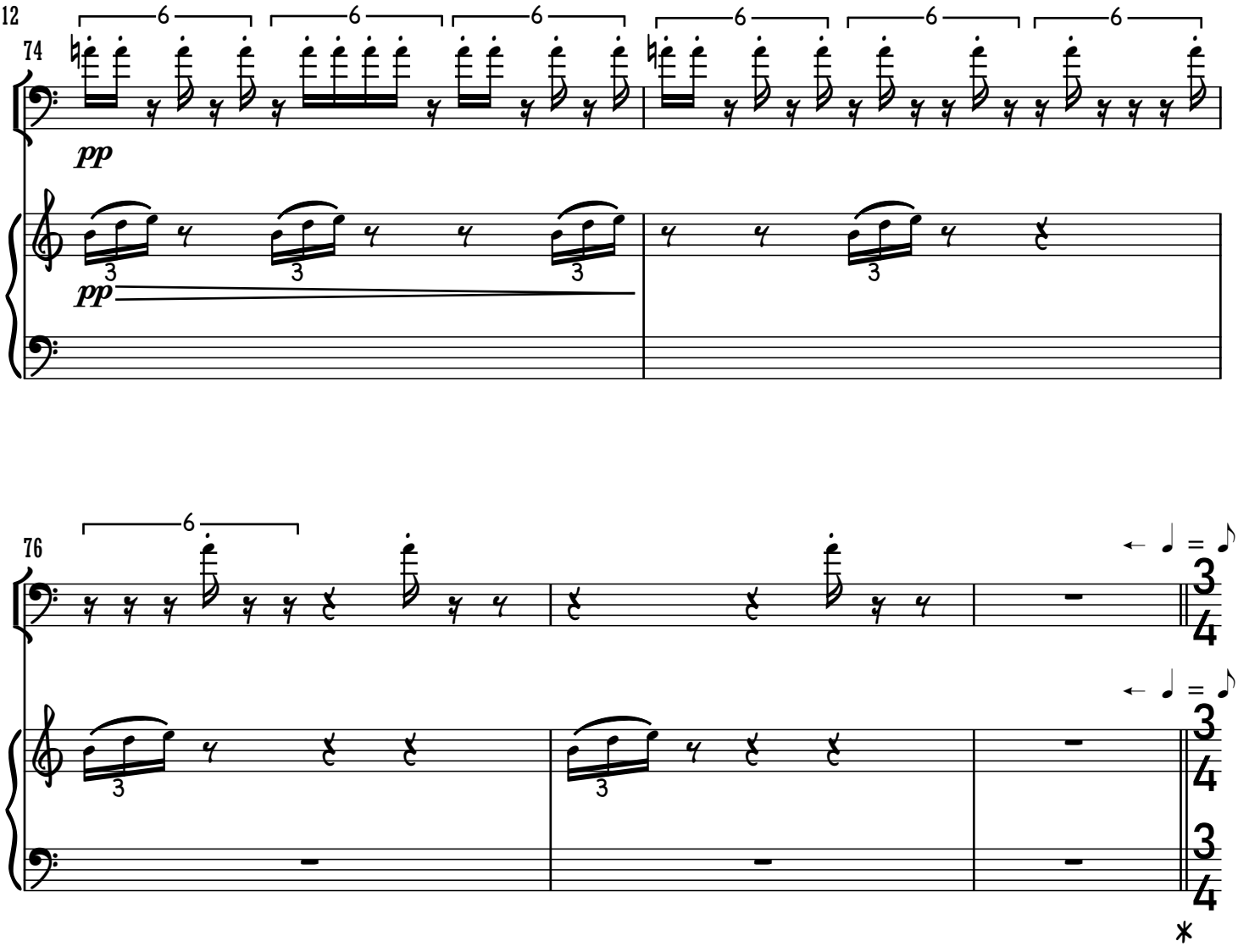
Double Time ♩ = 80




56
gliss.
mp
mf
8va
58
(8)
loco
f
PED.
60
p

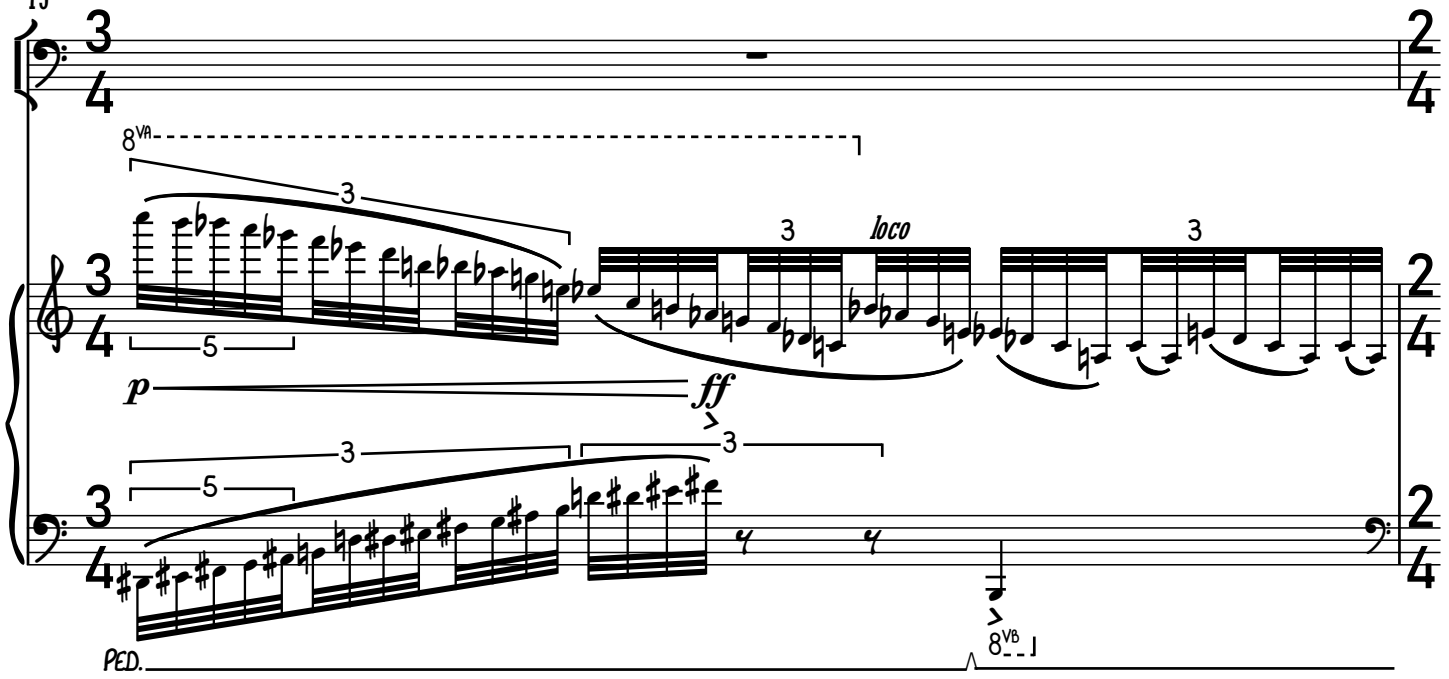

62
gliss.
mf
mp
64
mp
gliss.
p
66
7/8
7/8
7/8
* PED.

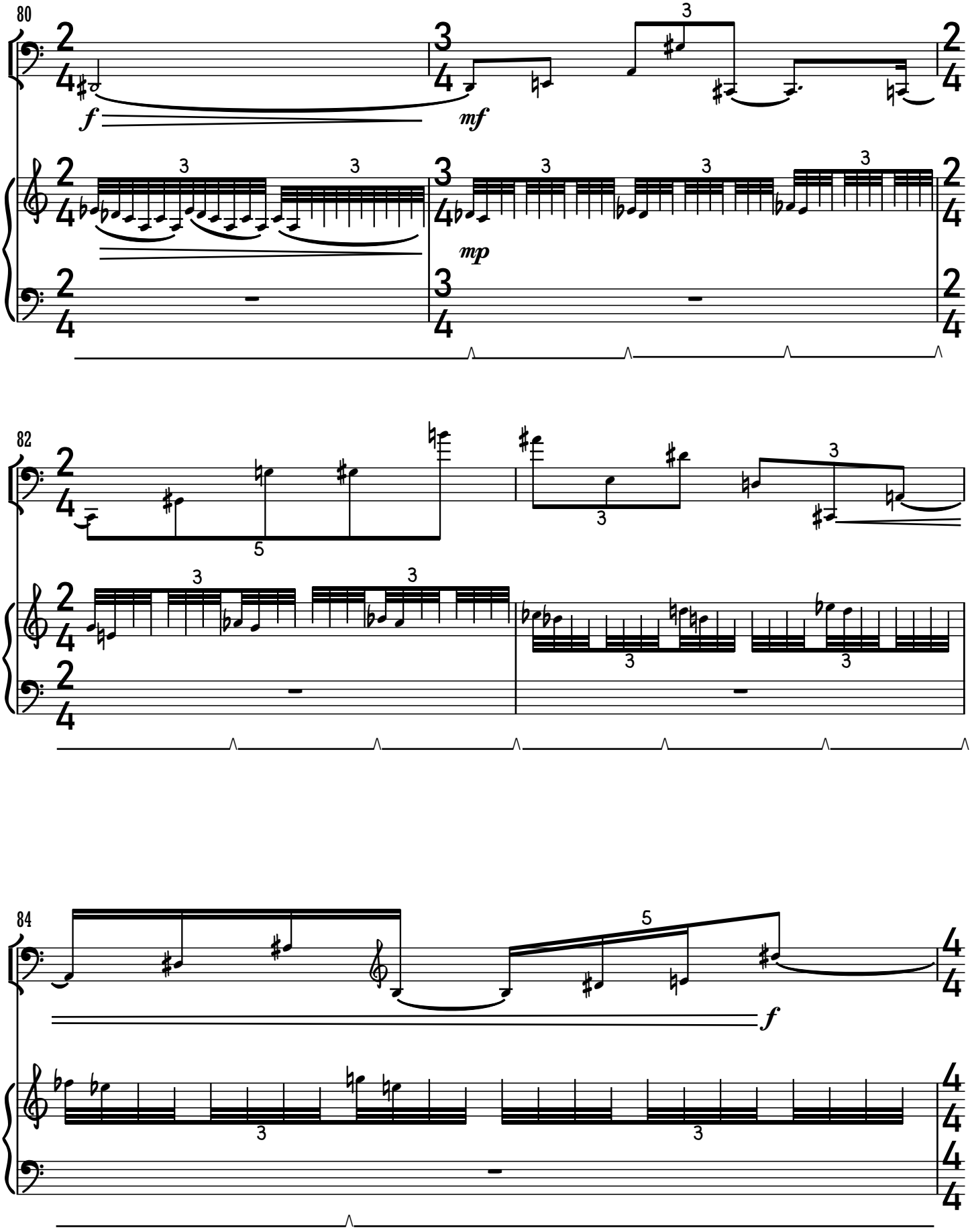

68
pp
p
70
p
pp
mp
p
PED.
72
p
mf
p
PED.

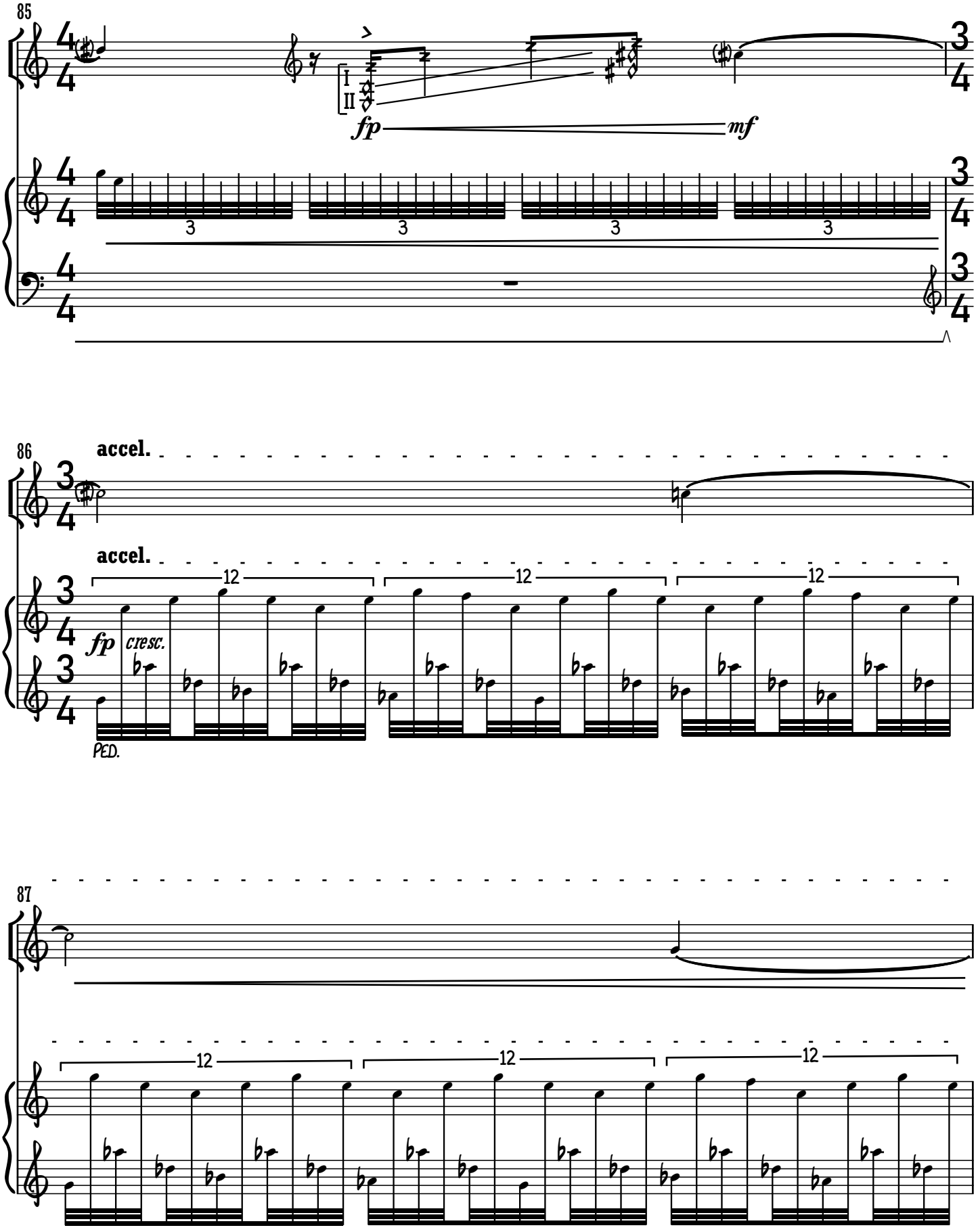


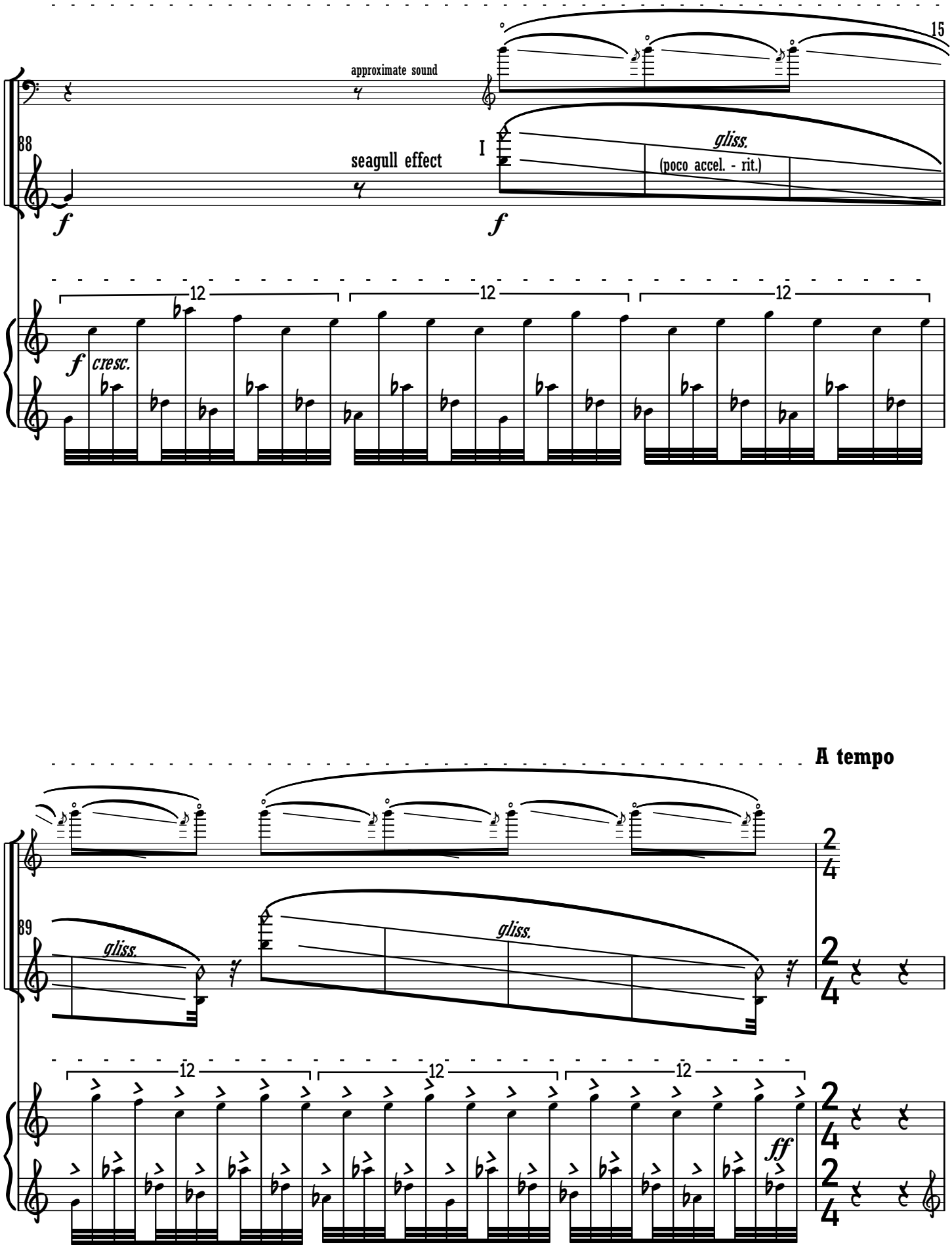
F

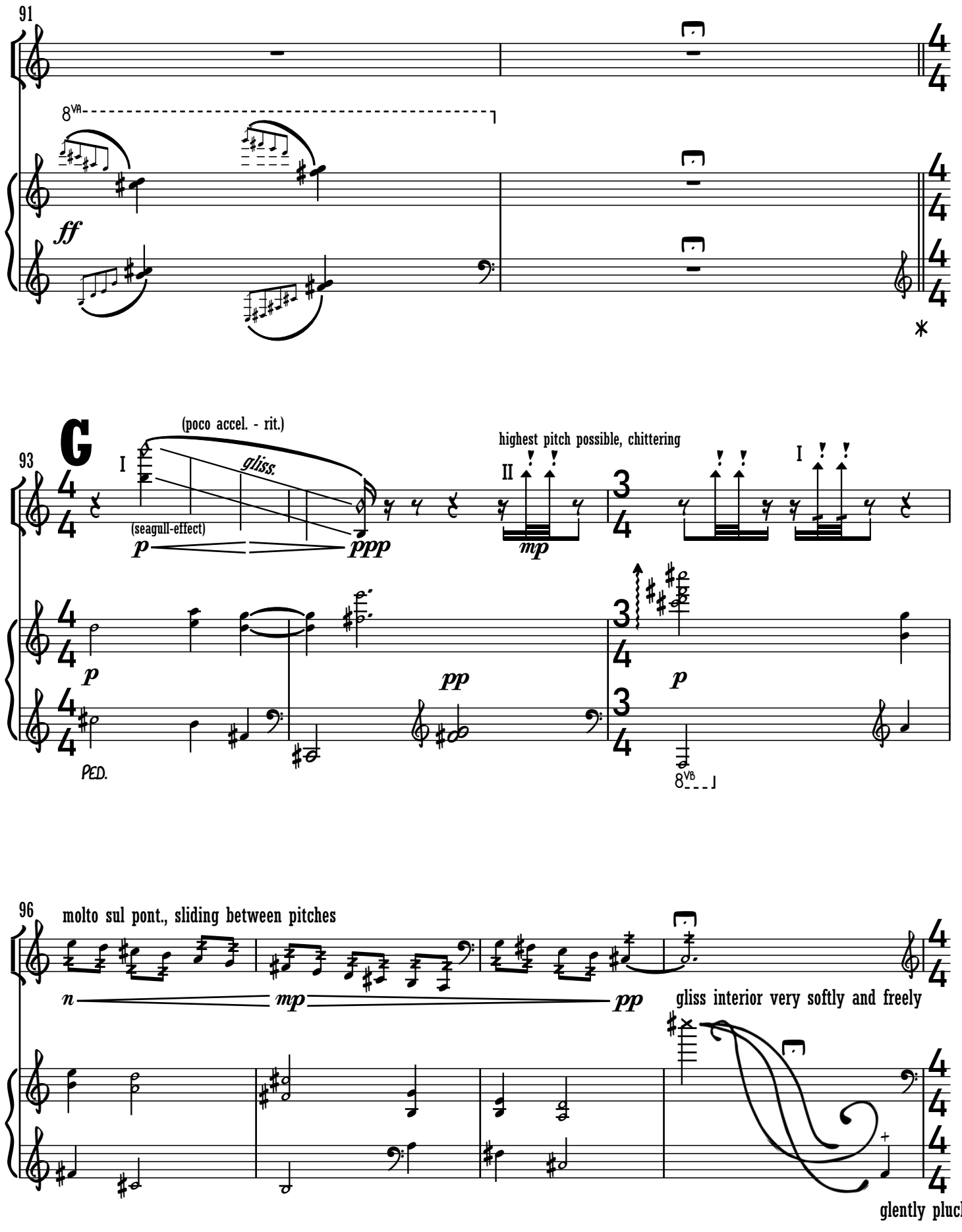
A tempo (Half Time; ♩ = 40)

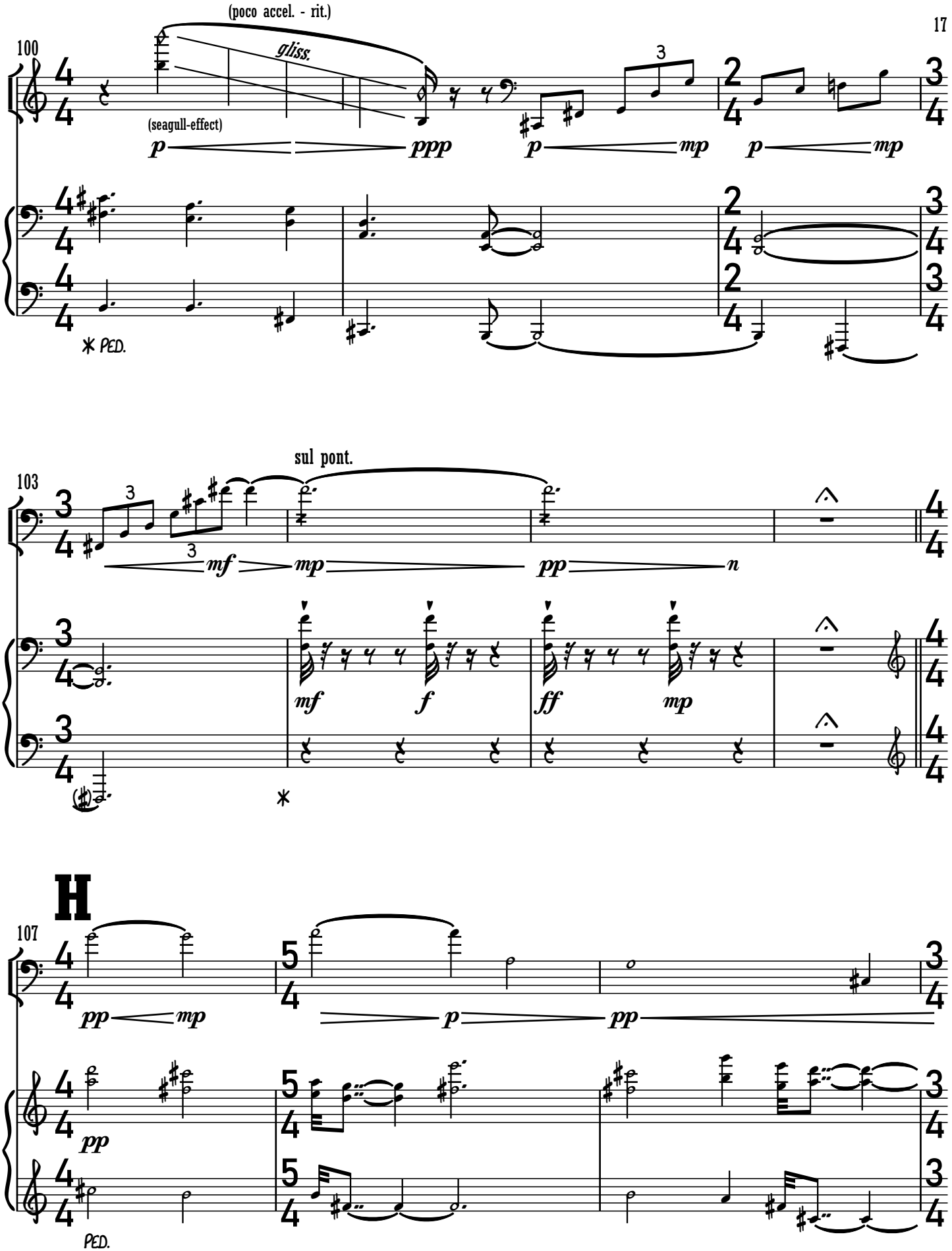


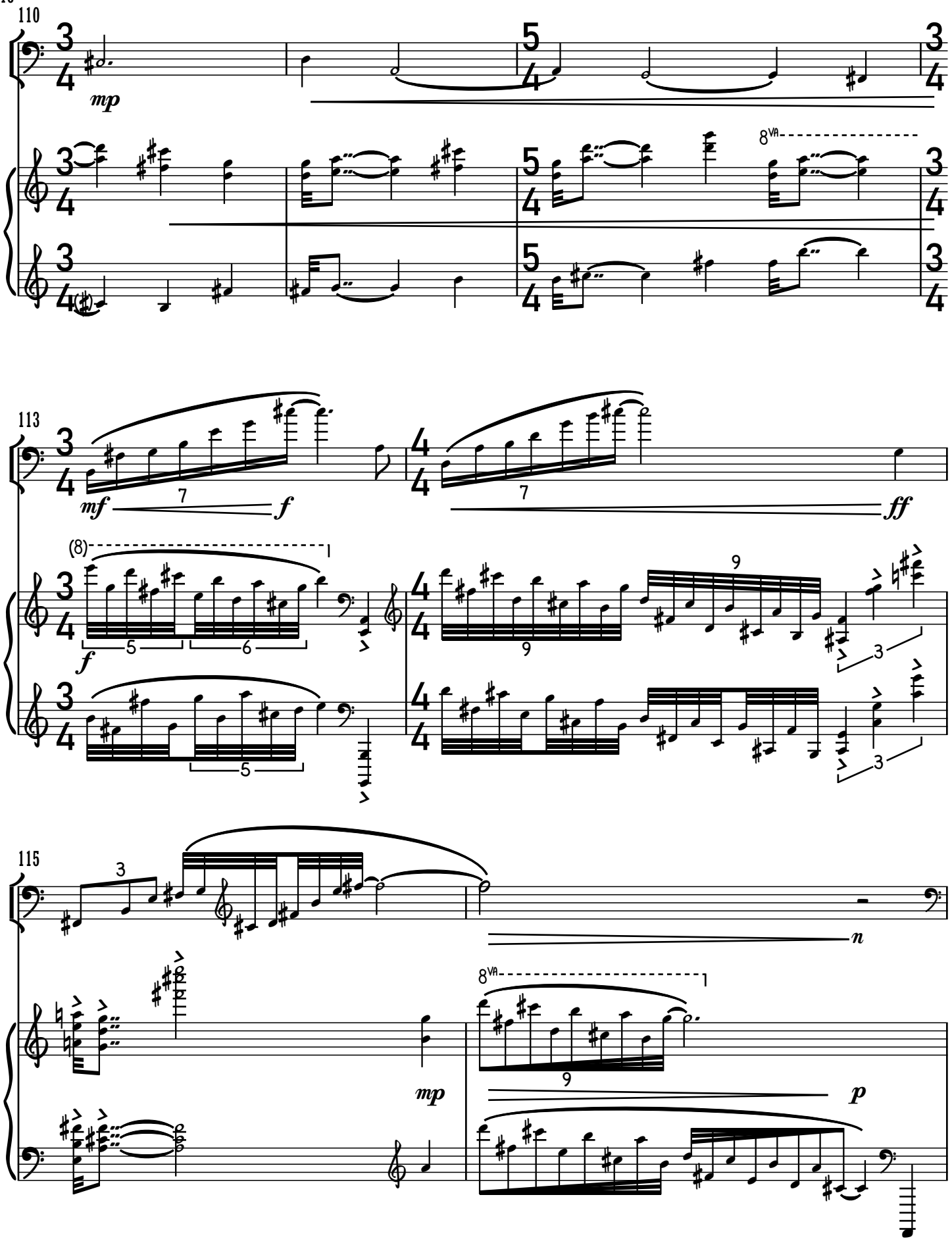

80
82
84
f
mf
mp
f

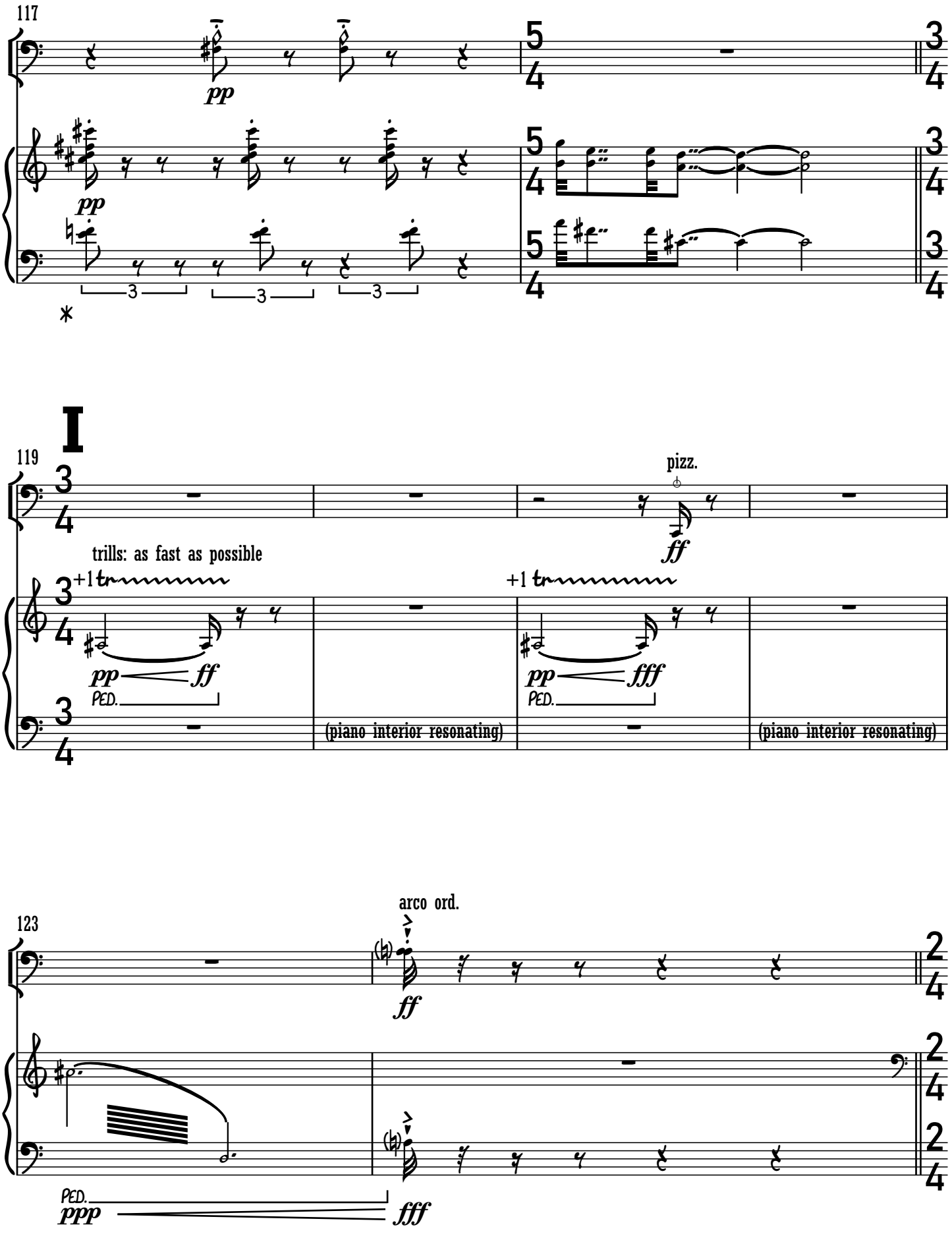

85
I
II
fp
mf
3
3
3
3
86
accel.
accel.
12
12
12
fp
cresc.
PED.
87
12
12
12

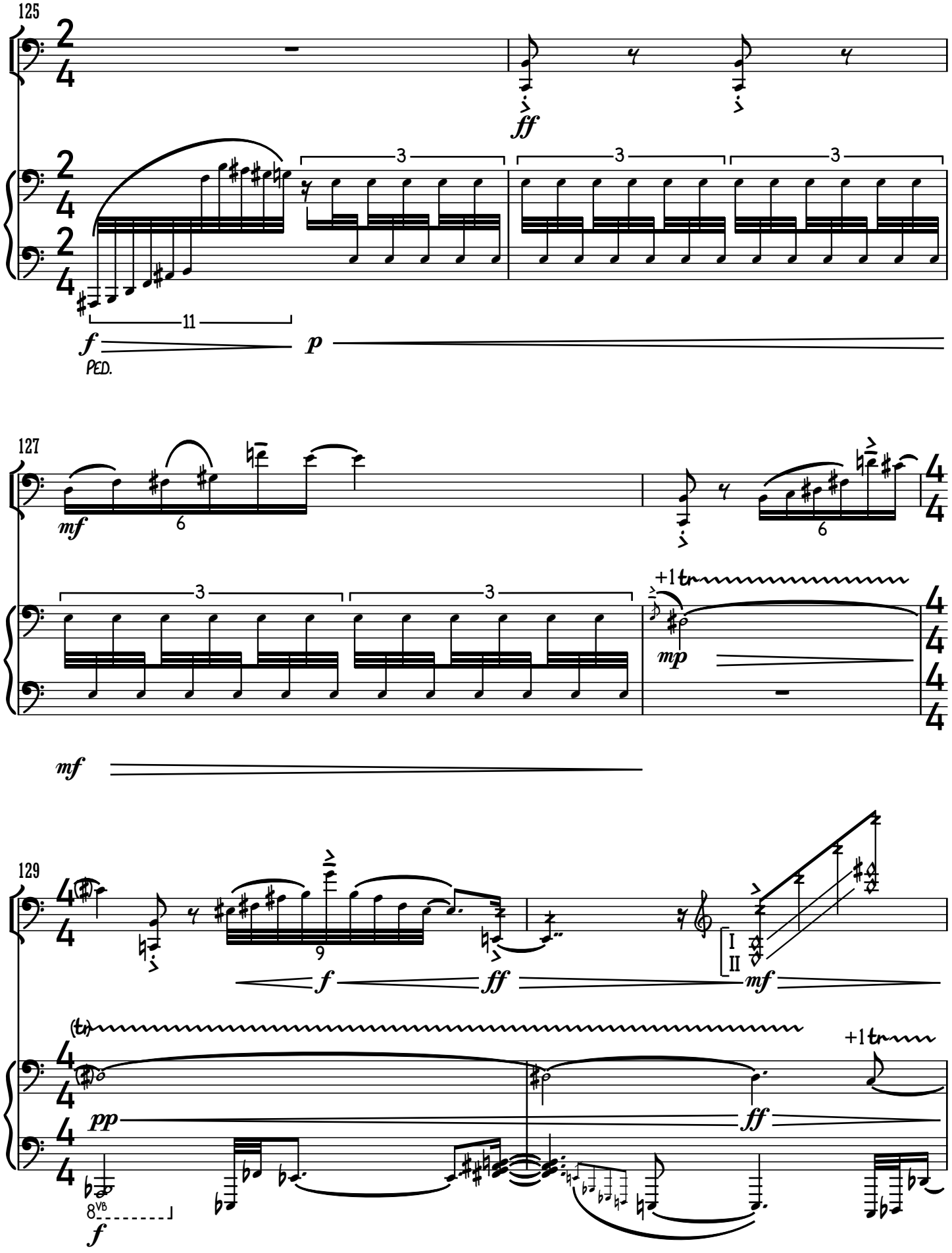

15
approximate sound
88
seagull effect
I
gliss.
(poco accel. - rit.)
f
f
12
12
12
f cresc.
A tempo
89
gliss.
gliss.
2
4
12
12
12
ff

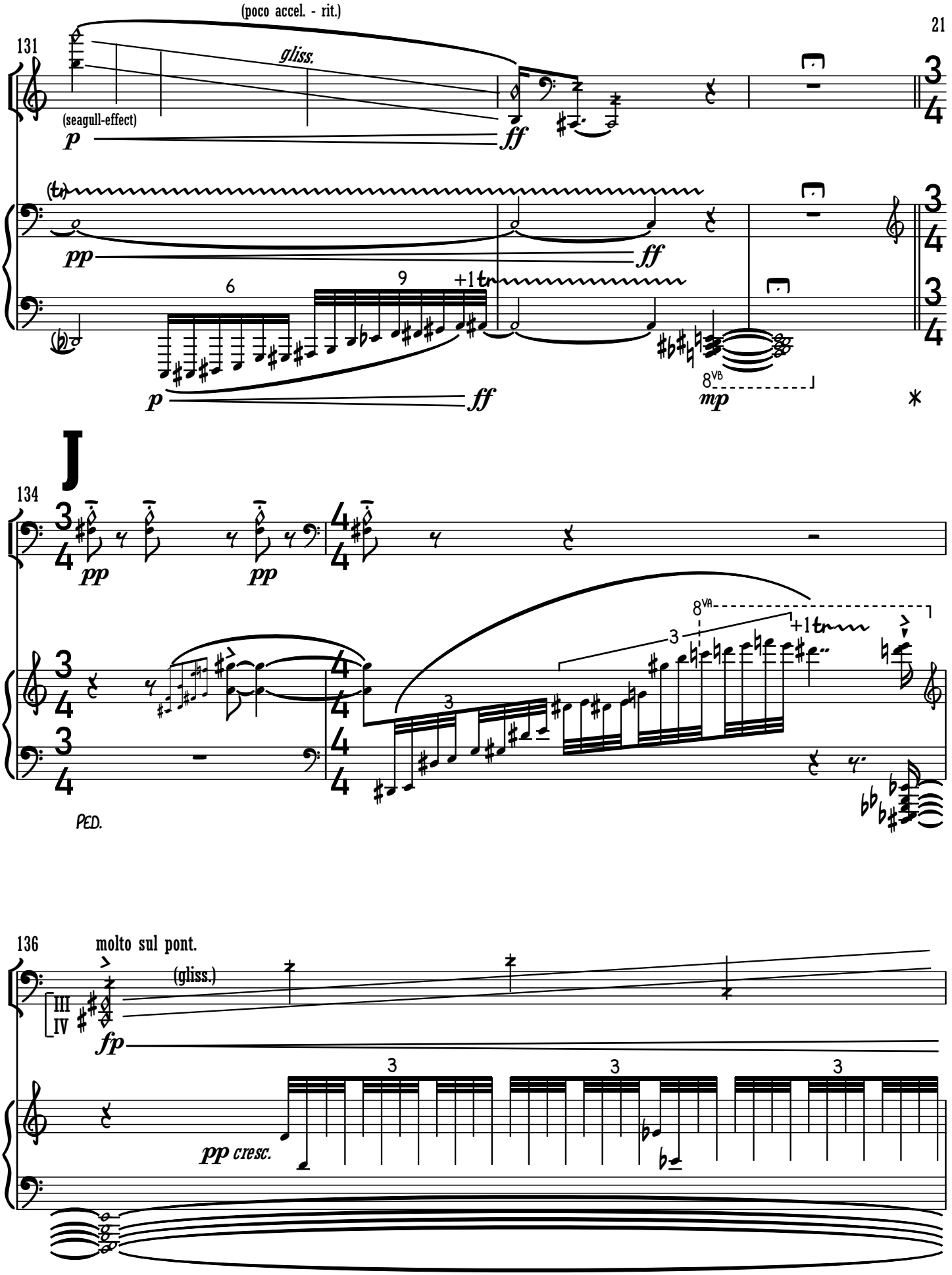

91
8va
ff
*
G
93
(poco accel. - rit.)
I
gliss.
(seagull-effect)
p
ppp
highest pitch possible, chittering
II
mp
I
p
pp
p
PED.
8vb
96
molto sul pont., sliding between pitches
n
mp
pp
gliss interior very softly and freely
glently pluck

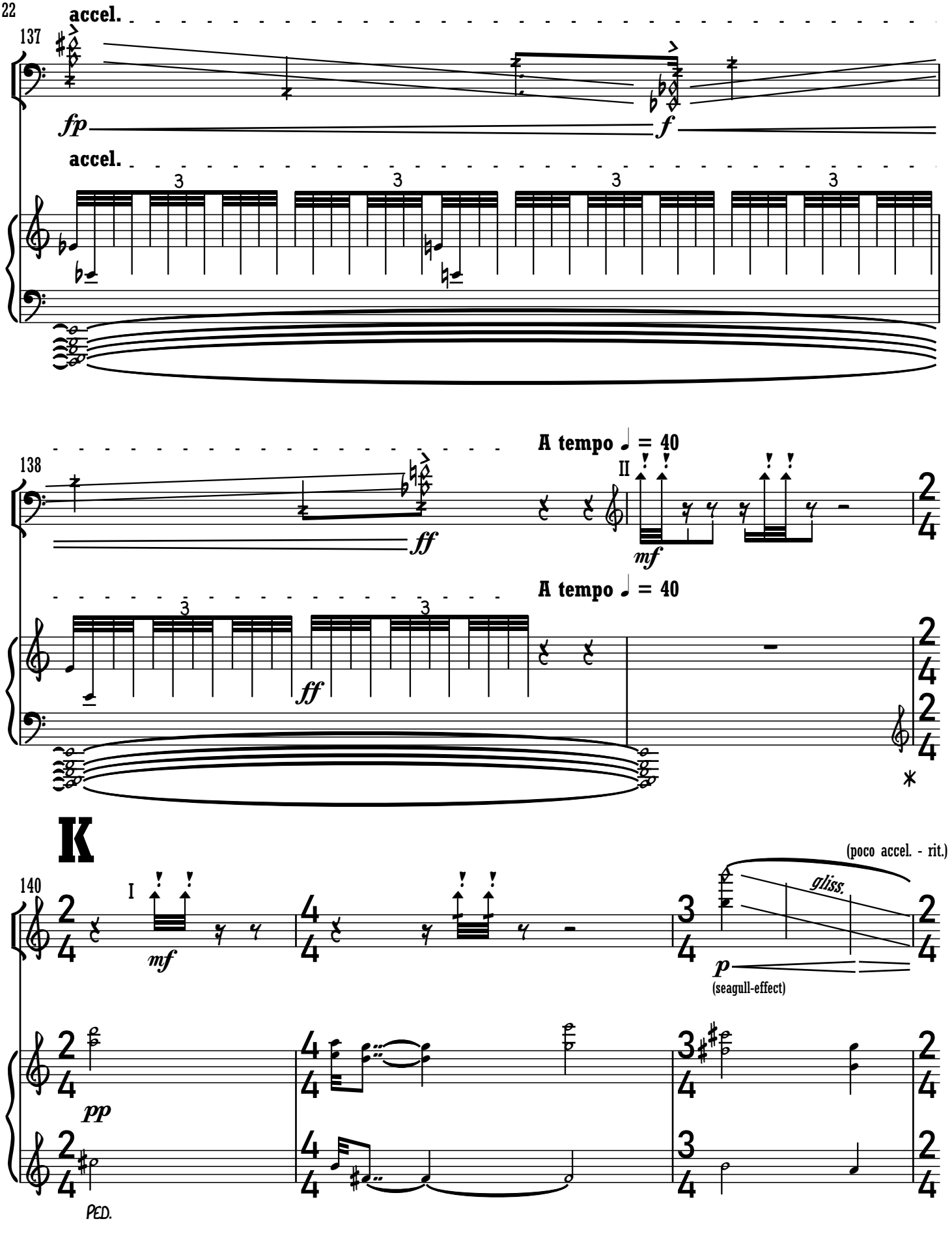

100
(poco accel. - rit.)
gliss.
(seagull-effect)
p
ppp
p
mp
p
mp
PED.
103
sul pont.
mf
mp
pp
n
mf
f
ff
mp
H
107
pp
mp
p
pp
pp
PED.

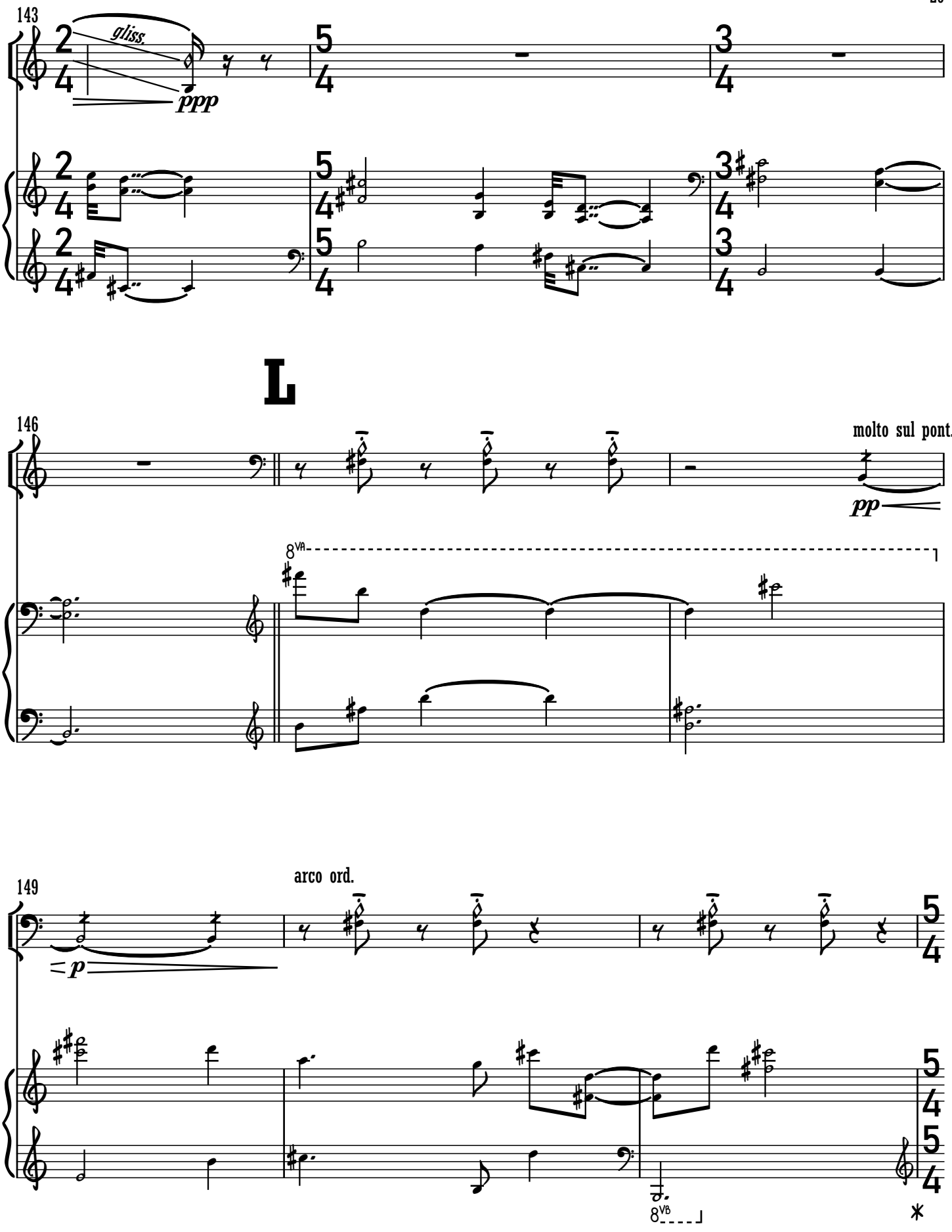

110
mp
8va
113
mf
f
ff
(8)
115
mp
n
p

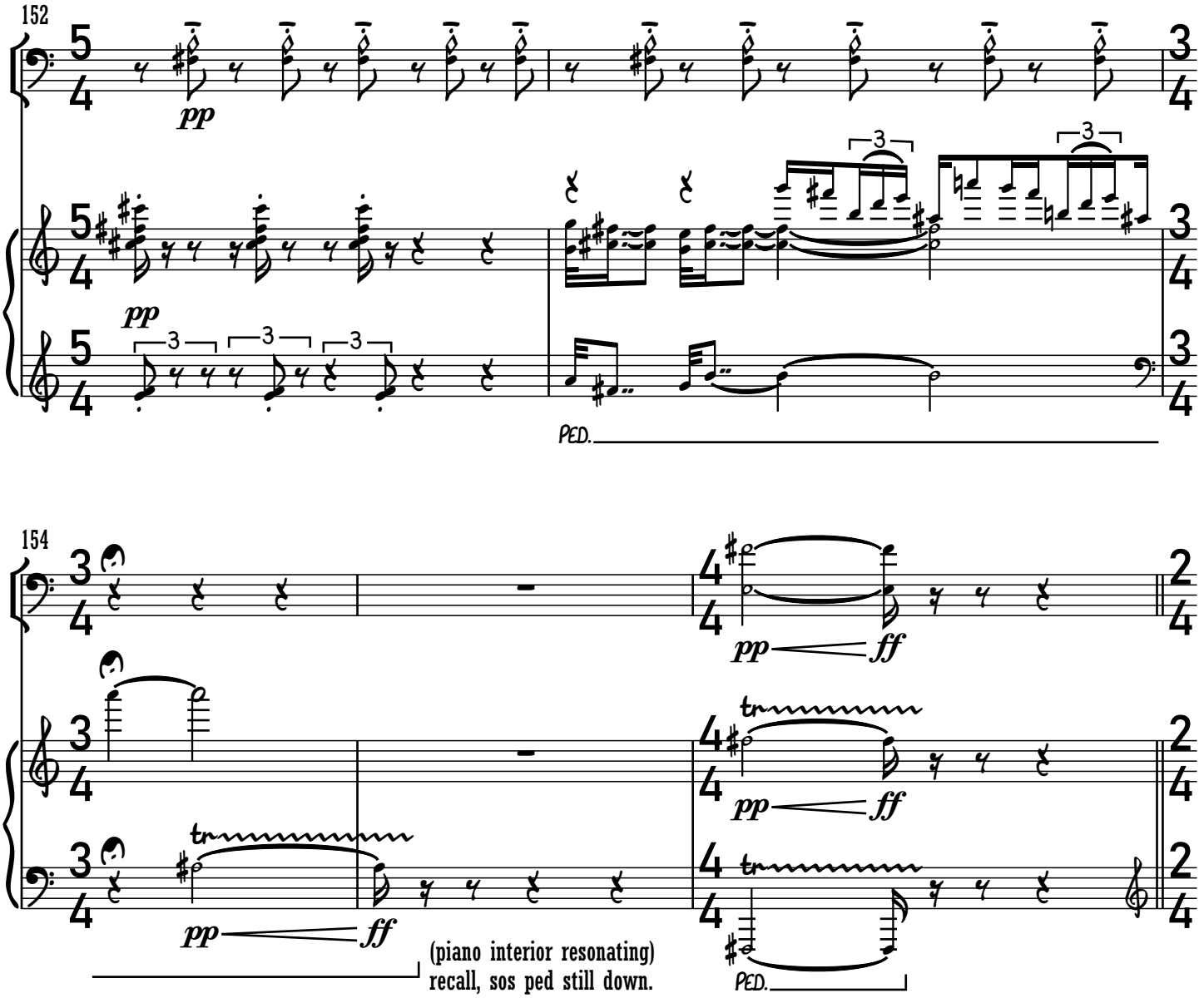

117
pp
pp
3
3
3
*
I
119
trills: as fast as possible
+1
pp
ff
PED.
(piano interior resonating)
pizz.
ff
+1
pp
fff
PED.
(piano interior resonating)
123
arco ord.
ff
PED.
ppp
fff


125
ff
3
3
3
11
f
PED.
p
127
mf
6
6
3
3
+1 tr
mp
mf
129
9
f
ff
I
II
mf
(tr)
+1 tr
pp
ff
8VB
f


(poco accel. - rit.)
131
gliss.
(seagull-effect)
p
ff
(tr)
pp
ff
6
9
+1tr
p
ff
8VB
mp
J
134
pp
pp
8VA
3
+1tr
PED.
136
molto sul pont.
(gliss.)
III
IV
fp
pp cresc.
3
3
3

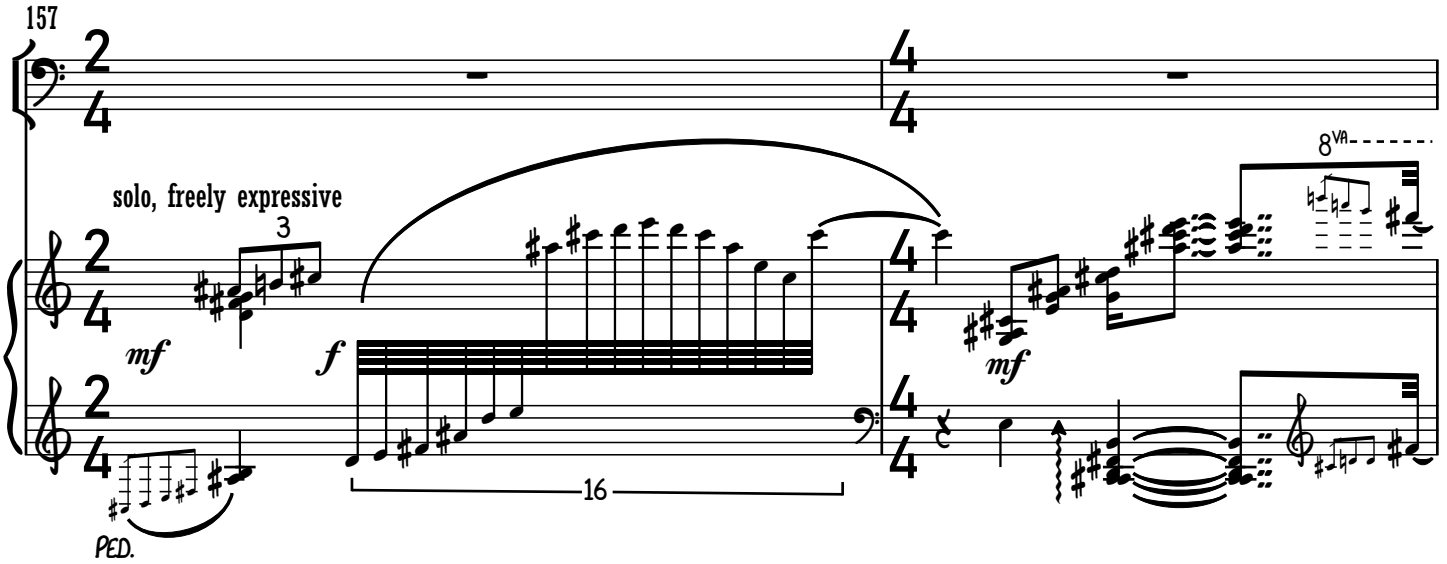

accel.
137
fp
f
accel.
3
3
3
3
A tempo ♩ = 40
138
II
ff
mf
A tempo ♩ = 40
3
3
ff
2
4
2
4
*
K
(poco accel. - rit.)
140
I
mf
gliss.
p
(seagull-effect)
pp
PED.

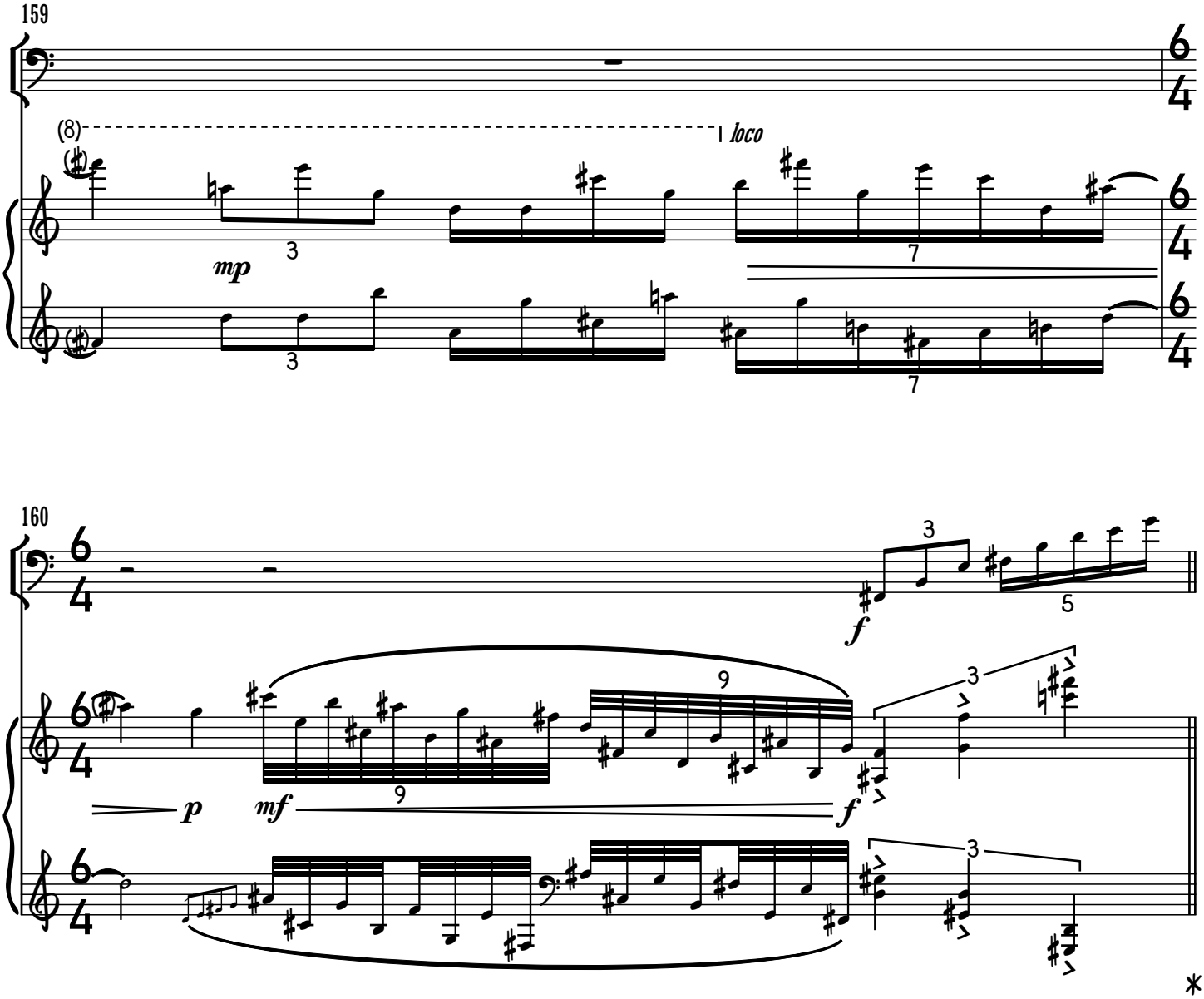

143
gliss.
ppp
L
146
molto sul pont.
pp
8va
149
arco ord.
p
8vb

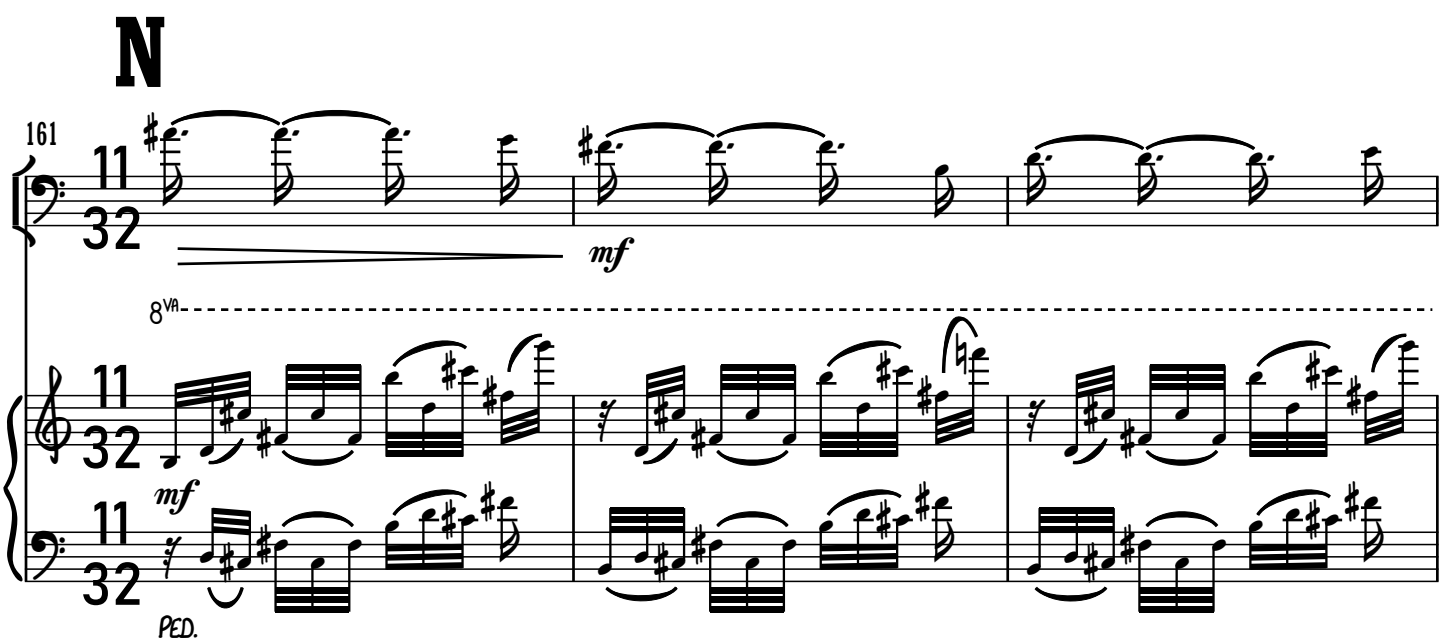

152
pp
PED.

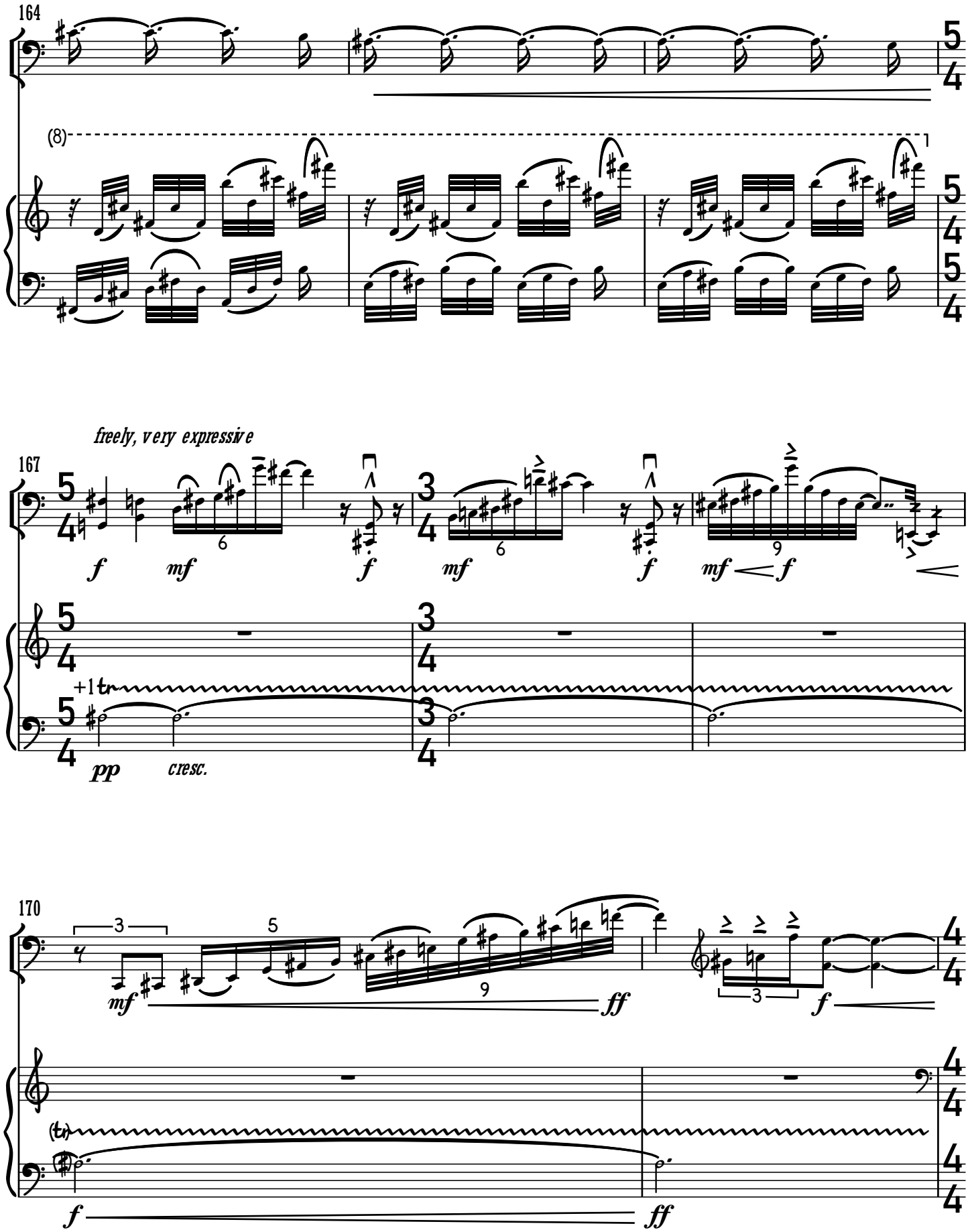
154
pp
ff
tr
(piano interior resonating)
recall, sos ped still down.
PED.

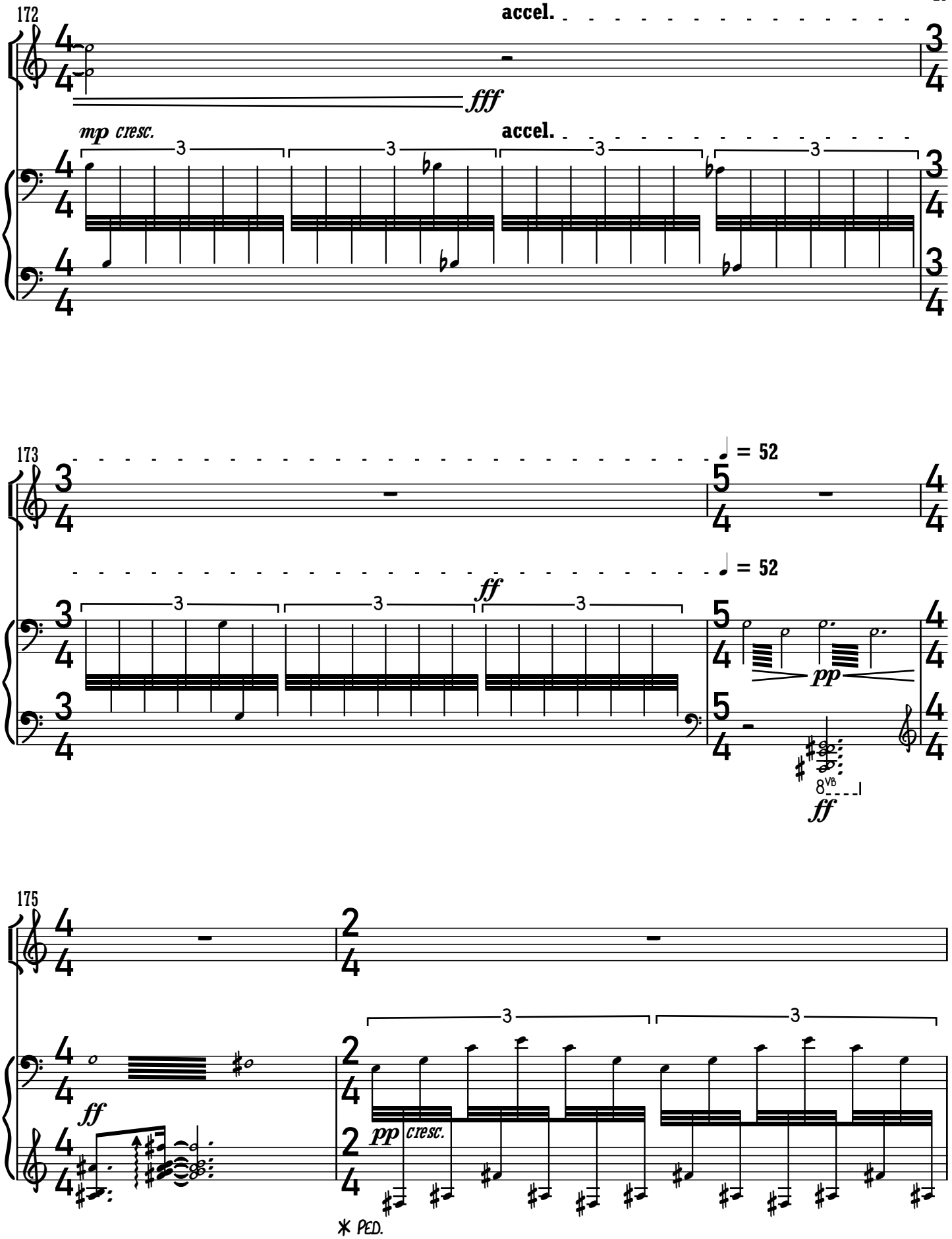
M

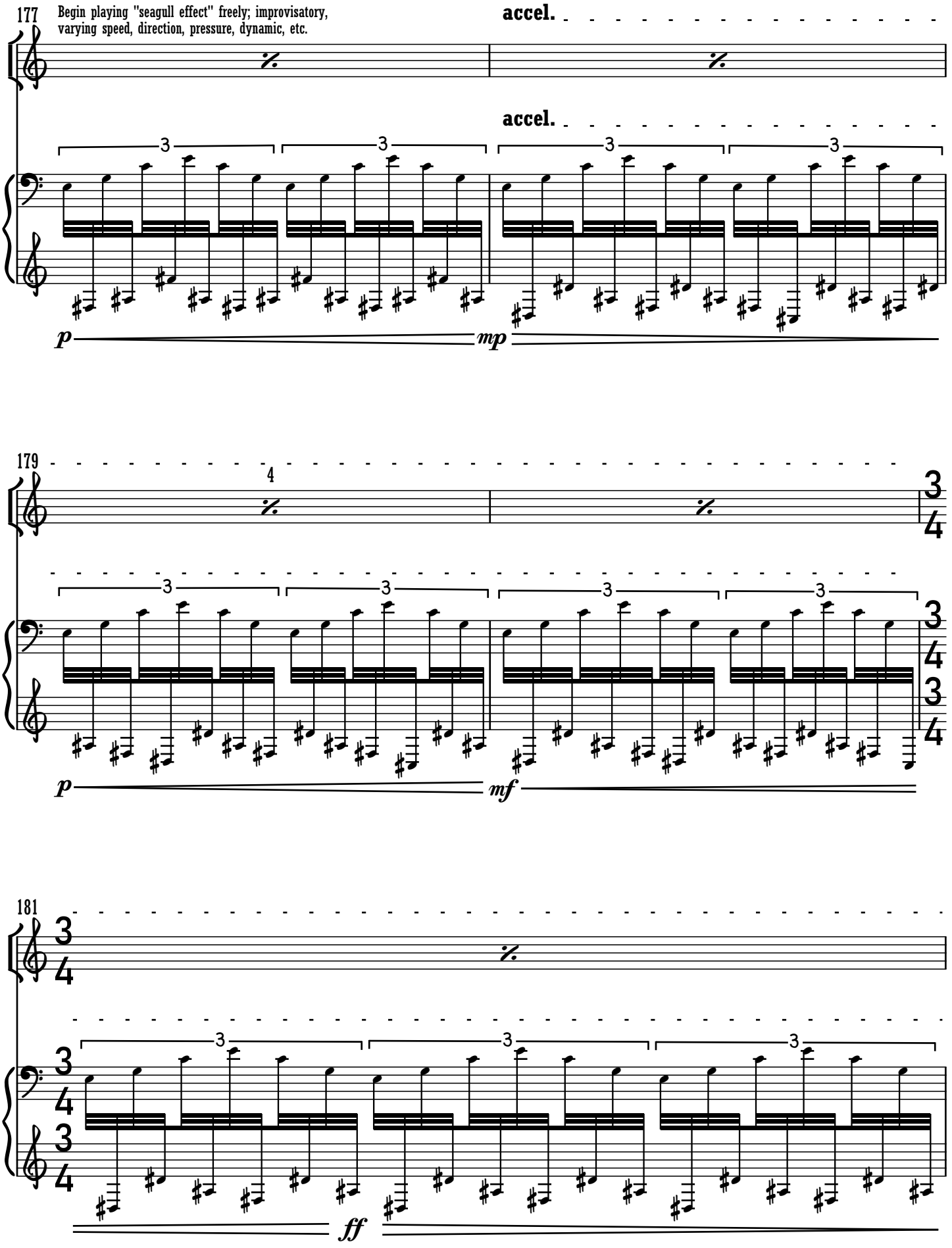

157
solo, freely expressive
mf
f
16
8va
PED.

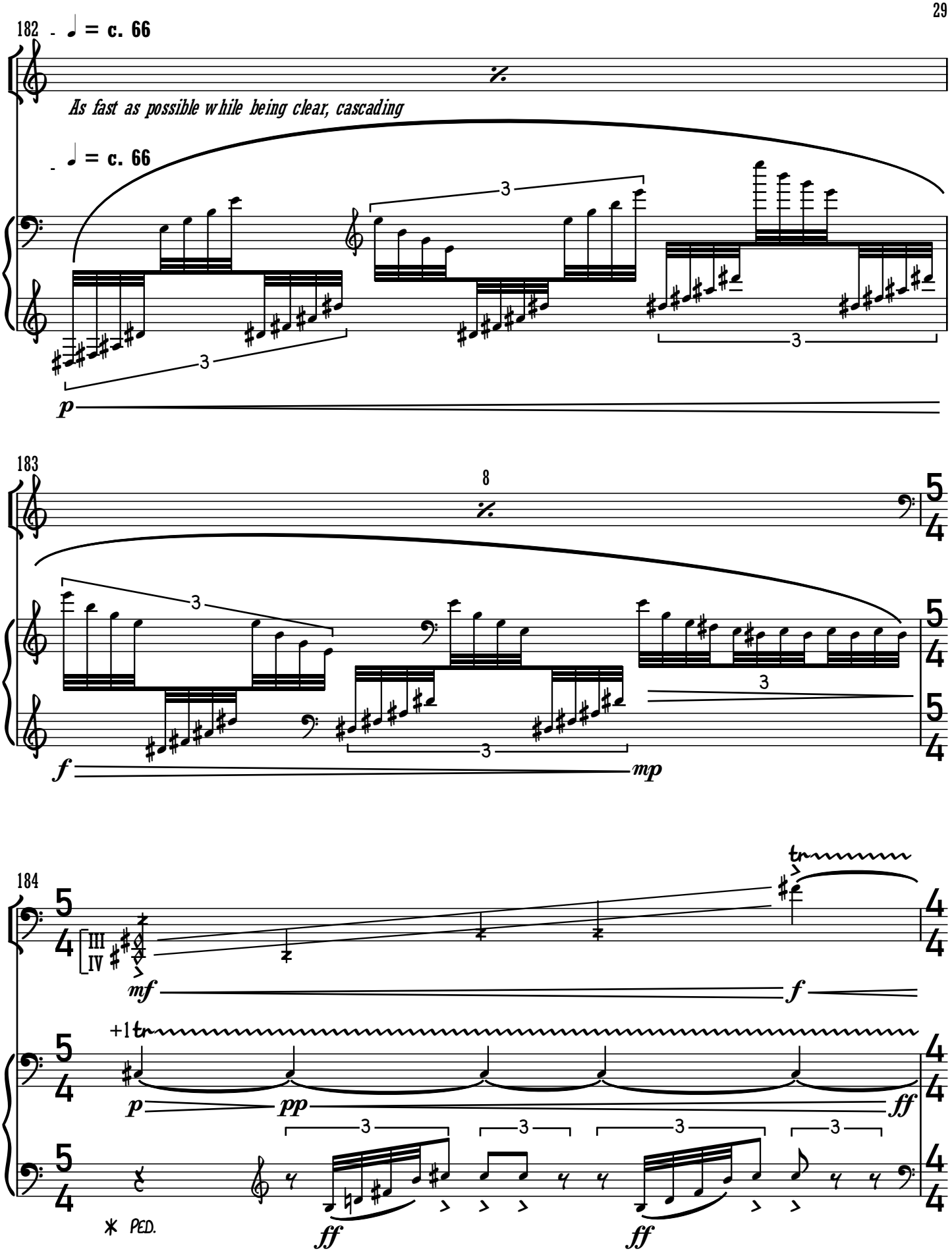

159
(8)
loco
mp
160
f
p
mf
f

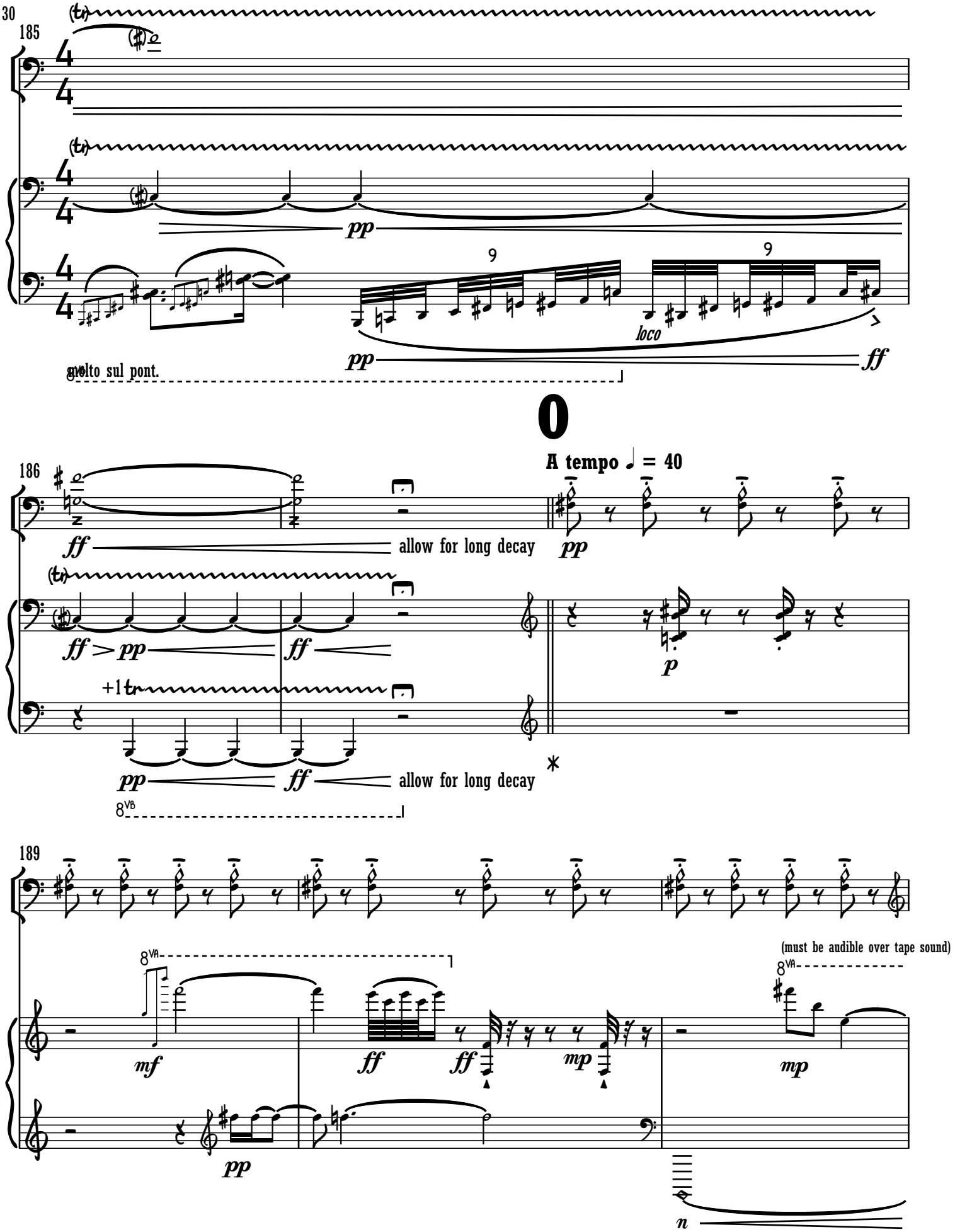

N
161
mf
8va
mf
PED.

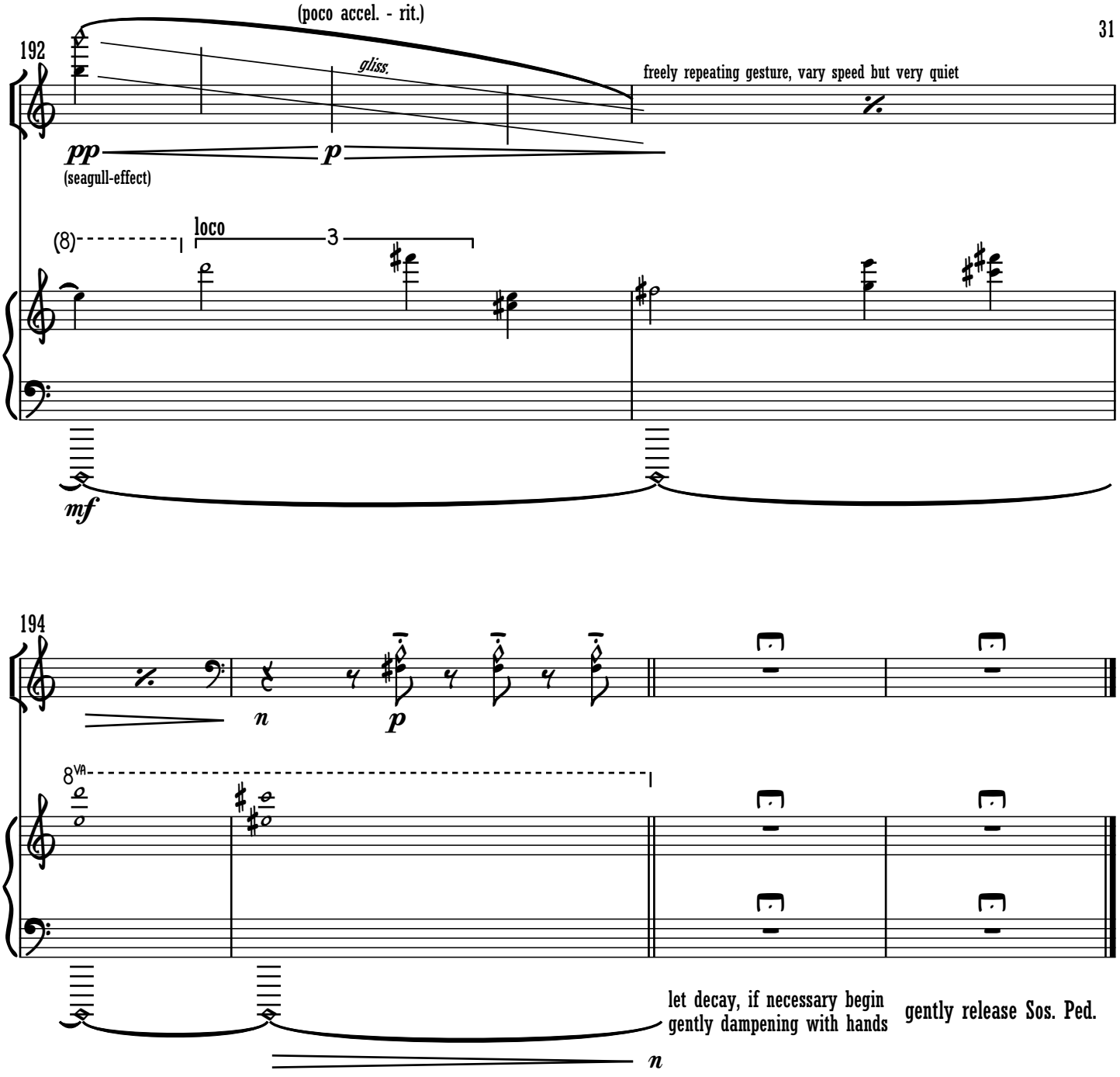

164
(8)
1
freely, very expressive
167
f
mf
f
mf
f
mf
f
+1
tr
pp
cresc.
170
3
5
mf
9
ff
3
f
(tr)
f
ff


172
accel.
fff
mp cresc.
accel.
3
173
= 52
ff
pp
8VB
ff
175
ff
pp cresc.
PED.


177
Begin playing "seagull effect" freely; improvisatory, varying speed, direction, pressure, dynamic, etc.
accel.
accel.
3
3
3
3
p
mp
179
4
3
4
3
3
3
3
3
4
3
4
p
mf
181
3
4
3
4
3
4
3
3
3
ff


182
♩ = c. 66
As fast as possible while being clear, cascading
♩ = c. 66
3
3
3
p
183
8
5
4
3
3
3
f
mp
184
III
IV
mf
f
tr
+1
p
pp
ff
3
3
3
3
PED.
ff
ff


185
pp
loco
pp
ff
molto sul pont.
O
A tempo ♩ = 40
186
ff
allow for long decay
pp
ff > pp
ff
p
+1 tr
pp
ff
allow for long decay
8VB
189
8VA
mf
ff
ff
mp
pp
(must be audible over tape sound)
8VA
mp
n


(poco accel. - rit.)
192
gliss.
freely repeating gesture, vary speed but very quiet
pp
p
(seagull-effect)
(8)
loco
3
mf
194
n
p
8VA
let decay, if necessary begin
gently dampening with hands
gently release Sos. Ped.
n