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Studies in Momentum

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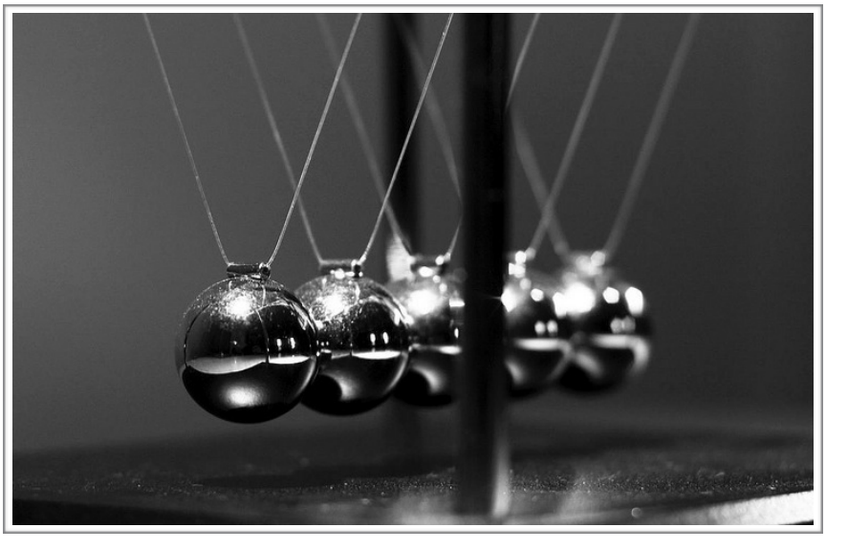
Peter Van Zandt Lane



Studies in Momentum

for piano and live electronics

Peter Van Zandt Lane

Studies in Momentum

(2014)

For piano and electronics

Commissioned by Keith Kirchoff

I. ground state
(*étude on harmonization)*

II. projectile motion
(*étude on downsampling)*

III. escape velocity
(*étude on ring modulation)*

IV. Planck's waltz
(*étude on delay)*

V. approaching entropy
(*fantasy/+concréte)*

APPROXIMATE TOTAL DURATION: 12 minutes

PERFORMANCE/TECHNICAL NOTE:
The performance of this piece requires a full version of Max5 or Max6, a high-quality single-channel input (condenser microphone), and high-quality speakers for the amplification of processed and pre-recorded sounds. The performer must trigger the sequence of cues indicated in the score via MIDI footswitch.

Although these pieces are études, they are meant to be performed as five movements of a set. There should be relatively little space between each movement. Two versions of the first movement are provided. The realization of both versions are identical; the player may choose whichever one he or she prefers.

PROGRAM NOTE:
Studies in Momentum is a cycle of five miniatures for piano and live electronics, composed for pianist Keith Kirchoff. The piece is modeled as four études and a fantasy, with the focus of each étude being a single kind of signal process: harmonization, downsampling, ring modulation, and delay (respectively). The closing fantasy, *approaching entropy*, combines the four while also including a kind of hyper-rhythmic *musique concréte* element that I often employ in my electroacoustic works.

The titles (which were each chosen before any of the music was composed) –ground state; projectile motion; escape velocity; Planck's waltz, and approaching entropy– give each étude's narrative a particular challenge, or sense of tension between where the music is going and how it gets there. These concepts – borrowed concepts of quantum mechanics and kinematics– are areas in which I have absolutely no authority (which is probably what makes them inspiring to me). But like many of my fellow composers, I find layperson-geared explanations of physics highly evocative, sparking exciting ideas about relationships between musical narrative and motion in the physical world.

Cover photo: Newton's Cradle. Photograph by Xraijs_ (use under creative commons)

for Keith Kirchoff

STUDIES IN MOMENTUM

for piano and live electronics

I. ground state

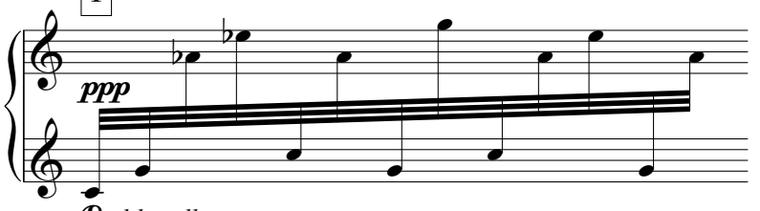
Peter Van Zandt Lane

[NOTATION VERSION 1]

Placid ♩ = c. 40

INSTRUCTIONS: Cycle through each sequence of notes continuously, playing the given subsets of the sequence in order. Subdivisions of each line are indicated with a broken beam. Boxed numbers correspond with patch cues.

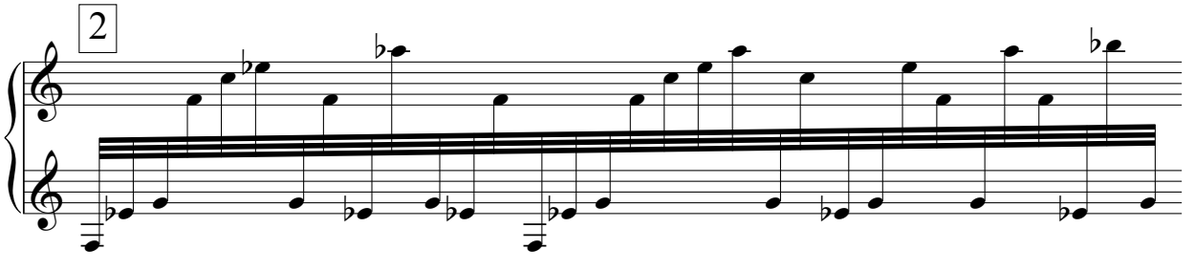
1



[13, 8, 5, 3, 5, 8, 13, 8, 5, 3, 1]

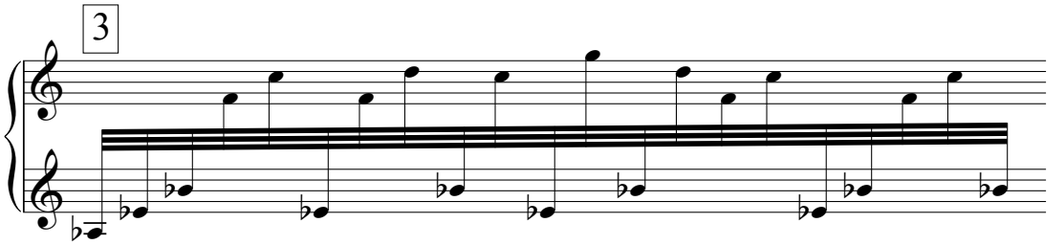
liberally
*una corda, sempre**

2



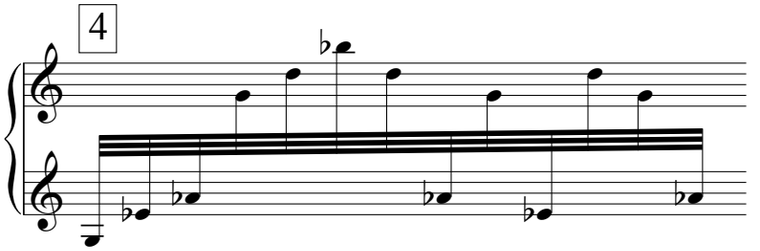
[34, 21, 8, 5, 34, 3, 5]

3



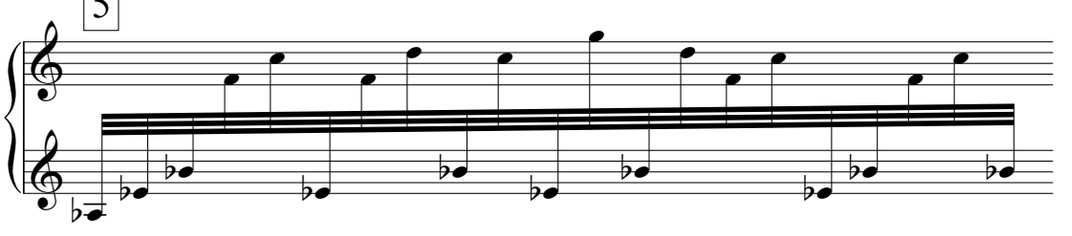
[21, 13, 8, 13, 21]

4



[13, 8, 5, 3, 2, 5, 8, 13]

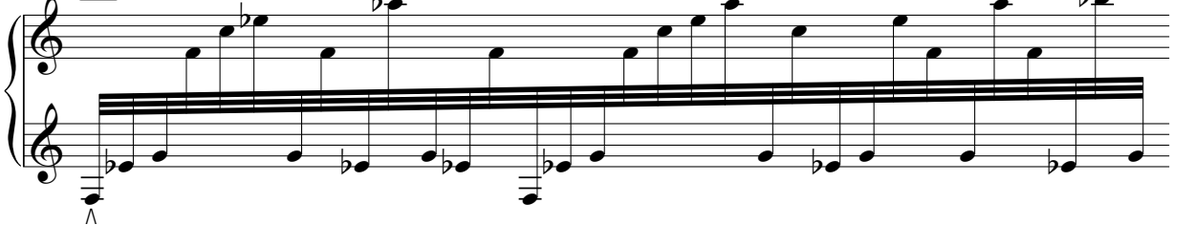
5



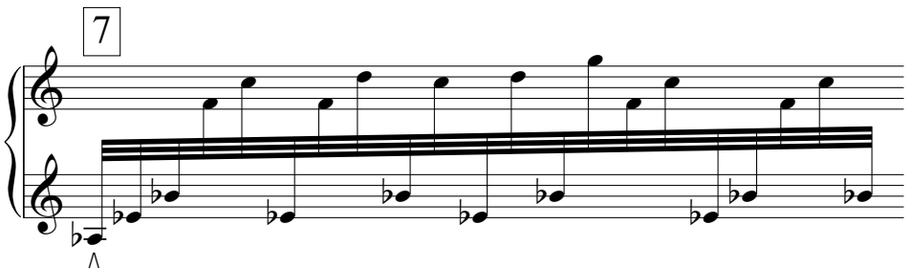
[21, 13, 21]

6

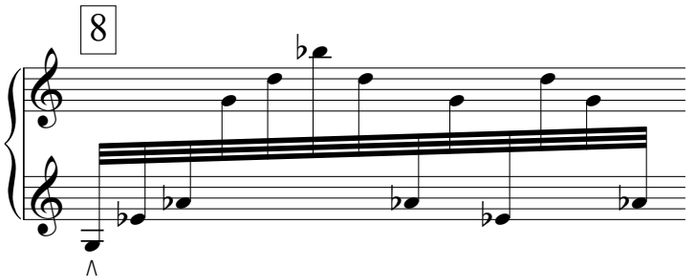
begin to fully reset sustain ped at the reset of each sequence. (the effect should be slightly interruptive)



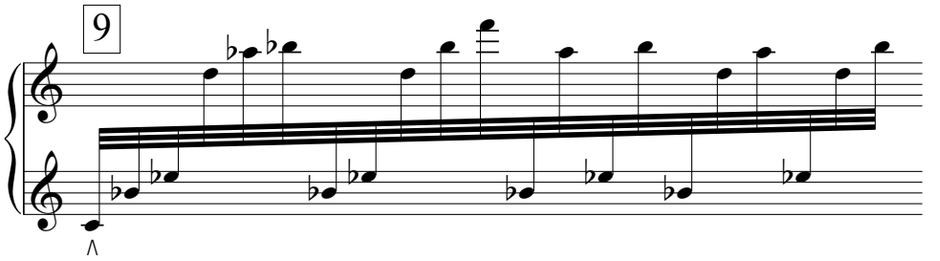
[34, 34]



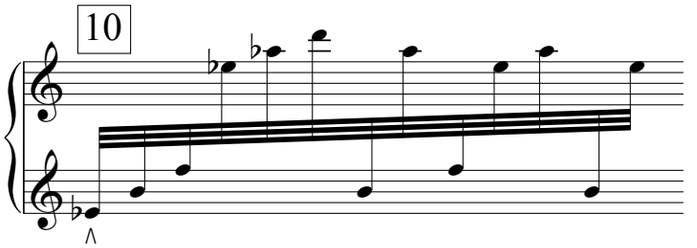
[21, 13, 8, 5, 3]



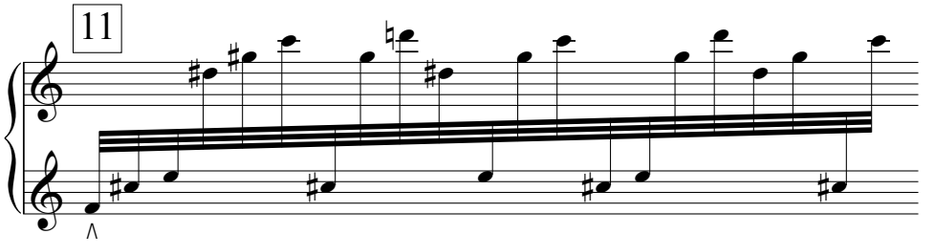
[13, 8, 3, 5, 8, 13]



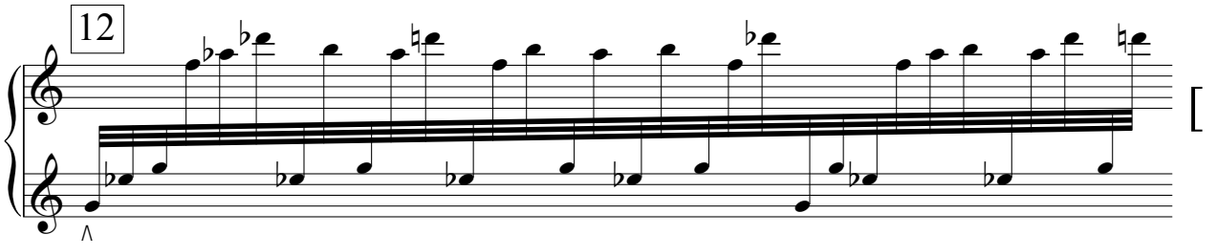
[21, 8, 5, 13, 5, 21]



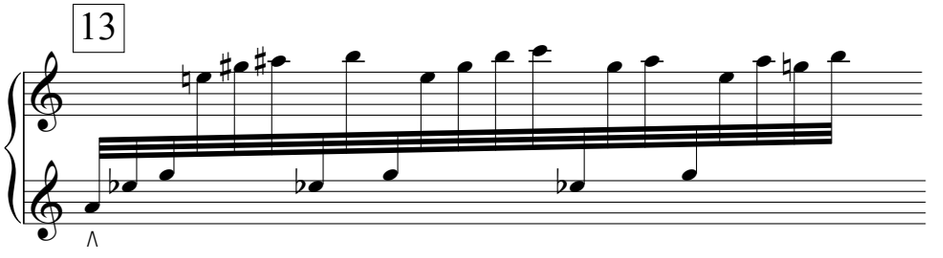
[13, 8, 5, 3, 2, 5, 8, 13]



[21, 13, 8, 13, 21]



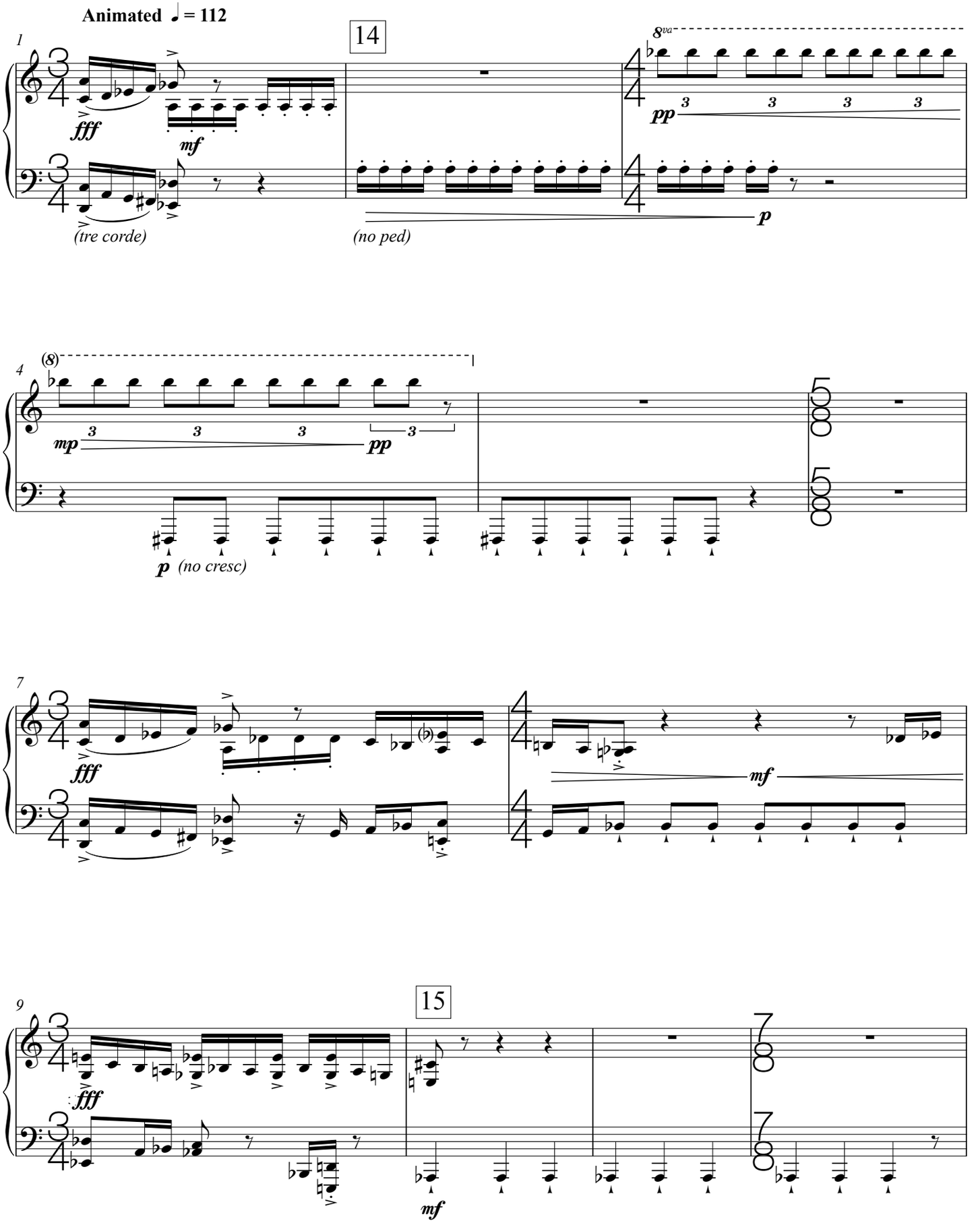
[34, 13, 8,
5, 13, 34]

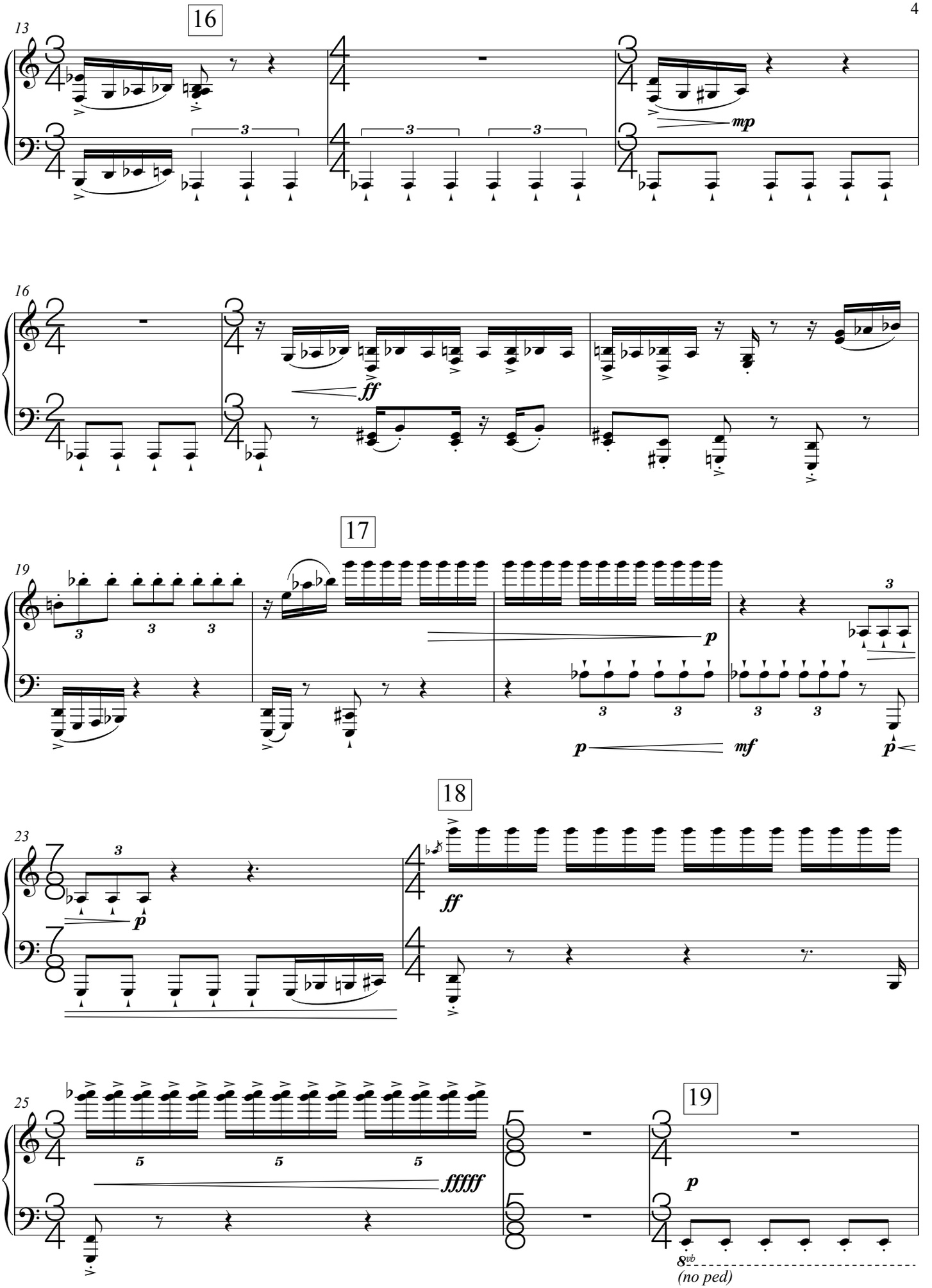


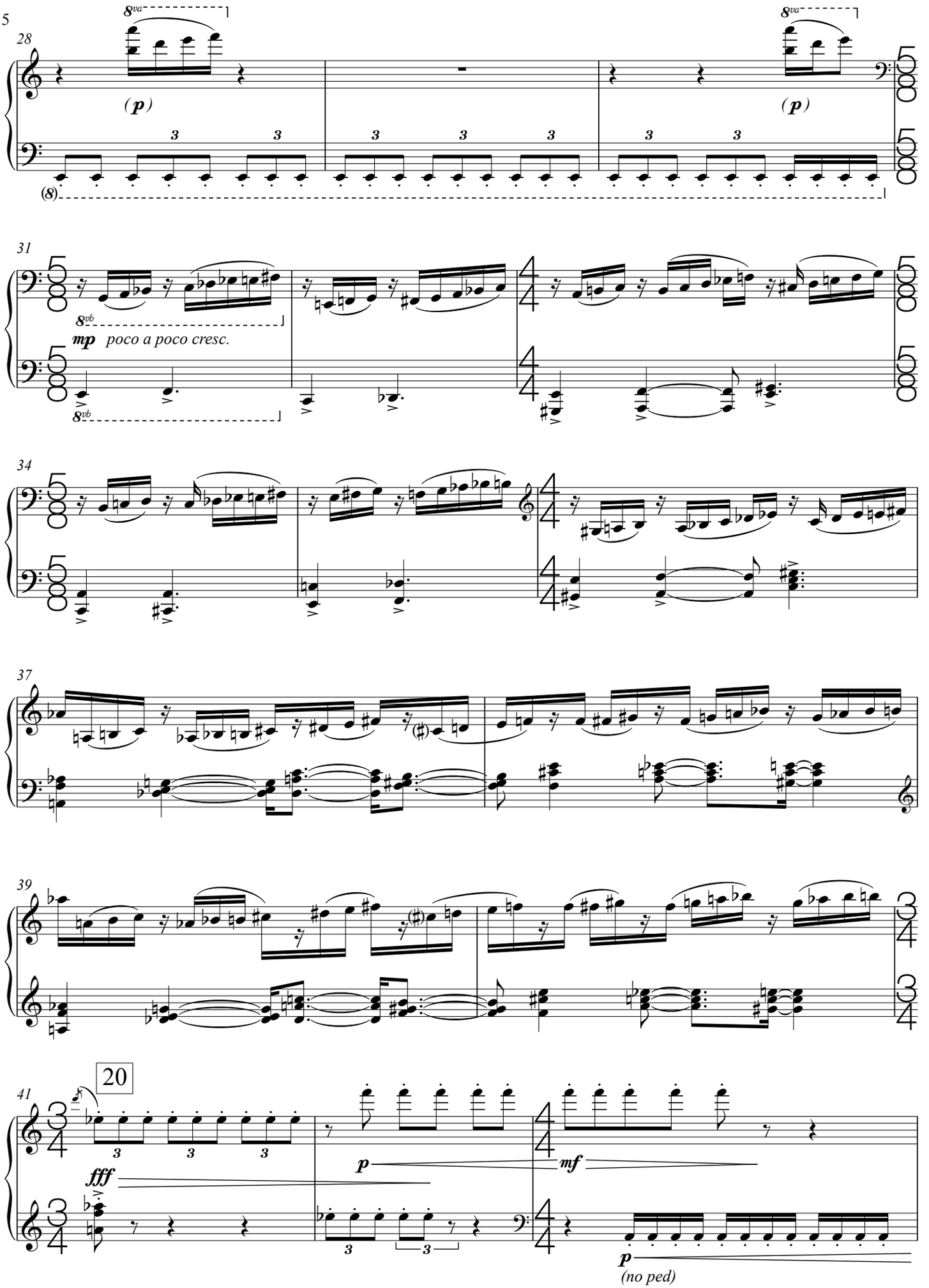
[21, 13, 21, 8,
5, 3, 8, 3, 6] 𝄽 | - ‖

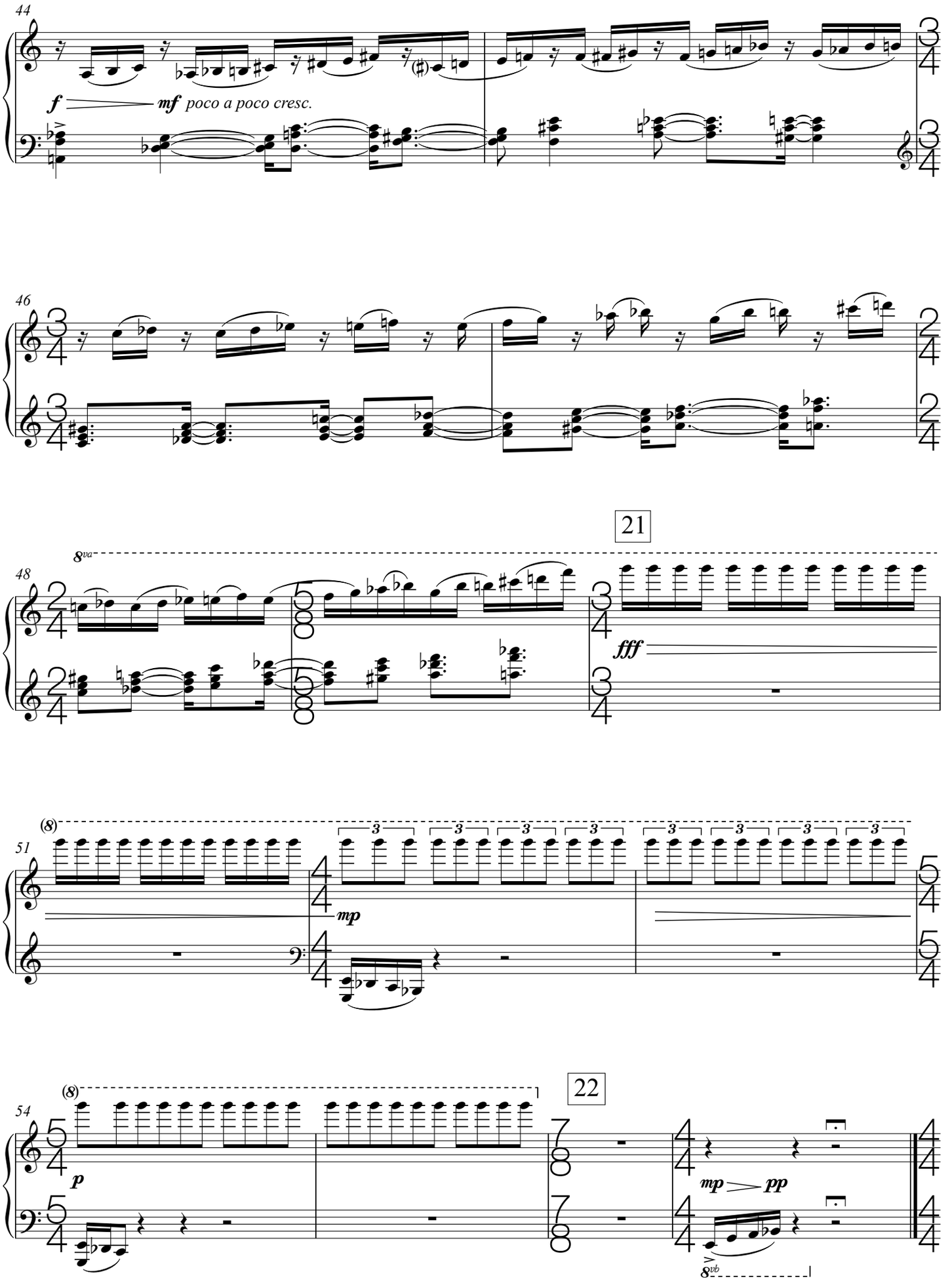
f

II. projectile motion



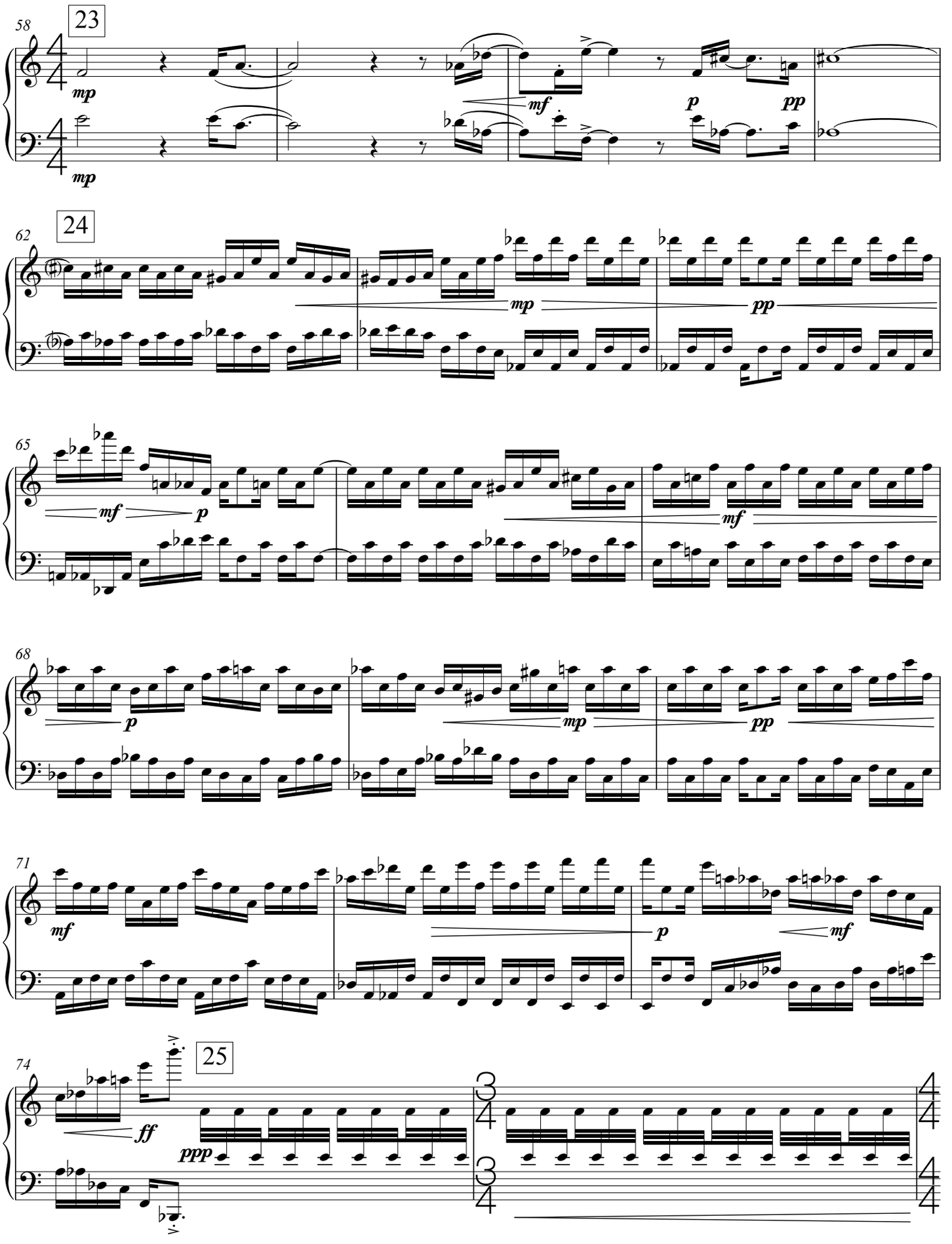

16
13
mp
16
ff
17
19
p
p
mf
p
18
23
p
ff
25
fffff
19
p
8vb
(no ped)

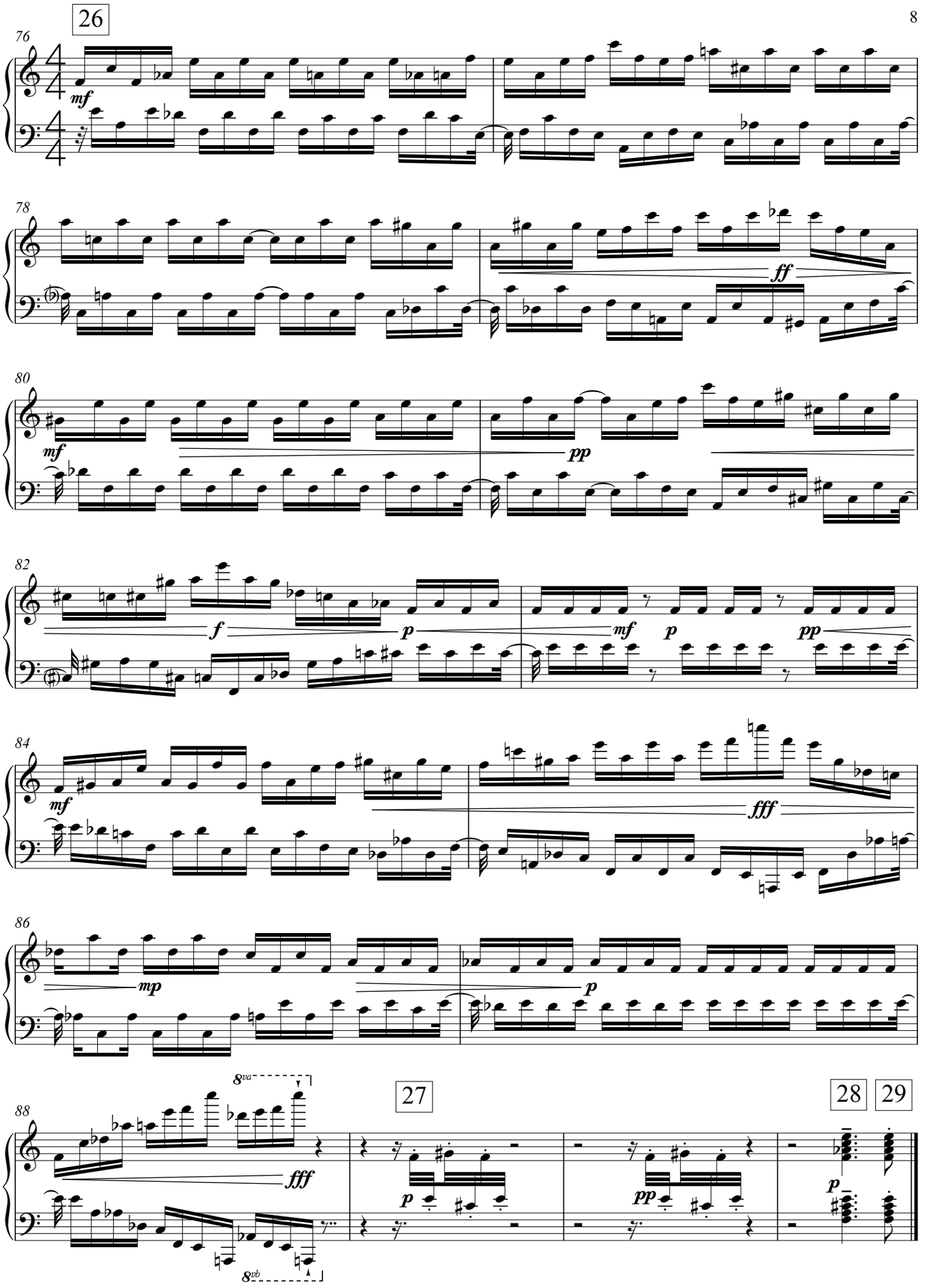

28
8va
(p)
8va
(p)
3
3
3
3
3
3
3
3
(8)
31
8vb
mp poco a poco cresc.
8vb
34
37
39
41
20
fff
p
mf
p
(no ped)


44
f
mf poco a poco cresc.
46
21
48
8va
fff
(8)
51
mp
(8)
22
54
p
mp
pp
8vb

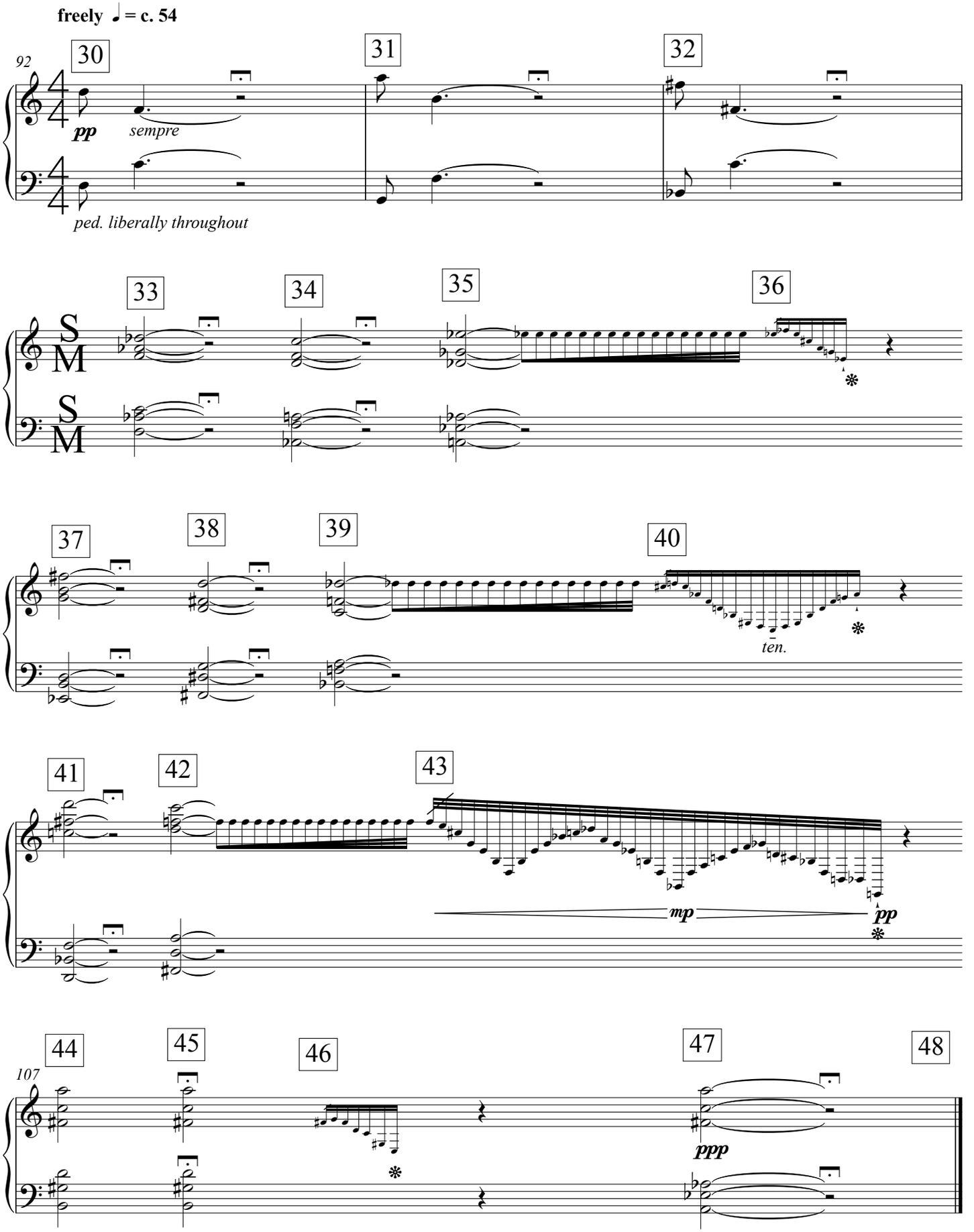
III. escape velocity

Fluid, controlled ♩ = 92

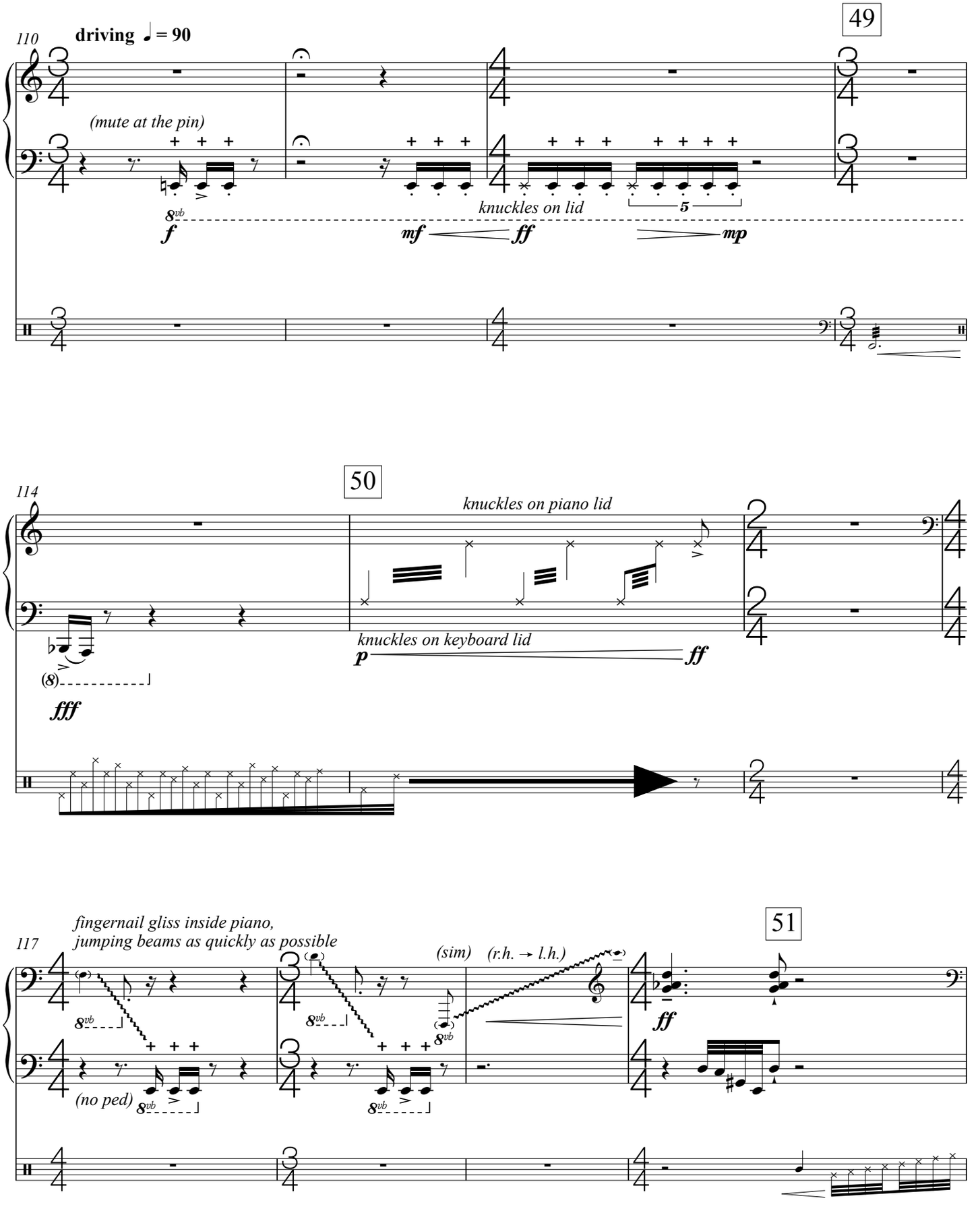



26
76
mf
78
ff
80
mf
pp
82
f
p
mf
p
pp
84
mf
fff
86
mp
p
88
8va
fff
8vb
27
p
pp
28
29
p

IV. Planck's waltz



V. approaching entropy



121

f *forceful/funky*

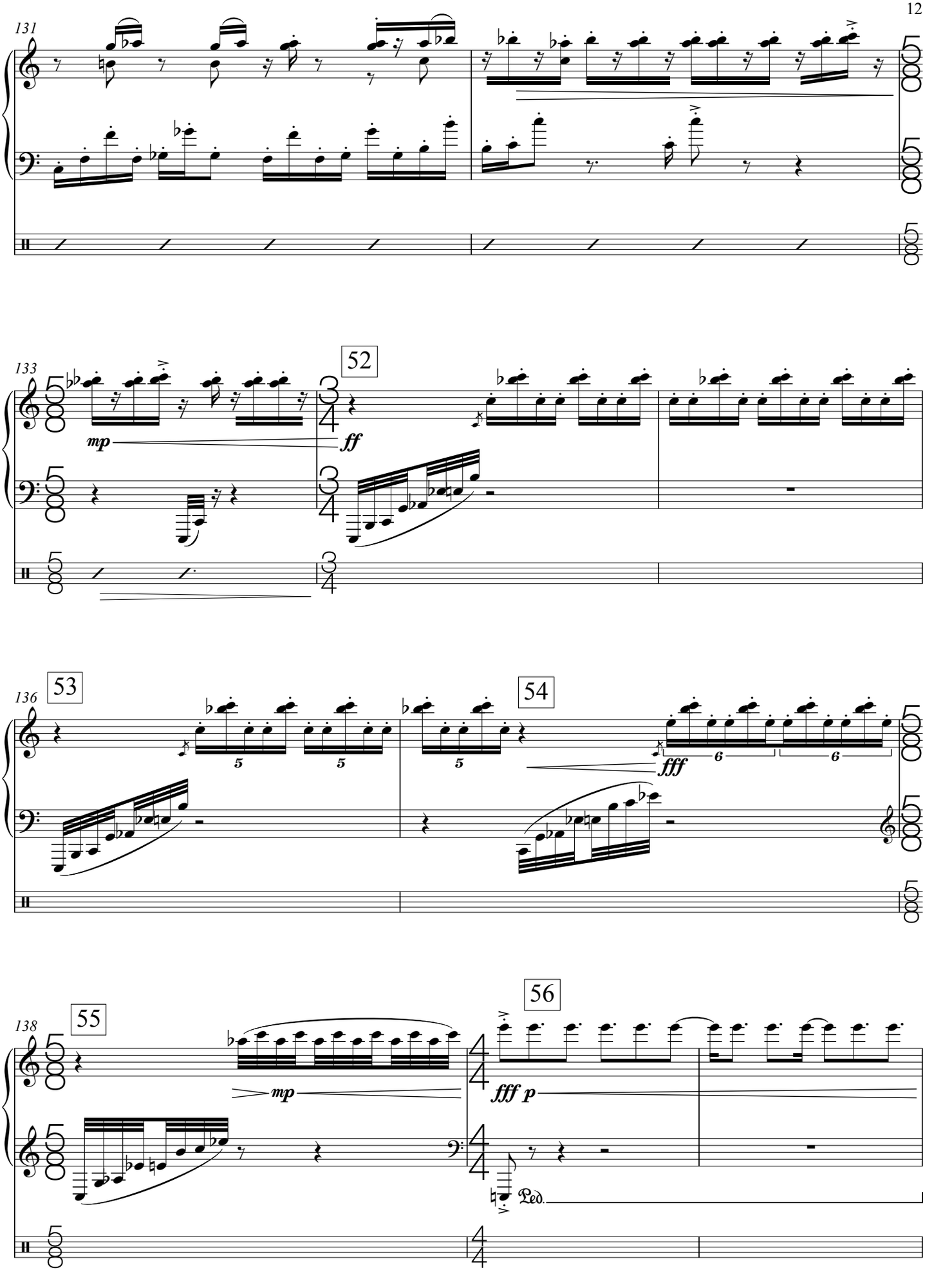
123

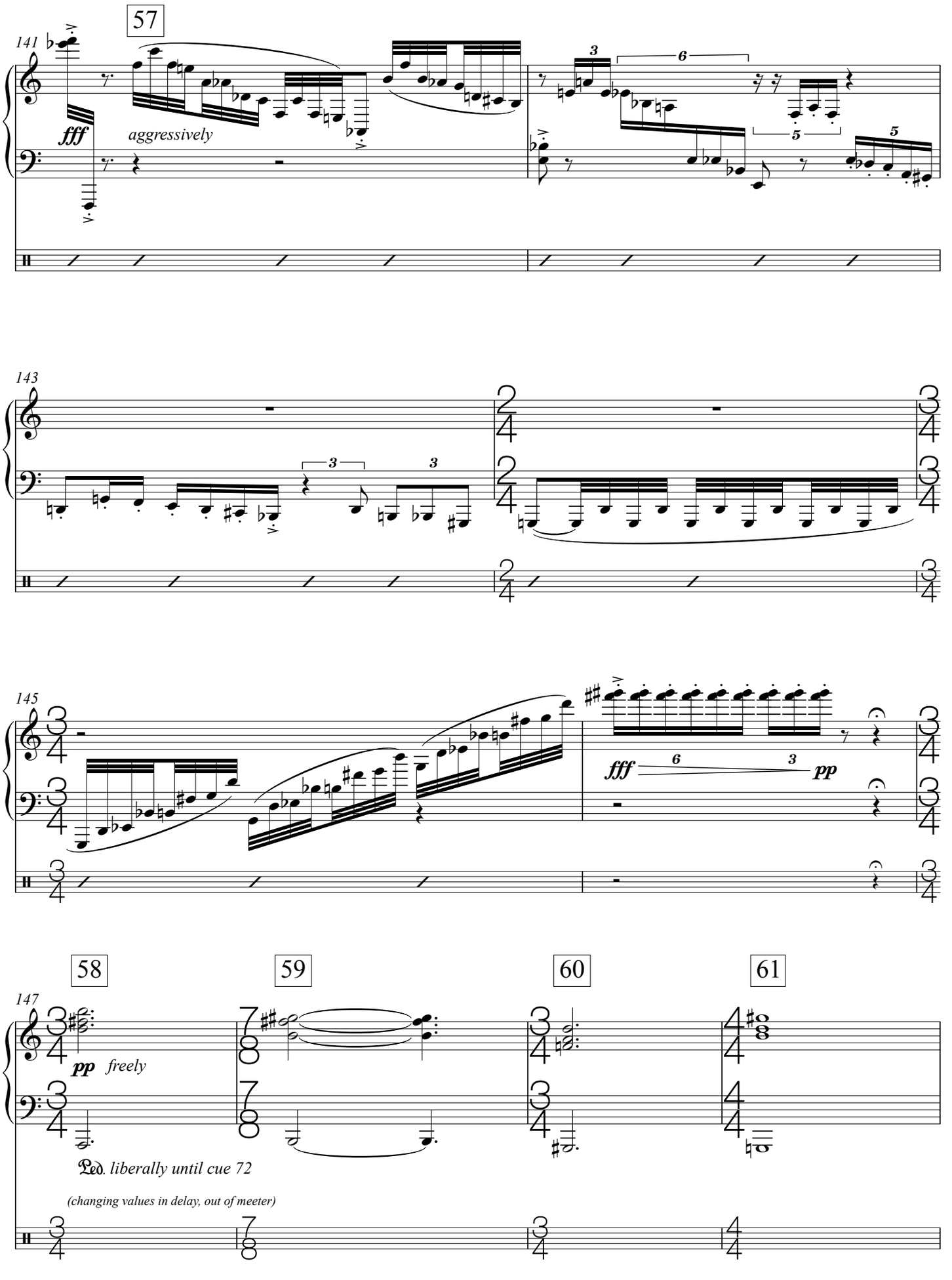
125

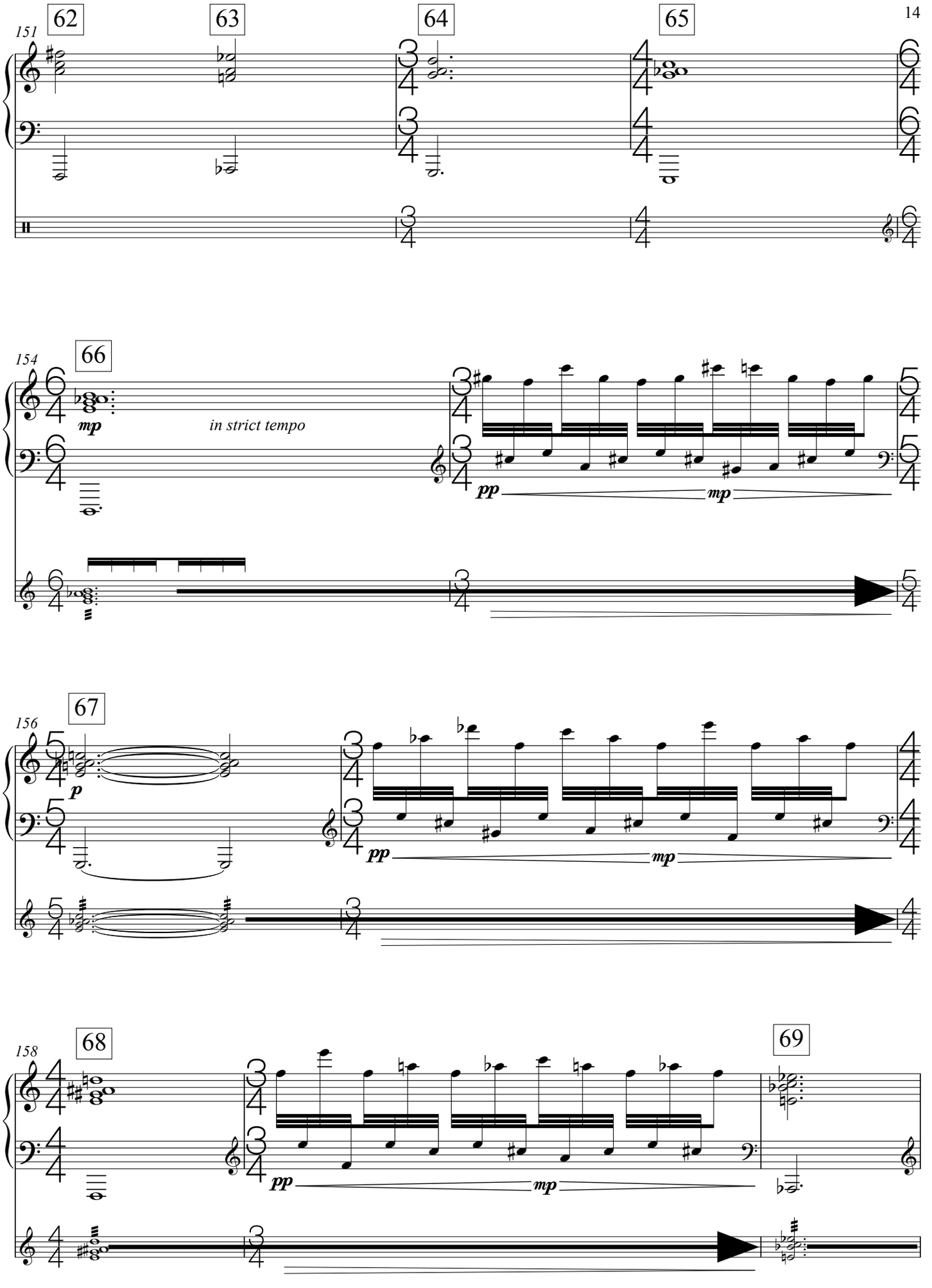
ff

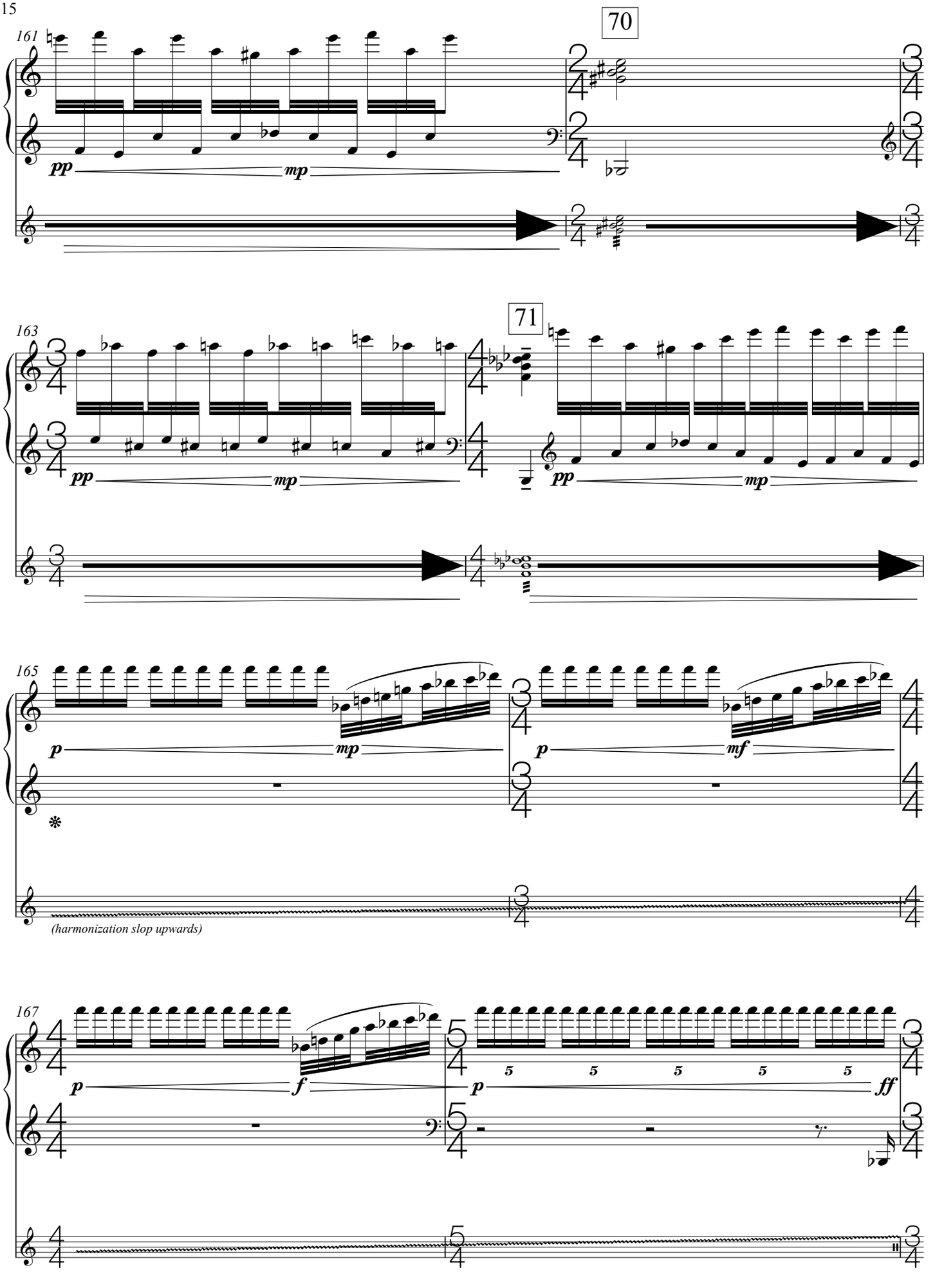
127

129


131
133
52
mp
ff
136
53
54
fff
55
56
mp
fff p
Ped.


57
141
fff
aggressively
143
145
fff
pp
58
59
60
61
147
pp
freely
Ped. liberally until cue 72
(changing values in delay, out of meeter)


151
62
63
64
65
154
66
mp
in strict tempo
pp
mp
156
67
p
pp
mp
158
68
pp
mp
69


161
70
pp
mp
163
71
pp
mp
pp
mp
165
p
mp
p
mf
(harmonization slop upwards)
167
p
f
p
ff

72

169

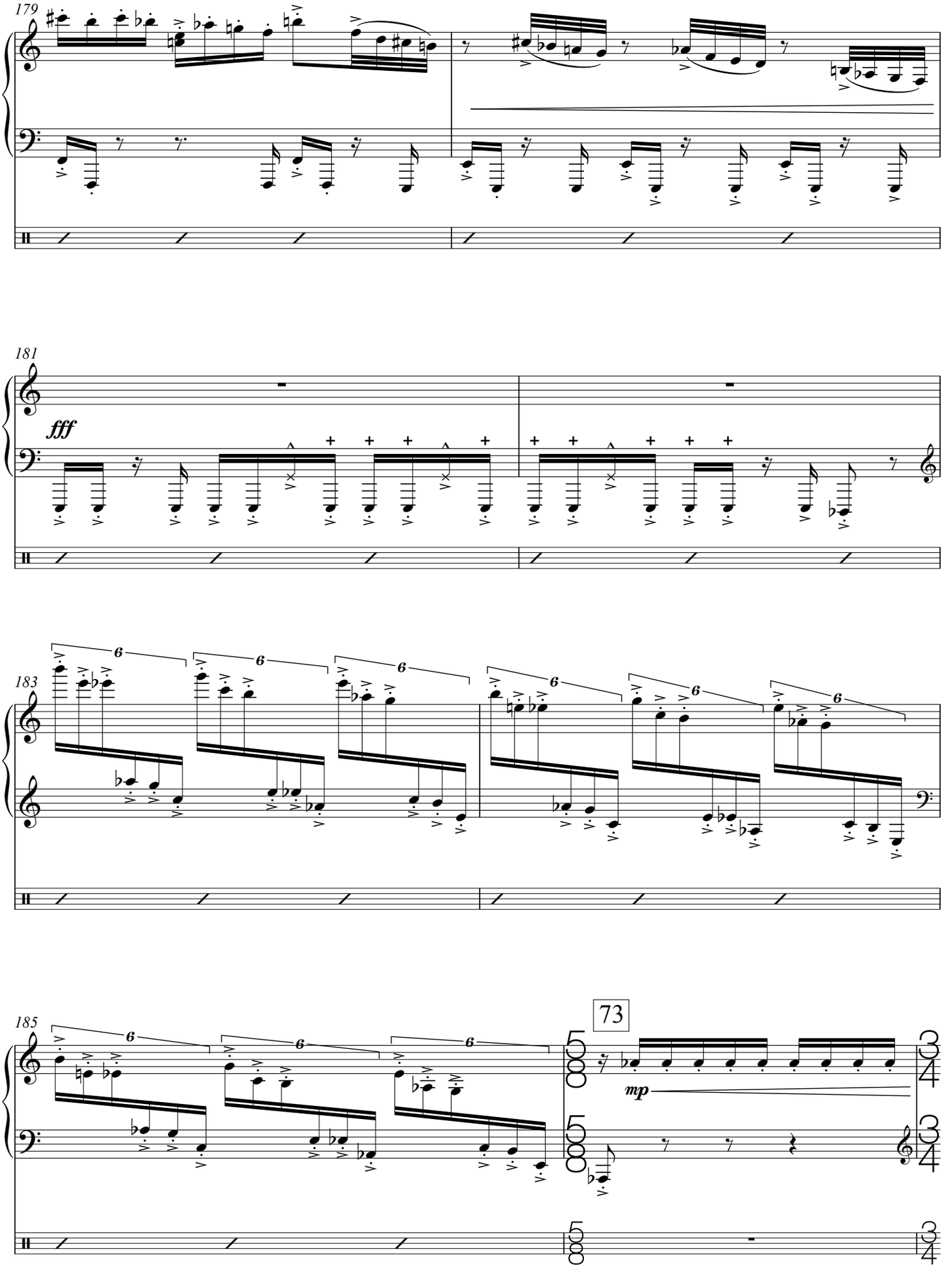
(ff)

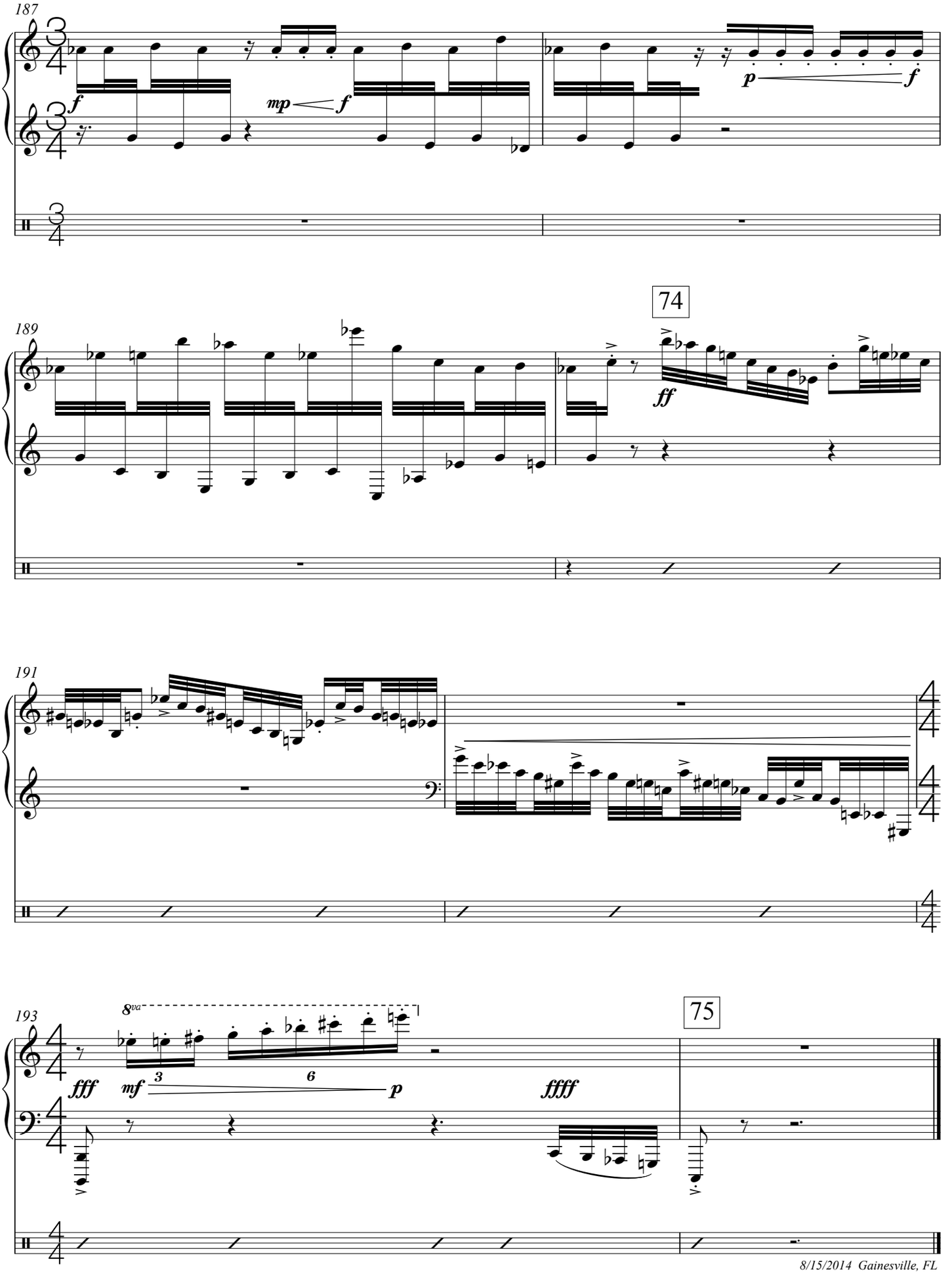
171

173

175

177


179
181
fff
183
185
73
mp

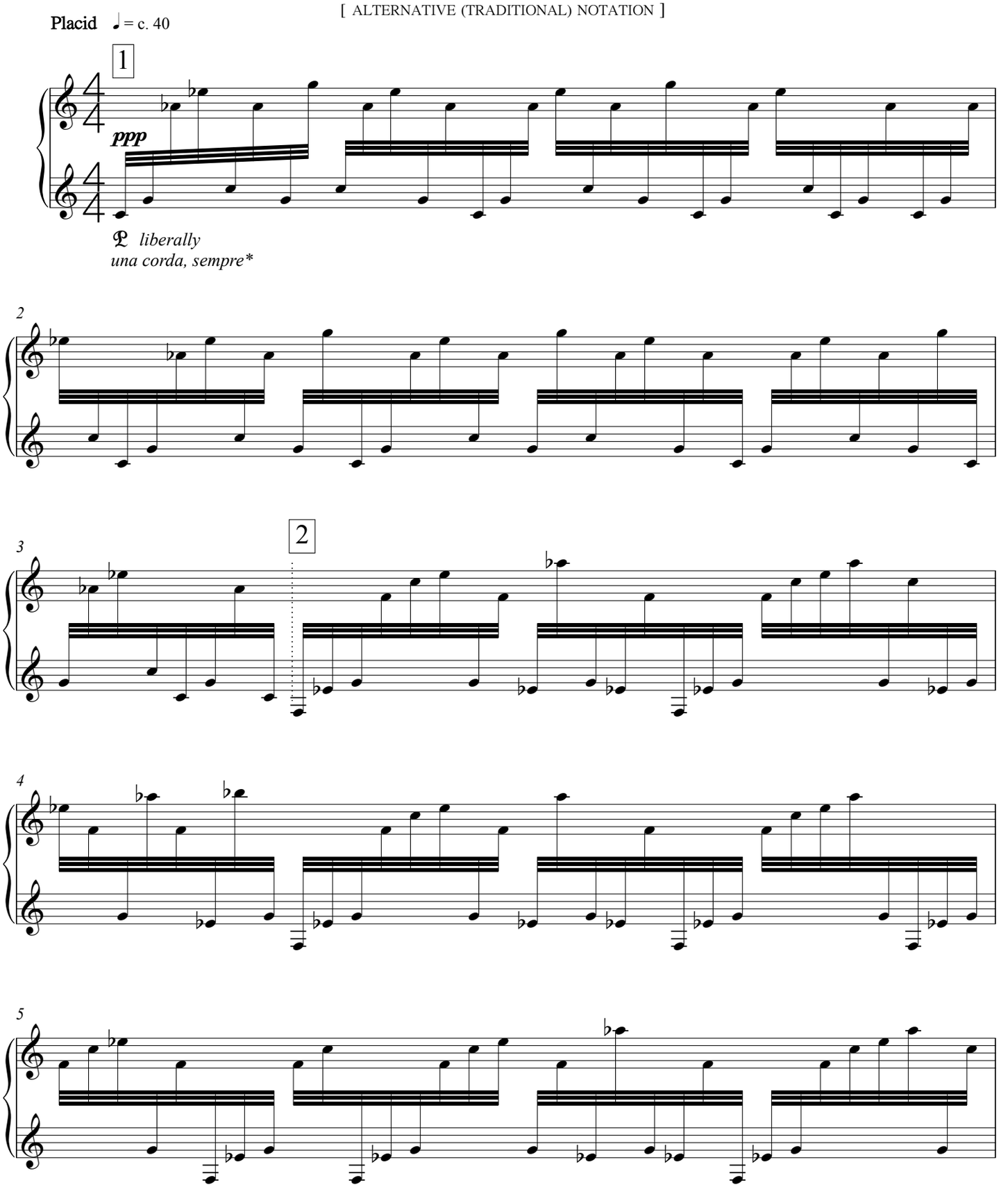


8/15/2014 Gainesville, FL

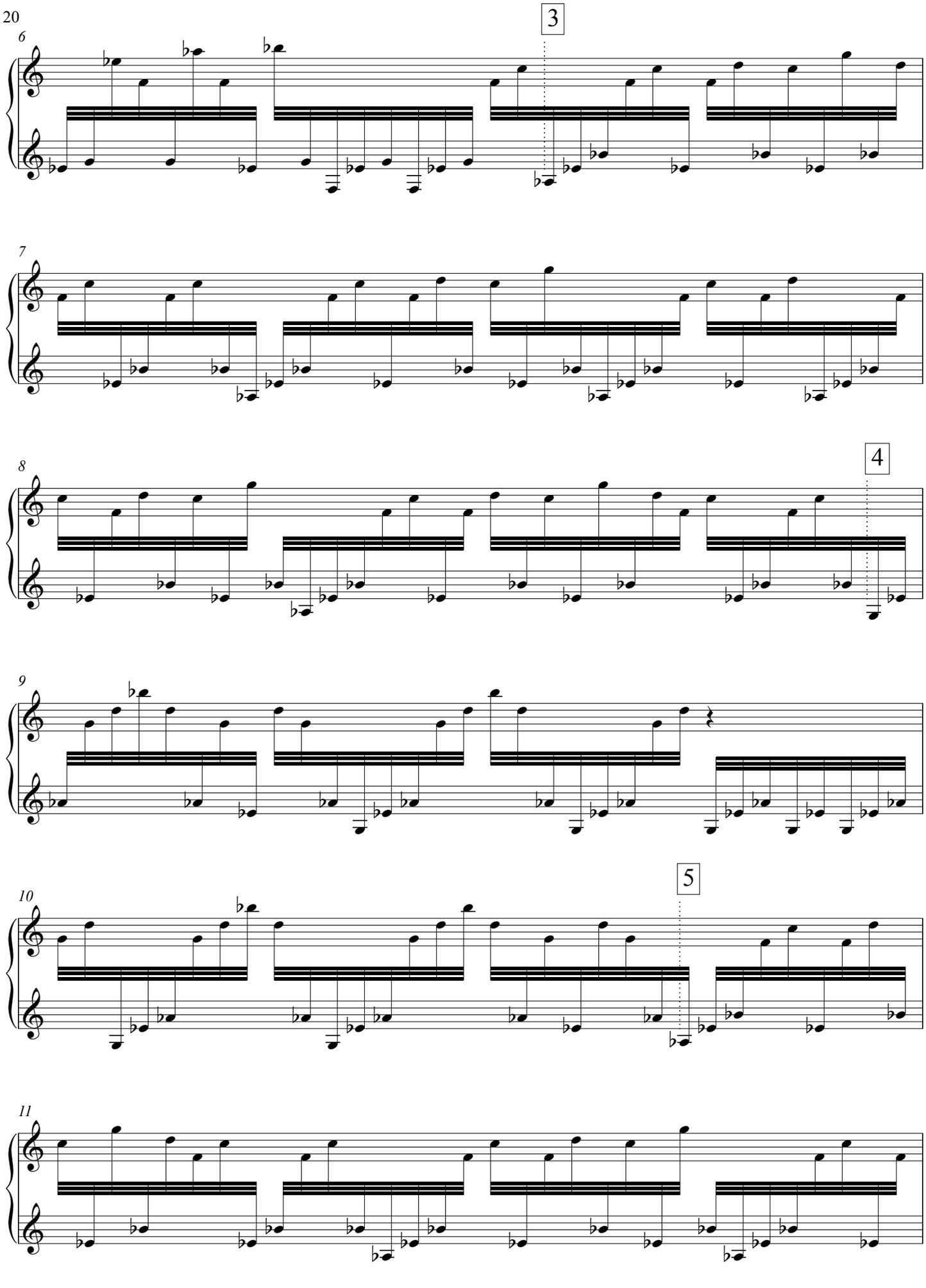
Appendix A:

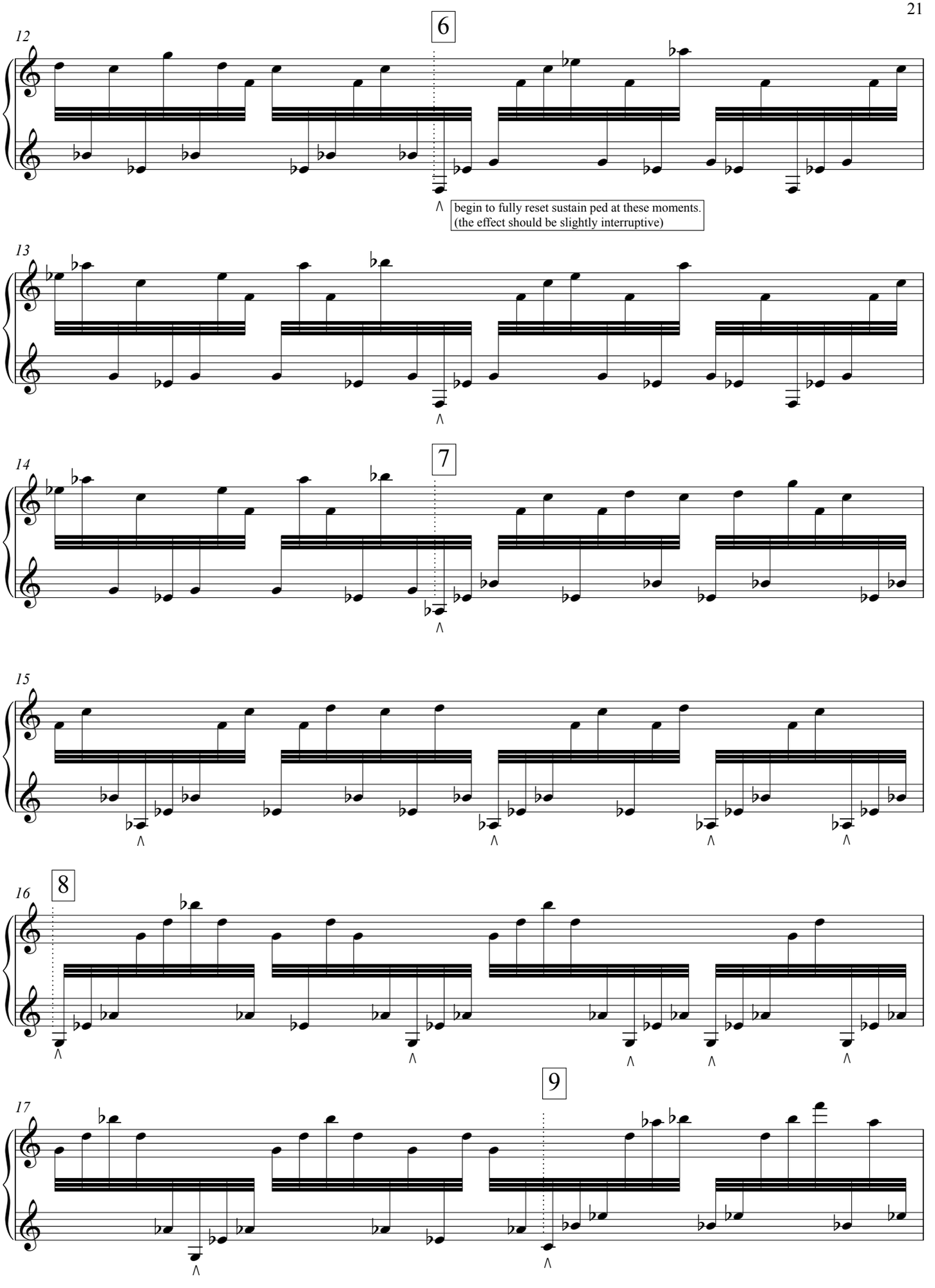
I. ground state

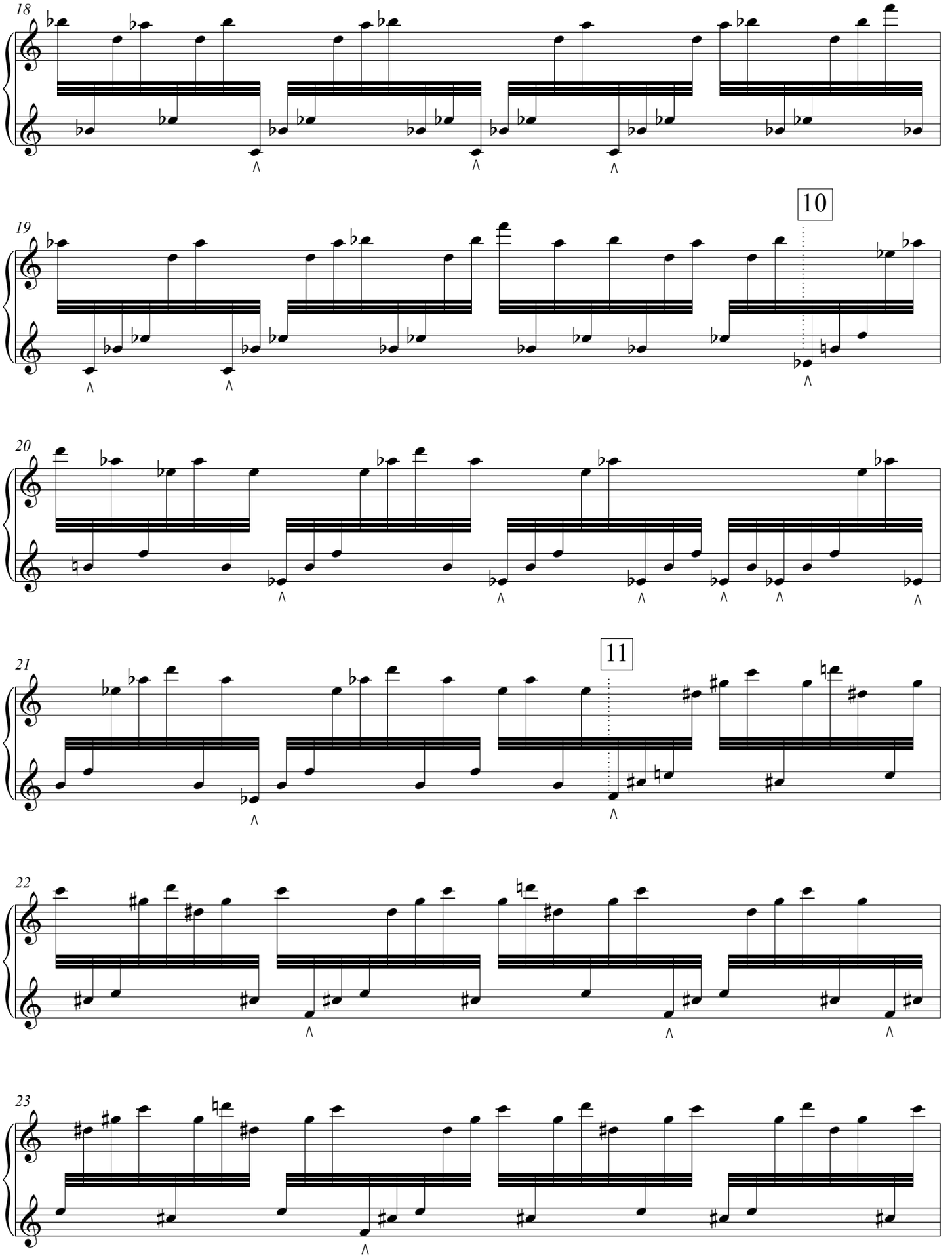
[ALTERNATIVE (TRADITIONAL) NOTATION]



** It may be necessary to weight down the una corda pedal to facilitate advancing the midi pedal. Alternatively, the heel may be used for the una corda pedal, while the heel is used for the midi pedal.*


6
3
7
8
4
9
10
5
11


12
6
begin to fully reset sustain ped at these moments.
(the effect should be slightly interruptive)
13
14
7
15
16
8
9
17


18
19
10
20
21
11
22
23

12

24

25

13

26

27

28

29

f