Topology (phases of this difference)

73˚ N, 44˚ W, written for Conrad Harris & Pauline Kim Harris
by Andrew C. Smith, 2012-13

For each melodic line, the violinists should take turns playing the individual notes, hocketing back and forth. Each note should be held until the player's next note; the exception to this is the end of each phrase, where Vn. II releases the note at the thick black bar and Vn. I holds the final note as long as desired. There is then a slight pause before the start of the next phrase.

The melodies are played in order, in this fashion, until the 15th melody. This UNISON ROW is played in unison by both violins. After this row, the players switch roles and Vn. II leads each melody.

Time is relative to horizontal space. Tick-marks have been provided in case the players wish to hone their timing, but there should never be a sense of a "beat."

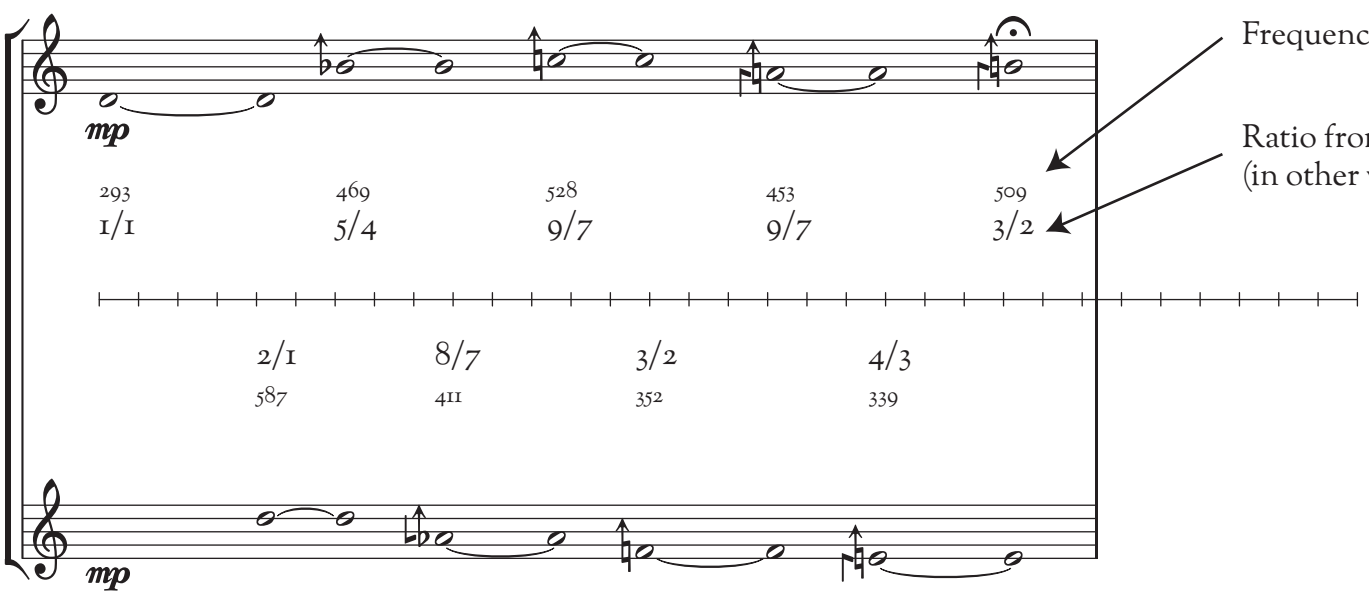
Tuning is based on just intonation, using the Helmholtz-Ellis accidentals developed by Marc Sabat and Wolfgang von Schweinitz.

In addition to the accidentals, the specific frequencies of the pitches have been provided. This should facilitate rehearsal with digital tuners.

Note that the key element is not the pitches' relationship to any global tuning, but rather their relationships to the other simultaneously sounding tone.

The piece takes as input the coordinates of the performance location. Each performance of the piece should (ideally) use its own coordinates as input.

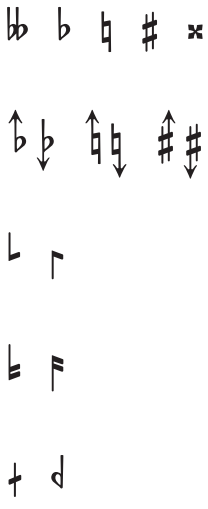
This piece was written for recording at 73˚ N, 44˚ W (New York). For a version of the piece calibrated for a different performance location, please contact the composer.



Explanation of the Helmholtz-Ellis notation created by Marc Sabat & Wolfgang von Schweinitz, excerpted from a legend written by the authors.

I created these particular glyphs based on the Helmholtz-Ellis font. While the HE glyphs are based on Finale's Maestro font and Sibelius's Opus font, these are based on the Lilypond Feta font.

The Helmholtz-Ellis notation is licensed under a Creative Commons 3.0 Share-Alike license. This implementation of the font is under the same license.



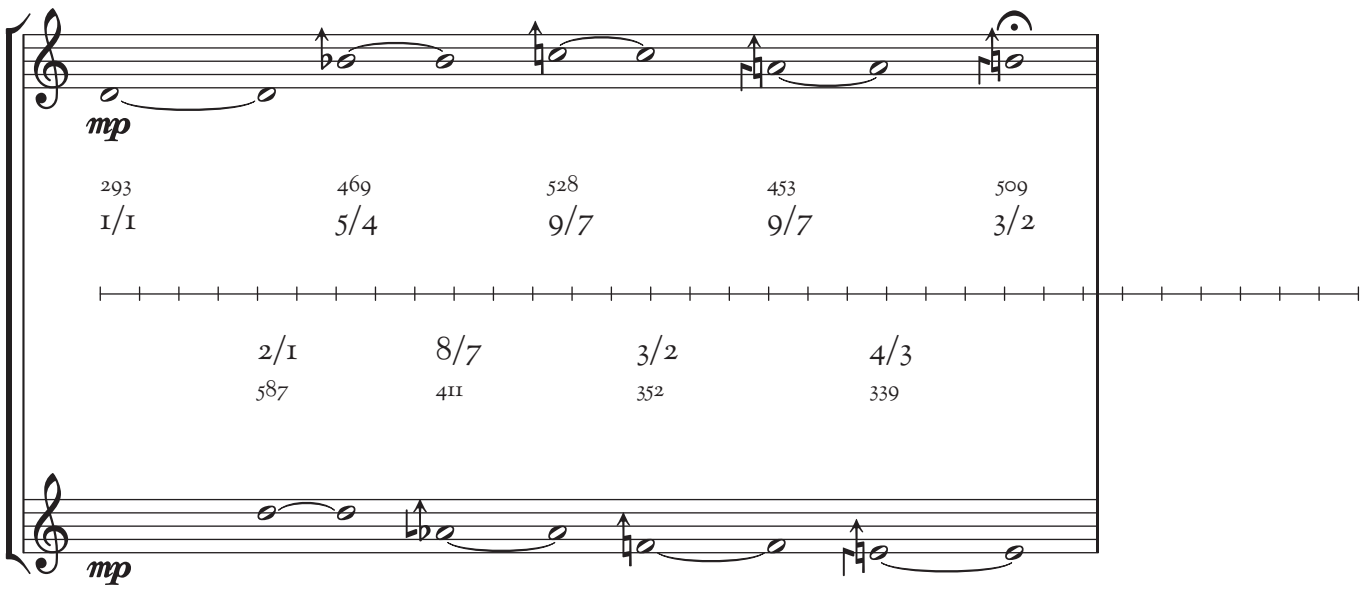
Pythagorean series of fifths – the open strings
(. . . c g d a e . . .)

lowers/raises by a syntonic comma
81:80 = circa 21.5 cents

lowers/raises by a septimal comma
64:63 = circa 27.3 cents

lowers/raises by two septimal commas
circa 54.5 cents

raises/lowers by an undecimal quartertone
33:32 = circa 53.3 cents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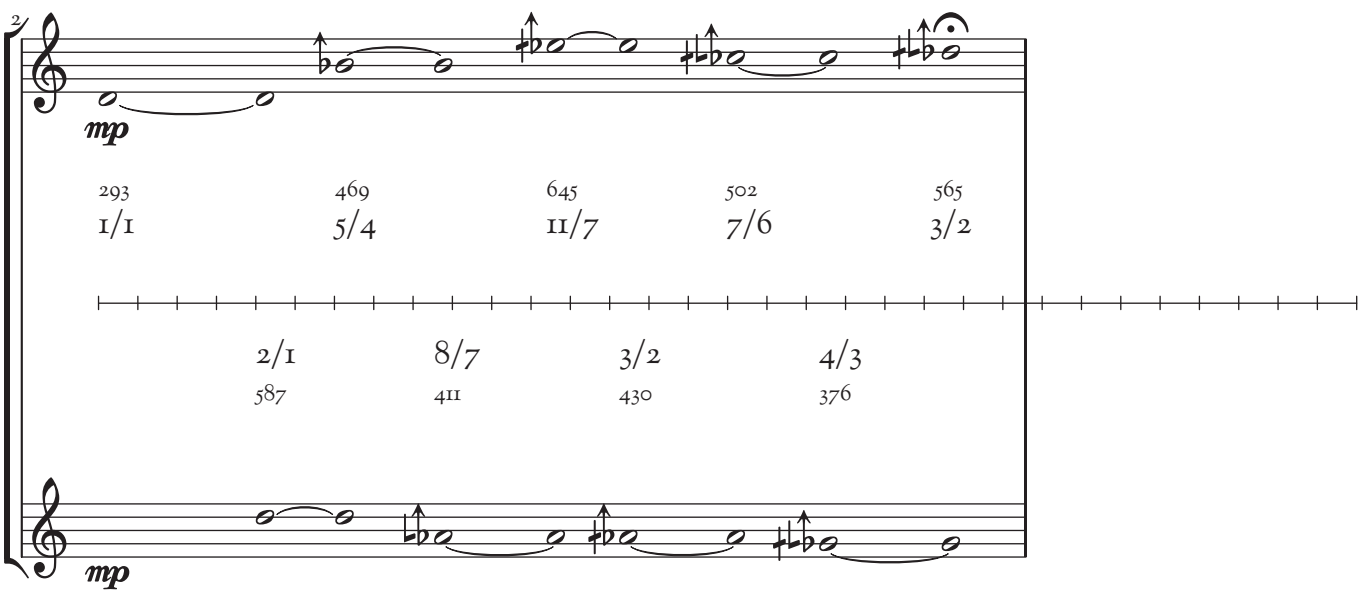
1/1
469
5/4
528
9/7
453
9/7
509
3/2
2/1
587
8/7
411
3/2
352
4/3
339
mp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mp
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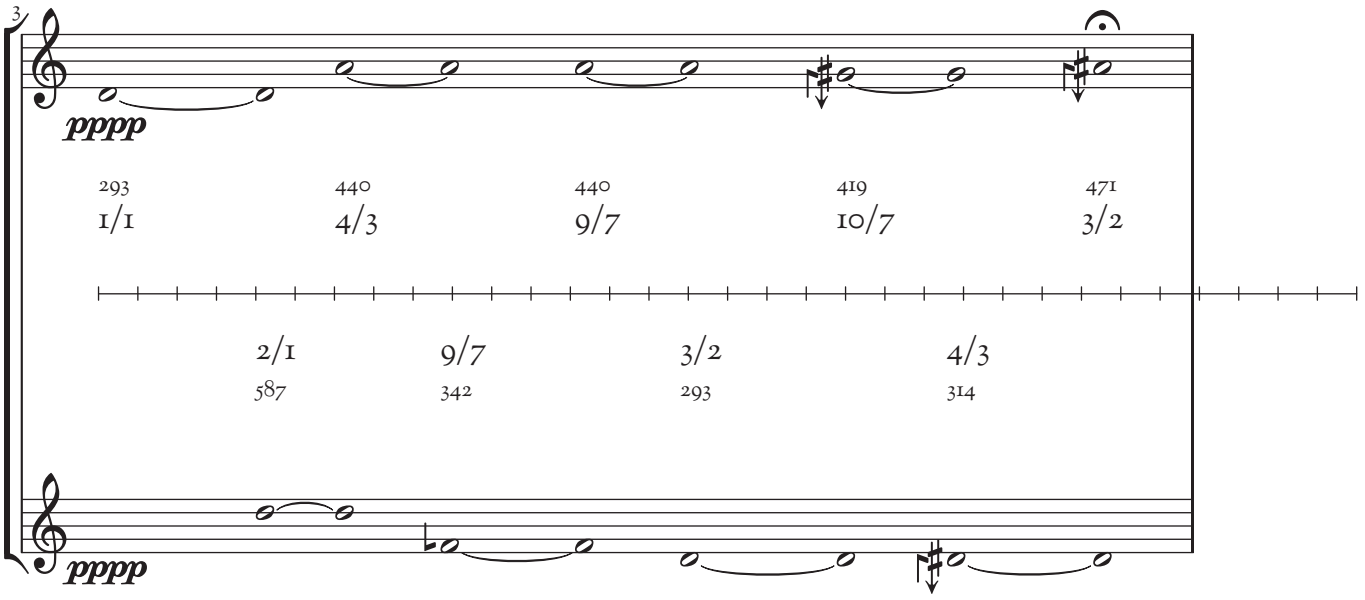
1/1
469
5/4
645
11/7
502
7/6
565
3/2
2/1
587
8/7
411
3/2
430
4/3
376
mp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pppp
293
1/1
440
4/3
440
9/7
419
10/7
471
3/2
2/1
587
9/7
342
3/2
293
4/3
314
pppp

4

p

293 440 440 743 835

1/1 4/3 8/7 9/8 3/2

2/1 8/7 4/3 4/3

587 385 330 557

p

5

mp

293 469 528 792 891

1/1 5/4 9/7 9/8 3/2

2/1 8/7 3/2 4/3

587 411 352 594

mp

6

ppp

293 440 550 825 928

1/1 4/3 10/7 9/8 3/2

2/1 8/7 3/2 4/3

587 385 367 619

ppp

7

mp

293 440 489 733 825
1/1 4/3 10/7 9/8 3/2

2/1 9/7 3/2 4/3
587 342 326 550

mp

8

mp

293 440 280 945 1063
1/1 4/3 7/6 9/8 3/2

2/1 11/6 3/2 4/3
587 240 280 709

mp

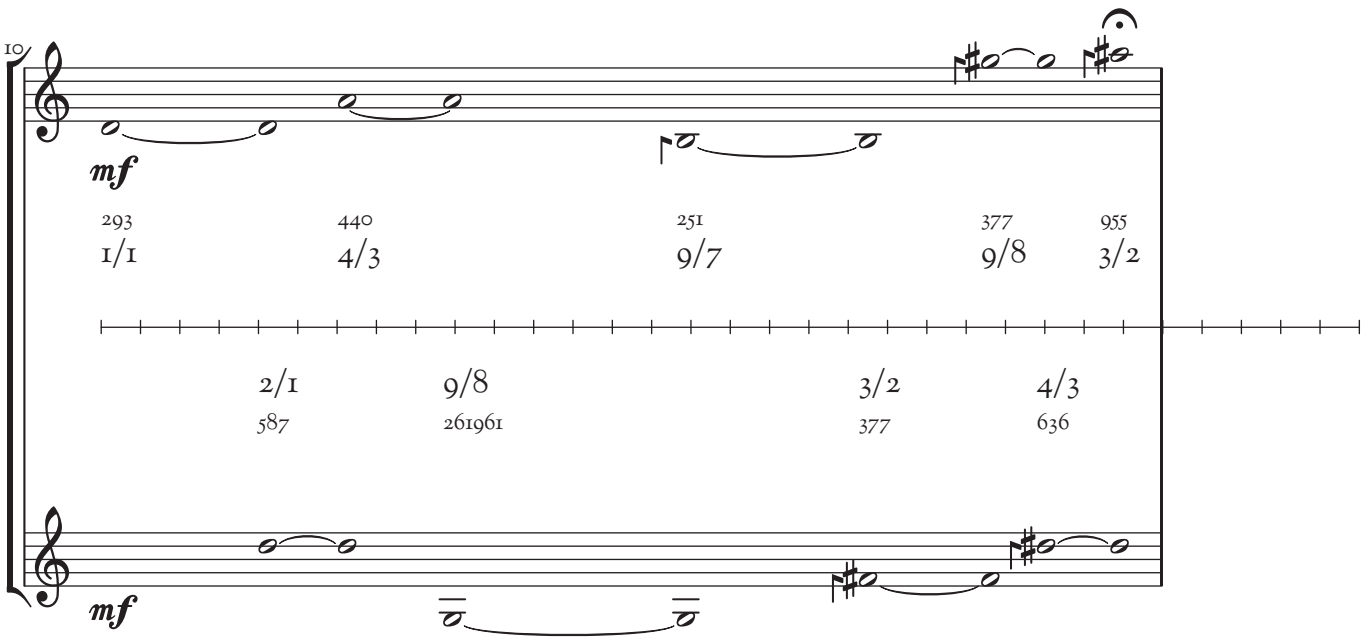
9

mp

293 440 223 754 849
1/1 4/3 8/7 9/8 3/2

2/1 9/8 3/2 4/3
587 196 335 566

mp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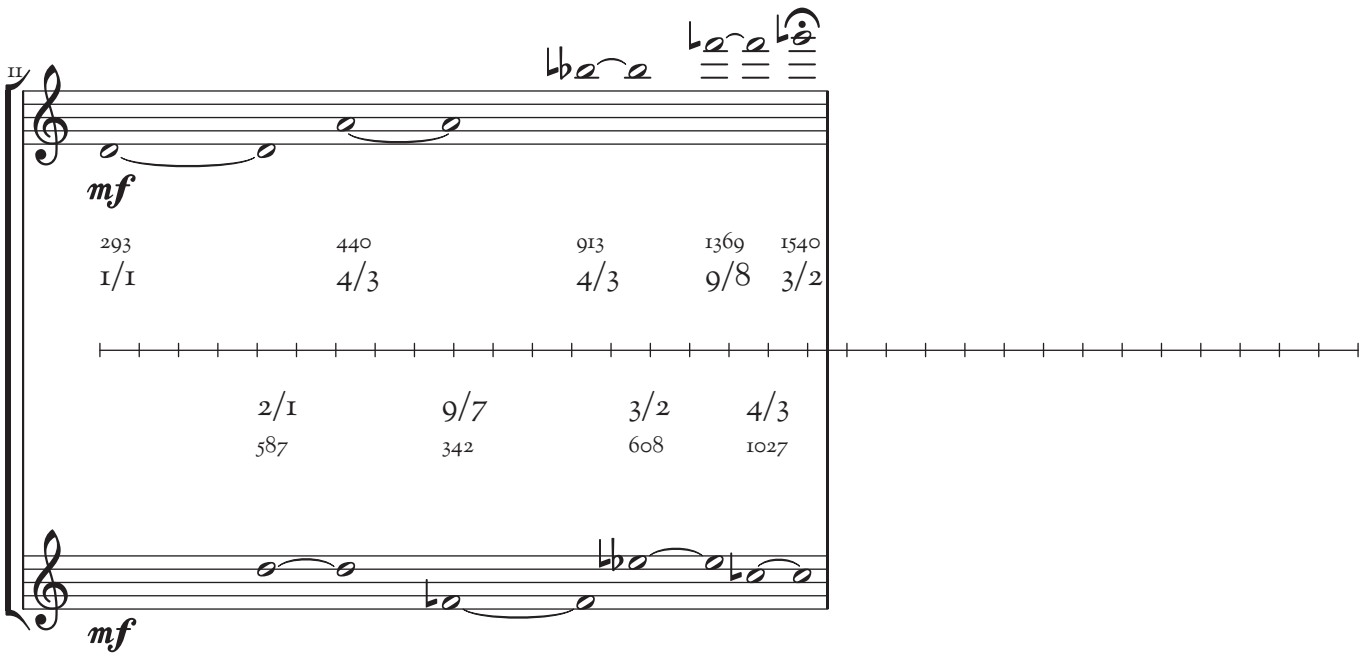
1/1
440
4/3
251
9/7
377
9/8
955
3/2
2/1
587
9/8
261961
3/2
377
4/3
636
mf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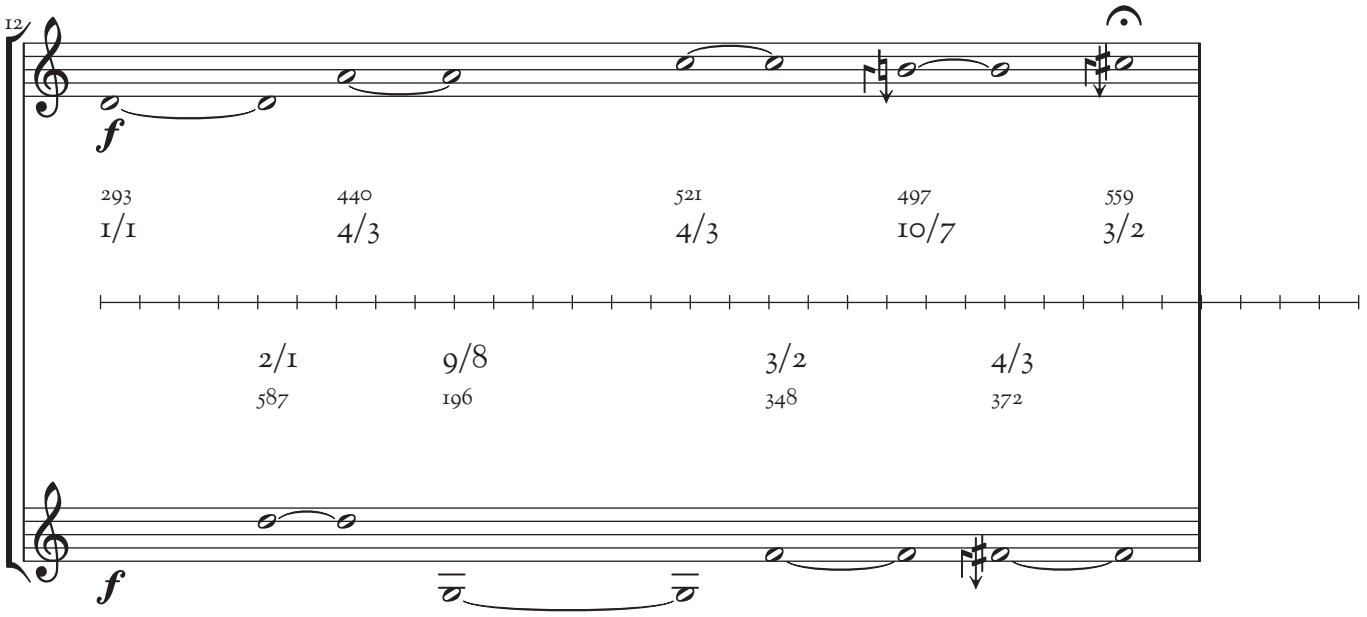
mf
293
1/1
440
4/3
913
4/3
1369
9/8
1540
3/2
2/1
587
9/7
342
3/2
608
4/3
1027
mf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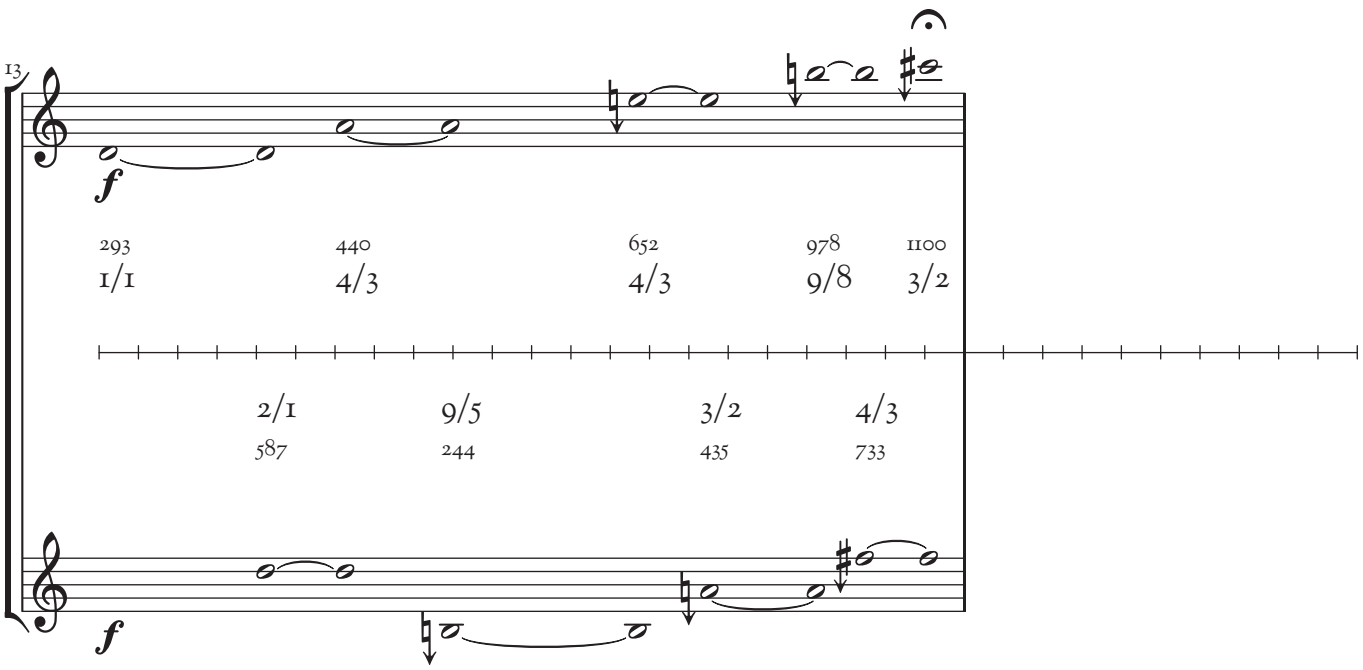
f
293
1/1
440
4/3
521
4/3
497
10/7
559
3/2
2/1
587
9/8
196
3/2
348
4/3
372
f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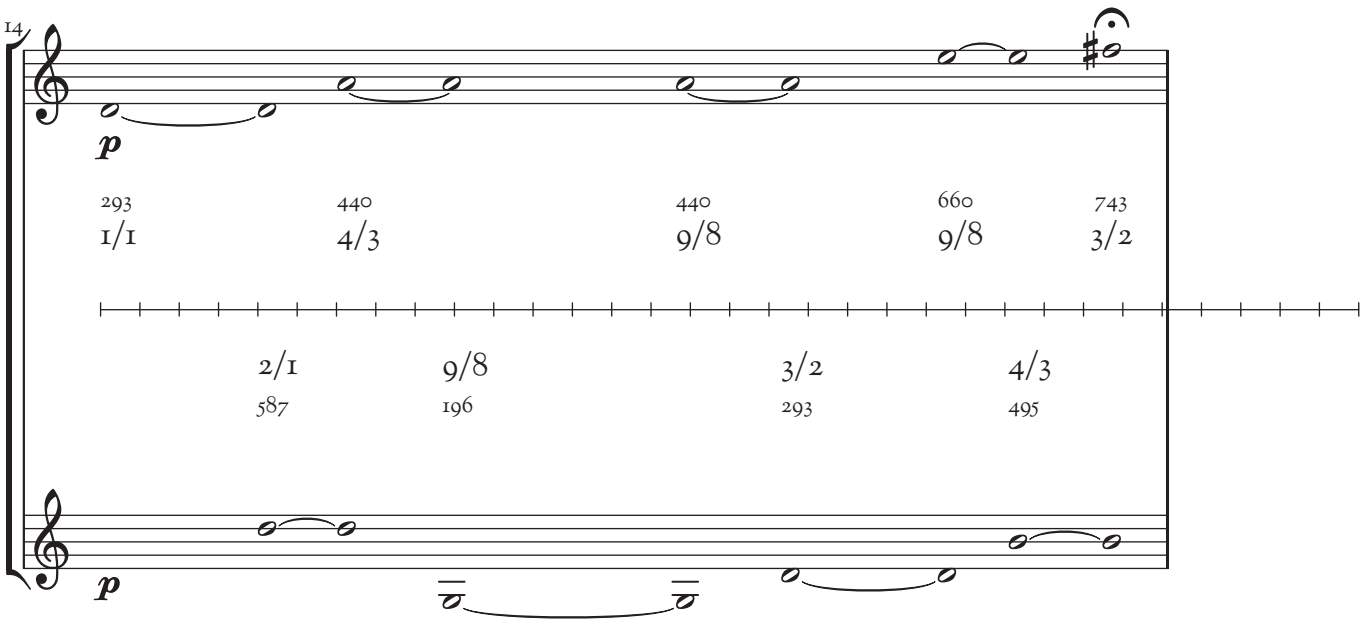
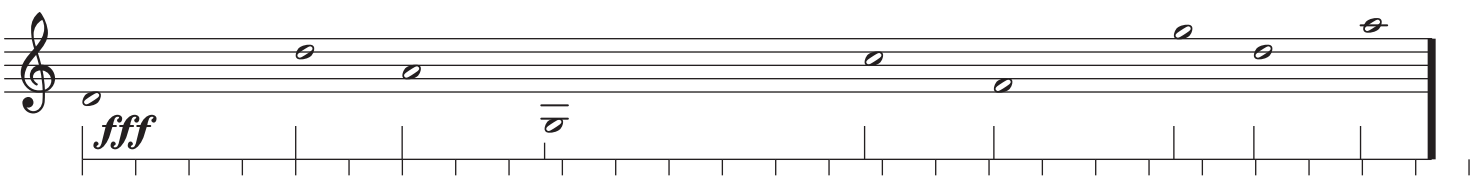
f
293
1/1
440
4/3
652
4/3
978
9/8
1100
3/2
2/1
587
9/5
244
3/2
435
4/3
733
f


14
p
293
1/1
440
4/3
440
9/8
660
9/8
743
3/2
2/1
587
9/8
196
3/2
293
4/3
495
p

o — UNSION


fff

15

f

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2/1 5/3 3/2 4/3

1/1 4/3 4/3 9/8 3/2
293 782 626 939 1056

f

16

p

587 528 939 1584
2/1 9/8 3/2 4/3

1/1 5/4 4/3 9/8 3/2
293 235 1408 2112 2376

8va

p

17

p

587 348 232 391
2/1 9/8 2/1 4/3

1/1 4/3 4/3 9/8 3/2
293 782 927 521 587

p

18

8va

mp

587 1564 2781 927
2/1 9/8 3/2 4/3

1/1 3/2 4/3 9/8 3/2
293 3520 4172 1236 1391

15ma

mp

19

8va

mp

587 1056 1877 3168
2/1 5/3 3/2 4/3

1/1 3/2 4/3 9/8 3/2
293 3520 2816 4224 2112

15ma

mp

20

8va

mp

587 913 1420 2342
2/1 9/8 3/2 4/3

1/1 7/4 7/6 11/5 3/2
293 2054 2129 3123 3513

15ma

mp

21

ppp

587 1043 587 329
2/1 9/8 3/2 5/4

1/1 2/1 4/3 7/5 3/2
293 2347 391 1643 493

8va

8va

ppp

8va

22

mp

587 1564 1043 2607
2/1 9/8 2/1 4/3

1/1 3/2 4/3 5/3 3/2
293 3520 4172 3477 3911

15ma

mp

23

p

587 838 279 471
2/1 7/4 2/1 4/3

1/1 5/4 4/3 9/8 3/2
293 2933 2235 629 707

15ma

p

24

ppp

587 1043 464 204
2/1 9/8 3/2 5/4

1/1 2/1 4/3 11/10 3/2
293 2347 2781 1020 306

15ma

ppp

25

ppp

587 587 196 352
2/1 5/4 2/1 4/3

1/1 5/4 4/3 6/5 3/2
293 2933 1564 469 528

15ma

ppp

26

ppp

587 513 196 330
2/1 2/1 7/4 4/3

1/1 7/4 4/3 9/8 3/2
293 2054 1369 440 495

8va

ppp

27

ppp

587 587 293 495
2/1 2/1 7/4 4/3

1/1 2/1 7/4 9/8 3/2
293 4693 2053 660 743

15ma

ppp

28

p

587 513 225 561
2/1 2/1 2/1 4/3

1/1 7/4 7/4 5/3 3/2
293 2054 1797 749 842

8va

p