Peter McKenzie Armstrong

In Modulo

Cycles from the Perfect Squared Square

for piano solo

Opus 34a

Edition Ottaviano Petrucci

NOTES

SOURCES

A square divided into subsquares is "Squared". Where division has ensured that the subsquare sizes are unique, this framing square is also "Perfect". Further, if its subsquares number 21 – proven as the fewest possible – then their framing square is the "Simplest".

I took up this figure originally for a different sort of division, that of Fibonacci's integer series, commandeering the subsquare dimensions as moduli. The result, *Additudes! for Csound* (2005) consisted of 21 movements, one per modulus, in which the mod–cycle values determined pitch assignment and their occurrence frequences set note–durations.

COMPOSITION

In Modulo is a reworking of that music for piano solo, translating pitch values from frequency cycles–per–second to standard keyboard notation and that of duration values from decimal seconds to standard notes. New in this process has been my use of the cycles values' *occurrence* frequencies to determine both note durations and voice density. The latter has varied (as occurrence–frequency series yielded subcycles of their own), suggesting several levels of voice combination. Finally, I have patterned those levels to determine the order of movements.

The score's line lengths roughly parallel the modulus values themselves, so as to reflect them horizontally as the pitch ranges do vertically. Please note, however, that this parallel is not at all reflected in the tempo settings – or in the audio file performance lengths, varying intuitively from 2 to 22 seconds.

PERFORMANCE

Most problematic in the result, despite many vertical &/or horizontal pattern reflections (marked "<>" in the score) is a resistance often shown to metrical organization, especially where tuplets (of 3 or 5) are concerned. Although measures are defined so as to encompass all of any tuplet's members, the members themselves are only seldom positioned together! Inevitably then, any sense of "beat" is often only fleetingly available, facing imminent upset. Accordingly, many of the score's time signatures I have hazarded mainly to suggest a most probably usable beat value.

Regarding articulation: all notes within a slur are to be connected, but with the last then curtailed to detach from what follows; the sustain pedal may within slurs help to connect what the hands cannot, but its use must not "smooth over" slur–end detachments.

SOUND FILE

The audio file accompanying this score was produced by the composer via *Rosegarden* and realized via *Pianoteq*'s "D4 Pointillist" instrument.

– PMA (2022)

Duration: 3'40"

to BVW c/o Faith Elliott

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Cycles from the Perfect Squared Square

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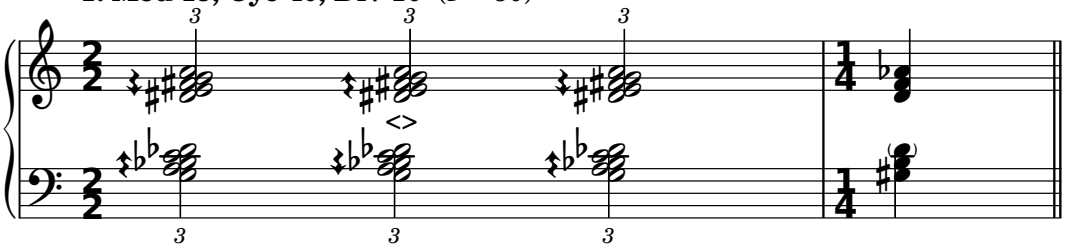
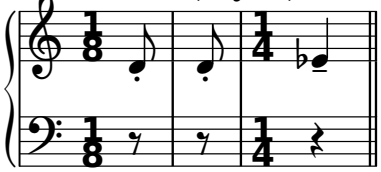
Opus 34a

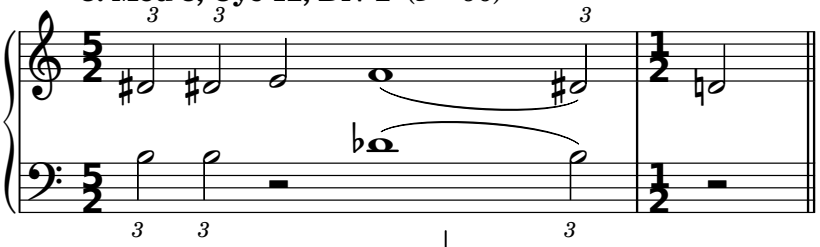
1: Mod 15, Cyc 40, Div 10 (♩ = 50)



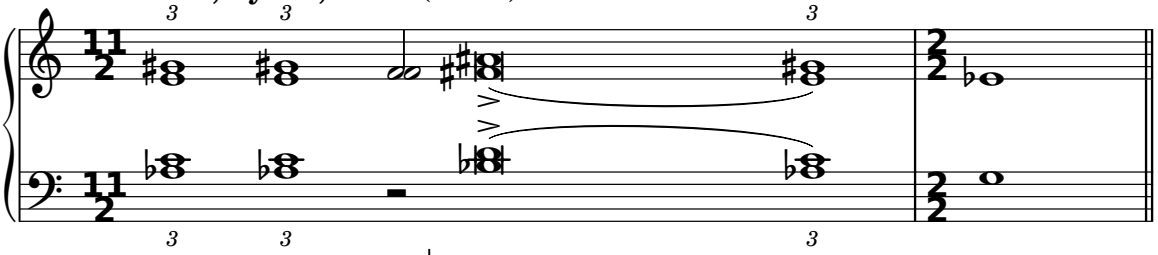
2: Mod 2, Cyc 3, Div 1 (♩ = 152)



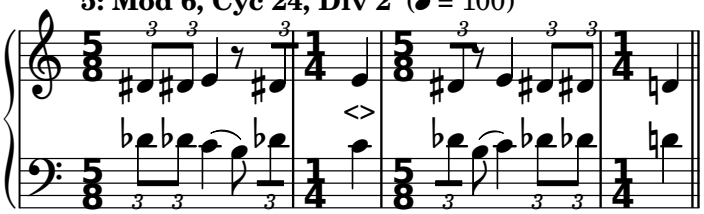
3: Mod 8, Cyc 12, Div 2 (♩ = 96)



4: Mod 16, Cyc 24, Div 4 (♩ = 63)



5: Mod 6, Cyc 24, Div 2 (♩ = 100)



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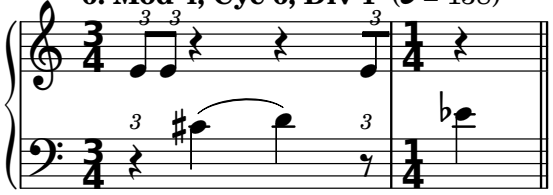
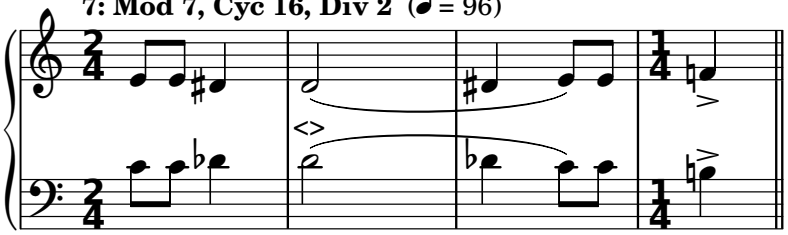
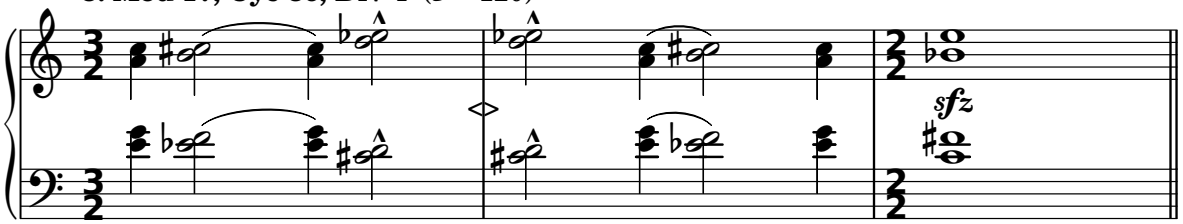
6: Mod 4, Cyc 6, Div 1 (♩ = 138)



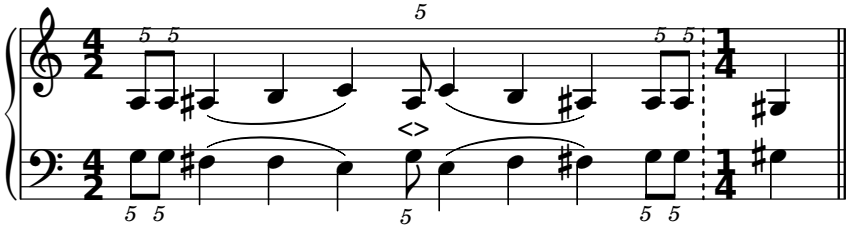
7: Mod 7, Cyc 16, Div 2 (♩ = 96)



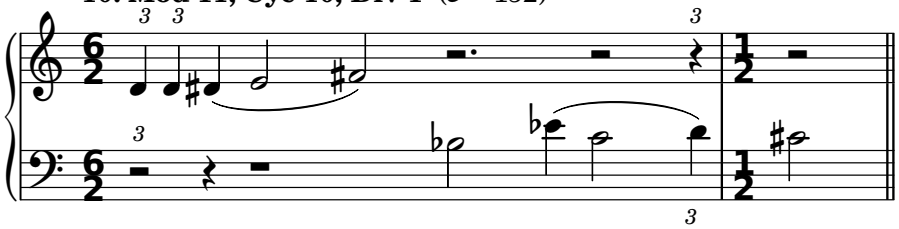
8: Mod 17, Cyc 36, Div 4 (𝅗𝅥 = 120)



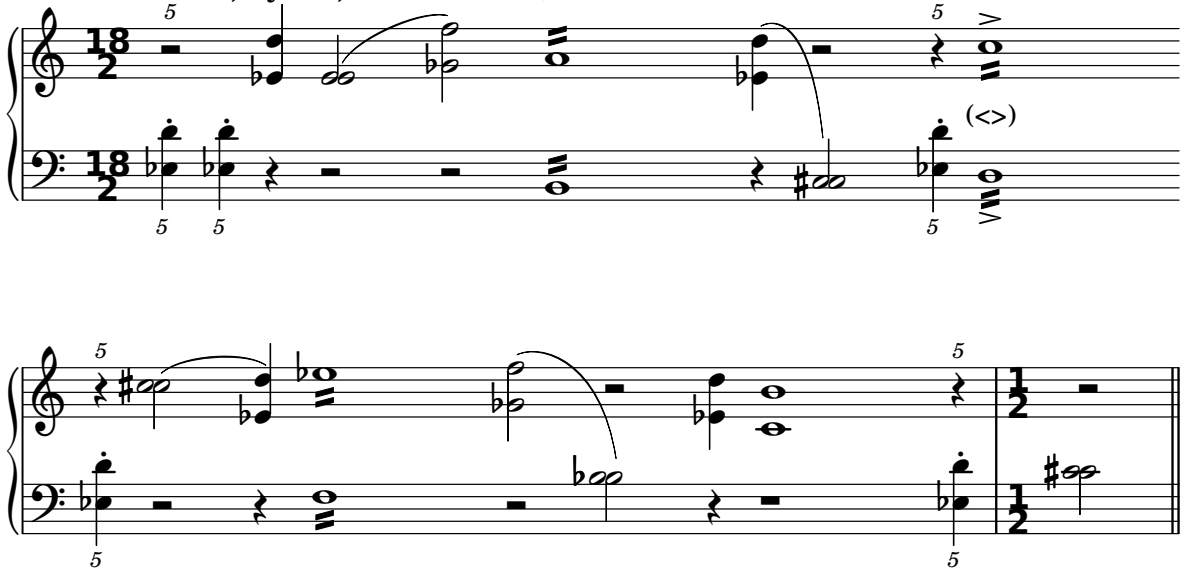
9: Mod 9, Cyc 24, Div 2 (♩ = 120)



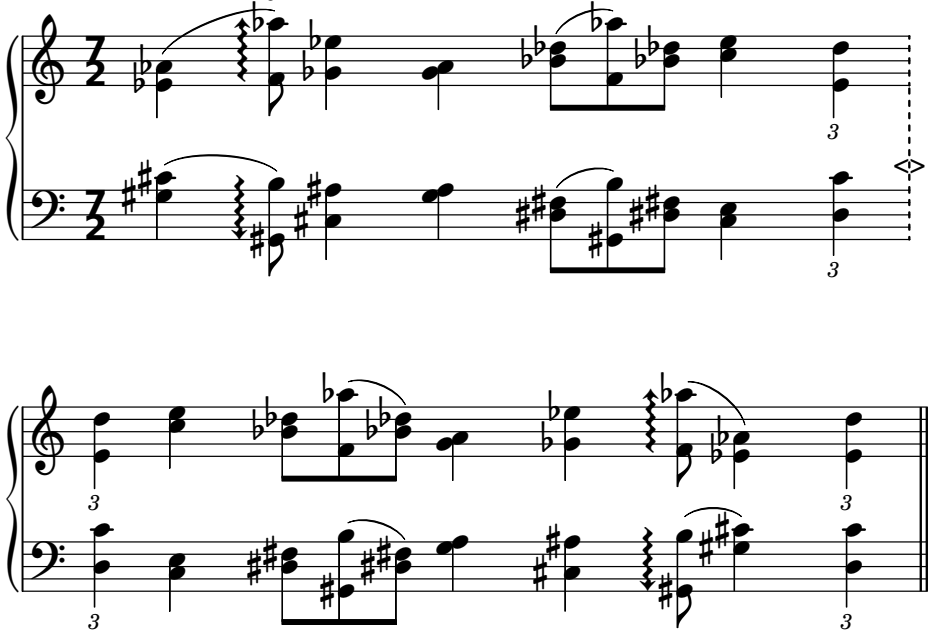
10: Mod 11, Cyc 10, Div 1 (♩ = 152)



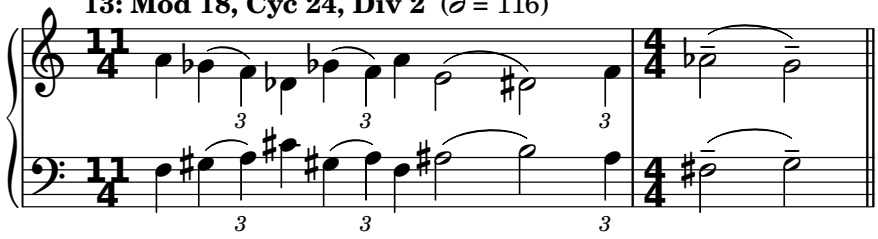
11: Mod 33, Cyc 40, Div 2 (♩ = 120)



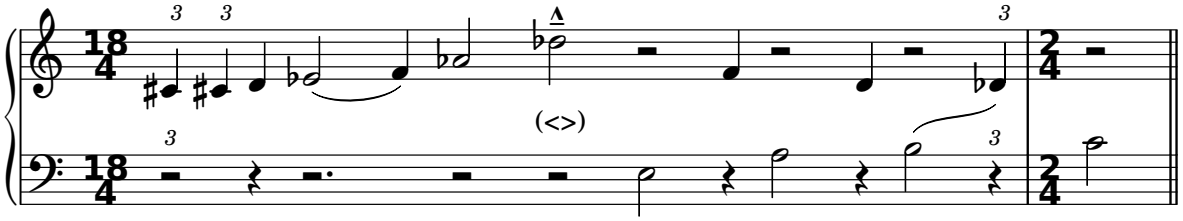
12: Mod 37, Cyc 76, Div 4 (♩ = 138)



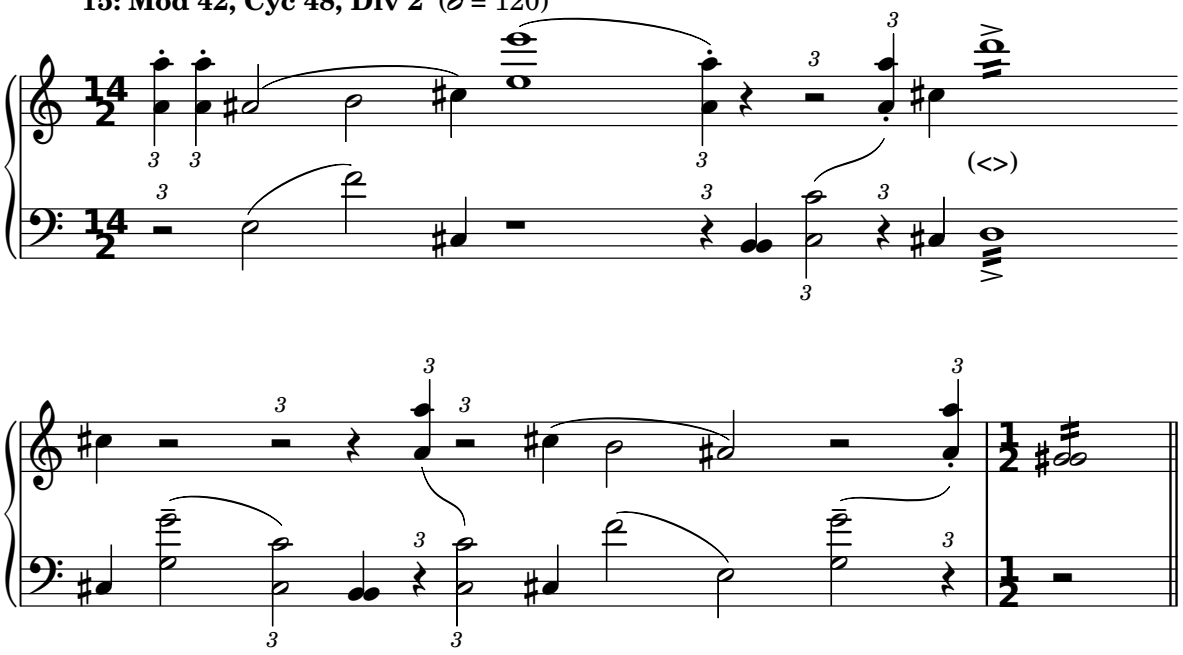
13: Mod 18, Cyc 24, Div 2 (♩ = 116)



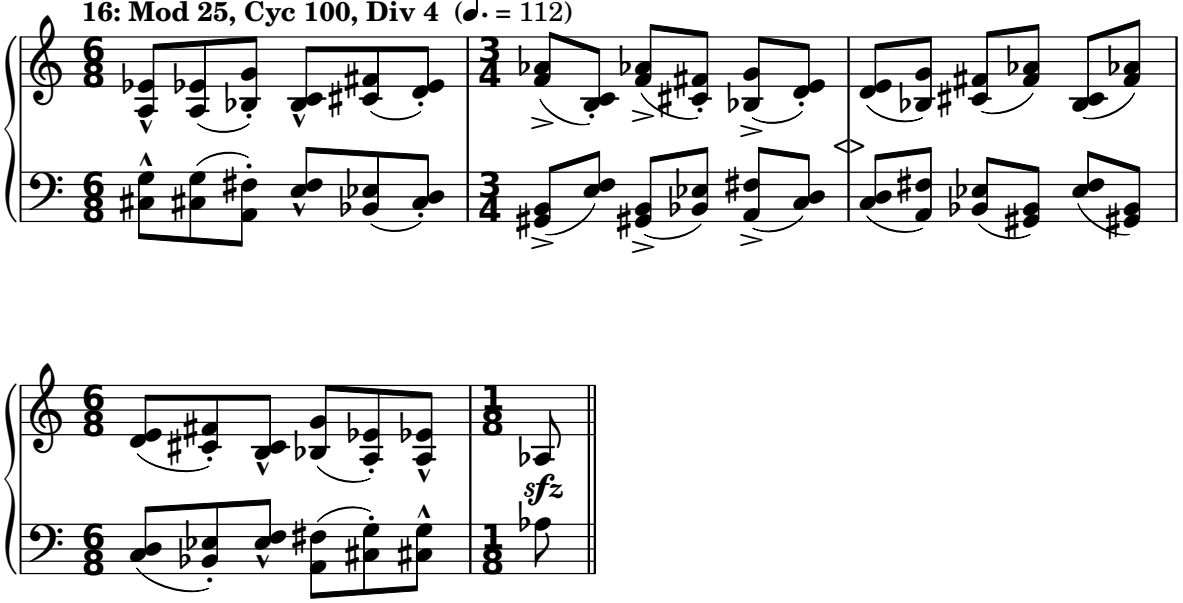
14: Mod 29, Cyc 14, Div 1 (♩ = 138)



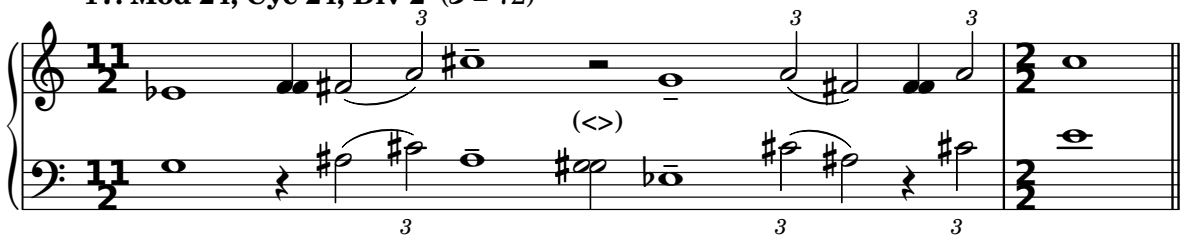
15: Mod 42, Cyc 48, Div 2 (𝅗𝅥 = 120)



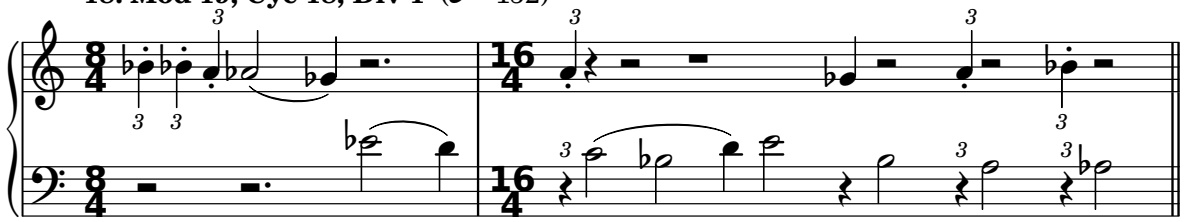
16: Mod 25, Cyc 100, Div 4 (♩. = 112)



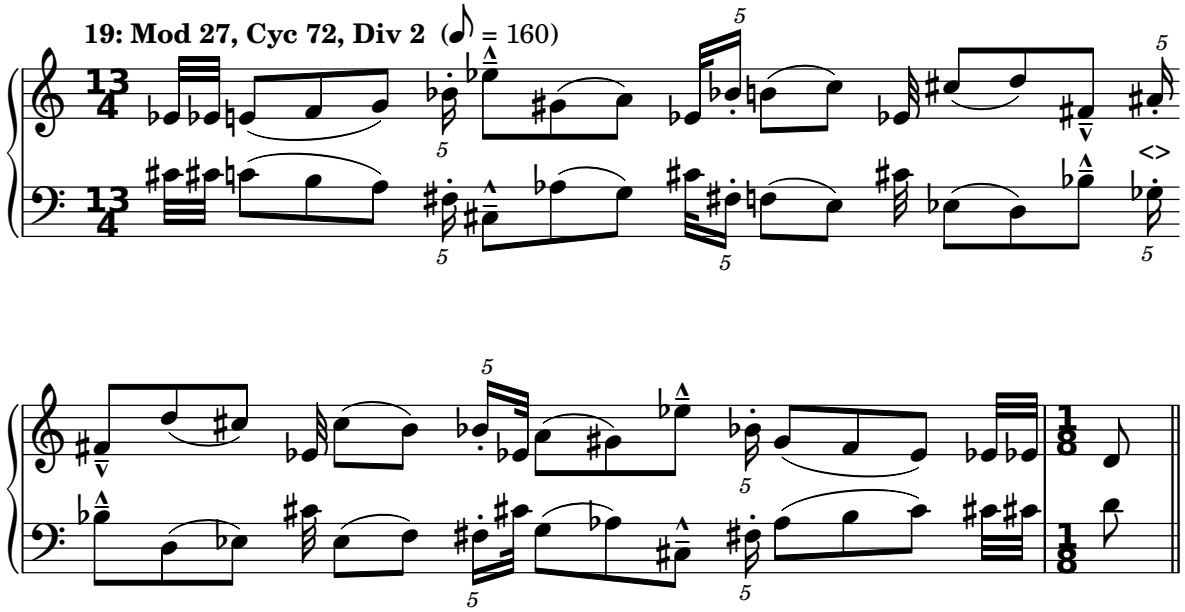
17: Mod 24, Cyc 24, Div 2 (𝅗𝅥 = 72)



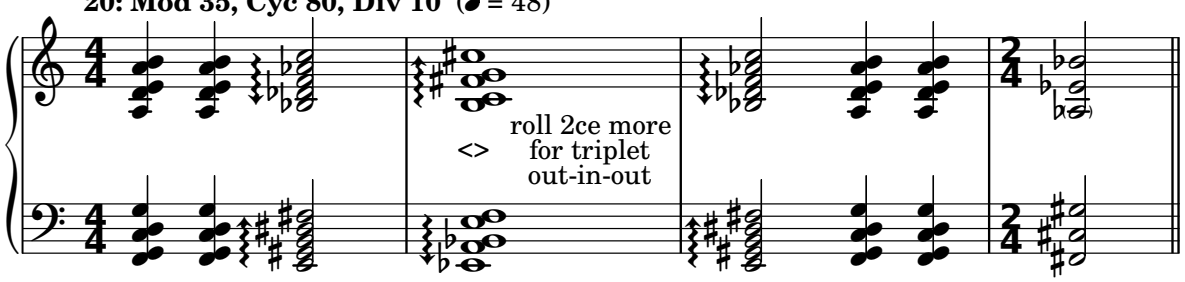
18: Mod 19, Cyc 18, Div 1 (♩ = 152)

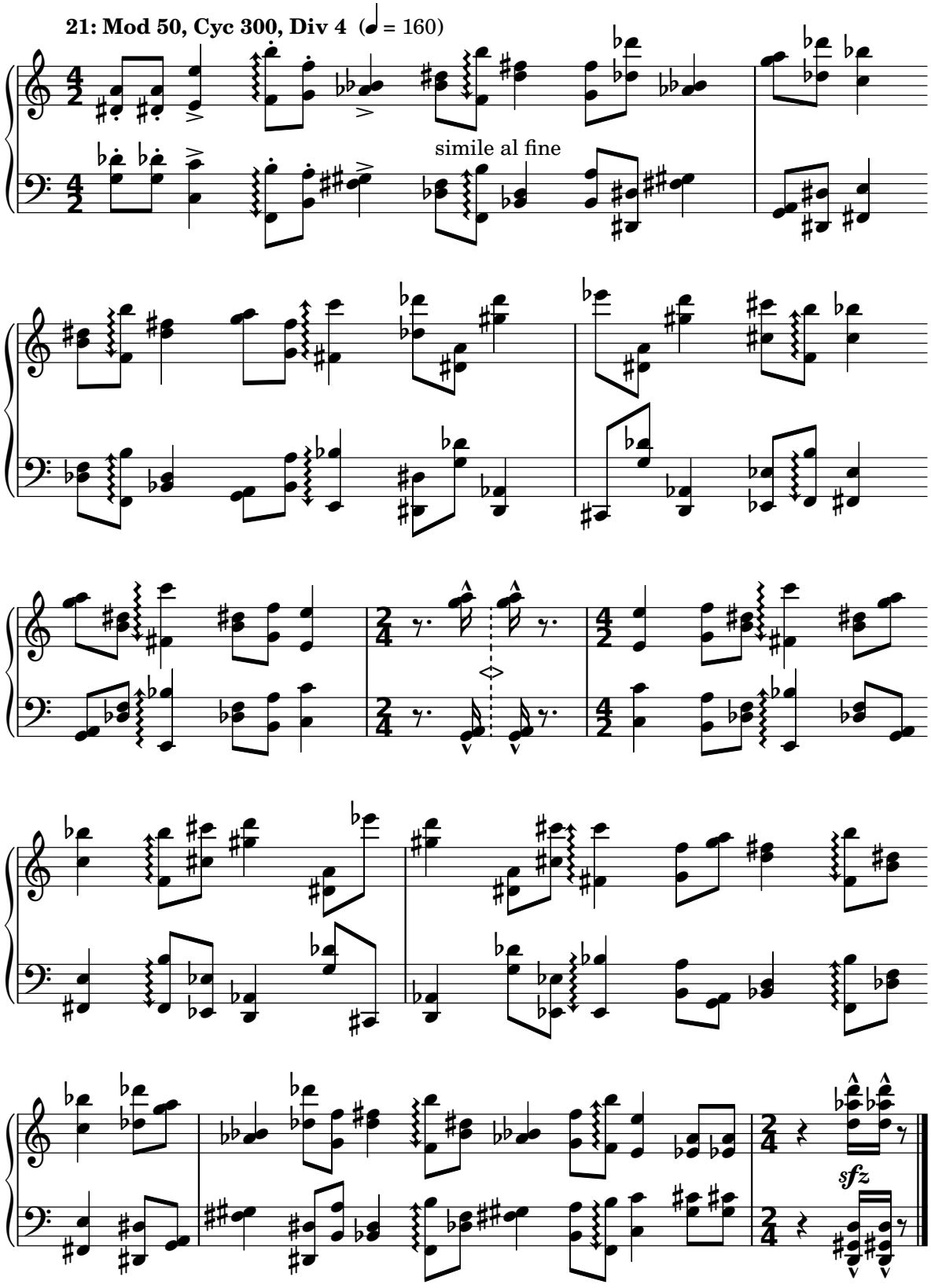


19: Mod 27, Cyc 72, Div 2 (♪ = 160)



20: Mod 35, Cyc 80, Div 10 (♩ = 48)




21: Mod 50, Cyc 300, Div 4 (♩ = 160)
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