

Canon for Flute

by Larry Polansky

for flute and multitrack flute
for Ann LaBerge
1978-79, Urbana; New Edition, 1990, Oakland

Introduction

Canon for Flute, from a set of pieces that began with *Psaltry* (1978-9), is based on the harmonic idea of a continual modulation between three harmonic series, related to each other as 1:5:3. Others in this set include: *Cello* (1979, for cello and multitrack celli), *Glass* (1979, for The Glass Orchestra), *Choir* (1978), *Flutes* (1978, for flute choir), and *Horn* (1990, for horn and live computer). *Canon for Flute* was premiered by Ann LaBerge in a workshop performance at the University of Illinois in 1979.

Performance Notes

All of the arpeggios are played fairly evenly. Each measure is repeated several times. The piece is 17 minutes long. The middle sections (measures 17-68), in general, repeat fewer times than the beginning and ending 17 measure sections. The tempo, number of repeats of each measure, and dynamics are left mostly to the player. The piece starts out

softly, builds up over the first 17 measures, remains fairly constant until about measure 68, and then slows down slightly and gets softer to the end.

Record up to eight tracks of tape, each track consisting of one complete performance of the score. Avoid exact synchrony between the various tracks or between the tape and the live performance. Each flute should move at its own pace.

Intonation and Notation

All of the pitches are from the harmonic series on C, E, or G, and the pitches E and G are related to C as 5:4 and 3:2. In other words, the pitches are the partials of C, numbers 1-17, 85-102, and 51-68, lowered by octaves to be within the flute's range. The intonations of these partials are used in the performance. In the score, these intonations are given in cents deviations from 12-tone equal tempered tuning. For example, the first pitch, C, is +0, since it is the fundamental, but the Bb in measure 13 is indicated as -31, since as the seventh harmonic (or octave equivalent) it is 31 cents flat of its tempered neighbor. Where a pitch is about 50 cents away from its nearest tempered pitch, an up- or down-arrow is affixed to the accidental, as a mnemonic aid

Intonation of the three harmonic series (in relation to C 1/1)

The image displays three staves of musical notation, each representing a different harmonic series. The notes are placed on a five-line staff, and their intonation is indicated by cents deviations from the standard 12-tone equal temperament. The first staff shows a series of notes with deviations: +0, +2, +0, -14, -31, +4, -14, -49, +2, +41, -31, -12, +0, +5. The second staff shows: -14, -12, -14, -28, -45, -10, -28, -63, -12, +27, -45, -26, -14, -9. The third staff shows: +2, +4, +2, -12, -29, +6, -47, +4, +43, -10, +2, +7. Below each staff, the corresponding measure numbers are listed: 1,2; 3,6; 4,8; 5; 7; 9; 10; 11; 12; 13; 14; 15; 16; 17.

Handwritten musical score for guitar, consisting of 18 staves. Each staff contains a melodic line with notes, rests, and dynamic markings (accents), and a corresponding chord progression with Roman numerals and fret numbers.

- Staff 1: Measures 1-3. Chords: I₁ (+0), I₂ (+0), I₄ (+0).
- Staff 2: Measures 4-6. Chords: I₈ (+0), I₁₆ (+0), I₃ (+2).
- Staff 3: Measures 7-9. Chords: I₆ (+2), I₁₂ (+2), I₉ (+4).
- Staff 4: Measures 10-11. Chords: I₅ (-14), I₁₀ (-14).
- Staff 5: Measures 12-13. Chords: I₅ (-12), I₇ (-31).
- Staff 6: Measures 14-15. Chords: I₁₄ (-31), I₁₁ (-49).
- Staff 7: Measures 16-17. Chords: I₁₃ (+41), I₁₇ (+5). Includes the instruction "(full series on C)".
- Staff 8: Measure 18. Chords: I₁₇/I₈ (-9), I₁₃/I₁₆ (+27). Includes the instruction "(series on E begins)".

20 $\text{II}_{11}/\text{I}_{14}$ -63 $\text{II}_{14}/\text{I}_{17}$ -45

22 $\text{I}_{7}/\text{I}_{9}$ -45 $\text{I}_{15}/\text{I}_{16}$ -26

24 $\text{I}_{10}/\text{I}_{13}$ -28 $\text{I}_{5}/\text{I}_{3}$ -28

26 $\text{I}_{9}/\text{I}_{11}$ -16 $\text{I}_{3}/\text{I}_{15}$ -12

28 $\text{I}_{6}/\text{I}_{8}$ -12 $\text{I}_{12}/\text{I}_{2}$ -12

30 $\text{I}_{16}/\text{I}_{10}$ -14 $\text{I}_{8}/\text{I}_{12}$ -14

32 $\text{I}_{4}/\text{I}_{5}$ -14 $\text{I}_{2}/\text{I}_{4}$ -14

(full series on E) 34 $\text{I}_{1}/\text{I}_{1}$ -14 (series on G begins) $\text{III}_{17}/\text{I}_{5}$ +7

36
 III₁₃/II₁₅ III₁₃
 +43 -47

38
 III₁₄/II₁₇ III₇/II₄
 -29 -29

40
 III₁₅/II₉ III₁₀/II₂
 -16 -12

42
 III₅/II₆ III₉/II₁₁
 -12 +6

44
 III₁₂/II₁₄ III₆/II₇
 +4 +4

46
 III₃/II₂ III₁₆/II₁₆
 +4 +2

48
 III₈/II₁₀ III₄/II₈
 +2 +2

50
 III₂/II₃ III₁/II₁
 +2 +2
 (full series on G)

(series on C begins)

52 *I7/III11* *I13/III9*

54 *I11/III15* *I14/III14*

56 *I7/III5* *I15/III3*

58 *I10/III13* *I5/III3*

60 *I9/III6* *I12/III8*

62 *I6/III17* *I3/III2*

64 *I16/III12* *I8/III1*

66 *I4/III7* *I7/III16*

(full series on C)

68
+p
-I17
78
-I13
-I11
72
-I14
-I7
71
-I5
-I10
-I5
77
-I9
-I12
-I6
80
-I3
-I16
-I8
-I4
-I2
hold, do not fade

to the flutist, indicating that the correct intonation is about a quarter-tone away from the notated pitch. This notation is used for the 11th and 13th partials of C and G, and the 11th, 7th and 14th partials of E.

The use of conventional (equal-tempered) musical notation is for convenience only. Play the piece in the Just Intonation given in the chart below. Roman numerals with arabic subscripts indicate which pitch is entering, leaving, or being replaced in a given measure. For example, I₁₁

means that the 11th partial of C is entering in that measure; III₁₁/V₁₃ means that the 11th partial of G is replacing the 13th partial of E; and -I₅ means that the fifth partial of C has dropped out in that measure. Accents over white notes indicate which pitch is entering the composite arpeggio—those pitches should be emphasized. Once a new pitch enters, it remains in the arpeggio until it is replaced. Most of the piece consists of mixtures of the harmonic series of the three fundamentals. 1/1