

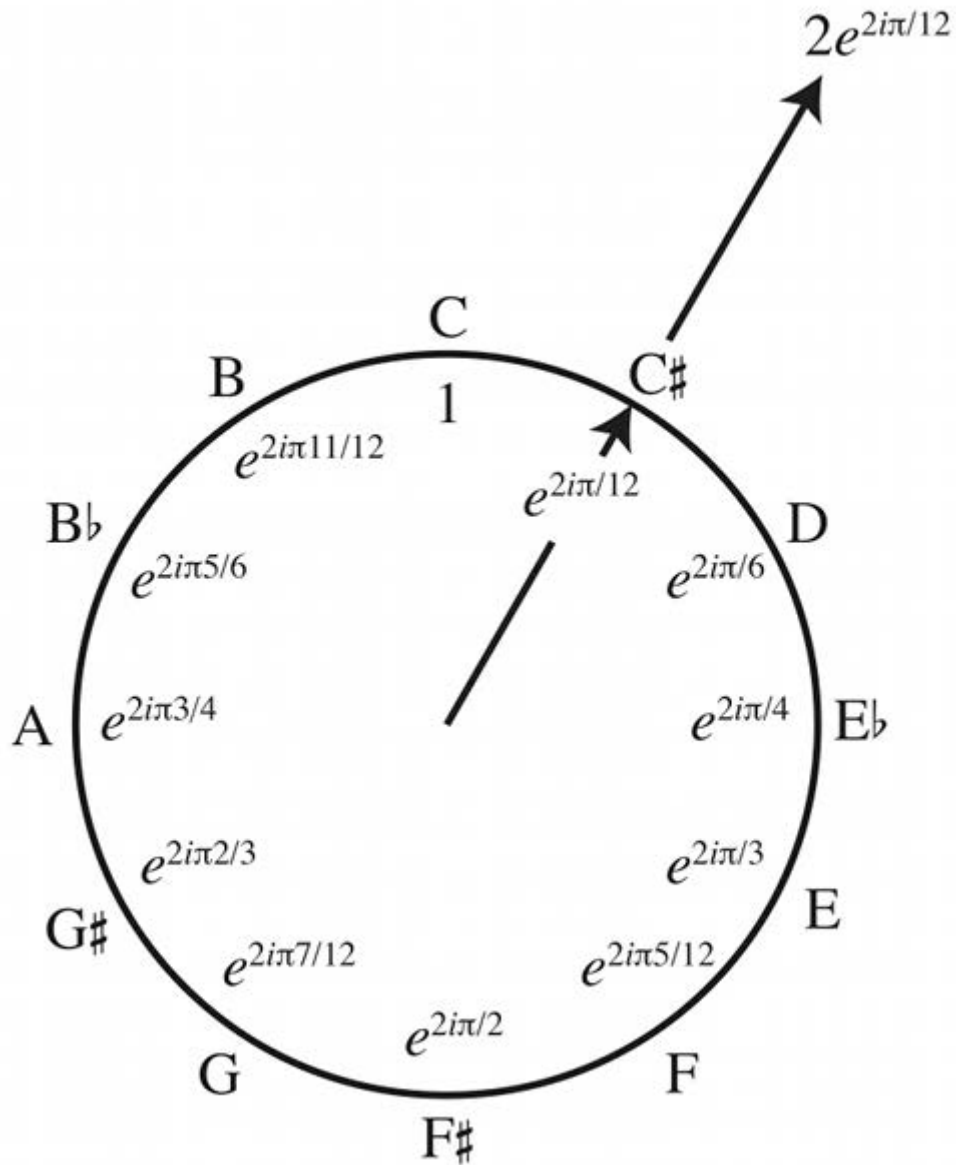


### MTO 23.3 Examples: Yust, Review of Amiot

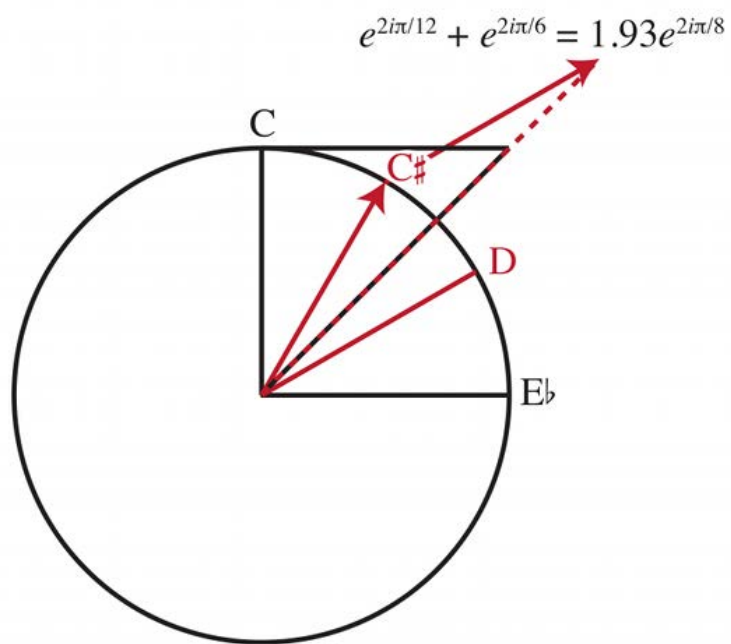
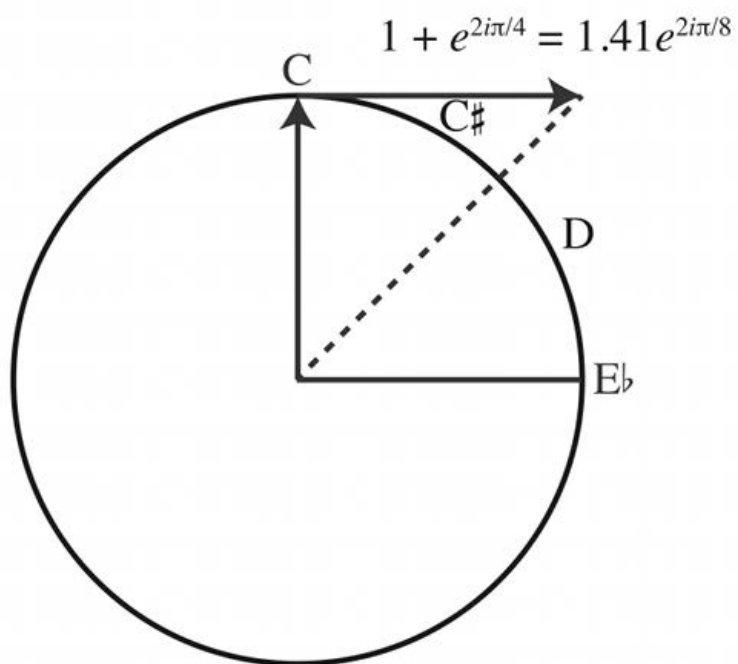
(Note: audio, video, and other interactive examples are only available online)

<http://www.mtosmt.org/issues/mto.17.23.3/mto.17.23.3.yust.php>

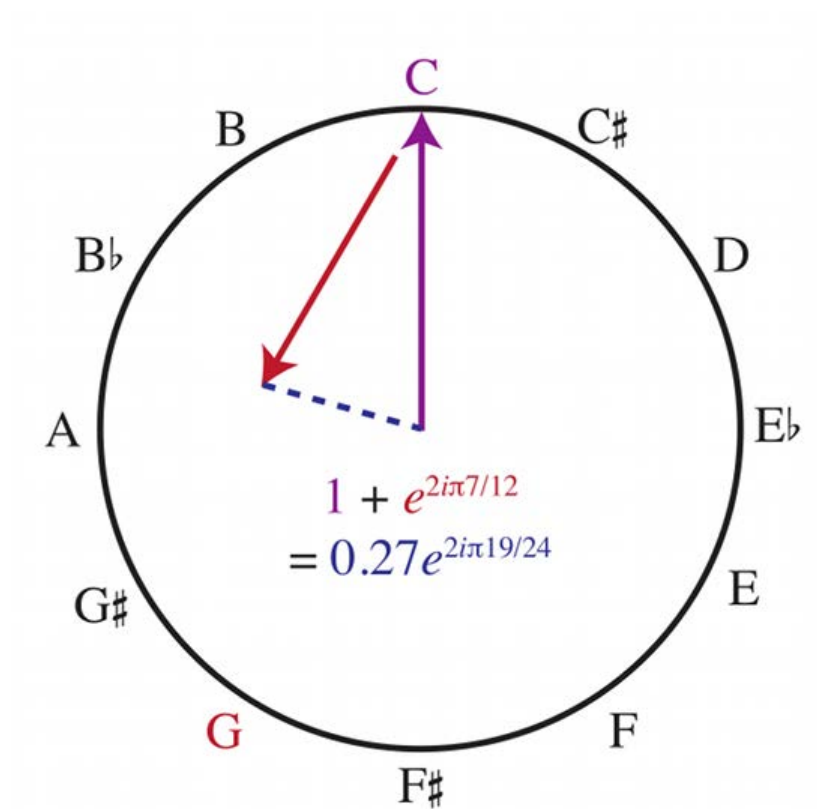
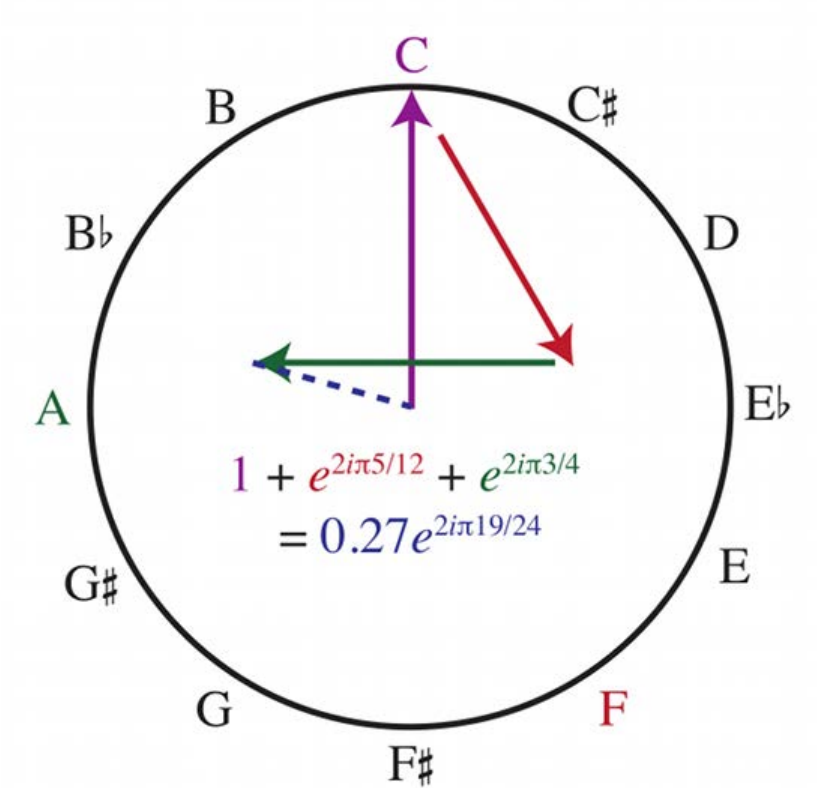
**Example 1.**  $2e^{2i\pi(1/12)}$  (double-C $\sharp$ ) in pitch-class space



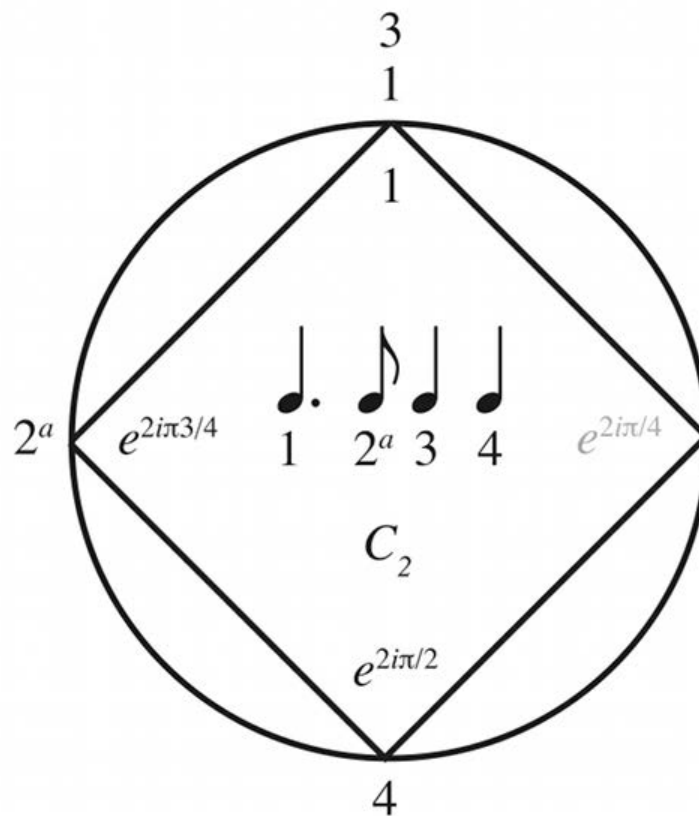
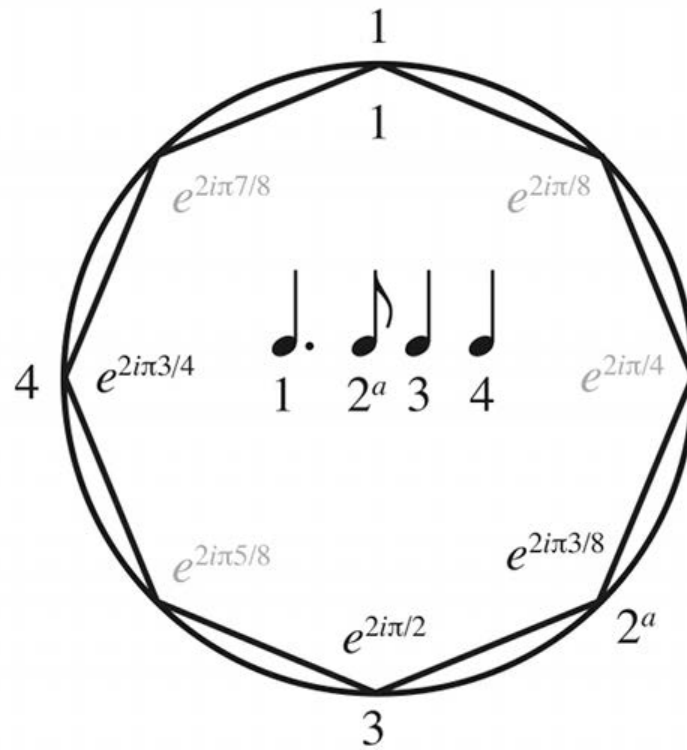
**Example 2.** Sums of  $C E\flat$  and  $C\sharp D$  on the pitch class circle



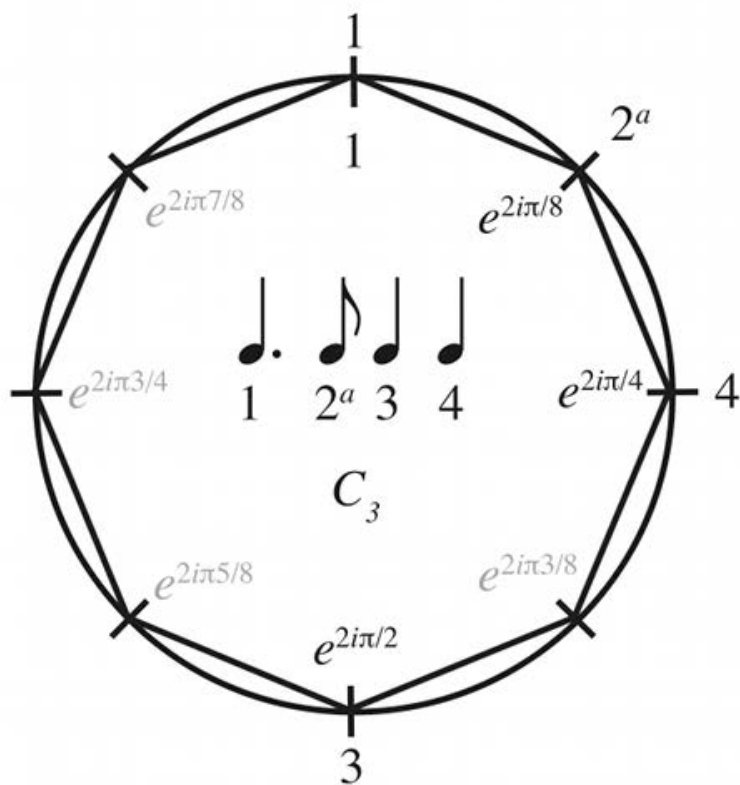
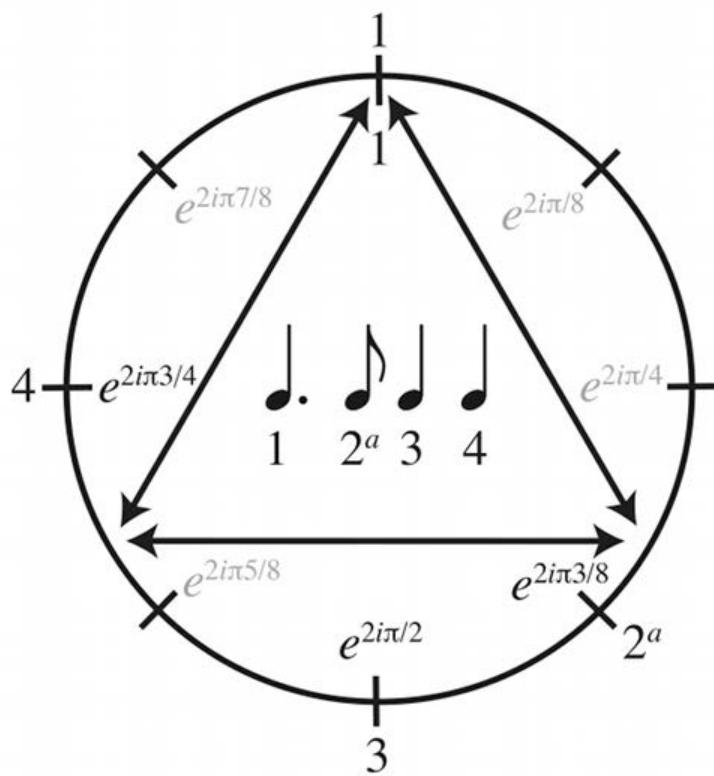
**Example 3.** Sums of CG and FAC on the pitch class circle



**Example 4.** The tango rhythm in a beat-class space, and the same in a 2-cycle of the beat-class space. The superscript  $a$  denotes “and of” (eighth note following the given beat)



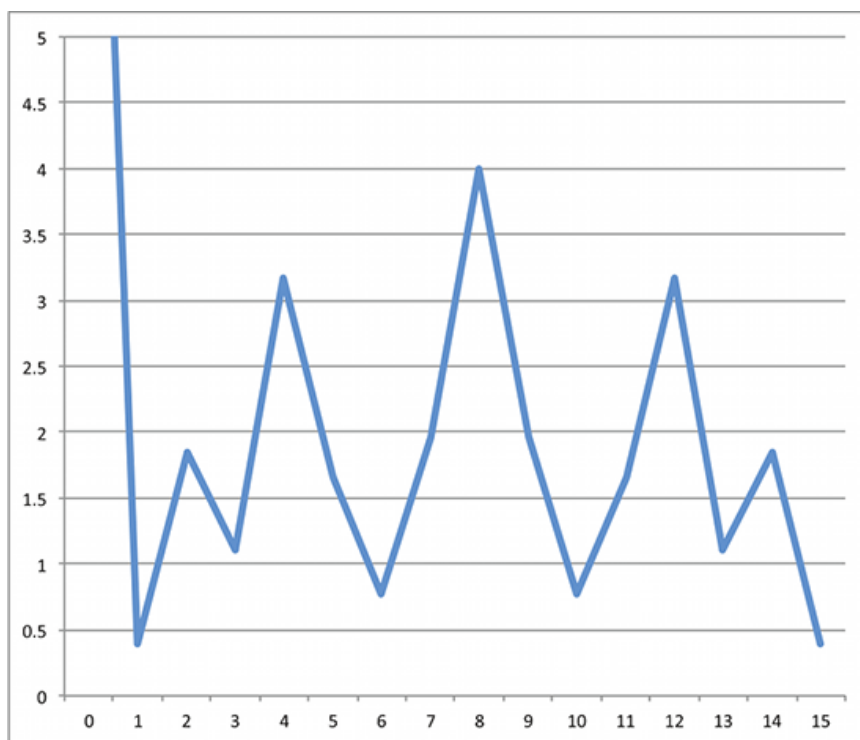
**Example 5.** The tango rhythm in a 3-cycle



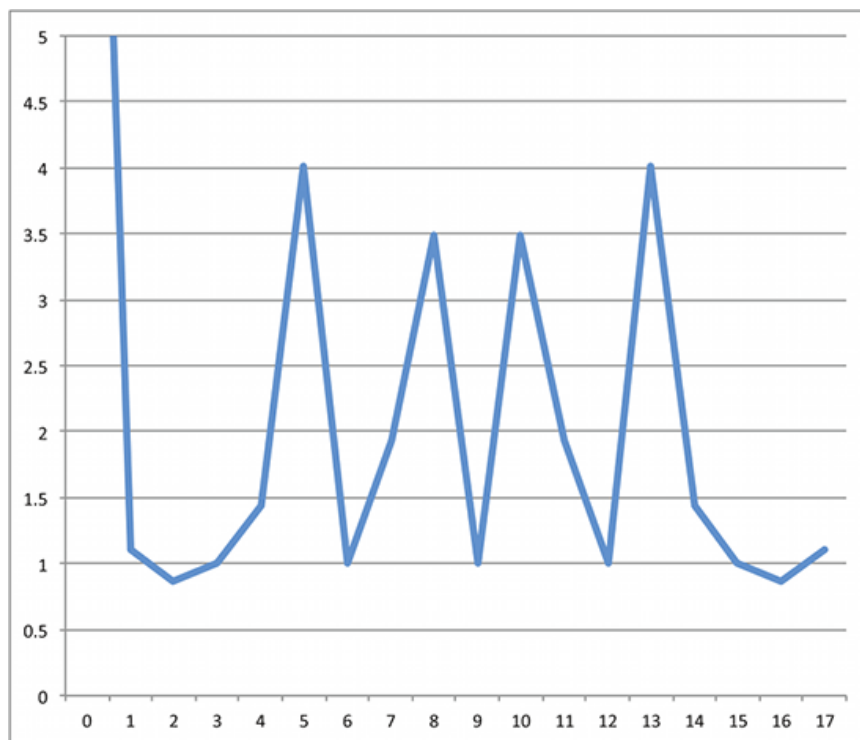
**Example 6.** Rhythmic ostinati from Ligeti *Etude 8*, “Fém”

The image displays two staves of musical notation. The upper staff is in treble clef with a key signature of one flat (B-flat). It features a series of rhythmic patterns consisting of eighth and sixteenth notes, often beamed together, with rests. The lower staff is in bass clef with the same key signature. It contains a more complex rhythmic pattern with eighth and sixteenth notes, some beamed together, and rests. Both staves conclude with a double bar line and repeat dots, indicating the end of the rhythmic ostinati.

**Example 7.** DFT profiles of Ligeti's ostinati: (a) left hand, and (b) right hand

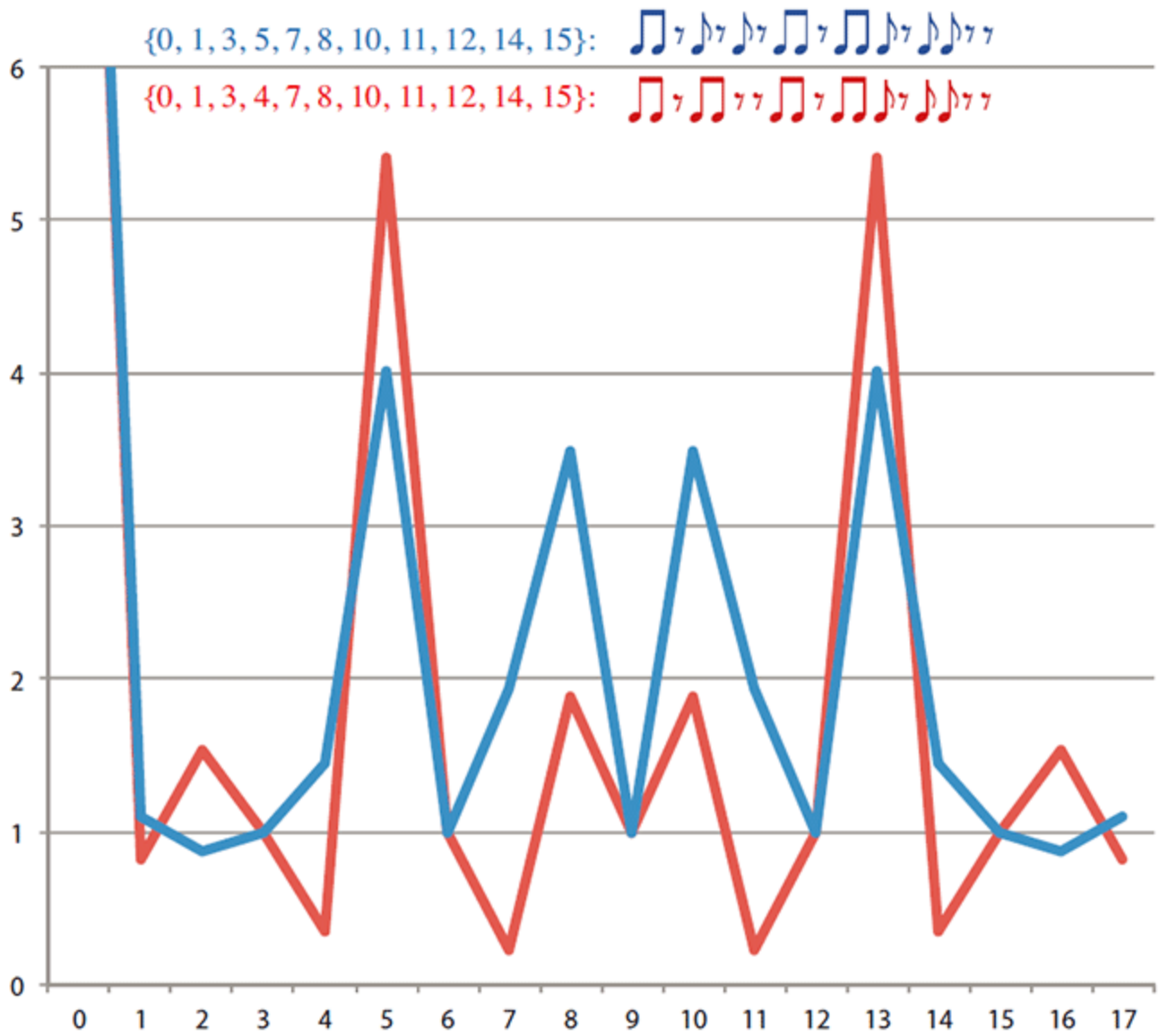


a.



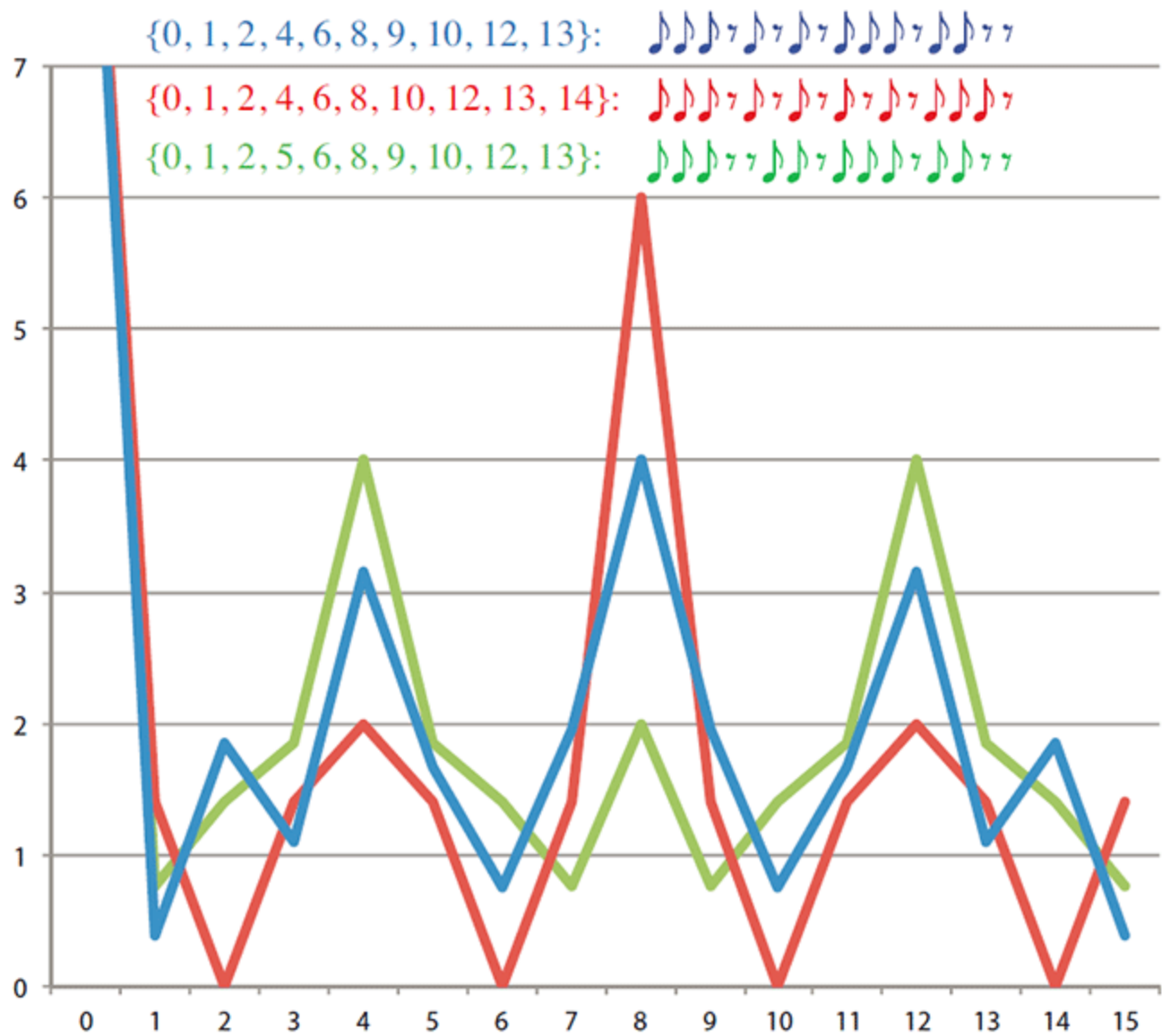
b.

**Example 8.** Comparison of the DFT of Ligeti's right-hand ostinato (blue) and a similar generated rhythm that maximizes Fourier component 5 (red)

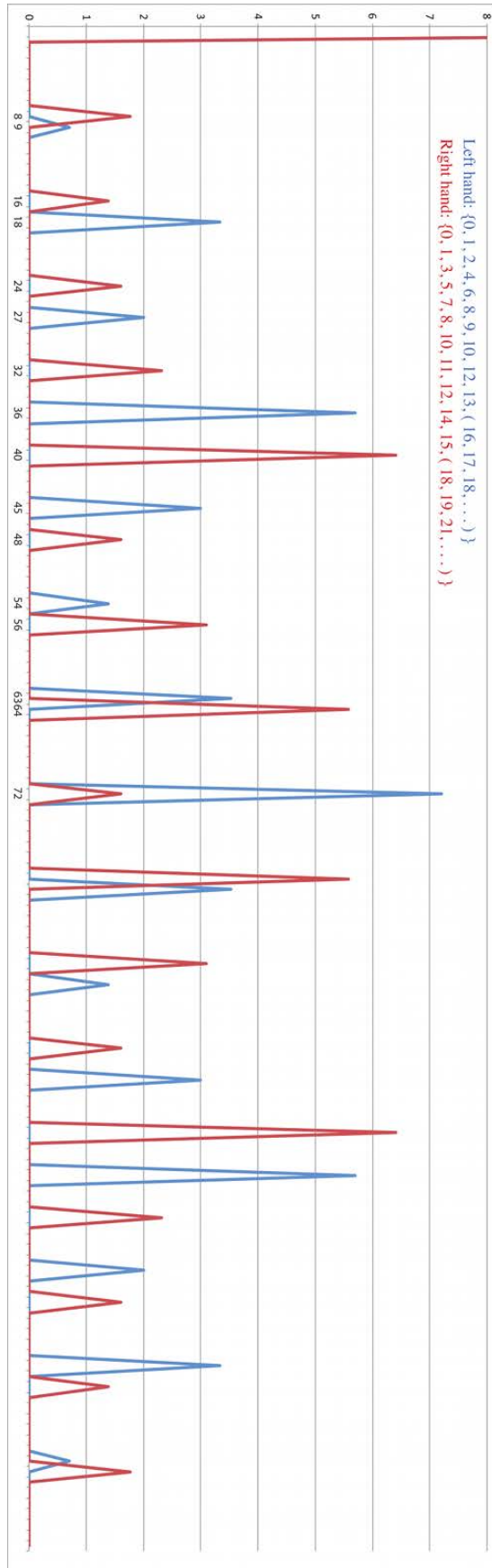




**Example 9.** Comparison of the DFTs of Ligeti's left-hand ostinato (blue) to similar rhythms that maximize  $a_8$  (red) or  $a_4$  (green)



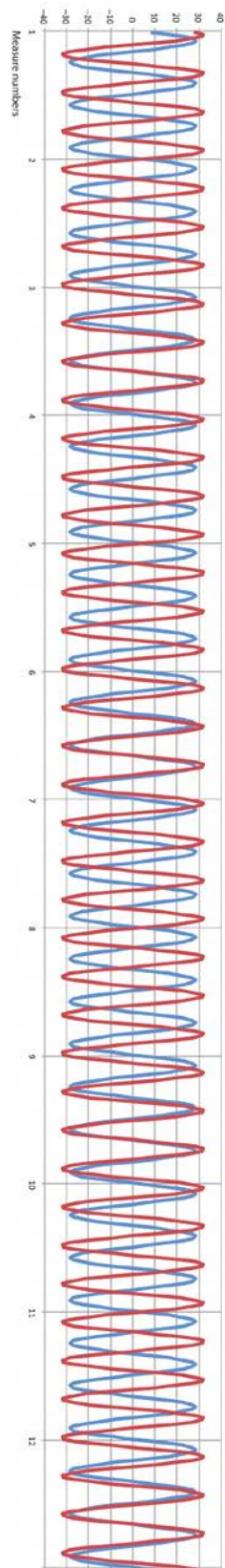
**Example 10.** The DFT profiles of Ligeti's rhythmic ostinati repeated over twelve measures



**Table 1.** Values of some coefficients for Ligeti's rhythms

Coefficient	Left Hand		Right Hand	
	Magnitude	Phase ( $\times 144/2\pi$ )	Magnitude	Phase ( $\times 144/2\pi$ )
$a_{36}$	28.5	115	0	Undef.
$a_{40}$	0	Undef.	32.0	133
$a_{63}$	17.7	49.5	0	Undef.
$a_{64}$	0	Undef.	27.9	98.3
$a_{72}$	36	0	8	72

**Example 11.** A plot of  $28.5 e^{2i\pi(36t + 115)/144}$  (left hand, blue) and  $32 e^{2i\pi(40t + 133)/144}$  (right hand, red)



**Example 12.** The number of coinciding events (onsets or rests) between the hands per measure

