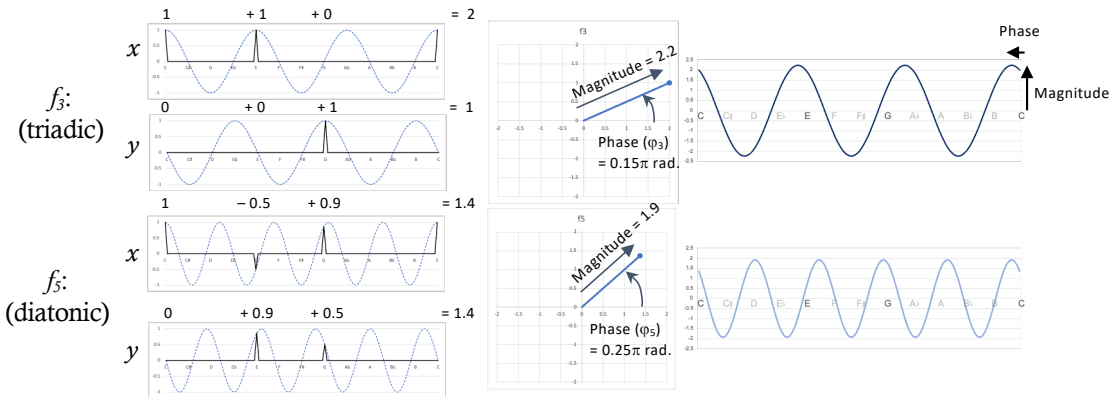
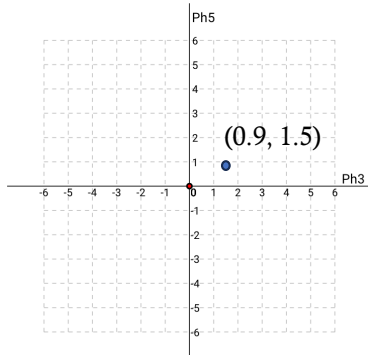


Animated Harmonic Analysis Using DFT Phase Spaces and Coefficient Products: Jason Yust, Giovanni Affatato, Fabian Moss

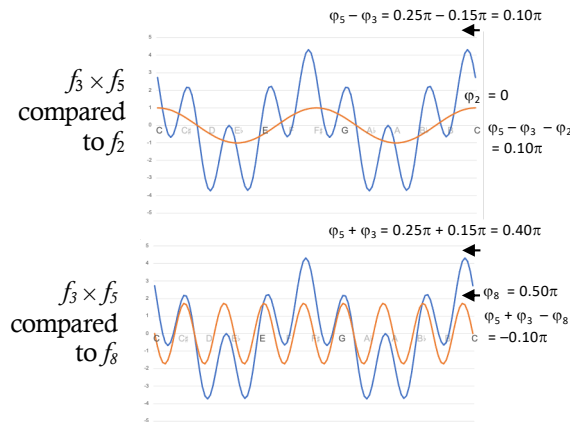
Calculation of triadic and diatonic coefficients for C major triad



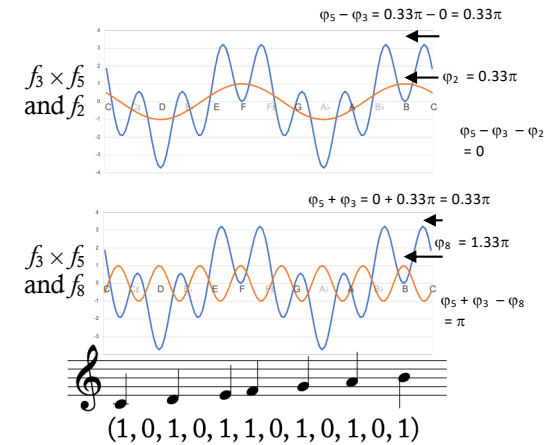
Phase Space



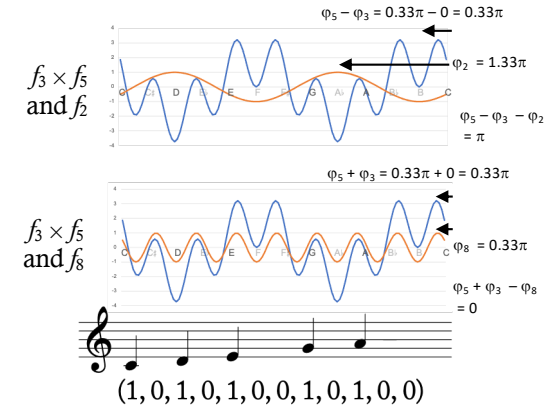
Coefficient products, C maj. triad:



Coefficient products, C diatonic scale:



Coefficient products, C pentatonic scale



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dcmlab.github.io/midiVERTO



time resolution:

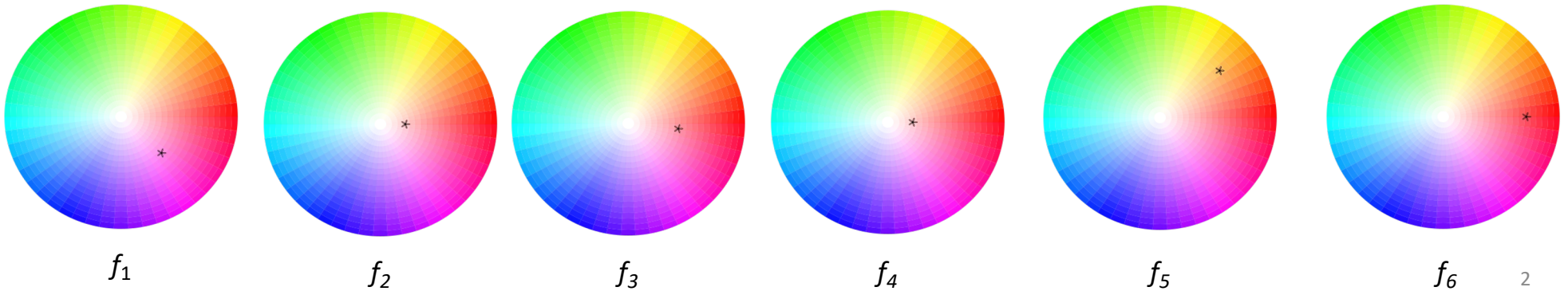
...
window length: 2

(36, 0, 18, 0, 18, 4, 0, 4, 0, 4, 0, 0)

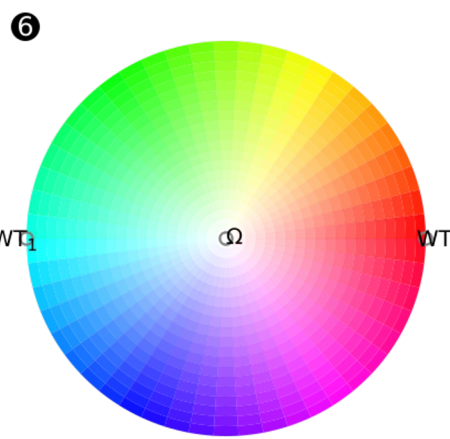
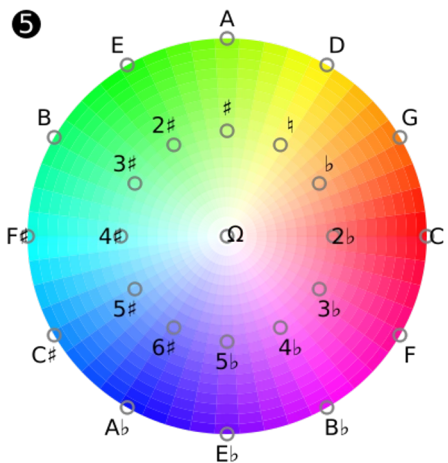
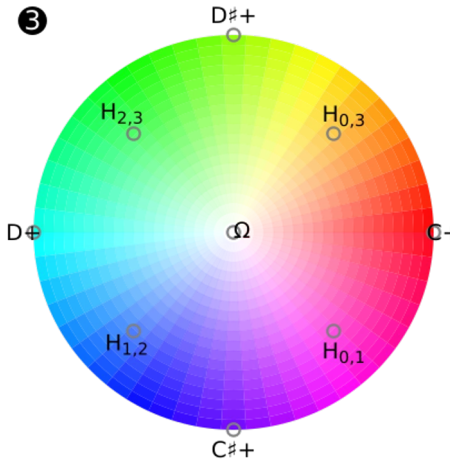
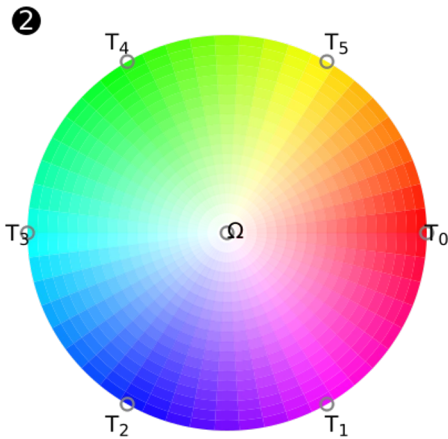
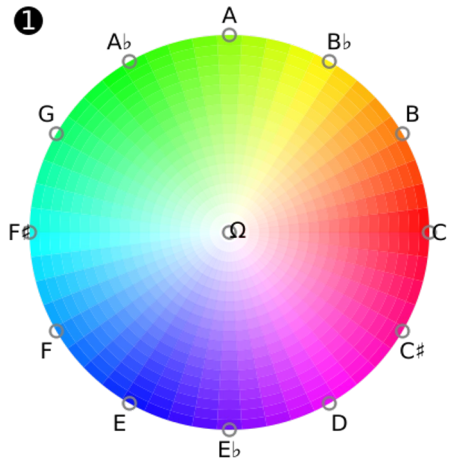
norm (0.43, 0, 0.21, 0, 0.21, 0.05, 0, 0.05, 0, 0.05, 0, 0)

DFT $X[k] = \sum_{n=0}^{11} x[n] e^{-i2\pi n \frac{k}{12}}$

Fourier spaces (colour mapped complex unit disk):



Orientation in space: Prototypes



C C# D D# E F F# G G# A Bb B

$$\Omega = (1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1)$$

$$\mathbf{A} = (0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0)$$

$$\mathbf{T}_0 = (1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0)$$

$$\mathbf{C}^+ = (1, 0, 0, 0, 1, 0, 0, 0, 1, 0, 0, 0)$$

$$\mathbf{H}_{0,3} = (1, 0, 0, 1, 1, 0, 0, 1, 1, 0, 0, 1)$$

$$\mathbf{C}^{\circ 7} = (1, 0, 0, 1, 0, 0, 1, 0, 0, 1, 0, 0)$$

$$\mathbf{O}_{0,2} = (1, 0, 1, 1, 0, 1, 1, 0, 1, 1, 0, 1)$$

$$\mathbf{\eta} = (1, 0, 1, 0, 1, 1, 0, 1, 0, 1, 0, 1)$$

$$\mathbf{WT}_0 = (1, 0, 1, 0, 1, 0, 1, 0, 1, 0, 1, 0)$$