

cents_analysis_v1.0¹

Patch/Abstraction for Microtonal Music Analysis

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Abstract: computer music patch/abstraction developed with Max 7 (Cycling74) for frequency analysis and music notation. It features a microtonal interval calculator alongside an interface for musical notation. This patch was made for those who deal with the notation of microtonal music.

Keywords: computer music; microtonal music; music notation; contemporary music; acoustics.

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Cents Analysis is a patch and abstraction made within the Max platform (Cycling74 Max 7.0.1 written on a Macintosh OS 10.10.1). It was written for different purposes, such as: a tool for composers (spectral music, music notation, and sound analysis), for musicologists and ethnomusicologists (sound analysis, transcription, and notation), for theorists (acoustics, microtonal music analysis, and notation), and for performers (microtonal music practice). The patch was developed having in mind the routine of a musician while dealing with notation for specific frequencies. The entire engine is based on the cents-to-frequency-ratio formula (LOY, 2006, p.46) and it can be paired with a pitch tracker object, such as `fiddle~`, in order to work with microtonal transposition within a musical domain (Figure 1).

$$\text{¢} = \frac{1200}{\log 2} * \log \left(\frac{f2}{f1} \right)$$

Figure 1 – cents formula

The patch's main functions are: 1) to analyze any frequency according to the closest pitch (equal temperament as reference); 2) to output the amount of cents in order to adjust the notation, e.g. 446Hz = A440 + 23.45¢; 3) to transpose any frequency based on cents values, e.g. 440Hz + 23.45¢ = 446Hz (Figure 2).



Figure 2 – notational solution for 446Hz based on cents_analysis_v1.0

All these alternatives allow the user to work within both linear (cents) and exponential (frequencies) domains. This patch works as an abstraction under the tag/code: cents_analysis_v1.

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