TOT Tutorial

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1 Introduction

This document presents in a tutorial fashion some functionality of the TOT library for Opusmodus. The TOT library is a loose collection of tools for algorithmic composition. Various functions and independent and their reference documentation is probably suficient.

However, this library also implements some features where a number of definitions work together. This tutorial focusses on documenting such features.

2 Microtonal and xenharmonic music

2.1 Introduction

The TOT library greatly expands Opusmodus' builtin support for microtonal music. Opusmodus' builtin support for microtonal music only allows for quarter tones (24 tone equal division of the octave, 24-EDO) and eighth tones (48 tone equal division of the octave, 48-EDO). The microtonal model

of the TOT library, by contrast, allows users to define arbitrary equal temperaments (both equal divisions of the octave and other intervals), just intonation (JI) for arbitrary prime limits, and arbitrary regular temperaments (`https://en.xen.wiki/w/Tour_of_Regular_Temperaments`).

The library provides this tuning universe in a way that is controllable by a single uniform notation embedded in OMN. Still, the library tries to keep things relatively clear and simple by introducing mainly one actual new accidental symbol, and that symbol will then be combined with numbers (for prime limits) to express arbitrary JI pitches, which are then mapped to all the possible tunings. Technically, pitch deflections are expressed by OMN articulations, as a library cannot change the underlying OMN pitch format.

For microtonal playback, the library implements what could be called a subset of MIDI Polyphonic Expression (MPE), where chords are distributed automatically over multiple MIDI channels so that each tone is tuned independently by pitch bend messages. A considerable number of soft synth already support MPE directly (some incomplete list is shown here, scroll down and select Soft Synths), and every instrument plugin can be relatively easily made to support MPE by using multiple instances of that plugin in parallel (e.g., directly in a DAW or with a plugin host that itself is also a plugin, like Plogue Bidule).

The core idea of this xemharmonic support is that JI, arbitrary equal temperaments and very many other tunings (`https://en.xen.wiki/w/Tour_of_Regular_Temperaments`) can all be expressed as regular temperaments. You can find an informal discussion of regular temperaments, its context and motivation – how it extends/generalises many other tone systems – at this link: `http://x31eq.com/paradigm.html`. Here is another introduction: `https://en.xen.wiki/w/Mike%27s_Lectures_On_Regular_Temperament_Theory`.

3 Karnatic rhythms

3.1 Creating a higher-level plan

3.2 Filling in details