By DelayLama

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Overview

- An octaver effect developed in SuperCollider, suitable to be applied on a live analog instrument input, such as an electric guitar or bass
- An octaver is an audio effect which mixes the input signal with a synthesised signal whose musical tone is one (or more) octave lower or higher than the original.

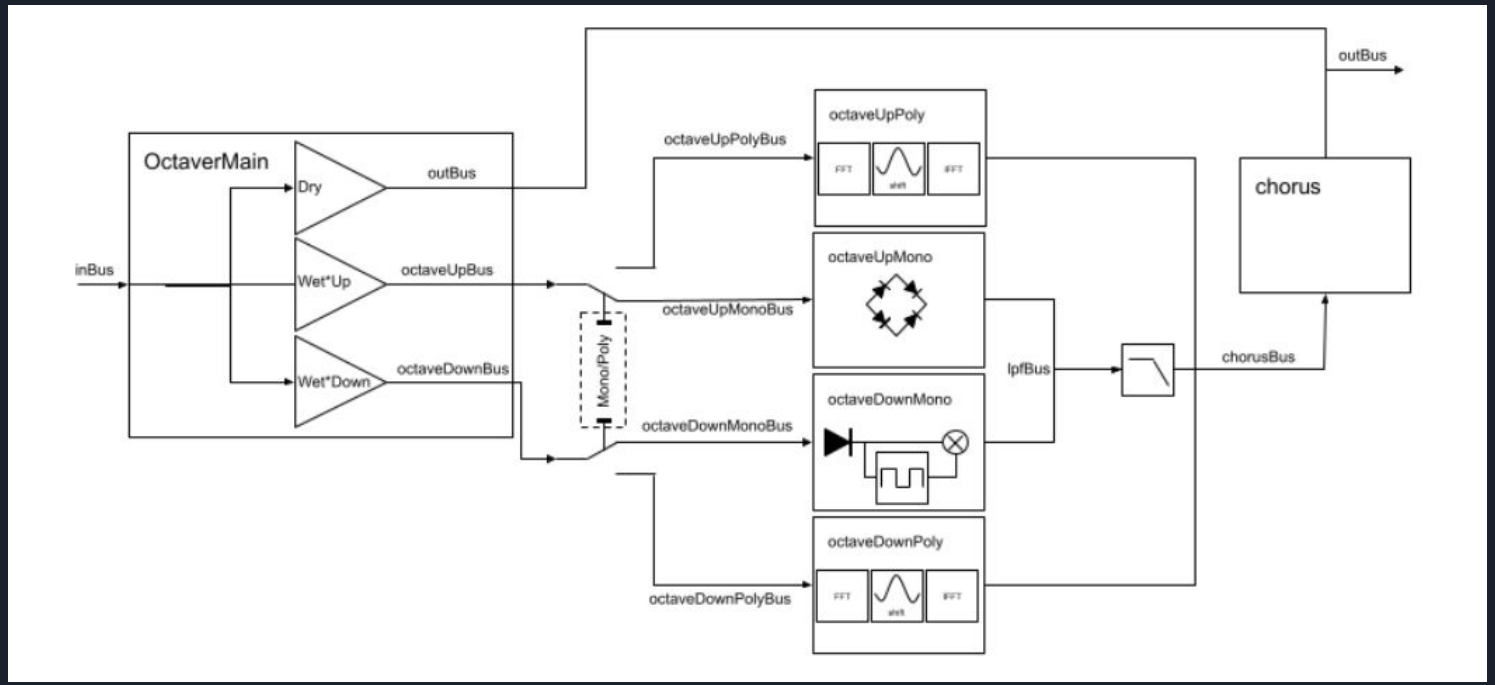
Features and GUI

- Final output is composed of Dry, Octave Up and Octave Down signals
- Two operating modes
  - Monophonic
  - Polyphonic
- An additional **chorus effect** can be applied on the octave-modified signals

Knobs


Octave up/Octave down
Signal Dry/Wet
Monophonic/Polyphonic
LPF Cutoff
Volume
DelayLama Octaver
Octaver
monophonic
Chorus
Wet
Depth
Rate

Implementation

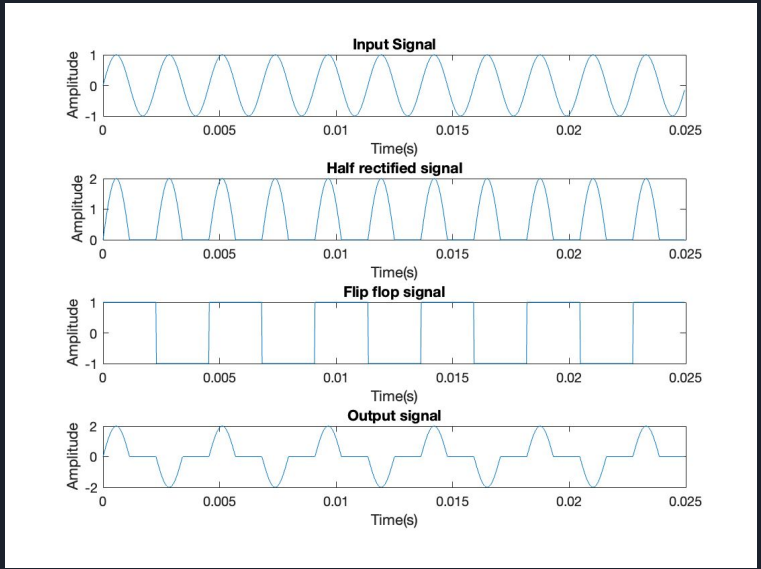


Monophonic vs Polyphonic

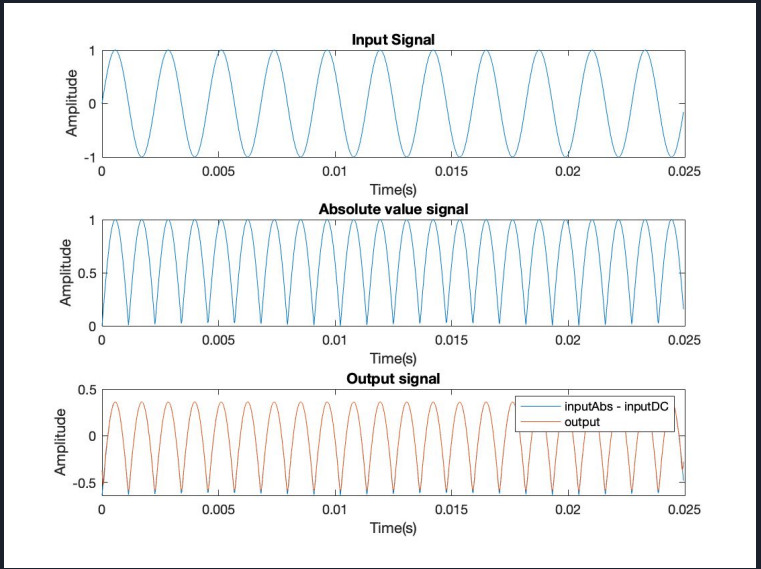
- The monophonic mode simulates the processing chain typical of the first analog octaver guitar pedals (such as the BOSS OC-2)
  - Introduces distortion due to non-linear processing; results can vary significantly depending on the source signal
  - Simple and fast, thus suitable for real-time applications
  - Not suitable for polyphonic material
- The polyphonic mode is based on scaling the frequency domain representation of the signal
  - All frequencies get equally scaled: more “reliable”
  - Can produce “unnaturally” sounding results
  - Noticeable latency

Monophonic (“Analog-Inspired”) Octaver - time-domain analysis

Octave down

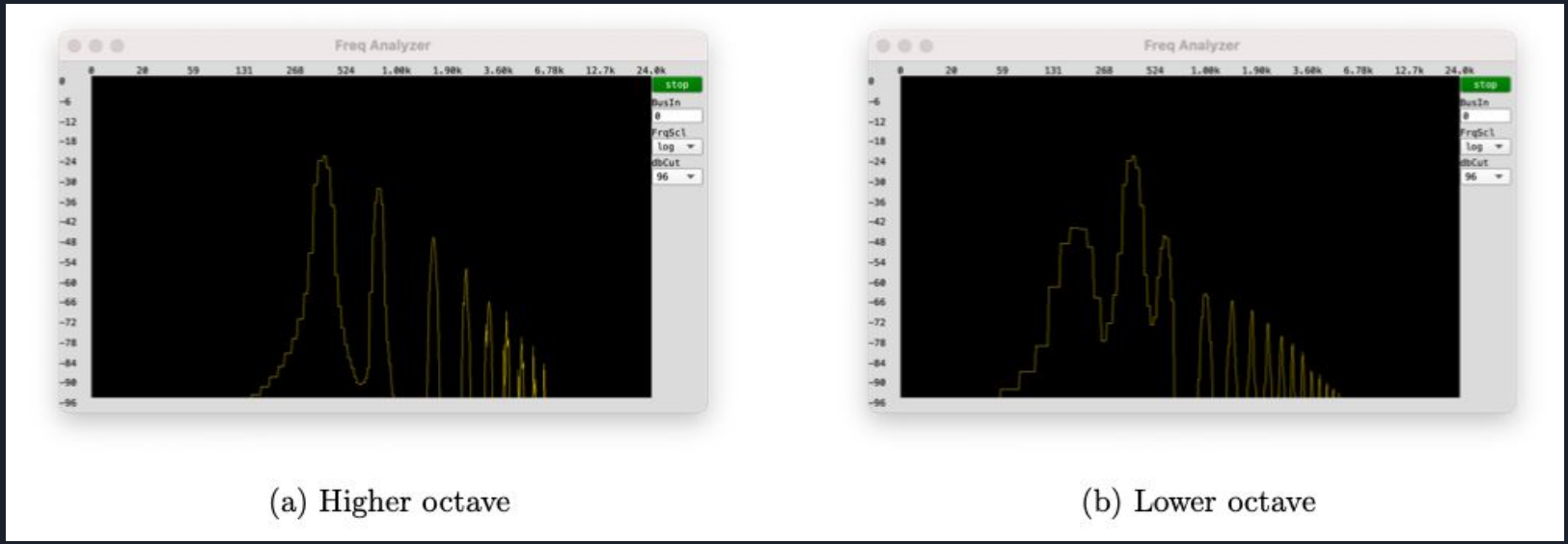


Octave up



Spectrum analyzer test: Monophonic (“Analog-Inspired”) Octaver

- Introduces distortion due to non-linearity of operations
- Spectrum includes HF components (test was done using a sine wave)
  - A possible “solution”: user controlled LPF

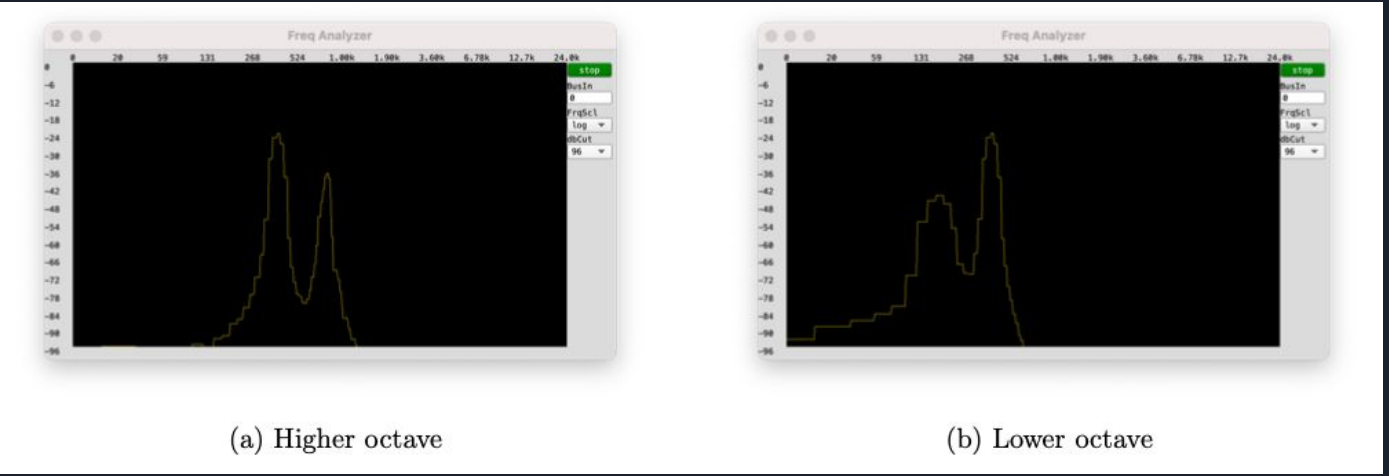


(a) Higher octave

(b) Lower octave

Spectrum analyzer test: Polyphonic (“Phase-Vocoder”) Octaver

- Applying transformations directly to frequency-domain representation of signal
- Cleaner Spectrum
- Suited for Polyphonic material



(a) Higher octave

(b) Lower octave

Video demo