Cluster v3

multi-filter sequencer

AAX + **AU** + **VST** effect plugin for Mac/Windows/Linux

INTRODUCTION

Cluster is a multi-filter sequencer. The core concept is simple at first – a filter with a modulation envelope – but every single parameter is sequenced in a rhythmical fashion, even the filter type itself. At the foundation of the sound engine is a set of six filters which can be selected from many models like multi-mode state variable, comb, phaser and resampler; also, each of those filters can be configured with up to 4 stages in series. Based on this setup, **Cluster** builds up a sequencer matrix with 7 parameter lanes: three for the filters (type, frequency, resonance), and four for its highly flexible envelope generator with over 50 possible modulation shapes. The sequencer matrix holds up to 8 patterns at once and is driven by an elastic step sequencer algorithm with both polymetric and polyrhythmic abilities, and an extremely wide range of timing settings. All of this is presented via a single-screen, color-coded user interface with dozens of utility functions for pattern manipulation – which makes **Cluster** an extremely easy-to-use and fun tool for creating pretty much any animated filter effects you can dream of... and way beyond.

Cluster has a fully open, “hackable” preset format: it uses pure XML to clearly present the plugin’s main parameters as well as all the sequencer patterns. This means anyone has the ability to view and modify this data in a text editor, and also generate custom sequencer patterns via any programming language.

SPECIFICATIONS

SOUND ENGINE

- Six-track filter sequencer with type and slope selectable per track; independently variable cutoff frequency and resonance per step
- 9 available filter types: low-pass, high-pass, band-pass, notch, peaking, comb positive and negative, phaser, resampler; up to 4 filter stages with self-calibrating resonance
- Multi-envelope generator for filter cutoff modulation with independently variable type, divisions, polarity and modulation level per step
- Up to 8 separate sequences per preset
- Step sequencer with up to 32 steps, rhythmically correct swing, polymetric and polyrhythmic abilities
- Optional RMS limiter per each filter track
- Variable per-step pan randomization
- Two-pole analog-style lag filter for variable smoothing of all step transitions
- One-pole lag filters on all continuous parameters for smooth, click-free adjustment
- Supports mono › mono, mono › stereo, and stereo › stereo channel configurations

USER INTERFACE

- Color-coded control elements
- Consistent name, mapping, value, and unit implemented for all parameters in both graphic user interface and host control/automation
- Sequencer pattern macro editing functions: copy, paste, reset, trim, invert, reverse, evolve, randomize, shift left or right, loop
- Built-in preset management functions
- Supports window size scaling up to 200%

SUPPORTED FORMATS

Mac	AU/VST3/AAX for macOS 10.13 or newer (64-bit Apple Silicon and Intel)
Windows	VST3/AAX for Windows 8.1 or newer (64-bit Intel and AMD)
Linux	VST3 for Linux 2020 or newer (64-bit Intel and AMD)

QUICK START

Use the arrow buttons to switch through different presets

Choose up to 6 different filter types and choose which of them is active on each sequencer step. Set cutoff frequency and resonance individually for each step.

With the four envelope parameter lanes, create a unique modulation shape on each step.

Apply and fine-tune the envelope using the global controls.

Change the amount of steps in the current sequencer pattern using the timeline ruler

Fine-tune the filter parameters using the global controls.

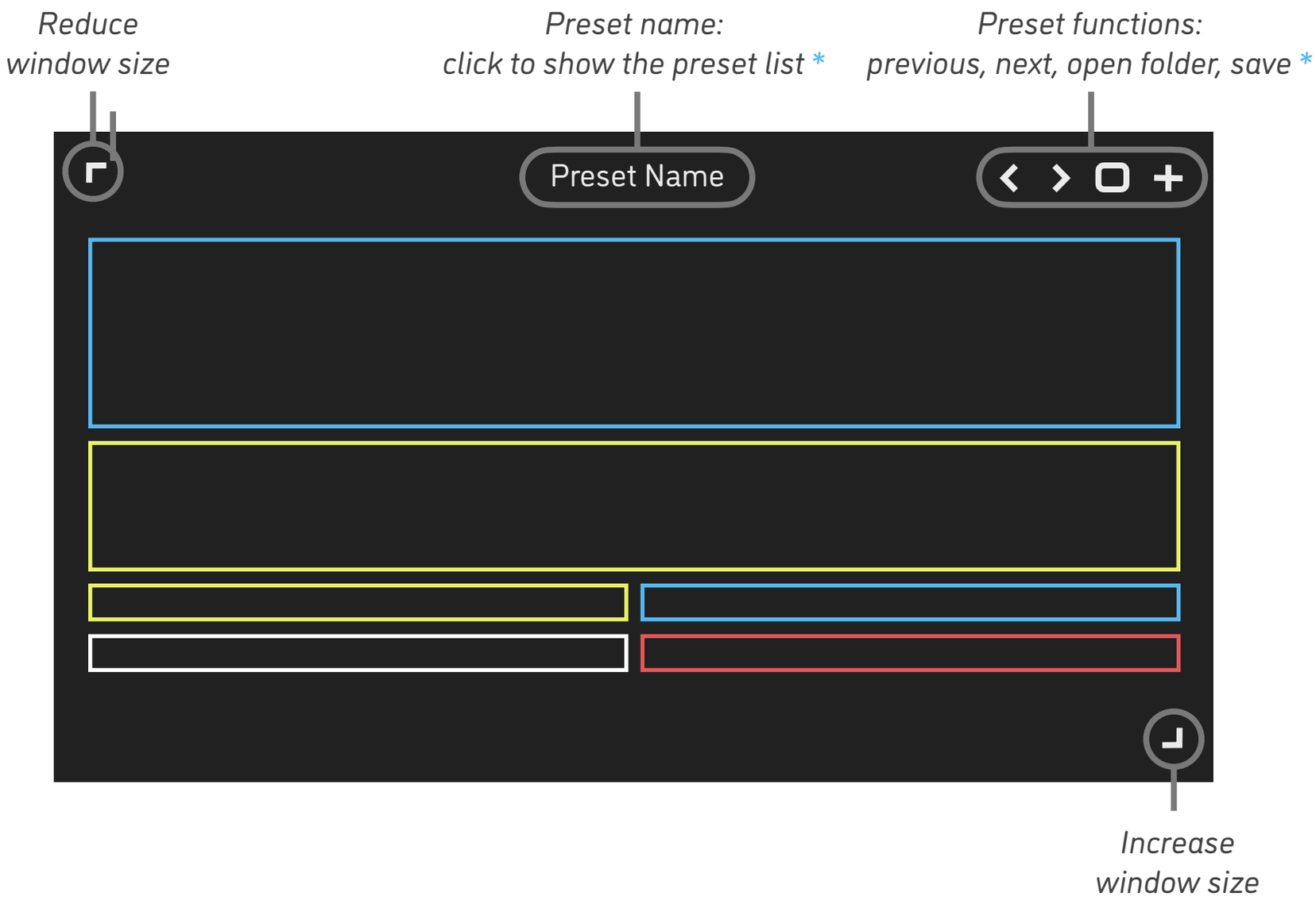
Create up to 8 different sequence patterns. Use the utility function menu and apply various macro editing functions like copy, paste, randomize, shift, loop – and more.

Set the sequencer rate and swing parameters to any values desired.

Adjust the level balance and apply the per-step stereo pan scattering using the global controls.

OVERVIEW

Cluster features a fully vector-based interface, with color-coded elements for effective visual grouping. The plugin allows you to change its window size from 0.8x to 2x in 10% increments. The last size you set is stored in a preference file and is recalled the next time **Cluster** is loaded.

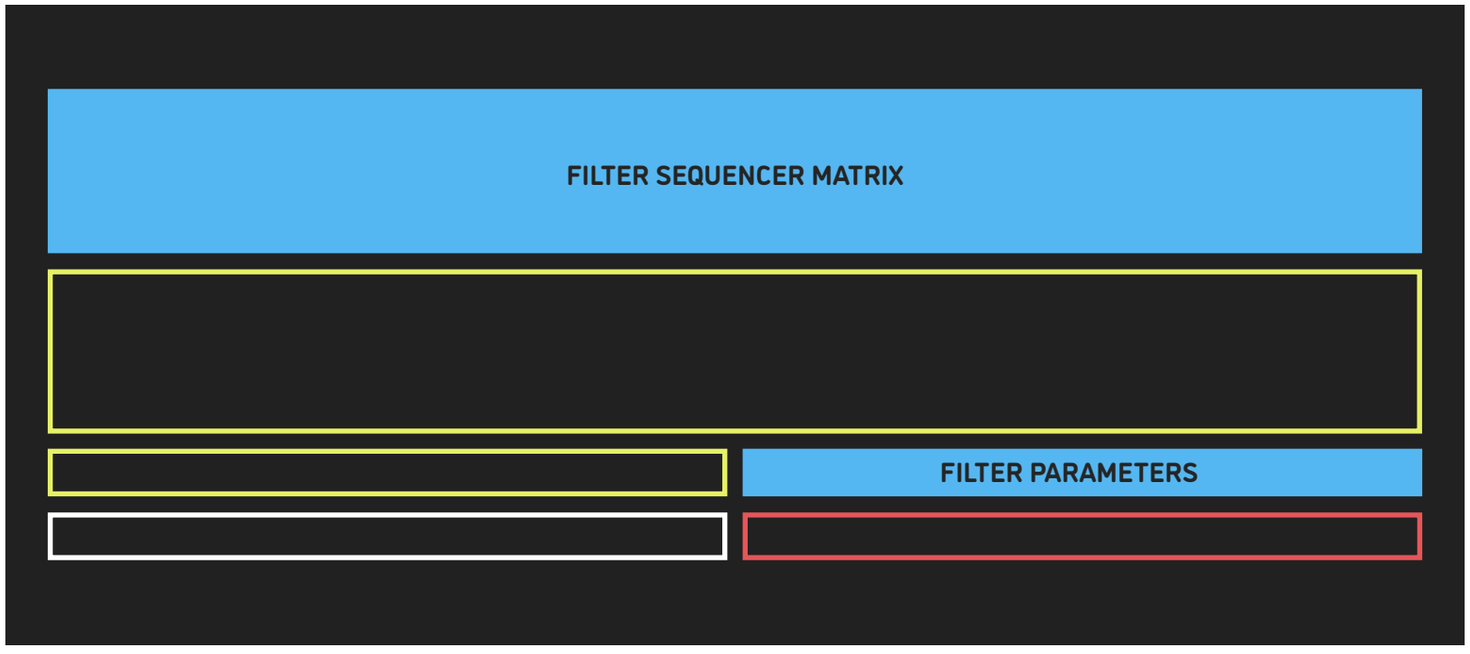


Cluster features simple built-in functions for saving and loading presets, as well as for quickly switching between presets within the same bank. All these functions are accessed via the top toolbar.

* You can click the preset name while holding ***command*** (Mac) or ***control*** (Windows, Linux) to reveal the actual preset file.

* The installation includes *Factory* and *User* preset banks, but you can freely create additional subfolders to have more banks.

FILTER



FILTER SEQUENCER MATRIX

The filter sequencer matrix has an array of six filters, each of which can be configured from 9 different algorithms; the amount of filter stages can also be varied from 1 to 4, with each additional stage making the effect more pronounced. The filter gate switch lane defines which filter is active on a given sequencer step. Each filter's gate is processed via a two-pole lag filter whose time is also set by the **lag** parameter in the global envelope controls.

The filter sequencer matrix also has two lanes which define the main filter parameters individually per each step:

- **Frequency**: continuous value from 20 Hz to 20,000 Hz (mapped exponentially)
- **Resonance**: continuous value from 0.0 to 1.0

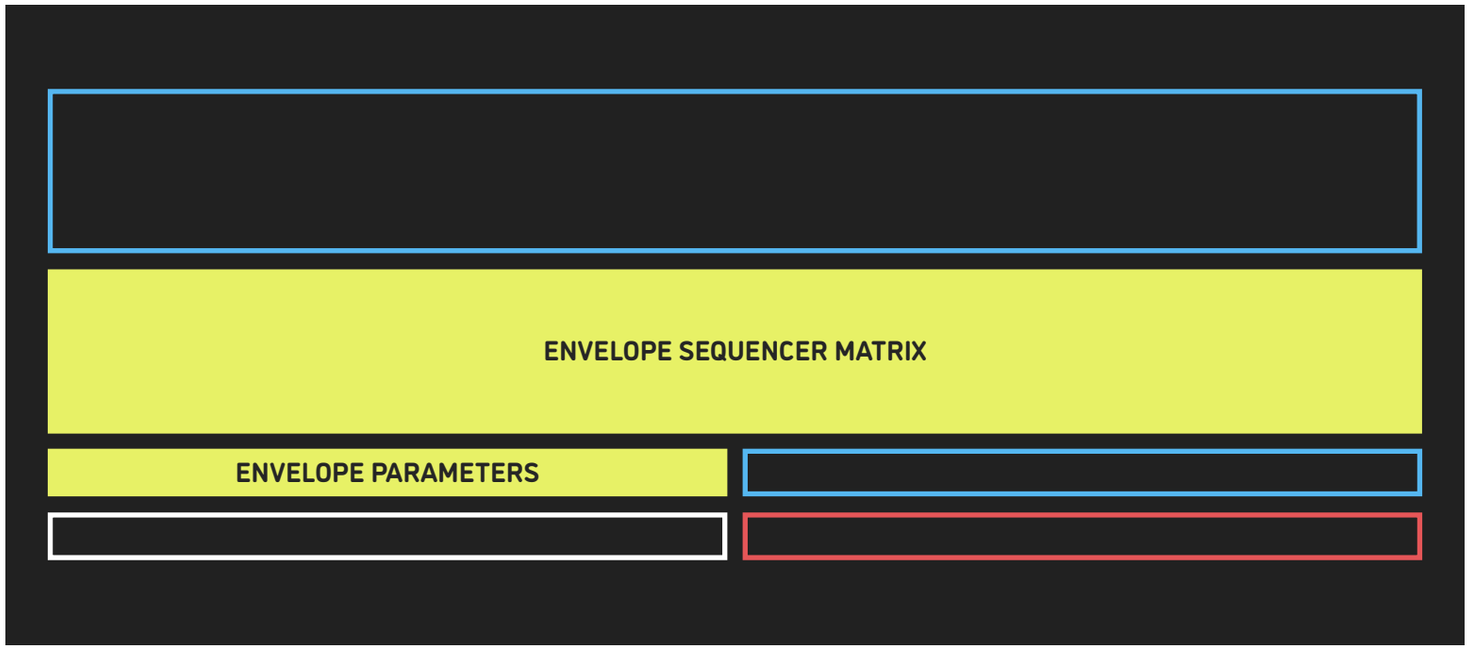
FILTER PARAMETERS

The filter cutoff **frequency** parameter (-100..+100 %) provides a global relative offset for the frequency sequencer lane. Likewise, the **resonance** parameter (-100..+100 %) provides a global relative offset for the resonance sequencer lane. The **limiter** parameter (-6..+18 dB) allows to adjust the threshold of the six limiters that are placed after each of the six filters; above the value of +18 dB these limiters are fully bypassed.

FILTER ALGORITHMS

Low-Pass Resonant state variable low-pass filter: filters out part of the spectrum above the cutoff frequency. Each stage has a -12 dB/octave slope.	**Low-Pass** Resonant state variable high-pass filter: filters out part of the spectrum below the cutoff frequency. Each stage has a -12 dB/octave slope.	**Band-Pass** Resonant state variable band-pass filter: filters out parts of the spectrum above and below the cutoff frequency. Each stage has a -12 dB/octave slope.
Notch Resonant state variable band-reject filter: filters out part of the spectrum at and around the cutoff frequency. Each stage has a -12 dB/octave slope.	**Peaking** Resonant state variable peaking filter: adds a boost in the spectrum around the cutoff frequency. Each stage has a -12 dB/octave slope.	**Comb Plus** Comb filter with positive feedback: produces spectrum peaks and notches at regular frequency intervals, emphasizing even harmonics.
Comb Minus Comb filter with negative feedback: produces spectrum peaks and notches at regular frequency intervals, emphasizing odd harmonics.	**Phaser** Multi-stage all-pass filter with positive feedback: produces peaks and notches in the spectrum at non-linear frequency intervals. Each stage has 4 such filters in series; the amount of spectrum peaks and notches is doubled with each stage.	**Resampler** Variable sample rate converter combining a 6-pole low-pass filter, a 24-point sinc interpolator, and a feedback line. Dramatically filters out part of the spectrum above the cutoff frequency.

ENVELOPE



ENVELOPE SEQUENCER MATRIX

The envelope sequencer matrix has four lanes which define the following envelope generator parameters individually per each step:

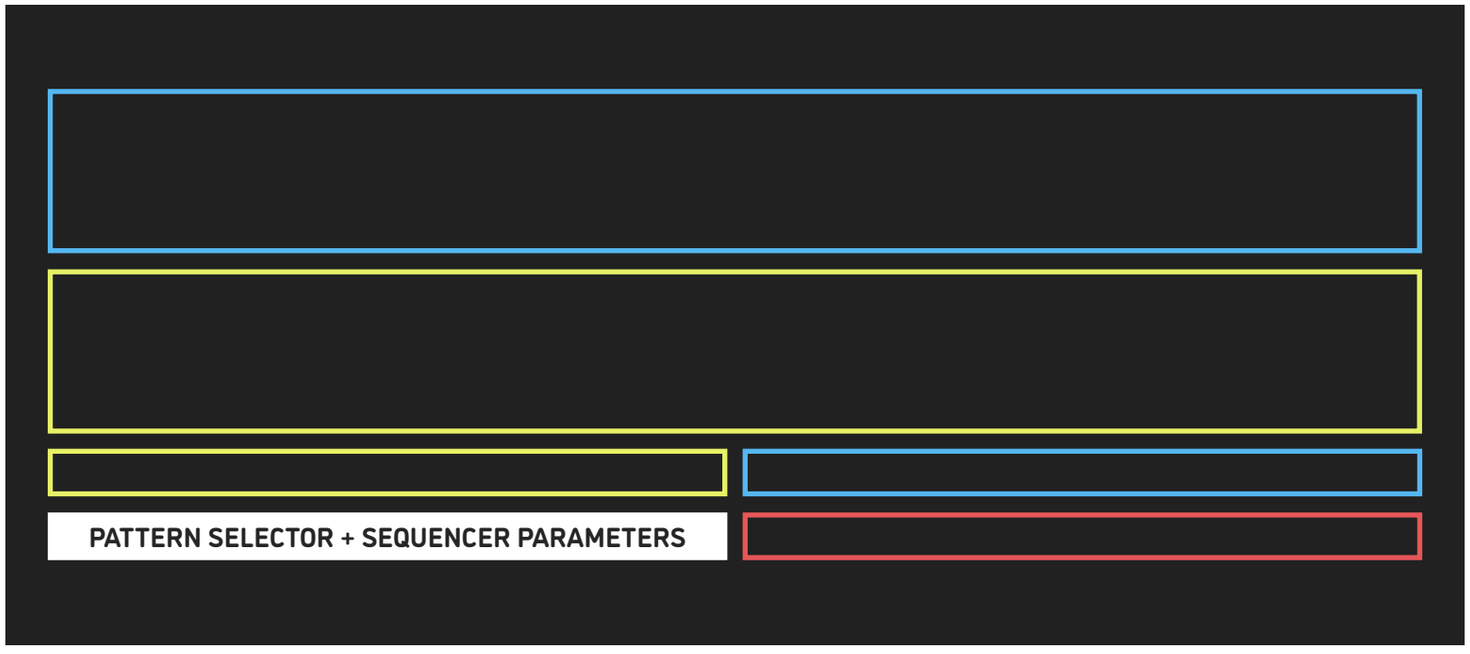
- **Modulation**: continuous value from 0.0 to 1.0
- **Polarity**: positive or negative *
- **Divisions:** up to 4 repetitions of the envelope shape within a single step *
- **Type**: linear, exponential, logarithmic, triangle, square, flat

* Does not affect the "flat" envelope type.

ENVELOPE PARAMETERS

The envelope **shape** parameter (-100..+100 %) allows you to further adjust the final envelope curvature: for linear, exponential, logarithmic, and triangle types it makes it more concave at negative values and more convex at positive values; for the square type it makes the duty cycle shorter at negative values and longer at positive values; the flat envelope type remains unchanged. The envelope **lag** parameter (1..300 ms) controls an analog-style two-pole lag filter that makes the envelope either more snappy and fast, or more smooth and slow. The **depth** (-100..+100 %) parameter adjusts the amount of the envelope signal applied onto the filter cutoff frequency; at negative values, the depth stays positive – but the envelope signal itself is inverted.

SEQUENCER



SEQUENCER PATTERN SELECTOR

The sequencer pattern selector provides access to up to 8 separate sequencer matrix patterns per each preset, and the current pattern number can be automated via the plugin host application. For those patterns that have not been edited yet, the pattern number is replaced by a dash sign. The currently active pattern can be manipulated in various ways using many different utility functions: pressing the "three dots" button opens the utility menu.

SEQUENCER PARAMETERS

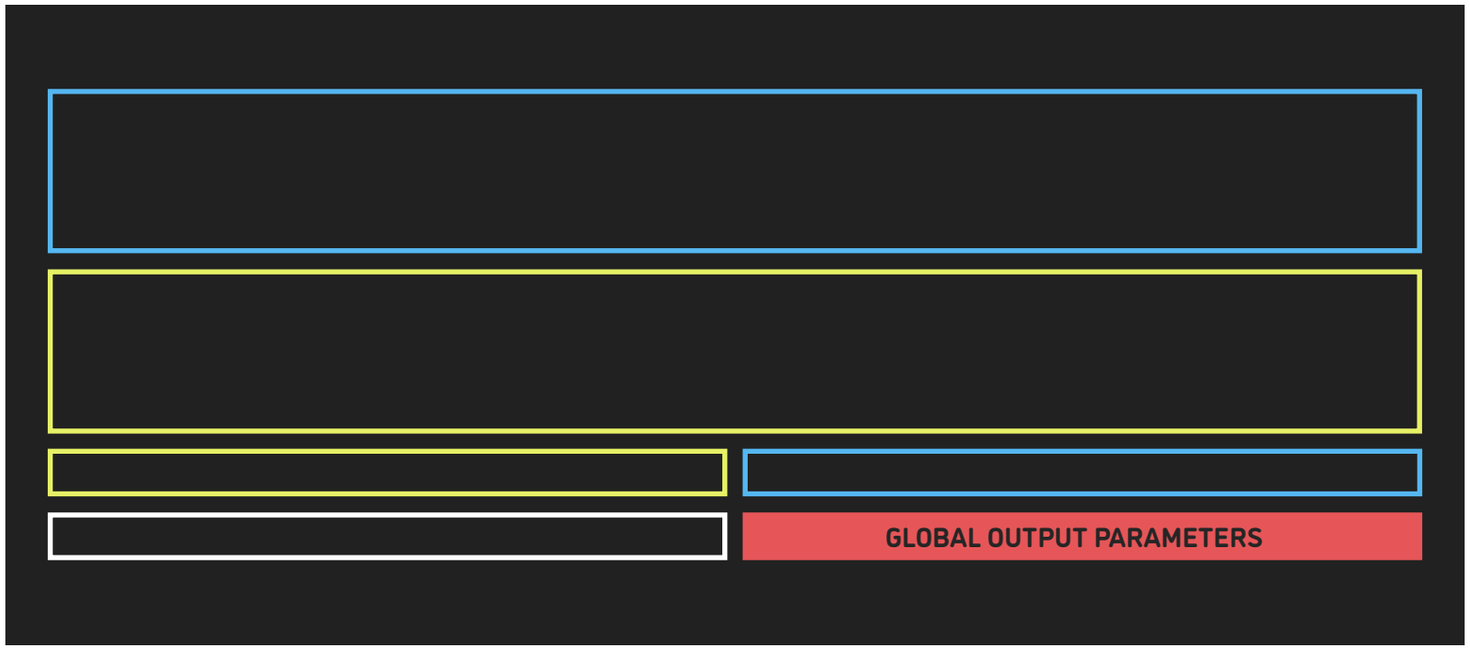
The sequencer runs in sync with the host, at a rate defined by the host tempo and the step length ratio that's set by separate **numerator** and **denominator** parameters in the ratio selector. The step length can be set to any value from 1/32 to 16 bars – combined with the variable sequencer length, it makes it possible to create a wide variety of polymetric and polyrhythmic patterns. The **swing** parameter adjusts the relative duration between odd and even sequencer steps. At 50%, the duration of the steps in the odd/even pair is the same; above 50% odd steps become longer while even steps become shorter, and below 50%, it works the opposite way.

SEQUENCER FUNCTION MENU

Cluster includes a number of handy pattern utility functions, available in an overlay menu that shows up when you click the menu button. All of these functions only affect the currently active pattern.

Copy	Copy the pattern into the temporary buffer
Paste	Paste into the pattern from the temporary buffer
Reset	Set all pattern steps to default values
Trim	Mute all pattern steps beyond the end step marker
Invert	Invert polarity on all pattern steps
Reverse	Flip the pattern horizontally (left to right)
Evolve	Randomize values on select steps in all lanes; steps are selected with 10% probability
Randomize	Randomize values on all steps in all lanes
Left **Right**	Shift all steps to the left or the right of the sequence, with the sequence itself wrapped within the currently active pattern region (that's defined by the end step marker)
Loop	Repeat the steps within the active pattern region (until the end step marker) multiple times until the maximum step count (32) is reached + set the pattern length to an integer multiple of that region; e.g. 7 steps will be looped 4 times and pattern length will become 28, 9 steps will be looped 3 times and pattern length will become 27 - and so on

OUTPUT



OUTPUT PARAMETERS

The **level** parameter (-12..+6 dB) allows to calibrate the overall level of the processed signal, i.e. the output mix of all six filters after they have passed through their respective gates and limiters (unless those were set to bypass). The **scatter** parameter (0..100 %) allows to apply random panning onto the output signal, with the pan value being generated on each new sequencer step; the pan signal itself is sent through a two-pole lag filter whose time is also set by the **lag** parameter in the global envelope controls. Finally, the overall dry/wet signal balance of the plugin can be adjusted via the **mix** parameter (0..100 %).

CONTROL SHORTCUTS

Cluster supports a number of shortcuts and alternative ways to adjust parameters:

- Hold ***shift*** and drag any slider to adjust it with increased resolution.
- Use ***option-click*** (Mac), ***alt-click*** (Windows, Linux), or ***double-click*** any control to reset it.
- The mouse wheel (and vertical swipe on the trackpad) can also be used on most control elements.

And the following additional editing functions are available in the sequencer matrix:

- The mouse wheel (and vertical swipe on the trackpad) can be used for value adjustment.
- Hold ***control*** to edit all steps on a lane at the same time.
- Hold ***option*** (Mac) or ***alt*** (Windows, Linux) and click any lane to randomize all steps on that lane.
- Hold ***shift*** while adjusting the frequency, resonance or modulation lane to edit with a fixed (quantized) range of values; hold ***shift*** and ***control*** at the same time to edit all steps on that lane in fixed steps.

SINEVIBES

DOWNLOADABLE SUPERPOWERS