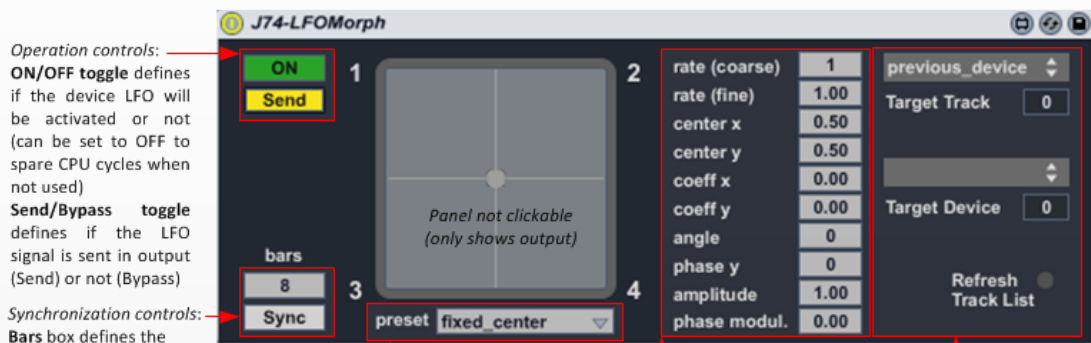# MORPH

LFOMorph

This is a *two-dimensional* LFO. Compared to traditional one signal (one dimension) LFOs, this LFO outputs *two correlated signals simultaneously*. The LFO controls can be used to define the "geometry" of the LFO shape (based on variation and manipulation of an ellipse) and additionally to influence the relative phase of these signals (by adding a static phase delay or performing phase modulation). The shapes which can be obtained can vary from being extremely simple and repetitive to pseudo random and chaotic paths…..

Operation controls:
ON/OFF toggle defines if the device LFO will be activated or not (can be set to OFF to spare CPU cycles when not used)
Send/Bypass toggle defines if the LFO signal is sent in output (Send) or not (Bypass)

Synchronization controls:
Bars box defines the synchronization / LFO restart period in bars (from 1 to 8) if the LFO runs in Sync mode
Sync/Free toggle defines if the LFO signal is synchronized to Live tempo or set to run free based on internal settings (see rate controls)

Preset menu: This menu selects possible combinations of LFO settings to achieve specific goals (the names of the presets should be self explaining).

For instance a "bigcircle" preset will set the LFO to run in a geometric circle centered in the middle and having a diameter of 1. This preset can be used to simulate doppler effects using a 4 speaker system (and an audio interface with four outputs, in this case mapped to the returns)

Note: settings can be then fine tuned using the LFO specific control set

LFO controls:
rate (coarse) = sets the period of the LFO oscillation. In Sync mode this specifies the bars. In Free mode the seconds.
rate (fine) = a multipler {0. to 1.} for the rate value. It can be used to fine tuning (i.e. achieving sub-fractions of the rate)
center x = sets the geometric X coordinate of center of the shape
center y = sets the geometric Y coordinate of center of the shape
angle = rotates clockwise the shape of an angle in degrees {0. to 360.}
phase y = adds a delay to the phase of the LFO Y component
amplitude = gain value for the output signals
phase modulation amount = applies an oscillator to the phase of the Y component, for phase modulation. Useful to create complex modulations

Target menu: This menu selects target of the LFO in the morph device family (which are the only devices understanding this two-dimensional LFO)

Refresh track list button: use this button if track menu does not show a track (a track has been added after this device was loaded)

Although only devices in the morph family support this control, you can control any device/parameter by chaining this device with the ParamMorph device!