MOD·01 / MOVEMENT

PULSAR

MOVEMENT | FREE · GPLV3 | VST3 · AU

PULSAR sends your signal into **real 3D orbit** around the listener. You steer a chaos field with the **StellarPad** and the sound flies — close and far, fast and slow — following physical attractors instead of a boring sine LFO. Simple on the surface, a genuine motion engine underneath.

// ANATOMY

// CONTROLS — COMPLETE REFERENCE

SOUND

STELLARPAD — The control surface. Drag to set the center of the orbit — the field flies around the point you pick.

MOTION — One knob for energy. Couples chaos, distance and Doppler through orbital mechanics — turn it up and the whole system comes alive.

RATE / SYNC — Free-running, or locked to your host tempo — from whole bars to fast cycles.

SHAPE — Morph continuously between four attractors: Orbit → Pendulum → Lorenz → Rössler. From clean circles to deterministic chaos.

SMEAR — A comet tail. Schroeder diffusion in the feedback path smears the trajectory into space.

WIDTH / IN PHASE — Real head-shadow stereo width. IN PHASE collapses to mono-safe in one click.

GLOBAL & I/O

IN / OUT — Input and output gain trim, smoothly ramped, with a true-peak-safe meter.

SIZE · S/M/L — Three interface scales; your choice is remembered across every OVNI plugin.

PRESETS — Save your own and browse the bank with ◄ name ►.

A/B — Hold two settings and flip between them to compare.

BYPASS — The power icon bypasses the effect for a clean A/B against the dry signal.

// PARAMETERS · EXACT RANGES

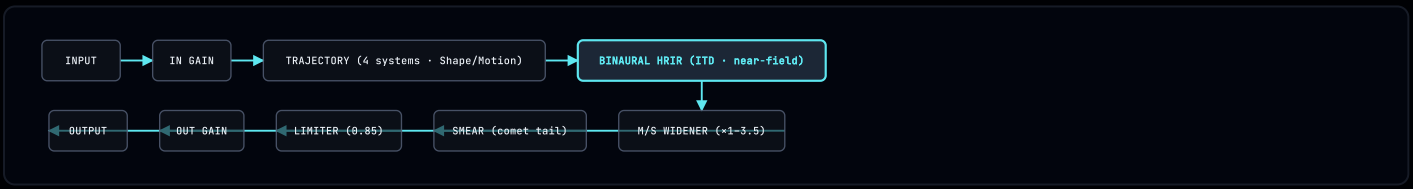
		RANGE	DEFAULT
MOTION		0–100%	45%
SHAPE · MORPH	0–100% · Orbit→Pend→Lorenz→Rössler		66%
SMEAR		0–100%	25%
WIDTH		0–100%	70%
MIX		0–100%	100%
RATE (FREE)		0.01–10 Hz	0.5 Hz
SYNC		Off · On	Off

	RANGE	DEFAULT
DIVISION	1/4 · 1/2 · 1 bar · 2 bar	1 bar
STELLARPAD X/Y	-1…+1	center
INPUT GAIN	-24…+24 dB	0 dB
OUTPUT GAIN	-24…+24 dB	0 dB
IN PHASE · MONO-SAFE	Off · On	Off
BYPASS	Off · On	Off

// HOW IT WORKS

Movement you feel, backed by real acoustics.

No "3D" marketing. PULSAR uses the same psychoacoustics your ears use to locate sound in the real world.



// UNDER THE HOOD

DETERMINISTIC CHAOS

SHAPE morphs continuously across four attractors (Orbit→Pendulum→Lorenz→Rössler); the path is erratic but never random — solved from differential equations, always musical.

ORBITAL COUPLING (MOTION)

One control couples chaos energy, orbital distance and Doppler through Keplerian mechanics, so the whole system accelerates together — not N independent LFOs.

BINAURAL HRIR + ITD

The voice is placed with the same head-related convolution as ORBIT plus Woodworth head-shadow ITD, so width is real externalisation, not hard L/R panning.

MEASURED STEREO FIELD

Phase correlation is tuned and verified with pink noise from +0.79 (natural) to −0.46 (ultra-wide); IN PHASE collapses it to +0.92, mono-safe.

SCHROEDER SMEAR

Diffusion in the feedback path stretches the trajectory into a comet tail without smearing the transient that drives the motion.

LOOKAHEAD TRUE-PEAK

Inter-sample peaks are caught by a lookahead limiter (held ≤ 0.85) so the smear never clips the bus.

// MEASURED PERFORMANCE

Phase correlation · Width 0→100%	+0.79 → -0.46	IN PHASE correlation · Width 100%	+0.92
Mono-sum · Width 0→100%	-0.04 → -4.33 dB	Width ratio side/mid · 0→100%	0.35 → 1.62
Anti-clip true-peak · worst case	0.850 · -1.41 dBFS	Limiter ceiling · release	0.85 · 60 ms
Latency	0 samples		

Conditions — pink noise (Paul Kellet) mono→dual · 48 kHz · 512-sample blocks · 500 blocks (100 discarded as warmup); measure preset rate 0, motion 25%, shape 50%, smear 0%. Anti-clip test: full-scale 220 Hz sine, motion/smear/width 100%.

// LATENCY · PER SAMPLE RATE

	44.1 KHZ	48 KHZ	96 KHZ
REPORTED LATENCY	0 samples / 0.0 ms	0 samples / 0.0 ms	0 samples / 0.0 ms

// SPECIFICATIONS

SYSTEM · FORMATS		AUDIO · PROJECT	
FORMATS	AU · VST3 · Standalone	SAMPLE RATES	44.1 – 192 kHz (host)
SYSTEMS	macOS 11+ · Windows 10+	PRECISION	64-bit float
ARCHITECTURE	Universal · Apple Silicon + Intel	LATENCY	0 samples · zero-latency
I/O	mono / stereo in → stereo out	PRESETS	5 factory
MIDI	Program Change · preset recall	LICENSE	GPLv3 · open-source · github.com/ovniaudio

// TRANSPARENCY & HONESTY

Dry path is transparent — Bypass is a chassis pass-through. No analog modeling: no added noise, harmonics or THD. THD+N, frequency response and SNR are not characterised.

// INSTALL (FREE & OPEN-SOURCE)

Free & open-source (GPLv3), not yet code-signed: on macOS, **right-click → Open** the first time (or `xattr -cr` on the .component/.vst3); on Windows, allow it in SmartScreen. Source & downloads at **github.com/ovniaudio**.