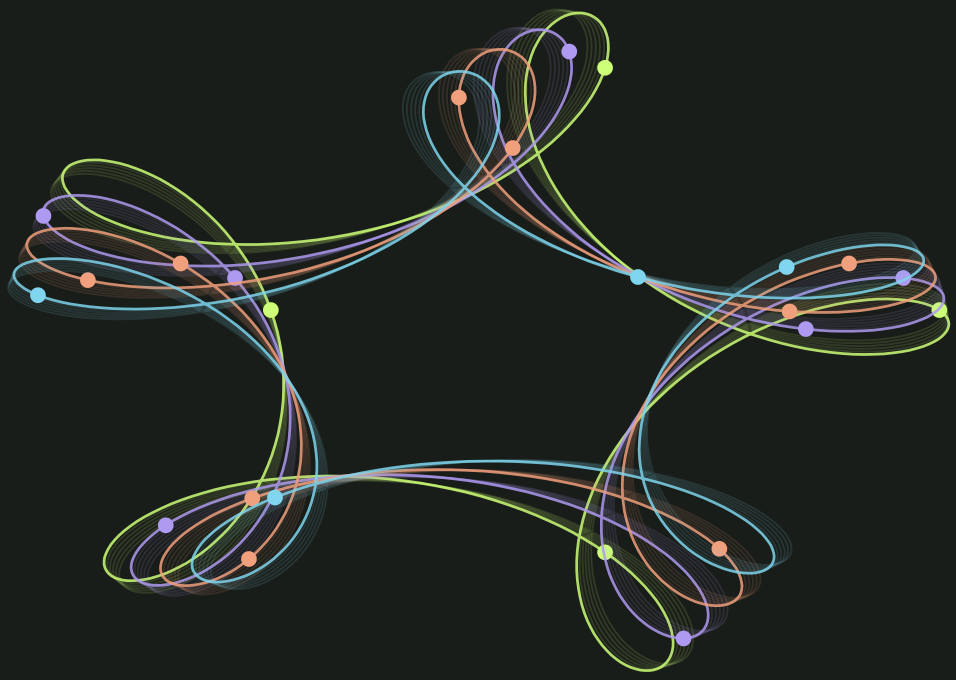


Órbita 2

a generative FM instrument · four voices, euclidean rhythms, orbits you can hear

USER MANUAL · WEB · VST3 · AU · APP

ENGLISH EDITION

Dark Funk Durcal design · built at **POLARIS SOUND LAB** · Mérida, Yucatán, México · ♥ DONATE

Instagram @polaris.sound.lab · YouTube @PolarisSoundLab · drophlex.github.io/ORBITA

WELCOME

Music drawn by orbits.

ÓRBITA 2 is a generative instrument. Four FM voices play euclidean rhythms over a scale, and the screen draws each voice as an orbit: every bright dot on a curve is a note you hear, and the ring is where the voice is right now. You don't write notes one by one: you shape the orbit, and it plays.



ÓRBITA 2 in the browser. The plug-in shows exactly the same page.

New in ÓRBITA 2

- **One engine, one interface.** The web and the plug-in run the same code: they sound and look the same.
- **GRAVITY**: one knob glides the whole sound from one scene to another.
- **EVOLVE** and the **TIME MACHINE**: the orbit wanders by itself, and every moment is kept.
- A fourth voice (HALO), six voice models, polymeter, an echo, a deep reverb, chorus and warmth.
- **HARMONY keys**, **MIDI OUT** and dragging a clip onto your tracks.

> The four classic scenes play ÓRBITA 1's notes and rhythms exactly (all 82,944 cases are checked by the tests), so the FM-1 firmware and your old clips still match.

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Free, and it stays free

Everything is open source on GitHub. If ÓRBITA is useful to you, a donation keeps it growing.

♥ DONATE (PayPal)

GET IT

Three ways to play.

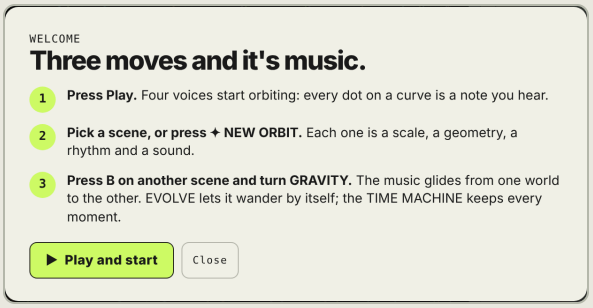
WHERE	HOW
🌐 Web	Open drophlex.github.io/ORBITA on a computer or a phone and press ▶ Play. Nothing to install. Chrome or Edge also send the notes to MIDI gear (the FM-1, other synths).
🎛 Mac · VST3 · AU · App	Open Terminal (⌘ Space, type Terminal) and paste the line below. It downloads the latest release, installs the VST3, the AU and the app, and clears the download quarantine.
🪐 M-VAVE FM-1	The ÓRBITA firmware (beta) and the 32 voices are installed from the browser: /firmware and /fm1. They are ÓRBITA 1's, explained in the ÓRBITA 1 manual (Orbita-1-EN.pdf).

```
curl -fsSL https://drophlex.github.io/ORBITA/install.sh | bash
```

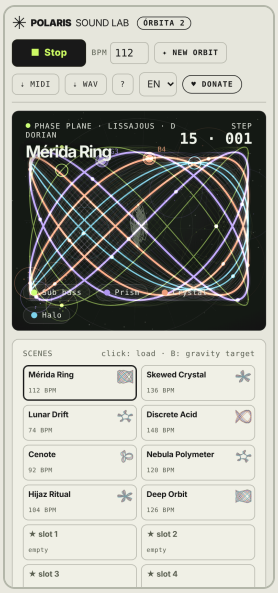
Ableton Live (and other DAWs)

1. Live → Settings → Plug-ins → turn on **Use VST3 Plug-in System Folders** (and Audio Units if you prefer the AU) → **Rescan**.
2. Drag **Polaris Orbita** (Plug-ins → Polaris Sound Lab) onto a MIDI track.
3. Press play in Live: with **SYNC** on (the default) ÓRBITA follows Live's tempo and starts on the beat. With Live stopped, ÓRBITA's own ▶ plays at its own tempo.

> **Tip** ÓRBITA 2 replaces ÓRBITA 1 in your plug-in list (same name). Old Live sets open with ÓRBITA 2 starting from its first scene. A step-by-step guide with pictures: drophlex.github.io/ORBITA/guide.



The first time, three moves get you playing.



On a phone

THE SCREEN, PIECE BY PIECE

Everything on one page.

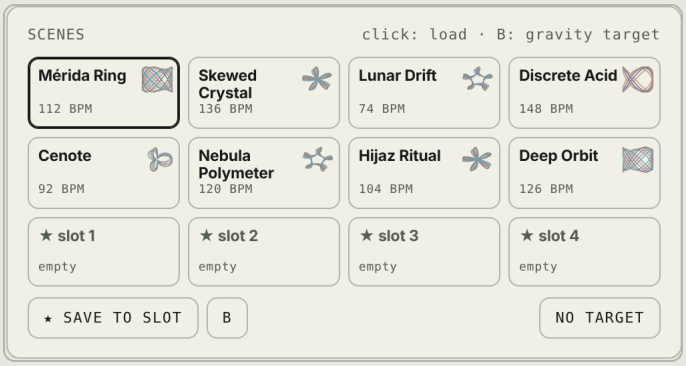


#	PART	WHAT IT DOES
1	▶ Play · BPM	Start and stop (or the space bar). The tempo. In the plug-in, SYNC follows the DAW.
2	✦ NEW ORBIT	A new orbit: scale, geometry, rhythm and sound, chosen to be musical.
3	≈ MUTATE · ↶	Change two or three things and keep the feel · go back one step.
4	⇣ MIDI · ◖ · ? · EN/ES · ♥	A 4-bar clip · paper or night · quick guide · language · donate.
5	Phase plane	The four orbits. Click a dot to add or remove that note. The chips below mute a voice.
6	The core	The sound itself, drawn as an XY figure (left against right).
7	Scenes	Eight scenes and four slots of your own. B picks GRAVITY's target.
8	Macros	The ten big moves; FX & MIX opens eleven more.
9	Harmony	Root, scale, geometry, and what your keys do.
10	Lanes	One row per voice: its steps, pulses, length, rotation, octave, level. Its name opens its sound.
11	Time machine · keys	Every moment you can go back to · two octaves to play (and the computer keys A–K).

Tip Every knob: drag up or down (Shift for fine), use the mouse wheel or the arrow keys; double-click returns it to its default.

PLAYING: SCENES, DENSITY, PHASE

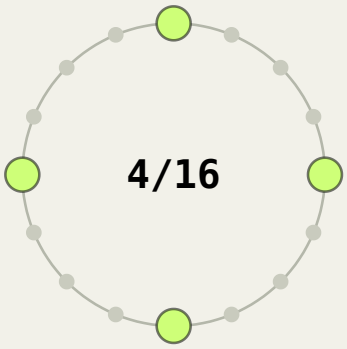
Shape the orbit, not the notes.



Click a scene to load it. Right-click (or B, then click) to make it GRAVITY's target.

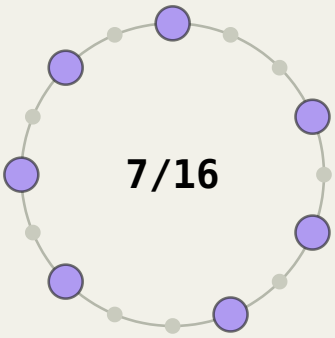
SCENE	THE IDEA
Mérida Ring	A spaced sub bass and two bells that cross (ÓRBITA 1).
Skewed Crystal	Metallic off-beats in a five-petal rose (ÓRBITA 1).
Lunar Drift	A slow, open pentatonic pulse (ÓRBITA 1).
Discrete Acid	Dense sixteenths, bright modulation (ÓRBITA 1).
Cenote	Glass drops in deep water; a spiral that keeps evolving.
Nebula Polymeter	Cycles of 16, 12, 10 and 7 steps that drift and meet again.
Hijaz Ritual	Phrygian dominant, dust and a turning rose.
Deep Orbit	Sub-heavy techno at 126 BPM with eighth-note echoes.

The three moves that matter



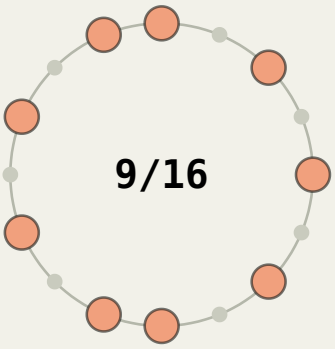
DENSITY

How many notes fall in each cycle, spread as evenly as possible (a euclidean rhythm). Each voice adds its own PULSES to it: the sub plays fewer, the crystal more.



PHASE

Where the notes fall, and which notes they are. Each voice is shifted by PHASE × its number, so the four voices answer each other instead of hitting together.



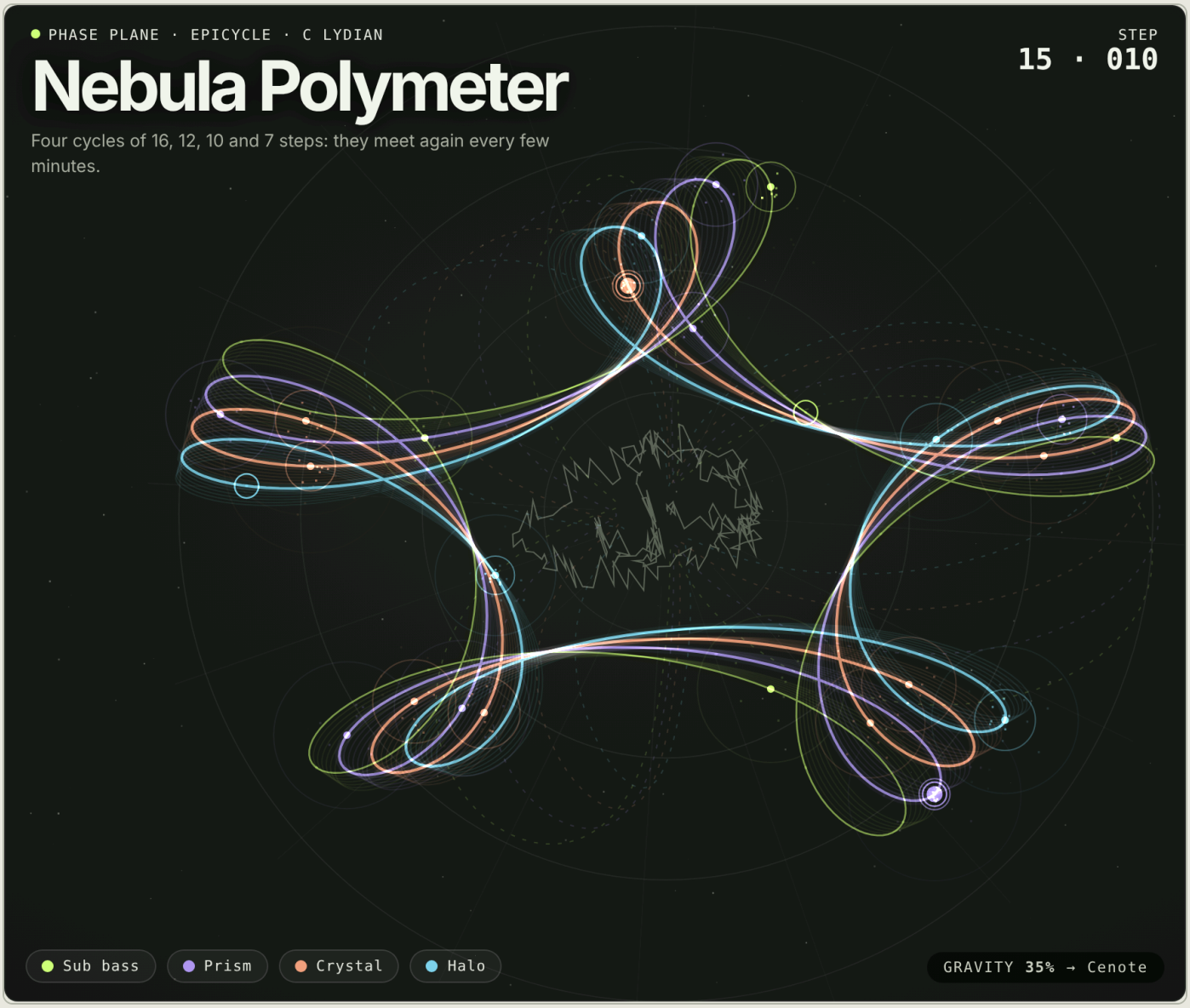
FM RATIO

The modulator's pitch against the note: whole numbers (1, 2, 3) are warm and in tune, halves are hollow, odd values like 3.5 or 7 are bells and metal.

Tip Click a dot on the screen or a cell in a lane to add or remove a note; the lane shows ✎ while it has your own steps. Moving DENSITY, PHASE, PULSES, STEPS or ROTATE draws the rhythm again.

From one world to another.

GRAVITY glides everything from the scene you are playing (A) to a second one (B): the tempo, the FM ratio, every level, filter, envelope and send move smoothly; DENSITY, PHASE and the pulses step; the scale, the geometry and the voice models switch half way. One knob, a whole transition.



GRAVITY at 35% towards Cenote: the target's orbits are drawn dashed, and the bar shows where you are.

1. Play a scene (A).
2. Press **B** and click another scene, or right-click it. It shows a B and stripes.
3. Turn **GRAVITY**. At 0% you hear A, at 100% you hear B. **NO TARGET** lets go of B.

> **Tip** In a DAW, automate **Gravity** over 8 or 16 bars for a build or a breakdown. Your own slots (★) work as A or B too, so you can morph between two versions of the same idea.

Let it wander. Keep the best.

EVOLVE

Once a bar, with the chance EVOLVE sets, the orbit takes a small step: PHASE moves one place, DENSITY one note, or the FM ratio drifts a little. It's a random walk on a short leash: it never goes more than four phases, two notes or half a ratio from the scene, so it stays recognisable. The screen shows ✦ while it evolves.

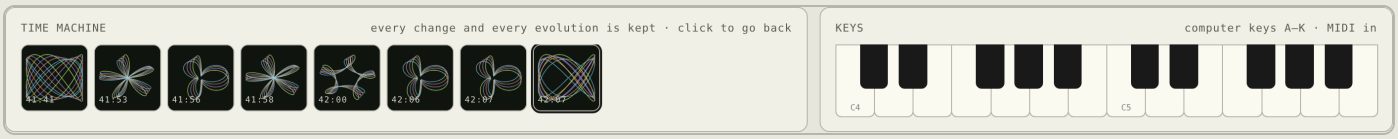
CHAOS · HUMAN

CHAOS adds ghost notes, drops a few and, above 30%, throws some notes an octave away. HUMAN loosens the velocities. Both leave the orbit's shape alone.

The time machine

Every change you make (after a short pause), every scene, every NEW ORBIT and MUTATE, and every step EVOLVE takes is kept as a small picture with its time. Click one to go back to it exactly; the last 40 are kept. ↶ steps back one.

> Going back turns EVOLVE off, so the moment you came back for stays. Turn it up again to let it wander from there. ★ SAVE TO SLOT keeps a moment for good (in the browser, or in the DAW project).

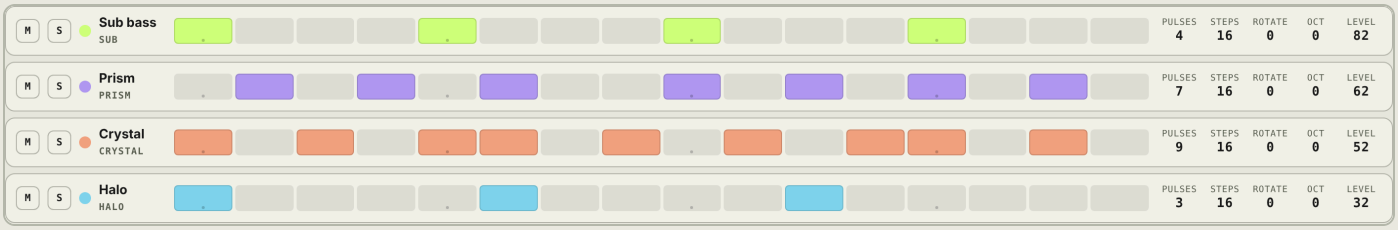


The time machine (✦ marks the moments EVOLVE made) and the keys.

> **Tip** A generative jam: EVOLVE at 40%, record the audio (or MIDI OUT) for ten minutes, then come back through the time machine to the moments you liked and drag them out as clips.

THE LANES AND POLYMETER

Four voices, four cycles.



Nebula Polymeter: Prism has 12 steps, Crystal 10, Halo 7.

CONTROL	WHAT IT DOES
M · S	Mute the voice · solo it (S again brings the others back).
Name	Opens the voice's sound (next page). Under it, its model, and ✎ when it has your own steps.
Cells	Its steps. Click to add or remove a note. A dot marks each beat.
PULSES	Notes per cycle: DENSITY plus this voice's offset (the number shown is the total).
STEPS	The length of its cycle, 2 to 16. Different lengths make a polymeter.
ROTATE	Turns its rhythm around the circle, on top of PHASE.
OCT · LEVEL	Its octave (±2) · its volume.

Why polymeter feels alive

With 16, 12, 10 and 7 steps, the voices line up again only after 1,680 sixteenth notes: at 120 BPM that is three and a half minutes of patterns that never quite repeat, from four simple rhythms. Short cycles (5, 7) against 16 make syncopation; 12 against 16 feels like a triplet swing.

SOUND: THE SIX VOICE MODELS

FM that breathes.



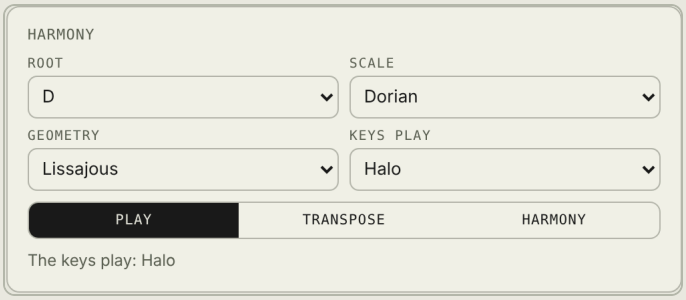
A voice's sound: click its name in its lane. RESET VOICE brings its default back.

MODEL	SOUND
SUB	A soft FM bass with a sine an octave below.
PRISM	A clear bell with a high sparkle.
CRYSTAL	An inharmonic, glassy bell.
HALO	A slow, detuned pad that holds the harmony.
GLASS	Bright and metallic, like struck glass.
DUST	A breathy FM tone with noise in its attack.

KNOB	WHAT IT DOES
RATIO · INDEX	This voice's FM ratio (× the global one) · how much modulation.
FEEDBACK · MOD ENV	Grit in the modulator · how much the brightness falls with the note.
ATTACK … RELEASE	The volume envelope.
GATE	How long each note is held, in steps.
CUTOFF · RESONANCE	A low-pass filter on the voice.
DETUNE	Two copies, left and right, slightly apart: width.
ECHO · SPACE SEND	How much goes to the echo and the reverb.
CHANCE · ACCENT	How likely each note plays · how much the orbit's shape sets its velocity.

> Gain staging is built in: the voices are summed with headroom, a clean soft-knee glue keeps the peaks round and a safety limiter holds −1 dBFS. WARMTH adds tape-like drive gradually; at 0% there is none.

Play it like an instrument.



SCALE	SEMITONES
Dorian	0 2 3 5 7 9 10
Minor	0 2 3 5 7 8 10
Minor pentatonic	0 3 5 7 10
Phrygian	0 1 3 5 7 8 10
Lydian	0 2 4 6 7 9 11
Major pentatonic	0 2 4 7 9
Phrygian dominant	0 1 4 5 7 8 10
Whole tone	0 2 4 6 8 10
Harmonic minor	0 2 3 5 7 8 11
Hirajoshi	0 2 3 7 8

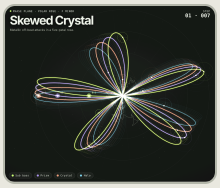
What your keys do

The on-screen keys, the computer's keys (A W S E D F T G Y H U J K..., Z and X change octave) and, in the plug-in, your MIDI keyboard:

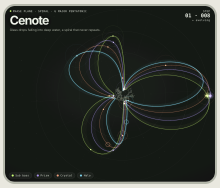
MODE	WHAT HAPPENS
PLAY	You play the voice chosen in KEYS PLAY (Halo by default) like a synth, over the orbit.
TRANSPOSE	The key you press becomes the root: the whole orbit moves to it. Great for following a bass line or a chord change.
HARMONY	Hold notes: while you hold them they **are** the scale. Hold a chord and the four voices play only its notes, in the orbit's rhythm. Let go and the scale comes back.

Geometry

The geometry is the curve each voice follows. It sets the shape on the screen and, with PHASE, which degree of the scale each step plays: Lissajous climbs and falls in waves, the polar rose returns to the root often, the epicycle circles slowly, the spiral (new) wanders the most.



Polar rose



Spiral



Hijaz Ritual

IN YOUR DAW

A generator for your whole studio.

FEATURE	HOW
PLAY / STOP (like XO)	ÓRBITA's own PLAY and STOP are independent of the DAW: it plays with Live stopped, to try ideas. With **SYNC** on (the default) it always runs at the DAW's tempo; the DAW's play starts it on the bar, and the DAW's stop stops it only if the DAW started it.
⇣ MIDI	Press and drag it onto a MIDI track: 4 bars, every voice together on **one channel** (1), at the current tempo and swing.
⇣ WAV	Press and drag it onto an audio track: a 4-bar loop rendered by a copy of the engine (a bar first, so the echo and reverb tails loop).
Drop a MIDI clip	Drag a .mid from Live or the Finder onto ÓRBITA (onto a lane): ÓRBITA takes the clip's key (the best root and scale) and its rhythm on that lane.
MIDI OUT	The notes ÓRBITA plays also leave the plug-in on channel 1. In Live, set another MIDI track's input to the ÓRBITA track to play any instrument with an orbit.
Automation	63 parameters: Gravity, Density, Phase, FM ratio, Evolve, Chaos, Bloom, Space, Echo, Warmth and the mix, root, scale, geometry, keys mode, and per voice On, Level, Pulses, Steps, Rotate, FM index, Cutoff, Ratio and the sends.
The project	Everything is saved with your set: every value, GRAVITY's target, the steps you clicked, your slots, the language and the theme.



The plug-in adds SYNC and MIDI OUT to the top bar; ⇣ MIDI and ⇣ WAV are dragged.

Tip Layer it: MIDI OUT into a drum rack (Sub as kick, Crystal as hats) and keep ÓRBITA's own sound for the bells. Or set MASTER to 0 and use it only as a generator.

Tested: the engine (ÓRBITA 1's notes and rhythms in every case, levels, silence after stop, every note on with its note off, steady sync, the XO transport) and the plug-in with pluginval at strictness 8 and auval. It hasn't been played inside Live by us yet: tell us how it goes.

EFFECTS, MIX AND RECIPES

Space, echo, warmth.



KNOB	WHAT IT DOES
BLOOM	More FM on every voice at once: from round to glittering.
SPACE · SIZE · DAMP	An eight-line reverb: how much, how big (up to ~10 s), how dark.
ECHO · TIME · FEEDBACK · TONE	A ping-pong echo in time with the tempo (1/16 to 1/2, triplets), warm in its loop.
CHORUS · WIDTH	A slow stereo shimmer · from mono to extra wide.
WARMTH · TILT · MASTER	Tape-like drive · darker or brighter · the output.
SWING · HUMAN	Delays every other sixteenth · loosens the velocities.

Recipes

Ambient that never repeats

Cenote · EVOLVE 40% · SPACE 70%, SIZE 90% · Halo STEPS 10 · HARMONY mode, hold a minor seventh chord.

Club transition

Play Deep Orbit, B on Discrete Acid, automate Gravity 0 → 100% over 16 bars, WARMTH 30%.

Bells over your bass line

TRANSPOSE mode, send your bass track's MIDI to ÓRBITA: the orbit follows every root. Mute Sub.

Generative drums

MIDI OUT to a drum rack, Sub = kick (STEPS 16), Prism = snare (PULSES −5, ROTATE +4), Crystal = hats (STEPS 12), CHAOS 15%.

ANSWERS, CREDITS AND LICENCE

Questions, answered.

I hear nothing on the web.

Press ▶ (browsers start audio only after a click), check the volume, and that the phone isn't on silent.

Live doesn't show the plug-in.

Turn on "Use VST3 Plug-in System Folders" and Rescan. If you installed by hand, run the curl line again: it clears the quarantine.

It doesn't follow Live's tempo.

SYNC must be on (top bar). With Live stopped, ÓRBITA uses its own tempo.

My clicked steps disappeared.

Moving DENSITY, PHASE, PULSES, STEPS or ROTATE draws the rhythm again. Go back with the time machine.

Too loud, or distorted?

Lower MASTER and WARMTH. With WARMTH at 0% ÓRBITA is clean; the limiter only catches peaks.

Credits

Dark Funk Durcal design · built at Polaris Sound Lab · Mérida, Yucatán, México.
Instagram @polaris.sound.lab · YouTube @PolarisSoundLab

Support it

ÓRBITA is free and complete. A donation keeps new instruments coming.

❤ DONATE (PayPal)

PART	LICENCE
ÓRBITA 2 (engine, web, plug-in)	GPL-3.0
JUCE 8 (plug-in framework)	its own terms (AGPL-3.0 / commercial)

Source and releases: github.com/drophlex/ORBITA · Web: drophlex.github.io/ORBITA

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