Klatch User Guide

Krakli · 12 November 2026

What Klatch is

Klatch is a dual scanned-synthesis instrument from Krakli: VST3, AU and standalone on Mac, and VST3 and standalone on Windows. Its sound comes from two vibrating objects, **A** and **B**, each a ring or a string of 128 masses joined by springs. You set them moving by striking or pulling them, and every note you play listens to their shapes at its own pitch. Where the objects come close they can bond or collide. A third object, **Surface C**, travels on a path of its own and presses into them, the way your mouse does on the screen.

The result is sound that is always slightly alive. A held chord keeps changing because the objects keep moving, and you can reach in with the mouse and push them while you play.



- **Two scanned objects** with their own materials, shapes, scan paths and octaves.
- **Contact:** Bond and Collide between A and B; Press, Collide and Bond between Surface C and both.
- **A moving third body**, Surface C, on an orbit, sweep, bounce, figure 8 or wander path, free or synced to tempo.
- **The shape strip:** volume and filter envelopes, six filter types (including Vowel and Comb), two LFOs and a modulation envelope that can move the physics itself.
- **Chorus, delay and reverb**, with levels calibrated so the effects change the space more than the loudness.
- **20 factory presets**, a **randomiser** that builds new sounds that work, and **patch files** you can save and load.

How scanned synthesis works

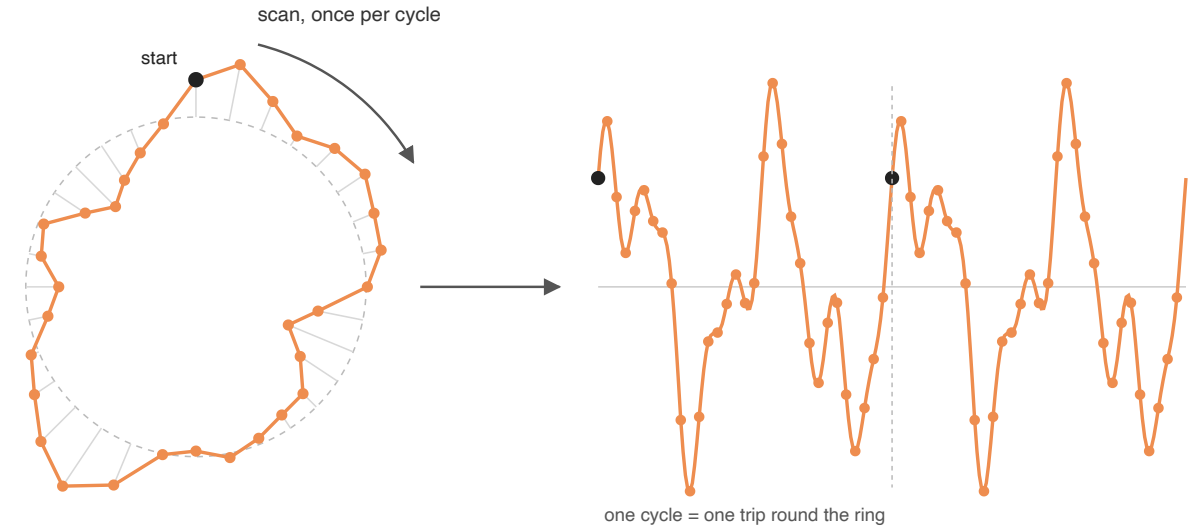
Most synthesizers make a waveform from a formula (an oscillator) or a stored table (a wavetable or sample). Scanned synthesis makes it from the shape of an object that is moving.

The idea

Scanned synthesis was developed by Bill Verplank, Max Mathews and Rob Shaw at Interval Research around 1998 to 2000. Their starting point was that two very different speeds are at work in music:

- **The speed of gesture.** Hands, bows, breath and vibrating plates change a sound over tens or hundreds of milliseconds. That's what we hear as a sound "doing something": swelling, settling, wobbling.
- **The speed of pitch.** The waveform itself repeats tens to thousands of times a second. That's what we hear as the note.

Scanned synthesis keeps the two apart. A simulated object moves at the speed of gesture. Its shape is then read ("scanned") from one end to the other, over and over, at the speed of pitch. Each trip along the object is one cycle of the waveform.



A ring of masses on springs, moving slowly

The sound: the ring's shape, read at the note's pitch

Because the object keeps moving, the shape that is read keeps changing, and so does the tone. Because the reading speed is set only by the note, the pitch stays steady however the object moves. You get a stable note with a living, evolving timbre, and the evolution follows physical rules, so it sounds natural: things ring, settle and bounce rather than morph in straight lines.

The object: masses and springs

The object is a chain of masses. In Klatch each body has 128.

- **Neighbour springs** join each mass to the next. When one mass is pushed, it pulls its neighbours and a wave travels along the object. Stiffer springs (**Tension**) make the waves travel faster and the motion livelier.
- **Mass** (**Weight**) slows everything down: heavier objects move more lazily.
- **Centring springs** (**Springiness**) pull each mass back to where it rests, as if the object were mounted on rubber. They make the whole object spring back and give it a firmer, more bell-like motion.
- **Damping** (**Sustain** and **High damp**) takes energy away, so a struck object settles back to rest. High damp takes away the fine, fast ripples first, the way a real object loses its high overtones before its body tone.

- **Nonlinear springs** (**Nonlinear**) get stiffer the further they're stretched, so a hard strike behaves differently from a soft one: louder notes come out brighter and more agitated.

A **ring** joins its two ends, so the waveform loops round seamlessly. A **string** has its two ends fixed, like a guitar string, so the waveform starts and ends at zero and has a different, often thinner character.

What you hear

The shape of the object decides the tone:

- A **smooth, gently curved** object gives a soft tone that's mostly the fundamental.
- A **jagged** object, with sharp kinks between neighbouring masses, gives a bright tone full of high harmonics.
- As a struck object **settles**, its kinks smooth out and its tone mellows, much as a plucked string does.

Because one trip round the object is always exactly one cycle, the sound is harmonic (in tune with the note) as long as the object moves slowly compared with the pitch. When the object moves faster, the changes within each cycle add a roughness or shimmer around the note. **Physics rate** controls that: it sets how fast the simulation runs, and so how quickly the shape moves.

The scan path

The waveform doesn't have to read the masses in order. The **scan path** is the order the masses are read in, and it's like moving your ear around the object: the motion is the same but the waveform is different.

- **Linear** reads them in order, 1 to 128: the most natural tone.
- **Leap** jumps five masses at a time, so neighbouring points of the waveform come from different parts of the object: brighter and more complex.
- **Bounce** alternates between the two ends, working inwards: hollow and reedy.
- **Scatter** reads them in a fixed random order: noisy and gritty, but still pitched.

How you play the object

In a real scanned instrument you touch the object. Klatch gives you several ways to do it:

- **Strikes:** every note hits the object (a hammer, a pluck or a scrape), or pulls a point out while the key is held and lets it snap back when you let go.
- **The mouse:** drag any curve on the stage and the object bends under your pointer; let go and it rings.
- **Another object:** A and B can be bonded, so vibration flows from one to the other, or they can collide.
- **Surface C:** a third object that travels on a path and keeps pushing into A and B, so they never quite settle.
- **Modulation:** the LFOs and the mod envelope can change how the objects behave while a note sounds.

What makes Klatch different

Classic scanned synthesis has one object. Klatch has two scanned together, so every note is a blend of two related but different moving shapes, and they can interact physically. Surface C adds a moving obstacle, so the sound is driven continuously rather than only struck. Notes share the objects, as they would on a real instrument: play a chord and every note hears the same vibrating bodies at its own pitch.

Installing

Mac (macOS 12 or later, Apple silicon or Intel): open `Klatch-<version>-mac.pkg` and follow the installer. It is signed and notarised by Apple, so it opens without warnings. **Customize** lets you leave out any of the three parts:

- **VST3:** `Klatch.vst3` in `/Library/Audio/Plug-Ins/VST3`.

- **AU:** `Klatch.component` in `/Library/Audio/Plug-Ins/Components`.
- **Standalone:** `Klatch.app` in Applications. Choose your audio and MIDI devices in its Options menu.

Then rescan plugins in your DAW. In Logic, a new AU sometimes only appears after you restart the Mac or reset the plugin manager.

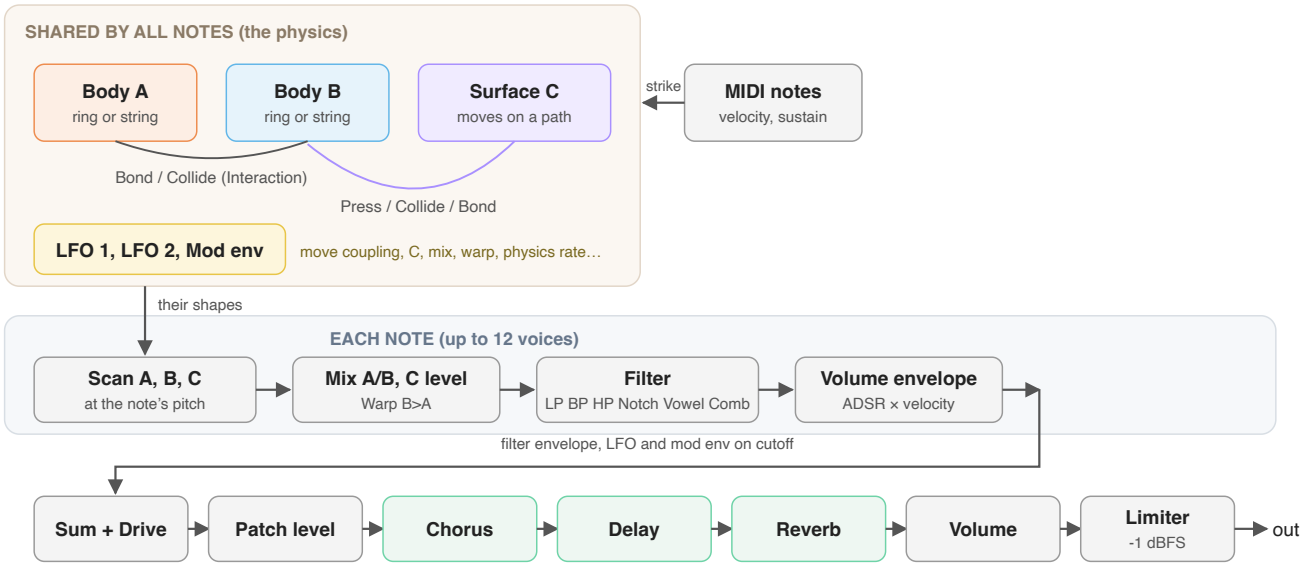
Windows (64-bit):

- **VST3:** copy the `Klatch.vst3` folder to `C:\Program Files\Common Files\VST3` (this needs administrator rights).
- **Standalone:** `Klatch.exe` runs on its own. Choose your audio and MIDI devices in its Options menu.

Quick start

1. Load Klatch on an instrument track and play a chord. **Wrecking Ball** is the first preset.
2. Step through the presets with **<** and **>** next to the preset name, and watch how each one moves on the stage.
3. Drag a curve on the stage while a note sounds. The body bends under the pointer and rings when you let go.
4. Drag the **A**, **B** or **C** handle to move a body. Moving B into A with **Bond** on joins them; with **Collide** they rattle.
5. Open **Random...** and choose **Pad**, **Pluck** or another kind of sound. Every result has been played and levelled before you hear it, so it's safe to keep pressing.
6. When you find something you like, press **Save**.

Signal flow

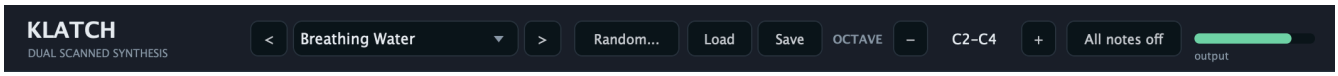


The bodies are **shared**: there is one A, one B and one C however many notes you play. Each note (up to 12) reads all of them at its own pitch, then has its own filter and envelopes. The notes are summed, driven, levelled, sent through the effects and finally a safety limiter.

The window

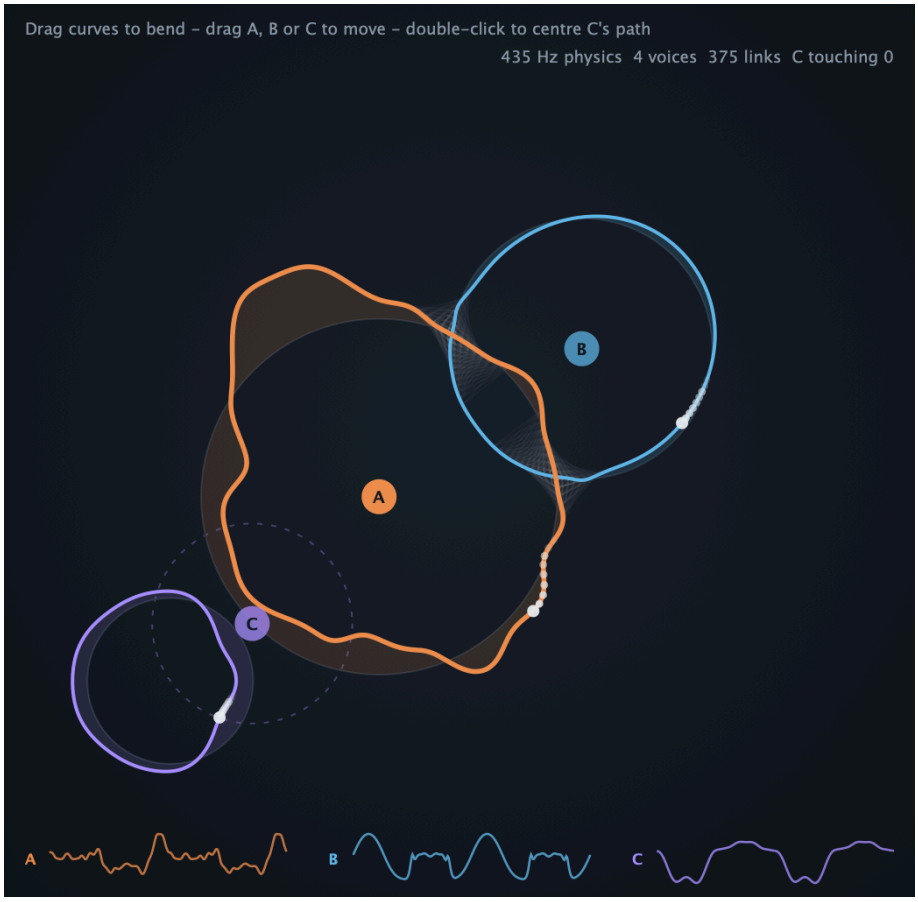
The window is 1060 × 800 and can be scaled from 70% to 150% by dragging its bottom-right corner. On a small screen it opens at a size that fits.

Top bar



Control	What it does
< Preset >	Steps through the factory presets, or pick one from the list. Choosing a preset never makes a sound; it only calms the bodies. A random or loaded sound shows its own name here.
Random...	The randomiser menu: new sounds, crossbreeds, new parts, Vary and Undo. See The randomiser.
Load / Save	Opens or saves a `.klatch` patch file. See Patches.
Octave	Shifts what the keyboard plays by an octave at a time (the range the test keyboard shows, such as C2–C4). Notes already held are released correctly.
All notes off	Stops every note and calms all three bodies.
Output meter	The output level. It reads "limiting" with the amount when the limiter is working.

The stage

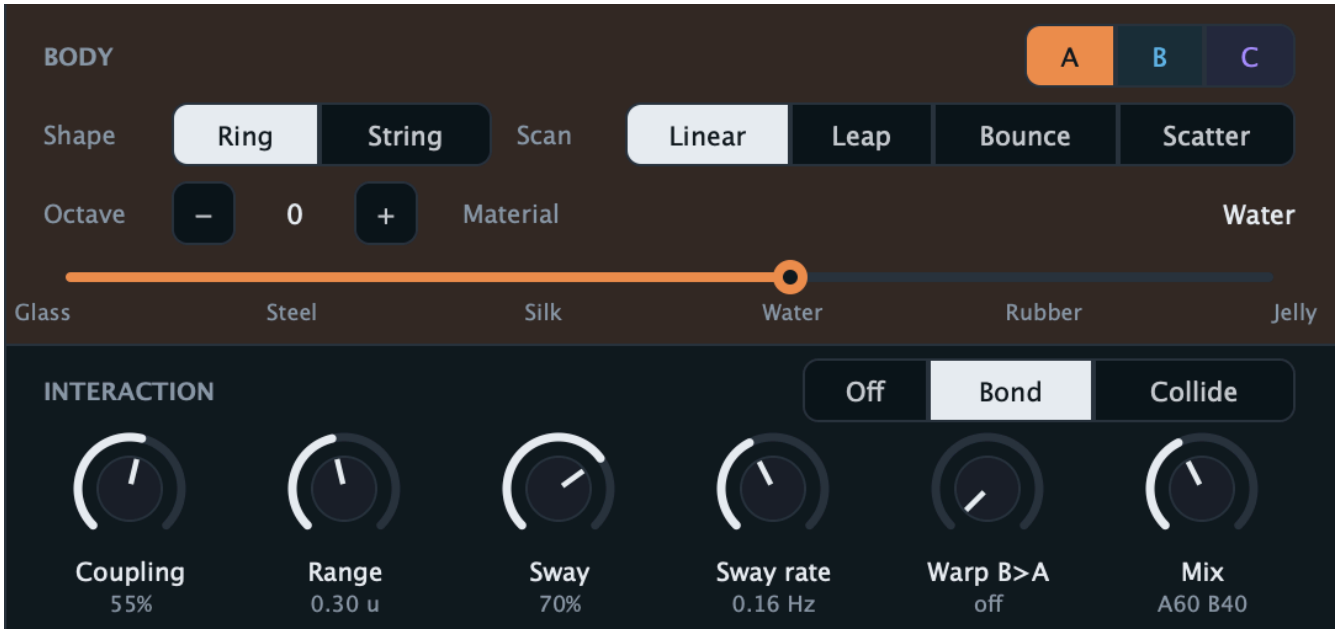


The stage draws the bodies as they move. Each curve is a body's shape; the faint fill shows how far it is from rest. Bright dots are the scan heads. The three strips at the bottom show the waveform each body is producing right now.

- **Drag a curve** to bend that body. It follows the pointer and rings when you let go.
- **Drag a handle** (A, B or C) to move a body. Selecting a body with its handle also shows its controls in the Body section.
- **C's path** is drawn dashed. Dragging C's handle moves the centre of the path; **double-click** anywhere to centre C's path there.
- The line at the top shows the physics rate, how many notes are sounding, how many contact links A and B have, and how many points C is touching.

Every position is a parameter, so you can automate it in your DAW.

Body



Choose **A**, **B** or **C** at the top right. The Body section and the Physics page are tinted with that body's colour (orange, blue or purple) so you can see which one you're editing.

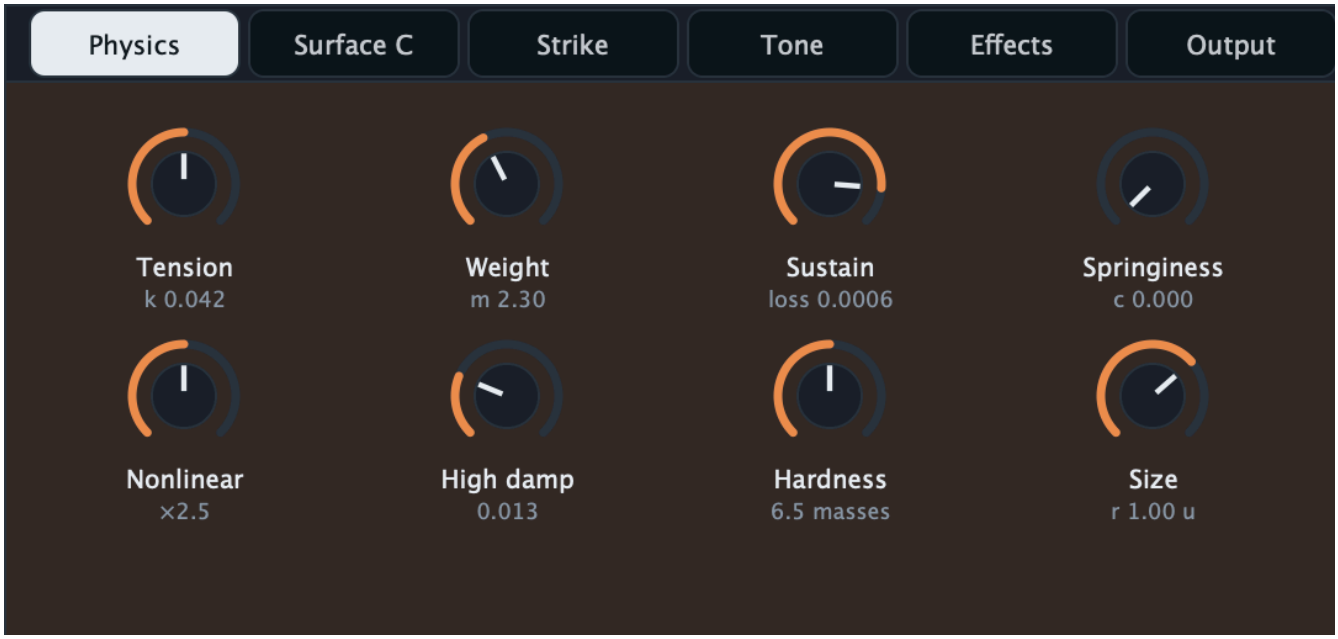
Control	What it does
Shape	**Ring** (a closed loop) or **String** (fixed at both ends).
Scan	The scan path: Linear, Leap, Bounce or Scatter (see The scan path).
Octave	Reads this body one or two octaves above or below the note. A body an octave up adds a bright overtone layer.
Material	Sets the seven physics controls together along a line of materials: Glass, Steel, Silk, Water, Rubber and Jelly. In between, it blends neighbouring materials. Once you change any physics control yourself it shows **Custom**.

Interaction

Control	Range	What it does
Off / Bond / Collide		How A and B affect each other where they come close. **Bond** joins nearby masses with springs, so vibration flows between them. **Collide** lets them bounce off each other when their curves meet: rattles, buzzes, snares.
Coupling	0–100%	How strongly they bond or collide.
Range	0.05–0.6 units	How close two points must be to interact. The stage draws the links when Bond is on.
Sway	still–100%	Moves B slowly towards and away from A, so the contact keeps changing.

Control	Range	What it does
Sway rate	0.03–2 Hz	How fast B sways.
Warp B>A	off–100%	Uses B's waveform to bend where A is read (phase modulation), for growling, vocal and metallic tones. It works whether or not the bodies touch.
Mix	A only–B only	The balance of A and B in the sound (equal power).

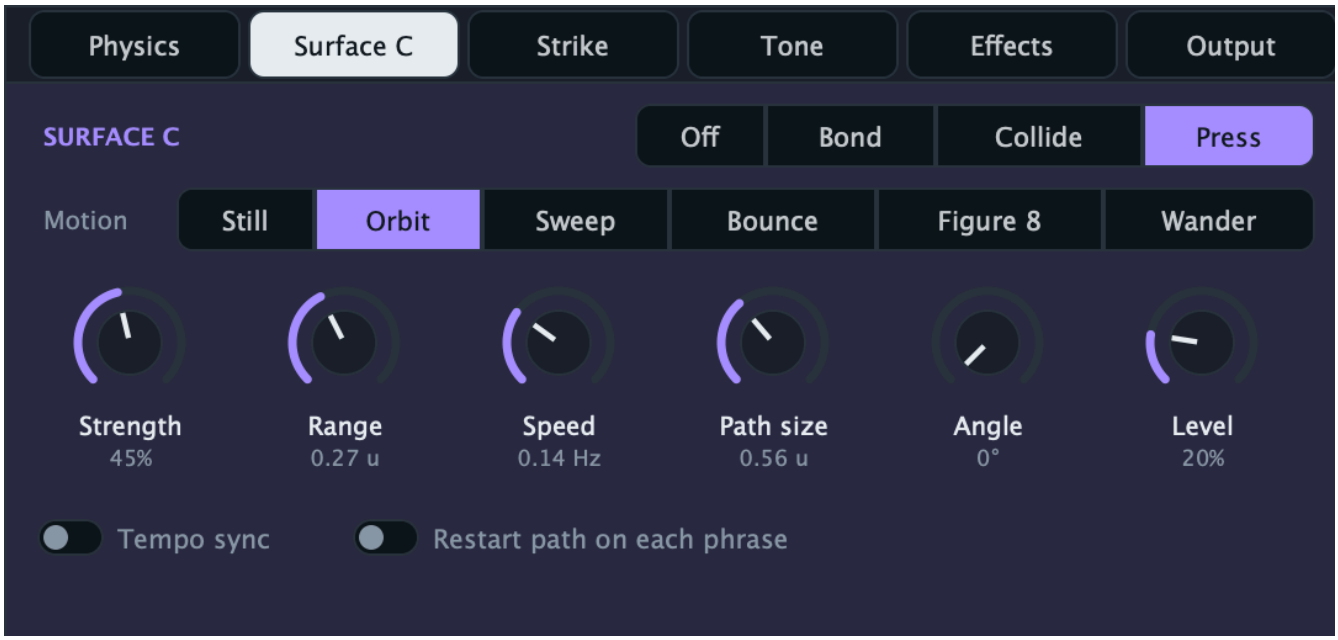
Physics page



These belong to the selected body.

Control	Range	What it does
Tension	k 0.004–0.45	Stiffness of the springs between neighbours. Higher: faster, livelier motion and a brighter tone.
Weight	m 1–8	Mass of each point. Heavier: slower, smoother motion.
Sustain	loss 0.06–0.00025	How long the body rings. High values ring for a long time.
Springiness	c 0–0.15	Centring springs that pull each point back to rest: a firmer, bell-like bounce.
Nonlinear	×1–×7	Springs stiffen when stretched, so harder strikes sound brighter and wilder.
High damp	0–0.2	Damps fine ripples first, mellowing the tone as it decays.
Hardness	12–1 masses	How narrow the strike is. Hard (narrow) strikes are bright and clicky; soft ones round and warm.
Size	r 0.35–1.3 units	The body's size on the stage. It doesn't change the tone directly, but it changes where bodies meet.

Surface C page



Surface C is a third body that moves. Its own physics, shape, octave and size are on the Body section and Physics page when **C** is selected; this page sets how it moves and what it does.

Control	Range	What it does
Off / Bond / Collide / Press		**Press:** C is solid and pushes A and B aside as it passes; they wrap round it and snap back as it leaves. **Collide:** the same, but C dents as much as what it hits. **Bond:** C exchanges vibration with whatever it touches. Press and Collide can make sound on their own, with no strike at all.
Motion		**Still**, **Orbit** (a circle), **Sweep** (back and forth), **Bounce** (back and forth at constant speed, turning sharply), **Figure 8** or **Wander** (an irregular, never-repeating path).
Strength	0–100%	How hard C presses or how strongly it bonds.
Range	0.05–0.6 units	For Bond: how close points must be to link.
Speed	0.02–12 Hz	Trips round the path per second. With **Tempo sync** on, **Cycle** sets it in beats instead (1/16 to 8 bars).
Path size	0–1.6 units	How far C travels from the centre of its path.
Angle	0–180°	Turns the path. Sweeps and bounces work best aimed straight through a curve.
Level	silent–100%	Mixes C's own scanned sound in. At silent, C only shapes A and B.
Restart path on each phrase		The first note after all keys are up starts C from the beginning of its path, so a rhythmic C lines up with your playing.

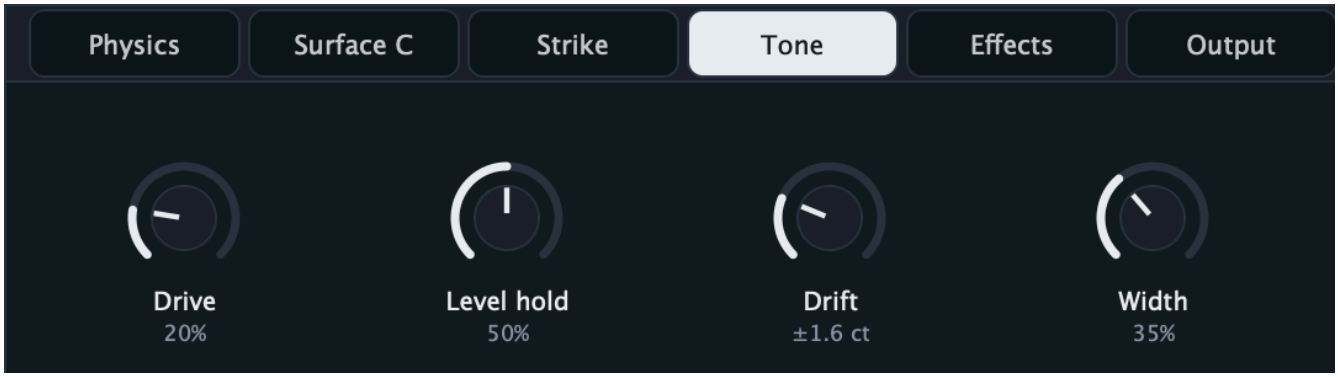
Strike page



How each note sets the bodies moving.

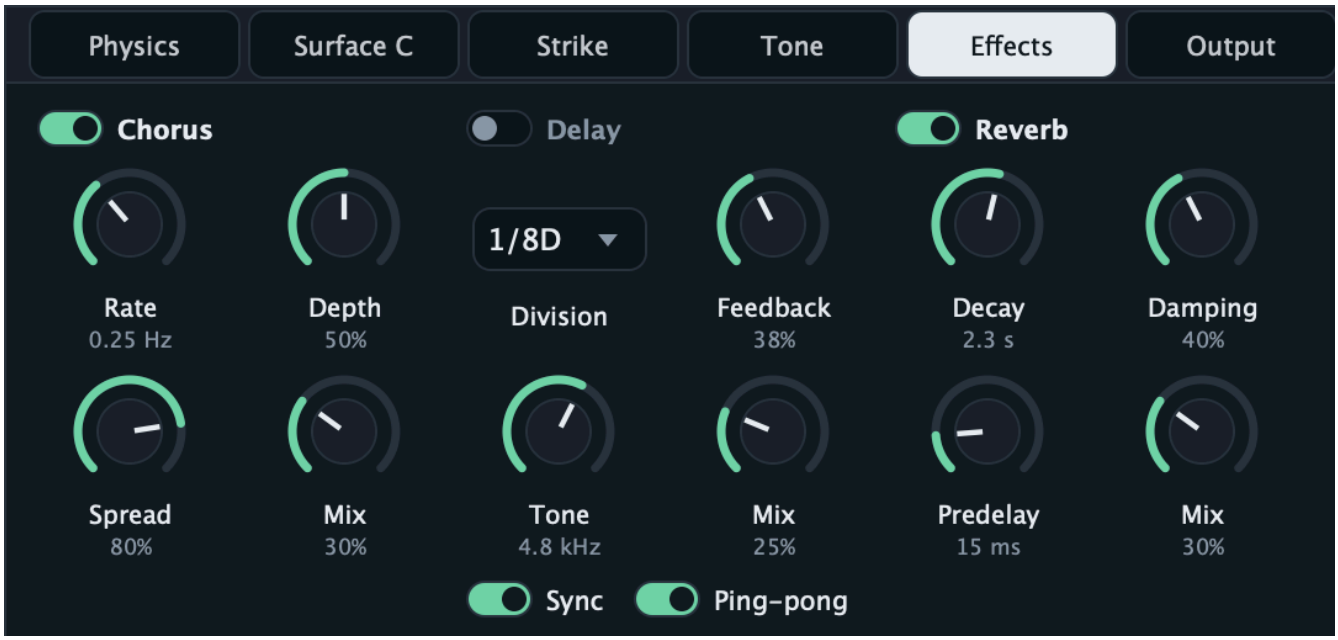
Control	What it does
A / B / Both	Which bodies a note strikes.
Hammer	A quick blow (velocity), like a mallet.
Pluck	Pulls a point out into a triangle and lets it go, like a plucked string.
Scrape	A burst of random displacement over a wide area: noisy, bowed or brushed attacks.
Pull	Key down drags a point out over **Pull time**; key up lets it snap back. **Depth** is how far it pulls; **Auto release** lets go by itself after a set time; **Ring after** is how long the note keeps sounding after the snap.
Strike level	How hard. Velocity scales it too. Each extra held note strikes a little softer, so chords don't hit four times as hard as single notes.
Position	Where on the body the strike lands (mass 0 to 128). Striking near a string's end gives a thinner, brighter tone.

Tone page



Control	Range	What it does
Drive	0–100%	Soft saturation of the summed notes. It's levelled so it changes the tone more than the loudness.
Level hold	0–100%	At 0 each body keeps its natural loudness, so struck sounds decay. Higher values hold the scanned waveform at a steady level, so even a decaying body keeps sounding (the shape still changes).
Drift	±0–25 cents	A slow pitch wander for each note, A and B in opposite directions, so they beat gently against each other.
Width	0–100%	Reads the right channel from a different point of each body, for a wider stereo image.

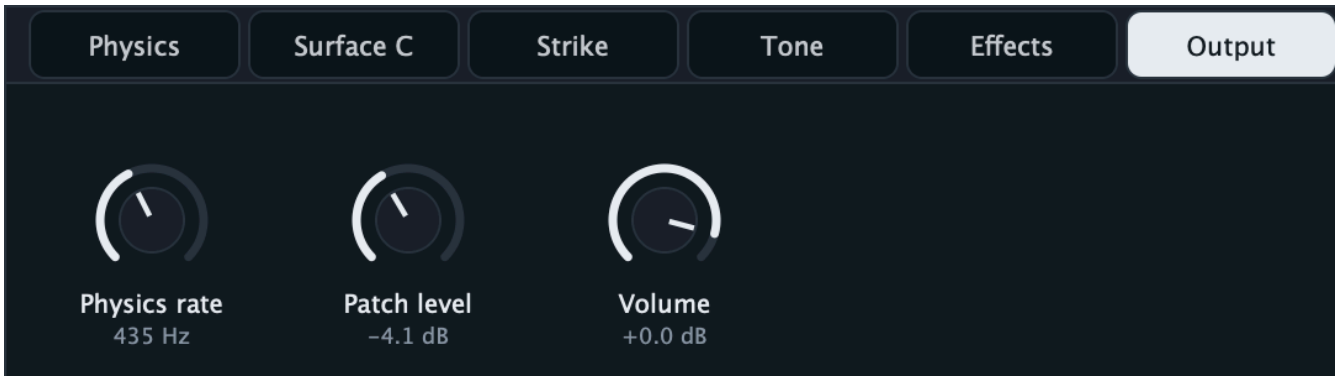
Effects page



Each effect has its own switch. Their mixes are equal-power, and the reverb is levelled by its decay, so turning effects up changes the space, not the volume.

Control	Range	What it does
Chorus: Rate, Depth, Spread, Mix	0.05–5 Hz	A stereo chorus. Spread sets how far apart the two sides move.
Delay: Time or Division, Feedback, Tone, Mix	10 ms–2 s	A delay, free (Time) or synced to the host tempo (Division, from 1/32 to a whole bar, with dotted and triplet values). Tone darkens the repeats; **Ping-pong** bounces them left and right.
Reverb: Decay, Damping, Predelay, Mix	0.3–12 s	An eight-line reverb. Damping darkens the tail; Predelay delays its start by up to 100 ms.

Output page



Control	Range	What it does
Physics rate	120–3000 Hz	How fast the simulation runs: how quickly the bodies move. Low rates give slow, smooth evolution; high rates give fast, shimmering, sometimes rough tones.
Patch level	±18 dB	The sound's own level, set for each factory preset and random sound so they all match.
Volume	−48 to +6 dB	Your listening level. It isn't stored in a patch.

A limiter at −1 dBFS sits at the very end, so nothing clips. It adds 1.5 ms of latency, which your DAW compensates for.

The shape strip



Everything that shapes a note through time sits across the bottom of the window, always in view. Each envelope draws its own shape as you set it.

Volume envelope

Attack, **Decay**, **Sustain** and **Release** for each note's volume.

Control	Range	What it does
Attack	2 ms–2 s	How long a note takes to reach full volume.
Decay	5 ms–10 s	How long it then takes to settle on the sustain level.
Sustain	0–100%	The level while you hold the key. At 0 a held note dies away by itself, like a plucked string.
Release	20 ms–5 s	How long it takes to fade after you let go.

Velocity scales each note's volume too.

Filter

Each note has its own filter, chosen with the six buttons at the top.

Type	What it does	Cutoff becomes	Res becomes
LP	Low-pass: removes the highs. The classic.	Cutoff	Resonance
BP	Band-pass: keeps a band around the cutoff. Thin, nasal.	Cutoff	Resonance
HP	High-pass: removes the lows.	Cutoff	Resonance
Notch	Removes a narrow band: a hollow, phasey colour.	Cutoff	Resonance
Vowel	Three formant filters that slide through the vowels A, E, I, O and U. Moving the cutoff makes the sound talk.	**Vowel**	**Focus**: narrower formants, a sharper voice
Comb	A tuned delay with feedback. Its peaks sit on the same harmonics of every note, because it follows the keyboard. Sweeping it gives flanging and metallic, plucked or tube-like colours.	**Tune** (40 Hz to 4 kHz at middle C)	**Feedback**

The filter has its own envelope: **Attack**, **Decay**, **Sustain** and **Release**, as for the volume. **Env amt** (0 to 6 octaves) sets how far it opens the filter; **Invert env** makes it close the filter instead. Harder notes open it further. The cutoff also follows the keyboard by half (an octave up the keyboard raises it half an octave), except for Vowel, which stays put, and Comb, which follows fully.

LFO 1 and LFO 2

Two low-frequency oscillators that move things repeatedly.

Control	Range	What it does
Shape		Sine, Triangle, Saw down, Saw up, Square, **S&H** (a new random value each cycle) or **Drift** (a smooth random wander).
Destination		What it moves. See the list below.
Rate	0.02–20 Hz	Speed. With **Sync** on it's set in beats instead (4 bars to 1/16, with triplets).
Amount	–100% to +100%	How far, and which way. The ring fills out from the centre.
Fade in	off, 50 ms–10 s	Brings the LFO in gradually from the start of each phrase, for delayed vibrato.

Mod envelope

One envelope for the whole phrase: it starts when you play a note with no keys held and releases when you let go of the last one. Use it for slow changes across a held chord. It has **Attack** (5 ms–10 s), **Decay** and **Release** (20 ms–10 s), **Sustain**, a **Destination** and an **Amount** (–100% to +100%).

Destinations

The LFOs and the mod envelope can each move:

Destination	What moves
Cutoff	The filter, up to ±4 octaves (or the vowel or comb tuning).
Pitch	Every note, finely at small amounts (vibrato) and up to an octave at full.
Volume	Tremolo or swells. It only ever turns the sound down, never up.
Mix A/B	The balance of the two bodies.
Coupling	How strongly A and B bond or collide.
C strength	How hard Surface C presses or bonds.
C speed	How fast C travels its path.
C level	How much of C's own sound you hear.
Warp	Warp B>A.
Physics rate	How fast the bodies move, ±1 octave.

The LFOs and the mod envelope are shared by all notes, like the bodies, so a chord moves as one. Moving **Coupling** or **C strength** changes the physics itself, so the shapes change differently over a note, not just the filter on top of them.

The keyboard and shortcuts

The keyboard at the bottom plays Klatch; click and drag along it for glissandi. Klatch also responds to MIDI notes with velocity, the sustain pedal and All notes off.

Key	Action
Z / X	Octave down or up.
Space	Strike the bodies without playing a note.
Esc	All notes off.

The randomiser

Random... opens a menu:

- **New sound:** Any, Pad, Pluck, Bell, Bass, Percussion or Drone. Each section (each body, the interaction, Surface C, the strike, the tone, the effects) is taken from a factory preset of that kind or drawn from ranges that suit it. The bodies are placed so their contact can actually happen: bonded bodies overlap or nearly touch, colliding ones get a small gap they must swing across, and Surface C's path runs through a curve.
- **Envelopes and LFOs are always fresh.** Each new sound first picks a shape through time (struck, held, swelling, blooming, pulsing or fading), weighted by its kind, then sets the envelopes, filter type, LFOs and mod envelope to suit it. Modulation only goes to things that do something in that patch.
- **Crossbreed two factory presets:** each section from one parent or the other.
- **New part only:** Body A, Body B, Interaction, Surface C, Note strike, Tone, Effects, or Envelopes and LFOs. Everything else stays.
- **Vary this sound:** Subtle, Medium or Strong. Every knob moves a little (Strong moves them a lot); switches and choices stay as they are.
- **Undo:** steps back through random sounds and loaded patches, up to 30 times.

Every result is played offline before you hear it. Anything silent, unstable, off-centre or harsher than the factory sounds of its kind is rejected, and Patch level is set so it's as loud as the factory presets.

Patches

- **Save** writes the current sound to a `.klatch` file. The file's name becomes the sound's name.
- **Load** opens one. **Undo** in the Random... menu returns to what you had before.
- Patches start in `Documents/Krakli/Klatch/Patches`; after that Klatch remembers the last folder you used.
- A patch stores every sound setting, the material positions and the name. **Octave** and **Volume** are yours and aren't stored.
- A patch saved now will load in later versions with any newer controls at their defaults, so it keeps sounding the same.

Your DAW also saves the whole state with your song, as with any plugin.

Factory presets

No.	Preset	Kind	What it shows
1	Wrecking Ball	Percussion	Surface C bounces through the bodies in time with the song.
2	Rim Runner	Drone	C orbits round A's rim, pressing it as it goes.
3	Slingshot	Percussion	Pull strikes on A, which then collides with a string.
4	Stretched Water	Pluck	Pull strikes on a water ring bonded to glass.
5	Breathing Water	Pad	Bonded bodies with sway and an orbiting C.
6	Rattle Drum	Percussion	A ring colliding with a string, and a fast synced C.
7	Twin Bells	Bell	Glass and steel bonded, with delay.
8	Bowed Pair	Pad	C sweeps slowly across the bonded pair, like a bow.
9	Warped Glass	Bell	Warp B>A with a wandering C.
10	Wire & Membrane	Drone	A string colliding with a jelly membrane.
11	Glass Harmonica	Pad	No strike at all: C's orbit makes the whole sound.

No.	Preset	Kind	What it shows
12	Kalimba Tines	Pluck	Plucked steel strings.
13	Rubber Bounce Bass	Bass	Colliding rubber and jelly an octave down.
14	Drifting Silk Pad	Pad	Silk and water with a figure 8 C, chorus and delay.
15	Tidal Bloom	Pad	The mod envelope draws the bodies together through each phrase; an LFO moves the mix.
16	Pulse Engine	Drone	A synced square LFO on Volume, a drifting C speed and a slow filter swell.
17	Glass Swell	Pad	Slow volume and filter attacks, delayed vibrato and C pressing harder over time.
18	Snapped Wire	Pluck	A decaying pluck with S&H on the physics rate.
19	Talking Rings	Pad	The Vowel filter, drifting and opening through each phrase.
20	Comb Harp	Pluck	Plucked strings through a slowly swept, tuned comb.

Tips

- **Start from the stage.** Before reaching for a knob, drag the bodies around while you hold a chord. Where they meet matters more than almost any setting.
- **Bond for blends, Collide for character.** Bond makes A and B one richer instrument; Collide adds attack and rattle that changes with how hard you play.
- **Let C do the playing.** With Press on and strike turned down, a slow Orbit or Sweep gives sounds that never stop moving. **Glass Harmonica** is made this way.
- **Level hold for pads, not plucks.** Turn it up for sustained, steady sounds; down so struck sounds decay naturally.
- **Physics rate is a tone control.** Lower it for slow, smooth sounds; raise it for bright, agitated ones.
- **Move the physics, not just the filter.** A mod envelope on Coupling or C strength gives slow changes that a filter sweep can't.
- **Vowel with a slow LFO** (Drift shape) on Cutoff makes a voice that never quite settles.
- **Comb with high Feedback** and a short volume decay turns any body into a tuned string or pipe.
- **Random... then Vary.** Find a direction with a new sound, then use Vary Subtle to explore around it, and Undo if you go too far.

Levels

Every factory preset is measured and trimmed to the same loudness, about −18 dB RMS, and they sit within 2.5 dB of each other. Random sounds are levelled the same way. Drive, resonance and the effects are compensated so they change the sound more than its level.