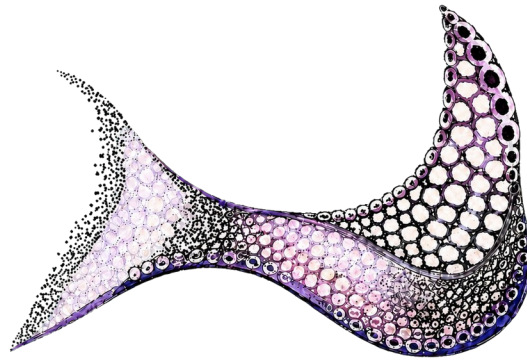




Fishtail

USER GUIDE

iPhone + iPad / AUv3 / iOS and iPadOS 17+

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01 / FISHTAIL FIELD MANUAL

First sound

One Fishtail, one receiver, one calm signal path.

ESSENTIAL SIGNAL PATH

Fishtail 00 All MIDI output → receiving instrument's MIDI input → receiver audio → AUM mix/output

THE HEART OF FISHTAIL

Pitch/Tempo Lock keeps pitch and pulse mathematically related: tempo is derived from the selected reference frequency through an integer divisor. This relationship is the musical centre of Fishtail and the current that makes each piece swim.

Quick start in AUM

1. In AUM, load Fishtail AUv3 as an Audio Instrument.
2. Add the synthesizer or sampler that will receive Fishtail's MIDI.
3. In AUM's MIDI Routing Matrix, connect Fishtail 00 All (MIDI output) to the receiving instrument's MIDI input.
4. Confirm the receiving instrument's audio reaches AUM's mix/output, then open Fishtail and choose D4 Gentle Source.
5. Leave Tuning on Equal Temperament and Output on Normal 12-ET.
6. Tap Link to arm Fishtail and open Ableton Link settings. Enable and connect Link, enable Start/Stop Sync, then tap Generate.
7. Tap Play, or use AUM's synchronized transport. Cue, Stop, Loop, and Rate remain available in Fishtail.
8. **Open Takes when you want to revisit, order, or export a generation. Save a .fishtail project when you want to continue later.**

LISTEN SAFELY

Lower monitoring levels before making new MIDI routes, enabling reference audio, or changing the receiving instrument. Pulse and Ticker are reference monitors, not the generated musical audio.

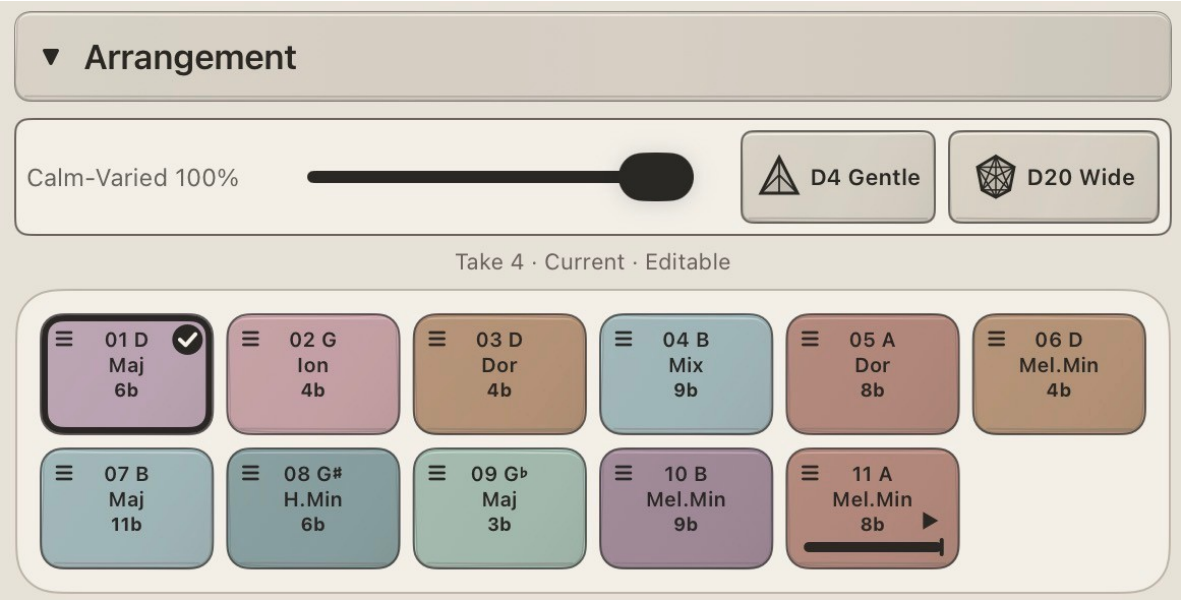
02 / FISHTAIL FIELD MANUAL

The instrument map

The same four musical sections, reflowed for the space available.

Compact layout	Wide layout
Structure	Left: Structure
Arrangement	Left: Arrangement
Feel	Right: Feel
Intonation	Right: Intonation

On a narrow host window or phone, the panels form one vertical sequence. On a wide iPad window, Structure and Arrangement occupy the left column while Feel and Intonation occupy the right. The musical controls do not change meaning when the layout reflows.



Arrangement at iPad width: Take identity, selection, and playhead remain separate visible cues.

PERSISTENT CONTROLS

Project, the Take control, Generate or Gen, transport, Settings, and status remain available outside the scrolling instrument area. Selected-take exports live inside Takes.

Arrangement

Design the journey section by section.

Start a form

D4 Gentle Source creates a musically weighted, generally compact starting form. D20 Wide Form permits broader variation. Before the first take, choose one and then Generate. Once a take exists, D4 or D20 rolls and Generates the new form in one action. The names describe musical behaviours, not equal-probability dice simulations.

Edit the selected section

- **Bars** sets section length.
- **Key and Mode** define the tonal centre and pitch collection.
- **Time Sig** defines the section meter.
- **Cadence** shapes the ending; Role and Treatment shape the section's job.
- **Expression & Bloom** opens contour, register, lift, pressure, and Keyboard Bloom.

Use the arrow, Add, Duplicate, and Delete controls to reshape the form. The first section remains the primary source section, so some Role and Treatment choices are intentionally restricted.

Section action menu. Choose Export Section or Export Section Channels. Section export uses the processed map, including composer processing beyond the visible draft.

Structure

Choose the compositional character before shaping the details.

Composer	Character
Imitation & Invention	Related entries and answers; a clear first exploration.
Counterpoint	Independent lines that cooperate without collapsing into one voice.
Fugue State	Extended fugal treatment; the processed piece may exceed the visible draft form.
Dub Gravity	Grounded motion, space, and dub-informed behaviour. Dub Intonation is suggested, never forced.

Voices and movement

Voices/Layout chooses the active register layout. Breathing, Density, and Rhythm Motion control continuity and activity. Pedals hold or reinforce selected voice regions where the layout permits them. Gravity Velocity is in Settings > Generation.

A GENTLE PLACE TO BEGIN

Try Imitation & Invention, a four-part layout, modest Density, generous Breathing, and a little Rhythm Motion. Then alter one dimension at a time and Generate.

Generation boundary

Structure and other recipe controls shape the next Generate. They never rewrite the immutable Current take. When visible edits are waiting, the main Take control says Changes.

05 / FISHTAIL FIELD MANUAL

Feel

Move the performance without losing its form.

Reference, tempo, and Rate

PITCH / TEMPO LOCK

Fishtail binds pitch and pulse: tempo is derived from the selected reference frequency through an integer divisor, so tonal reference and musical time remain mathematically related.

$$BPM = \frac{60 f_{ref}}{n} \quad f_{ref} > 0, n \in \mathbb{N}, n \geq 1$$

$$220 / 220 \Rightarrow 60 \text{ BPM}$$

BPM = 60 × reference frequency / n; at 220 Hz with n = 220, BPM = 60.

Changing Pitch or Fine changes the selected reference frequency and therefore the derived BPM; Tempo chooses n. This relationship does not mean that a section's key is the reference pitch. Generate freezes the internal tempo-lattice shape; Reference, Tuning, Output, and Tempo remain live. With Link active, Rate (¼×–4×) changes live playback on the next beat without altering the take or its MIDI export.

Feel mode	Use
Natural	The most restrained interpretation.
Hybrid Drift	A balance of stable and moving behaviour.
Living Drift	A more active sense of motion.
Comptroller Time	Experimental movement away from straight bar positions; may alter apparent bar and piece length.

Rational Swing is regular; Irrational Swing is less regular. Each changed control shows Next Generate. Both take effect on the next Generate; neither mutates Current.

LIVING GLAZE

Successful notes travel inward and stain the central sphere. The glaze remembers the live project while it stays open; New, Open, or reopening begins visually empty. Reduce Motion preserves the musical state while calming visible movement.

Intonation

Reference, tuning model, and output form one audible contract.

Reference

The default is A3 = 220 Hz, equivalent to conventional A4 = 440 Hz. Presets include A3 = 216 Hz and C4 = 256 Hz, and an exact frequency may be entered directly. Fine is shown in cents. Reference note and Hz set Fishtail's pitch centre, tempo relation, reference Pulse, and visual colour lock.

Tuning models

Fishtail includes Equal Temperament, Just Major, Just Minor, Pythagorean, Dub Intonation, Super Symmetry Intonation, and Werckmeister III. Each model is anchored to the selected reference note and frequency.

TARGET-FREQUENCY MODEL

For note m , Fishtail measures displacement from the selected reference note, finds its pitch class, calculates octave displacement, and anchors the target directly to the selected reference frequency.

$$d = m - m_{ref}$$

$$s = d \bmod 12$$

$$o = \lfloor (d - s) / 12 \rfloor$$

$$f(m) = f_{ref} r_s 2^o$$

Direct reference anchoring: pitch-class ratio and octave displacement determine $f(m)$.

Changing the reference moves the whole table while preserving its internal ratios. Super Symmetry Intonation deliberately treats the selected reference as a hidden fundamental and begins the audible table at $\sqrt{(9/8)}$ above it.

What remains live

Generate freezes notes, velocities, sections, and internal timing. Reference, Tuning, Output, and Tempo remain live and apply immediately to Current. Changing Output while notes sound first releases the old notes. MIDI export captures the current tuning when Export is pressed; Rate remains playback-only.

Tuning character

Seven pitch worlds, each anchored to the selected reference.

Equal Temperament

Twelve equal logarithmic semitone steps: the ordinary MIDI and DAW expectation.

Slots 0-11 (ratio / cents): 1/1 / 0.00; $2^{(1/12)}$ / 100.00; $2^{(2/12)}$ / 200.00; $2^{(3/12)}$ / 300.00; $2^{(4/12)}$ / 400.00; $2^{(5/12)}$ / 500.00; $2^{(6/12)}$ / 600.00; $2^{(7/12)}$ / 700.00; $2^{(8/12)}$ / 800.00; $2^{(9/12)}$ / 900.00; $2^{(10/12)}$ / 1000.00; $2^{(11/12)}$ / 1100.00.

Just Major

5-limit major just intonation, with pure thirds and fifths for stable major-mode consonances.

Slots 0-11 (ratio / cents): 1/1 / 0.00; 16/15 / 111.73; 9/8 / 203.91; 6/5 / 315.64; 5/4 / 386.31; 4/3 / 498.04; 45/32 / 590.22; 3/2 / 701.96; 8/5 / 813.69; 5/3 / 884.36; 16/9 / 996.09; 15/8 / 1088.27.

Just Minor

5-limit minor just intonation; its lower semitone and whole-tone ratios shape minor relationships.

Slots 0-11 (ratio / cents): 1/1 / 0.00; 25/24 / 70.67; 10/9 / 182.40; 6/5 / 315.64; 5/4 / 386.31; 4/3 / 498.04; 45/32 / 590.22; 3/2 / 701.96; 8/5 / 813.69; 5/3 / 884.36; 16/9 / 996.09; 15/8 / 1088.27.

Pythagorean

A 3-limit chain of pure fifths. Fifths feel open and old; thirds are bright and restless.

Slots 0-11 (ratio / cents): 1/1 / 0.00; 256/243 / 90.22; 9/8 / 203.91; 32/27 / 294.13; 81/64 / 407.82; 4/3 / 498.04; 729/512 / 611.73; 3/2 / 701.96; 128/81 / 792.18; 27/16 / 905.87; 16/9 / 996.09; 243/128 / 1109.78.

Ratios + reference

Read every pair as ratio / cents above the selected reference.

Dub Intonation

A harmonic dub map mixing 5-, 7-, 11-, and 13-limit colour for plagal weight, shimmer, pivot notes, and stretched tension.

Slots 0-11 (ratio / cents): 1/1 / 0.00; 16/15 / 111.73; 9/8 / 203.91; 8/7 / 231.17; 7/6 / 266.87; 5/4 / 386.31; 4/3 / 498.04; 11/8 / 551.32; 3/2 / 701.96; 8/5 / 813.69; 13/8 / 840.53; 7/4 / 968.83.

Super Symmetry Intonation

An unresolved symmetry tuning. The selected reference is a hidden fundamental, so slot 0 begins at $\sqrt{9/8}$ and refuses a plain home.

Slots 0-11 (ratio / cents): $\sqrt{9/8}$ / 101.96; 9/8 / 203.91; 8/7 / 231.17; 5/4 / 386.31; 4/3 / 498.04; 11/8 / 551.32; 16/11 / 648.68; 3/2 / 701.96; 8/5 / 813.69; 7/4 / 968.83; 16/9 / 996.09; $2/\sqrt{9/8}$ / 1098.04.

Werckmeister III

Historical well temperament for keyboard colour. It circulates through every key, but the keys are not equal.

Slots 0-11 (ratio / cents): 1/1 / 0.00; 256/243 / 90.22; $64/81 \cdot \sqrt{2}$ / 192.18; 32/27 / 294.13; $256/243 \cdot 2^{(1/4)}$ / 390.22; 4/3 / 498.04; 1024/729 / 588.27; $8/9 \cdot 2^{(3/4)}$ / 696.09; 128/81 / 792.18; $1024/729 \cdot 2^{(1/4)}$ / 888.27; 16/9 / 996.09; $128/81 \cdot 2^{(1/4)}$ / 1092.18.

REFERENCE + ROOT BEND

Every ratio multiplies the selected reference and repeats by octave. Root bend cents = $1200 \times \log_2(\text{target Hz} / 12\text{-ET Hz at A4} = 440 \text{ Hz})$. Fishtail derives this value internally; it is not entered separately. Super Symmetry uses the reference as a hidden fundamental.

07 / FISHTAIL FIELD MANUAL

MIDI output

Begin with ordinary MIDI; add pitch detail only when the receiver is ready.

Mode	Route	Receiver
Normal 12-ET	00 All or split	Standard MIDI instrument
00 All bend ± 2 st	00 All	± 2 semitone bend; multi-channel reception preferred
01–07 split bend ± 2 st	Outputs 01–07	One mono-capable part per route; ± 2 bend
MPE bend ± 48 st	00 All or split	MPE receiver; ± 48 semitone bend

POLYPHONIC BEND RULE

One ordinary MIDI channel cannot hold different pitch-bend values for simultaneous notes. Use split outputs or an MPE receiver for polyphonic non-equal tuning.

Receiver checklist

- Choose the Fishtail output mode first.
- Set the receiver's pitch-bend range to the exact value named by Fishtail.
- Route 00 All for a simple first patch; use 01–07 only when the host exposes multiple AUv3 MIDI cables.
- If notes conflict, confirm mono-per-route or MPE channel behaviour at the receiver.

Fishtail computes target frequencies in double precision. Final pitch also depends on the receiver's bend implementation, master tuning, synthesis, and calibration.

IF EVERYTHING STILL SOUNDS EQUAL

Normal 12-ET sends ordinary notes. Choose a bend or MPE output and configure the receiving instrument to the matching pitch-bend range before judging an alternative tuning.

07 / RECEIVER REFERENCE

Receiver + export

Match Fishtail's Output mode before judging pitch.

Normal 12-ET

Sends ordinary note MIDI; pitch-bend range does not matter and MIDI export is plain. Use A4 = 440 Hz for ordinary playback. To follow another exact Fishtail reference without bend, retune the receiver's master tuning. Non-equal models require a bend/MPE mode or an externally retuned synth.

00 All bend +/-2 st

Connect 00 All to a normal synth at A4 = 440 Hz with bend range +/-2 semitones. Fishtail sends each note's bend on that note's MIDI channel before note-on; multi-channel reception is preferred because one single-channel poly synth cannot hold different bends at once. Export bakes +/-2 bends; Export Channels is safest for mono lanes. Outputs 01-07 remain centred.

01-07 split bend +/-2 st

Connect Outputs 01-07 to mono synths at A4 = 440 Hz with bend range +/-2 semitones. Each generated mono lane receives its bend before note-on; 00 All remains centred. Channel exports bake the bends, while combined export uses route channels 1-8.

MPE bend +/-48 st

Connect 00 All to an MPE synth, or Outputs 01-07 to mono MPE synths, at A4 = 440 Hz with bend range +/-48 semitones. Playback uses member-channel per-note bends. Combined export uses member channels 2-16; each channel export uses member channel 2.

TUNING FILES + ACCURACY

Export Current Tuning writes the same current frequency table as MTS or Scala; keep both Scala files together. Theoretical 14-bit rounding is at most about +/-0.0122 ct for +/-2 st bend and +/-0.293 ct for MPE +/-48 st. A receiver may use lower internal resolution. Change its setup whenever Output mode changes.

Takes: Current + Next

Keep making versions without breaking the music.

01 TAKE N one permanent stamp	02 CHANGES edits wait for Generate	03 CURRENT the take ready or sounding	04 NEXT one take waits for the boundary
---	--	---	---

Generate without interruption

- **Stopped:** Generate creates a new take and makes it Current.
- **Playing:** Generate creates a new take as the sole Next while Current keeps sounding.
- **At the natural whole-piece boundary,** Next begins once from its own start.
- **Generate again before the boundary:** the newer take becomes Next; the former Next remains retained.

Every successful generation receives a permanent Take N stamp. Selecting, reordering, saving, reopening, Undo / Redo, and Current-to-Next handoff never rename it.

CALM STATUS

The main Take control shows Current - the take ready or playing. If visible edits will affect the next generation, it changes once to Changes and stays still. The console briefly says Changes apply on Generate. There is no flashing or pulse.

The Takes page

Tap the main Take control for a quiet shelf of exact generations.

01 STOPPED tap to make Current and editable	02 PLAYING tap to make the sole Next	03 REORDER drag ≡ or Move Earlier / Later	04 EXPORT uses the selected Take N
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Play in Order

Turn Play in Order on to let natural whole-piece boundaries follow the displayed order. It follows position, not the permanent Take N stamp, and the final take does not wrap automatically. A manual selection becomes the sole Next and supersedes the automatic choice. Turning Play in Order off preserves Current and any manually chosen Next.

Read a row

Take N is permanent; its play position can move. Stopped selection makes it Current and editable. During playback it becomes the sole Next and previews read-only until the boundary. Already-Current and already-Next selections are harmless.

OPTIONAL BY DESIGN

You can ignore Takes and simply Generate and play. Open the shelf when you want to revisit, reorder, sequence, or export. A project holds up to 32 retained takes; nothing is silently overwritten.

Playhead + transport

Selection and the section playhead show musical authority, not merely elapsed time.

PLAYHEAD RULE

A section playhead appears only when the visible sections are the audible Current take. If the visible draft shows a different Next recipe, the section playhead is intentionally hidden.

The main Take control shows only the take actually playing. If the visible Arrangement contains edits for the next generation, it reads Changes and the section playhead hides. Generate shortens to Gen only when the measured button width cannot fit the full word.

Transport

Control	Behaviour
Link	Tap to arm Fishtail and open Ableton Link settings. In that panel, enable and connect Link, and enable Start/Stop Sync for host transport.
Cue	Returns playback to its prepared start position.
Play / Stop	Starts or stops the generated take; host Stop always wins.
Loop	Cycles Loop, Bounce, and Off. At a whole-piece boundary, a ready manual or Play in Order Next takes priority, then inherits the selected whole-piece mode.
Section selection	Can set the start for section-to-end playback when Current is ready.

SELECTED-SECTION BOUNDARY

Looping a selected section does not hand off to Next, even if that section happens to finish at the piece endpoint. Whole-piece transport owns promotion.

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Export

Keep the composition editable; move the performance wherever it belongs.

MIDI

Transport Export Take and Export Channels use Current. Inside Takes, those actions use the exact selected Take N without changing playback. Export Take creates one combined Standard MIDI File; Export Channels creates a route-separated multitrack file. Current export uses live Reference, Tuning, Output, and Tempo. A retained take keeps its own frozen tempo and timing while using live Reference, Tuning, and Output. Rate is never written to MIDI.

Tempo lattice	Export representation
Off	One base BPM; frozen performed timing lives in the note positions.
On	Pre-lattice note positions plus the frozen tempo lattice as a MIDI tempo map.

Both options represent the same performance. Timing is carried by the notes or by the tempo map, never both, so the lattice is not applied twice.

Current tuning

- **MTS (.syx)** exports a 128-note absolute MIDI Tuning Standard table.
- **Scala (.scl + .kbm)** exports a scale and its reference-note mapping. Keep both files together.

EXPERIMENTAL ANALOGUE CV

This visible export is experimental and has not been validated as a hardware-safety path. Connect only through a suitable DC-coupled interface; confirm the receiving hardware and levels, then start low. Use MIDI if you are unsure.

SELECTED-TAKE AUTHORITY

Export uses the selected permanent Take N. It does not recall, queue, reorder, or generate, and Current and Next remain unchanged.

Projects + history

Save the instrument state; export MIDI for interchange.

.fishtail projects

New, Open, Save, and Save As manage portable Fishtail documents. A project stores the editable instrument state and retained Takes, their displayed order and selection, Current, the sole Next, and Play in Order as one coherent state. Opening or creating a project stops playback.

Host-session recall

AUM and compatible hosts may restore the generated state and its Take/order authority as one coherent snapshot. Recall opens stopped at 1× Rate. Cue, Loop, playhead, transport-playing state, project path, Undo / Redo history, appearance, and Link state are not restored. Save an explicit .fishtail document for important work.

Undo / Redo

Boundary	Meaning
32 Takes	Maximum retained exact generations in one project.
256 steps	Editable Undo / Redo states in the current session.
Exact history	Bounded cache; older Undo payloads roll only after confirmation.
Project document	Bounded portable file; oversize saves fail without replacing the project.

At 32 Takes, Generate is refused rather than overwriting music. Save the project, then begin a continuation project or choose an existing take. Separately, if the Undo payload cache fills, Fishtail asks before rolling old history. Current and Next remain protected.

TAKES + HISTORY

Takes is the exact-generation shelf. Undo / Redo follows edits. Reordering Takes does not rewrite history, and travelling through history does not rename the shelf.

13 / FISHTAIL FIELD MANUAL

Hosts + troubleshooting

Make the route visible before diagnosing the music.

Live outputs

Cable	Content	Cable	Content
00 All	Combined performance	04 Soprano	Soprano lane
01 Bass	Bass lane	05 Bloom B	Bass-support lane
02 Tenor	Tenor lane	06 Bloom Oct	Bloom octave lane
03 Alto	Alto lane	07 Shimmer	Shimmer-support lane

AUM is the currently tested host. Other AUV3 hosts must expose instrument MIDI output for live routing. If they do not, export MIDI and import it into the host or DAW.

Fast diagnosis

- **No generated sound:** route 00 All to a receiving instrument and confirm that instrument reaches the audio output.
- **Edits do not change playback:** Changes means the visible recipe is waiting for the next Generate. Reference, Tuning, Output, and Tempo remain live.
- **Alternative tuning sounds ordinary:** choose bend or MPE output and match the receiver's bend range.
- **Compact interface:** scroll through Structure, Arrangement, Feel, then Intonation. Enlarge the host window for the two-column view.
- **Cannot find whole-take export:** open Takes, select the required Take N, then use Export Take or Export Channels.
- **Project commands unavailable:** finish or cancel the active Files picker or document operation.

Settings + access

Keep performance choices clear and the manual close at hand.

READING THE INTERFACE

Fishtail uses colour as one cue among several. Text, outlines, selection marks, and accessibility descriptions preserve meaning when colour cannot carry it by itself.

GRAVITY VELOCITY

Open Settings > Generation. On shapes generated MIDI velocity with voice, phrase, harmony, and expression. Off gives every generated note-on a steady velocity of 88. The choice applies to the next Generate; Current is never rewritten.

KEEP THE MANUAL BESIDE THE INSTRUMENT

Open Settings > Guide > User Manual. Use Share to save the exact bundled PDF to Files or send it to another reading app or device.

Created by

Amy McBride - instrument concept, musical system, sound design, and development.

OcularDebris - visual identity, artwork, and production design.

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