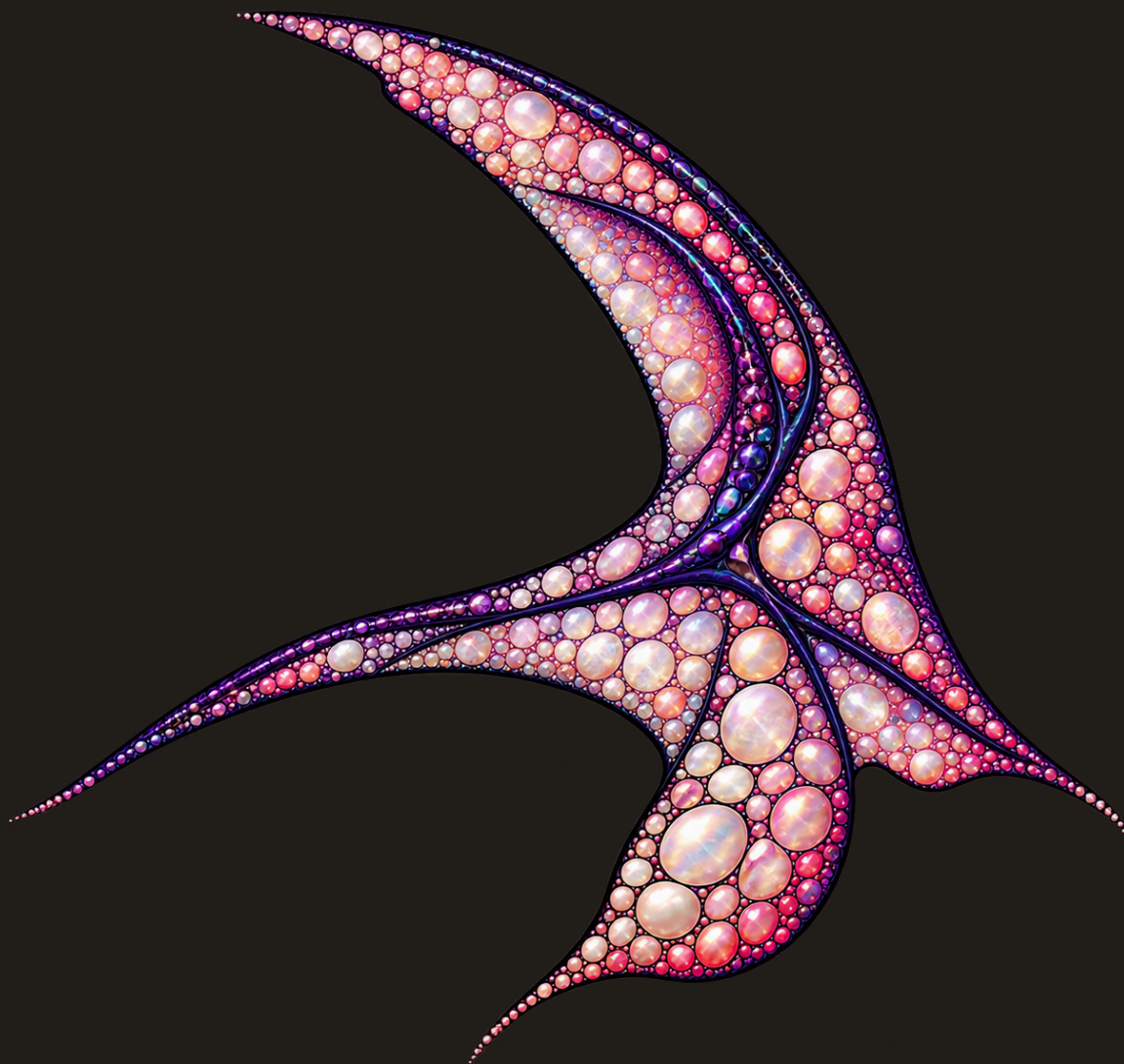


AMY_CIN / USER GUIDE

VESPER

A calm guide to a curious polyphonic synthesiser.

QUICK START / SOUND DESIGN / MIDI / PATCHES / HOSTS / TUNING



Standalone + Audio Unit musical instrument
iPhone / iPad / Mac

VISUAL IDENTITY AND ARTWORK BY OCULARDEBRIS

PRIVACY POLICY & SUPPORT

fishtailmidi.com/vesper/privacy

fishtailmidi.com/vesper#support

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Use the contents or the PDF bookmarks to move around the guide. Begin with Meet Vesper and Start in sixty seconds if this is your first session.

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Privacy and support

Read how Vesper handles your sounds, Noise Jars and optional sensors.

Privacy policy: fishtailmidi.com/vesper/privacy

Support: fishtailmidi.com/vesper#support

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02 / Meet Vesper

Vesper is arranged as a scrollable instrument surface. The same sections appear on iPhone, iPad and Mac, although narrow screens stack them into a longer vertical journey.



1 Header and patches Browse, save, randomise and open Settings.	4 Mixer and Foundation Balance A, B, Sub and Noise.
2 Orbit 1 and Orbit 2 Two assignable modulation sources.	5 Character and Filter Fold, shape and filter the sound.
3 Oscillators and Swarm Choose waves, ratios and related copies.	6 Delay, Space and Output Add movement, depth and final level.

Scroll for Envelopes and Performance. The section drawer at upper left can hide areas you do not need.

03 / Start in sixty seconds

Vesper is a two-oscillator polyphonic synthesiser with an optional 15-copy Swarm, expressive MIDI, A 440, A 432 or imported Scala tuning, two assignable Orbits, stereo delay and an aperiodic Space effect. Start simply; complexity is optional.

A CLEAR SUCCESS TEST

- Connect a MIDI keyboard or route notes from another MIDI app.
- Open the **Current Sound** folder control, search for **First Light**, and load it.
- Play middle C. Success means you hear a steady sound while the note is held.
- If there is no sound, check the MIDI route, Mixer levels, Output and the device or host audio destination.

STANDALONE

- Allow local-network access only if you want to use Ableton Link.
- Vesper listens to available CoreMIDI sources and also presents **Vesper MIDI In** for explicit routing.
- Choose **POLY**, leave Delay Mix at zero, and begin with Oscillator A around 50 percent.

INSIDE AN AUV3 HOST

- Create a software-instrument or AUv3 instrument channel and insert **amy_cin: Vesper**.
- Route MIDI to the channel, open Vesper's full interface, then play or record-enable the track.
- The host clock takes priority for synchronised controls. Save the host project as well as any Vesper patch you want to reuse elsewhere.

SAFE BEGINNING

Vesper's linked limiter is always active at approximately -1 dBFS. Set levels in the Mixer, then use Output to match the finished patch honestly.

SIGNAL FLOW

OSC A + OSC B/SWARM + SUB + NOISE → FOLD → FILTER → AMP → GLOW → DELAY → SPACE → MONO BASS →
5 HZ HPF → OUTPUT → LIMITER

04 / Touch, Pencil and view mode

GESTURE	RESULT
Drag a dial	Move up or down to adjust it. Small sideways movement is tolerated.
Double-tap a dial	Return to that parameter's defined default.
Tap a readout	Open precise numeric entry. Wave-shape controls intentionally omit this.
Hold a supported dial	Open Orbit and MIDI assignment after a short pause.
Tap a selector	Open the connected Vesper choice menu.
Drag an envelope	Attach to the nearest A, D, S or R stage for the rest of the gesture.
Pinch or magnify	Zoom the instrument on iPhone, iPad or a Mac trackpad.

SECTION DRAWER

The upper-left drawer hides or shows Orbits, Oscillators, Mixer, Character and Filter, Envelopes, Output, and Performance. Hiding a section does not change the sound or the saved patch.

VIEW MODE

Tap the eye to lock the controls for safe viewing. One-finger panning then moves around the enlarged interface without changing a dial. Unlock the eye to edit again; zoom and position stay where you left them. Escape also leaves the locked view on Mac.

ACCESSIBILITY

Dials expose increment and decrement actions with descriptive values. Vesper supports light, dark and high-contrast appearances, and keeps discrete touch targets at least 44 points where practical.

05 / Oscillators and the Mixer

OSCILLATOR A AND B

CONTROL	WHAT IT DOES
Wave A / B	Morphs continuously from Sine to Triangle to Saw to Pulse.
Octave	Moves that oscillator from -2 to +2 octaves in whole-octave steps.
Classic / Swarm	Classic gives B one oscillator. Swarm replaces B with closely related copies inside each played note.
Ratio	Chooses an exact frequency relationship between A and B.
Core ratios	Fixed relationships from 1:4 through 7:2, independent of keyboard tuning.
Colour ratios	Curated JI, Amy Dub and Super Symmetry relationships for less familiar harmonic colours.
Free retune	Moves A and B symmetrically around the played pitch in cents.
PWM	Changes only the Pulse component. Its effect appears as Wave moves from Saw toward Pulse.

PWM

If PWM seems inactive, move Wave toward Pulse. PWM is pulse width, not a general waveshaper.

MIXER

CONTROL	PURPOSE
A / B	Linear levels for Oscillator A and Classic or Swarm B.
Sub	A centred square-wave foundation one or two octaves below the note.
Noise	Per-note noise with a musical level taper.
Noise Colour	Violet, Blue, White, Pink or Brown.

For clean gain staging, begin with A and B near 50 percent, Sub below 20 percent, and Noise off. Add density after the filter and envelopes behave as intended.

06 / Swarm and relational motion

Swarm replaces Oscillator B with up to 15 closely related copies inside each played note. Their levels are normalised so changing Copies remains manageable.

CONTROL	RANGE	MEANING
Copies	1-15	Number of active copies inside Oscillator B.
Spread	0-4	Relational retuning across the copies in Free mode.
Teardrop	0-2	Shapes copy weighting and the importance of the outer copies.
Phase	Free / Key / Room	Chooses a repeatable starting relationship.
Time	Free / Sync	Free uses Beat in hertz; Sync uses a musical division.
Beat	0.00098-32 Hz	Adjacent-copy beat offset in Free mode.
Division	through 16 bars	Tempo-related adjacent-copy motion.

A USEFUL WAY TO LISTEN

- Set Copies to 1 and establish pitch and wave first.
- Raise Copies to 3, then 7. Match musical density with the B level rather than chasing the limiter.
- Use a very slow Beat or long Sync division for living chords rather than obvious chorus.
- With P-Glide, change chord voicings slowly so independent notes travel toward nearby pitch histories.

CPU

Swarm copies multiply oscillator work inside every active note. Long releases also keep notes alive. On a phone, reduce Copies or requested polyphony before shortening a sound you love.

07 / Character and Filter

CONTROL	MEANING
Fold	Bounded sine-fold colour before the Filter. The live display shows the signal after Fold and before Filter.
Cutoff	20 Hz to the sample-rate-safe upper limit, with logarithmic control.
Res	Nonlinear resonance from gentle emphasis to a narrow peak.
Env	Positive filter-envelope movement, reaching roughly five octaves at full depth.
Mode	Low-pass, high-pass, band-pass or notch.
Slope / Order	LP and HP use 6, 12, 24 or 36 dB per octave. BP and Notch use 2, 4 or 6 poles.

SLOPE AND ORDER

The 6 dB low-pass and high-pass choices are gentle first-order filters. Band-pass and notch responses are described by pole count instead of one stop-band slope.

FILTER RELATIONSHIPS

Open Settings to find Filter Relationships. These controls let filter pitch follow exact musical relationships without changing the front-panel Cutoff dial.

CONTROL	HOW TO USE IT
Cutoff Mode	FREE keeps Cutoff in hertz. RATIO places it at an exact relationship.
Cutoff Ratio	Choose relationships from 1:4 through 7:2.
Ratio Source	KEY follows each played note. ROOT uses the fixed Ratio Root frequency.
Ratio Root	Sets the reference frequency used when Ratio Source is ROOT.

The filter envelope can still move the resulting cutoff, so an exact relationship may become the centre of a changing gesture rather than a static point.

08 / Envelopes and Orbits

AMP AND FILTER ENVELOPES

STAGE	RANGE	ROLE
Attack	1 ms-30 s	Rise after note-on.
Decay	1 ms-60 s	Fall from peak to Sustain.
Sustain	0-100%	Held level while the note remains owned.
Release	1 ms-120 s	Fade after key, sustain, Hold and arp ownership have ended.

The four readouts sit above the graph so values remain visible while a finger or Pencil covers a handle. Time stages use fine movement at the short end while long times remain reachable.

ORBIT 1 AND ORBIT 2

Both Orbits are general modulation sources. Nothing is assigned by default. Hold a supported destination dial to connect one or both Orbits.

CONTROL	OPTIONS / RANGE	MEANING
Time	Free / Sync	Free uses hertz. Sync follows host or Link tempo.
Rate	0.00098-12 Hz	From roughly one cycle in 17 minutes to 12 cycles per second.
Division	1/16T through 16 bars	Straight, triplet, dotted and multi-bar cycle lengths.
Shape	Sine to Pulse	Continuous LFO-shape morph.
Depth	0-1	Overall Orbit strength before destination depths.
Phase	Loop / Retrigger	Loop runs continuously. Retrigger starts again on note-on.

ASSIGN AN ORBIT

- Hold a supported destination dial until its assignment panel opens.
- Set Orbit 1 or Orbit 2 depth. Positive and negative values move in opposite directions.
- The pink and green arcs around the dial show the saved routing depths.
- Use Clear Modulation to remove all musical and learned-controller routes for that destination.

09 / Delay, Space and Output

CONTROL	RANGE / OPTIONS	MEANING
Delay Time	Free / Sync	Seconds or musical divisions.
X / Y Time	1 ms-12 s Free	Independent left and right delay times.
X / Y Division	bar, straight, triplet, dotted	Exact timing from the host or Link.
Feedback	0-0.94	Signal returned to each delay after low-frequency and high-frequency control.
Mix	0-100%	Dry and wet balance. A new patch may be completely dry.
Width	0-100%	Stereo width of the wet delay only. Zero centres the repeats.
Glow	0-1	Gentle asymmetric saturation before the global effects.
Space	0-1	Wet amount for the eight-path aperiodic space network.
Tail	0.32-20 s	Decay time for Space.
Output	-60-0 dB	Final trim before the safety limiter.

FREE DELAY

Free delay accepts 1 ms to 12 seconds. The dials concentrate their normal travel below four seconds for precise adjustment; tap a readout to enter a longer value exactly.

A WIDE ECHO

For a familiar wide dotted-repeat gesture, begin with X at 1/8D and Y at 1 BAR, Feedback around 0.25, then raise Mix slowly. Delay settings belong to the patch.

OUTPUT SAFETY

- Mono Bass is enabled by default. It centres stereo difference below approximately 160 Hz and restores width smoothly above the crossover.
- The optional 5 Hz high-pass removes DC and subsonic drift. Leave it on for ordinary playing and recording.
- The limiter is linked stereo and always active at approximately -1 dBFS sample peak.
- Delay and Space tails continue after notes release or are stolen.

10 / Voice modes, Hold and P-Glide

MODE	BEHAVIOUR
POLY	Normal polyphony. Portamento is not applied.
MONO	Last-note priority with one voice. The envelope retriggers on overlapping notes, and Portamento applies.
LEGATO	Overlapping notes reuse the voice without retriggering the envelope. Detached notes begin normally.
P-GLIDE	Polyphonic voice-leading glide. A new pitch prefers the nearest available released pitch history.

PORTAMENTO

Portamento travels between tuned pitches and reaches 30 seconds, with most of the dial's travel concentrated below four seconds. Tuning sets each destination first; MPE or MIDI 2.0 pitch expression moves around the travelling result.

HOLD AND SUSTAIN ARE DIFFERENT

CC64 Sustain delays note releases. Hold latches Vesper's own chord. A note ends only after its physical key, sustain, Hold and arp ownership have all ended. When Hold is active and all physical keys are released, the next fresh playing gesture replaces the old held chord.

VOICE STEALING

Released notes are preferred before an actively held note is stolen. Long releases remain bounded by the device's active voice cap.

P-GLIDE EXERCISE

Play slow, close chord voicings, then change one or two notes at a time. Different notes choose nearby histories and travel independently. Microtonal scales make the paths stranger without breaking their tuning.

11 / Arpeggiator and Ableton Link

ARPEGGIATOR

CONTROL	MEANING
Arp	Enable the real-time arpeggiator.
Mode	Up, Down, Up/Down, Random, played Order, or Chord.
Clock	Free runs independently; Sync follows host or Link beat.
Rate	Tempo-synchronised step division.
Free Rate	0.05-30 steps per second.
Pattern	Ten distinct 16-step gate, accent and tie rhythms.
Octaves	Expand the sequence upward by one to four octaves.
Gate	10-95 percent note length within an active step.
Chance	Probability that an otherwise active step plays.

Chord mode triggers all owned notes and octave copies together. Source velocity and per-note expression are preserved; accented steps are stronger than ordinary steps.

FREE TIME

At 0.05 steps per second, one arp step lasts 20 seconds. This is useful for drifting, out-of-time structures.

ABLETON LINK

In standalone Vesper, Link can provide tempo and beat. In AUv3, the host clock takes priority. Link does not carry MIDI notes.

- Allow local-network access when the operating system asks.
- Enable Link in Vesper's Performance section and in the other Link app.
- Route notes, CC, pressure and pitch bend through CoreMIDI or the host while Link supplies musical time.

Ableton reference: [Link features and functions FAQ](#).

12 / Expression, MPE and MIDI

ASSIGNABLE SOURCES

SOURCE	MEANING
Orbit 1 / 2	The two modulation sources.
Velocity	Note-on strength; amplitude also follows a musical velocity curve.
Poly Aftertouch	Per-note pressure.
Slide / CC74	MPE slide or conventional CC74.
Mod Wheel	MIDI CC1.
Channel Pressure	Channel aftertouch.
Learned CC	One channel-specific arbitrary CC for that destination.

Assignment depth is bipolar from -1 to +1. MIDI Learn waits for a controller movement, then remembers its channel and CC for that destination.

MPE AND MIDI 2.0

MPE can give each note its own pitch bend, pressure and slide. Choose Lower, Upper or Auto channel rules and match the member bend range in Vesper and the controller. MIDI 2.0 per-note bend, pressure and timbre can also be enabled while ordinary MIDI 1 channel messages remain available.

PROGRAM CHANGE AND BANK SELECT

With no bank selected, Program Change steps through the available preset list. For an exact sound, send Bank Select MSB (CC0), Bank Select LSB (CC32), then Program Change. MIDI sends program numbers as 0-127, although many controllers display them as 1-128.

HOST AUTOMATION

Vesper's front-panel controls are available to the host for automation. Begin by recording a control gesture, then refine the resulting automation lane in the host. Learned arbitrary CC assignments belong to the current setup rather than the sound patch.

13 / Tuning, Scala and oscillator ratios

PITCH SOURCE	MEANING
A 440	Twelve-tone equal temperament with A4 at 440 Hz.
A 432	Twelve-tone equal temperament with A4 at 432 Hz.
Scala File	One imported .scl scale, optionally paired with one .kbm keyboard map.

SCL AND OPTIONAL KBM

An **.scl** file defines ordered scale intervals. Without a KBM, Vesper repeats the scale, uses the selected Root Note for degree 1, and references A4 at 440 Hz. A **.kbm** file supplies its own keyboard mapping and reference.

Choose exactly one .scl file and, optionally, one complete 128-note .kbm map. If either file is invalid, Vesper leaves the current tuning unchanged.

TUNING SUPPLIED THROUGH MPE

When another app supplies tuning through MPE pitch bends, choose A 440 and use the same pitch-bend range in both apps.

OSCILLATOR RATIOS

Oscillator Ratio multiplies one oscillator by an exact fixed relationship after the played note has been tuned. The curated JI, Amy Dub and Super Symmetry colours therefore remain available with A 440, A 432, Scala and MPE-tuned input.

A USEFUL CHECK

If notes arrive at the wrong pitch, first confirm Pitch Source, MPE zone and bend range. Then check whether the sending app is also applying its own A4 reference or keyboard mapping.

14 / Patches, search and presets

OPEN THE PATCH BROWSER

Tap the **Current Sound** folder control in Vesper's header. Factory sounds, bundled banks and your own saved patches appear in the same browser.

SEARCH AND FILTER

- Search by patch name, bank or category.
- Tap a category to show only matching sounds.
- Tap that category again, or choose All, to clear the filter.
- Use the previous and next controls in the header to move through the current preset list.

CATEGORIES

A patch can belong to one or more categories: **Bass, Lead, Arp, Pad, Keys, Pluck, Orchestral, Percussion, Texture** and **FX**. Categories help you find sounds; changing them does not change the sound.

SAVE A PATCH

Use the save control in the header, enter a patch name and optional bank name, then choose one or more categories. If an unusual choice matters, include the musical reason in the patch name or in your own test notes.

AU FACTORY PRESETS

In an AUv3 host, the host's preset menu can choose INIT, Vesper's supplied sounds, and available saved or imported Vesper patches. The Current Sound browser remains the most complete place to search and organise them.

WHAT A PATCH SAVES

A patch saves oscillators, Mixer, Swarm, envelopes, Orbits and musical assignments, filter, voice mode, Portamento, arp, Delay, Space, Glow and Output.

WHAT STAYS WITH THE SETUP

Held notes, Hold's latched chord, Link enable, requested polyphony, MPE and MIDI setup, imported tuning, safety switches and learned arbitrary CC sources are not ordinary sound-patch content.

15 / Import, export and state

EXPORT

- Export the current sound directly from the patch browser.
- Export one patch from its row, or export a displayed bank.
- Select several of your own patches and export them together as one shareable Vesper bank.
- Vesper uses the concise `.vesper` suffix for current bank files.

IMPORT

When an imported bank contains patches that match ones you already have, Vesper shows the bank name, revision and likely additions or updates before changing anything.

CHOICE	RESULT
Keep Mine	Skip matching patches and add only new ones.
Update Existing	Replace matching patches with the imported versions.
Keep Both	Keep your versions and add editable copies of the imported matches.

Older `.vesperbank.json` files remain importable. Scala tuning uses its separate Settings import control rather than the patch browser.

HOST PROJECTS AND PATCHES

An AUv3 host saves the complete state of that Vesper instance, including the imported Scala or KBM tuning table. A Vesper patch is best for moving a sound between hosts; the host project remains the authority for that particular track.

A GOOD HABIT

Save the host project and export important Vesper patches or banks. The two files solve different problems: session recall and sound sharing.

16 / AUM quick start

- Tap the large plus button and create an Audio channel.
- Tap the channel input or source node and choose an AUv3 instrument: **amy_cin: Vesper**.
- Open Vesper's node menu and route a hardware controller, AUM keyboard or another MIDI source.
- Set AUM tempo and transport for synchronised Orbits, delay, Swarm and arp timing.
- Record-enable the audio channel and use AUM's main Record control when ready.

MIDI ROUTING

AUM's MIDI Matrix connects sources across the top to destinations at the side. The routing control on Vesper's node opens its source list directly. Avoid routing both host MIDI and a virtual loop from the same controller, which can double notes.

IF THE AUDIO PROCESS STOPS

- Close Vesper's window, remove the failed node, then insert a fresh Vesper instance.
- Reduce requested polyphony or Swarm Copies before restoring a dense, long-release sound.
- Check AUM for BAD SIGNAL and bypass other nodes one at a time if it appears.
- If a saved session repeatedly fails, open a blank AUM session and load Vesper before importing the sound.

MPE

Enable MPE in Vesper and match the controller's member bend range. If every note bends together, check controller routing, zone and channel filtering before changing the patch.

Official AUM guide: kymatica.com/aum/help

17 / Logic Pro for iPad

- Install and launch Vesper once so iPadOS registers its Audio Unit extension.
- Create or select a software-instrument track.
- In Plug-ins, tap **Add Instrument**, open **Audio Units**, then choose **amy_cin: Vesper**.
- Tap the Vesper slot to open Details view. Record-enable the track and play from Logic's keyboard or a connected CoreMIDI controller.
- For automation, open Automation View, choose Vesper in the Automation Parameter menu, then select the desired control.

PRESETS AND MPE

Use Logic's plug-in preset menu or Vesper's Current Sound browser. For MPE, enable it in Vesper and match zone and member bend range to the controller.

PROJECT RECALL

Logic saves the Vesper instance with the project, including parameter values and custom tuning tables. Export a Vesper patch when you also want the sound available outside that project.

TEMPO

Logic's clock takes priority over Ableton Link inside the Audio Unit. Set Free or Sync independently for the arp, Orbits, Swarm and delay.

Apple references: [Logic Pro for iPad](#).

18 / Logic Pro for Mac

- Create a Software Instrument track.
- Click its Instrument slot and choose **AU Instruments** → **amy_cin** → **Vesper** → **Stereo**.
- Open Vesper, record-enable the track, and select your MIDI or MPE controller.
- Press A to show automation, choose a Vesper parameter, and use Read, Touch or Latch as appropriate.

IF VESPER IS MISSING

- Open Logic Pro → Settings → Plug-in Manager and find Vesper under amy_cin.
- If validation failed, select Vesper and choose Reset & Rescan Selection.
- After a fresh install, restarting the Mac can make a newly registered Audio Unit visible.
- Use Full Audio Unit Reset only as a last host-level step because it rescans every installed AU.

MPE IN LOGIC

MPE sends each note and its expression on a separate MIDI channel. Vesper performs that interpretation internally; match Lower or Upper zone and bend range to the controller. Fifteen member channels is the practical MPE limit.

PRESETS

Logic's preset menu can choose INIT, Vesper's supplied sounds, and available saved or imported patches. Use Vesper's browser for search, categories and bank tools.

Apple references: [Logic Pro for Mac](#).

19 / Performance and display

ACTIVE VOICE CAPS

DEVICE	UP TO 50 kHz	50-100 kHz	ABOVE 100 kHz
iPhone	8	6	3
iPad / Mac	16	10	4

The active cap changes with device class and sample rate. Long envelopes do not create unlimited work; they occupy a voice until Release completes or the voice is reused.

IF CPU IS HIGH

- Lower requested voices first, especially at high sample rates.
- Reduce Swarm Copies, long envelope releases and active delay or Space tails.
- Bypass other host nodes one at a time to identify the expensive part of the session.
- Keep the musical change that matters and simplify the less audible layers around it.

LIVE SCOPE

The Fold scope shows the signal after Character and before Filter. It pauses when hidden or offscreen. Magnifying the interface makes the display sharper without changing the sound.

HEADROOM

The limiter protects against sample peaks; it is not a mastering loudness target. Leave headroom when recording for later processing or codec conversion.

WORKSPACE ONLY

Hiding a section, entering View mode, zooming or panning does not change the sound or saved patch.

20 / Troubleshooting

SYMPTOM	FIRST THINGS TO CHECK
No sound	MIDI route, track record-enable, Mixer A/B, Amp Sustain and Release, Output, host mute and audio destination.
PWM seems inactive	Move Wave toward Pulse. PWM affects only that part of the wave morph.
Resonance is gentle	Try 12, 24 or 36 dB slope. The true 6 dB LP or HP choice is deliberately gentle.
Wrong pitch bend	Match member and legacy bend ranges; inspect MPE zone and duplicated MIDI routes.
Unexpected tuning	Check Pitch Source. Scala without KBM uses Root Note and A 440; Scala with KBM uses its map reference.
Arp is out of time	Check Free versus Sync, host transport, Link state and host clock priority.
High CPU	Reduce voices, Swarm Copies, long Release, active tails and sample rate; then inspect other host nodes.
AU process stopped	Remove and reinsert the node, lower density, then test a blank host session.
Bank will not import	Choose a .vesper or supported legacy bank file and confirm Files permission.
Vesper missing in Logic	Use Plug-in Manager and Reset & Rescan Selection.

WHEN ASKING FOR HELP

Include the device, operating system, host and version, sample rate, voice mode, Swarm Copies, envelope Release, effects settings, whether MPE, Link or Scala were enabled, and the smallest patch that reproduces the problem.

RETURN TO A KNOWN SOUND

Load First Light and play middle C. If that works, restore the more complex patch one layer at a time: voices, Swarm, envelopes, modulation and effects.

21 / Compact parameter reference

SECTION	RANGES / CHOICES
Oscillator	Wave 0-3; Octave -2 to +2; PWM 0.02-0.98; A/B 0-1; Sub 0-1; Noise 0-1
Swarm	Copies 1-15; Free cents -50 to +50 display; Beat 0.00098-32 Hz; Spread 0-4; Teardrop 0-2
Amp / Filter Env	A 0.001-30 s; D 0.001-60 s; S 0-1; R 0.001-120 s
Filter	20 Hz-22 kHz sample-rate limited; LP/HP 6, 12, 24 or 36 dB/oct; BP/Notch 2, 4 or 6 poles
Filter Relationships	Free or Ratio; relationships 1:4 through 7:2; Root 20-2000 Hz; Root or Key source
Orbit 1 / 2	0.00098-12 Hz; shape 0-3; depth 0-1; Free or Sync; Loop or Retrigger; through 16 bars
Delay	Free 1 ms-12 s; Sync to musical divisions; Feedback 0-0.94; Mix 0-1; Width 0-1
Space / Output	Space 0-1; Tail 0.32-20 s; Glow 0-1; Output -60 to 0 dB
Performance	Poly, Mono, Legato or P-Glide; Portamento 0-30 s; Hold; Link
Arp	Free 0.05-30 steps/s; 6 pitch modes; 10 patterns; 1-4 octaves; Gate 0.10-0.95; Chance 0-1
Tuning	A 440, A 432, or one Scala scale with optional KBM; fixed oscillator ratios

REMEMBER

Vesper is an Audio Unit musical instrument: it receives MIDI and produces audio. A patch captures the sound; a host project captures the full session. Start with one audible note, then add motion deliberately.

MAKE SOMETHING STRANGE, SWEET AND TRUE.