

FLUSS

Granular Playground

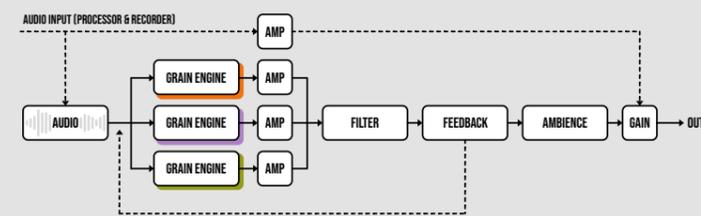
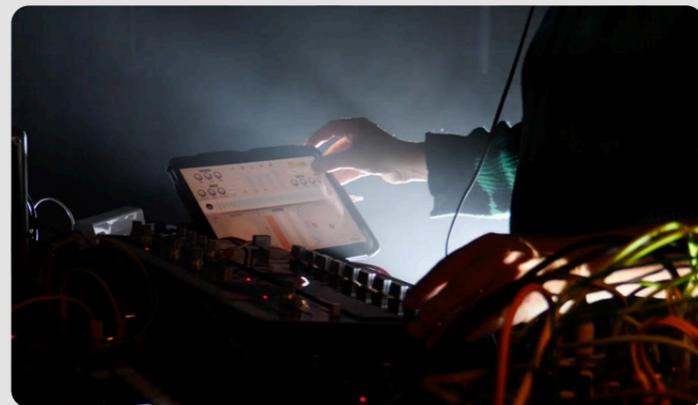
INTRODUCTION

Welcome to Fluss, a granular synthesizer and effect processor with a kinetic control interface, designed by Bram Bos and Hainbach.

Fluss makes full use of the touch capabilities of iOS devices to get you as close to the grains as possible. We created it to be both inviting and fun to play, yet sonically rich and full of sound creating possibilities.

You can set it up to process instruments live, or use it standalone to reshape your sound library into a shimmer of harmony and chaos. Play it like a synth or create generative patches that keep changing over hours. It is all in your hands, and you are the modulation.

The way you interact with grains in Fluss was inspired by composer Iannis Xenakis and his ideas on *collision* („Formalized Music“, 1971).



DESIGNED FOR TOUCH: KINETIC SLIDERS AND PADS

One of the novel features of Fluss is how it approaches modulation. Instead of setting LFOs and envelopes using knobs and sliders, simply flick a slider or ball and let it bounce.

Using the global **Friction** setting you can control how quickly moving objects come to a standstill. Set Friction to zero for endless modulations.

For sliders, you can set their minimum and maximum boundaries by picking up the respective ends of the scale and moving them up or down. If the "slider's value" is nearby, it will get priority so it doesn't get in the way of playing.

- If balls get bunched up with each other (either on purpose or not) double-tap them to untangle.
- Two-finger tap the XY Pad to instantly freeze any moving balls
- Bonus feature: Triple-tap the pitch XY Pad to make the balls bounce off of each other instead of moving through each other.
- Shake your device to give everything a random whack (randomize feature)

SCAN SPEED

These three knobs set the speed the playheads move forward or backwards across the sound source. Center them (double tap) to keep the playheads stationary.

These values work in conjunction (and can be modulated) with the **Scan Speed** setting in the left XY control pad.

LIGHT MODE / DARK MODE

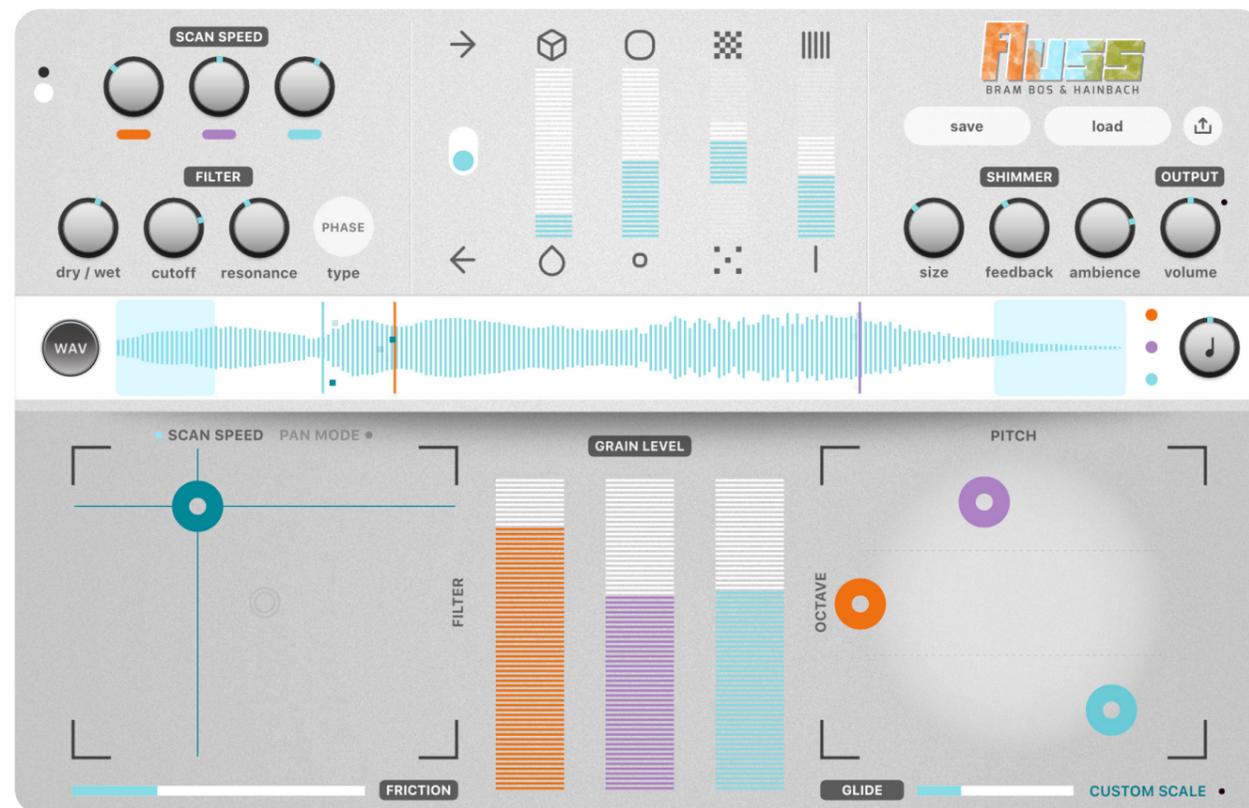
The white and black dots in the top left corner of the UI let you switch between light mode and dark mode user interface style.

The setting is persistent between sessions. If multiple plugin windows are already open you may need to manually switch them. The next time they're opened they will use the preferred setting.

GRAIN CHARACTERISTICS

These five controls let you define the characteristics of your grain cloud. They are from left to right:

- ➔ **Direction** - play grains forward or reversed
- ◊ **Window shape** - changes the envelope of each individual grain, from smooth, sonic droplets to angular clicks of sound.
- **Grain size** - the duration of each grain
- ▣ **Grain density** - how many grains are generated in your grain cloud. At higher density settings your grains overlap to form a continuous texture
- ▮ **Scatter** - this defines how far from the playhead grains may be generated. Keep this small for a narrow (precise) window and large for a diffuse spray of grains.



XY PADS (SCAN SPEED, PAN MODE, FILTER, PITCH, OCTAVE)

These let you live control several aspects of the performance, such as the filter cutoff frequency, pan spread, and the speed multiplier for the playback heads.

Pitch maps note frequencies to the X axis, while **Octave** lets you choose between three octaves of range.

For the right XY Pad, the base frequency of the sound you've imported (or recorded) is in the center octave, along the left edge of the pad (i.e. this is where your sample will play at 100% speed).

Friction lets you set the global friction parameter for the kinetic physics model. Set it to 0 to remove all friction: endless movement.

SCALES & NOTES

When you move the three generator balls you can change the pitch of the sounds that are played. How they are played depends on the active scale mode:

- Custom scale lets you select and modify the set of semitones that your pitch will be quantized to (some presets are given)
- Scala support lets you import standard Scala files for exploring more exotic scales and microtonal tunings. Note that not all scales may play as nice with Fluss' UI paradigm.
- Unquantized disables all quantizing. Pitches change freely

Use the **Glide** slider to set the slide time between frequencies.

FILTER

The filters are based on the design of the Oberheim Xpander filters and have a smooth character that fits well with sampled material.

You can choose between several filter types, including the sparkly Phase filter which combines a resonant phaser with a shallow lowpass filter:

- Oberheim Phase filter (18dB All pass + 6dB Low pass filter)
- 12dB (2 pole) Low pass filter
- 24dB (4 pole) Low pass filter
- 12dB (2 pole) Band pass filter
- 12dB (2 pole) High pass filter
- 12dB (2 pole) Notch filter

The **dry/wet** knob specifies how much of the unfiltered sound comes through.

You can modulate the filter cutoff frequency using the ball in the left XY Pad which bounces between 0 and the frequency set with the **cutoff** knob.

SHIMMER

The **shimmer** effect is a bit like a shimmer reverb, but instead of feeding directly to the output, it feeds the processed sound back into the grain engine.

The feedback loop means that processed sounds will get reprocessed infinitely, including their pitch settings. So if your pitch and octave settings are set up to alter the pitch of your grains they will be pitched up/down again and again - creating complex and rich harmonies across multiple octaves.

Size determines the delay time of the shimmer effect. Small sizes mean a shorter feedback loop and quick response of the effect.

Feedback sets the amount of sound that is fed back into the grain engine. The sound will be delayed and reprocessed by all active generators.

Note: with some filter combinations, feedback may actually create very loud distorted feedback loops at higher feedback settings. Dial down the feedback level to contain the loop in this case. Use with care!

The **Ambience** knob determines how spacious the sound will become. Ambience combines reverbs and multiple delays and can be dialed in independently of the feedback loop.

OUTPUT

The **volume** button controls the output level of the grain engine. In AU effect mode this represents the "wet" control and does not include the level of the input signal (which is controlled using the "input" knob).

The little red led next to the knob will light up if the signal is distorting. Although it doesn't do any harm (the signal will be clipped internally to safe levels) it is recommended to decrease the volume a bit to keep the signal clean.



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INSTRUMENT MODE

When loading Fluss as an instrument in your plugin host (or when running in standalone mode) you can import your own sounds and recordings for granulation.

- Tap the **WAV** button to import almost any sound file (obviously WAVs, but also MP3, M4A, AIFF, and virtually anything supported by the iOS system).
- Tapping the waveform places the playback heads at that point in the sound
- If you want to reposition individual playheads you can select the respective heads using the **three colored dots** behind the waveform view. Tapping this control toggles through each individual playhead color and the default "all three" dots simultaneously.
- The **tuning** knob lets you tune the sound to fit your music. The range is -1 octave to +1 octave (or half speed to double speed)

The loop boundaries can be set by touching and dragging their inner borders. Whenever a playhead reaches a boundary it will wrap around to the other end of the waveform and continue its way.

Note: when a playhead approaches one of the boundaries, sometimes newly triggered grains will not be able to complete within the time/space left between the boundary and the playhead. The grains will then wrap around the loop, ahead of the playhead. If you wish to avoid this from happening, you can decrease the size of the grains.



RECORDER MODE

When loading Fluss in Recorder mode (as an effect plugin) you can record all sound passing through it.

Simply tap the record button to start and stop recording. A maximum of 112 seconds can be recorded. You can not tweak the incoming sound levels. Everything will be recorded as-is, so use your host's mixer to adjust levels.

The main use case for Fluss Recorder (and the reason we made it in the first place) is to have a convenient quick tool for recording and creating presets using live sound sources.

Recorder was not meant to be a performance/looper instrument, but the record button is exposed as an AU parameter, so you can MIDI learn it to a MIDI pedal for instance.

PROCESSOR MODE

The Processor plugin turns Fluss into a realtime effect processor, granulating all incoming sounds in realtime.

The result is a kind of mix between a pitch shifter, a delay and a shimmer reverb. The delay buffer has a maximum duration of 6 seconds which can be set using the boundaries.

Instead of displaying a static waveform, the timeline view now shows a delay scale from 6 seconds down to near-realtime. These times represent the delay time of the playback heads. For example: when a play head is on "2 seconds" it will process sound with a delay time of 2 seconds. But because the playheads can be moving all the time, the delays will be constantly changing and evolving.

Wet/dry control

The **input** knob is the "dry" setting; it determines how much of the dry (original) input signal is being mixed in with the output. If you just want to hear the processed sound, you can set the input knob to 0, and control the output strength of the wet signal with the **volume** knob.

Freeze mode

If you tap the timeline view with two fingers simultaneously, the processor will freeze as long as you hold the gesture. This will effectively halt the realtime input of new signal, but the granulation will still be able to be modulated. When you let go of the freeze hold, audio input will resume as normal.

Freeze is also exposed as an AU parameter so you can trigger it using external controllers if your host supports MIDI learn.

Processor presets

When you save a preset in processor mode, it will not contain any audio - just the settings for all the modulations.

You can load a processor preset in any other mode as well. This will not replace the existing audio and just change the settings of all the controls.

AUDIO UNIT PLUGINS / AUv3

If you're running the Fluss app and wondering how to switch to these different 'plugin modes', chances are you haven't heard about Audio Unit plugins yet.

Au3, or Audio Units are a very powerful concept for making music on iOS. Just like on desktop, you can create virtual studio setups on your iDevices using 'hosts' and 'plugins'.

- A host is an app that can combine multiple plugins (e.g. effects, instruments, MIDI generators, sequencers, etc.) into a setup which emulates an entire studio. These often contain mixers, timelines and built-in effects, audio export and recording functionality, etc.
- Plugins are all the instruments, effects, sound generators and other elements that you would use in a studio. You can load multiple instances of Audio Unit plugins. E.g. You could load three copies of Fluss to do different things. Other benefits include: state saving, parameter automation, standardized MIDI handling, etc.

Fluss is an Audio Unit plugin. In fact it is three plugins: an instrument plugin and two effects plugins (recorder and processor). To use Fluss as a plugin, you need a host. There are dozens of host apps available. Some popular ones are: AUM, Cubasis, Garageband, Audiobus, Drambo, Zenbeats or Nanostudio, but there are lots of others.

PRESET LOADING, SAVING & SHARING

Saving and loading

The **save** and **load** buttons let you retrieve and store presets you've created. The sound you've imported or recorded is stored within the preset (Fluss Processor only does realtime processing, so it doesn't store any audio).

If you want to delete a user created preset, simply swipe left on it - just like you would do in your email app to delete an email. You can only delete user presets (this can take a moment, depending on how many presets you have). Apple doesn't allow deletion of files inside in the package that was downloaded from the App Store, hence the factory presets are read only.

Sharing/exporting your current preset

Press the **share** button to quickly share the currently active preset. First you will be prompted for a name for the preset. After you've confirmed the name, you can share your preset to any destination supported by iOS (using the standard share sheet). Typically you can use Airdrop, save on the Files app, or use your Dropbox, iCloud and email, among other options.

Back up / exporting all user presets

If you open the **load** dialog and navigate to the user presets, an **Export all presets** button appears. If you press it, it will create a zip-file with all your presets (this can take a moment, depending on how many presets you have). Once finished, you can save this zip-file to any place you like.

Importing one preset / all presets

You can re-import any preset by simply opening it with the Fluss app. Single presets have the file extension **.fluss**. But you can also import zip-files containing multiple presets (such as the backup files exported by Fluss).

Sometimes you need to tap the **refresh** button in the corner of the load dialog for the newly added presets to show up. This button forces the Fluss plugin to scan for newly added presets.

PLAYING FLUSS WITH MIDI

When Fluss is loaded as an Au3 Instrument plugin (i.e. Not in standalone mode or loaded as an effect plugin) you can choose to play the granular engine's 3 voices using MIDI.

To enable MIDI mode, go to the **MIDI Control** tab in the Quantiser window, or simply start playing notes (make sure that Fluss is set up to receive MIDI in your host app).



Dynamic envelopes

Fluss does not have traditional envelopes for MIDI triggered notes. Instead, the sonic character settings of the individual grains are translated to attack and release behavior.

Softer grains translate to softer envelopes, harsh grains translate to more staccato envelopes. It's an intricate interaction between the **grain window** settings, the **grain density** and **grain size**.

MIDI CC OVERVIEW

The preferred method for automating parameters in Audio Unit plugins is using their native AU Parameter protocol. This is vastly superior to MIDI CC thanks to the 32 bit floating point resolution (versus a measly 7 bit for CC) and conveniently meaningful names.

However, if your host app does not fully support AU Parameter automation you can use CC messages when Fluss is loaded as an instrument plugin:

Parameter	MIDI CC#	Parameter	MIDI CC#
Output volume	13	Global tuning	31
Ambience	14	Glide	32
Feedback	15	XY Note 1	33
Shimmer size	16	XY Note 2	34
Grain direction	17	XY Note 3	35
Window shape	18	XY Octave 1	36
Grain size	19	XY Octave 2	37
Cloud density	20	XY Octave 3	38
Cloud scatter	21	Left boundary	39
Filter cutoff	22	Right boundary	40
Resonance	23	Scan speed 1	41
Filter wet/dry	24	Scan speed 2	42
XY Filter position	25	Scan speed 3	43
XY Scan speed	26	XY Pan	44
Grain level 1	27	Processor Dry	45
Grain level 2	28		
Grain level 3	29		

