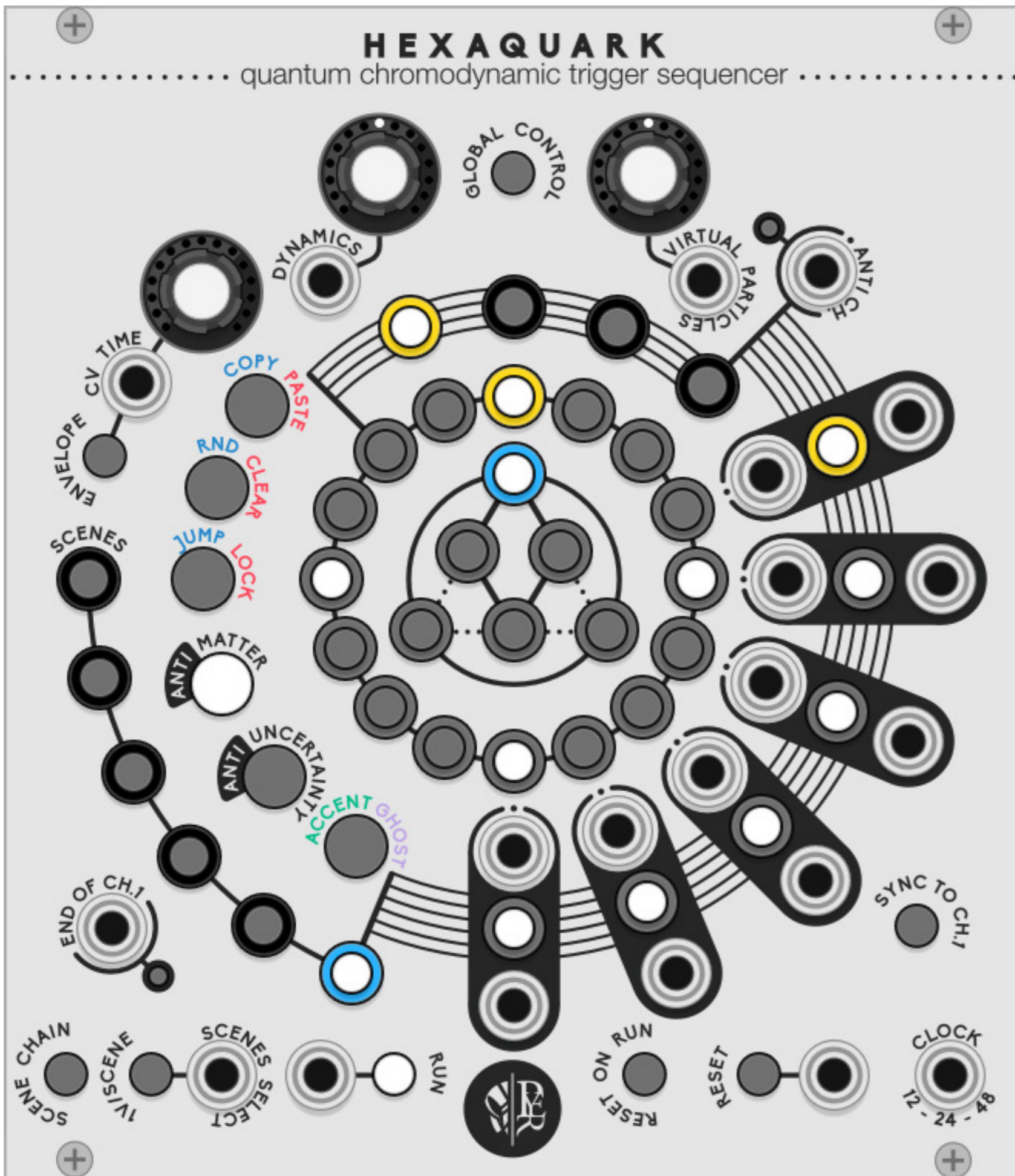


# GEODESICS — VULTIVERSE —



User Manual



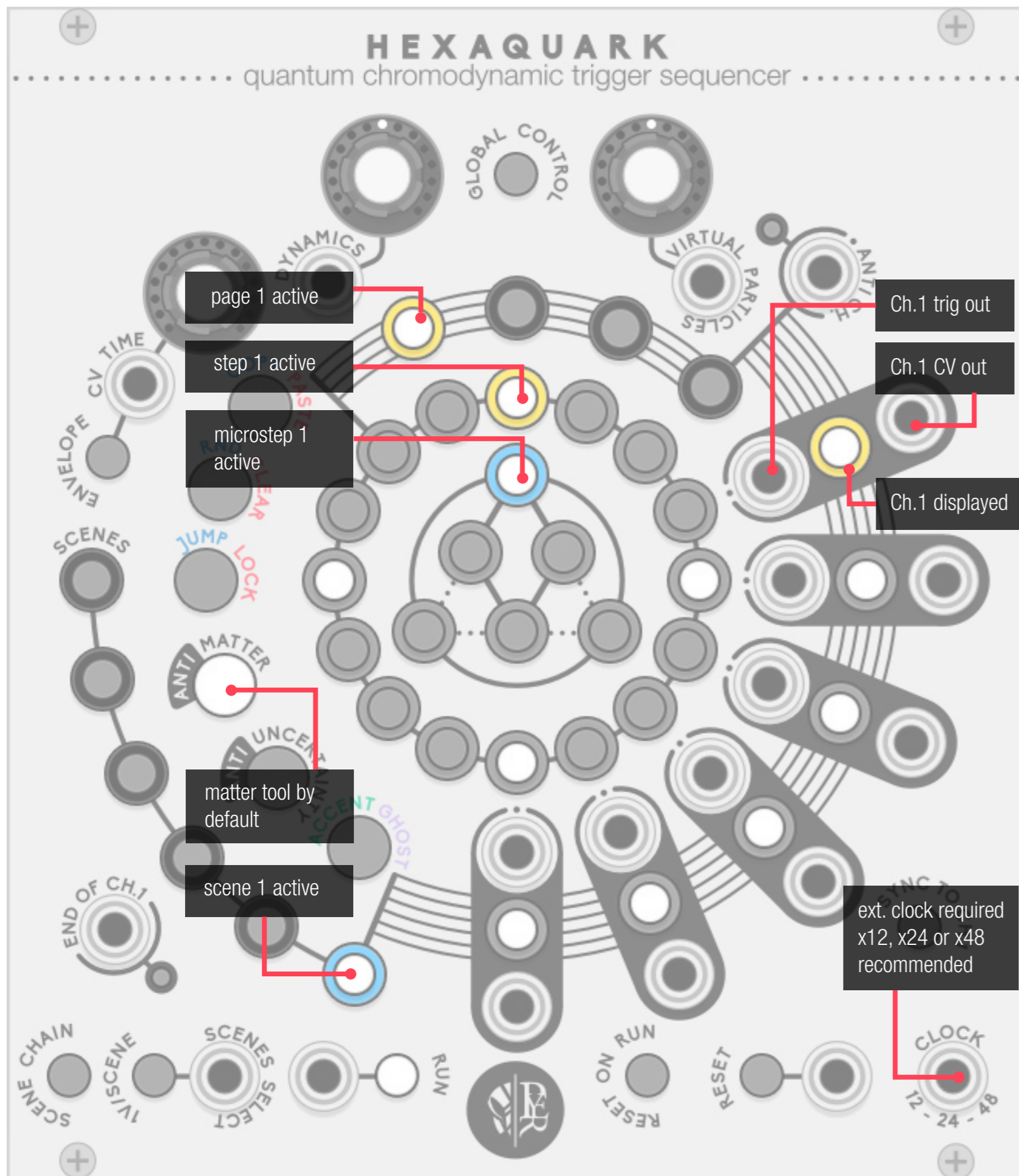
# HEXAQUARK

quantum chromodynamic trigger sequencer

Quarks are the heart of observable matter. A hexaquark is a hypothetical particle. Some believe it might be found inside pulsars.

**HEXAQUARK** is a poly-rhythmic trigger sequencer with 6 channels, expressive velocity, and dynamic envelope outputs.

A tool to write micro beats by composing with virtual particles, antimatter, and quantum void.



## QUICK START

### Clock input

While Hexaquark works with any kind of clock source, its ability to perform both triplets and quadruplets requires **a multiple of 12** to be in sync with other modules. x48 is recommended for fast ratcheting effects.

### Outputs

The 6 double jacks are the channel outputs. Trigger out is the dotted jack.

### Navigation

Clicking once on a level will select it and display its sublevels.

### Editing

Clicking a second time (or shift + click) on a level will change its state. The default tool is matter, which will active or silent the trigger

- Editing the 16 steps allows classic sequencing.
- Editing the 12 microsteps will create a micro rhythm within the selected step
- Extra pages and scenes can be added and edited.

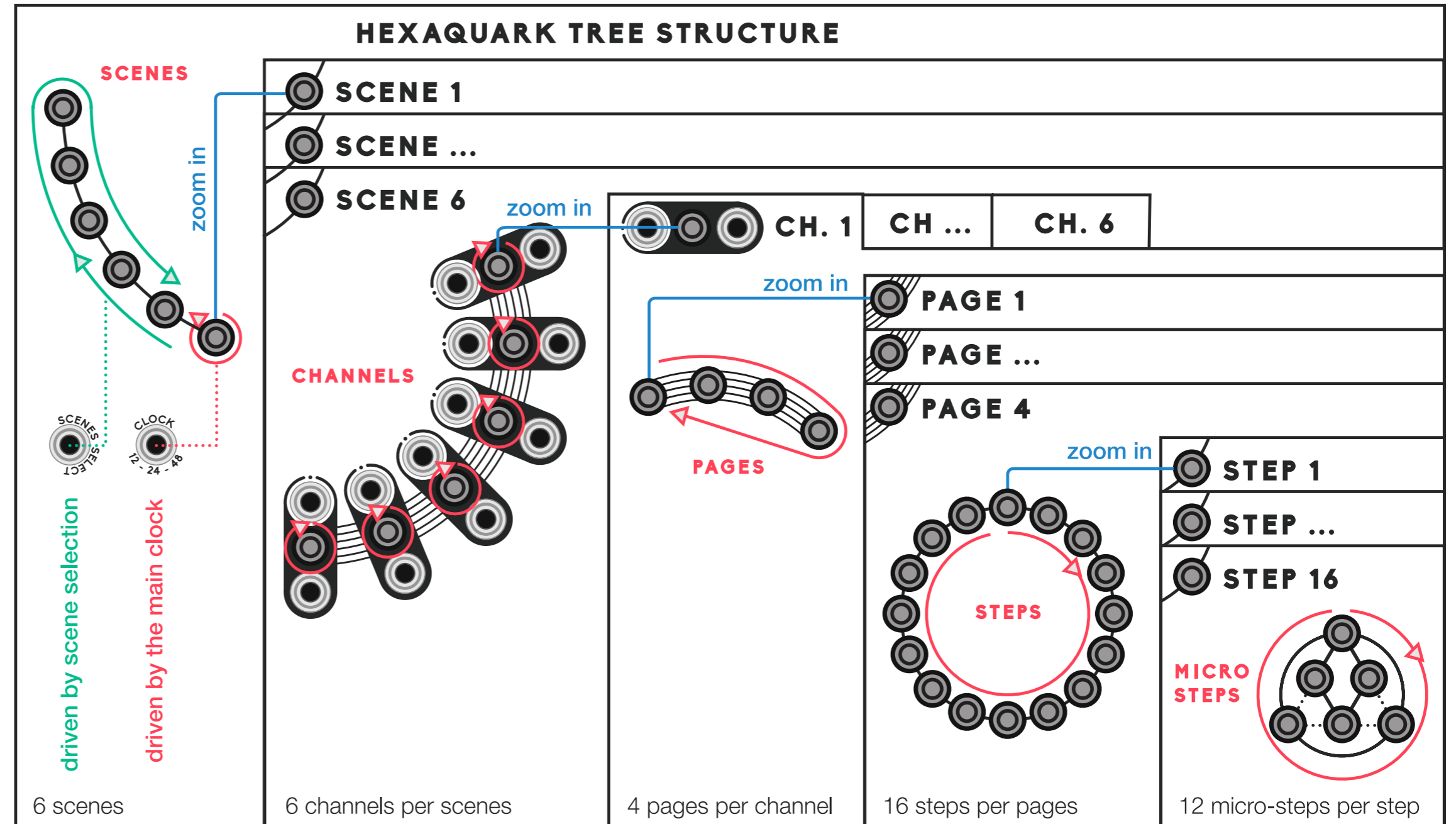
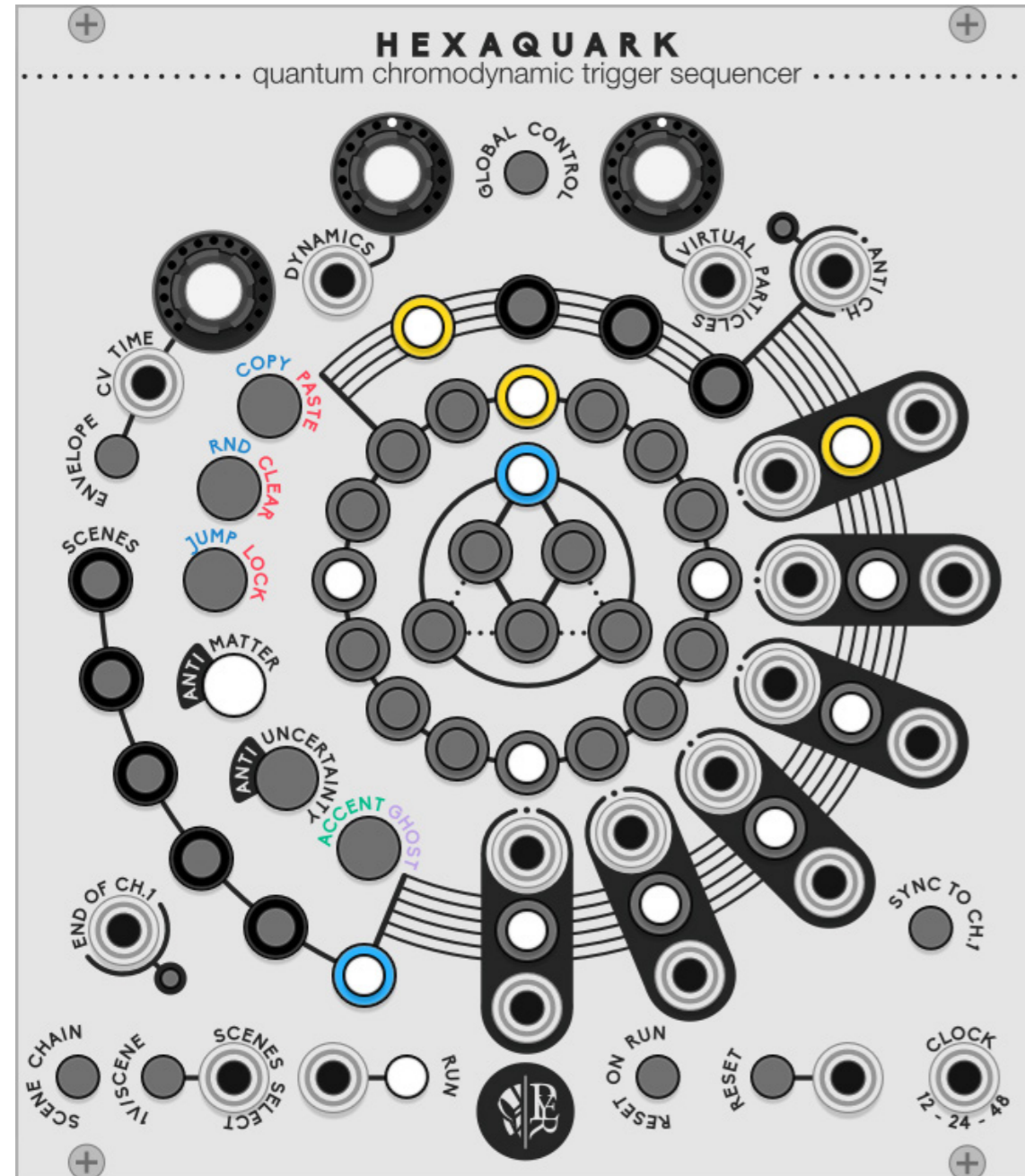
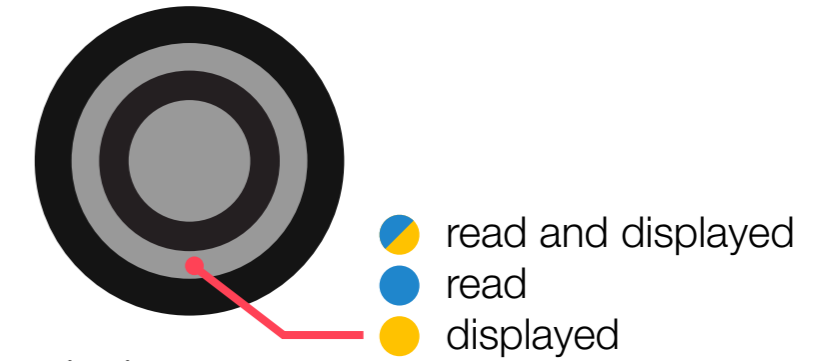
# 1. STRUCTURE

Hexaquark is to be seen as a molecular structure :

- 6 scenes to recall or play in chain
- a scene contains 6 channels
- a channel contains 16 pages
- a page contains 16 steps
- a step contains 12 micro steps for ratchet fx

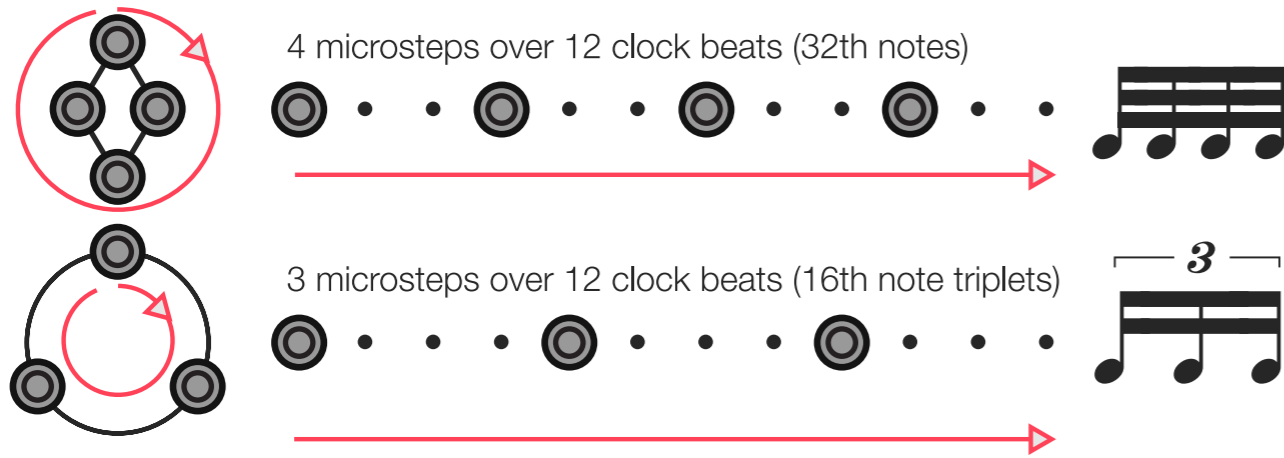
## Navigating in the structure

- A yellow ring indicates the displayed level
- A blue ring shows the play-head position in every level.
- Blinking is both read and displayed.
- Clicking once on a button (scene, channel, page, step, ...) will display its content.

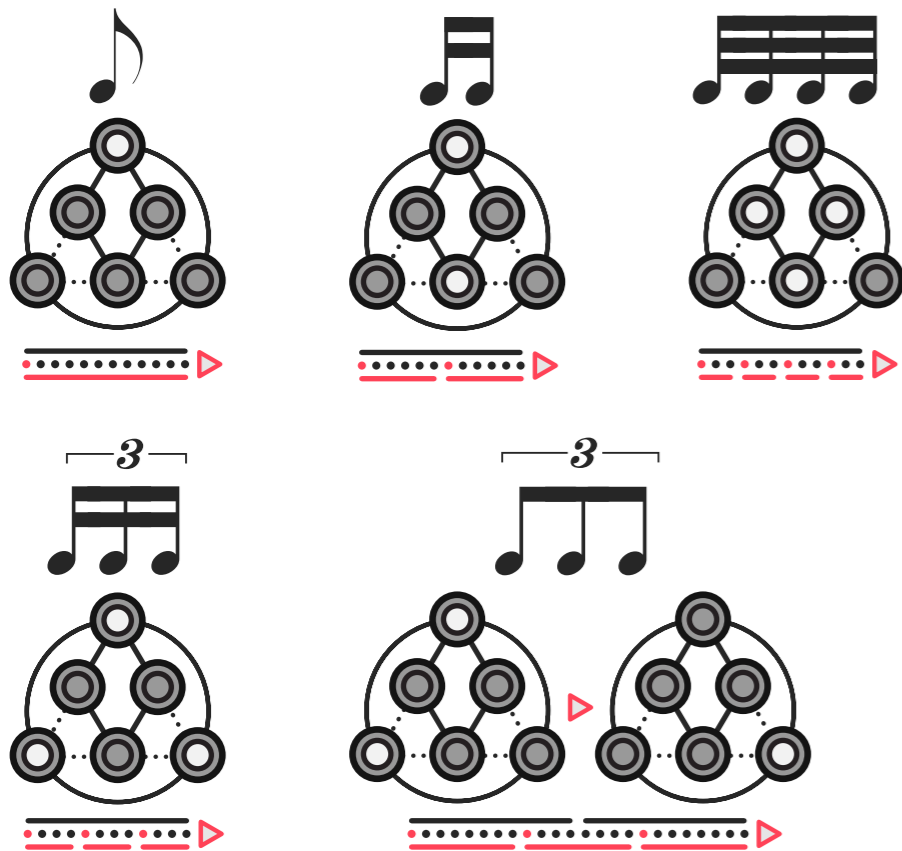


## 2. MICROSTEPS

The pyramid is an unusual figure in rhythm representation, but its structure allows to divide a step by 4 when considering center diamonds, or by 3 considering the outer triangle ... and of course, any blend of both.



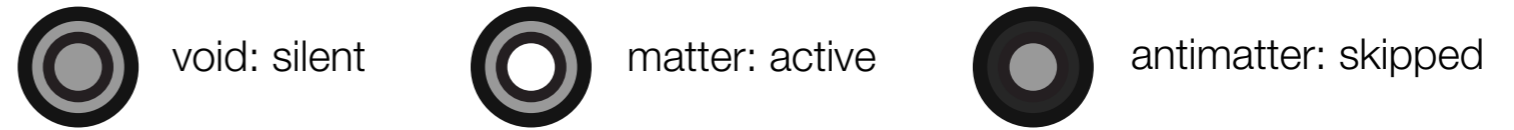
Micro-rhythm examples



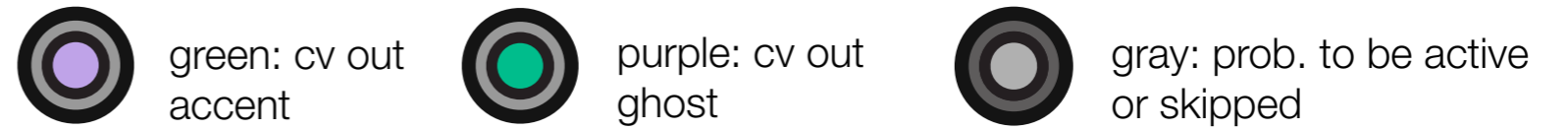
## 3. STATES

Clicking a second time or **shift+click** on a button (scene, channel, page, step, ...) will edit the state of the level.

Each level can be set in



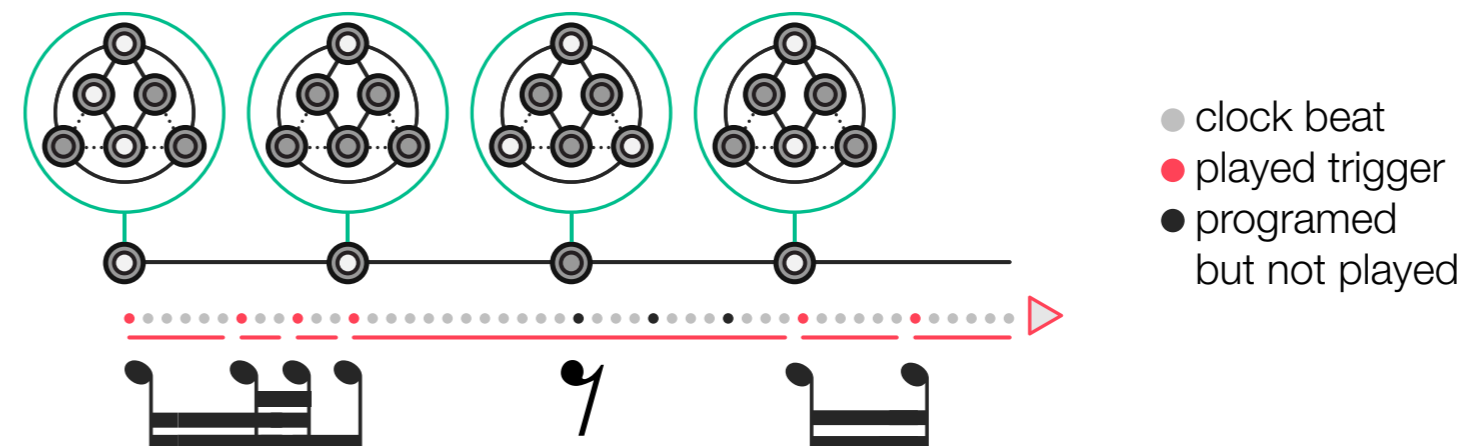
With some variations



Unlike most drum machines, these steps parameters can be **applied on any level:** pages, channel, scenes. This applies on all sublevels in a non-destructive way: muting a page will not erase the sequence, and muting a step will not destroy the ratcheting sequence of the micro steps.

**Unusual applications include:**

- muting a channel
- probability to mute a page in a multi-page sequence:
- manual cv accent or ghost of an entire channel
- probability to include or skip a complete scene in a chain
- skipping a microstep to create out of sync beats such as 31/32 grooves.



## 4. EDITION

Just like a painter dipping his pencil in different colors, the levels are edited differently depending on the tool selected, with a slightly different effect depending on the type of level. Clicking twice **or shift +click** on a level will change its state depending the selected tool. Most tools buttons have 2 tools in one so they can be toggled.

	MICRO STEP	STEP	PAGE	CHANNEL	SCENE
MATTER 	TRIGGER ON/OFF	ACTIVE / SILENT	ACTIVE / SILENT	ACTIVE / SILENT	ACTIVE / SILENT
ANTIMATTER 	SKIP / INCLUDE	SKIP / INCLUDE	SKIP / INCLUDE	SEND TO ANTI-CHANNEL	SKIP / INCLUDE
UNCERTAINTY 	TRIGGER PROB.	ACTIVE PROB.	ACTIVE PROB.	BERNOULI GATE	BERNOULI GATE
ANTI-UNCERTAINTY 	SKIP PROB.	SKIP PROB.	SKIP PROB.	ANTI CHANNEL BERNOULI GATE	SKIP PROB.

### Editors

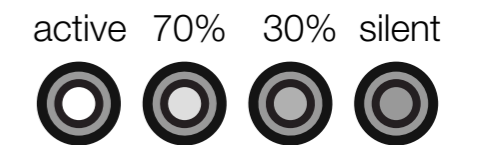
**Matter** allows to change the state of the level from silent to active. It can be used to compose a rhythm, insert a silence by bypassing a complete page, mute a channel or the complete scene.



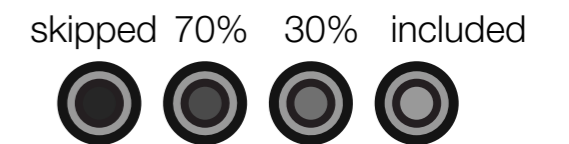
**Antimatter** allows to change the state of the level from included to skipped. It can be used to create odd measures, to compose with fewer than 4 pages, or to exclude a scene from the CV scene selection. Antimatter has its own display for editions.



**Uncertainty** allows to cycle through different levels of probability to be active, the result will be different at each reading. It can also be used to add a Bernoulli gate on each channel or scene.



**Anti-uncertainty** allows to cycle through different levels of probability to be skipped, the result will be different at each reading.



	MICRO STEP	STEP	PAGE	CHANNEL	SCENE
JUMP 	PLAY NEXT	PLAY NEXT	PLAY NEXT	FOLLOW PLAY HEAD	PLAY NEXT
LOCK 	PLAY AND LOOP	PLAY AND LOOP	PLAY AND LOOP	SOLO	PLAY AND LOOP
RND 	RANDOMIZE STATE	RANDOMIZE MICROSTEPS	RANDOMIZE STEPS AND MICROSTEPS	RANDOMIZE STEPS AND MICROSTEPS	RANDOMIZE STEPS AND MICROSTEPS
CLEAR 	INITIALIZE	INITIALIZE	INITIALIZE	INITIALIZE	INITIALIZE
COPY/PASTE 	COPY TO EQUAL LEVEL	COPY TO EQUAL LEVEL	COPY TO EQUAL LEVEL	COPY TO EQUAL LEVEL	COPY TO EQUAL LEVEL

## Tools

**Jump** will move the play head to the selected level. The action will happen at the end of the currently read level or at reset signals.

**Lock** will play and loop the selected level. A second click on the level will unlock it. Meanwhile, other tools and levels can be consulted and edited. It can also be used to solo a channel.

**Random** creates variations within the selected level and its sublevels. The amount of random is set by the virtual particles encoder. Negative value will include antimatter in the variations.

**Clear** reset the level to its initial state. Its current content will be lost.

**Copy Paste** allows to copy the content of a level and all its sublevels and paste it in an equivalent level from another page, channel, scene.

- Select the copy/paste tool - tool turns blue
- Click on the level to be copied - tool turns red
- Select an equivalent level to receive the content
- Click again on the level to confirm.

When Global control is on, the operation is done on all channels.

play



loop



clear



ready to copy



ready to paste



pasted



## 5. CV OUTPUTS

### Velocity and Envelope



Each channel has a CV output. Its role can be defined with the **envelope button**:

- Envelope off: A velocity or mod CV output with adjustable slew
- Envelope on: A Vult signature dynamic percussion envelope with adjustable decay.

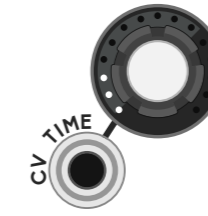
### Chromodynamics



The dynamic of the CV signal is controlled with the **accent/ghost tool** by defining the color of the level:

- White: normal
- Accent (green) amplifies the signal
- Ghost (purple) attenuates the signal.

### Slew and decay



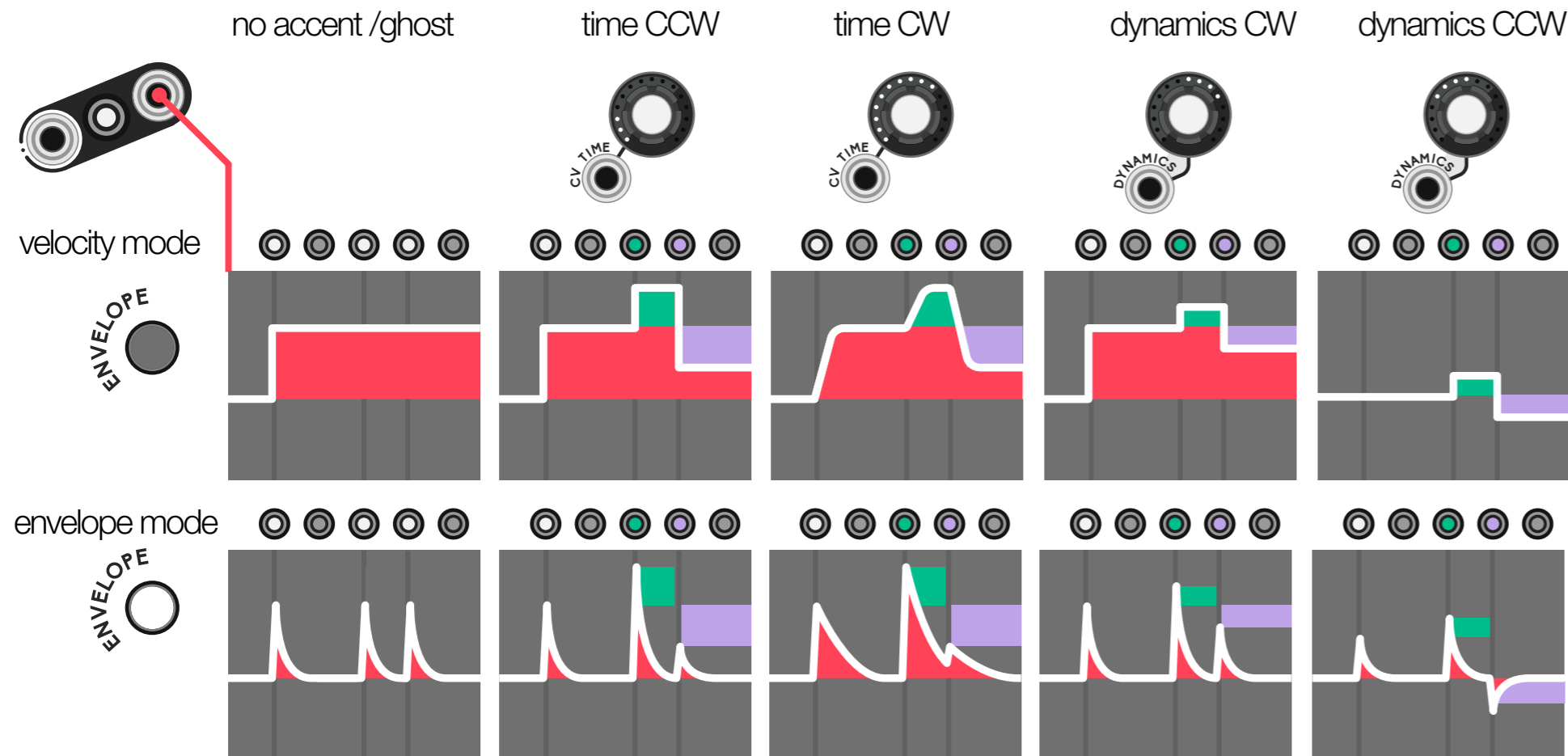
The **CV Time encoder** defines for each channel:

- Envelope off: the slew between each change of velocity
- Envelope on: the decay of the envelope

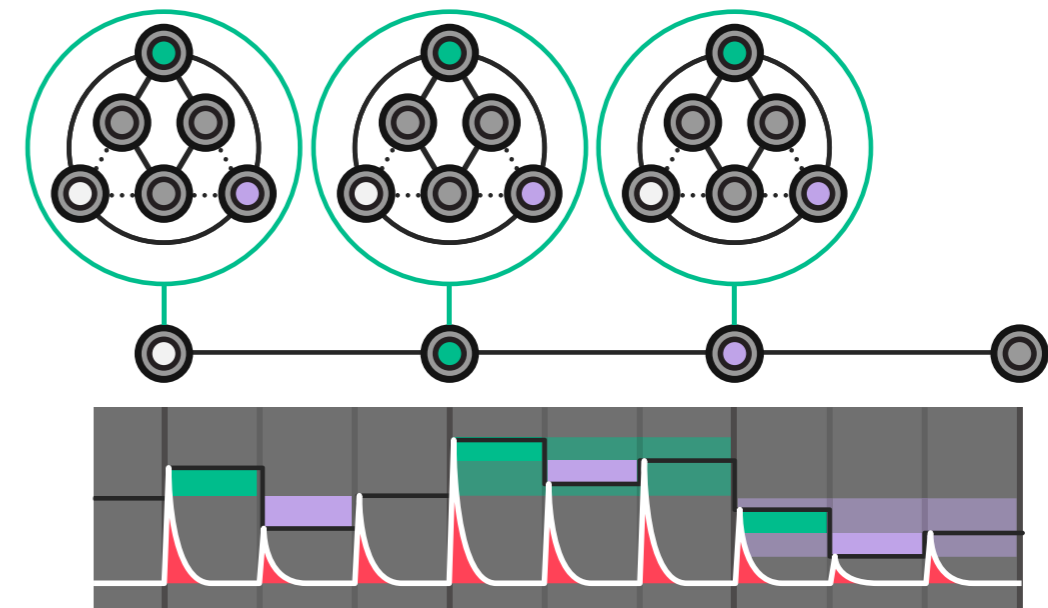
### Dynamic range



The dynamic behavior (difference between ghost and accent) can be set by the **dynamics encoder** or its CV control from compressed, bipolar (CCW) or wide range (CW).



The chromodynamics can be applied at every level of the sequence, from the micro-step to the complete scene. On higher level, it can be used as a performative tool to accentuates or damp a channel, a page, or a complete scene.



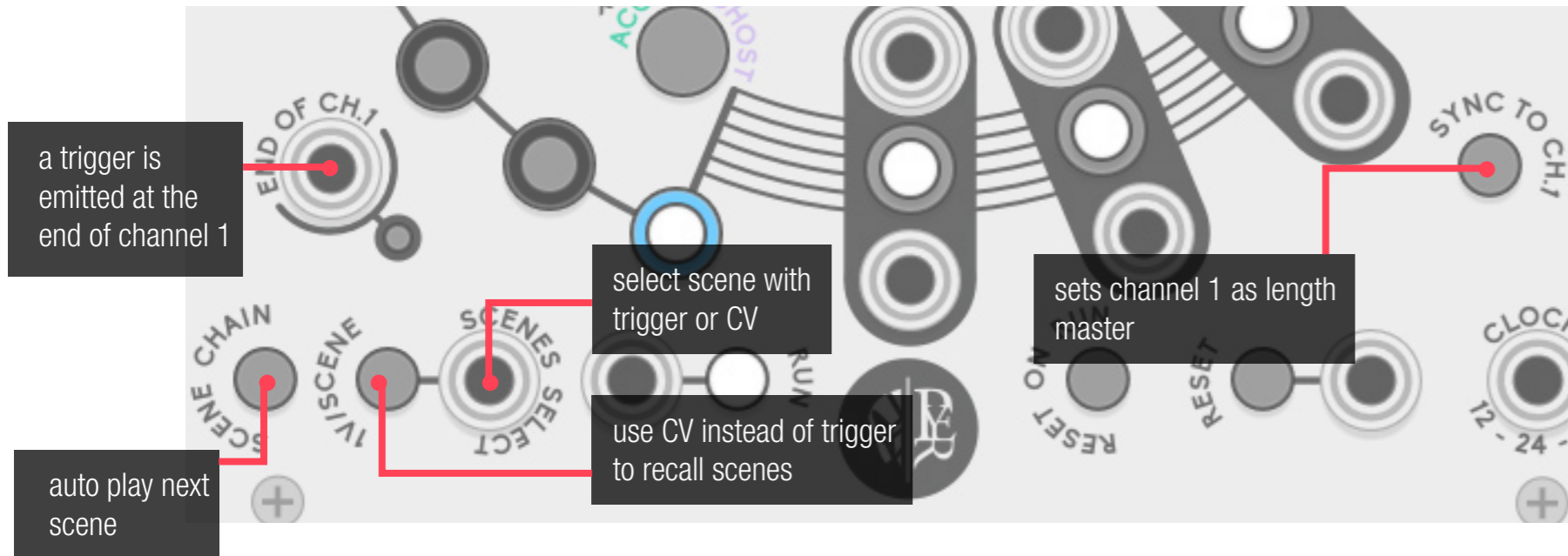


## 6. EXTRA FEATURES

### Scenes clock and CV select

the scenes are complete sequencers state that can be recalled in two different ways using the **scene select input**:

- As a **trigger input** to play the next scene. When the **scene chain** button is ON, the next scene will play automatically at the end of channel 1.
- As a **CV input** to address a specific scene, when the **1V/scene** button is ON, fed with an external signal from a sequencer clocked by **the end of ch.1**, a controller, or a random source.



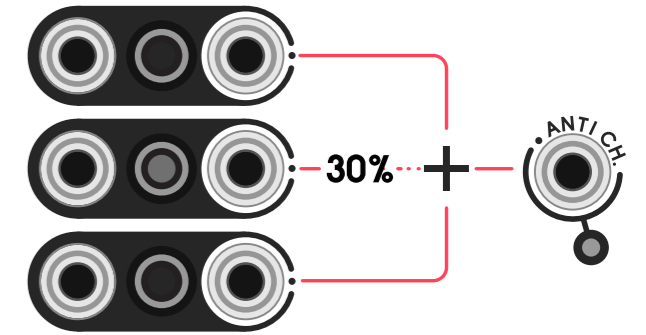
The **Sync to ch.1** button sets channel 1 as length master

- All tracks reset at the end of ch.1
- Scene changes happen only at the end of channel 1
- Jump and lock actions happen on all channels.

### Anti-channel

As a channel cannot be skipped, a **channel turned to antimatter** will emit its sequence through the anti-channel output.

Many channels can then be merged together in the anti-channel to create a new sequence. Anti-uncertainty on channel button will set a probability sending each trigger to the anti-channel.



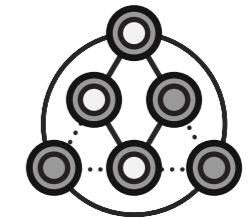
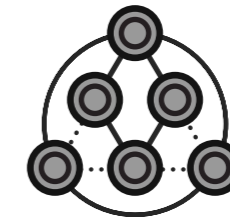
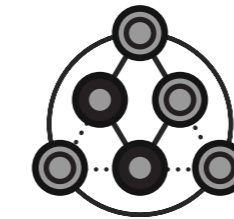
### Virtual particles

This effect is inspired by the quantum field theory: the void is full of virtual particles that don't have enough energy to exist as such. When the void is warmed up, virtual particles can borrow energy to exist for a very short time.

- In CW direction, a random group of microsteps has a chance to be triggered
- In CCW direction, a random group of micro step has a chance to be skipped

This process will give different results at each reading and is not destructive.

probability to skip

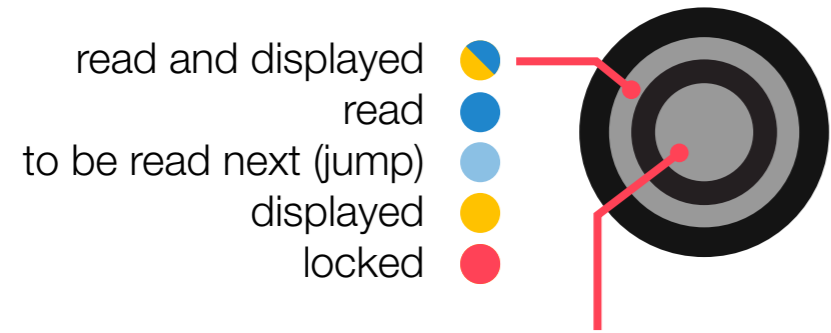


probability to trigger

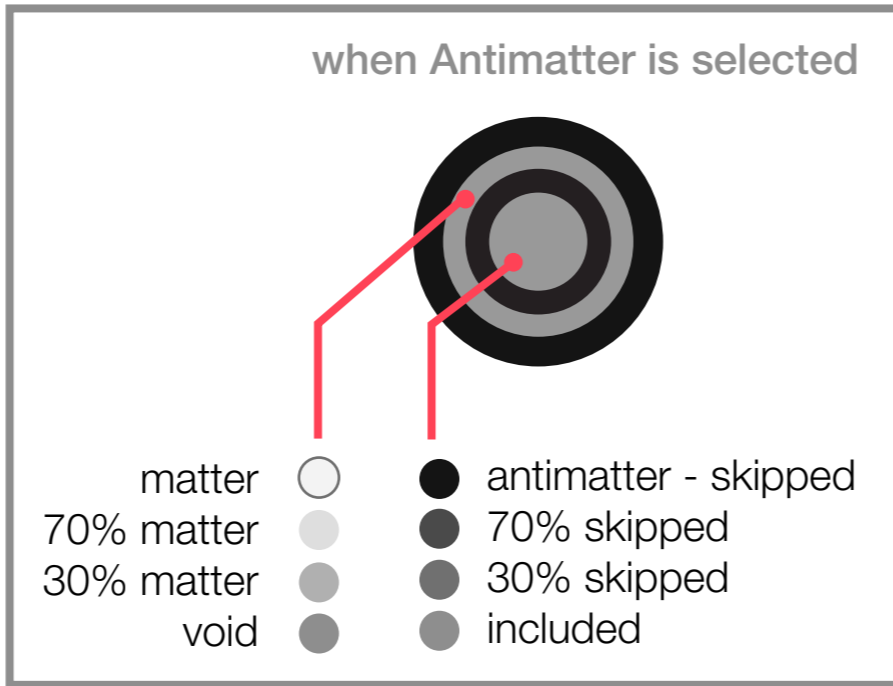
### Global control and encoders

The encoders set the value for the displayed channel only. When **global control** is on, the encoders set the value for all channel. A **monophonic CV** sets the value for all channels. A **polyphonic CV** sets the control for each channel separately.

# CHEAT SHEET

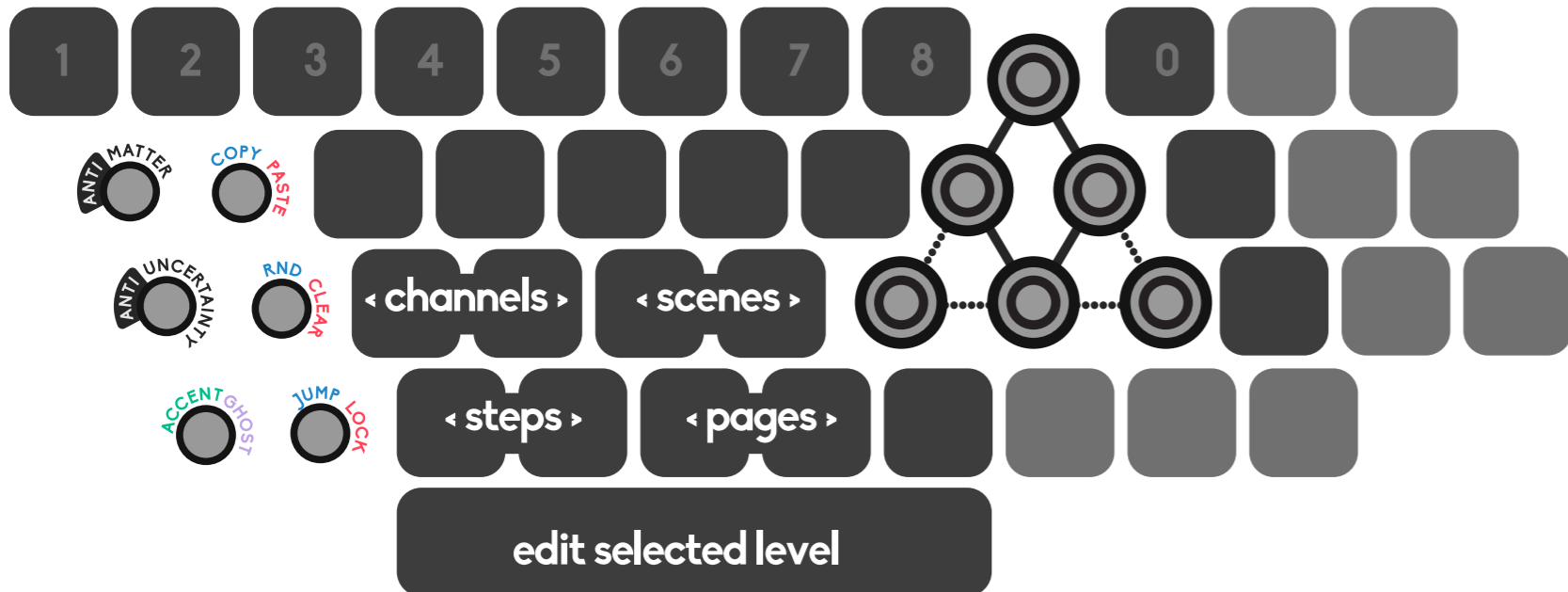


- antimatter - skipped (black)
- 70% skipped (dark grey)
- 30% skipped (medium grey)
- included (light grey)
- matter (white)
- 70% matter (light grey)
- 30% matter (medium grey)
- void (dark grey)



- Shift +Click** edit level at first click to avoid double click
- Shift +level keys** edit next level for paintbrush editing
- Alt +Click** jump to level
- Esc** back to matter tool

## shortcuts and previous/next level keys



	MICRO STEP	STEP	PAGE	CHANNEL	SCENE
MATTER 	TRIGGER ON/OFF	ACTIVE / SILENT	ACTIVE / SILENT	ACTIVE / SILENT	ACTIVE / SILENT
ANTIMATTER 	SKIP / INCLUDE	SKIP / INCLUDE	SKIP / INCLUDE	SEND TO ANTI-CHANNEL	SKIP / INCLUDE
UNCERTAINTY 	TRIGGER PROB.	ACTIVE PROB.	ACTIVE PROB.	BERNOULI GATE	BERNOULI GATE
ANTI-UNCERTAINTY 	SKIP PROB.	SKIP PROB.	SKIP PROB.	ANTI CHANNEL BERNOULI GATE	SKIP PROB.
ACCENT 	CV OUT AMPLIFY	CV OUT AMPLIFY	CV OUT AMPLIFY	CV OUT AMPLIFY	CV OUT AMPLIFY
GHOST 	CV OUT ATTENUATE	CV OUT ATTENUATE	CV OUT ATTENUATE	CV OUT ATTENUATE	CV OUT ATTENUATE
JUMP 	PLAY NEXT	PLAY NEXT	PLAY NEXT	FOLLOW PLAY HEAD	PLAY NEXT
LOCK 	PLAY AND LOOP	PLAY AND LOOP	PLAY AND LOOP	SOLO	PLAY AND LOOP
RND 	RANDOMIZE STATE	RANDOMIZE MICROSTEPS	RANDOMIZE STEPS AND MICROSTEPS	RANDOMIZE STEPS AND MICROSTEPS	RANDOMIZE STEPS AND MICROSTEPS
CLEAR 	INITIALIZE	INITIALIZE	INITIALIZE	INITIALIZE	INITIALIZE
COPY/PASTE 	COPY TO EQUAL LEVEL	COPY TO EQUAL LEVEL	COPY TO EQUAL LEVEL	COPY TO EQUAL LEVEL	COPY TO EQUAL LEVEL

# GEODESICS

## — VULTIVERSE —



### **Geodesics Vultiverse**

created by Leonardo Laguna Ruiz and Pierre Collard  
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Code by Leonardo Laguna Ruiz – visuals by Pierre Collard  
Thank you dear beta tester team, you are now free to go.  
Artem, David, Espen, Omri and Paul.

Thanks to Marc Boulé who brought Geodesics to this point  
Thanks to Omri Cohen for his tremendous help and support