

# Nervous Squirrel – Zeno's Paradox

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## Zeno's Paradox Eurorack Module

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### Creative Sound Design Strategies

The **Nervous Squirrel Zeno's Paradox** is a deep clock divider with 30 outputs, each halving the frequency of the one before, capable of dividing an incoming clock/audio signal by up to 1,073,741,824. It accepts either CV or audio-rate signals, and resets via trigger or manual pushbutton. With its ultra-wide range and audio-rate response, it's ripe for experimental modular patching.

Below are patching and modulation techniques tailored for:

- Distorted Percussive Sounds
  - Dubstep/Drum & Bass Basslines
  - Haunting Atmospheric Pads
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## 1. Distorted Percussive Sounds

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### Patch:

- Feed a drum machine output, noise burst, or sharp percussive audio into **CLOCK IN**. - Patch several divider outputs (e.g. /4, /16, /256) to different VCAs or ring modulators, applying envelopes to each for percussive

articulation. - Sequence resetting with triggers for rhythmically chopped results.

**Modulation Tips:** - **Reset Jack:** Modulate with a random or sequenced trigger pattern to create glitchy, syncopated rhythms. - **Clock Rate:** Use an audio-rate oscillator or LFO with waveform folding/distortion before the Clock In for unexpected percussive timbres. - **Noise as Clock:** Patch white noise into Clock In for “sample & hold” like percussive textures, where each output will have unique filtered characteristics.

## 2. Dubstep/Drum & Bass Basslines

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**Patch:** - Send a sawtooth or square VCO running at audio rate to **CLOCK IN**. - Take several outputs ( $/2$ ,  $/4$ ,  $/8$ , etc.) and patch through overdrive, wavefolders, and filters to create stacked sub and mid-bass layers. - Use a sequencer or RYO Voltage Controlled Switch (or equivalent) to rhythmically switch between divider outputs, creating fast, shifting basslines.

**Modulation Tips:** - **Manual Reset:** Use for wild rhythmic stutter effects – punch in a reset with a trigger transformer or footswitch for live performance. - **Envelope-Follower:** Use a kick drum’s envelope to modulate the audio rate going into the clock, imparting sidechain-like pulses to the divider’s output. - **Filter/FX Chains:** Each output is a square wave at varying octaves; send some through waveshaping modules to add digital grit, or ring mod them for FM-like tones.

## 3. Haunting Atmospheric Pads

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**Patch:** - Patch filtered white noise or a slowly modulating oscillator into **CLOCK IN**. - Use a deep clock division output ( $/131,072$  and above) as a control voltage to modulate wavetable position, filter cutoff, or reverb/wet mix on other synth voices. - Send divider outputs to control Vactrol-based modules for subtle, evolving changes.

**Modulation Tips:** - **Slow LFO to Reset:** Every few bars, reset the counters to re-sync evolving pad harmonies or filter textures, creating an “otherworldly” regularity. - **Subtle Audio-Rate Modulation:** Use the highest divider outputs as low-frequency oscillators for tremolo or warped vibrato on sustained

sounds. - **Multichannel Pads:** Process several divider stages differently and mix them for a harmonically rich pad with constantly morphing, ghostly overtones.

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## Further Exploration

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- **Stack and Chain:** Chain multiple Zeno's Paradox modules for even more insane slow/fast pulse outputs.
  - **Parallel Modulation:** Use outputs for cross-modulating envelopes, delays, or effects — especially with VC parameters that respond to sudden steps.
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## Creative Highlights

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- **Massive Sub-Octaves:** Instantly generate clean musical sub-harmonics for beefy basslines or foundational drone layers.
- **Rhythmic Choppers:** Use drum input + reset for syncopated “bitcrushed” percussion.
- **Granular Lo-fi Texture:** White noise in yields cascading filtered flavors across outputs, ideal for eerie beds or foley.

Explore multi-output patching, cascading clock resets, and feeding it *anything but regular clocks* for endless modular mayhem!

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