

to produce random notes across about three octaves of the pentatonic scale (on channel 1) and one unquantised (on channel 2).

### Ramp

The ramp output (on channel 2) increases from 0V to 6V across each bounce sequence. The output is updated on each bounce, rather than continuously.

### Slide

The slide output (on channel 1) is similar to the ramp output, but rather increasing from 0V to 6V each time, the output transitions to a new random voltage throughout each sequence.

### Audio delay

With a patch cable connected to Audio input 1, the two audio outputs become outputs of a stereo 'ping-pong' delay, which runs independently of the trigger generators. Delay lengths are controlled by Audio input 2.

### Panel interface:

Main knob: Bounce damping — sets the rate at which trigger signals speed up (and decay in amplitude). Fully to the left, the time between bounces halves between each bounce. Fully to the right, the bounce time decays by only a tiny amount.

Knob X & Y: Bounce rate — scales the bounce speed on channel 1/2

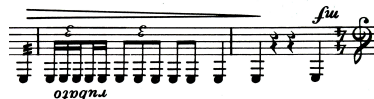
Switch: Retriggering of new bounces

Top — Bounce sequences restarted in a loop

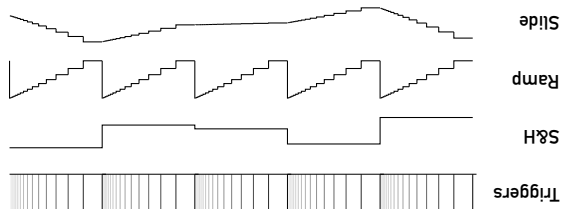
Middle — Bounce sequences started by new pulse inputs

Bottom — Start a new bounce sequence on both outputs

Synth Bumpers is a generator of 'bouncing ball' rhythmic sequences:



These are sequences realised by two independent trigger generators, and a ping-pong audio delay. Four types of CV output allow control of parameters (such as the crescendo above) throughout the sequence.

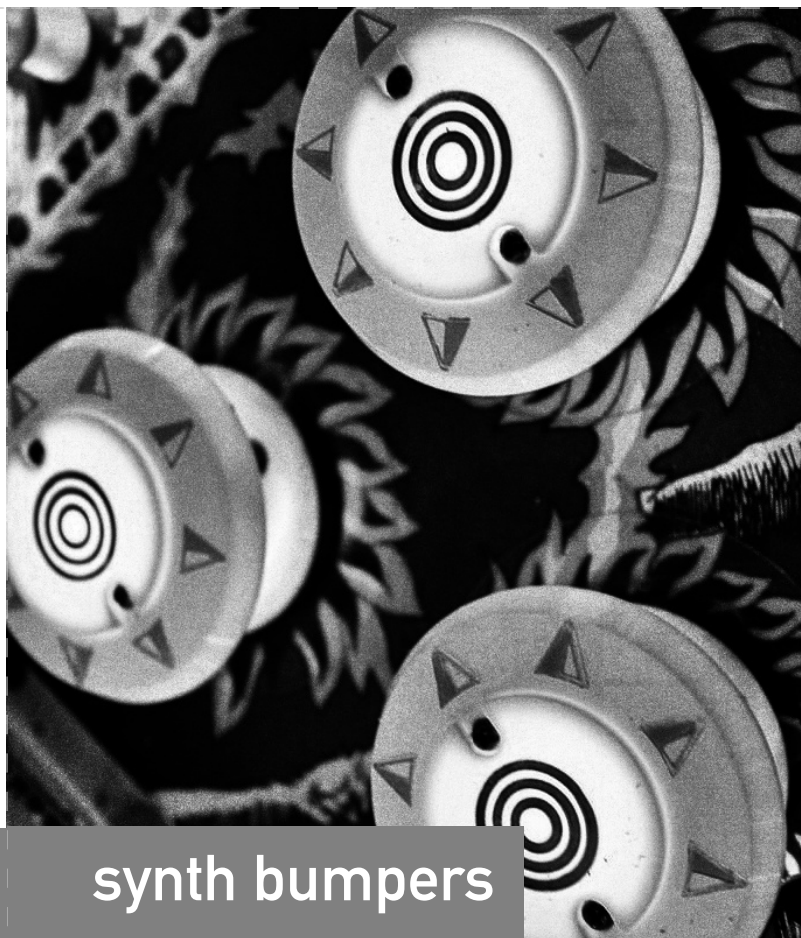


### Triggers

The two Pulse outputs generate triggers that vary in length from about 1.3ms at the start of the sequence to 0.02ms at the end. They are designed to be connected to the two Slopes inputs with the slopes in falling sawtooth mode (↘), usually with the other switch in the central (non-looping) position. For input triggers shorter than about 1.5ms, the Slopes does not have time to rise to its full amplitude, and instead the maximum amplitude of resulting envelope is proportional to the pulse duration.

### S&H

Two random sample-and-hold outputs are available, one quantised



## synth bumpers