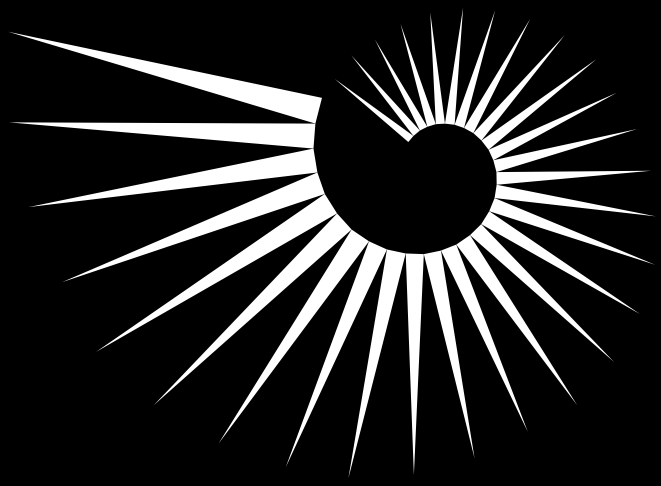
Spirals



Spirals Pitch and Multi Tap Delay Card for Z-DSP

This card uses various multi-tap delay techniques in combination with dual pitch shifters to create a wide range of chorus, echo and reverb sounds. Programs on this card derive from the complex algorithms found on high end studio effects processors, which, while powerful, have an almost torturous editing process. On the Z-DSP all of the power of the internal code is controlled by three simple adjustments for sculpting the sound, so they are made to tweak and play live, not navigate through dozens of menu pages.

Terms:

Multi-tap delay lines in these programs are mono with at least 4 output taps in a variety of ratios.

Detune is a very small up or down pitch shift that thickens the sound. When placed in the feedback loop it smears the pitch of the sound.

Diffusion is a set of all pass delays usually at the input of the process which smear the input sound using short delay times. Diffusion delays are modulated to further break up the sound, and when placed in the feedback loop discrete echoes turn into reverberant washes.

Intervals are the following for dual programs:

Left	Right	
-12	-7	Octave and Fifth Down
-7	-4	Major Chord Down
-7	-3	Minor Chord Down
-5	+3	Minor Chord Inversion
-5	+4	Major Chord Inversion
+3	+7	Minor Chord
+4	+7	Major Chord Up
+7	+12	Octave and Fifth Up

1> Detuned Interval Taps

The summed mono input passes through a pitch shifter with one of four intervals (-12, -7, +7, +12 semitones). Multiple delay taps have fixed ratios and are in the feedback loop with the detuning and diffusion. The interval shift is not in the feedback path, but the detune will slowly change the pitch during each feedback cycle.

Time - Maximum delay time of the taps
Fdback - The amount of signal from each tap fed back into the delay and detune
Pitch - the interval of pitch shift (-12, -7, +7, +12) and the detuning amount

2> 6 Taps Dual Interval

The summed mono input passes into a delay line. The multitap delays have a fixed ratio and are in the feedback loop with the diffusion. A pair of pitch shifters are set to intervals and are outside the internal feedback loop, but external analog feedback will add the final pitch shifted sound to the regeneration.

Time - Maximum delay time of the taps
Fdbck - amount of the delay taps are fed back into the delay
Pitch - The intervals of the two shifters

3> Pitch Pong

The summed mono input passes through a delay line for the Left and a single tap from this delay feeds the input for the Right delay line. Feedback is the output of the Right tap fed back into the Left input for the classic 'ping pong' effect. Both of the delay lines have their own Pitch shifter tuned to intervals.

Time - Maximum delay time of the taps
Fdback - The amount of signal from each tap fed back into the delay
Pitch - the interval of the pitch shifters

4> Panning Detune Taps

The summed mono input passes through multi-tap delay line with controls for the maximum delay length. Dual pitch shifters for Left and Right are tuned to slight detuning with modulation and the pitch shifting is inside the internal feedback loop. The delay taps are panned left-right using two internal sine wave LFOs with an adjustment for their rates.

Time - Maximum delay time of the taps

Fdback - The amount of signal from each tap fed back into the delay and detune
Pitch - the interval of the pitch shifters

5> Diffuse Dual Interval

Similar to Program #2 but with a single delay line tap and more diffusion. The summed mono input passes into a delay line. The delay line is in the feedback loop with the input diffusion and output diffusion creates the stereo image. The pitch shifters are set to intervals and are outside the internal feedback loop, but external analog feedback will add the final pitch shifted sound to the regeneration.

Time - Maximum delay time of the taps
Fdbck - amount of the delay taps are fed back into the delay
Pitch - The intervals of the two shifters

6> Interval Feedback

The summed mono input passes into a delay line. The multitap delays have a fixed ratio and are in the feedback loop with the pitch shifters. The pitch shifters are set to intervals and one for Left and one for Right output. Pitch shifting is inside the internal feedback loop, creating arpeggio patterns.

Time - Maximum delay time of the taps
Fdbck - amount of the delay taps are fed back into the delay
Pitch - The intervals of the two shifters

7> Dual Interval Feedback

The summed mono input passes into separate Left and Right delay lines. The multitap delays have a fixed ratio and feedback into their respective sides. The pitch shifters are set to intervals, one for Left and one for Right output. Pitch shifting is inside the internal feedback loop - adding external feedback will mix the intervals together.

Time - Maximum delay time of the taps
Fdbck - amount of the delay taps are fed back into the delay
Pitch - The intervals of the two shifters

8> Diffuse Dual Detune

The summed mono input passes through multitap delays that have a fixed ratio and are in the feedback loop with the detuning and diffusion. Both of the pitch shifters will detune to slowly change the pitch during each feedback cycle.

Time - Maximum delay time of the taps
Fdback - The amount of signal from each tap fed back into the delay and detune
Detune - the amount of pitch shift