Vulpus Labs
Spree

Introduction

Spree is polyphonic chorus effect with per-channel randomised drift applied to each of the effect parameters, so that there is a slight difference in the character of the modulation applied to each polyphonic voice.

Although it can be used with the "spread" parameter set to 0, resulting in a perfectly synchronised chorus effect being applied to all polyphonic channels, Spree is more interestingly applied with a wider spread value, resulting in a wider range of drift between polyphonic channels.

Because the chorus effect applies cyclic modulation to its input, blending in a slightly delayed voice which moves up and down in pitch, having multiple polyphonic channels whose cycles are slightly unsynchronised can give chords and pads a complex, dynamic quality, as the modulation cycles of each voice move in and out of phase with each other.

Theory of Operation

The chorus effect applied by Spree to each polyphonic channel is fairly standard. Each channel's signal is captured into a small buffer, from which a delayed and rate-modulated signal is extracted and blended with the original signal. The modulated signal can be fed back into the buffer, resulting in further modulation being applied to an already modulated signal. Each aspect of this process is controlled by a parameter of the module:

- **TIME**: the length of the delay applied to the modulated signal, ranging between 4 and 50 milliseconds.
- **WIDTH**: the width of rate-modulation applied to the signal - how much it wobbles up and down in pitch.
- **SPEED**: the rate at which the signal is rate-modulated - how fast it wobbles up and down in pitch. This ranges between 0.12 and 8Hz.
- **FBCK**: how much of the modulated signal is fed back into the buffer - this ranges between 0 and 80%.
- **MIX**: the wet/dry mix of the source and modulated signals.

The first four of these parameters drift very slowly by a random amount, ranging between at least 80% and at most 120% of the value set by the controls. The size of the drift range is controlled by the **SPREAD** parameter: at 0%, it is always exactly 100% of the control value; at 100% it is the widest allowed.

CPU usage

Spree is necessarily more expensive than a monophonic chorus effect, and should not be used if only a single voice is to be processed - there are several fine monophonic chorus modules that will serve in this case. Alternatively, you may wish to use a utility module to mix your polyphonic signal down into a single monophonic signal, or a pair of signals in stereo, and then process the combined mono or stereo signal with a chorus effect designed for that task.

Spree comes into its own when you want the dynamic quality that arises when the cyclic modulation applied to each polyphonic channel is allowed to drift, resulting in phasing of the modulation effect between channels. This can sound more dynamic and musical than a uniform modulation effect applied to the sum of the channels - as if a chorus of different instruments were playing.

An alternative approach to achieving this kind of diversity of expression among polyphonic voices is to apply a source of randomisation to the controls of the polyphonic instrument source (e.g. causing the pitch and/or filter CV of each source voice to drift or modulate slightly). This might be a little more onerous to wire up, however, whereas Spree can easily be patched in as the last thing in a polyphonic processing chain prior to mixing down to mono/stereo.

Controls

Spree has a single polyphonic **IN** jack, and a single polyphonic **OUT** jack. The remaining jacks allow a control signal to modulate the value set by the corresponding knob, between 0 (at -5v) and the value set on the knob (at 5v).

The five knobs control the characteristics of the chorus effect applied to each polyphonic channel. As discussed in the previous section, these are **TIME**, **DEPTH**, **SPEED**, **FBCK** (feedback) and **MIX**.

Next to the **SPEED** control jack there is a **RATE SWITCH**, which switches the range of the **SPEED** knob between 1-8Hz (when the switch is set up) and 0.12 to 1Hz (when the switch is set down).

The **SPREAD** slider at the bottom of the module controls the range of the random drift applied to the modulation parameters on the chorus of each polyphonic voice. At the far left, no drift is applied; at the far right, maximum drift is applied.

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