

# **Chebyshev Exciter**

*Version 1.0.0*

# Welcome

Thank you for downloading this fine plug-in. **Chebyshev Exciter** is an exciter plugin with a chebyshev waveshaper used to generate the harmonics.

In order to get the most out of the **Chebyshev Exciter**, please spend a few moments reading this brief manual.

# License

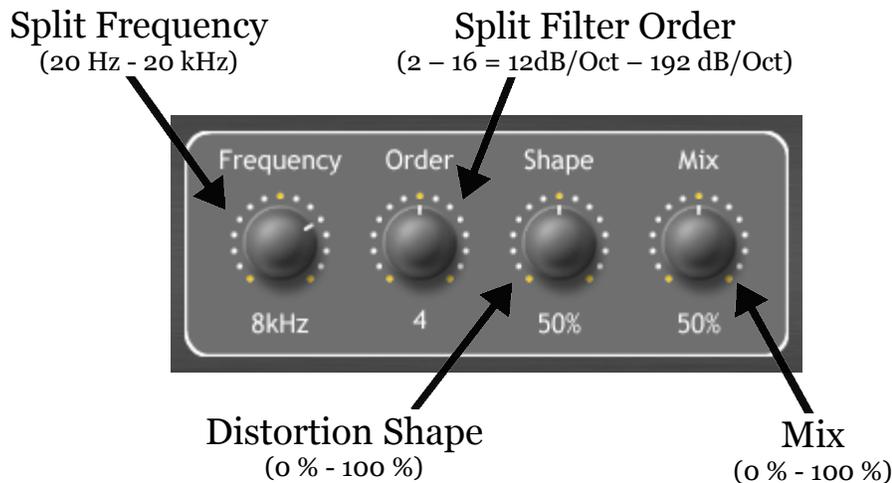
The pre-compiled **Chebyshev Exciter** has a very simple license:

1. **Chebyshev Exciter** is freeware. This means that you are free to distribute it, give it to friends, or otherwise share it around. However, only the entire unaltered archive, including this document, may be re-distributed.
2. Copyright of the code and the finished plug-in remain the property of the *Delphi ASIO & VST Project* and namely *Christian-W. Budde*.
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4. Magazine editors are welcome to include the plug-in on cover mount discs or similar media; however, I request that am informed about it via [e-mail](#). A few copies of the publication are always appreciated, but not expected.

# User Interface

The user interface shows all adjustable parameters and a readout for the characteristic curve. There are no meters available to maintain the lowest possible CPU usage without wasting too much CPU cycles. Either a dedicated analyse plugin or the build in meters can be used for this task.

Here is a commented screenshot:



On the left of the plugin the crossover frequency splitter controls can be found. A Linkwitz-Riley filter is used to separate the audio signal into a low and a high frequency band. The splitting frequency and the filter order can be adjusted.

On the right the shape of the distortion and the mixing can be adjusted.

The dials can be adjusted by clicking and dragging up and down on a dial. To reset the dials to their defaults hold the [Ctrl] key while clicking on the dial. Holding the [Shift] key enters the fine tune mode.

Below any dial a read out shows the exact value of a parameter.

# The parameters

This plugin features 4 adjustable parameters in two categories. The categories are '**Crossover**' containing the crossover filter parameters and '**Distortion**' containing the distortion shape and mix parameter.

## ***Crossover***

To separate the two bands, a linkwitz-riley filter is used (per channel). These filters have the properties to maintain a flat frequency response when mixed together.

**NOTE:** Since Linkwitz-Riley filters are minimum phase filters they do have a group delay and might introduce phasing issues if the order is set too high.

## ***Frequency***

The 'frequency' parameter controls the split frequency. The range is 20 Hz – 20 kHz.

## ***Order***

The filter order can be adjusted from second order to sixteenth order (in steps of two). This equals to a roll-off of 12 dB/Oct to 192 dB/Oct.

## ***Distortion***

To synthesize high frequency harmonics based on low frequencies from the original signal, a chebyshev waveshaper is used. It has the unique property, that oversampling is not required if the input signal is bandlimited (which is the case here due to the band splitting). Only harmonics up to the nyquist frequency are generated, thus no oversampling is used resulting in a low CPU usage.

## ***Shape***

The chebyshev waveshaper is modelled to emulate a rectangle shaped distortion. The shape parameter controls the phase shift.

## **Feedback / Bug Reports**

I am always eager to hear feedback or have bugs reported. The easiest way is to send me a mail to: [Christian@aixcoustic.com](mailto:Christian@aixcoustic.com)

Furthermore feel free to download the source code, that can be found in the [Delphi ASIO & VST Project](#) at [sourceforge.net](http://sourceforge.net).

## **Version History**

1.0.0      First release!

## **Credits**

- Programming: Christian W. Budde
- Additional Framework Programming: Tobias Fleischer, Maik Menz
- Special Thanks: Swen Müller, Duncan Parsons, Laurent de Soras
- Documentation based on a template by Greg Pettit

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