SIR

Version 2.4.000

Christian Knufinke Software

Manual

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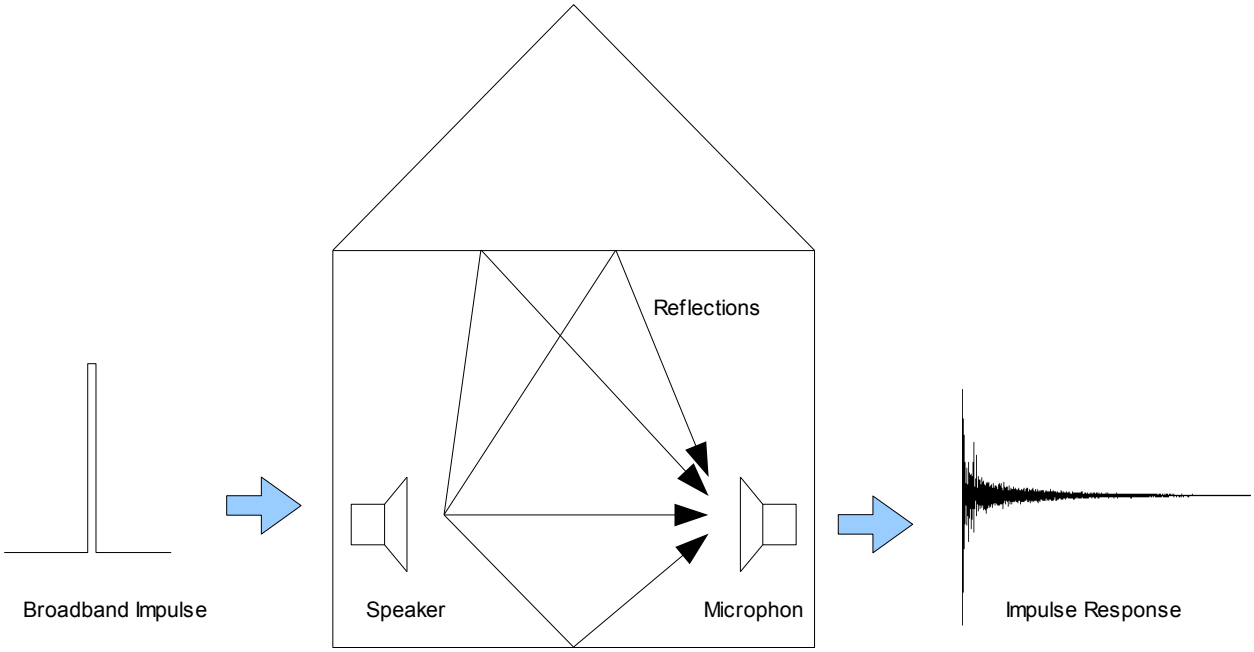
1 Introduction

SIR is reverb device that works with impulse responses. It is based on the mathematical convolution operation.

An impulse response (IR) is an acoustic fingerprint of a physical or virtual space.

There are several ways to produce impulse responses.

- Send a short broadband signal into a room and record the corresponding room-reflections.
- Send a broadband sine sweep into a room and record the corresponding room-reflections. Use a special deconvolve software (for example Pinguin HDIR-Creator) to create the impulse response.
- Send a 1 sample big rectangle signal through a digital reverberation unit. Record the output.



What you get contains the information needed to reproduce acoustic information with SIR2.

2 Installation

2.1 Windows

Please open the zip-File and start the containing setup-application.

Please read the contract carefully. If you agree, push the button “I Agree”, and the installation will proceed.

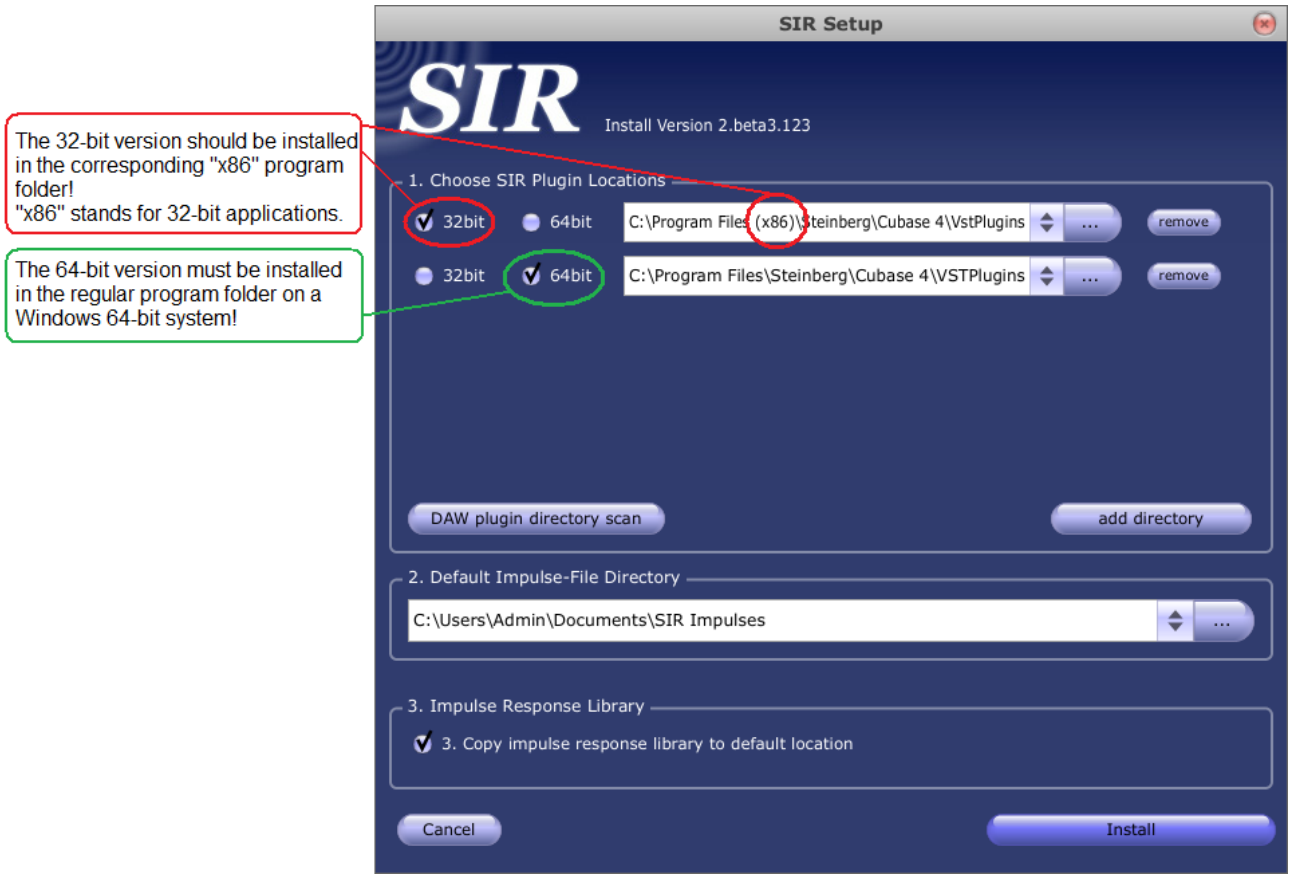
If not, push “Cancel” and the installation will cancel.

At the first installation, the setup-application will ask you to search automatically for VST-Plugin directories.

If the search takes place, this can take several minutes.

This is the main setup screen. You see the directories where SIR2.dll will be copied to.
If you miss a directory choose the “add directory” button to add one.
Change the directory with the “...” button, delete a directory with the “remove” button.
If you are not sure where the vst-plugin directory of your VST-host software is located, please look into the manual of your VST-host software.

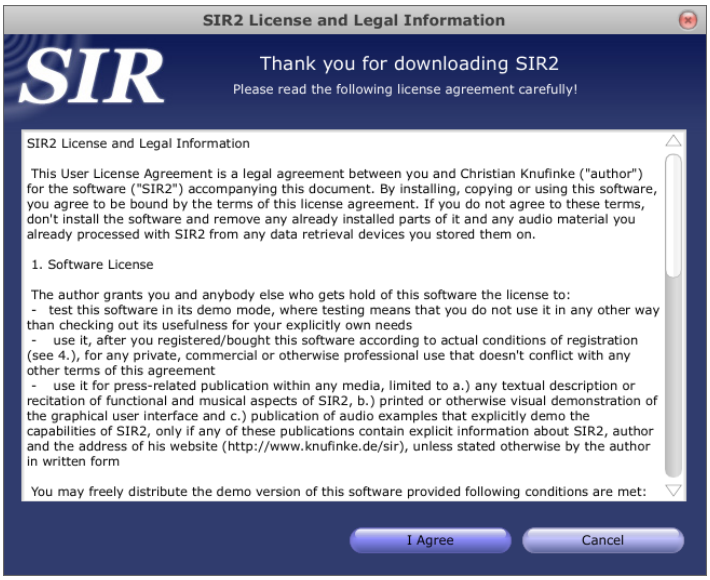
On 32-bit windows only the 32bit-versions should be installed!
To run the 64-bit version of SIR2 Windows Vista 64-bit AND a 64-bit host application is required!
If you are running a 32-bit host software on a 64-bit operating system, you have to use the 32bit version.
The new installer includes a 32-bit and a 64-bit binary of SIR2.



The default impulse-file directory is the directory, which content you see, when you open a new instance of SIR.
If you want to change the directory use the “...” button.
If you want to change the directory after installation, use the option in the preferences-menu of SIR2 (see 8.3 Default Impulse File Directory)

2.2 Mac

Please open the dmg-File and start the containing setup-application.



Please read the contract carefully. If you agree, push the button “I Agree”, and the installation will proceed.

If not, push “Cancel” and the installation will cancel.

This is the main setup screen. You see the directories where SIR2 VST or AudioUnit Plugin will be copied to.

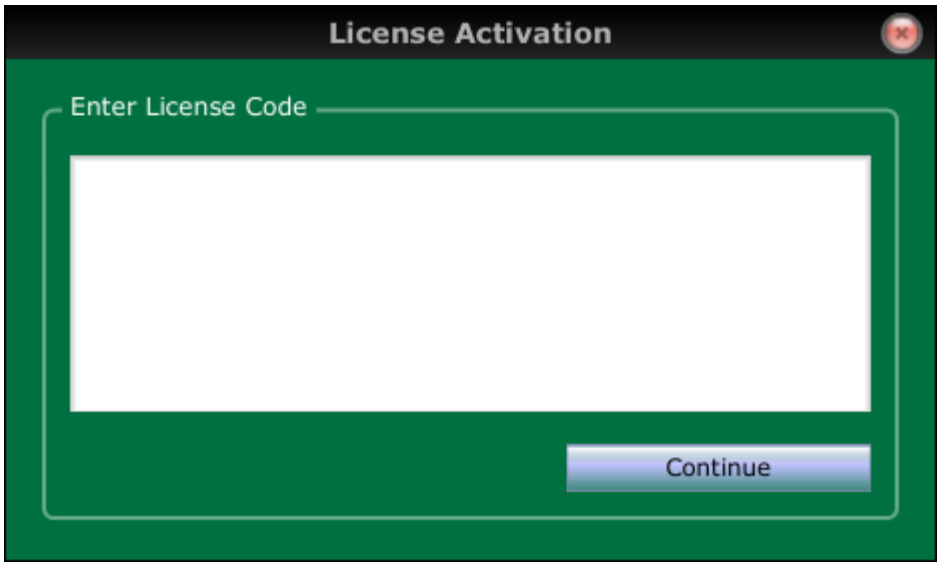
If you miss a directory choose the “add directory” button to add one.
Change the directory with the “...” button, delete a directory with the “remove” button.
The default impulse-file directory is the directory, which content you see, when you open a new instance of SIR.
If you want to change the directory use the “...” button.
If you want to change the directory after installation, use the option in the preferences-menu of SIR2 (see 8.3 Default Impulse File Directory)

2.3 Registration

After installation, a demo-sound will appear every 10 seconds when you are using SIR. This sound will stop when you have purchased SIR and have activated your license key.

The actual procedures, terms, conditions and benefits of registration, ordering and/or buying SIR2 can be found on Christian Knufinke's website http://www.knufinke.de/sir.

After you have purchased SIR2, you will get a license key.
Click on Preferences -> Enter License Key
Copy&Paste the “License Key” into the field and push “Continue” to proceed.

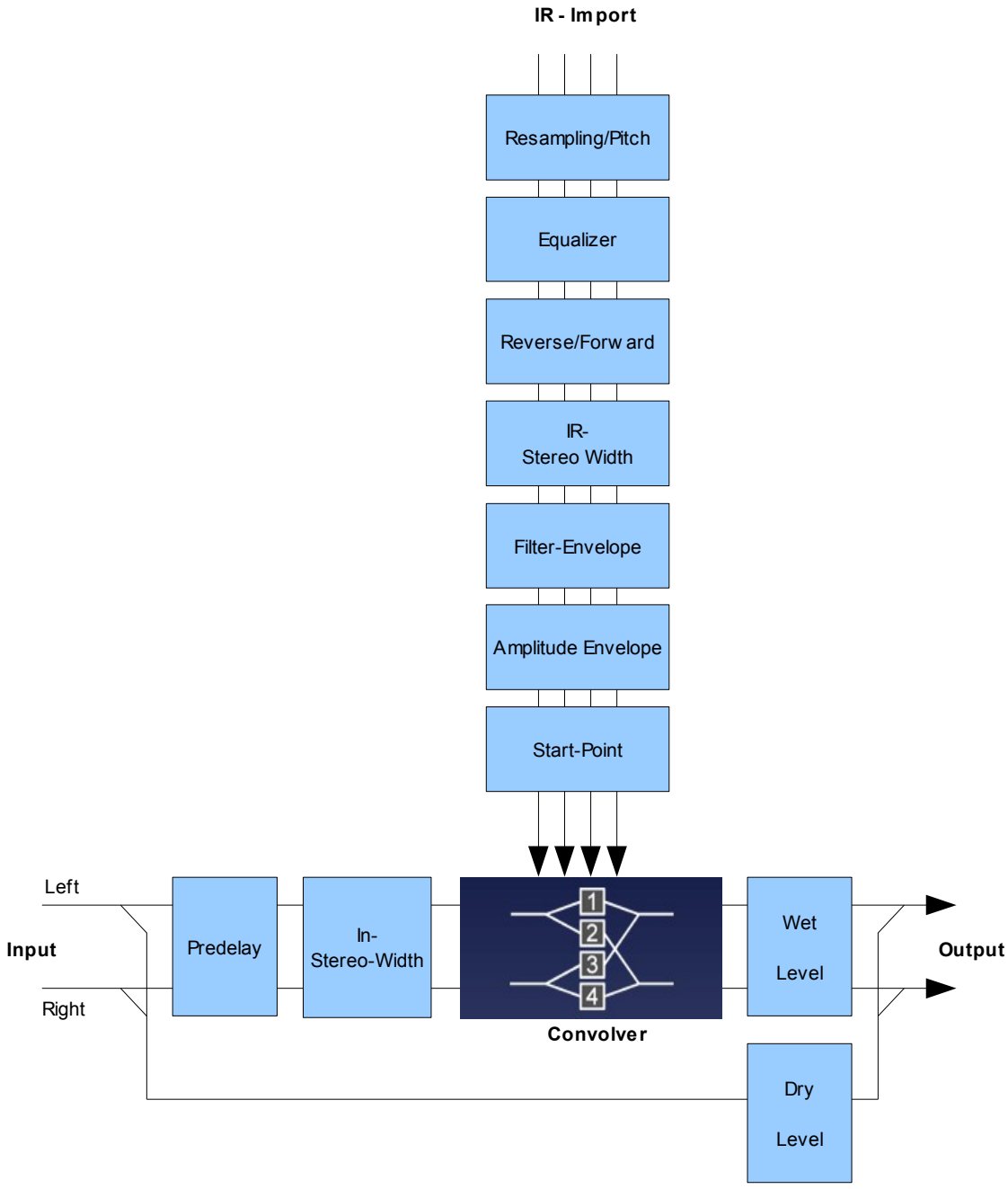


3 User Interface Overview

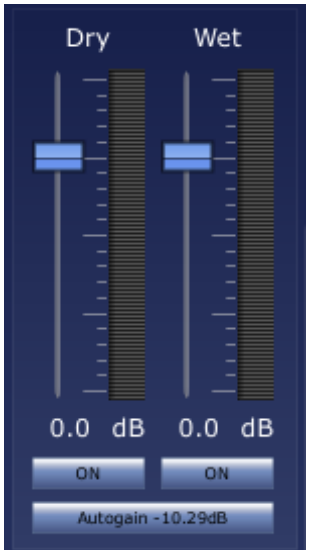
1. waveform view
2. controls to change the impulse response and the signal input behaviour.
3. dry/wet settings see 4.2 Wet & Dry
4. channel routing see 4.3 Convolver Channel-Routing
5. equalizer see 4.5.4 EQ
6. File and Preset-Browser
   Shows all files of the directory where the current opened impulse file is located.
   see 5 File and Preset Browser
7. You can apply a picture to an impulse response. The picture will be stored in the SIR-File.
   see 6 Pictures
8. HDIR-Direct Option 4.5.5 HDIR Direct

4 Signal Flow

4.1 Overview



4.2 Wet & Dry



With this faders you can change the dry and wet level.

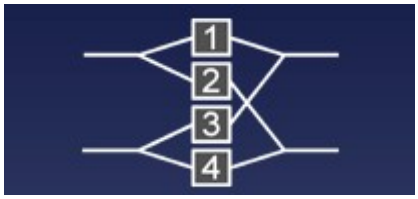
You can mute the wet/dry signal by clicking the on/off button below the fader.

"Autogain" is an automatic volume compensation, you can turn it on/off by clicking on the button. This feature is useful when you are browsing through different Impulse Responses, to avoid adjusting the wet level every time you select a new item.

Use a double click to reset dry and wet level to 0dB.

Dry/Wet settings are not stored in presets, because they are project dependent.

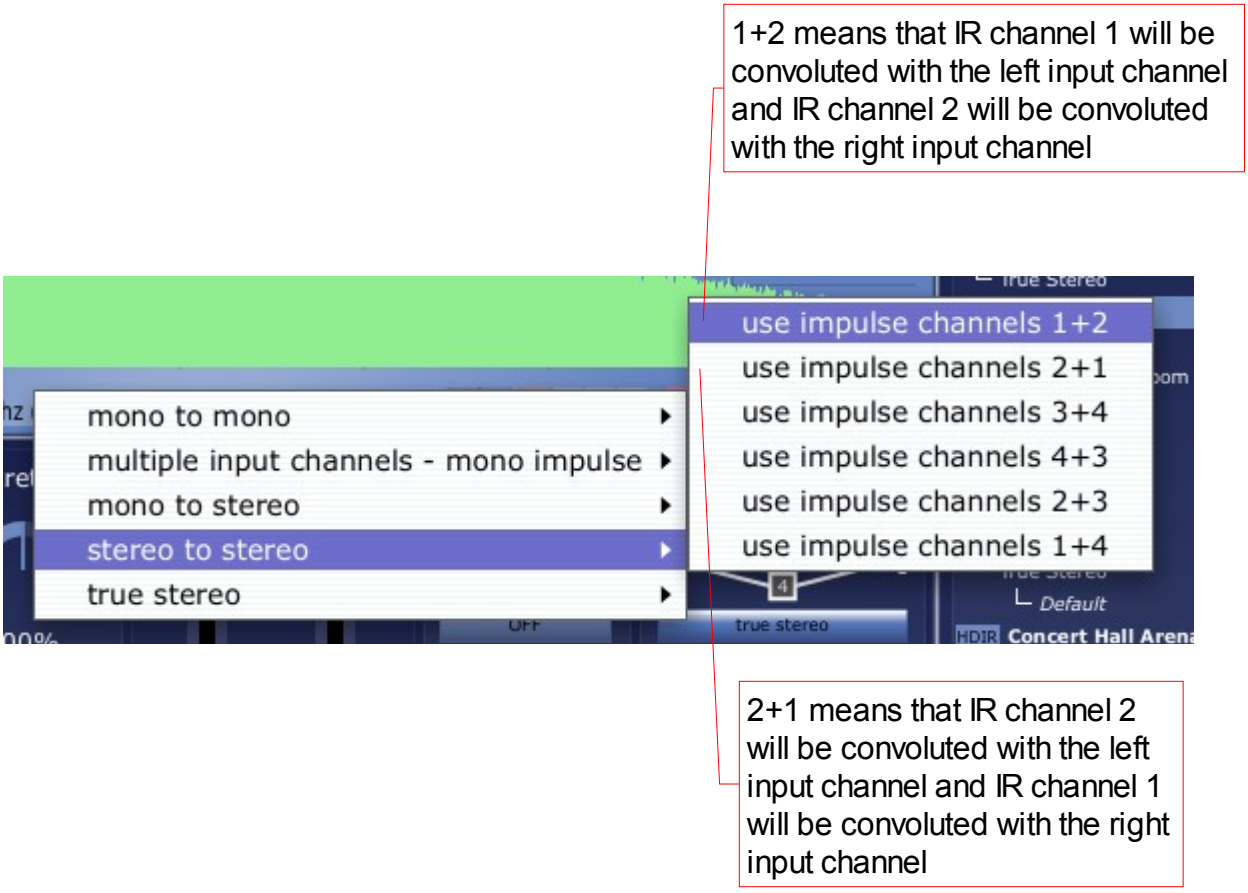
4.3 Convolver Channel-Routing



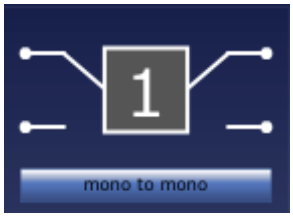
With the channel routing display you can set which channel of the input signal will be convoluted with which channel of your impulse response file.

By clicking on the channel routing display you can toggle between "Stereo to Stereo", "True Stereo" and other possible modes.

True Stereo is only possible with a 4 channel impulse response File.

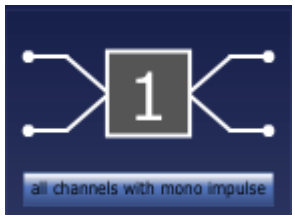


4.3.1 mono to mono



Left input channel will be convoluted with IR-channel 1, result will be added to the left Output.

4.3.2 all channels with mono impulse

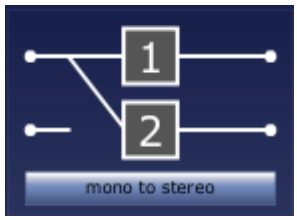


Left input channel will be convoluted with IR-channel 1, result will be added to the left Output.

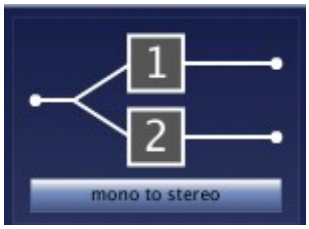
Right input channel will be convoluted with IR-channel 1, result will be added to the right Output.

4.3.3 mono to stereo

If the plugin has two input channels and two output channels (depends on the channel configuration of your host) it will look like this:



If the plugin has one input channel and two output channels (depends on the channel configuration of your host) it will look like this:



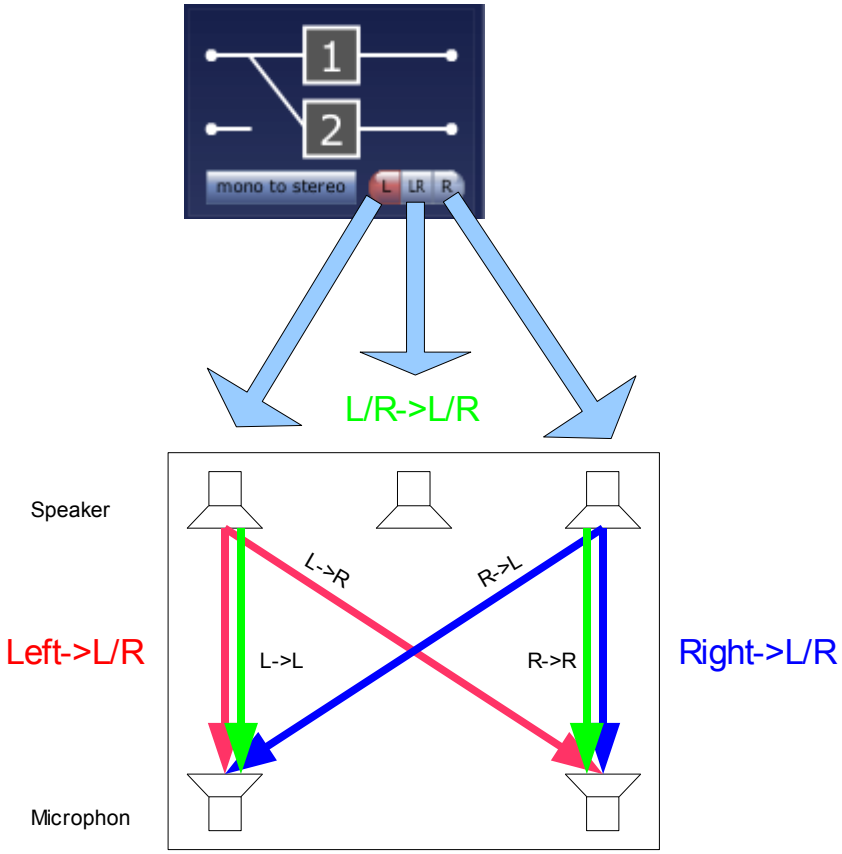
One input channel will be convoluted with IR-channel 1 and IR-Channel2, result will be added to the left and right Output.

This channel-routing is useful for hosts that supporting "mono to stereo" configurations.

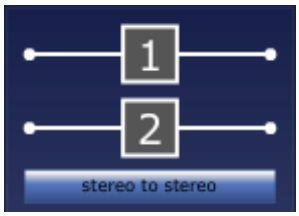
You can set the Stereo Input Control (see 4.4.2 Stereo-In) to 0%, the left and right input signal will be mixed together before the processing takes place.

4.3.3.1 mono to stereo directions

If you are using the "mono to stereo" or "stereo to stereo" channel configuration with a true stereo impulse response you can use the available impulse response channels (left->L (1) /R (2) ; Right->L(3) /R(4)) to control the spatial direction of the reverberation.

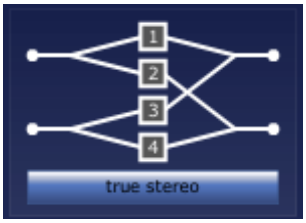


4.3.4 Stereo to Stereo



This view means that left-input channel will be convoluted with impulse response channel 1 and right-input channel will be convoluted with impulse response channel 2.

4.3.5 True Stereo



"True Stereo" in SIR means that a stereo convolution takes place for every source channel separately. This will result in a more realistic spatiality. True stereo make sense for source signals that containing different sources from different positions.

Left input channel will be convoluted with IR-channel 1, result will be added to the left Output.

Left input channel will be convoluted with IR-channel 2, result will be added to the right Output.

Right input channel will be convoluted with IR-channel 3, result will be added to the left Output.

Right input channel will be convoluted with IR-channel 4, result will be added to the right Output.

True Stereo is only possible with a 4-channel impulse response File.

You can generate a 4-channel impulse-response-file by merging two special 2-channel Wav-Files together (see 6 True Stereo File Creation).

4.4 Input Signal Transformation

4.4.1 Predelay

With this control you can adjust the delay between dry signal and the beginning of the impulse response signal.

Use low values, to add more presence to you to dry Signal.

Also this can prevent, that the dry/wet mixed signal sounds blurred.

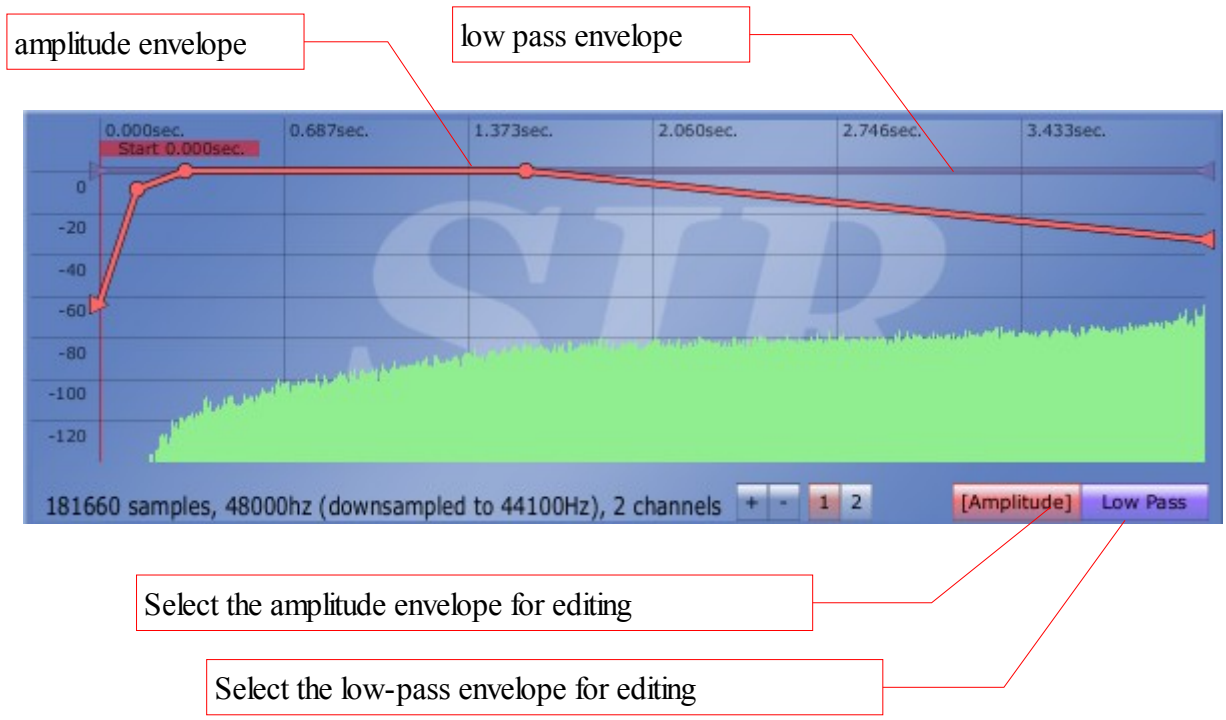
Use a double click to reset this parameter.

4.4.2 Stereo-In

With this control you can adjust the stereo-width of the incoming signal. That is important to control how much the middle (mono) or side-signal (stereo) has influence to the effect signal.
Use a double click to reset this parameter.

4.5 Transforming the Impulse Response

4.5.1 Envelopes

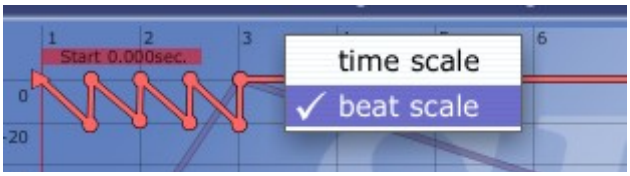


To toggle between amplitude and low pass envelope use the two buttons at right bottom.
The orange line is the amplitude-envelope. The purple line is the low pass envelope.

Add envelope-points with right mouse button, delete them with the left mouse button. By clicking on free area, a pop-up menu appears, which let you reset and reverse the envelope.

The the edge steepness of the low pass filter is 6dB/octave.

4.5.1.1 Time Scale



The time scale, can shown as seconds or as a beats. Change it by clicking with the right mouse button on the time line. A pop-up menu will appear.

The beat scale can be useful to add rhythmic delays to you impulse response.

The beat scale is synchronized to the tempo of you DAW, but the envelope-points will not move automatically by changing the tempo of you DAW, only the scale changes.

4.5.2 Start-Locator

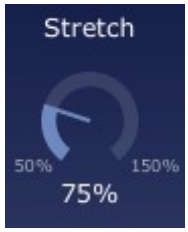
You can adjust the point in time where the IR should start by simply dragging the start-locater.

The front part of the IR will be cut off.

4.5.3 Stereo IR

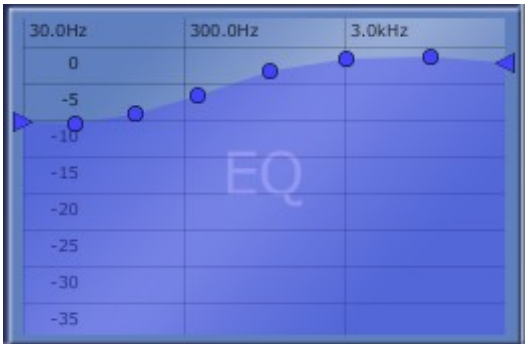
With this control you can adjust the stereo-width of the impulse response. Values over 100% generating a wider stereo-effect, but reducing the stereo-compatibility.
Use a double click to reset this parameter.

4.5.4 Stretch



This control adjusts the the up & down-sampling of the impulse response.
You can adjust the quality of the resampling algorithm in the preferences-menu (see 8 Preferences).
Use a double click to reset this parameter.

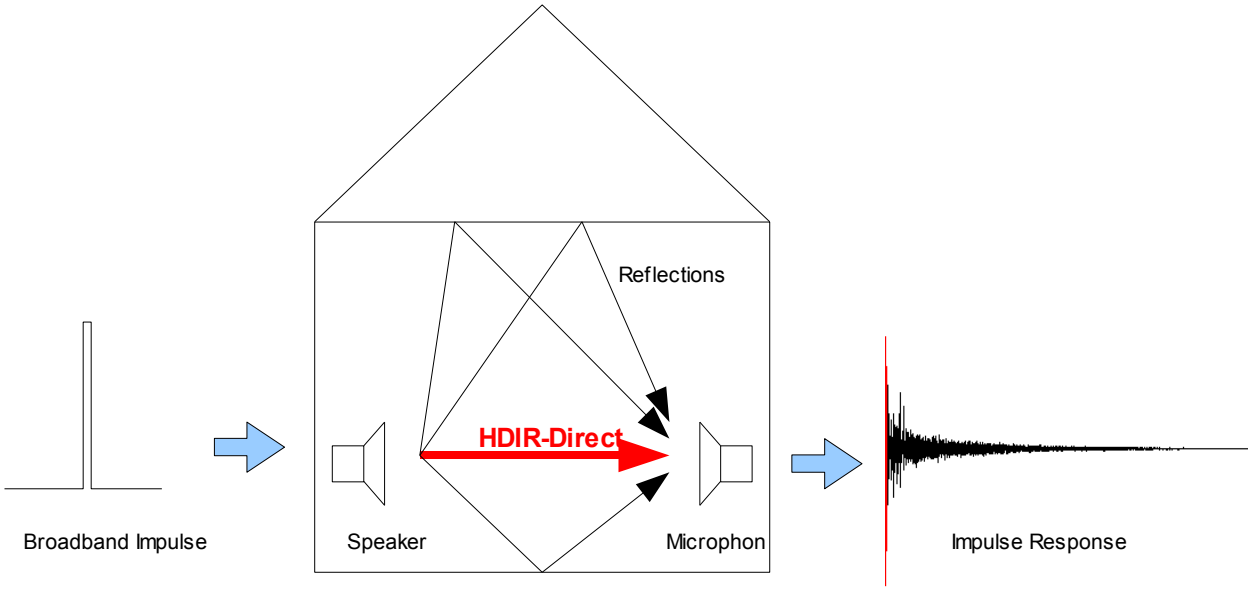
4.5.5 EQ



Linear-Phase FFT EQ to adjust the frequency spectrum of the impulse-response. Simple add filter-points with the left mouse button, delete them with the right mouse button. By clicking on free area, with the right mouse button, a pop-up appears which let you reset and reverse the filter-graph.

4.5.6 HDIR Direct

This option is only available with HDIRs (Pinguin High Definition Impulse Response) .
"On" means that you can use the "Dry-Information" of an impulse response for a very realistic reverberation.
NOTE: If you are using this, please mute the dry-signal (4.2 Wet & Dry) to avoid flanging.
Don't use this option if you are using SIR as a send effect!

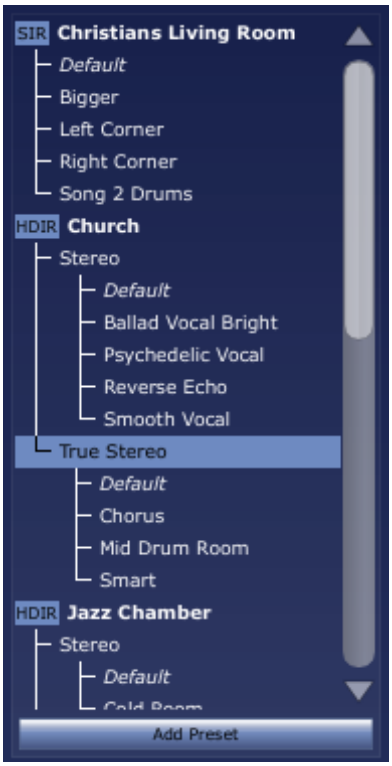


4.5.7 Reverse

You can reverse the the impulse response by clicking on this button.

5 File and Preset Browser

The browser shows all files of the directory where the current opened impulse file is located. To open a file from the list, select the item in the list.



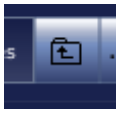
5.1 Browse

To open a file directly from anywhere from your hard disc click on "Open".

To change in a directory you recently used, use the "..." button.

To move into a folder double click on the folder.

To move into a higher folder use this button:



5.2 Open Files

You can open these kinds of files:

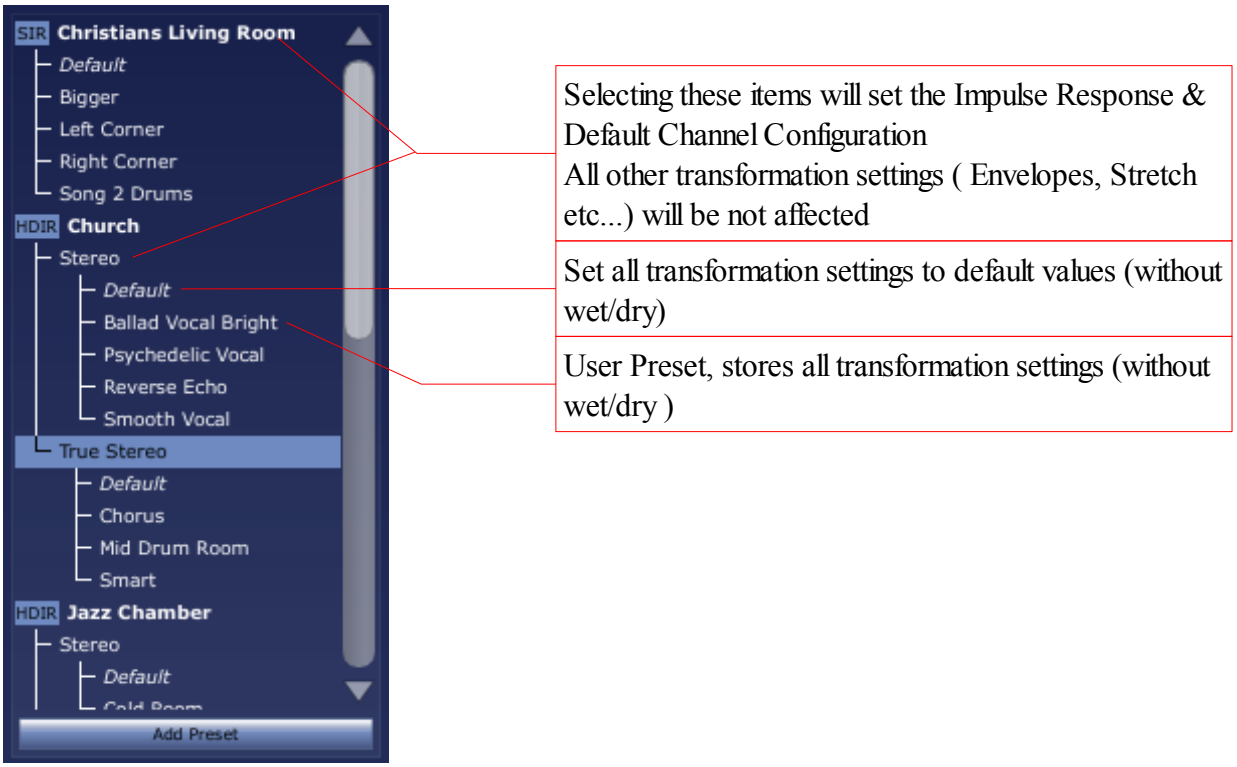
*.sir	SIR specific Impulse Response Format
*.wav	Waveform audio format
*.bwf	Broadcast wave files
*.aiff/aif	Audio Interchange File Format
*.flac	Free Lossless Audio Codec
*.ogg	OGG-Files (not recommended for impulse responses, because not lossless)

If a file is longer than 30 seconds, it will be reduced.

5.3 Presets

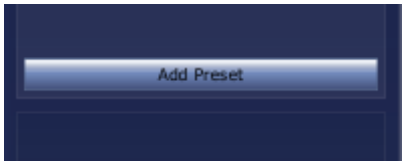
A preset stores all relevant information of settings (Amplitude/Filter-Envelope, Predelay, Stretch, Stereo/In, Stereo/IR, FFT-EQ, Channel-Configuration, Start-Locater) to an impulse response. **Dry/ Wet settings are not stored in presets, because they are project dependent.**

You can add presets only to *.sir files. If you add a preset to other file format (for example *.wav) SIR will ask you to convert the file into its own format (*.sir). If you do this, a copy of the impulse response will be created as a *.sir file.



5.3.1 Add Presets

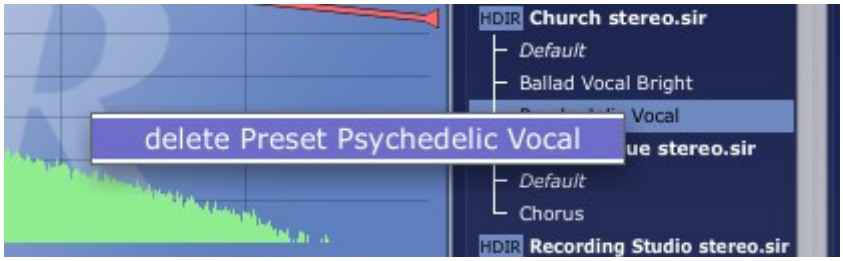
1. Click on "Add Preset"



2. Enter the name of the new preset and press “Add preset”

5.3.2 Delete Presets

Click with the right mouse button on the preset you want to delete.

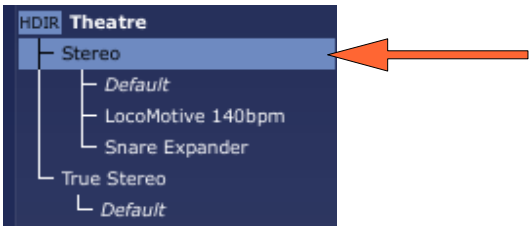


You can't delete the default-preset.

5.3.3 Copy preset settings to another impulse

1. First select the preset you want to copy.

2. Then select the main Item of the Impulse Response where you want to add the new (copied) preset.



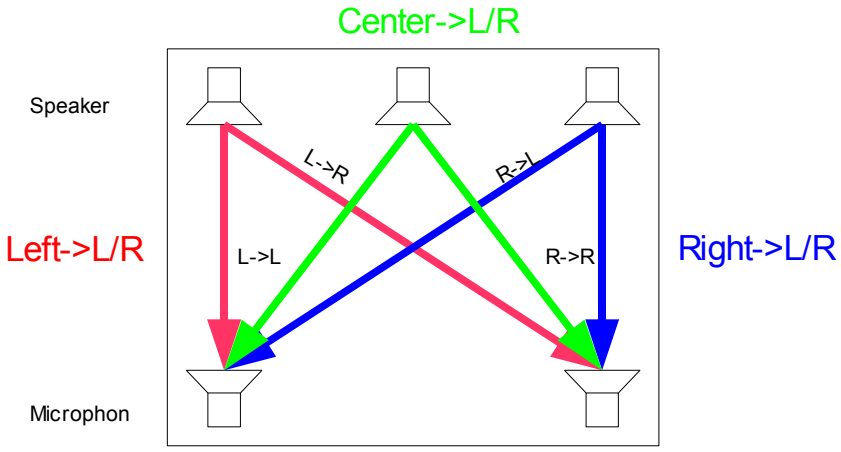
3. Click on "Add Preset"

4. Enter the name of the new preset and press “Add preset”

All transformation settings, without dry/wet and Channel Configuration (see 4.3 Convolver Channel-Routing), will copied to the new preset.

6 True Stereo File Creation

Impulse response libraries often comes with 3 different of directions of the same room.



6.1 Center / simple Stereo impulse response file (green):

Often this impulses are marked with a "C" at the end of the file name.

In SIR these Files are called "stereo" impulse responses.

6.2 Left to Left/Right (red) and Right to Left/Right (blue)

This two files are required to create a true stereo impulse response file.

To create a true stereo impulse response use the True Stereo File Creator (Tools->True Stereo File Creator).

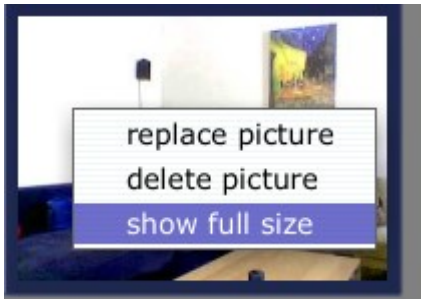
Often this impulses are marked with a "L" and a "R" at the end of the file name.

In this case you can simply click with the right mouse button on the file name to merge this two files to a true stereo File.

6.3 Stereo/True Stereo tree

If you have three Files, one with "C" (stereo) at the end, one with "L" and one with "R", you can create a Stereo/True Stereo tree. Click with the right mouse button on one of the Files and select "Create Stereo/True Stereo tree".

7 Pictures



You can apply a picture to your impulse response. If you add picture to another file format than the SIR-file format (for example *.wav), SIR asks you to convert the file into its own format. If you do this, a copy of the impulse response will be created and you can apply the picture.

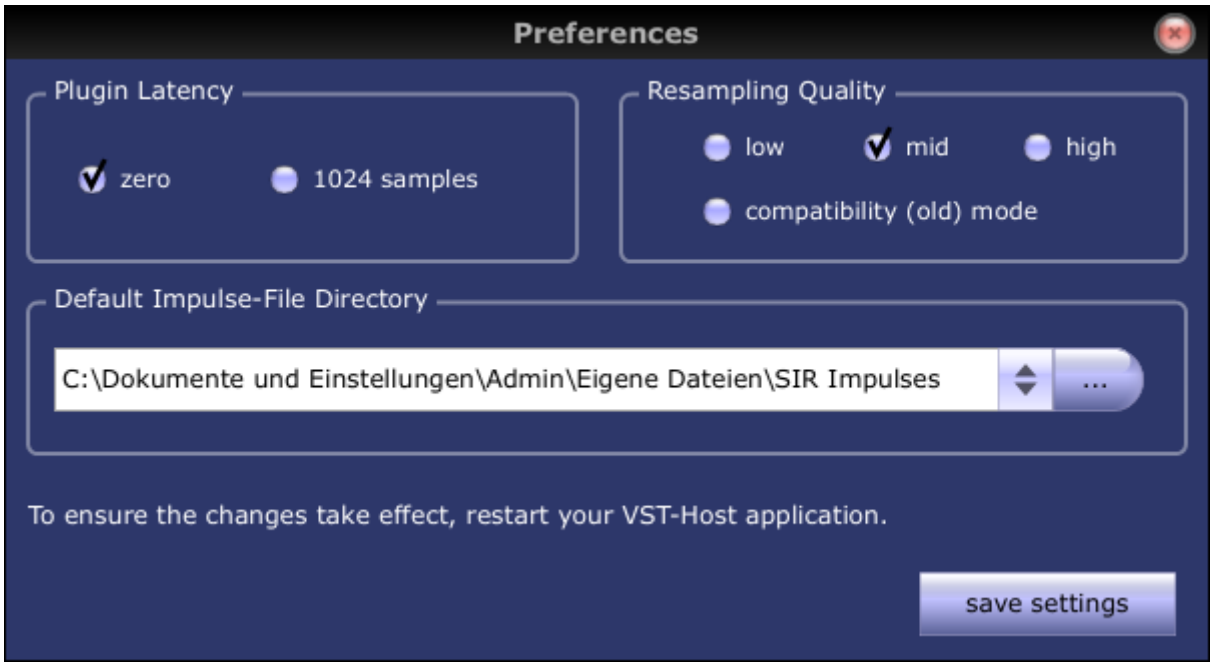
You can't change the picture of the impulse responses that are bundled with SIR.

8 Zoom & Channel View

The “+” and “-” buttons let you zoom in and out. So you have a more detailed view, if you want to edit the envelopes.

With the number-buttons you can select which channel is shown in the waveform view.

9 Preferences



9.1 Plugin-Latency

Zero:

The Plugin introduces no latency to the signal.

In most host-software applications this is the way to go.

1024 samples:

If you are using this option, SIR will introduce a latency of 1024 samples into the signal.

This can help to reduce your CPU Consumption, but will not do it in all cases.

The latency will have some effects. For example, if you are playing a instrument through SIR, you will recognizing delay. Some hosts will compensate the latency during playback.

Its very important to restart your VST-Host Software after you changed this setting.

9.2 Resampling Quality

Whenever you load a impulse response which samplerate differs to the samplerate you are using in you VST-host, SIR will convert the IR to the current used samplerate. SIR uses a high quality algorithm which has different quality options.

Quality:

low:

fast, much artefacts

mid:

less artefacts

high:

slow, very good quality

compatibility (old) mode:

Since Version 2.1.0, SIR2 uses a new improved re-sampling algorithm.
If you want to use the old algorithm instead you can switch this on.

Mac-Users: On Mac the compatibility mode is disabled.

The stretch parameter (4.5.3 Stretch) also uses re-sampling, and will be affected too.

Its very important to restart your VST-Host Software after you changed these settings.

9.3 Default Impulse File Directory

The default impulse-file directory is the directory, which content you see, when you open a new instance of SIR.
If you want to change the directory use the "..." button.

10 Version History

10.1 2.0.0

initial release

10.2 2.1.0

- new impulse-file browser (with folders)
- reset all parameters functionality in "Tools" menu
- default impulse-file path can be changed in preferences
- fixed some host compatibility issues (with wavelab & samplitude)
  Note: Due to several internal changes which were necessary to improve the host compatibility, the older release (2.0.0) isn't able to be used in projects, which already have been saved with the newer version (2.1.0)!
- host sample rate change - volume compensation
  Due to the nature of convolution different sample-rates will produce different output levels. This function compensate this.
- more detailed message when the impulse-file can't be located
- new improved re-sampling algorithm (much better quality even in "low" mode)
  Note: If you want to use the old algorithm instead - select in preferences: Resampling Quality "compatibility (old) mode"
- some minor fixes

10.3 2.2.0

- improved host compatibility
- more routing capabilities (mono->mono, mono->stereo etc.)
- better support for mono-channels
- auto true stereo file creation:
  If you have two stereo files, one with "L" and one with "R" at the end of the file name, you can click with right mouse button on one of the files to create a true stereo file. This is useful for special impulse response libraries.
- stereo/true stereo tree:
  If you have three stereo files, with L/R/C at the end of the file name, you can click with right mouse button on one of the files to create a stereo/true stereo tree, like the with SIR2 provided impulses. This is useful for special impulse response libraries.
- some minor fixes

10.4 2.3.0

- initial mac release
- If you have two mono files, one with "L" and one with "R" at the end of the file name, you can click with right mouse button on one of these files to create a stereo file.
- GUI now remembers that the time-line is in "Beat-Scale"-mode
- When ever you convert a wav-file (or aif) to a sir-file, you will asked if you want to store it into the default impulse file directory or at the current location
- fixed a cpu-glitch when play a loop in ableton live arrangement-view
- internal convolution engine redesigned

10.5 2.4.0

- initial windows 64-bit release
- triangle envelope functionality
- finer Predelay adjustment
- search functionality, if impulse file not found
- ability to store EQ-presets (right mouse-click into EQ-Envelope)
- improved project-portability between different workstations. (relative filename will be stored too, so if the default impulse-response location is different, the IR will be found) Please note: to use this function, the project has once to be saved with this new version.
- support for "ctrl+mouse click", for one-button mouse macs