SPEC 4.8 & ZAG 3.0

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What's New in Spec 4.8 Zag 3.0

- New installer that downloads and installs everything you need (if you already have Plogue 0.9710 or higher).

- Spec should now run on older slower computers. An SSE2 capable CPU is no longer required (but SSE capability is).

- Every group in Spec rebuilt from the ground up to minimize DSP load. Any controls not in use are shut down completely. This also helps with running on older computers, or let's you live monitor at higher FFT size and overlap settings (more quality). Off line processing will take less time.

- Uses a new signal type in a "P2" Experimental version of Plogue, the "discrete" signal (green lines). Discrete signals only do processing when the signal changes (vs. every audio sample). The new installer installs "P2" if you don't already have it, and you must use that version (PlogueBiduleP2.exe) with Spec. At some point the discrete signal will be included in the regular version of Plogue.

- Bug fix for Slice Wrap Rears controls

- Preset Manager now has a manual mode. Create all your presets (copies) then use the manual controls in preset manager to change tracks/presets. That will change presets in all groups (using PTA) at once. Also a good way to check that PTA is working correctly before you start a measurement run.

- Zmeter included and merged with Audio Recorder. Zmeter can be off, reset after each track, or show the entire album

- ZAG that uses cue files directly, instead of using tracktime. Paste your cue file into the top box in ZAG and you are good to go. Changing DSP sample rate will force a recalculation so you don't have to do anything else.

    - Zag now includes a "clear" function (different from reset)
    - Replacement of the sample counters with timers.

- The Layout Control group has been enhanced with several features including automatic resampling and DTS encoding (with supported resampler and encoders) at the conclusion of your conversion. Great for "over night" conversion runs. It can also save your layout and turn processing off (at the conclusion of a conversion)

- Version Checker
    - Checks to see if there is a new version of Spec when you load a Spec layout
    - Notifies you of a new version with a popup window (can be turned off)
    - Optionally, you can enter your email address to be notified when a new version is released

Spec 4.6 Zag 2.1

- Mac OSX (Intel snow leopard) support
- New ArcTan features
    - Frequency based steering

- o Spectral Channel Subtraction
- Bass routing
  - o Make rear channels stand out by routing non-directional bass to fronts/center
- Peak Capture in Zag 3.0
  - o Play back loudest 5 seconds of audio (for each channel) when making Zag output adjustments
- Zmon 2.0
  - o Now has connections for a 2 channel meter and a drop down to route different combinations of channels to the meter (great for use with phase meters for instance)
- Zplayer 1.4
  - o Several new features
- Input Selector
  - o Choose between the Audio File Player, ZPlayer, or a Connected Audio Device (for using Spec on a "live" source)
- Bug fixes

Spec 4.3.3 Zag 1.8

- No need to remove old plugins
  - o Old layouts will continue to work with old plugins
  - o New layouts use new plugins with no conflict
- Spec Controls
  - o "Bass Test Tone" and controls
- New ArcTan
  - o Improved math routines for image width's less than 360 degrees
  - o Spectral Channel Subtraction
- Spec Method Controls Grouped for ease of "Per Track Automation"
- New Normalization Group
  - o Selection for Normalization from original stereo or set all tracks to same volume (for compilations)
  - o Play signal from audio player now properly synced into ZAG
- New Preset Manager Group to assist with Per Track Automation of settings
  - o Reserve presets for "Master" or "Default" use.
  - o Map any number tracks to any number of Presets
- Zag 3.0
  - o Peak Capture for playback of loudest sections of your source to facilitate Zag output settings
- ZAG 1.8
  - o Results window shows final Peak and RMS values
- ZAG 1.7.2 and higher
  - o "Track" parameter can be linked to "Preset Number" in method controls for Per Track Automation of settings
- Preset Manager – assists in mapping the number of tracks in your conversion into the number of presets you have (Per Track Automation)

- ZPlayer – a player for individual track files in the media pool (RAM), ZPlayer has controls to navigate and loop on sections of music to help you refine your conversion settings

Requirements:

Windows XP, Vista, or Windows 7 (and OSX 10.6 via a separate package)

A CPU with support for the SSE Instruction set. Any x86 CPU sold in 2000 or later should have this.

Plogue 0.9710 or newer (32 bit standalone, **even if you have a 64 bit OS**)

http:www.plogue.com/bidule/latest

Review the Plogue Guide, for Plogue preferences:

http:www.surroundbyus.com/sbu/viewtopic.php?f=7&t=2

Installation:

Use the included installer. Just double click on Install_Spec.bat

If you don't already have the correct version of Plogue it will point you to the download and exit. Re-run the installer after you have installed Plogue .9710 32 bit standalone.

Any over packages you need (c++ runtime, VSTs, PlogueBiduleP2.exe, etc.) will be downloaded and installed as part of the Spec installation.

Don't forget to use PlogueBiduleP2.exe (or the "P2" shortcut on your desktop) with this version of SPEC. If you forget, you will get a bunch of messages about presets and a bunch of red boxes.

Video Guides:

The quickest way to get started is to watch the video guides at:

http://www.surroundbyus.com/sbu/viewtopic.php?f=8&t=171
And
http://www.surroundbyus.com/sbu/viewforum.php?f=7

Included Stereo to Surround Methods and Components:

SLICE – Slices the Stereo field up into SL, FL, C, RF, SR, using multiple stages of SPEC Center Cut.

CC – Center Cut. An algorithm borrowed from Center Cut GUI but implemented using Plogue Spectral Bidules.

LCR – Algorithms that came before ambisonics, implemented using Plogue Spectral Bidules.

ArCTan – Smoothly expands and spreads the stereo field up to 360 degrees

    ArcTan with Blended SLICE Rears

Zpan – A Constant Power Panner to allow you to widen or narrow your sound field and make your speakers disappear into the sound field (used mostly with CC, and SLICE methods).

ZAG – Z Automatic Gain Control to allow you to balance the volume of the individual channels within a song, the relative volume of each song, and the loudest peak in an album. ZAG also allows you to automate any setting in SPEC/Plogue on a per song (we will use the term "track") basis.

Preset Manager – assists in mapping the number of tracks in your conversion into the number of presets you have (Per Track Automation)

ZMON - A live monitoring control panel to allow you to mute or "solo" and channel or channels, and also easily compare the surround sound to the original stereo.

SYNC groups – to ensure accurate recording, gain control, and automation of audio start, stop, and track transitions, given any latency in the layouts in SPEC, or VSTs.

Normalization group – Selection for track to track volume normalization from original stereo or set all tracks to same volume (for compilations). The Normalization group also provides the sync function for ZAG and ZMon.

Bass Test Tones and LFE controls – to allow you to add and LFE channel, should you desire.

ZPlayer – a player for individual track files in the media pool (RAM), ZPlayer has controls to navigate and loop on sections of music to help you refine your conversion settings
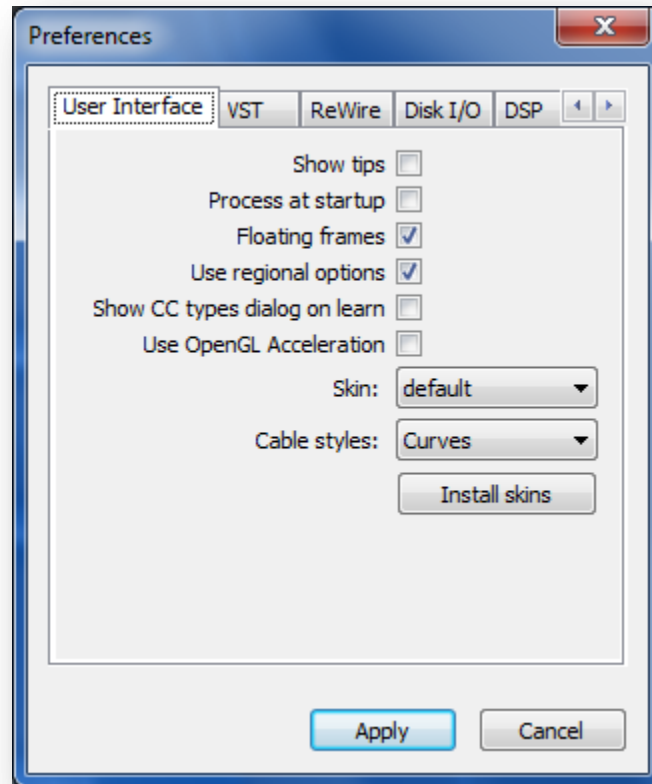
Zmeter and Audio Recorder – added metering functionality in the Audio File Recorder
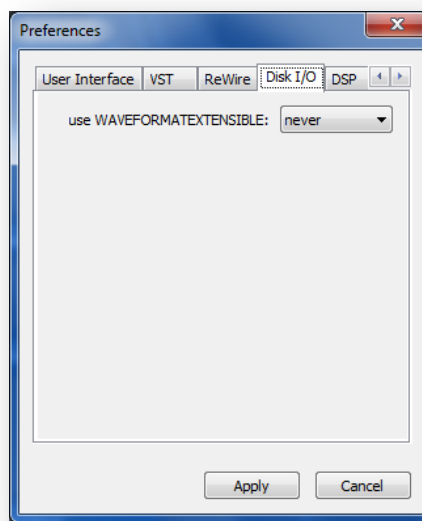
With the included (Free) VSTs:

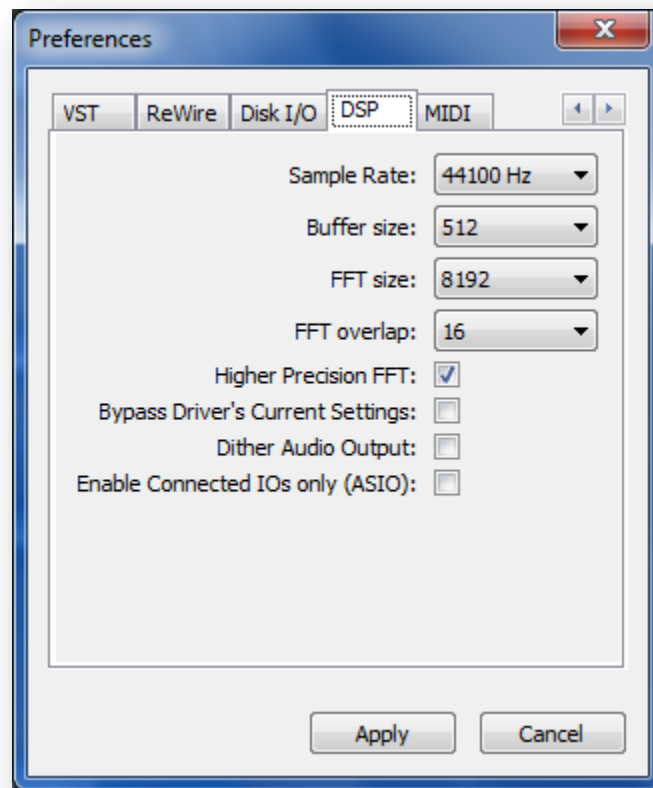Mastering multi-band compressors and Peak Limiters

Plogue Bidule Preferences:

Start Plogue Bidule. On the edit menu, select "Preferenc

On the "User Interface" tab, uncheck "Process at startup"

On the "Disk I/O" tab, select "use WAVEFORMATEXTENSABLE: never"

On the DSP tab, If you are going to make DTS CDs, chose "Sample Rate:" 44100Hz, for DVD-V choose 48000 Hz.

Choose the largest "Buffer size". On Windows this is 512, On OSX this is 4096.

Your "FFT size" and "FFT overlap" settings will depend on the speed of your computer. You should start with an FFT size of 4096 and an overlap of 4 and increase those settings if you are able to live monitor without any stuttering or buzzing. Watch the "DSP Load" percentage at the very bottom of Plogue Bidule, while you are running SPEC. If it is below about 80% you can increase the FFT size and/or overlap for higher quality results. The Overlap has the largest impact on DSP Load.

"Higher Precision FFT" FFT should be checked.

Apply the preferences by pressing the "Apply" button.

Lastly, turn processing off. The is the right most button at the top of Plogue Bidule:
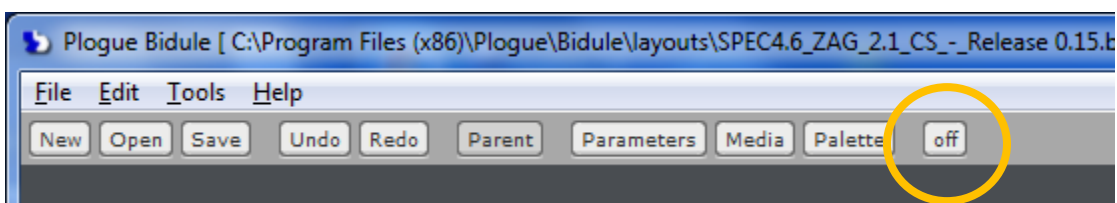
Turn processing on whenever you are ready to play audio, and off when you are not playing audio. Turning processing off reduces the CPU utilization on your computer.

Quick Start:

Start Plogue and open the "SPEC4.8 - Simple.bidule" layout:

If none of the boxes are **red**, you have properly installed SPEC, and are using the correct ,"P2", Plogue executable.
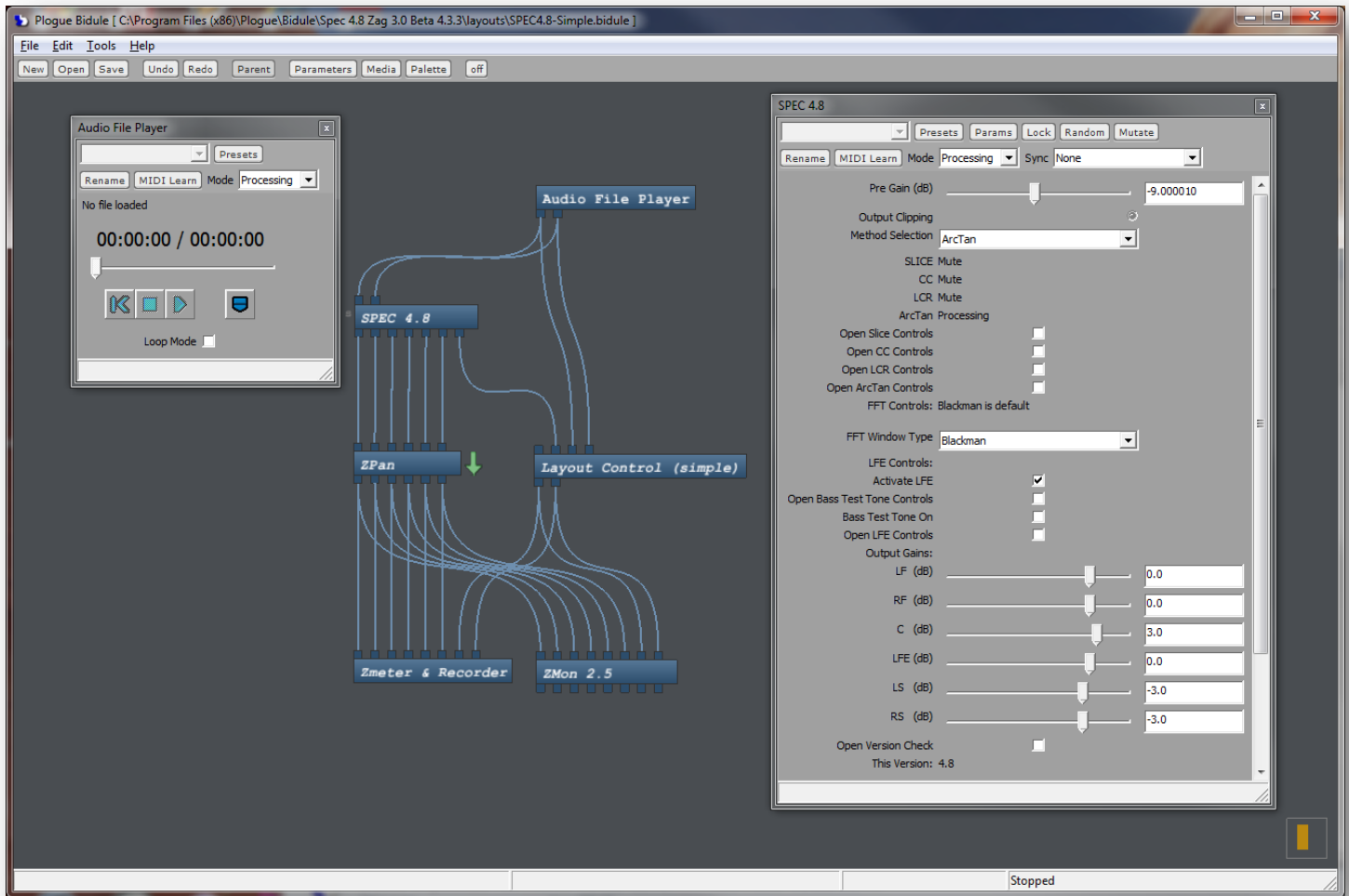
This "Simple" layout is the most basic, not using any mastering VSTs or plugins to adjust channel and track levels. While it's good layout to get started converting with, it does mean you have to manually adjust the levels yourself.

To assist you this layout includes "Zmeter" (now included with the Audio File Recorder) which measures the Peak and Average RMS levels of each surround channel and the original stereo (LI and RI) for comparison.

The measurements are for the entire album up to the point you look at Zmeter (Album mode, Track mode only applies to the non-simple layout). Zmeter will will "freeze" whenever you hit stop or turn processing off. Zmeter will automatically reset when you press the "home" |< button on the Audio file Player.

Zmeter & Recorder

Presets | Params | Lock | Random | Mutate

Rename | MIDI Learn | Mode Processing ▼

Meter Mode Album ▼

Bit depth 24 bits ▼

Version:
Zmeter3_0.surroundbyus.com

File out.wav

[...]

Meters:	Peak	Avg. RMS
LF	-8.4	-23.2
RF	-3.2	-19.2
C	-1.5	-18.1
LFE	-4.2	-19.5
LS	-11.2	-24.9
RS	-7.3	-20.9
LI	-0.1	-11.6
RI	-0.1	-10.3

Create new files for each record ☑

Current take C:\out_0001_5.wav
Elapsed time 00:00:09
Size on disk 6.04713 MB

Reset Select All ▼

Reset Send command

Create multiple files ☑

Channels per file mono ▼

Now open the "SPEC4.8 ZAG_3.0 - Release.bidule" layout:
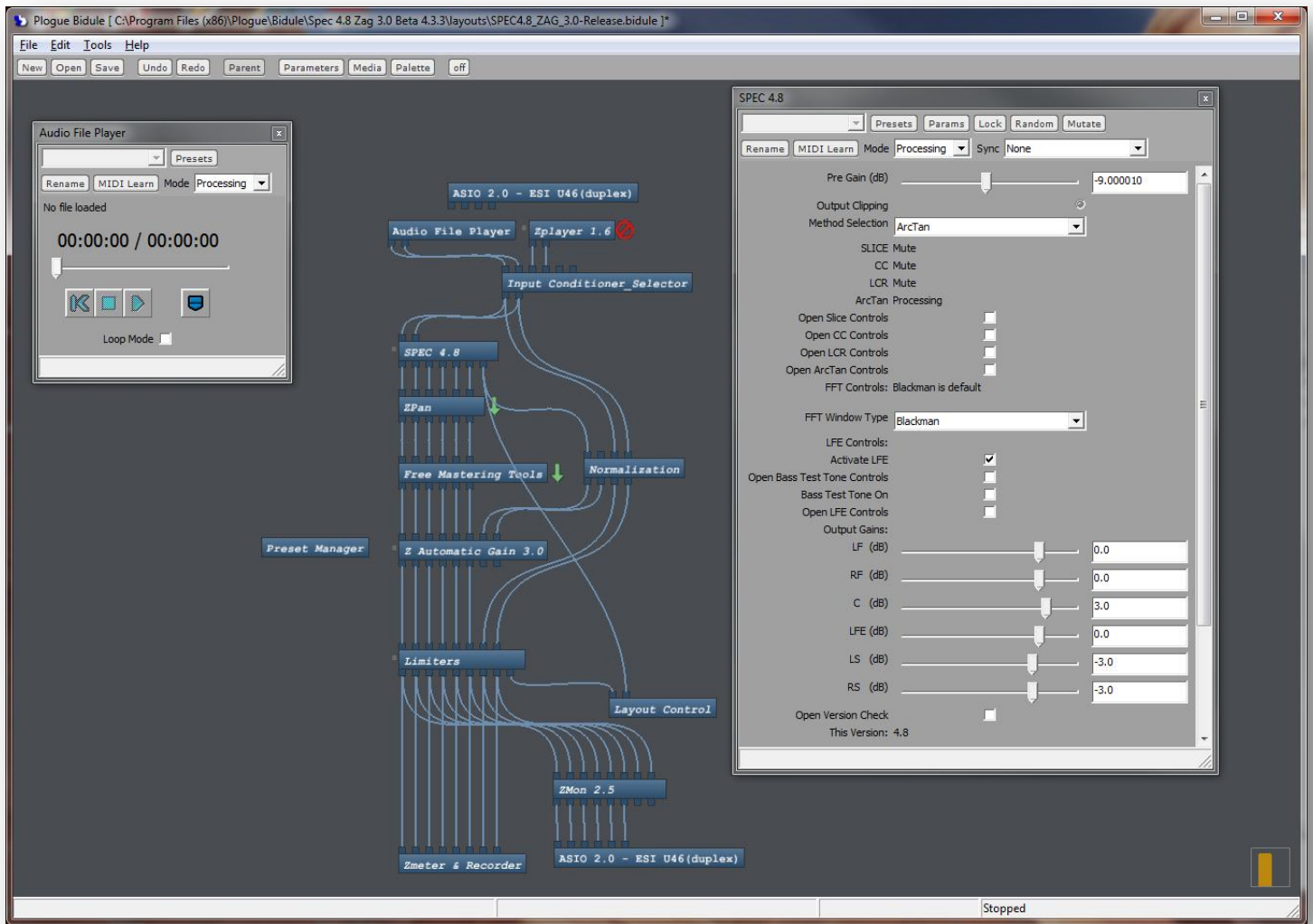
If none of the boxes are red, you have properly installed the free VSTs.
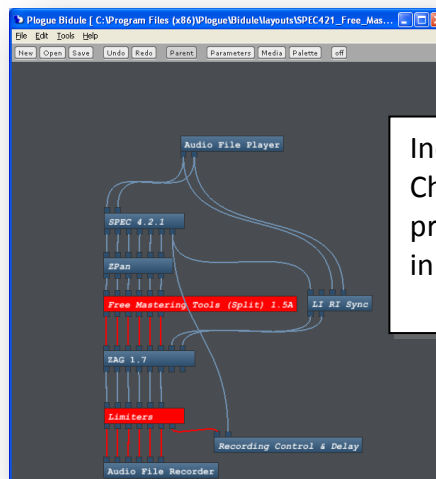
Incorrectly installed VSTs.
Check Plogue's VSTPlugins folder preference and that you put your VSTs in there.

This is the "All the Bells and Whistles" layout used for Automatic Gain and Per Track Automation. Additional components in this layout, are ZPlayer and the Preset Manager. The layout also includes links from the Preset Manager to all relevant group's "Preset Number" parameter.

See the section on ZAG ZPlayer and Per Track Automation for details.

Now that everything is installed properly, please watch the video guides at:

http://www.surroundbyus.com/sbu/viewtopic.php?f=8&t=171
And
http://www.surroundbyus.com/sbu/viewforum.php?f=7

SPEC 4.8 Controls:
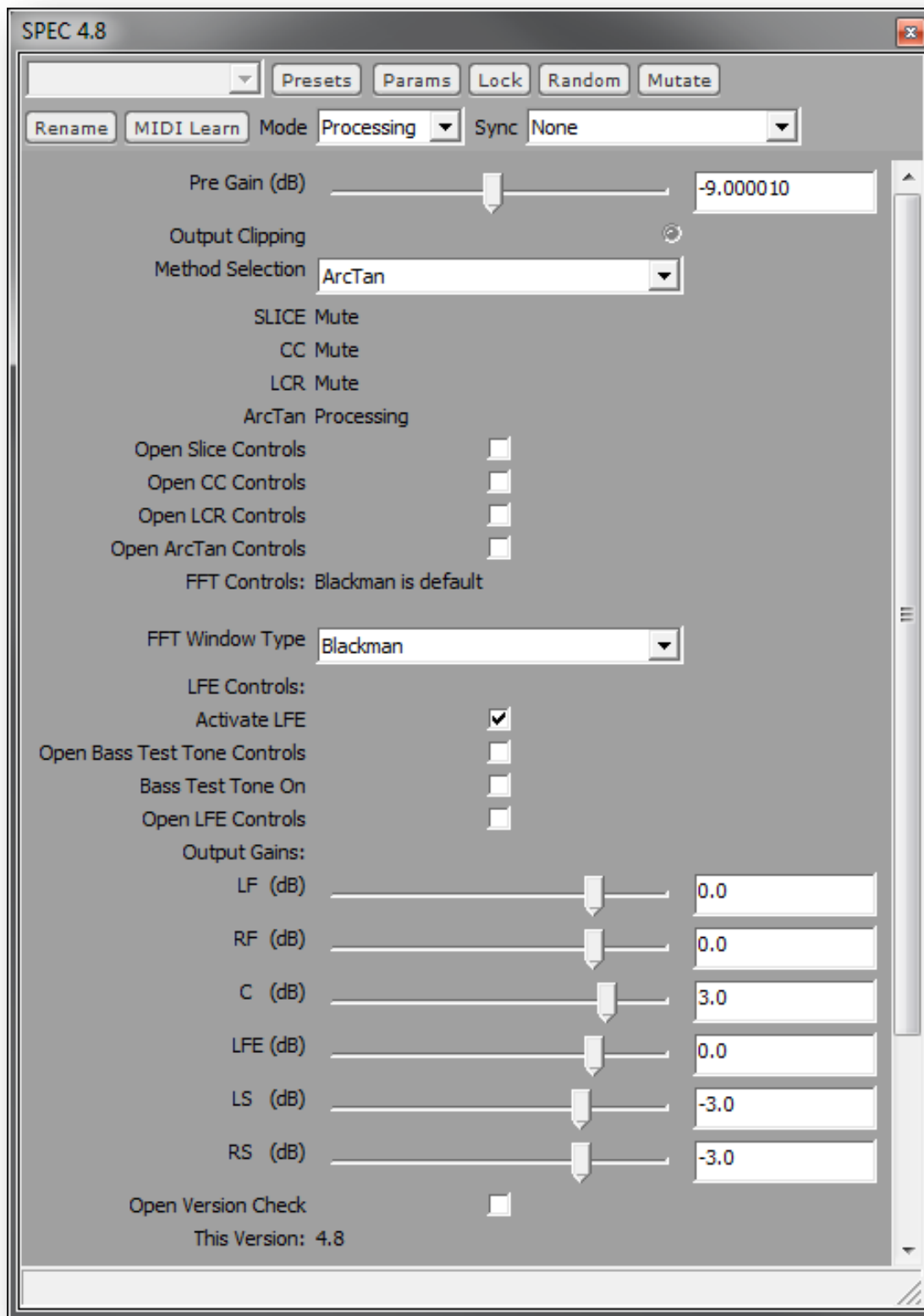
1) ***Pre Gain*** – Input Gain (typically -6 to – 12 dB – Listen for distortion and/or watch the Output Clip Light as you adjust the Pre Gain:
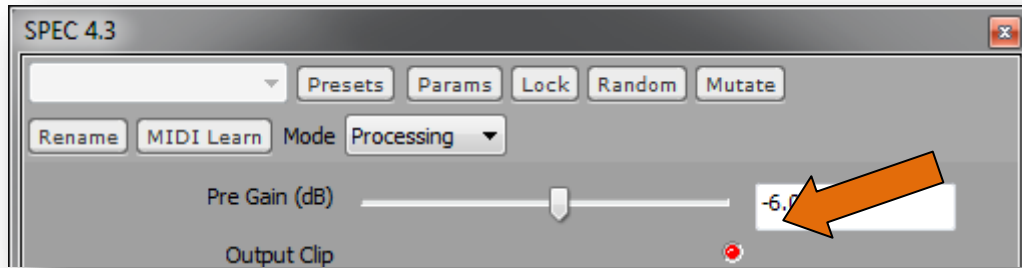
The Pre gain level will be different for each Method Selected.

 In order to prevent any distortion in the mix, it is important that you adjust your pre-gain to a level where the output clip does not light up.   A few flashes of the clip indicator in a song are not a reason to start a whole conversion over again (as we are doing 32 bit float processing) but you should check a "loud" portion of your stereo before moving on to other SPEC settings. Keep an eye on the clip indicator as you make other setting changes, as the different methods, and the output gains, will affect the final output level.

2) ***Method Selection*** – You need to have processing turned on when you change methods. Check the processing indicators, below the method selection drop down, to make sure your selection is processing. Also note, you need to select the CC method when setting the FFT Latency. Once set, change your method back to the one you want to use for conversion
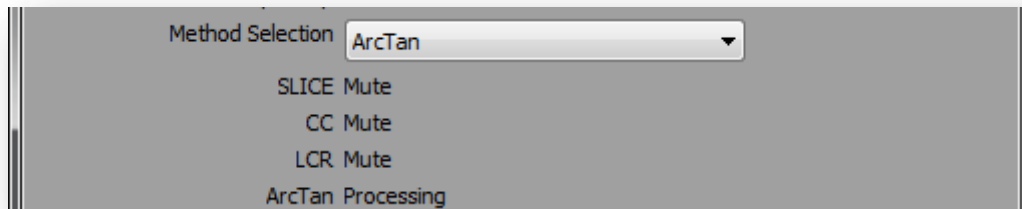
3) ***Method Controls*** – Use these checkboxes to open or close the additional method specific controls

4) ***FFT Window Type*** – All of these sound pretty similar except Rectangular. Choose the one you like (Rectangular may require a more negative pre-gain than the others). We think Blackman gives the best overall results.

FFT Window Type Blackman ▼
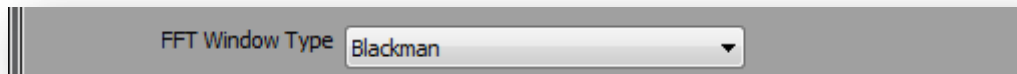
On faster computers, your DSP settings (In Plogue's preferences) should be:

FFT Window Size: 8192
FFT Overlap: 16
Higher Precision FFT: Checked

However if that creates too much DSP load you can still get good quality with:
FFT Window Size: 4096
FFT Overlap: 4
Higher Precision FFT: Checked

The "overlap" seems to be what affects the DSP load the most. You can also live monitor at lower window sizes and/or overlap and then go back to higher settings for off-line recording. Just be aware that Plogue sometimes crashes when changing FFT settings so be sure to save your layouts first.

Note that if you are going to be on up converting (re-sample to 88.2 or 96 Khz), you will need a higher FFT Window Size to achieve the same quality.

5) *LFE Controls*

LFE Controls:
Open Bass Test Tone Controls   ☐
Bass Test Tone On   ☐
Open LFE Controls   ☐
Activate LFE   ☐

SPEC 4.8 has a "bass boost" filter which acts similar to what you would see in a subwoofer amp. To turn it one, check the "Activate LFE" box. To see the LFE controls, check the "Open LFE Controls" box.
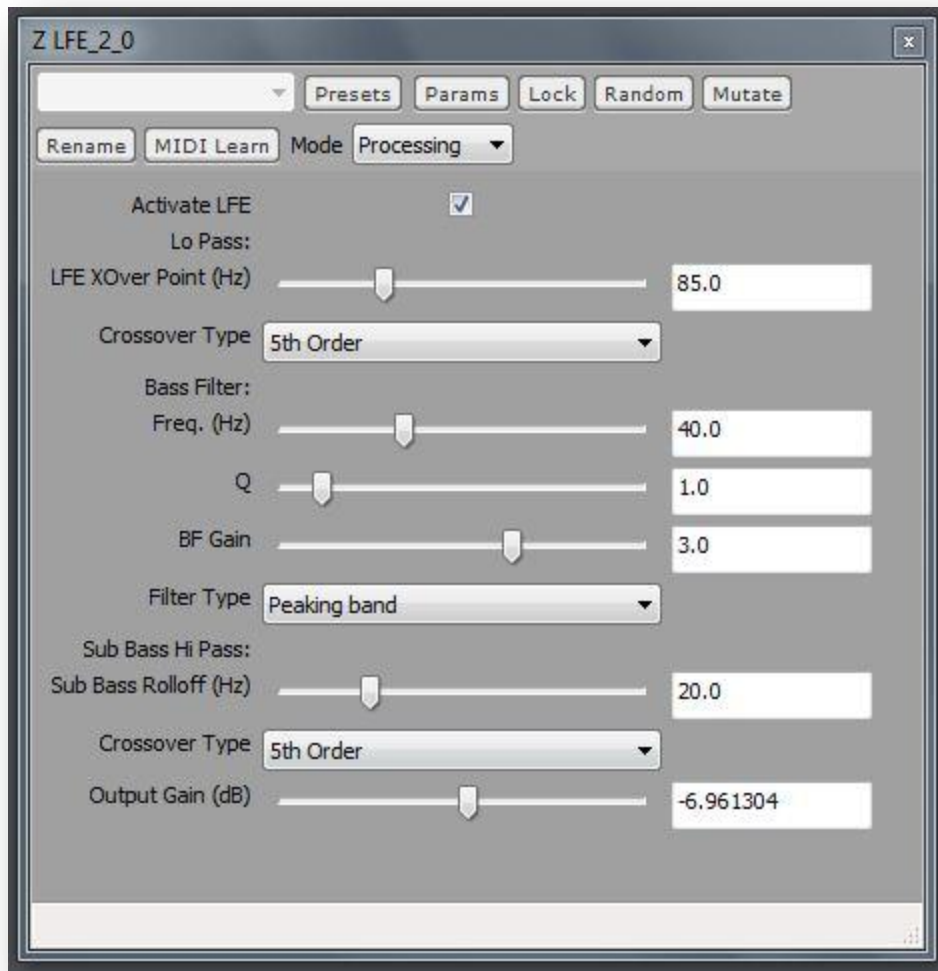
The LFE "bass boost" consists of 3 stages and an output gain control.

1) A Low Pass filter
   a. LFE cross over frequency (usually between 75 and 110 Hz)
   b. Crossover Type – the steepness of the crossover filter. 5th order is recommended
2) A "Peaking" filter (default settings shown give you a nice 40 Hz peak)
   a. Peak Frequency (usually 40hz)
   b. Q – how wide or narrow the peak boost range is (usually set to 1)
   c. Bass Peak Filter Gain (Usually 3 dB, set to 0 dB for no peak)
3) A Sub Bass filter
   a. Sub Bass cross over frequency (usually 20Hz)
   b. Crossover Type – the steepness of the crossover filter. 5th order is recommended

We won't debate the merits or issues with adding an LFE channel to your surround mix here, but should you choose to do so this "Bass Boost" filter is designed to give you a "tighter" "punchier" bass than what was in SPEC 4.0 and earlier.

The new LFE has been set up to be automatically time/phase aligned with the other surround channels, with stages one and two set for 5th order, regardless of your sample rate. The time/phase alignment may not be correct for One-Pole, One Zero settings.

SPEC 4.8 also has a "Bass Test Tone" included. This will either give a constant volume sweep from 200 to 20 Hz (THX recommended method for sub woofer setup) or give a fixed frequency (please don't blow up your speakers!).

The idea is that a properly setup HT (Home Theatre), and music played on it, should not exhibit any change in volume as the frequency sweeps through the crossover frequency from your 5.0 speakers to your subwoofer.

To see the Bass Test Tone controls, check the "Open Bass Test Tone Controls" box.

To turn the test tone on, check the "Bass Test Tone On" box.
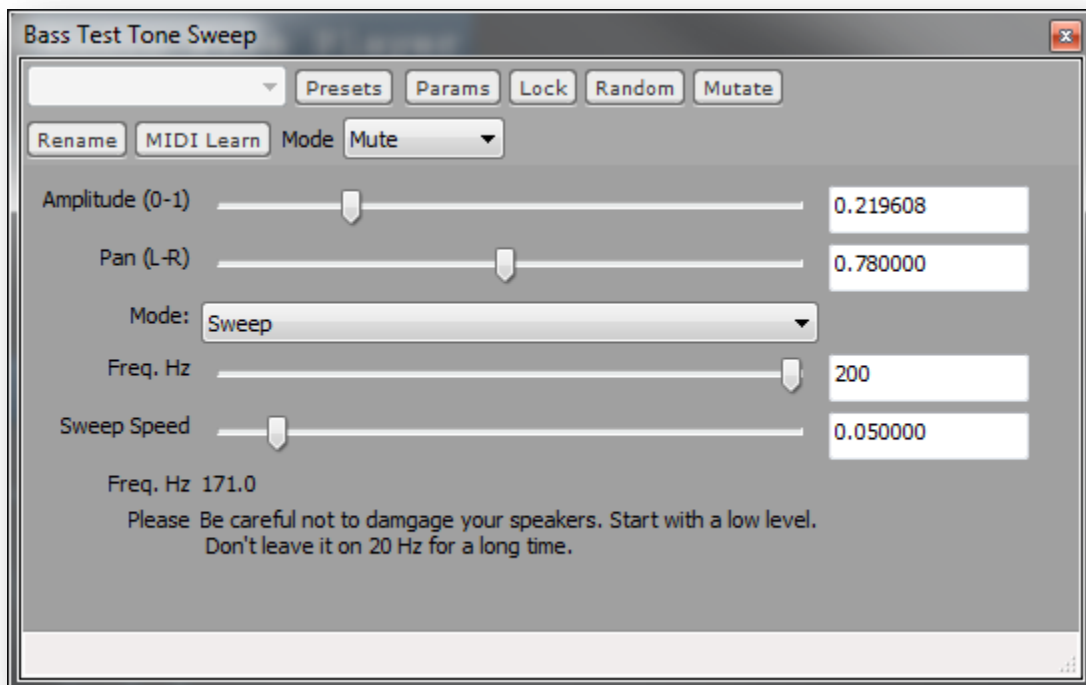
Amplitude – Tone Volume
Pan – Where in the stereo field to place the tone
Mode – Sweep or Variable (Variable controlled by the "Freq. Hz" slider)
Sweep Speed – To the left is a faster sweep.

The "Freq Hz" label will show the current frequency (useful during sweep for identifying the frequency of any volume change in your HT System or Conversion.

6) ***Output Gains*** – Use to control surround balance in standalone methods, or to control the levels to other bidules in your layout. The FL and SL Gains will move the FR and SR gains as a pair, but you can adjust the FR and SR gains independently if you need to.
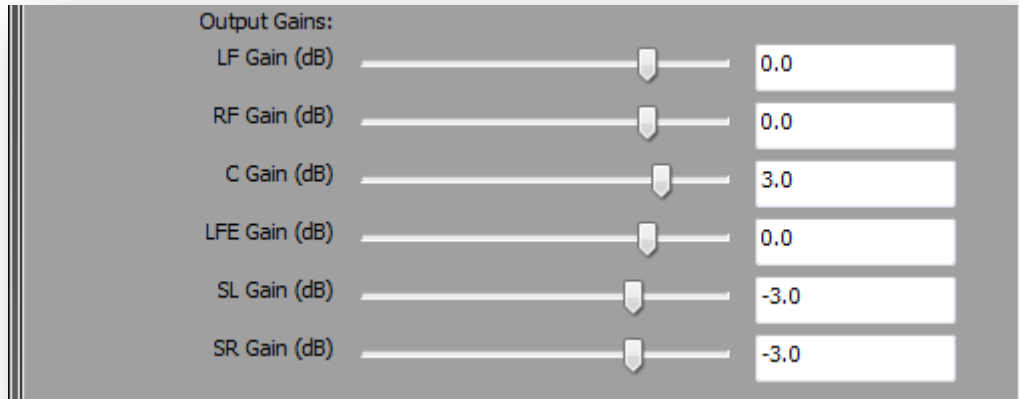
7) ***Version Check*** –
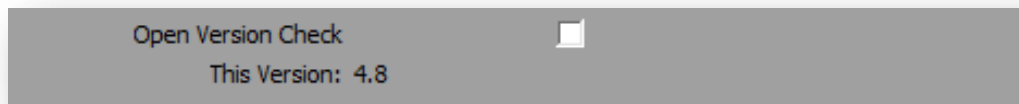
"This Version" will display "4.8 Not Current" if there is a new Spec version available.
Check off "Open Version Check" for additional controls:
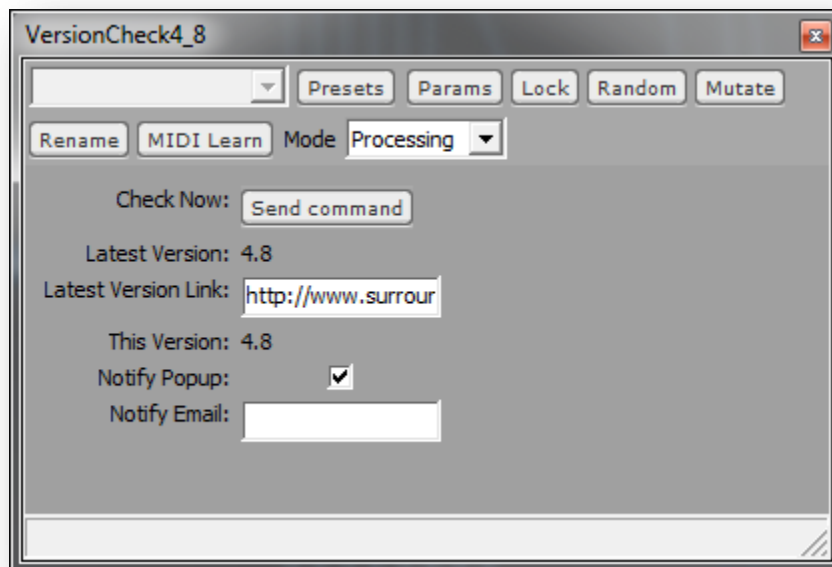
In this group you can press the "Send Command" button to perform a version check. The latest version and a (copyable) link to the latest version will be displayed. If you have no internet connectivity "Could Not Connect" will be displayed.

If "Notify Popup" is checked, this group will automatically open when a new version is available.

If you wish to be notified of version updates via email, enter your email address (will be saved along with the current layout). Be sure it end your email address entry with the enter key.

Method Specific Controls

SLICE

```
SPEC SLICE                                              ✕

  [              ▼] [ Presets ] [ Params ] [ Lock ] [ Random ] [ Mutate ]
  [ Rename ] [ MIDI Learn ]  Mode [ Mute        ▼]

  Stage One Humidity    ────────────────●────     0.800000
  Stage Two Humidity    ──────────────────●──     0.900000
         Wrap Rears              ☐
       Wrap Humidity    ──────────────────────●   1.0

  ZPan Controls:  LF and LS ZPan controls are included here
                  for automation convenience

                  Use them with negative values to adjust
                  the image width
                  Positive values will flip left for right

            LF ZPan    ──────●──────────────      -30.0
            LS ZPan    ───●─────────────────      -110.0

            ---------------- Bass Routing ----------------
         Bass Route  [ 5.0 (Normal)              ▼]
         XOver Freq.   ──────────────────────●     200.0

            Version:
                     Slice4_5.surroundbyus.com
```

SLICE Method Stage Humidity Sliders – Stage one is the humidity setting for the input of stage 2, affects FL, FR, SL, and SR. Stage two is the humidity setting for the SL and SR outputs. The Wrap Humidity is enables when the Wrap Rears checkbox is checked

A Humidity of 1 = 100% wet, or SLICE processed signal. A Humidity of 0 = 0% wet or 100% dry signal from the previous stage (or original left and right in the case of stage one). Humilities near one are used to decrease and artifacts heard in the outputs.

Recommended settings to start with are 0.8 for stage one and 0.9 for stage two.

Wrap Rears adds a third stage of separation. This has the effect of taking what was the extreme outside of the original stereo field and placing it in **both** rear speakers, creating a virtual center rear. This causes the

sound field to wrap around you 360 degrees. Checking the "Wrap Rears" box activates the feature and enables the "Wrap Humidity) slider.

The Zpan sliders are linked to their associated Zpan controls. See the ZPan section and the Per Track Automation section.

The function of the Bass Routing controls is described in the ArcTan section.

CC Controls

CC Method Humidity – Sets the Humidity for the SL and SR outputs
A Humidity of 1 = 100% wet, or SLICE processed signal. A Humidity of 0 = 0% wet or 100% dry signal
from the previous stage (or original left and right in the case of stage one). Humilities near one are
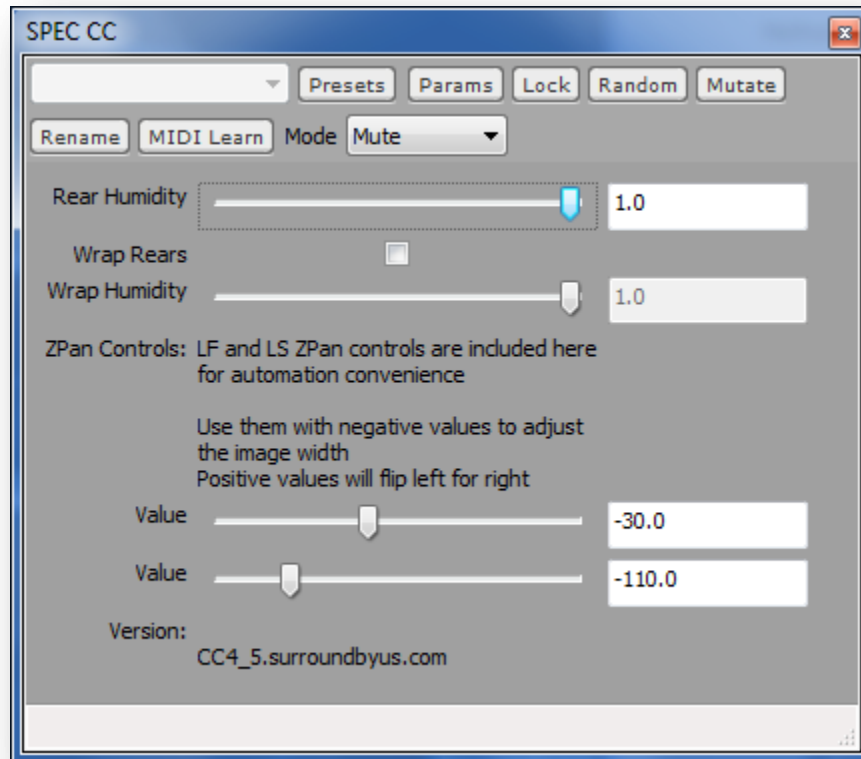used to decrease and artifacts heard in the outputs.

Wrap Rears adds a third stage of separation. This has the effect of taking what was the extreme
outside of the original stereo field and placing it in **both** rear speakers, creating a virtual center rear.
This causes the sound field to wrap around you 360 degrees. Checking the "Wrap Rears" box activates
the feature and enables the "Wrap Humidity) slider.

The Zpan sliders are linked to their associated Zpan controls. See the ZPan section and the Per Track
Automation section.

LCR Controls
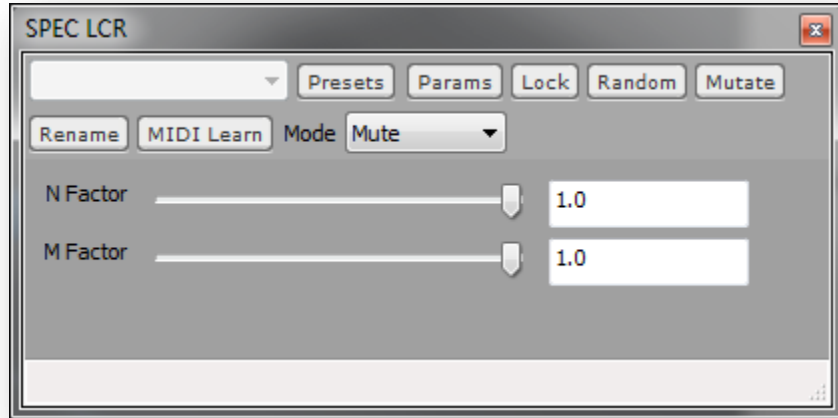
LCR Method N+M Factors

Default settings for the N and M factors are 1.0.
These settings affect only the SL and SR output channels, but Psycho-acoustically they interact with all the other channels (and their output Gains).

Some other settings to try:

Gerzon: Set N to 0.885 and M to 0.115 (Try other values of N and M that add up to 1.0)

LCR M: Set N to 1.0 and vary M.

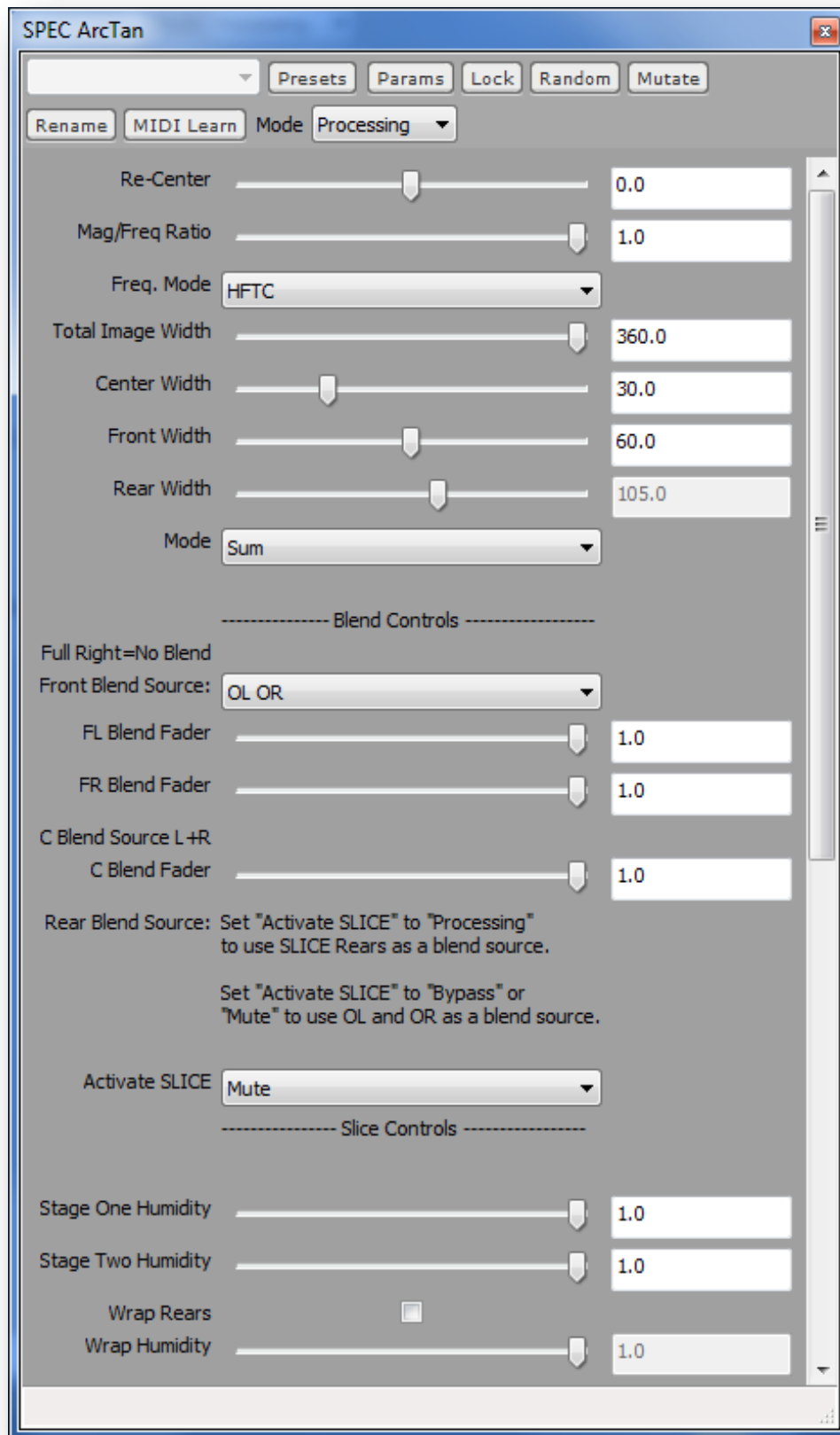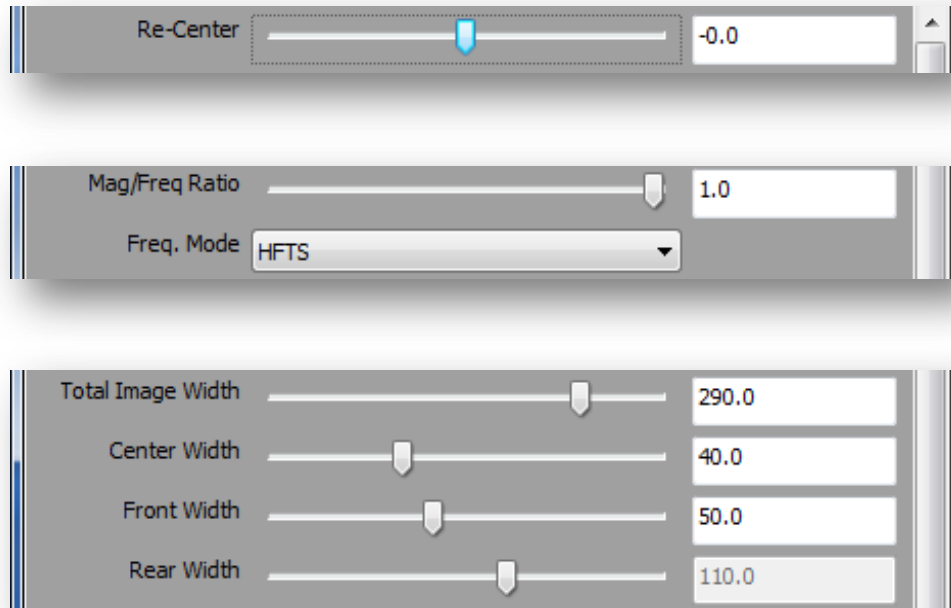LCR G: Set N to 1.0 and vary M and the Center output gain inversely.

ArcTan Controls:

ArcTan is a spectral method that uses the Arc Tangent of the ratio of each of the Left and Right frequency magnitude bins to determine the "angle" of the sound the producer created for that frequency in the stereo field. This angle is then magnified to fill a 360 or smaller degree sound field using the "Image Width" control.

Re-Center		-0.0

Mag/Freq Ratio		1.0
Freq. Mode	HFTS	

Total Image Width		290.0
Center Width		40.0
Front Width		50.0
Rear Width		110.0

The "Total Image Width" control can set from 0 to 360 degrees. A setting of zero will result in all of the sound

SL Blend Fader		1.0
SR Blend Fader		1.0

--------- Adjacent Speaker Controls -------

Level (1=100%)		0.0
Wrap Rears	Off	

--------------- Channel Subtraction ----------

Fronts - C (dB)		0.0
Rears - C (dB)		0.0
Rears - Fronts (dB)		0.0

----------------- Bass Routing ----------------

Bass Route	5.0 (Normal)	
XOver Freq.		200.0

Versions:
ArcTan4_6.surroundbyus.com

Slice4_6.surroundbyus.com
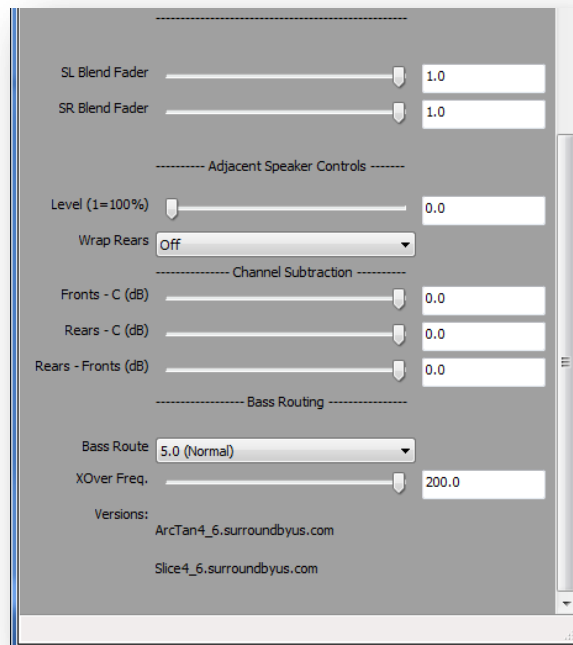
coming from only the center channel (assuming no "Adjacent Speaker" or "Blend Controls" are used). A setting of 90 degrees should recreate the stereo image (but utilizing all three front speakers). A setting equal

to the larger angle between your rear speakers will spread the stereo image from center all the way around to your rears, and a setting of 360 degrees will spread the stereo image 360 degrees around you so that what was the extreme outsides of the stereo field appear to come from behind you, between the rear speakers (as in SLCE or CC with "Wrap" turned on).

While any setting between zero and 360 degrees can be used, it is assumed that settings between the larger angle between your rear speakers and 360 degrees (inclusive) would be used in conversions (for instance if the larger angle between your rear speakers is 240 degrees, you would probably want to experiment with "Image Width" settings between 240 and 360 degrees inclusive) .
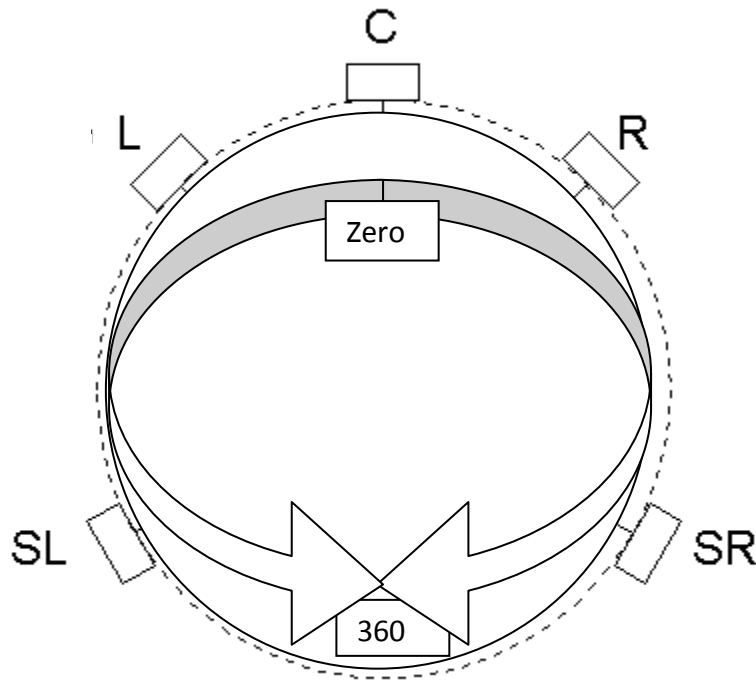
In ArcTan you can further modify the sound field with width controls individually for center, front, and rear (rear image width is automatically set based on what is "left over" from your center and front image setting).

These controls change the relationship between the ArcTan angle (as modified by the width control) and the actual angle each frequency bin is output at. Larger widths mean more of the stereo sound field will be mapped into those speakers, and smaller widths mean less. With the controls set at 72 degrees the relationship is basically 1:1 . The output angle is "capped" at the value of the width control.

As you move the Center width control to the right you may find that the center channel sound "slips away" from the center channel to one side or the other. In order to bring the "central" sound back the center

speaker a "Re-Center" control has been added. This simply adjusts the balance between the left and right audio signals at the input to ArcTan.

Following the above described controls, ArcTan has three different modes of distributing the sound into the surround field:
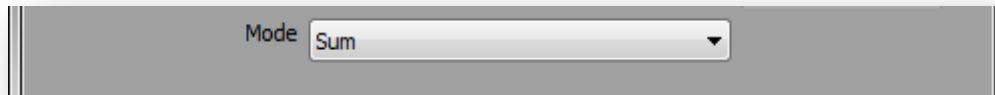
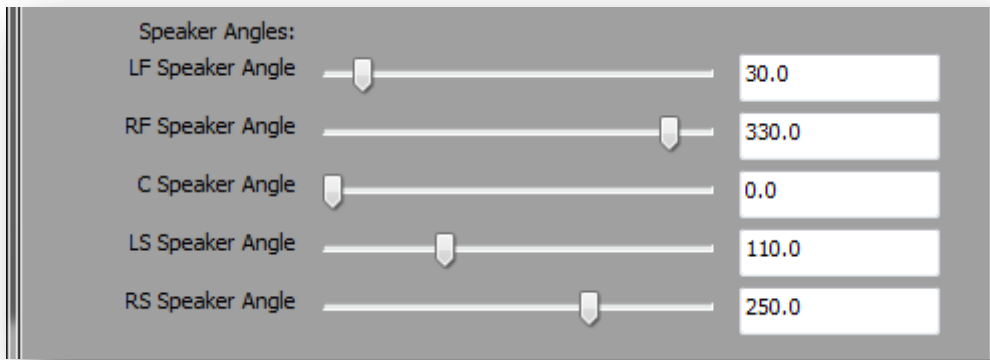1) Sum - The original Left and Right magnitudes of the frequency bins are added together and output at the calculated angle. This should be the most accurate reproduction/expansion of the original mix

2) Across – The louder of the original left and right magnitude is output at the calculated angle, and the quieter signal is output at an equal angle on the other side of zero degrees. This will give a more "full" sound, with more sound being concentrated toward the front and center speakers

3) Diagonal - The louder of the original left and right magnitude is output at the calculated angle, and the quieter signal is output at an angle 180 degrees from the calculated angle. This has the interesting effect of putting sounds that are slightly off center behind you, in both rears. We've found this to be particularly useful in songs where harmony vocals are panned just a little left or right (vs. the lead vocal in the center).

   Note that larger Center Width vs. Front Width settings are another possible way to spread out things panned only slightly off center in the original stereo.

At the output of all the above controls (inside ArcTan) a Constant Power Panner is used to "pan" each frequency between the appropriate pair of speakers to make the sound appear to come from the targeted angle.

In order for the Constant Power Panner to perform the correct calculation, it needs to know where your speakers are located.

Speaker Angles:

LF Speaker Angle	⬤━━━━━━━━━	30.0
RF Speaker Angle	━━━━━━━⬤━	330.0
C Speaker Angle	⬤━━━━━━━━	0.0
LS Speaker Angle	━━━⬤━━━━━	110.0
RS Speaker Angle	━━━━━━⬤━━	250.0

Rather than assuming ITU speaker positions, ArcTan uses the Speaker Angle sliders in ZPan for you to input the precise speaker angles of your system. Note that processing should be "on" when you adjust the Speaker Angle Sliders in ZPan.

Speaker angles are measured in degrees counter clockwise from the (normal) center channel position.
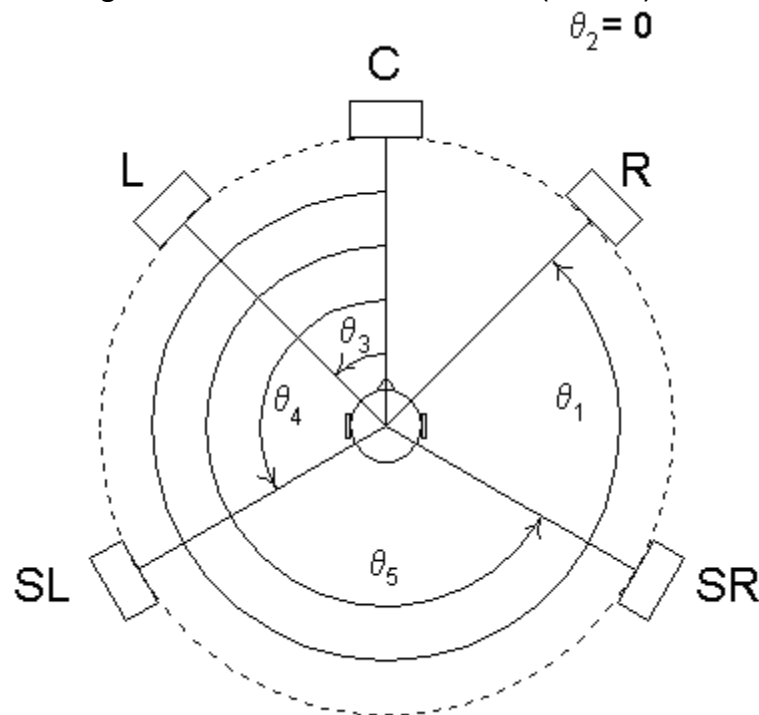

Note that in this layout the ArcTan speaker angles are linked from the ZPan speaker angles, so you can set your speaker angles once in ZPan, and have ArcTan also be set correctly (the reverse is not true).

The last page of this document contains a 360 degree chart to assist you in measuring your speaker positions.

Blend Controls

Rather than simple humidity controls, ArcTan's Blend Controls let you select the source of the "dry" signal to blend with its outputs. With all controls set to 1.0 you will hear the "pure" output of the ArcTan method. Feel free to experiment.
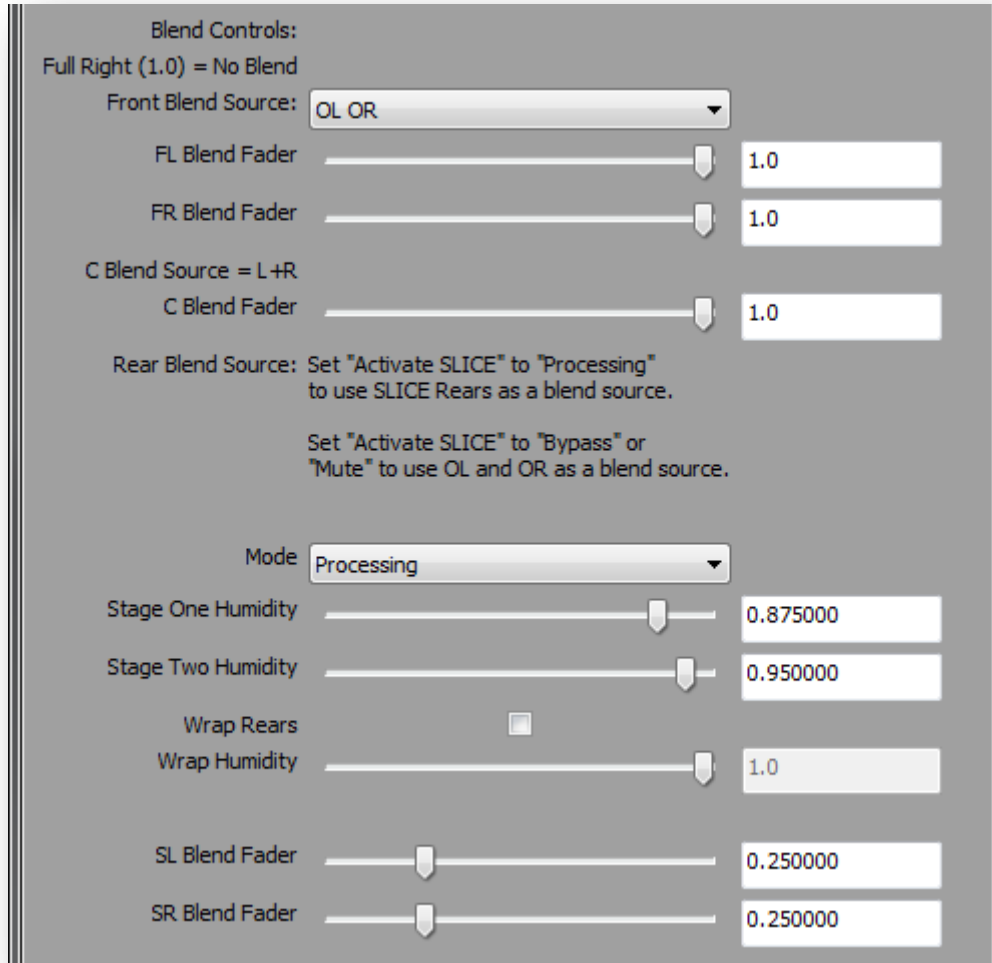
The Rear Blend faders allow you blend in rears from the SLICE method. We have found that ArcTan fronts and 25% blended SLICE rears (75% SLICE, 0.25 on the sliders) is an excellent combination for many types of music. Using ArcTan AND SLICE at the same time does increas the DSP load however, so you should keep the "Activate SLICE" drop down on "MUTE" if your not using SLICE blended rears.

Adjacent Speaker control

The adjacent speaker control lets you add in some signal destined for each speaker to the speakers on either side of it. This can "fatten" or "fill in" the sound. We have found that 0.3 is a good setting for this control.

With the control all the way to the left this control is "off".
Also included is a selection to have the opposite rear speaker included (Wrap Rears ON) or not.

Spectral Channel Subtraction
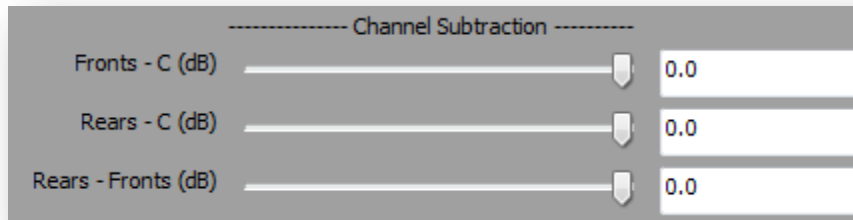
These controls allow you subtract one channel from another. For example you can subtract the Center channel from the Rears to remove any remaining vocal sounds in the rears after the ArcTan process. Similarly you can subtract the Center channel from the Fronts and Fronts from the Rears.

Keep in mind that you are subtracting sound, where as with the blend and adjacent speaker controls you are adding sound. It is suggested that you adjust the blend controls full right (off), and the adjacent speaker controls full left (off) before adjusting the Channel Subtraction controls. After you are happy with the amount of separation you can try adding back some sound with the adjacent speaker and/or blend controls, to reduce and audio artifacts.

On further thing to keep in mind is that the ArcTan process is meant to give a smooth transition between all the channels, with some sounds seeming to come from between the speakers. Aggressive use of the channel subtraction controls will make the overall sound more like the SLICE process. If you find you are using a log of Channel Subtraction you might want to check how the SLICE process sounds with your source material, to see if you prefer that.

Bass Routing controls
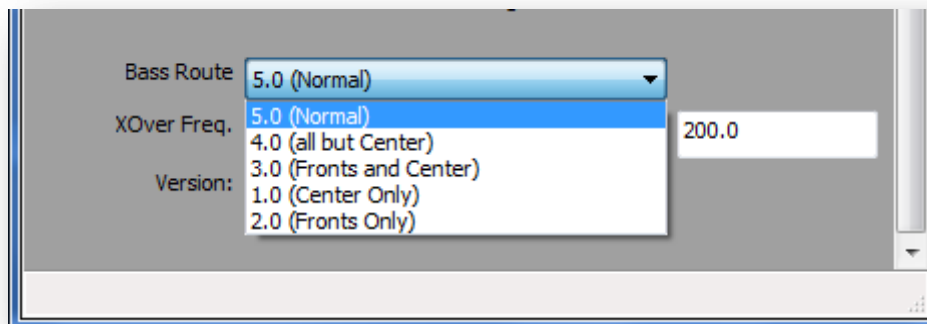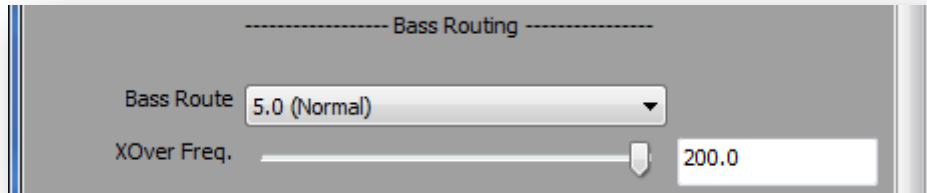
Bass Routing allows you to direct the frequncies below a certain value to the front/center speakers. Ther theory behind this is that frequencies below 200 hz have little directionality so by removing the "non directional" sound from the rears the directional sounds above 200 hz will stand out more in the sound filed. Furthermore, having all the bass sounds come from as few sources as possible should lead to tighter bass, with less chance of cancelation happening because of speaker placements etc.

5.0 means no bass routing. 4.0 means no base in the center, 3.0 means bass in fronts and center only, 1.0 means bass in the center channel only, and 2.0 means bass in the front channels only.

The Xover Frequency control is used to define the point at which frequencies are routed. This is done in the spectral domain, so is an infinite slope, zero phase shift filter.

Bass Routing caveats:

Assuming you have a satellite / sub sourround system ("small" speakers), setting bass routing xover frequncy below that of your bass management system will have no effect.

The use of bass routing will change the relative measured levels of the channels as 100% of the orginal bass signal is routed to fewer channels. For instance if you choose 1.0 bass routning the bass from the four other channels gets added to the center channel bass. This may force you to have "unusual" output settings in ZAG, to achive the correct sound balance.

Note that in Spec 4.8 ZPan is automattically bypassed when you are using the ArcTan method, to save DSP load. If you still want to use Zpan with ArcTan you can re-enable it by using the contex menu (right click on ZPan) to set the Processing Mode to "Processing".

ZPan

Zpan allows you to place the sound output from SPEC (or another method) *between* speakers vs. having the sound come directly from the speakers. This allows your widen or "open up" the sound (or narrow it) as well as creating a balanced sound field in which your speakers "disappear".

Thus Zpan can replace 5 channel input/output Ambisonic methods, *and* do so without adding any significant DSP load to your layout.

Note that Zpan is probably not needed for ArcTan, as ArcTan already creates a continuous sound field, vs. discrete speaker channels , but the other SPEC methods (SLICE, CC, LCR) can definitely benefit from using ZPan.
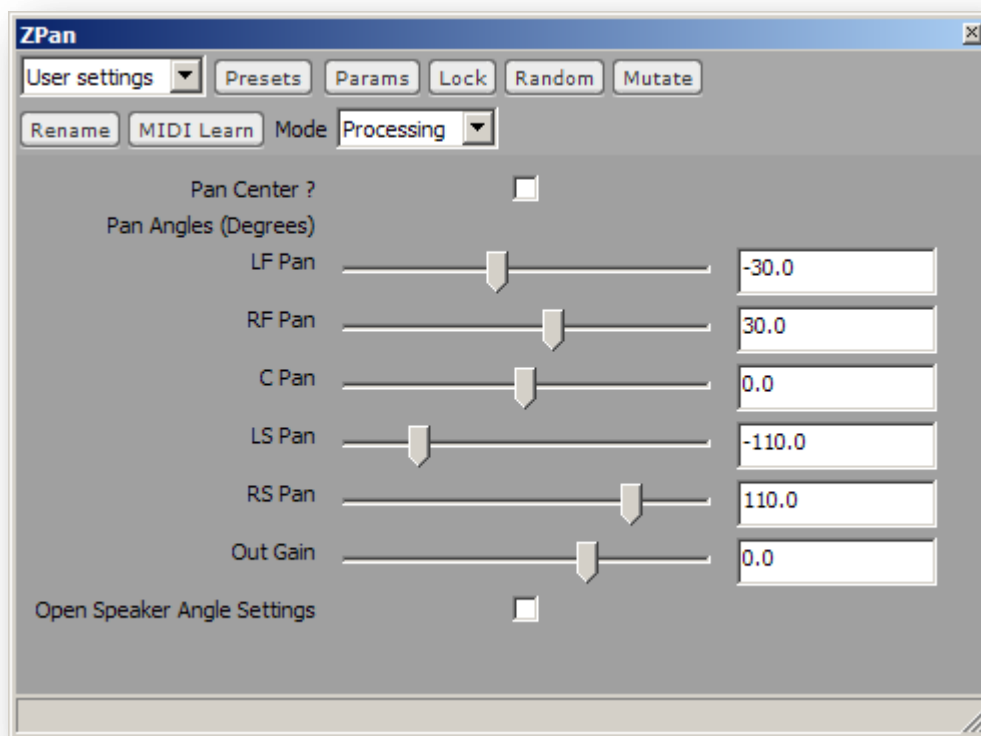
Pan Angles are measured in degrees clockwise from center (positive) and degrees counter clockwise from zero (negative). So the range of panning is from -180 degrees to 180 degrees. Note that both 180 degrees and -180 degrees create a pan angle that causes the sound to come from directly behind you, between the rear speakers.

A negative pan angle equal to the angle from center to your left rear speaker would result in the sound coming directly from your left rear speaker. The easiest way to get a feel for this is to use the Output Gain controls in SPEC to turn off all but one channel, and then move the ZPan pan control for that channel around to hear the result.

The "C Pan" Control has no effect unless you check off the "Pan Center ?" checkbox. This is to save DSP load.

You will notice that similarly to the output gain controls in SPEC, the Zpan pan left and right pan controls are linked so that if you move a "left" pan control the corresponding "right" pan control moves at the same time (processing must be "on"). This allows you to smoothly hear the effect of widening or narrowing the front or rear sound field by moving the LF or LS pan controls only.

Linked copies of the LF and LS pan controls are now included in the SLICE and CC method controls for that reason and specifically to set the image width when using "Per Track Automation".

You can set different pan angles for Left and Right speaker pairs by moving first the left Pan control and then the corresponding right control.

You will also quickly notice that the control linking behavior is different from the SPEC Output gain controls in that the pan controls move OPPOSITE to each other, and that this movement only occurs when processing is turned on (Because we need to do math between the links).

In order for the Constant Power Panner to perform the correct calculation, it needs to know where your speakers are located.

Rather than assuming ITU speaker positions, ZPan provides sliders for you to input the precise speaker angles of your system. These settings are also used by ArcTan.
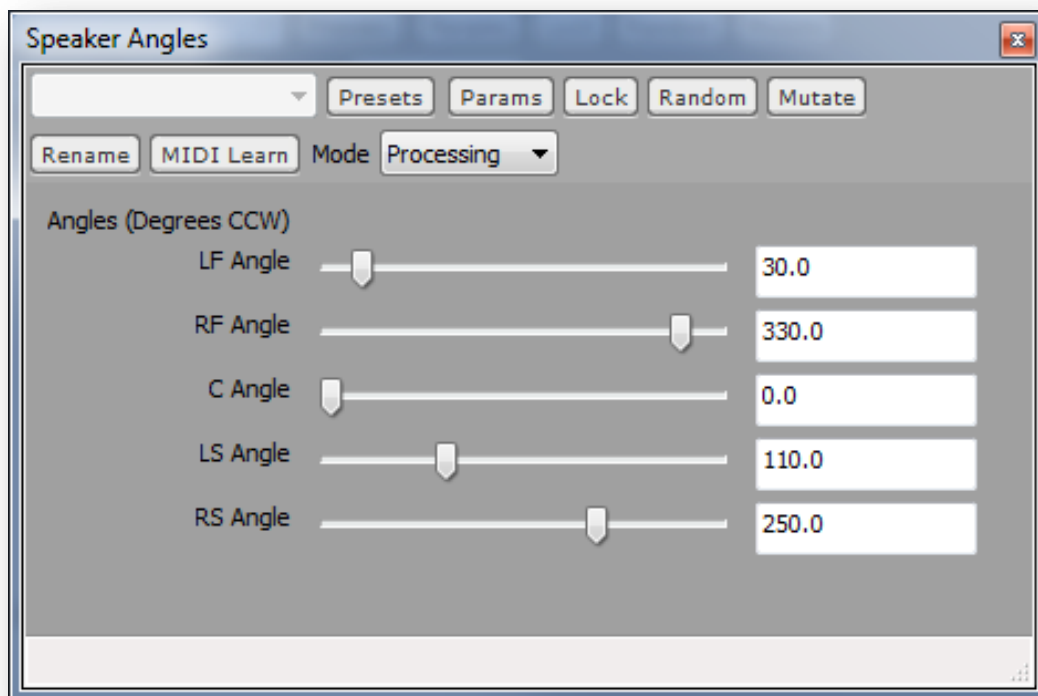
The angles are measured in degrees counter clockwise from the (normal) center channel position.
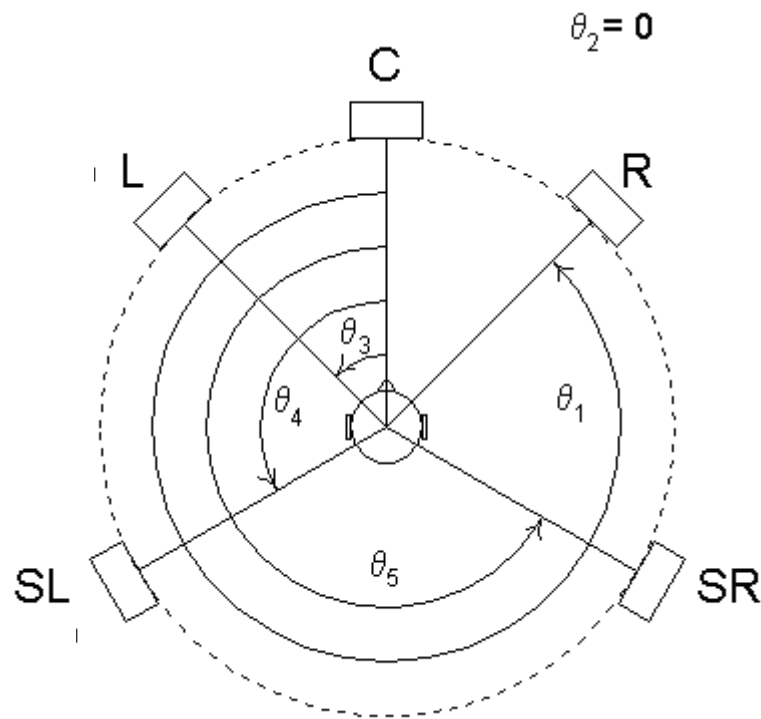
One could assume that the target audience has ITU setups, in which case it might make sense to set the speaker angles to ITU angles AFTER you have balanced our sound but before you do your conversion, but this assumption has not been tested (perhaps a poll of actual speaker angles would need to be done to determine the average speaker positions?).

However in general the idea is that you set your speaker angles to match the position of your speakers once, and only adjust the Pan Angles per conversion (or track).

Note that if the Pan Angles are set to match the position of your speakers ZPan has no effect on the sound (remembering that pan angles are measured from -180 (left) to +180 (right) and speaker angles are measured zero to 360 degrees counter clockwise).

Note that processing should be "on" during setting of the Speaker Angles.

A chart is included at the end of these instructions to help you set your speaker angles.

Note that in Spec 4.8 ZPan is automattically bypassed when you are using the ArcTan method, to save DSP load. If you still want to use Zpan with ArcTan you can re-enable it by using the contex menu (right click on ZPan) to set the Processing Mode to "Processing".

Free Mastering Tools
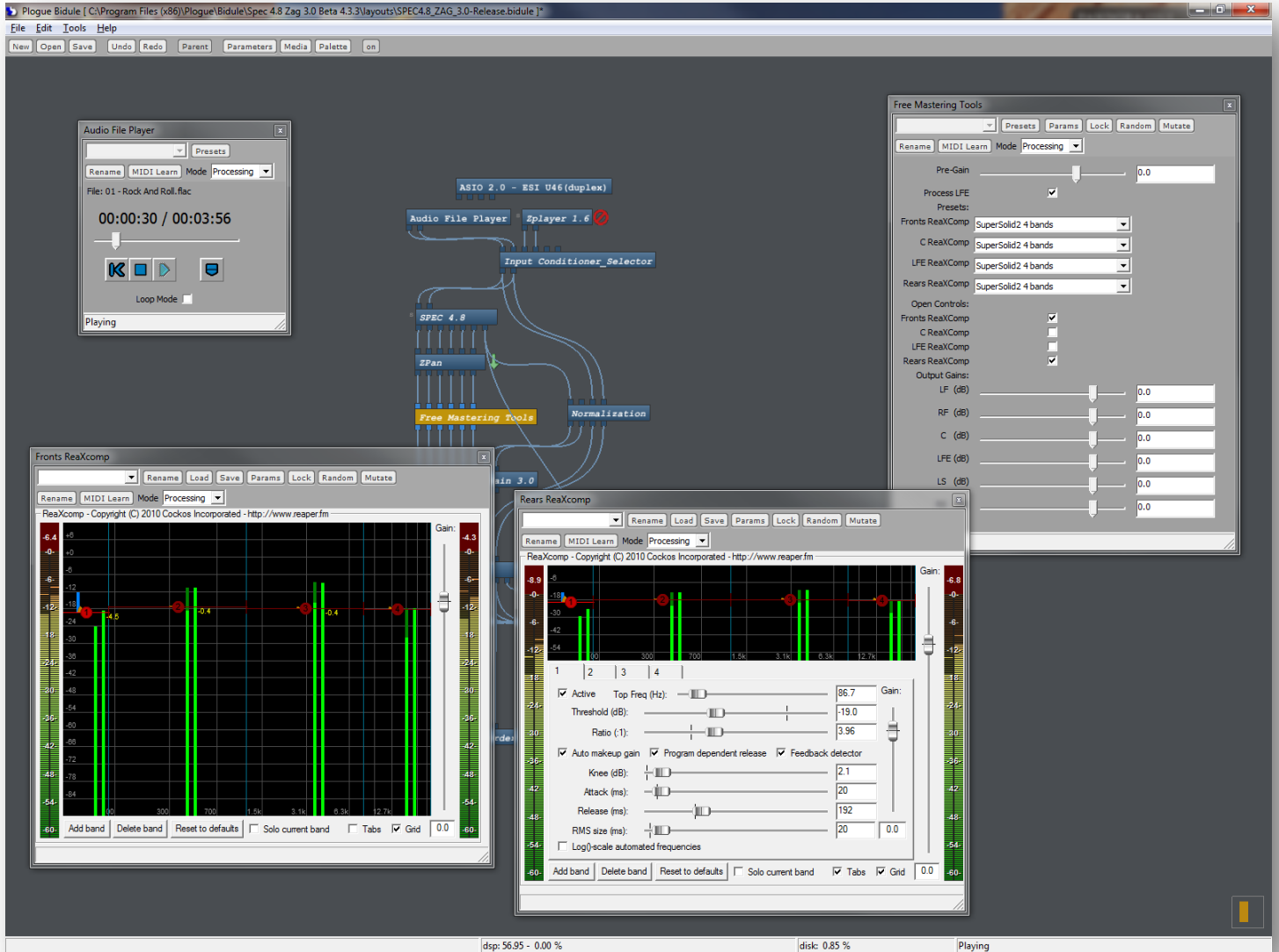
Bypassed by default in the Spec 4.8 layout, the Free Mastering Tools group is included if you feel the need to use compression in your conversion.

The group uses the ReaXcomp multiband compressor from the ReaPlugs package.

To enable the group, on the contect menu (Right click on the group), select Processing Mode → Processing. This will remove the Green Arrow, next to the group (Green Arrow indicates the group is bypassed).
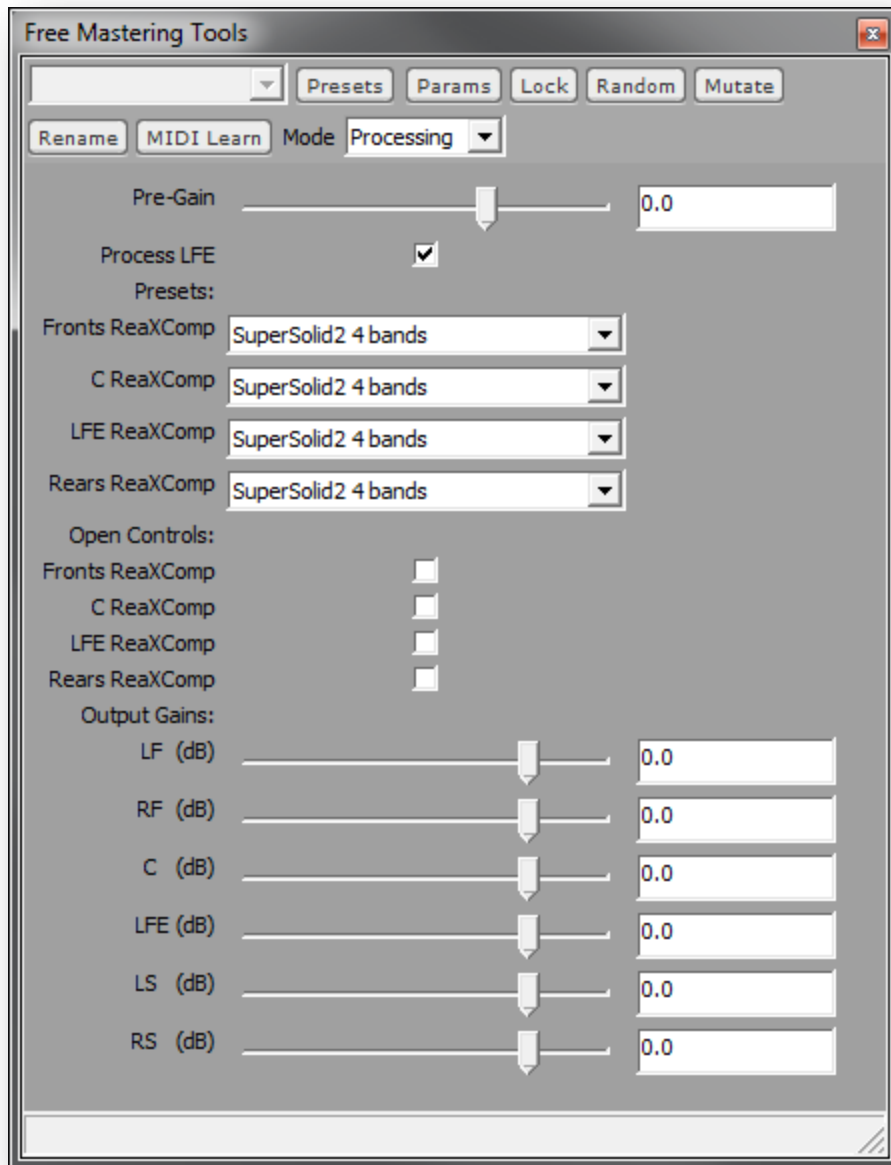
Group Controls

Pre-gain can be adjusted to drive the compressors harder or softer.

Process LFE enables/disables the LFE compressor (to save DSP load).

The drop downs select presets for each compressor. You can also set up each compressor manually by open its controls with the checkboxes.

The Output Gains are included for convenience. Each Compressor VST also has and output gain.

Mastering Tools in conversions

 In General you shouldn't need mastering tools or compression in your conversions (assuming you are starting with music that was already mastered.

If, however, you want to use mastering tools, this position in the layout (between Zpan and Zag) is where any mastering VSTs should go.

The "Free Mastering Tools" group doesn't have any latency, but many mastering VSTs do. If you are inserting mastering VSTs in the layout you need to account for any latency so the track transitions, and stop and stop of recording are aligned with the audio in the groups further down the layout. To do this you would connect the latency pin of **one of** your mastering VSTs to one of the two left most pings on the Normalization group, and also to one of the input pins in the Layout Control group. It is ok to have multiple things connected to these input pins (In Plogue, multiple signals connected to an input are **added**).

We are assuming that any Mastering VSTs you insert on the different channels will have the same amount of latency. If not, you have to add delay lines so that the paths for all channels have the same latency.

ZAG 3.0

ZAG stands for "Z Automated Gains." It is the most streamlined approach to automated channel gain balancing developed yet, requiring minimal steps on the converter's part. As a matter of fact, remember that gain spreadsheet Excel sheet from the main SPEC guide and AutoV2? Feel free to dump that in your Recycle Bin. You no longer need it! The same goes for the TrackTime icon on your desk top. Starting with Zag 3.0 you can paste cue files directly into Zag.

ZAG uses the original stereo (LI and RI) signals to assist in track to track normalization, so those signals must be in sync with the surround channels coming out of SPEC. The "Normalization" group has been added to take care of that (as well as delaying the "Play" signal from the "Audio File Player").

It's called the "Normalization" group because it also lets you pick whether you want ZAG to normalize the relative volume of your tracks based on the original stereo (you are converting a stereo album) or you want ZAG to make all tracks the same volume (you are converting a compilation of tracks from different albums).

Double clicking on the "Normalization" group gives you:
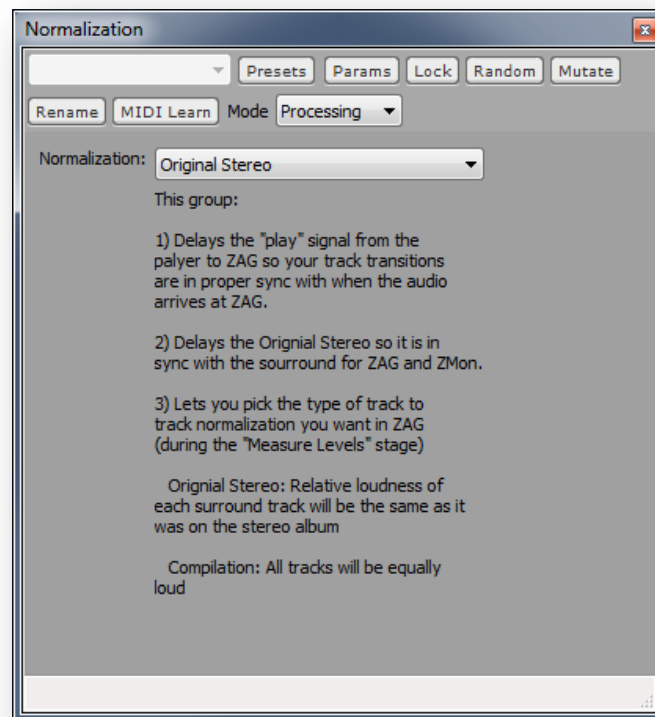
Now let's get into the details of ZAG.

ZAG is designed to work with a single album-length track. If you are working with individual files for each track on an album, you can combine them into an album-length track, and create an accompanying Cue sheet, using Foobar2000. Drag and drop your single song files onto Foobar, highlight them all, and right-click and choose "Convert."
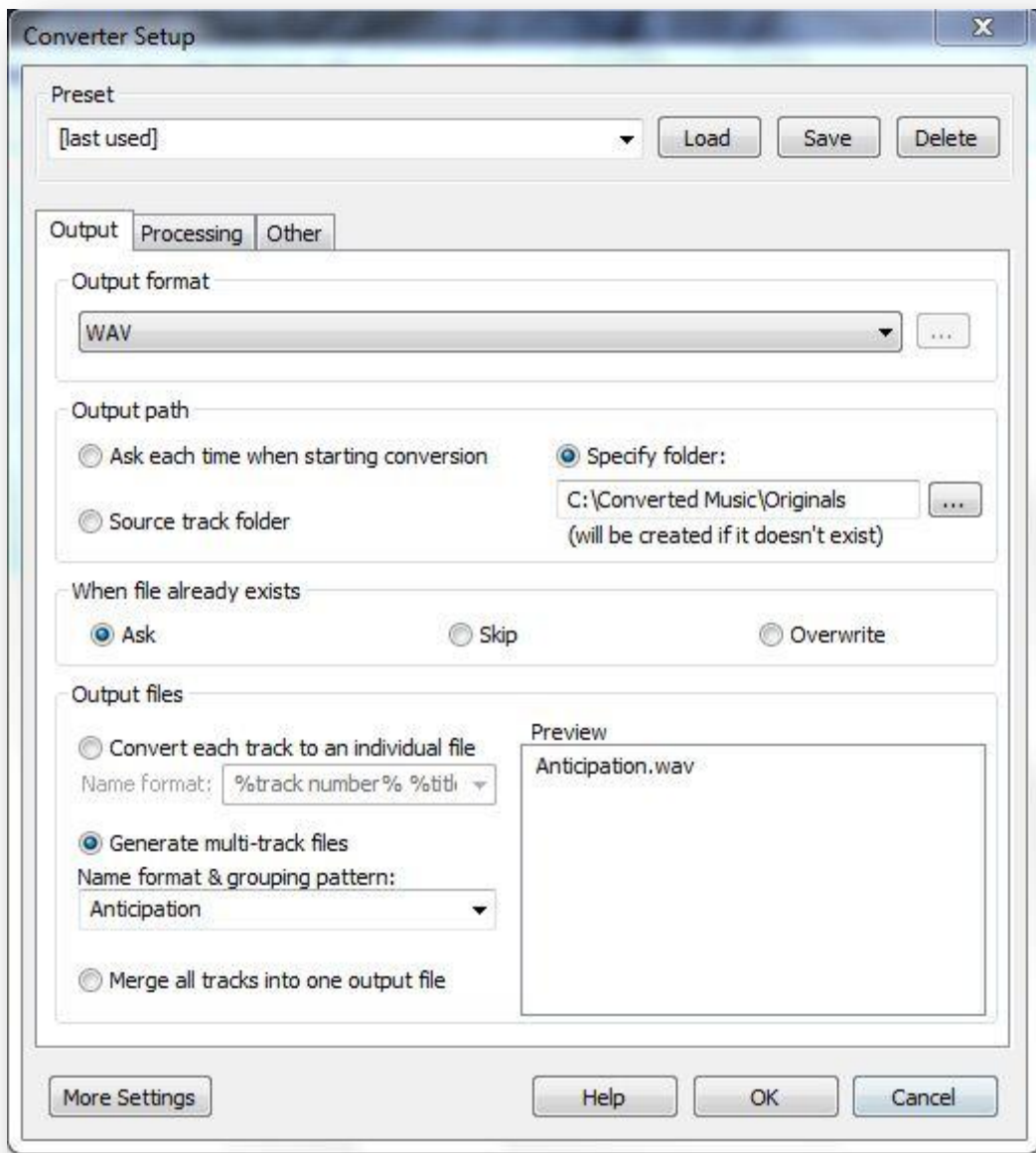
Selecting the "Generate multi-track files" option will create a single album-length file, with an accompanying cue sheet. Obviously, where you place those files is up to you.

Let's take a quick look at the top half of the ZAG UI:

Z Automatic Gain 3.0

| | Presets | Params | Lock | Random | Mutate |

Rename | MIDI Learn | Mode Processing ▼ | Sync None ▼

Cue File

Peak Capture ☐
Open PC Controls ☐
ZAG Mode Measure Levels ▼
Output (-2 +6) 1.0
C to Fronts (+/-10) 3.0
LFE to Fronts (-20 0) -9.0
Rears to Fronts (+/-10) -3.0
Track # 1 / 1
Track Length 00:00:00
In Track 00:00:00
In Album 00:00:00

Meters	Peak	Avg.	RMS
LF	-110.0	-110.0	
RF	-110.0	-110.0	
C	-110.0	-110.0	
LFE	-110.0	-110.0	
LS	-110.0	-110.0	
RS	-110.0	-110.0	
LI	-110.0	-110.0	
RI	-110.0	-110.0	

Clear | Send command
Reset | Send command
Play Status ☐

Open your cue file in Notpad or another text editor and copy all the text into the "Cue File" box in Zag:
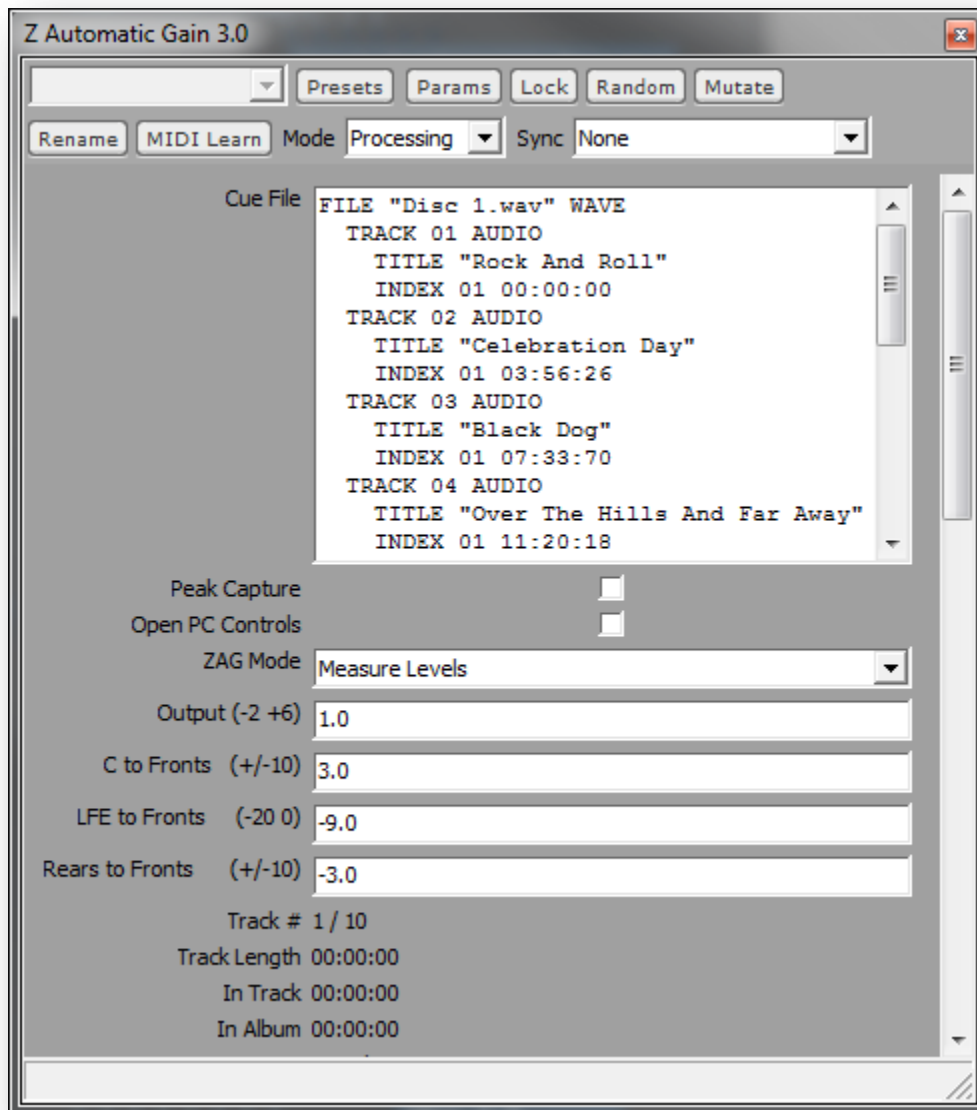
Notice how the track # on the bottom now reflects the number of songs on the album. Leave the other controls on ZAG where they are for now and go ahead and set up SPEC to the parameters you want for this album.

Make sure your album-long track is loaded into the player as well. Keep ZAG Mode at "Measure Levels" for now and simply hit "Play." If you see the ZAG meters begin to measure RMS levels, you are good to go. Walk away, make a sandwich, dance with your spouse, etc. Come back when your album is done, hit the off button, and switch ZAG Mode to "Apply Gains."

```
ZAG 1.7                                                           ☒

                      ▾  Presets   Params   Lock   Random   Mutate

 Rename   MIDI Learn  Mode  Processing   ▾

 ┌───────────────────────────────────────────────────┐
 │                                                   │
 │                                                   │
 └───────────────────────────────────────────────────┘
     ZAG    ┌──────────────────────────────────────────┐
     Mode   │ Apply Gains                            ▾ │
            └──────────────────────────────────────────┘
   Output   ┌──────────────────────────────────────────┐
   (-2 +6)  │ 0.0                                      │
            └──────────────────────────────────────────┘
 C to Fronts┌──────────────────────────────────────────┐
  (+/-10)   │ .8                                       │
            └──────────────────────────────────────────┘
LFE to Fronts┌─────────────────────────────────────────┐
  (-20 0)   │ -10                                      │
            └──────────────────────────────────────────┘
Rears to Fronts┌──────────────────────────────────────┐
  (+/-10)   │ -3                                       │
            └──────────────────────────────────────────┘
      Track #  1 / 11
     Sample #  0 / 9531480
      Meters    Peak Avg. RMS  Gain
          LF  -110.0 -110.0    +9.3
          RF  -110.0 -110.0    +9.6
           C  -110.0 -110.0   +11.3
         LFE  -110.0 -110.0   +14.2
          LS  -110.0 -110.0   +10.0
          RS  -110.0 -110.0   +11.3
          LI  -110.0 -110.0
          RI  -110.0 -110.0
     Reset   ┌──────────────────────────────────────────┐
     Select  │ All                                    ▾ │
            └──────────────────────────────────────────┘
     Reset   ┌───────────────┐
             │ Send command  │
             └───────────────┘
     Play
     Status              ☐
    Results ┌────────────────────────────────────────┐
            │Out +0.0 C2F +0.8 LFE2F-10.0 R2F -3.0 ▲│
            │Track 1        9531480 Samples          │
            │Ch. Peak   RMS   LGain  NGain  FGain    │
            │LF -14.1  -26.7  +10.7   -0.6   -0.8    │
            │RF -14.1  -27.0  +11.0   -0.6   -0.8    │
            │C  -12.1  -27.9  +12.7   -0.6   -0.8    │
            │FE -24.3  -41.6  +15.6   -0.6   -0.8    │
            │LS -14.7  -30.4  +11.4   -0.6   -0.8    │
            │RS -13.6  -31.8  +12.8   -0.6   -0.8    │
            │LI  -6.1  -18.7                         │
            │RI  -6.1  -19.0                         │
            │Track 2        4523484 Samples          │
            │Ch. Peak   RMS   LGain  NGain  FGain  ▼│
            └────────────────────────────────────────┘
  Measure- ┌────────────────────────────────────────┐
    ments  │-14.124:-26.727;-14.114:-27.040;-     ▲│
           │12.110:-27.855;-24.254:-41.597;-        │
           │14.727:-30.438;-13.564:-31.750;-6.124:- │
           │18.727;-6.114:-19.040;/                  │
           │-14.124:-28.930;-14.116:-28.096;-        │
           │12.911:-28.460;-27.118:-50.938;-        │
           │18.413:-36.226;-16.604:-33.951;-6.124:- │
           │20.930;-6.116:-20.096;/                  │
           │ 14 124 26 767 14 112 27 022          ▼│
           └────────────────────────────────────────┘
```

The "Results" box will now show you peak levels, RMS values, and three sets of gains for each track on the album.

The "LGain" is the Level adjustment formula from the spread sheet (Remember the spread sheet?). Each surround channel will (probably) have a different LGain.

The "NGain" is the track to track Normalization. This ensures that the relative volumes of each surround track are the same as for the original stereo. Each track will have the same NGain for all channels.

The "FGain" is the Final gain needed to bring the loudest peak of the entire album to the output level you have set in the "Output" box. Every channel of every track will have the same FGain.

In ZAG 3.0 the Peak and RMS levels of the surround channels are the calculated final results of ZAG, not the measured values. You can still see the measured values (Peak, then RMS, in ITU order) in the Measurements window. If you subtract the sum of LGain, NGain, and FGain from the calculated Peak and RMS values, you will arrive at the measured Peak and RMS values for that channel.

Before, we decide to record, though, let's go back up to the four boxes below ZAG Mode:
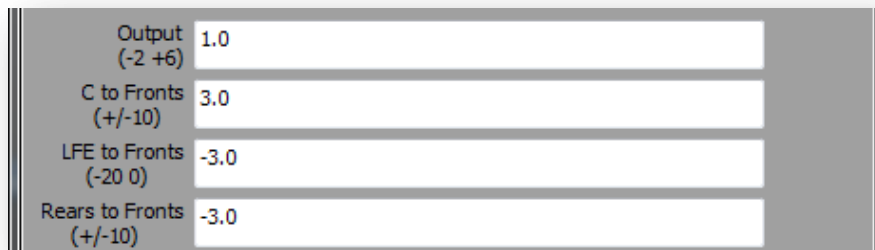
Output refers to where you want to set the highest possible peak value for your entire conversion. The range here is -2 to +6. Setting it to zero, or lower, will result in a fully normalized mix with no positive peak values (no clipping), however, you may find that your mix is too low in volume, or lacking in power. This is why our range allows you to the push the highest possible peak value all the way up to +6, and why we include use of a limiter to round that peak value off at the end of the layout. While excessive use of a limiter is never recommended, when used with some restraint, chances are what you are rounding off is the rare transient on the album which is not going to negatively affect your overall sound quality.

If using the limiter option, open up the main UI:
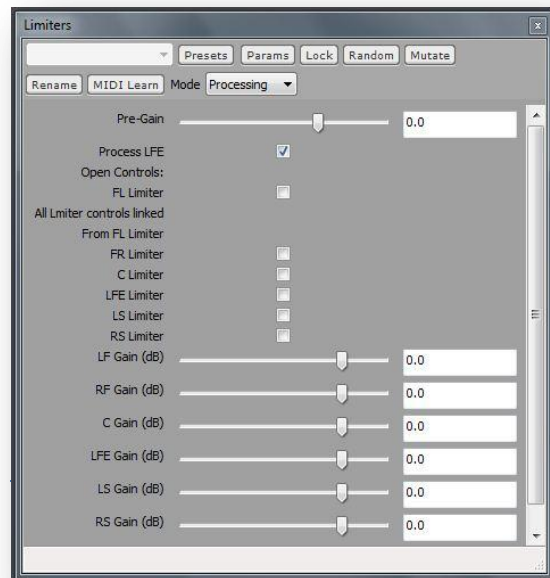
Open up "FL Limiter," which controls the settings for each channel, and make sure your limiter settings look like this:


Pay special attention to the "LookAhead" slider. It should be all the way to the right. Something in this VST doesn't always save that setting.

Going back to the ZAG UI, you should now enter your parameters for where you want your center channel, LFE, and rears to be relationally in volume to one another. What you see above (.8 for center, -10 for LFE, and -3 for rears) is a safe set of defaults for most sources with most SPEC variants, but you should always feel free to make adjustments according to both source and your own tastes. In SPEC 4.8 ZAG 3.0 the defaults are Output 1.0, CtoF 3.0, LFE to Fronts -3.0 and RtoF -3.0.

Once all these steps are done, you are ready to record your six mono wavs. Now tell me that wasn't much easier than previous methods…

Peak Capture

If Peak Capture is checked in Zag during the measure levels stage, Zag will automatically record (internal to Plogue Bidule) six 5 seconds clips from your conversion, that represent the six loudest points, one for each channel.
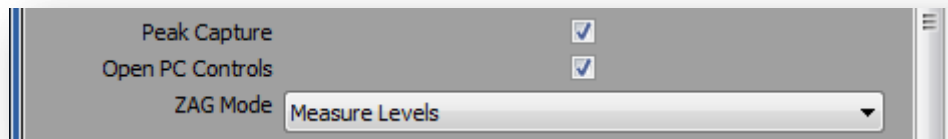
In other words it will capture the loudest five seconds of the center channel, the loudest five seconds of the right front channel, etc.

The purpose of this is to assist in setting the Zag output settings, after the measure levels step and before you "apply gains" and make your final recording.

The Zag mode now has six new items to play back these peak captures:
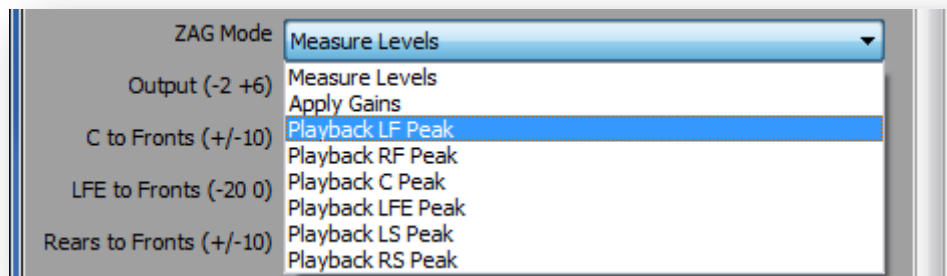
After a completed "Measure Levels" run, you can use these new items to loop over the loudest sections for each channel, and adjust the Zag channel to channel and output level controls, while live monitoring, and or checking the output level in the limiter GUIs.

Each time you change a channel to channel or output level settings and then playback a peak capture, Zag applies the new settings so you will be able to hear/see the results of your changes before going on to "apply gains" and your final recording.

Peak captures are cleared at start of processing, and/or when you press "Reset all" in Zag. They are NOT saved with the layout.

Optionally you can look deeper into the peak capture mechanism by checking off "Open PC Controls" in Zag.
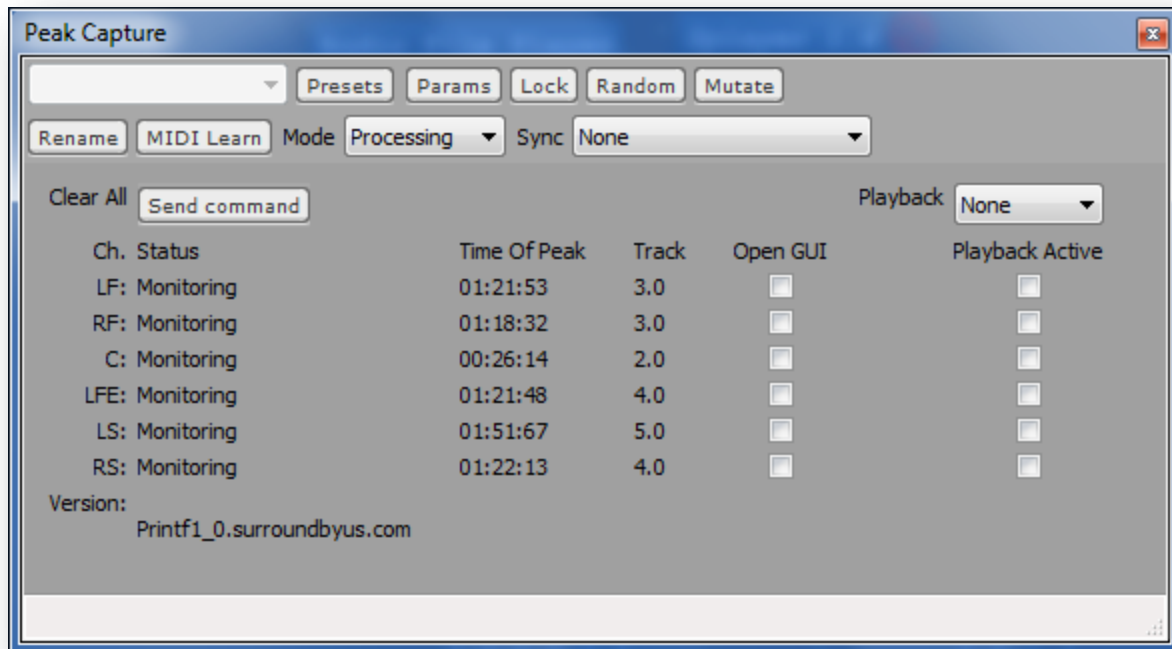
As you can see for each channel there is a set of indicators and controls.

Status will be either "Monitoring" or "Recording". Recording indicating that we are currently recording what is (so far) the loudest section of audio for that channel. Peak Capture has a look ahead buffer so it knows when it can capture the peak at the middle of the 5 second buffer.

Time of Peak is the time from the start of play that the peak occurred.

Track is the number of the track in which the peak occurred

Open GUI lets you look at the waveforms in the peak capture buffer:
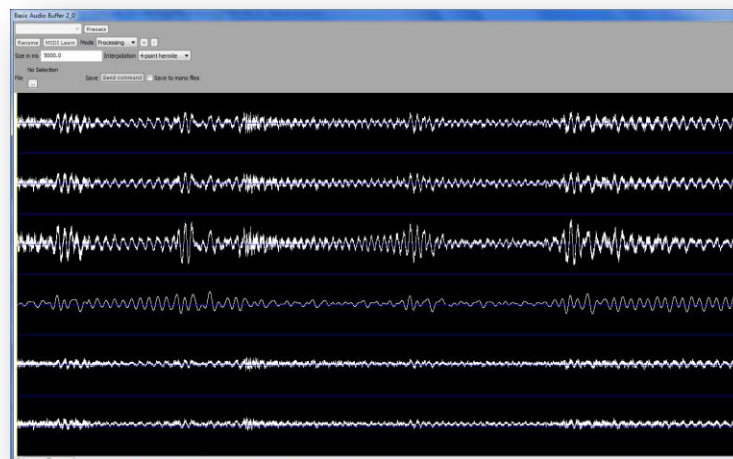
Playback Active is checked of when you are playing back a peak capture.

You can use the "playback" pull down to playback directly from the peak capture control window (vs. the Zag Mode Control).

Per Track Automation of SPEC Settings

Methodology

For each group of controls you want to automate, create a "preset" for each track. With **ZAG bypassed**, run through each track, adjusting the controls for the optimum values for that track, and save them to a preset (Presets ordered by track number).
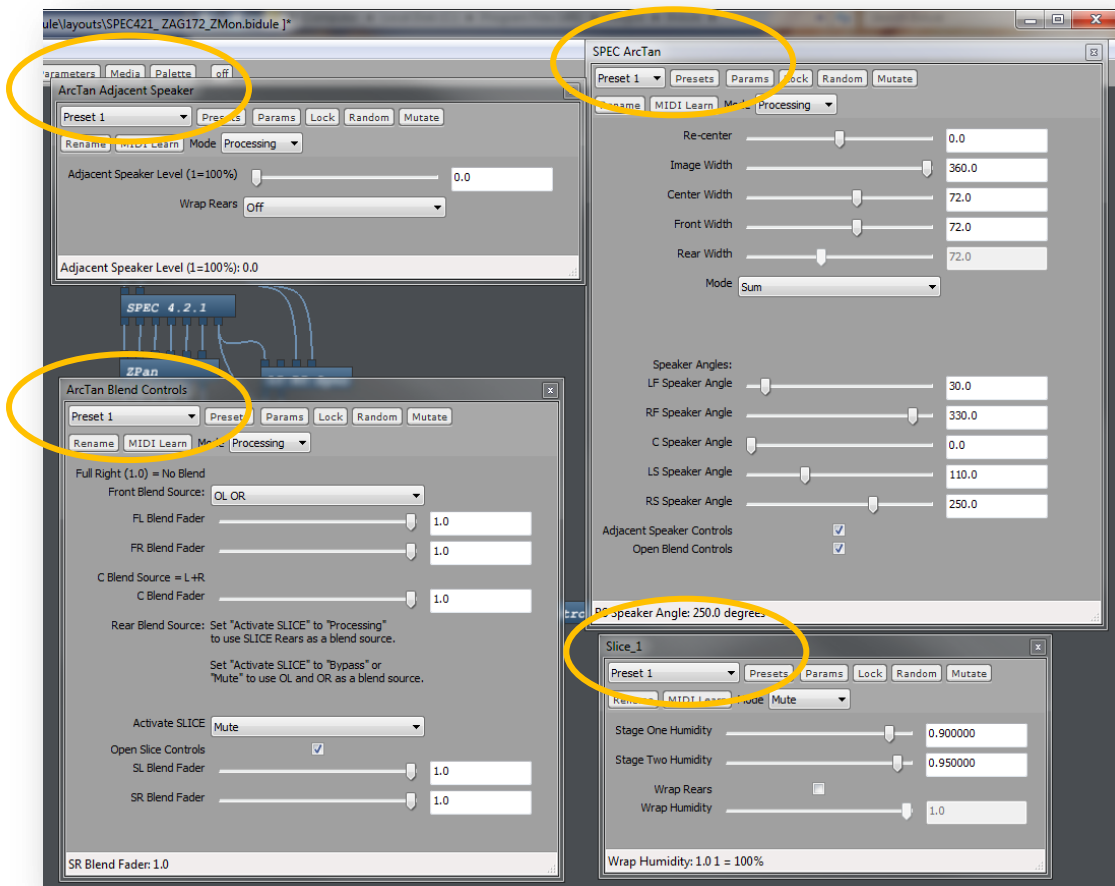
Use the parameters window to link ZAG's "Track" Parameter to each group of control's "Preset Number" parameter (This has been done for you in the "PTA" layout).

Set ZAG to processing and do your measurement and apply gains steps. The presets will change at each track transition.

Note

SPEC Output Gains

Automation of SPEC Output Gains won't work well because ZAG will "undo" those according to the output level controls in ZAG.

VSTs

Your ability to automate VST settings with this method will be highly dependent on the VST. If the VST allows you to create modifiable (number of tracks) presets in the first number of tracks presets slots then you can use this method.

Optionally you could make a bidule with a bunch of sliders, linking those to the parameters of your VST you want to automate, then make presets for those sliders.
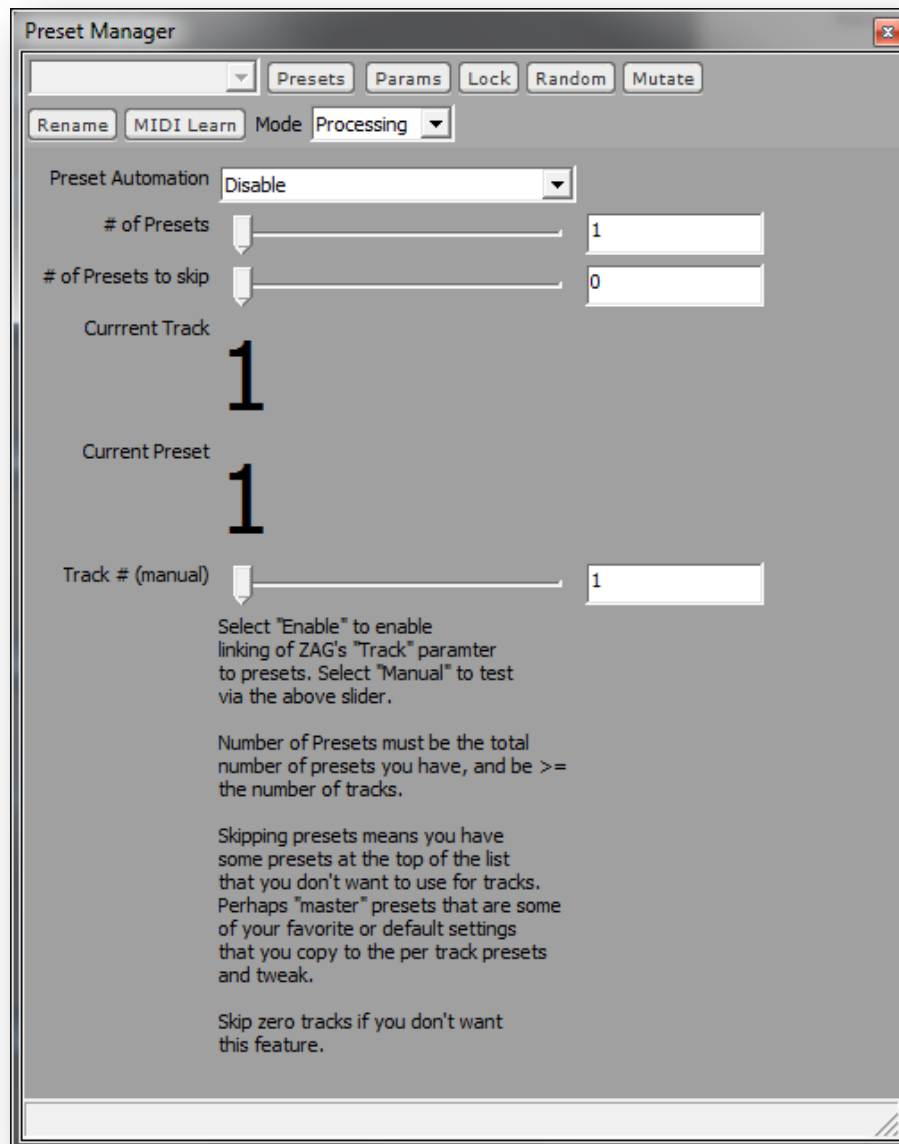
Per Track Automation components

The "SPEC4.8 ZAG3.0 Release.bidule" layout (with the additional components highlighted):
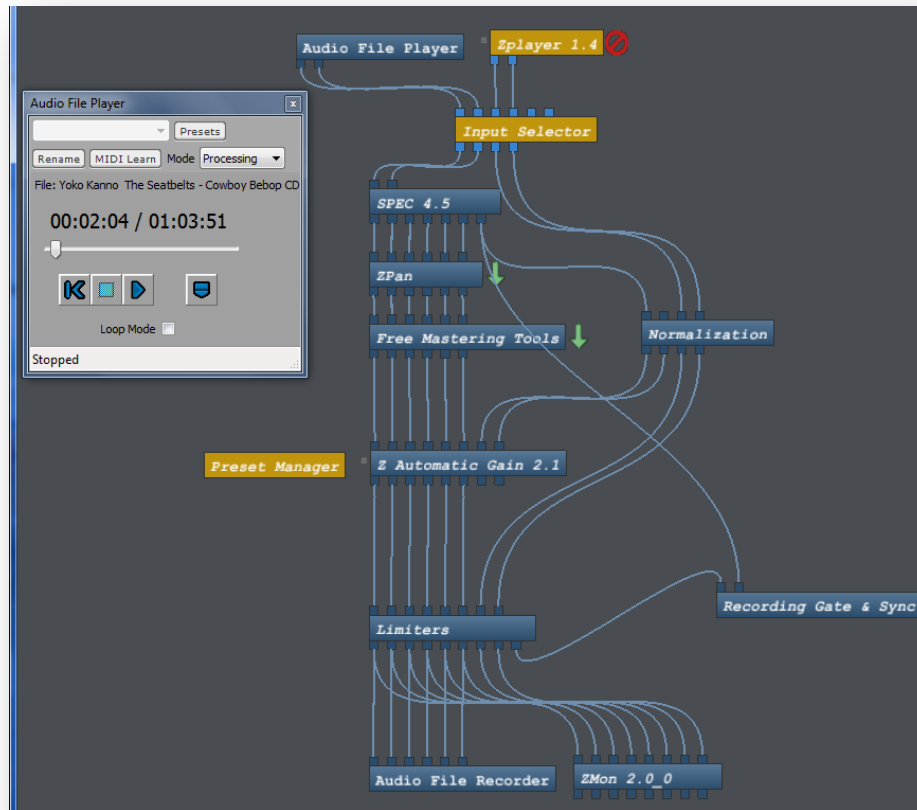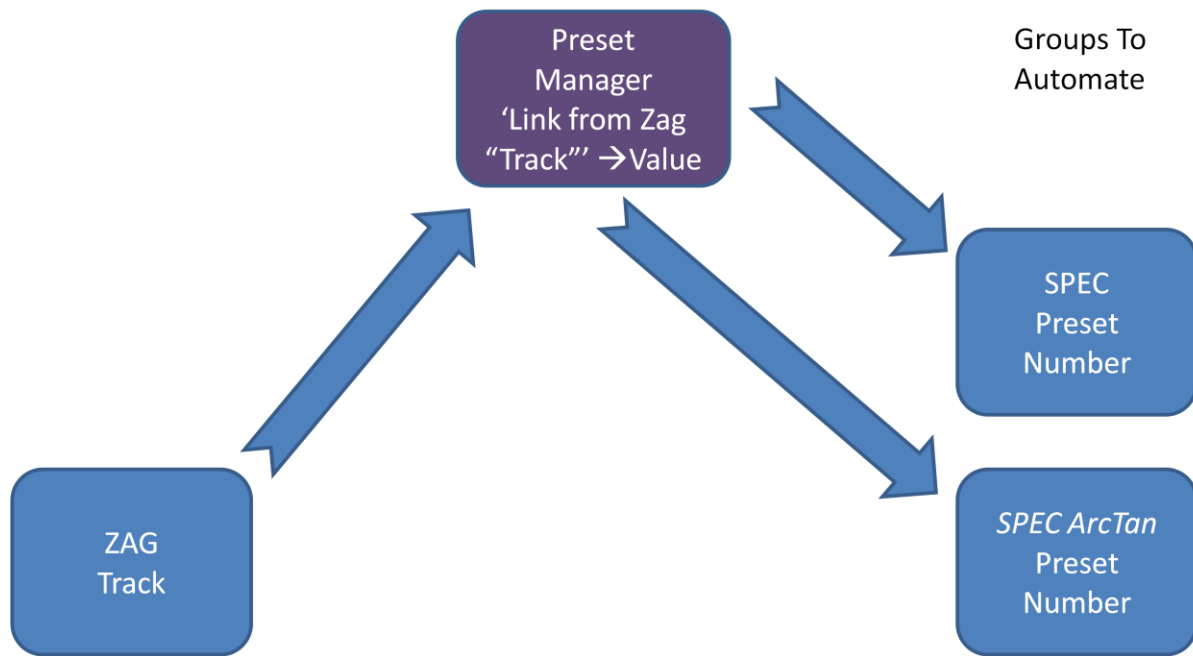

Has additional components and parameter links to assist in Per Track Automation.

The Preset Manager:

Serves as a "bridge" between ZAG and the Presets of all the other groups in the Layout you might want
to edit on a per track basis.

Linkage*

Preset Manager 'Link from Zag "Track"' →Value

Groups To Automate

ZAG Track

SPEC Preset Number

SPEC ArcTan Preset Number

*All groups must have same number of presets and same number of presets to skip

In the Spec 4.8 Zag_3.0 layout these links have been made for you.

The Preset Manager allows you to have more presets than you have tracks in your conversion, and also allows you to skip one or more presets at the top of the list, should you want to use those as "master" read only settings that you copy to other presets before per track adjustments.

Preset Manager Settings
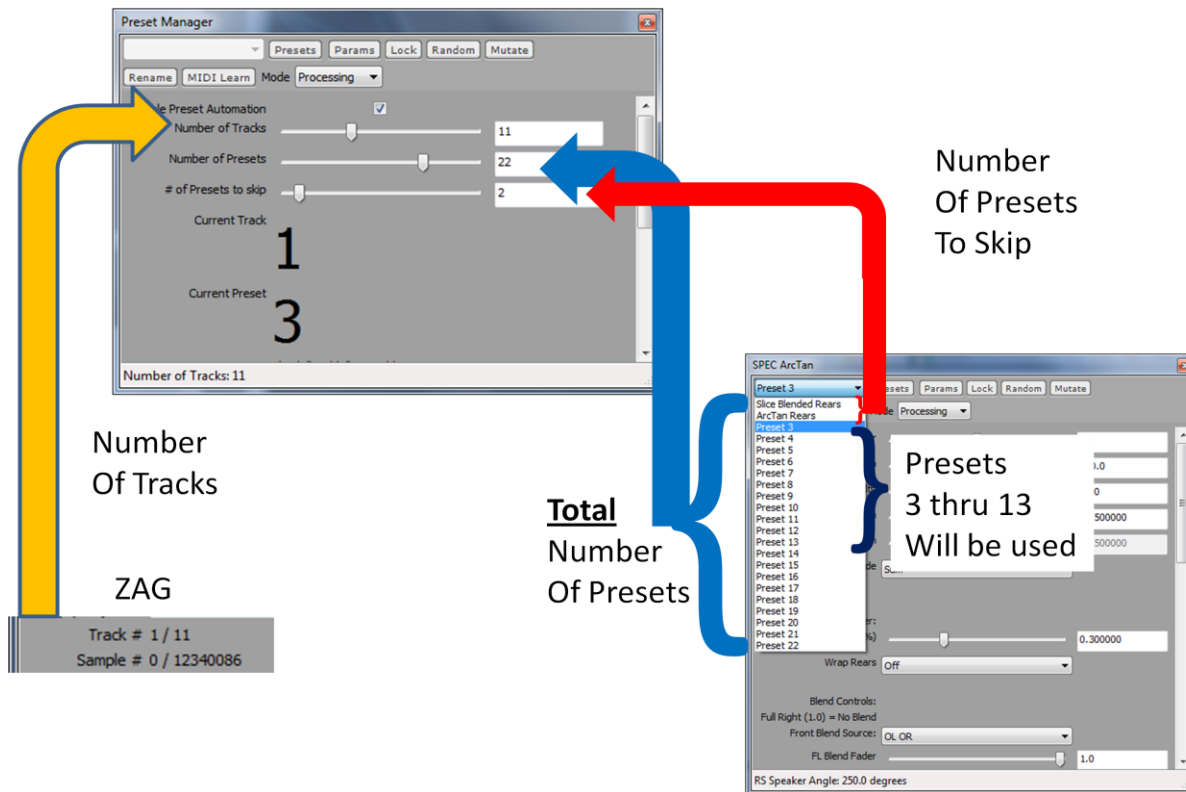
The above diagram shows a "number of tracks" setting but this is now hidden and automatically set from Zag.

The Preset Manager also has a drop down to disable the linkage of Track number to presets, or set it to Manual. You would disable, or set to manual "Preset Automation" during Preset adjustment, and enable it during the ZAG "measure levels" and "Apply Gains" steps of your conversion.

In the layout, the groups that are linked to the Preset Manager are:

SPEC
SPEC SLICE
SPEC CC
SPEC LCR
SPEC ArcTan
ZPan
Free Mastering
Limiters
LFE Controls

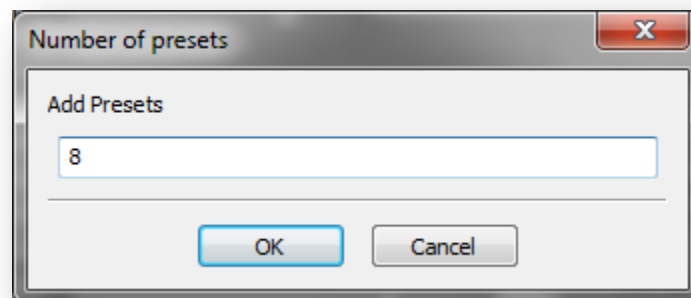ZPlayer, and the Input Selector, also included in the layout, will be discussed in a separate section.

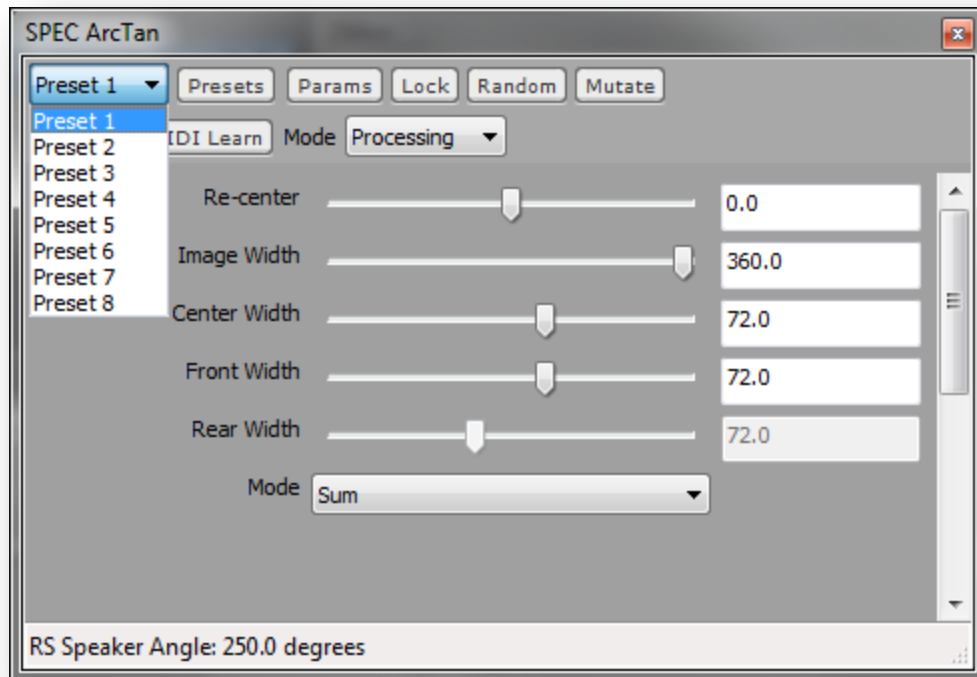## *Per Track Automation Detailed Instructions*

Setting up Presets

Let's assume you want to automate ArcTan Controls.
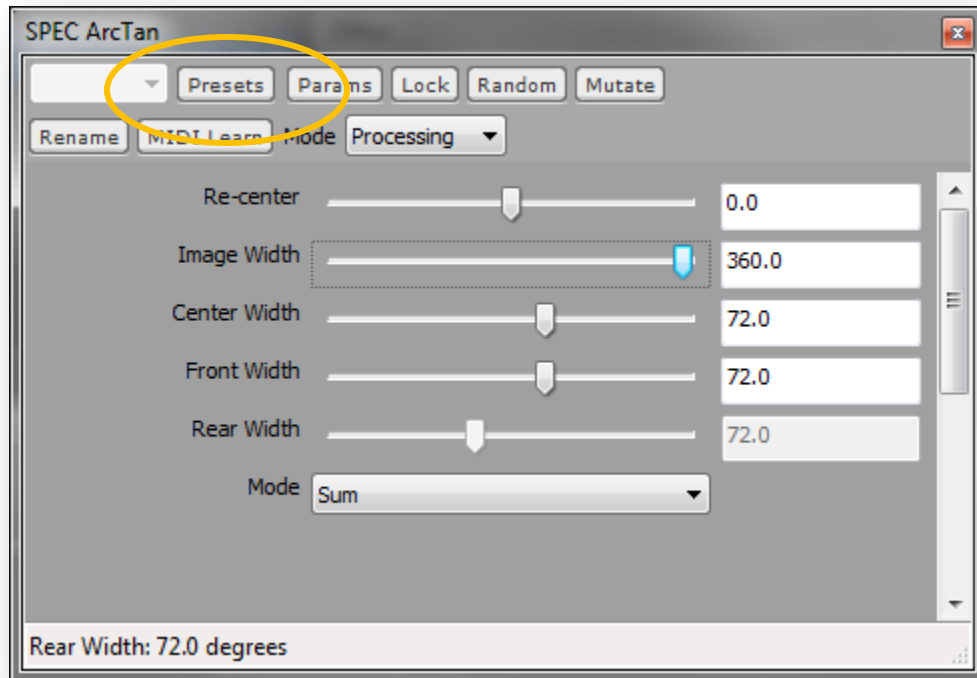
Click on the "Presets" button and select "Add N Copies".

Enter the number of tracks in your album (or compilation). The ArcTan controls will now have a preset for each track in your album (Assumes you started with one preset)

Saving your settings for automation

> **Disable "Preset Automation" in the Preset Manager or Put ZAG in bypass mode**.

> Put ArcTan on "Preset 1" and listen to track one, adjusting the ArcTan controls for the optimum sound.

> Put ArcTan on "Preset 2" and listen to track two, adjusting the ArcTan controls for the optimum sound.

> Repeat for each track on the album. You may want to save your layout each time you finalize your adjustments for a track. If you don't save your layout, be careful not to make any adjustment to a control if you are listening to a different track than your current preset. There's no way to undo the change.*

Playing Back Your Automation

> **Enable "Preset Automation" in the Preset Manager and Set ZAG to Processing mode** and go through your "Measure Levels" and "Apply Gains" steps as before. Your presets will change at the track transitions.
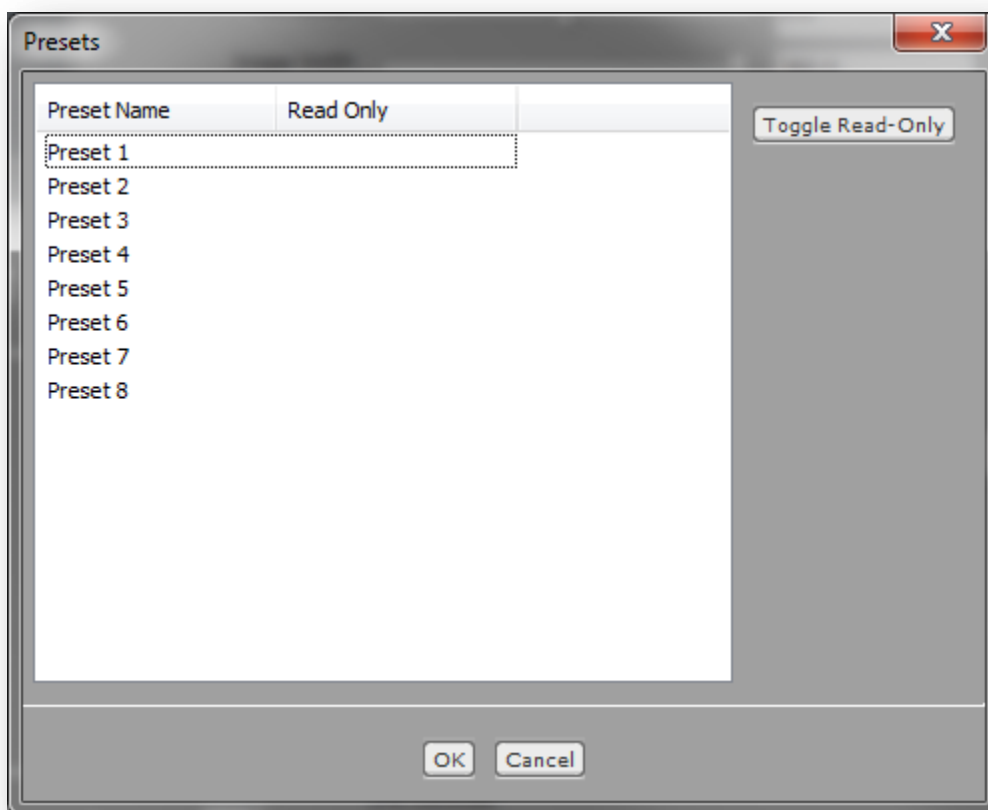
That's it!

Layout re-use

> To reuse the layout for subsequent albums you can remove the presets or un-mark them "Read-Only"* and save new settings in them, using the presets dialog.

Note that it is OK to have control groups linked to ZAG or the Preset Manager and have zero or one preset in them, if you don't want per track automation for that group of controls on your current album. That way you could link all the control groups once and reuse the layout regardless of which controls you wanted to automate. Just remember; zero or one (default) preset for no automation, "number of tracks" presets for per track automation.
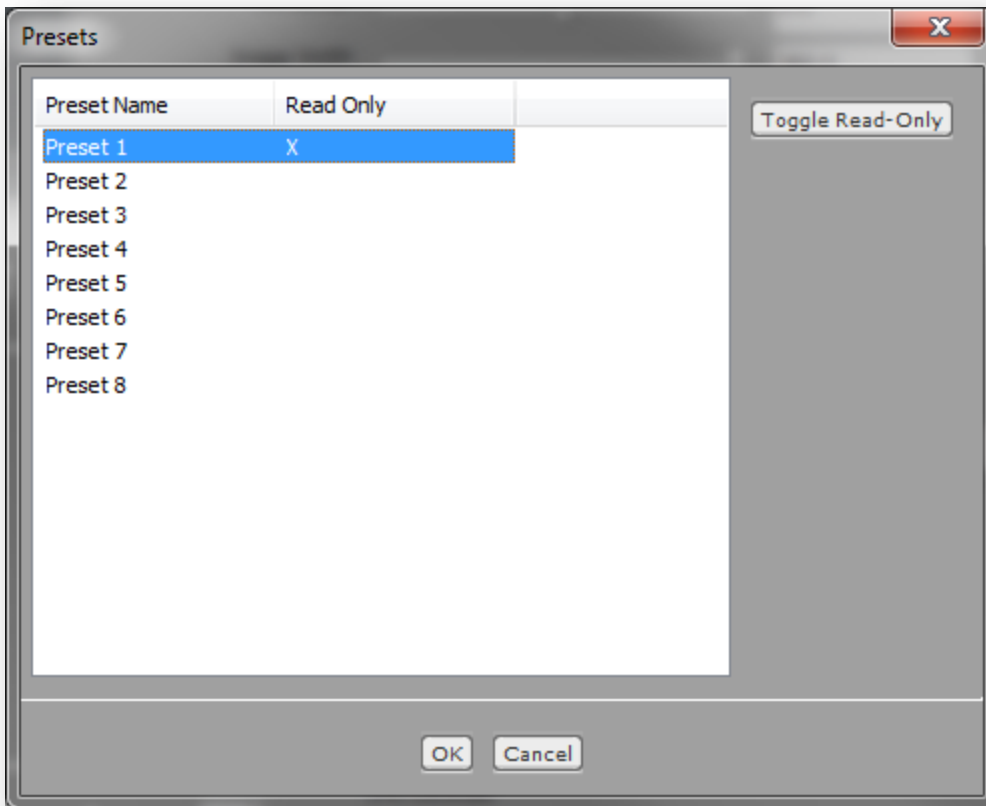
*Marking Presets Read Only

Optionally you can use the below procedure to "lock" each preset as you are finished with the associated track (Plogue .9705 and higher).

To mark a Preset Read-Only, press the preset button and select "organize".

Click on the preset for your track to select it, and then click on Toggle Read-Only". That "locks" your settings. E.G. for track 1 into Preset 1.

Hit OK and repeat the process with the test of the tracks on your Album.

To reuse the layout for subsequent albums you can remove the presets or un-mark them "Read-Only" and save new settings in them, using the presets dialog.

Automated Encoding

Spec 4.8 as the ability to (optionally) resample using R8BrainPro and start SurCode encoders automatically when the recording step is finished in Plogue.

Encoders supported

SurCode DTS CD Pro, version 1.0.20 and up
SurCode DVD DTS, version 1.0.29 and up
SurCode MLP, version 1.0.29 and up

Not supported

DTS HD Encoder Suite, as it doesn't use windows registry, have command line controls, or use standard windows widgets.

Sample converters supported

R8BrainPro (version 1.5 and up) can be used to automatically resample your monos prior to automatic encoding.

Usage

Spec 4.8 has additional controls in the Layout Control group:
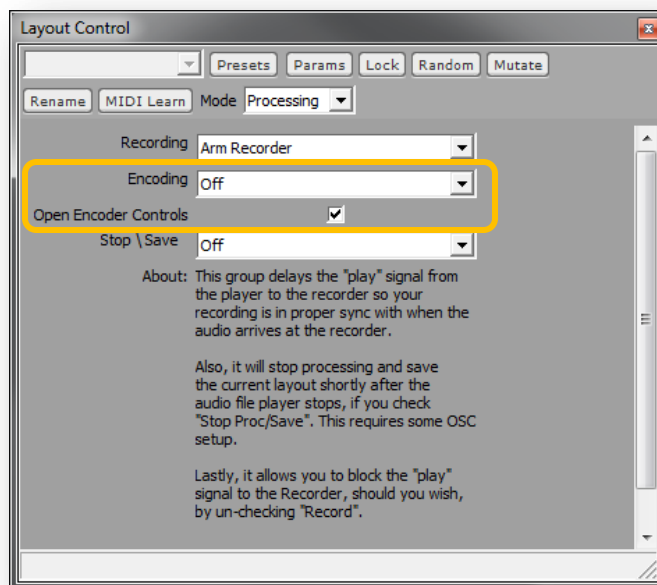
Encoding and Open Encoder Controls.

The steps to Arm the Encoding are a little tricky but should become 2nd nature with use.

Just remember not to set the Encoding to "Arm Encoder" until **AFTER** your recording is running. Doing it earlier or leaving it on "Arm Encoder" after you are all done will lead to it triggering when you don't want it to (any time the player is stopped after processing has stopped and started).

Other things to remember for smooth operation are to set any encoder/resampler preferences ahead of time, and close the encoder or resampler. You'll also want to make sure there aren't any old files lying around that would cause the encoder to ask if you want to overwrite, etc., or that would be extra files for resampler to resample.

The Launch Plugin
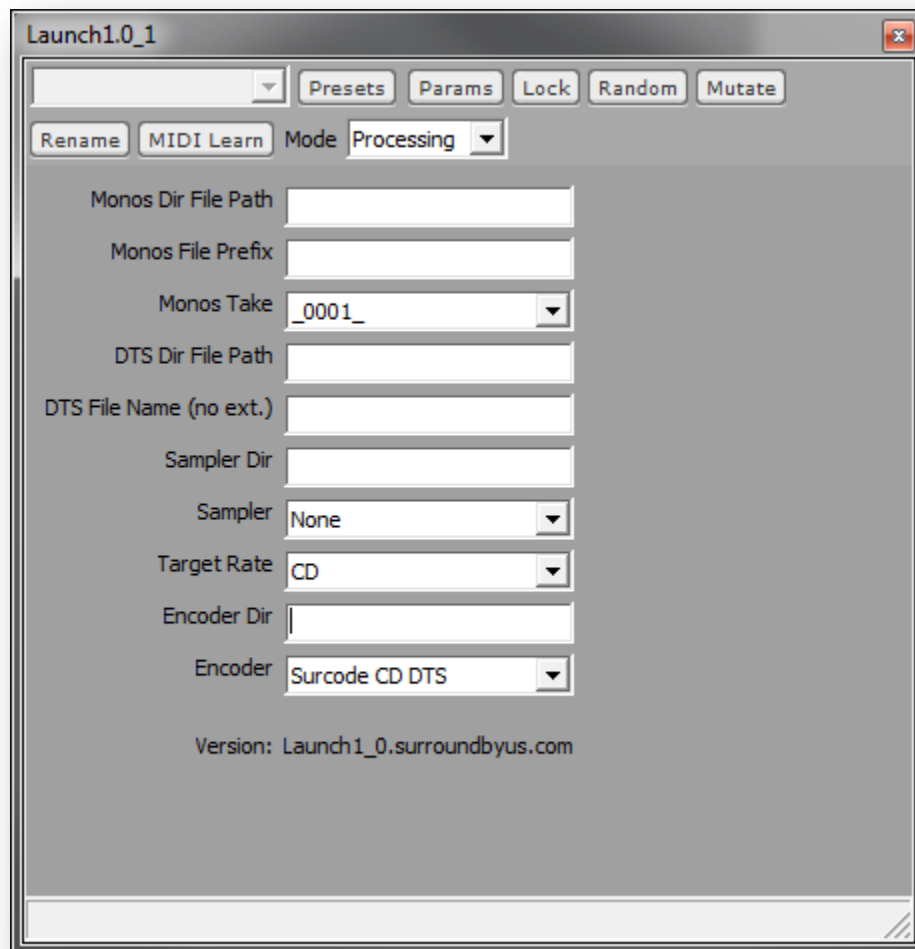
Monos Dir File Path: This needs to be the full path (including a drive letter) to the directories your mono files are in. E.g.: C:\Users\Glenn\Downloads\Finished Torrents\Heart - Magazine (1978).

Does not need to be in double quotes. In Windows 7/Vista this is easy to get by right clicking the address bar in an explorer window and selecting copy address as text. In XP you'll need to open My computer, start with your dirve, and click down to the directory and then copy and paste the address.

> **Resampling Note:** R8BrainPro will resample **ALL** wave files in the monos directory. It is suggested that for resampling you use a separate directory, such as C:\R8Brain, to write the monos from Plogue and resample them.
>
> You should clean out that directory after each conversion, so you don't resample old files. Not cleaning out the resampling directory could lead to another problem in that the launch program compares the lengths of the channel 0 and channel 5 resampled files to determine when resampling is complete.

Monos File Prefix: This is the file name you entered in the recorder (without the .wav extension). E.g. if your monos look like OUT_0001_0.wav you would enter OUT in this box.

> **Resampling Note:** It is assumed that you have the default R8BrainPro setting to add the _r8bp suffix to your resampled monos. Thus, during resampling out_0001_0.wav would be resampled to out_0001_0_r8bp.wav. The encoder will be passed the resampled filenames with the default _r8bp suffix.

Monos Take: Select which "take" you want to encode. This should match the files recording in the recorder.

DTS File Path: This needs to be the full path (including a drive letter) to the directory you want your encoded file to be placed in. E.g.: C:\Users\Glenn\Downloads\Finished Torrents\Heart - Magazine (1978).

> **Note** that this includes the .mlp file (vs. dts), in the case of the SurCode MLP encoder.

DTS filename (no .ext): The name for the dts (or mlp) file, without any extension.

Sampler Dir: This needs to be the full path (including a drive letter) to the directory your surcode exe file is in. E.g.: C:\Program Files (x86)\Voxengo\r8brain PRO

Sampler: Select "R8BrainPro" to enable resampling. Select "None" to skip resampling.

Target Sample Rate: Not used in this version, **you must set the target sample rate in the R8BrianPro GUI** (then close it) prior to Re-Sampleing/Enocding.
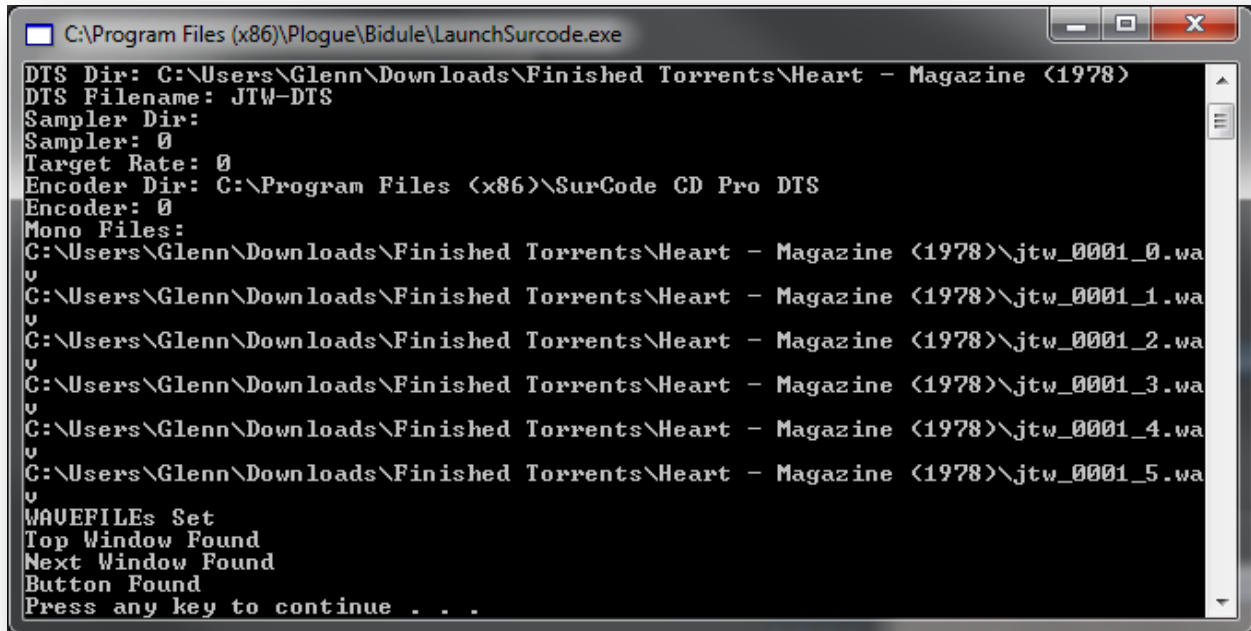
Encoder Dir: This needs to be the full path (including a drive letter) to the directory your surcode exe file is in. E.g.: C:\Program Files (x86)\Minnetonka Audio Software\SurCode MLP.

> **Note** that if you switch back and forth between Encoders you will need to update this path as well.

Encoder: Select the encoder to use (Don't forget to set the path!).

Debug Window (No Resample)

This version includes some debugging information in a console window:

This window prints out all the arguments passed from the launch plugin to the actual launch program, followed by the paths to the six monos files.

WAFEFILEs Set means that the registry was updated with all the info regarding files to encode. This will be followed by the encoder program launching and an approximate 10 second delay (to allow time for the encoder program to start up).

Top Window Found, etc. refers to the launch program finding the windows and buttons in the encoder program, so it can "push" the encode button.

Press any key (or click on the X) to close the debug window. Note that the encoder will have focus, so to enter a keystroke in the debug window you need to click on it first.

Beta Debug Window (With Resample)

When resampling the above additional debug information is printed.

The Sampler Dir and the first line inside the orange box make up the command to launch R8Brain. The last argument is the Monos Directory, in which R8Brain will resample **ALL** wave files.

After a short pause, to give R8Brain time to start up, the size of the channel 0 and channel 5 resampled mono files will be printed. If you cleaned out the monos directory (as you should) the channel 5 resampled file won't exist yet, and the channel 0 file will be empty or close to empty.

The launch program then begins comparing those two file sizes, once per minute, printing a "." each time it checks.
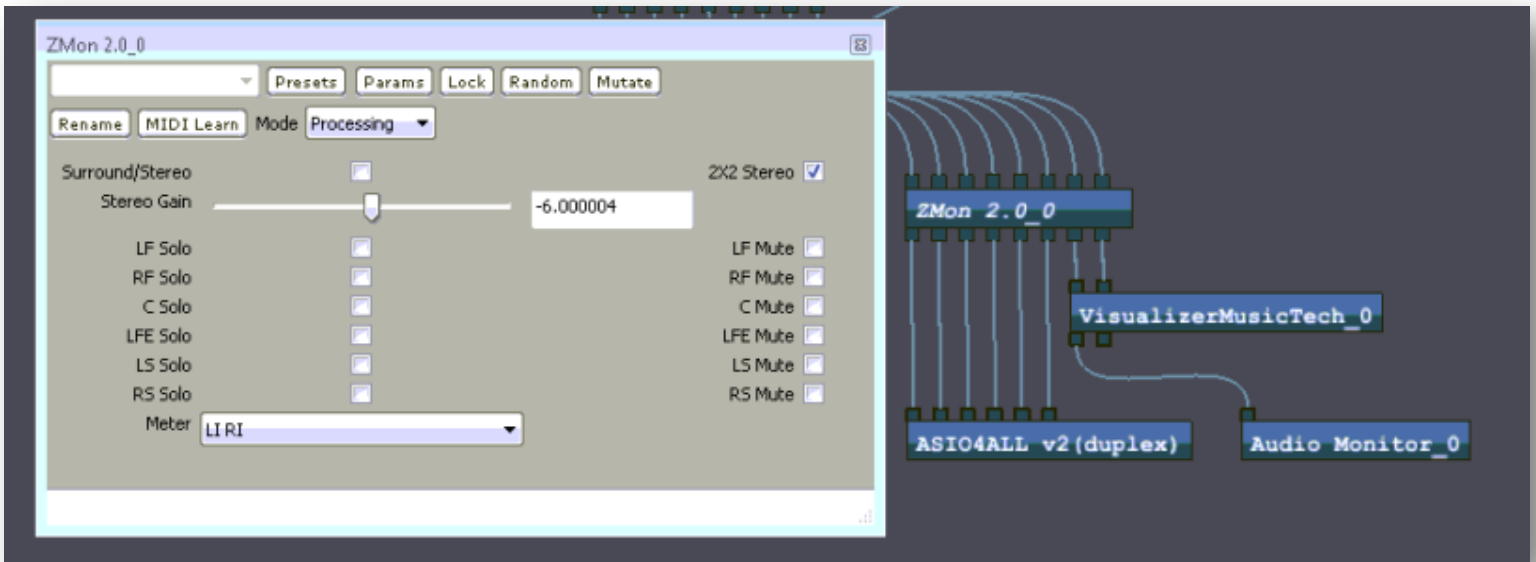
When the channel 0 and 5 files are the same size, sample conversion is finished.

Note that the mono files names passed to the encoder now have the _r8bp suffix added.

Final Note

The Encoder/Resampler will not launch (even if armed) twice in a row. You must turn Plogue processing of and on again before it will launch again.

ZMon 2.5

ZMon is included as an aid to live monitoring of your conversion. It also serves as the connection point in the layout for your sound card (Audio Device). In the above screen shot you can see the output of Zmon connected to an audio device (in this case ASIO4ALL) and a stereo meter (Nugnen's Visualizer).

The Solo and Mute controls work just as the Solo and Mute controls on an audio mixer do. Any channels that are checked "Solo" will play and all others will be muted. For example if you check "C Solo" only the center channel will be heard. If you check "LF Solo" and "RF Solo" only those channels will be heard.

Any Channels that are checked "Mute" will not play. For example checking "C Mute" will play all channels except Center.

ZMon is also setup to enable quick comparison of your conversion (or certain channels of it) to the original Stereo.

Checking the box labeled "Surround/Stereo" will play the original stereo. Un-checking it will play the surround channels. The "Stereo Gain" slider is included so you can match the volume level of surround to that of the stereo, to make for more accurate "A/B" comparisons.

The 2X2 box sends the original stereo left signal to both front and rear left speakers, and the original right signal to both front and rear right speakers. Un=checking the box sends the original stereo to only the front left and right speakers.

2X2 is similar to playing stereo in a car with front and rear speakers. A few HT (Home Theatre) units also have this setting. Using 2X2 in ZMon also helps with more accurate "A/B" stereo to surround conversions.
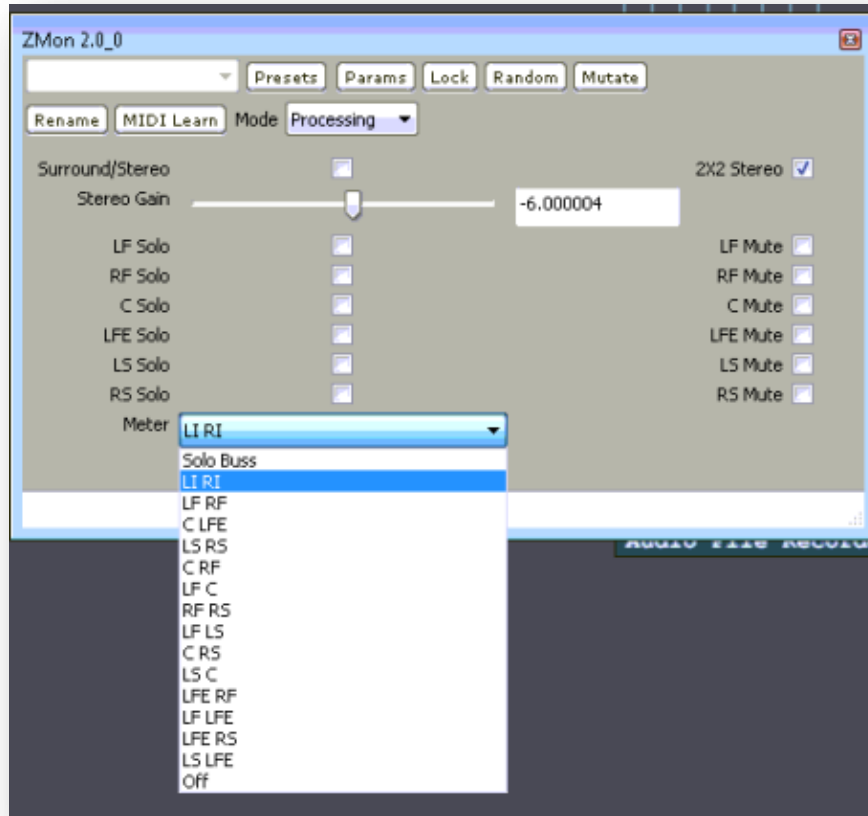
The Meter pull-down selects which 2 channels are connected to ZMon's meter output. All the possible combinations are present should you wish to check the phase alignment of your conversion.

ZPlayer 1.6
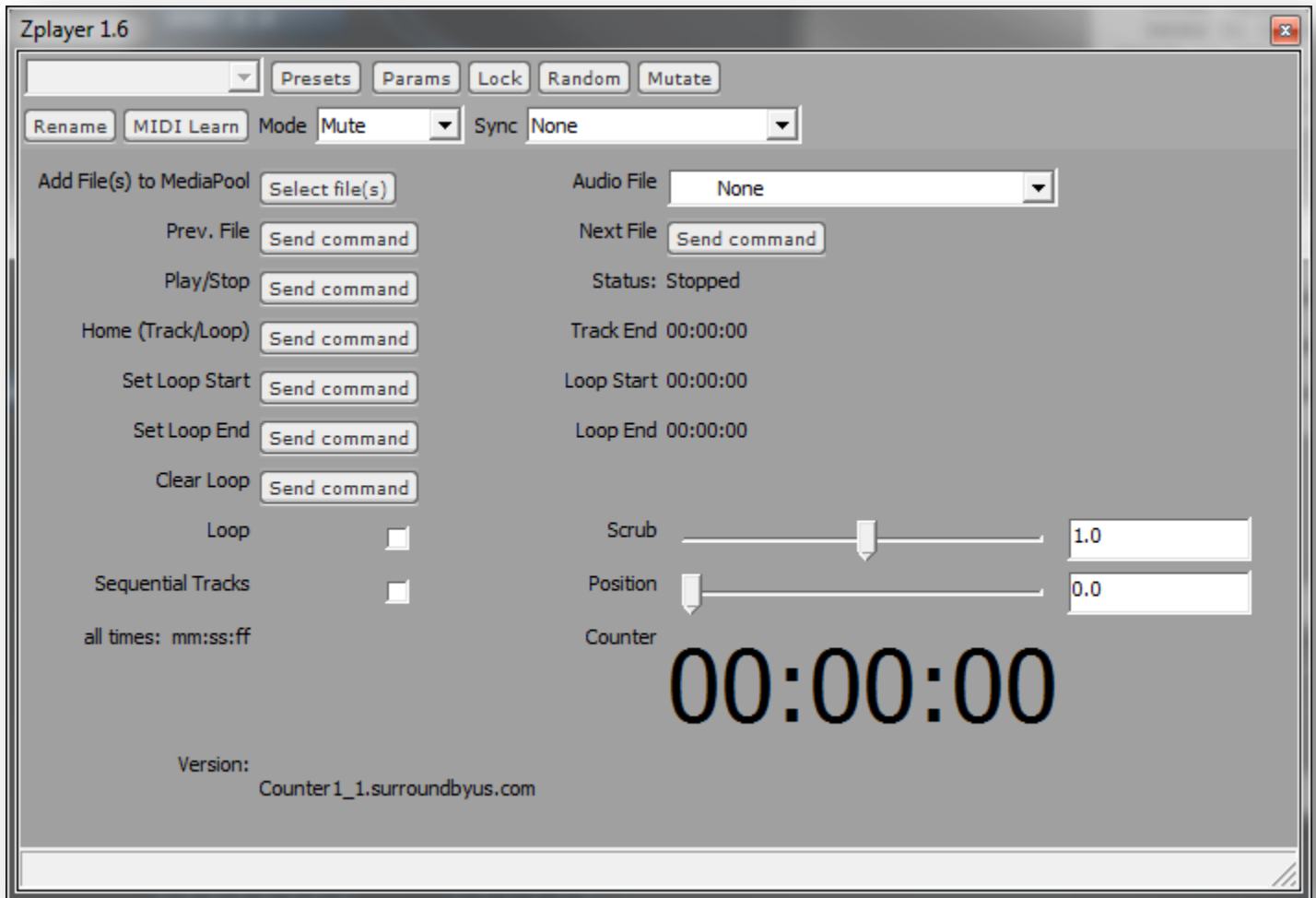
What is it?

A file player for use during preset adjusting.

Why?

So you can easily jump between tracks, move around within a track, loop on a small section of track (or the whole track), and even listen to details at half speed etc.

All of this is for adjusting settings for per track automation.

Does it take the place of the audio file player?

No, at least not yet. There is still a bug in Plogue's "Basic Audio Player" (at the core of this) that degrades audio quality after ~6 minutes of audio (@ 44.1Khz).

It needs individual audio files for each track.

Also, ZPlayer requires that all your tracks be in the media pool (RAM) so you probably should have a lot of RAM and a 64 bit OS. But try it on 32bit XP and let us know.
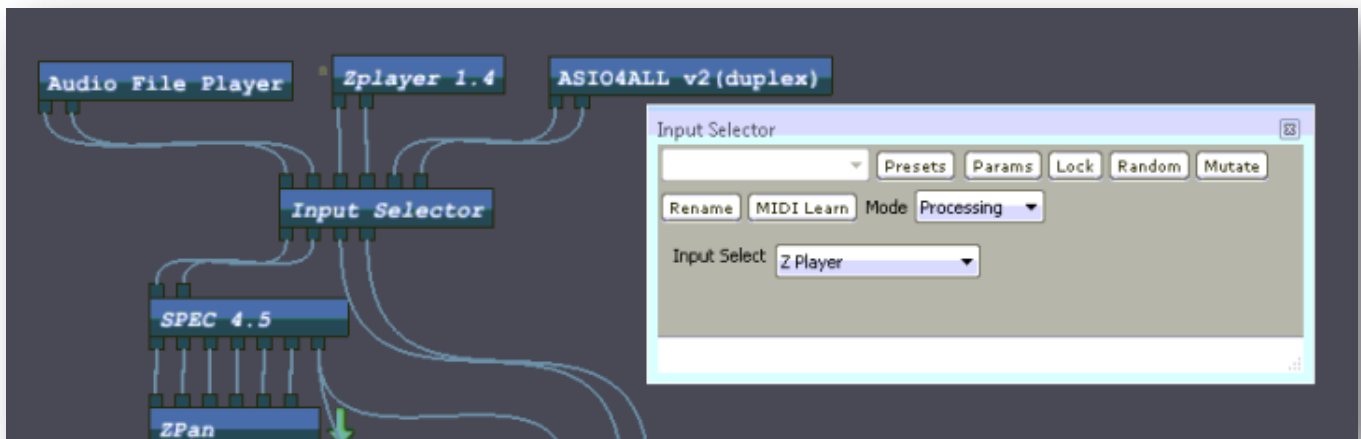
Instructions/Features

Check to see that processing is on.

Double click on the input selector and select Z Player. The input selector will mute Z Player when it's not selected to save on DSP.

In a windows explorer window, select your individual track files and drag them into plogue's patch bay (the gray background part of plogue). That will load them into the media pool.

Note: You can use "media" button, at the top of plogue, to manage the files in the media pool. The player also has a button to add files to the media pool.

Use the "Audio File" drop down in the player to pick the track you want to play.

Note: If you have a scroll wheel on your mouse (or a scroll ring on a trackball) you can scroll through the tracks one you "focus" on the drop down.

Controls:

Add File(s) to MediaPool lets you add additional files to play (if you have sufficient RAM).

The Audio File pull-down lets you select a file in the media pool to play.

Prev/Next File plays the next/last file

Play/Stop: toggles play

Home: Jumps to Loop Start (or Track start if loop is cleared)

Set Loop Start: As you are listening to the track, clicking this will set a start point for the loop function, at the current position in the track. By default the start position of the loop function is the beginning of the track.

Set Loop End: As you are listening to the track, clicking this will set a end point for the loop function, at the current position in the track, and start the loop over at the beginning. By default the Loop end is the end of the track.

Clear Loop: Clears your loop settings back to the Start and end of the track.

Loop: Check box to turn looping on and off. If Loop is unchecked, play will stop at the end of the track or the end of the current loop setting.

Scrub: a -32x to 32x speed control/jog wheel. As soon as you "let go" with the mouse it will spring back to a 1X play speed (Processing must be "On"). Positions close to "1" are fractional speeds (slower than 1X). This lets you move around (forward and backwards) in the track with precision. Works well with scroll wheels (if you have one), while using the wheel you can right click to jump to 1x.

Checking Sequential Tracks well play the files in the media pool one after the other.

Indicators:

Track End: The length of the current file in minutes:seconds:frames.

Loop Start: The start of the loop in minutes:seconds:frames.

Loop End: The end of the loop in minutes:seconds:frames (or track length in samples if loop is cleared).

Position: A relative indicator of where you are in the track. The number is from 0 to 1, 1 being the end of the track. Moving this around with the mouse does nothing, but remember the speed control lets you move around (like a jog wheel)

Counter: Play position in minutes:seconds:frames.

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We have updated the SurroundByUs.com privacy policy as of 3/25/2011.

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conference, or telephone communication. Identity theft and the practice currently known as "phishing" are of great concern to us. Safeguarding information to help protect you from identity theft is one of our priorities. For more information about phishing, visit the Federal Trade Commission at http://www.ftc.gov/bcp/edu/pubs/consumer/alerts/alt127.pdf

Security

The security of your personal information is important to us. When you enter sensitive information to make a donation, we encrypt that information using secure socket layer technology (SSL). We follow generally accepted industry standards to protect the personal information submitted to us, both during transmission and once we receive it. No method of transmission over the Internet, or method of electronic storage, is 100% secure, however. Therefore, while we strive to use commercially acceptable means to protect your personal information, we cannot guarantee its absolute security.

Access to data

Registered users may contact us with requests that we delete their Personally Identifiable Information from our systems and we will attempt to accommodate such requests. If all such information is deleted from our systems, your account may become deactivated. In any event, we may retain an archived copy of your records as required by law or for legitimate business purposes. See below for privacy contact information.

International Users

SurroundByUs.com is located in the United States of America. If you live outside of the United States, by visiting our Site or using the Software and providing us with data, you acknowledge and agree that your data may be transmitted to the United States which is outside your resident jurisdiction. Furthermore, you acknowledge and agree that such data may be stored and processed on servers located in the United States.

CHANGES TO THIS POLICY

If we decide to change our privacy policy, we will post those changes to this privacy statement, the home page, and other places we deem appropriate so that you are aware of what information we collect, how we use it, and under what circumstances, if any, we disclose it.

We reserve the right to modify this privacy statement at any time, so please review it frequently. If we make material changes to this policy, we will notify you here, by email, or by means of a notice on our home page.

The most current version of the Privacy Policy can be found at http://www.surroundbyus.com/privacy.html

CONTACT

We welcome inquiries or comments about our Privacy Policy and any queries or concerns about SurroundByUs.com by email at admin –at- surroundbyus.com (remove spaces and replace -at- with @ in the address).

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Speaker Angle Chart:

Center Speaker