

GRM Tools SpaceVR

User Manual



version 3.7



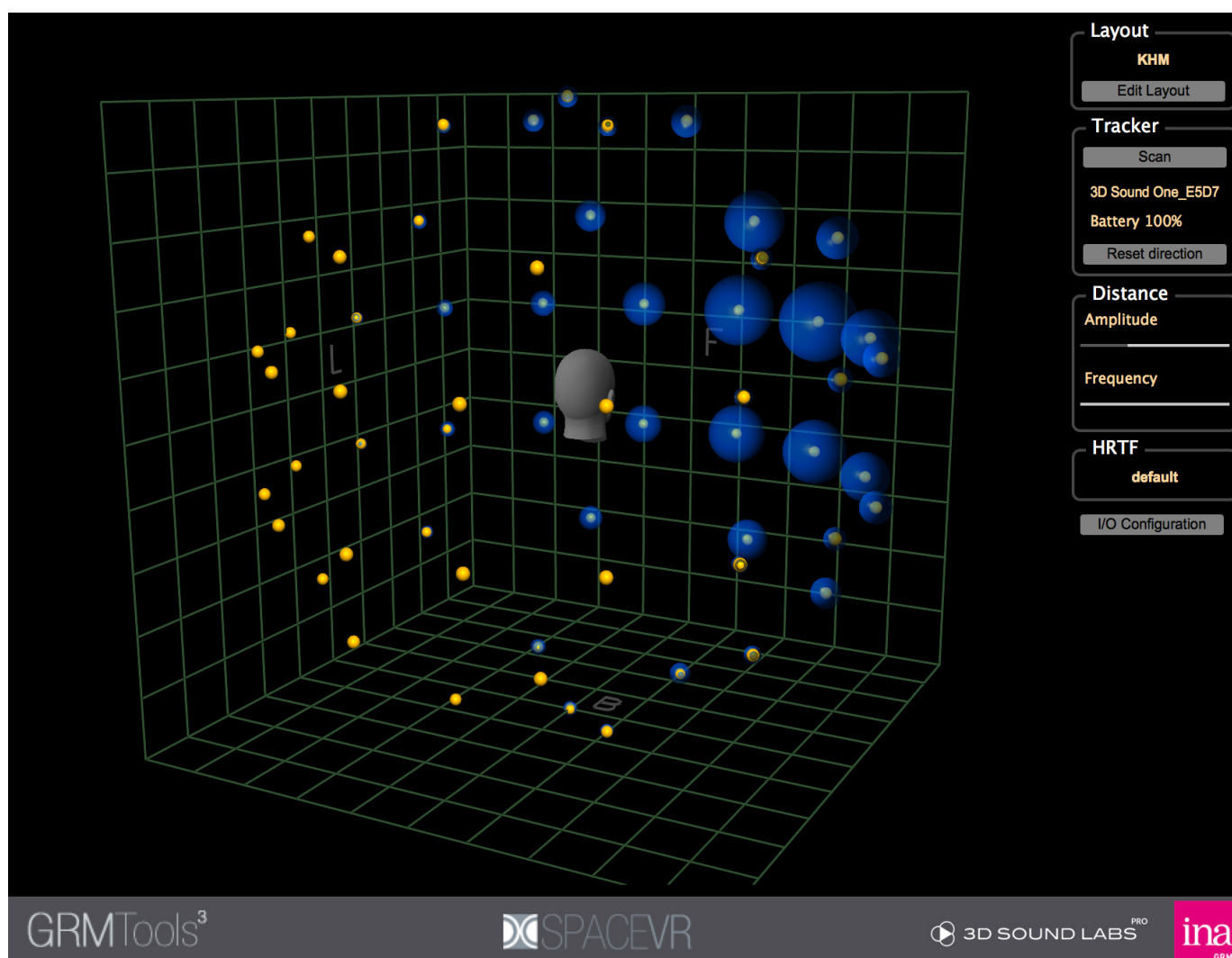
SpaceVR

Developed in collaboration with **3D Sound Labs**, **SpaceVR** generates a stereo binaural output from a multichannel input (from 1 to 64 channels) by using head-related transfer functions (HRTF) from **3D Sound Labs**. The orientation and position of the auditor can be modified.

Even though SpacesVR can be used independently of other GRM Tools treatments, **SpaceVR** is a natural complement of available treatments in the **Spaces** bundle including **Spaces**, **SpaceGrain**, **SpaceFilter** and **Space3D** that share a certain number of features.

It is available for architectures and applications in 64 bits.

SpaceVR isn't protected and doesn't require any particular validation.





Installation

Mac OS X

The installer copies **SpaceVR**'s different files in the following folders :

- AAX : Library\Application Support\Avid\Audio\Plug-Ins
- VST : Library\Audio\Plug-Ins\VST\GRM
- Audio Units : Library\Audio\Plug-Ins\Components
- Stand Alone : Applications\GRM
- Documentation : GRM Tools Documentation

To launch the installer, double-click on the **GRM_Tools_SpacesVR.pkg** icon and follow the instructions. If you do not want to install all available architectures, select the desired components in the **Installation Type**.

PC Windows

The installer puts the different files in the following folders :

- AAX : Program Files\Common Files\Avid\Audio\Plug-Ins
- VST : GRM folder in the default VST folder (usually : Program Files\Steinberg\Plug-Ins\VST) or Program Files\VSTPlugins if the default folder is not defined.
- Stand Alone : Program Files\Ina-GRM\GRM Tools
- Documentation : My Documents\GRM Tools Documentation

To launch the installer, double-click on the **GRM Tools SpaceVR Installer.exe** icon and follow the instructions.



Reference

Main window

Displays the positions of the input channels in a 3D view.

View control

The different input channels are visualized in a three dimensional space.

The display of this view can be modified by mouse movements associated with modifier keys :

- [Alt]+mouse moves the view horizontally and vertically
- [Alt]+[Shift] approaches or moves the view further
- [Alt]+scroll wheel approaches or moves the view further
- [Ctrl]+mouse makes the cube turn around it's center
- [Ctrl]+[Shift] gives an effect of Dolly-Zoom
- [Ctrl]+scroll wheel gives an effect of Dolly-Zoom

Contextual Menu

a right click can make the contextual menu appear :



Display Infos displays only the information of the selected channels

Display Infos displays information regarding all channels.

Display Box displays the box containing the game space.

Fade out. Applies a gradual darkening of the view depending on the distance.

Projection on planes. Displays the perpendiculars of each plan **L**, **F** and **B** at the center of the source.

Top view. Top view of the box.

Front view. Front view of the box.

3D view. 3D view of the box.

Controlling the auditor's head

A click followed by a mouse movement moves the head of the auditor :

- lateral movement :left-to-right axis.
- longitudinal movement : back-to-front axis.
- longitudinal movement : bottom-to-top axis.
- longitudinal movement + [Shift] : bottom-to-top axis

The « **M** » key slightly magnets the movement on the grid mesh.



A click on the auditor's head followed by a mouse movement moves with a modifier key changes the orientation :

- [Alt]+lateral movement :rotation around bottom-to-top axis.
- [Alt]+longitudinal movement :rotation around left-to-right axis.
- [Ctrl]+lateral movement :rotation around bottom-to-top axis.
- [Ctrl]+longitudinal movement :rotation around left-to-right axis.

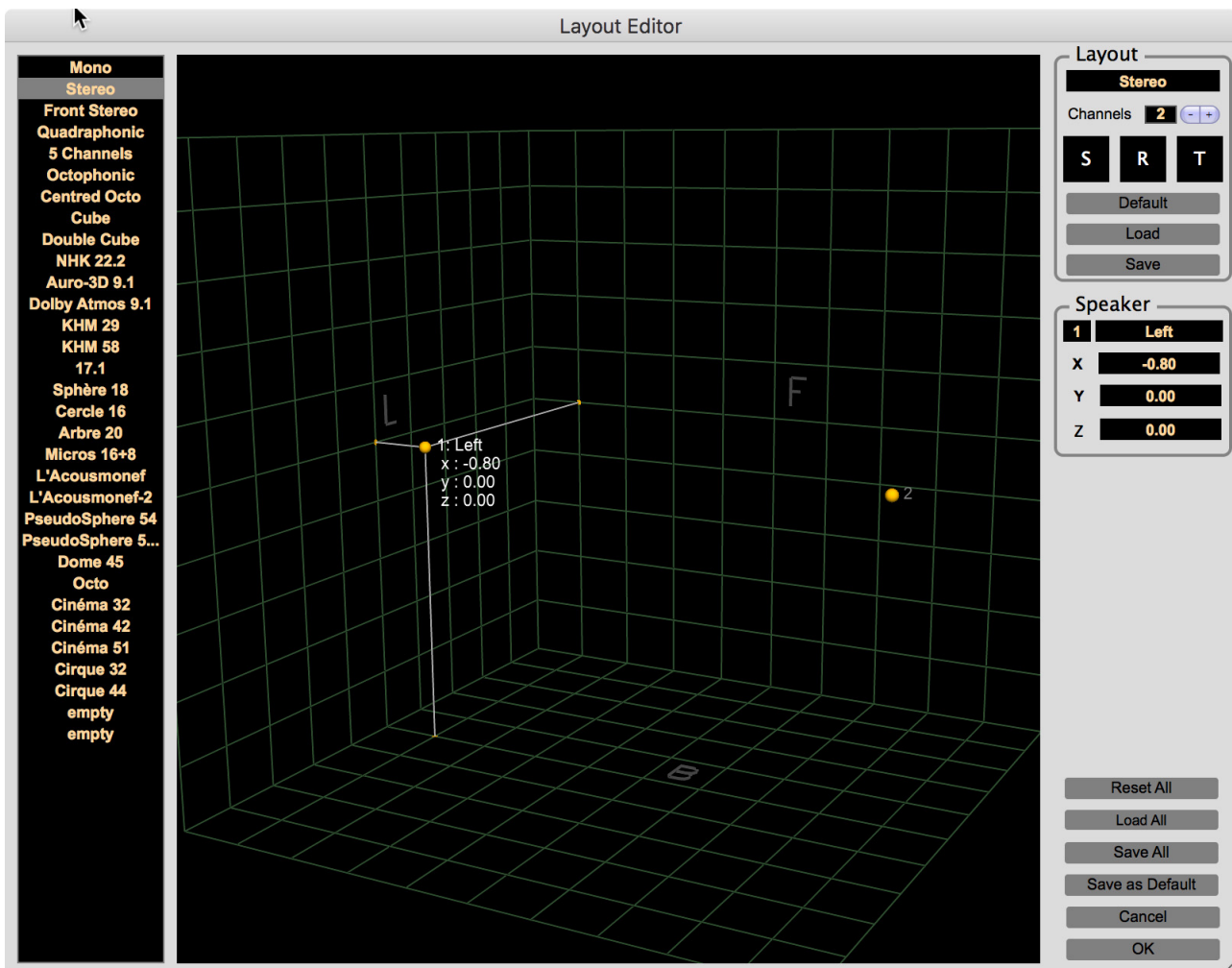
Note : the orientation of the auditor's hear can also be slaved to the physical orientation of the **3D Sound One Module** tracker.

Layout

Menu enabling the choice of a layout amongst the 32 available, and its allocation to the layout of the virtual speakers. Only layouts with a number of channels that is equal or lower than the number of input channels actually available can be selected. The configurations can be edited by using the **Edit Layouts** button.

Edit Layouts

Opens the Configuration Manager



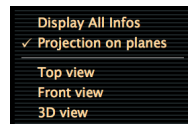


The left hand column lists the 32 possible layouts.

- Clicking on a name displays the layout in the central window, and its name and characteristics in the **Layout** frame in the top right hand corner.
- Click+drag is used to move an item in the list
- Shift+Click+drag copies the start item into the end item.
- The copy/paste is available with a right clic opening the contextual menu

The central window displays the selected layout.

A right click on this window makes the contextual menu appear, letting more or less information as well as the selection of 3 point of views getting displayed.



Displacements of the point of view are done as indicated in the paragraph **View Control**.

A channel is selected when the mouse is close to the yellow ball representing it. Its number, name and coordinates are then displayed in the **Speaker** frame at the right of the window. A click in the central window will enable a modification of its coordinates :

- lateral movement : left-to-right axis.
- longitudinal movement : back-to-front axis.
- longitudinal movement : bottom-to-top axis.
- longitudinal movement + [Shift] : bottom-to-top axis

The « **M** » key slightly magnets the movement on the grid mesh.

The **Layout** frame on the right allows you to :

- **edit** the name of the layout
- **change** the number of channels. The direct edition of the numerical field initialises the position of the speakers in the default layout. Pressing the + or - button either adds a speaker in the centre or deletes the speaker without modifying the position of the other speakers.
- **apply** the default layout, depending on the number of channels
- **import** and **export** layouts in XML files. The file format is as follows:

```
<?xml version="1.0" encoding="UTF-8"?>
<Speakers name="5 Channels">
  <S x="-0.5" y="0.77" z="-0.26" weight="0" name="Left"/>
  <S x="0.43" y="0.77" z="0" weight="0" name="Right"/>
  <S x="-0.8" y="-0.4" z="0" weight="0" name="Left Surround"/>
  <S x="-0.6" y="-0.3" z="0.21" weight="0" name="Right Surround"/>
  <S x="0" y="0.88" z="0" weight="0" name="Center"/>
</Speakers>
```



The **name** attribute indicates the name of the layout as it will appear in the list, and the attributes **x**, **y** and **z** are the coordinates of the speakers between -1 and 1. The number of channels is equal to the number of **S** items.

The three keys **S**, **R** and **T** allow the application of global transformations to all the channels :

- **S** : scaling relative to the center of gravity of the channels. Scaling can be limited to one dimension by pressing a key: **W** for width, **H** for height, and **D** for depth.
- **R** : rotation around the center of gravity
- **T** : horizontal et vertical translations with [Shift]

For **R** et **T**, if the [Shift] key is pressed during the mouse click, the rotations and translations will be limited to only one axis.

The **Speaker** frame on the right is used to:

- **select** a speaker by its number
- **edit** its name (Left in the example shown)
- **modify** its position using Cartesian coordinates (X, Y and Z)

Reset All

Resets the layout list to default layouts.

The following “empty” are reset in frontal stereo.

Load All

Load a set of 32 layouts previously saved.

Save All

Save a set of 32 layouts

Save as Default

Save the set of 32 current layouts as new default layouts.

The default layouts **defaultLayout.ala** et **defaultUserLayout.ala** are stored in the following folders :

Mac : /Library/Application Support/GRM/SpacesData

PC : \Program Files\Common Files\GRM\SpacesData

Tracker



If a **3D Sound One Module** is available, its ID and its level charge are displayed. The **Reset direction** button reinitializes its orientation. The orientation of the auditor's head is then automatically slaved to the orientation module.

This module is available on the website [3DSoundLabs](http://3DSoundLabs.com).



Distance

Amplitude : applies attenuation based on the distance between the auditor and the different channels of the source.

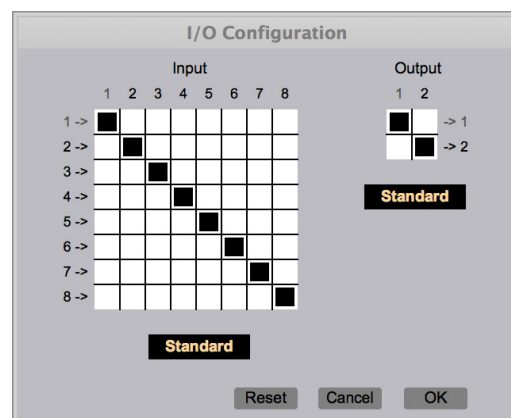
Frequency : applies a lowpass filter based on the distance between the auditor and the different channels of the source.

HRTF

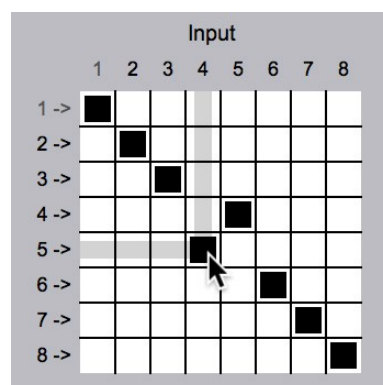
allows you to import and select a Head Related Transfer Function file. Files must be in [3D Sound Lab](#) format and can be customized.

I/O configuration

In most cases, the distribution of the I/O channels are done automatically. To modify this distribution click on the **I/O configuration** button :



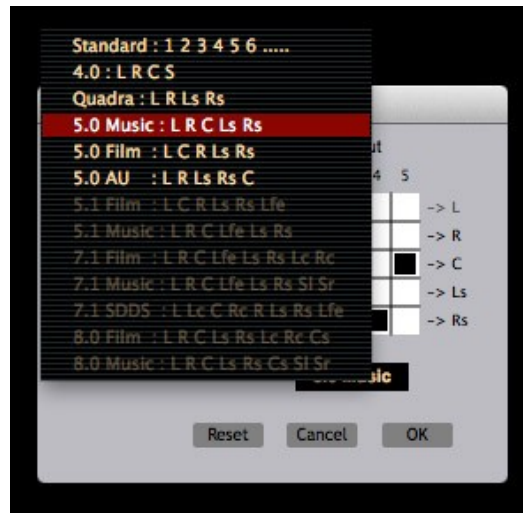
In this example, the processing is configured as an input on 8 channels. In **SpaceVR** the output is always stereo. The sequencer track channels (n-> or -> n) correspond to the rows of the matrices. The input and output channels of the processing correspond to the columns of the matrices. To direct a process output channel to a channel of the output track (or an input track channel to a process input channel), click in the corresponding box of the matrix.





In this example, the channel 5 of the processing input track is routed towards the channel 4 of **SpaceVR** input.

To help identify the channels, the surround menus under the two matrixes offer the most standard configurations:



Only the configurations compatible with the number of channels can be selected.

The numbers of the track channels are then replaced by their standardized names (L, R, Ls, etc ...) and the configuration of the matrix is done automatically.

It is possible to manage up to 64 inputs.

Credits

Conception, development
Emmanuel Favreau

Interface Design
Emmanuel Favreau

Documentation
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Translation
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Tests
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La création et la recherche
dans le domaine du son
et des musiques électroacoustiques