

# Connecting to Sphere

## Live Space 2026 (LMTA, Vilnius)



You are provided with this document that will step-by-step guide you through the process of learning the multi-channel audio composition.

If you want to do this preparation work quickly: open the folder, open file named “Connect to Sphere cheatsheet.pdf”, download everything mentioned in the pdf. Inside you will find folder named “Ambisonics template (5th order) LMTA, Vilnius”, open it. Inside you will find a Reaper project template that automatically set you up.

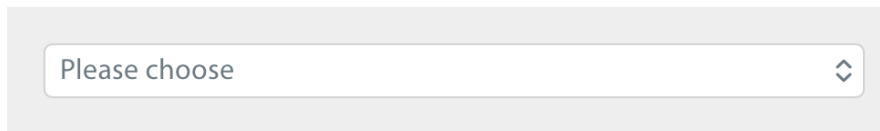
Although, it is important to understand the process, so we recommend that you follow the steps provided in this document. Good luck!

1. Download Reaper: <https://www.reaper.fm/download.php> . This is the Digital Audio Workstation (DAW) you are going to use for ambisonics.

2. Download driver for audio interface that we use: <https://rme-audio.de/downloads.html> :

a) Scroll down to see this list

Select product or software



Select your **Driver**  
or **Flash Update**

RME Audio Firmware and Driver Downloads

b) From the list choose MADiface USB

c) Pick your operating system (Windows / Mac)

d) Select option “driver”

3. You already have main program and the driver for the hardware device, now you need plug-ins that will be used for ambisonics. Download the whole list:

#### **ambiX**

<http://www.matthiaskronlachner.com/?p=2015>

#### **mcfx**

<https://www.matthiaskronlachner.com/?p=1910>

#### **IEM plugin suite**

<https://plugins.iem.at/>

#### **Sparta plugin suite**

<https://leomccormack.github.io/sparta-site/>

#### **Spat5**

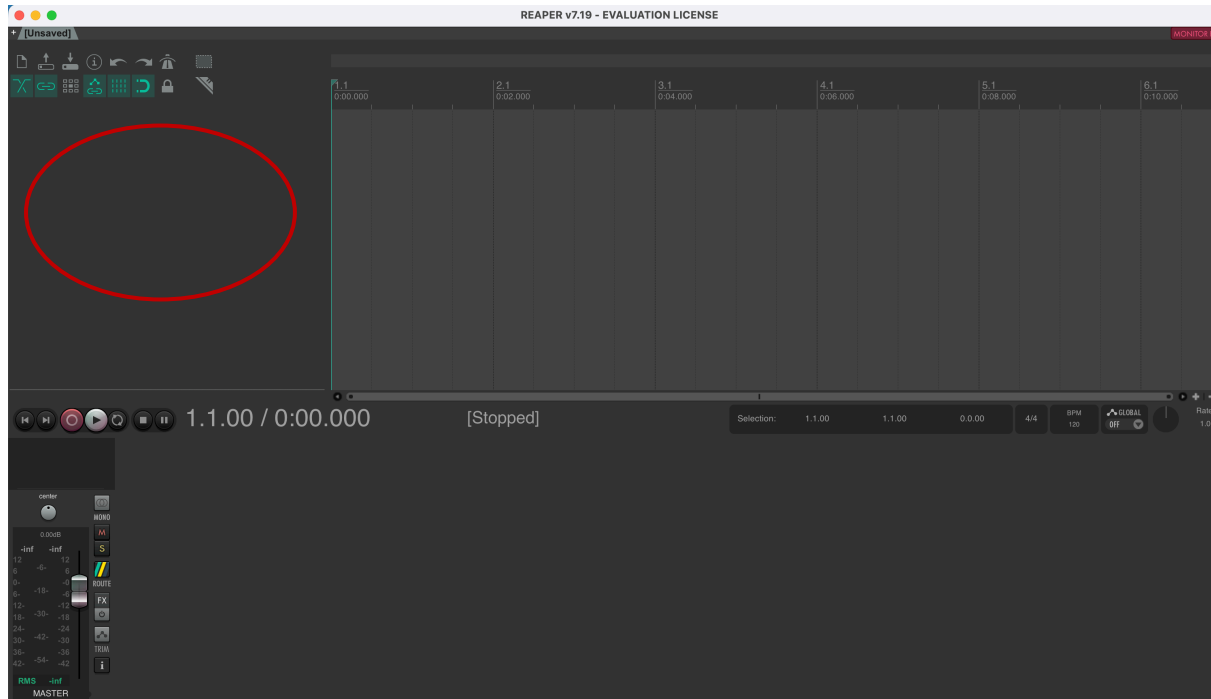
<https://forum.ircam.fr/projects/detail/spat/>

(Need to login to download)

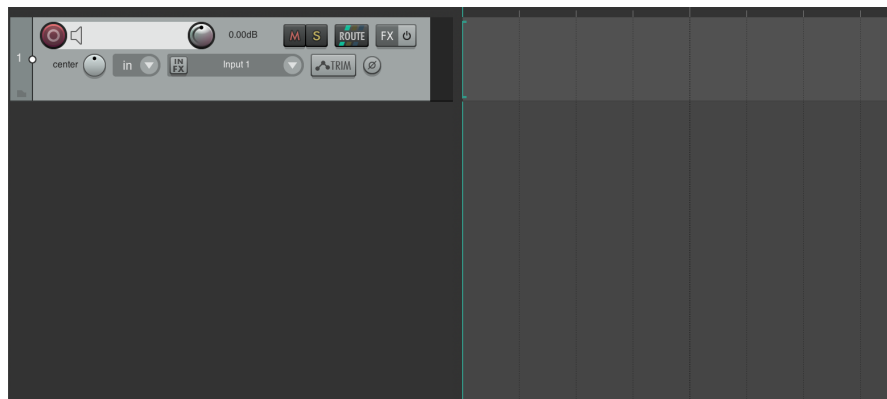
4. The Setup (need to be done only once):

a) Open Reaper;

b) create a track (double click on this empty space):



c) By default some of the parameters are hidden. To reveal them press on the track, go to options-layouts-track panel. Select option B (150% recommended). Now the track should look like this:

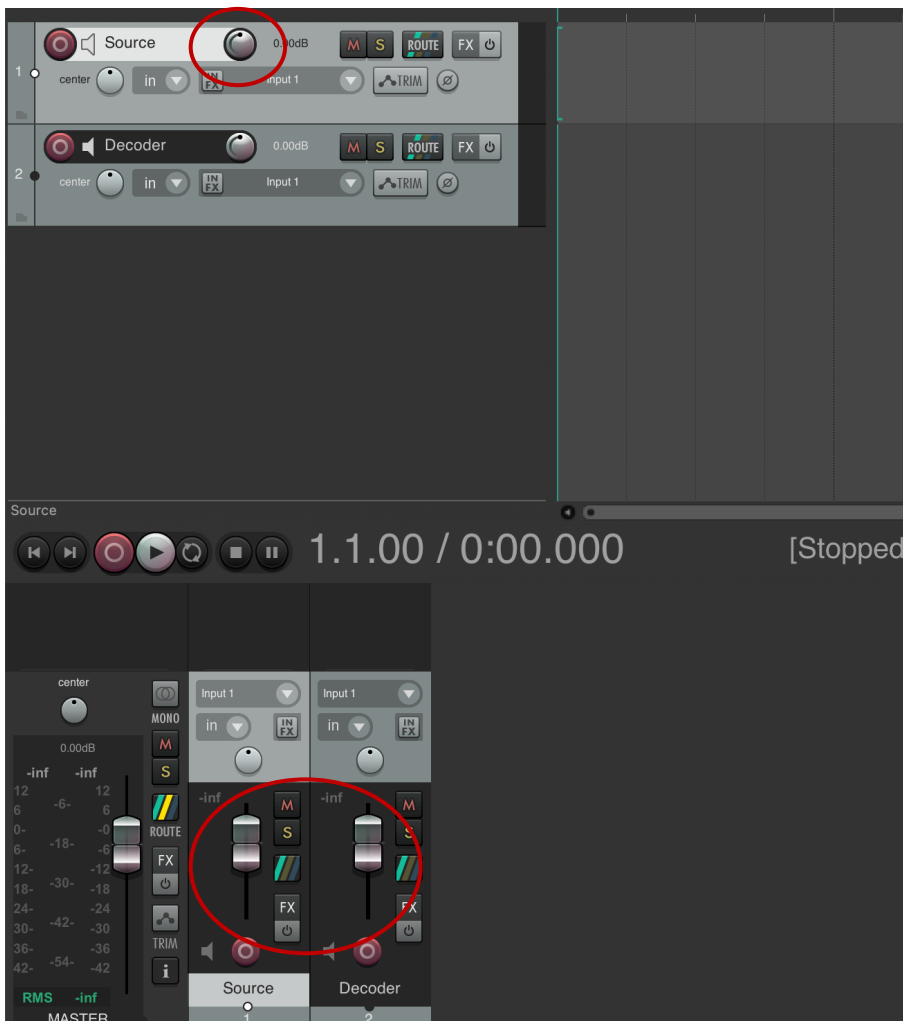


d) you can right-click on the track and duplicate it

e) create two tracks and name them “Source” and “Decoder”:

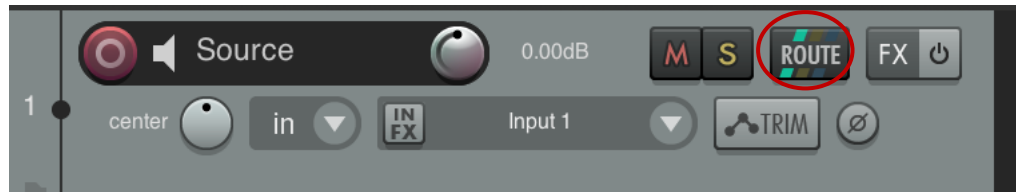


f) You have a representation of each track in two places: left and bottom. Volume of each track can be controlled either on the “bubble” on the left view or the fader in mixer view:

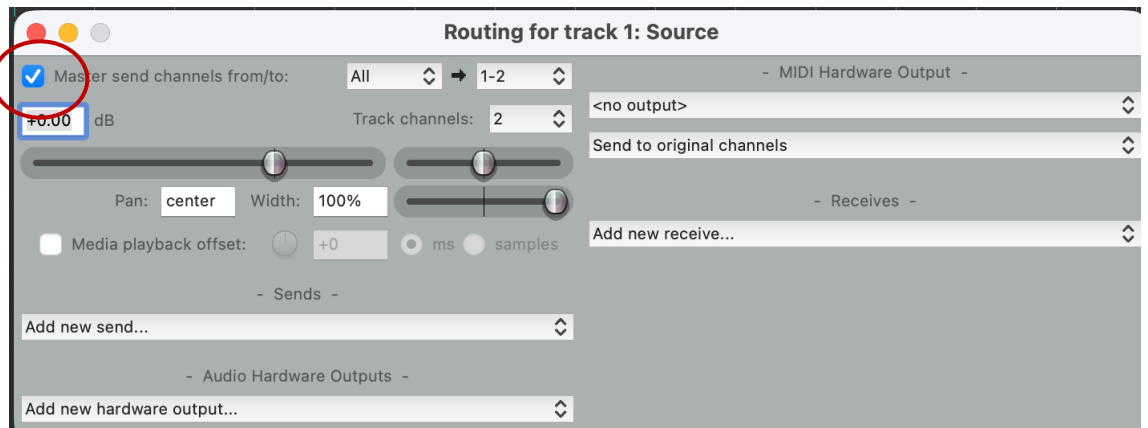


g) Routing. The idea is that you will have a lot of “Source” tracks that all are collected into the “Decoder” track:

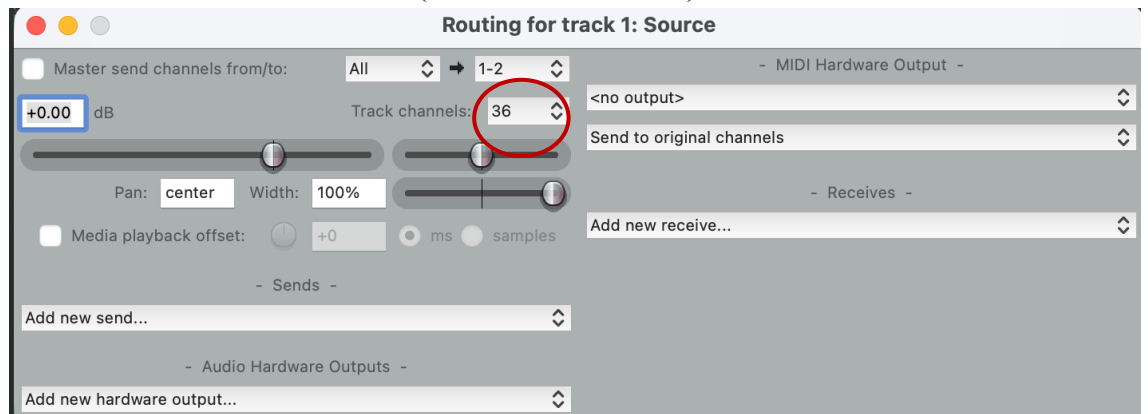
- Press “Route” on the **Source** track



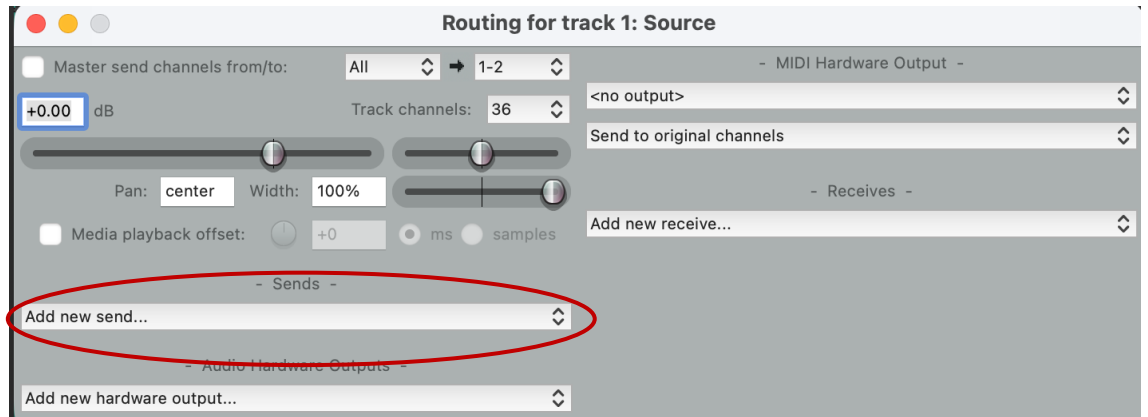
- Uncheck the tick on the “Master send channels from/to”



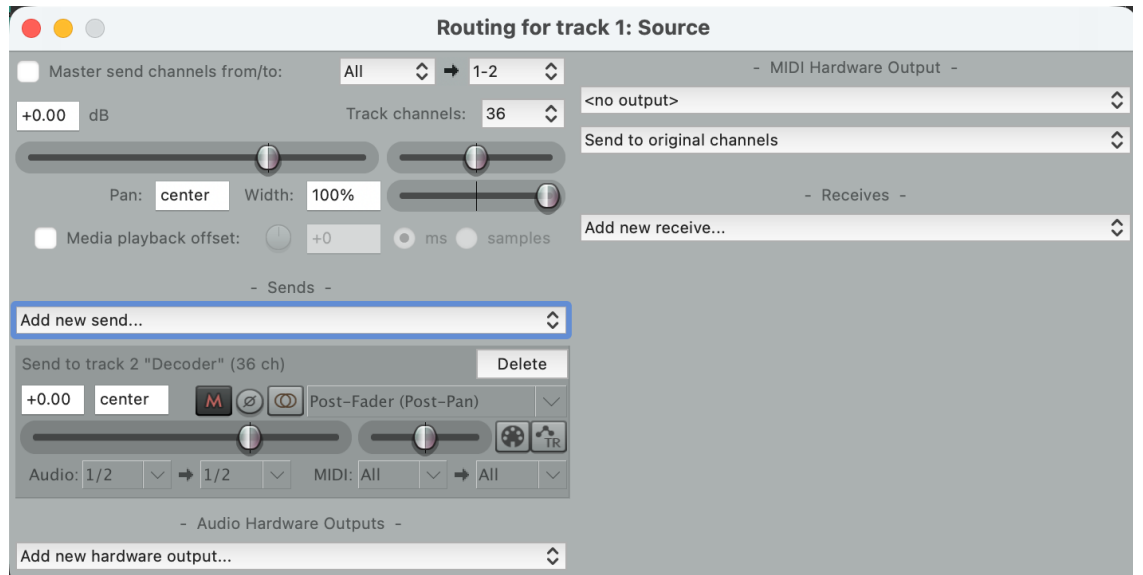
- On the track channels select 36 (5<sup>th</sup> order ambisonics)



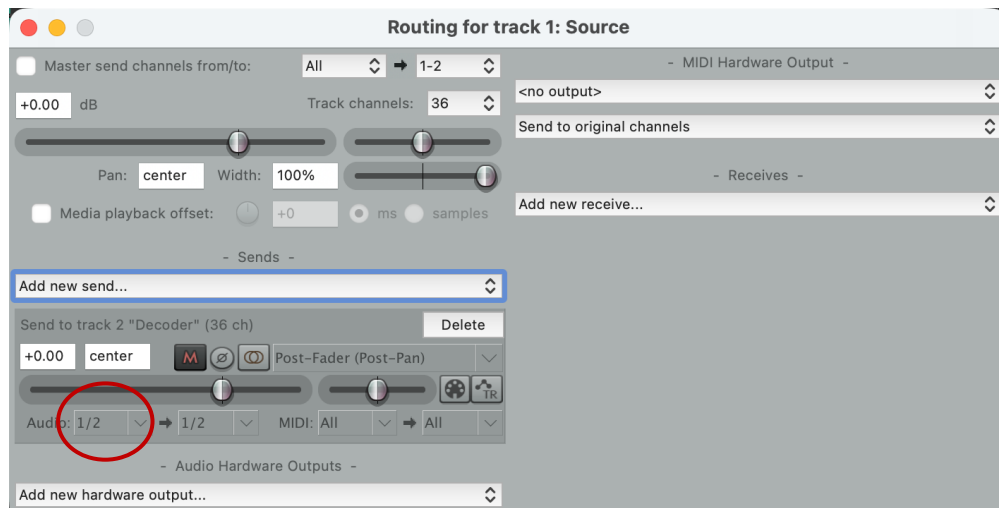
- Press on “add new send...”



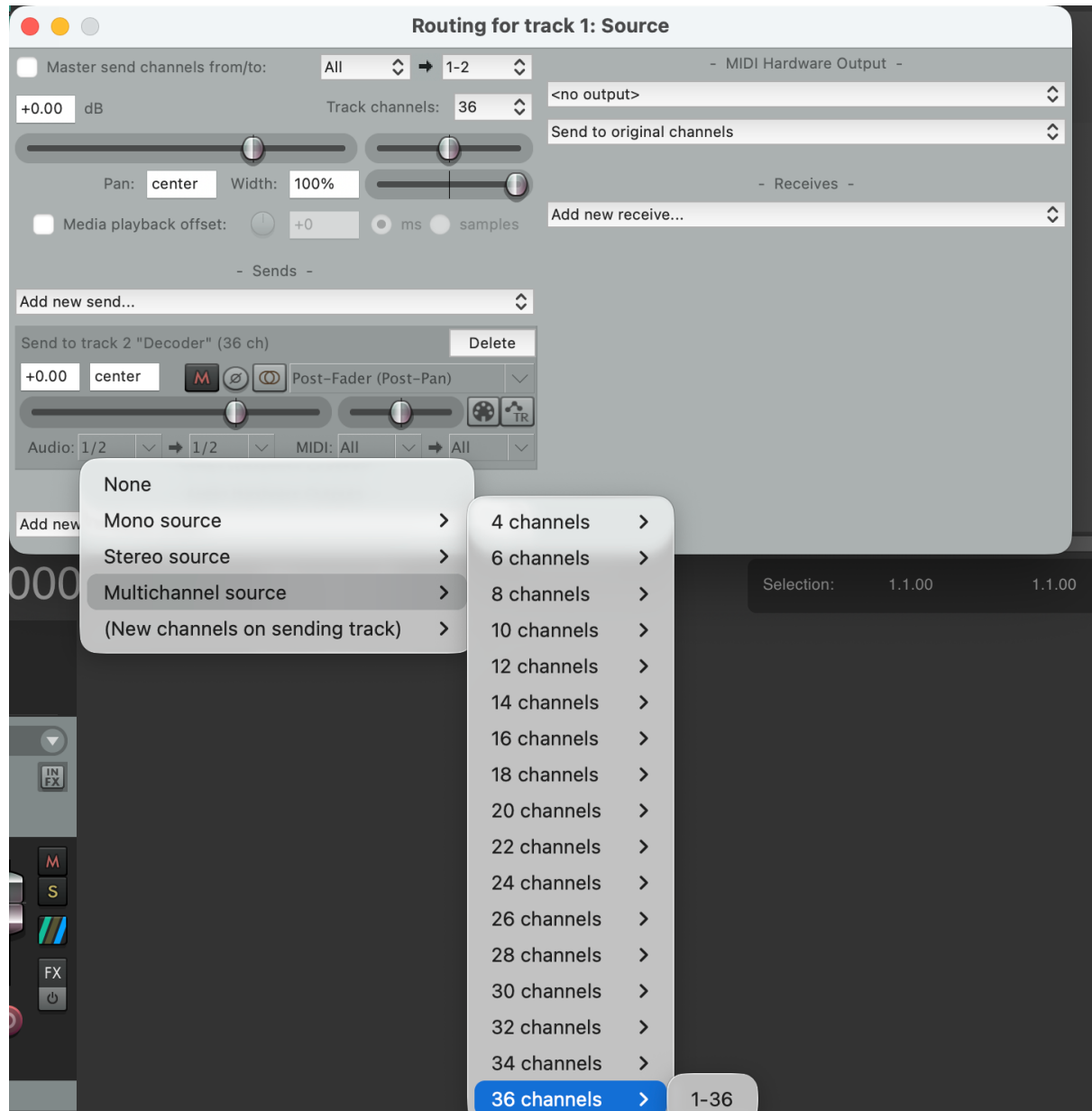
- Select your “Decoder” track (you are sending multi-channel sound from each separate track to your main track)



- Click here



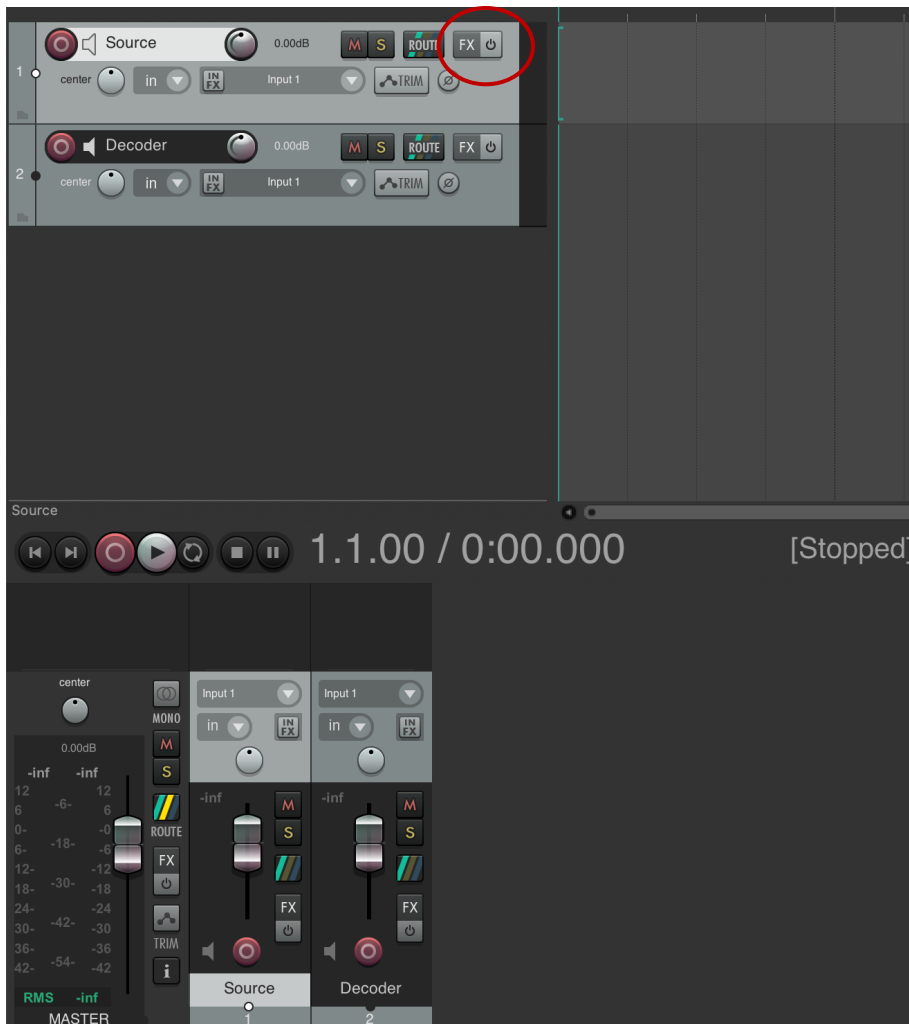
- Select multichannel source, 36 channels, 1-36



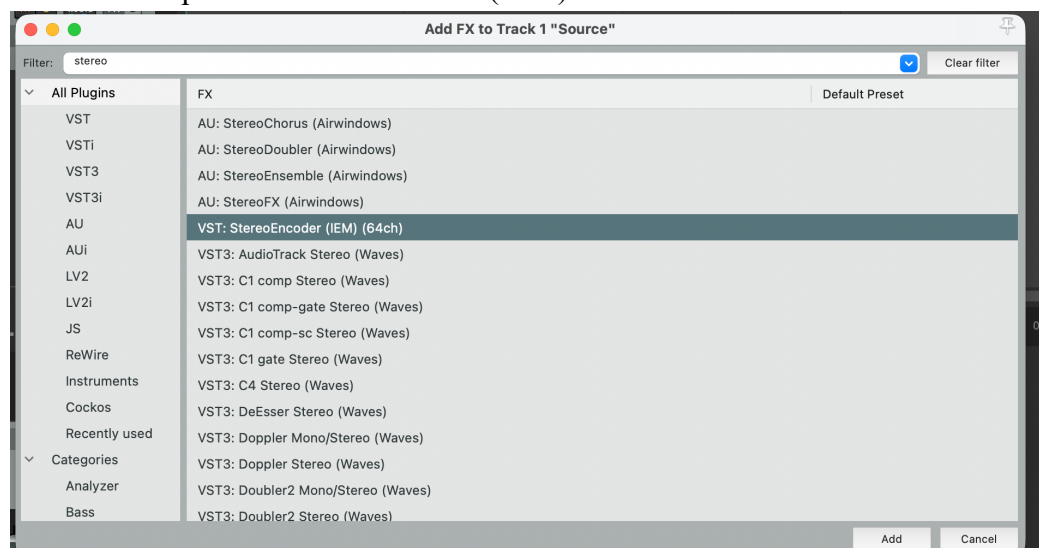
- Routing is done! Now onto effects that convert stereo sound into ambisonics.

## h) Effects

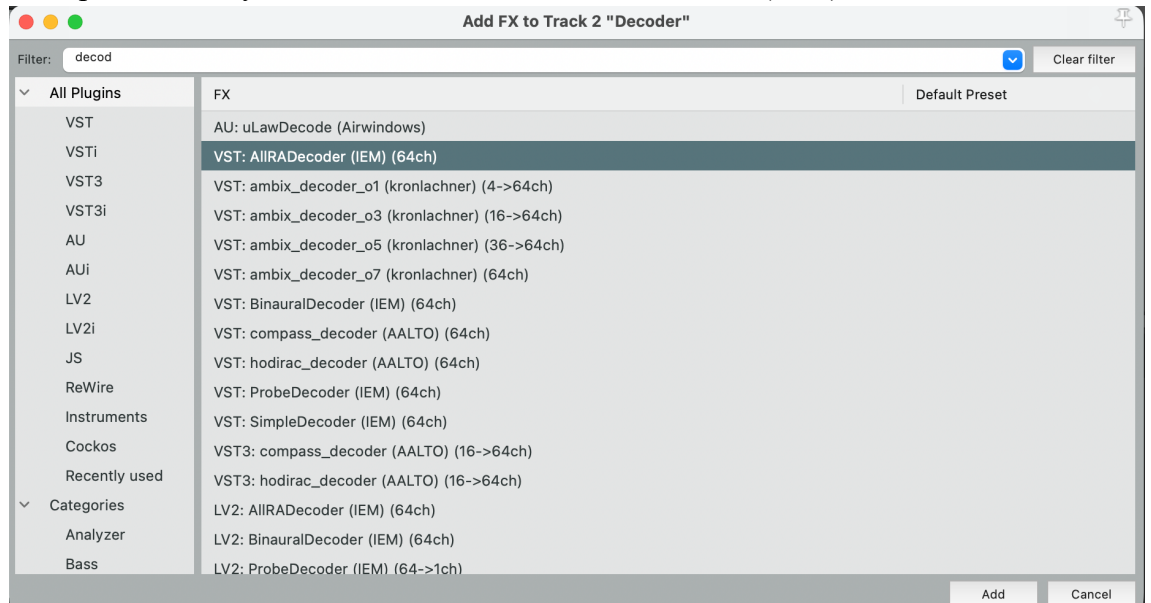
- On your Source track press FX



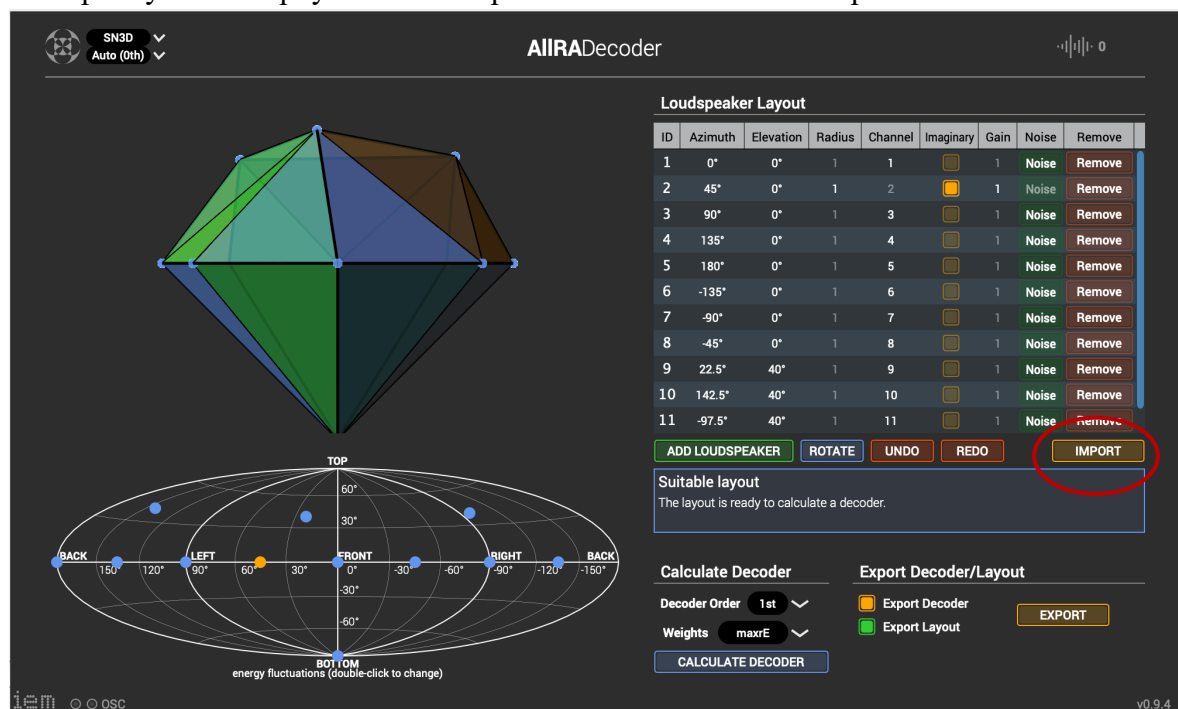
- From the list pick the StereoEncoder (IEM). Add it or double click



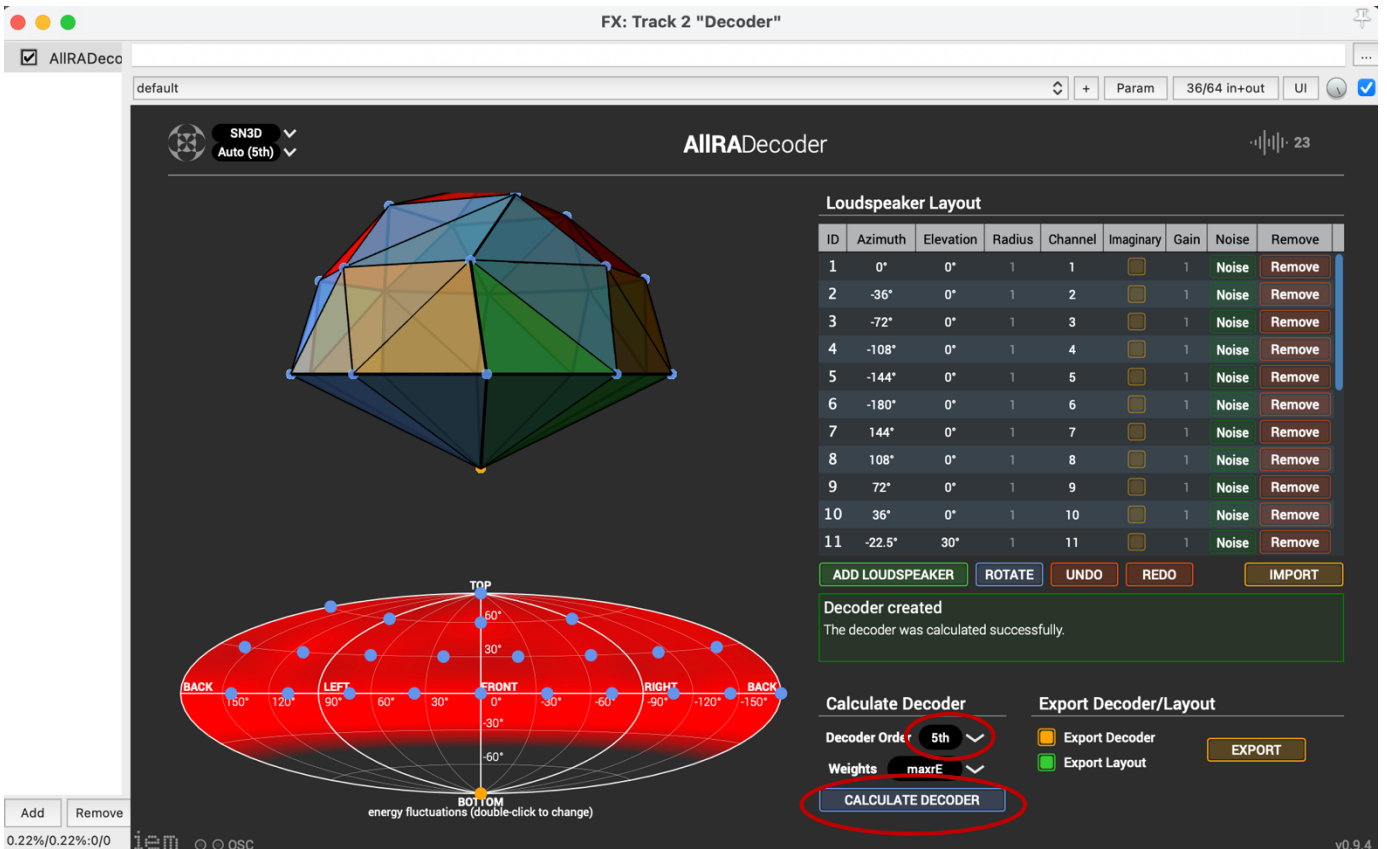
- Close the window (you can reopen it by clicking FX again)
- Now press FX on your Decoder track. Pick AllRaDecoder (IEM)



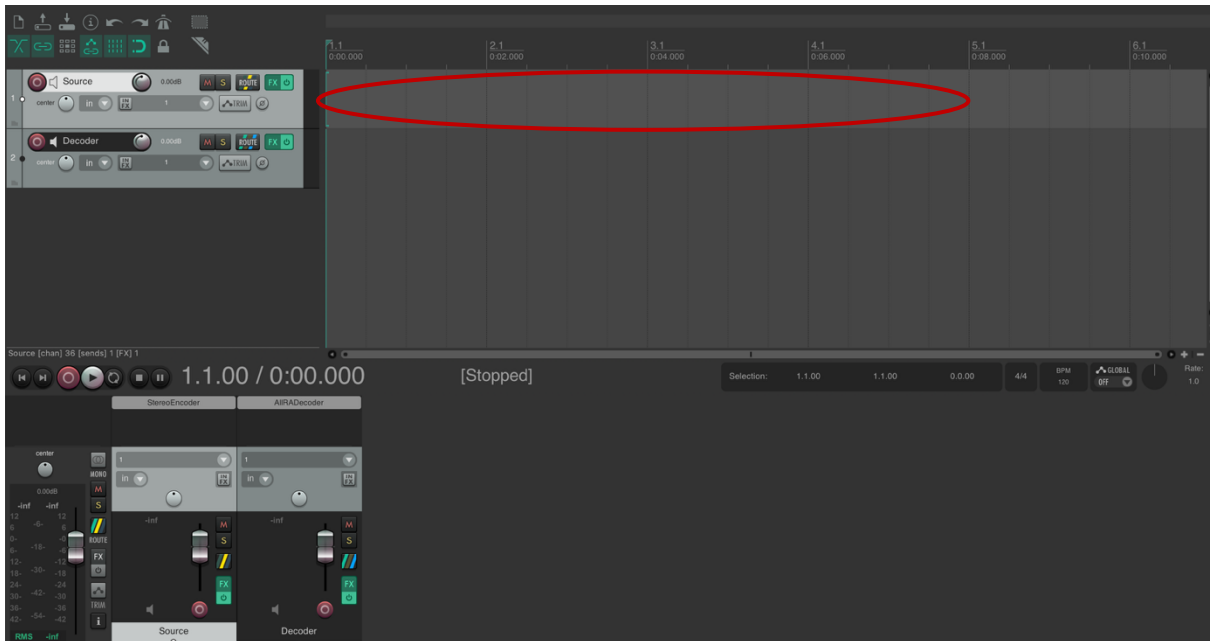
- Click “import” and select the .json file provided in the folder (MiscAllrad\_o5). You specify how the physical sound sphere looks like for the computer



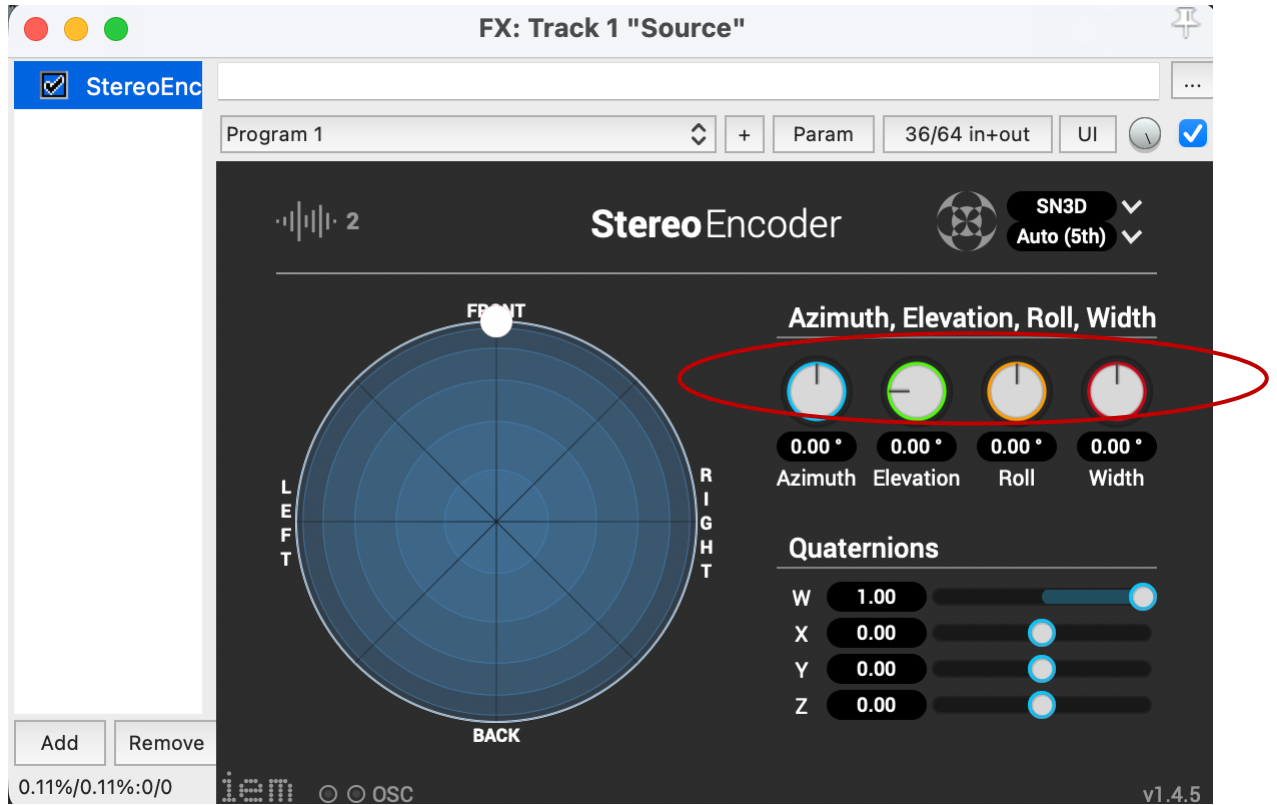
- Select 5<sup>th</sup> order on the “Decoder Order” and press “Calculate Decoder”



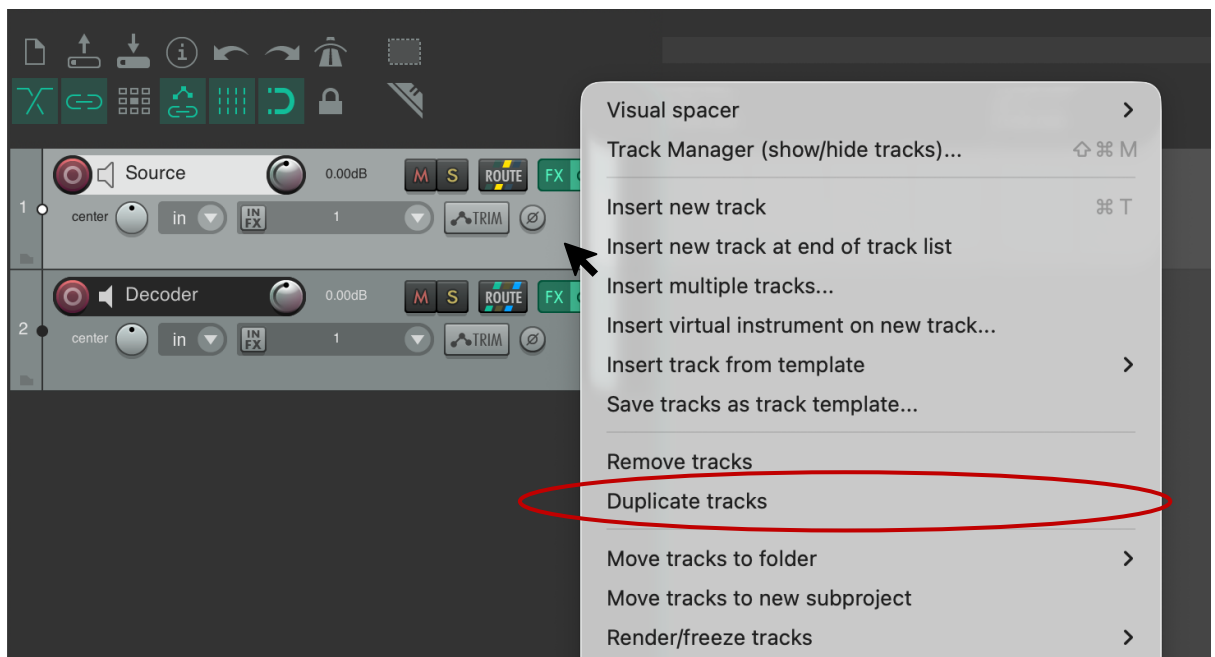
- You are done! Now upload (drag and drop) any audio file to your source track



- Your stereo audio file can be moved in the sphere easily! Press on FX on the source track and change the position on the StereoEncoder with azimuth (around), elevation (up and down), width (how wide is your Left and Right), Roll (spinning the Left and Right around the defined center). You can also just move the ball with your mouse.

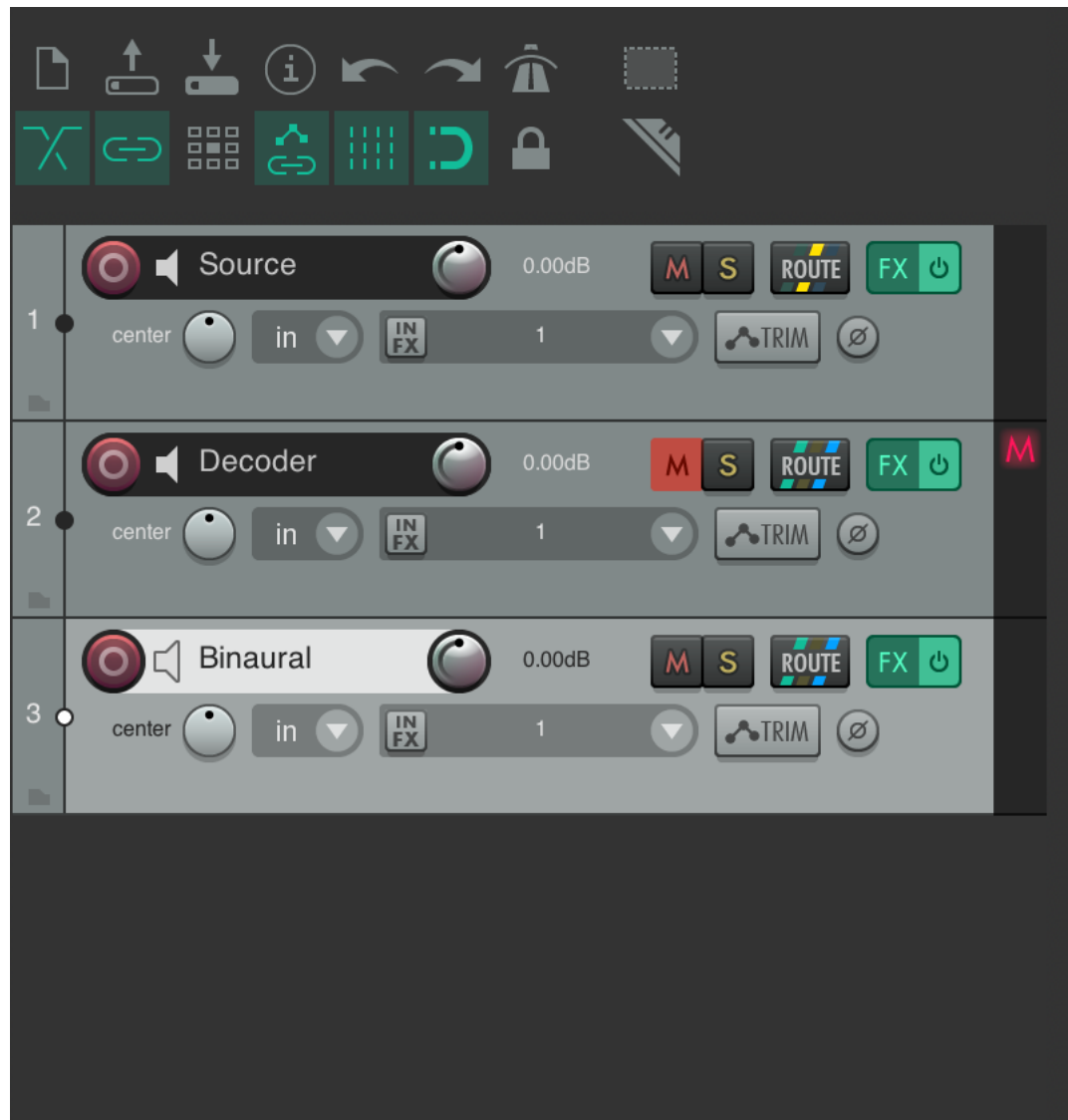


- If you want more sounds in your composition just duplicate the source track (right click on the track) so you will not need to do the routing again

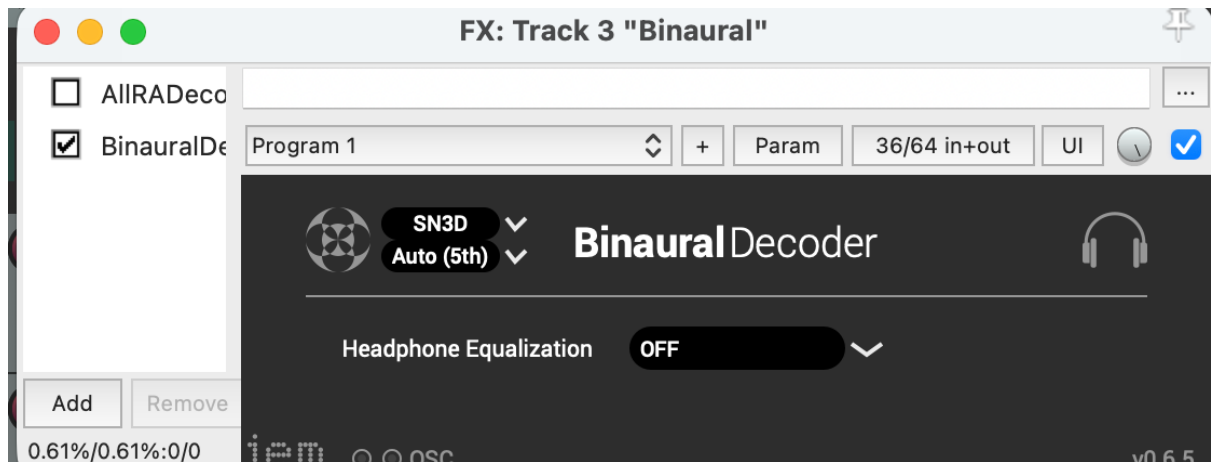


i) OPTIONAL. You are ready for working with ambisonics! But you will not hear the sounds properly through your stereo speakers or headphones because you have defined the system to have 23 speakers. If you want to enjoy multi-channel sound on your headphones you need to do one more step. This is called binaural.

- Duplicate your “Decoder” track. It’s important you duplicate the Decoder track not the Source one because you want to keep your routing.
- Rename this new track to “Binaural” and mute the “Decoder” track



- Click on the “FX” on this Binaural track. Remove the AllRaDecoder plug-in and add BinauralDecoder (IEM)



Congratulations! If you want to check whether your project works the same you can compare it with the Reaper project template inside Folder-Ambisonics template (5th order) LMTA, Vilnius.

If you want to learn more about ambisonics here is the video lecture recorded by the head of our innovation center Mantautas Krukauskas: <https://bit.ly/3PeqdNI>

See you in Vilnius!

Best,

Live Space team