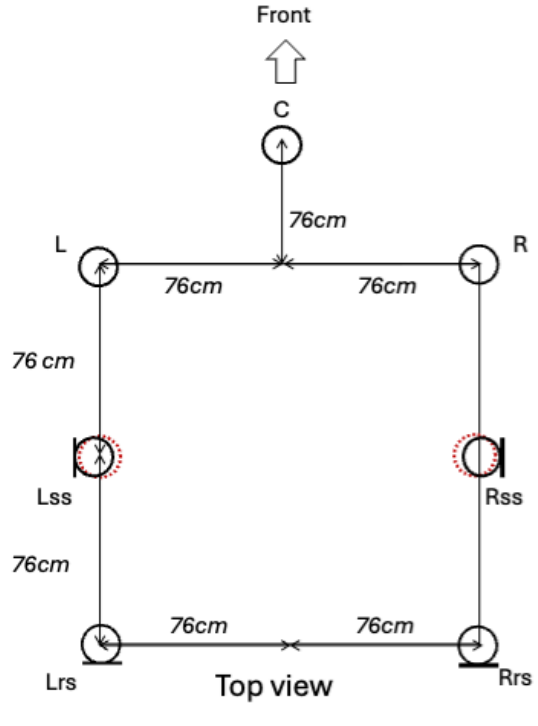
AirCage

This setup has been published by the ECHO project and it shows some very interesting details. The "inventor" is Nick Wollage.

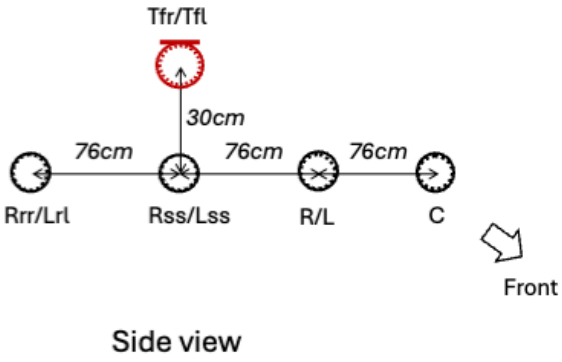
We rebuilt the „AirCage“ using commonly available gear and more affordable microphones. Everything fits into a larger backpack and the total weight, including recorders, batteries, cables and tools, is about 22 kg.
We use a trick to keep the long tubes from swinging back and forth. This gives the whole setup a very unique look. More on that a little bit later.

Now, let's take a look at the original description of the AirCage. It doesn't look too difficult, but it has its caveats.



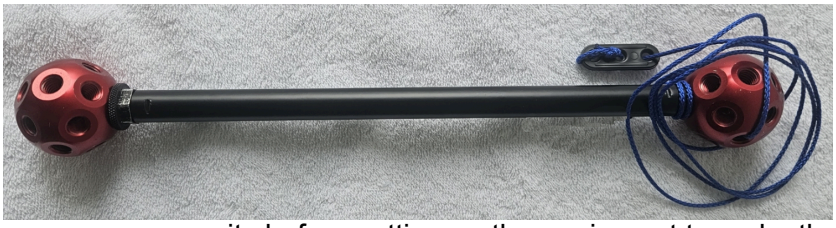
AirCage
Nick Wollage

Ch	Mic	Model	Polar pattern
L	Neumann	M50	Omni
R	Neumann	M50	Omni
C	Neumann	M50	Omni
Lss	Neumann	TLM170R	Hyper Cardioid
Rss	Neumann	TLM170R	Hyper Cardioid
Lrs	Neumann	TLM170R	Hyper Cardioid
Rrs	Neumann	TLM170R	Hyper Cardioid
Tfl	Neumann	TLM170	Hyper Cardioid
Tfr	Neumann	TLM170	Hyper Cardioid



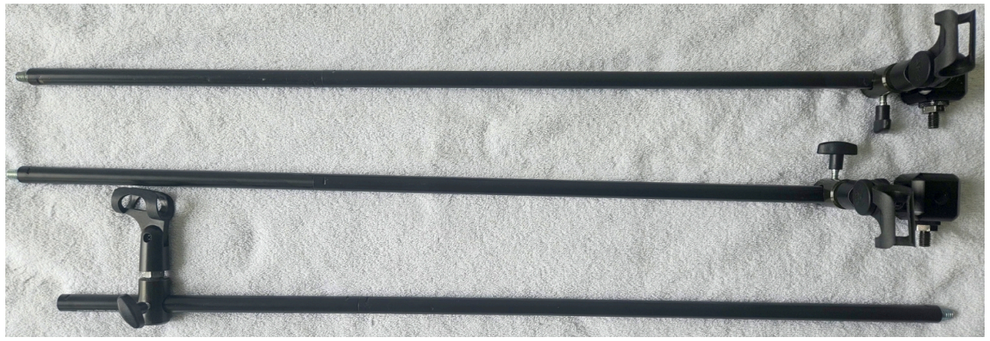
The Neumann M50 (omnis, front) are THE microphones for a „Decca-Tree“ since ever. But they are not on stock, hard to get and … expansive. The same apply to the Neumann TLM 170R. We use the AKG Blue-Line microphones with the CK92 (omni) and the CK93 (hypercardioid) capsules. You may use any other microphones with the same microphone patterns.

It all starts with the red ball on a light stand. Actually, two red balls. The blue nylon string is for stabilizing the front pipe later on.



We suggest to prepare some units before setting up the equipment to make the process easier and safer. Note that the parts are kind of heavy, so the long lever is the hazard.

We will start with the two pipes for the left and right front microphones. Screw a 50 cm pipe and a 25 cm pipe together, then add a male/male 3/8” thread adapter and a cube to one end.
The result should look like the next picture.



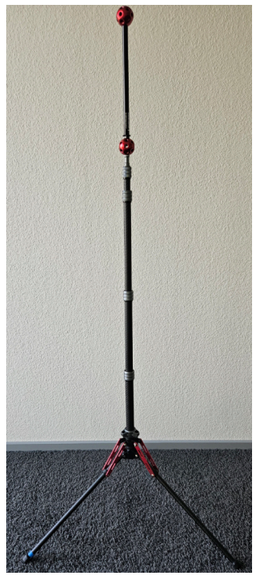
The two upper pipes are for the left and right omni, the pipe below is for the front omni. This will build the „Decca-Tree“.
Take a close look at the pipes with the cubes. We prepared anothe male/male 3/8“ thread adapter. Because one pipe is for the left and the other for the right side, the must be on different sides. This requires the microphone clamps to be on the correct side also.

Now comes an important part. For the long sides we screw together a 100 cm and a 50 cm pipe for each side. We add another male/male 3/8“ thread adapter and apply another cube. This will be the end of the pipe.
Tot this end we apply three rapid adapters and two microphone clamps for each side. Make sure the one at the and „looks“ to the cube, while the other one has an angle of 90°. The third rapid adapter stays free for now.

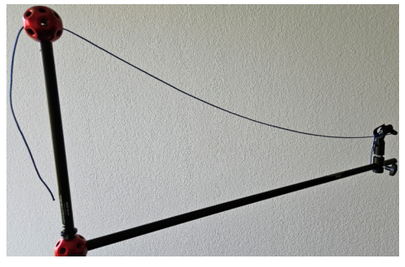


As the preparations are done, we setup a stand and apply the double red ball unit to it. Make sure, the wholes of the red balls are „looking“ into the same directions.

Now we screw in the pipe for the front of the „Decca-Tree“

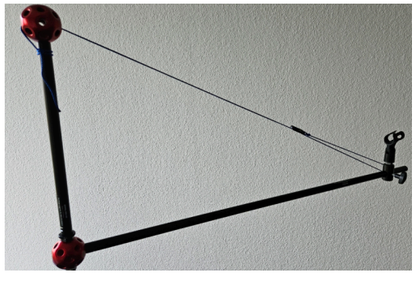


We prepare the 1.5 m long nylon string with the tent rope tensioner as shown. We hang the part with the loop loosely over the rapid adapter as shown.



We secured the loose end of the nylon string with a clove hitch.





Now, it's time to straighten the string. It should not be too tight or too loose.

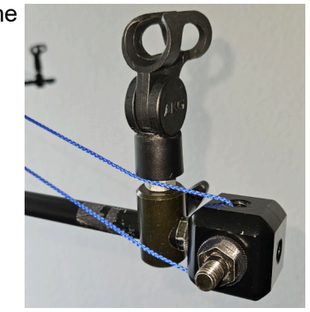
Now comes the tricky part: the two arms of the "Decca Tree."

First make sure you have the rapid adapters on the pipe before you screw them in!!!

You should screw both arms in simultaneously. If you screw them in one after the other, you will need someone to assist you. With a little practice, however, you can do this yourself. These arms will also have an assisting nylon string.

This is our example for one arm. You thread the nylon string through the wholes of the cube and thread it into the tent rope tensioner.

Then you thread the string through the upper red ball and over to the over arm.





Here you thread the string also through the wholes of the cube and fasten the string on the arm. We recommend a clove hitch. Then you should move the rapid adapter close to the end of the pipe.

Now the „Decca-Tree“ part look like this.

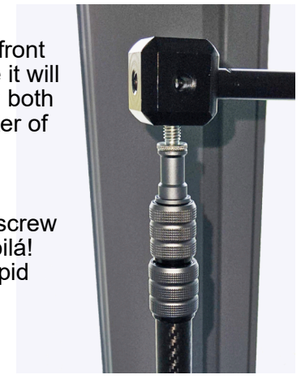




The next part is also a little bit tricky, but you can handle this even alone.
Make sure the pipe shown here in the middle, has the three rapid adapters on it before you screw it in!!!

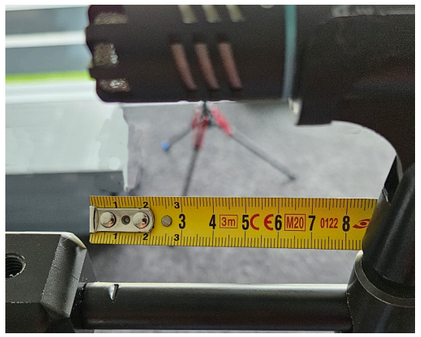
Now extend stand up to the hight of the front stand an position it at the position where it will stand (roughly!). Then take the pipe with both hands and screw it into the thread adapter of the cube. Try to keep it in a horizontal position.

Once you are done, take the stand and screw it into the cube at the end of the pipe. Voilá! Don’t worry about the positions of the rapid adapters yet, we’ll fix this in a minute.



Now it’s time to mount the microphones. The rapid adapter of microphones pointing backwards should be 8 cm away from the cube, as shown.

Then measure the distance between this microphone and the omni in the front. It should be 152 cm (2 x 76 cm).





Here you see it from a different perspective and the fixes for two microphones in the middle. The microphone clamp must be in the middle of the hypercardioid pointing to the back and the omni in the front. Or as shown in the plan of Nick Wollage, it has to be 76 cm away from the omni in the front.

Just a quick word about the distances. We think, that it don’t need to be 76.0 cm, it could also be 76.4 or 75.7 cm.
We didn’t notice any differences. Of course you could proof that this not exact. We assume you need to have very high quality equipment to tell the difference. - Just our honest oppinion!

The pipe next to it should be places like this.

The clamp of the upper microphone should be exactly above the one in the middle. For this we lower the upper clamp and fix the position. Then we move it up again, back to 30 cm above the microphone in the middle.

This is exactly enough as mentioned above. And it’s very convenient and fast!







It’s not an accident that the microphone leans in a bit; it has been adjusted on purpose. Since the omni is slightly inside the pipe, the other microphones must be adjusted accordingly. Just loosen the rapid adapter a bit, tilt it, and you're done.

You can also see the four-channel multicore applied to the system. You can connect them in any order; it doesn't matter.

Since we chose to record the "Decca Tree" with a four-track handheld recorder (e.g., Tascam Portacapture X8), the other six microphones will be recorded with an eight-track recorder (e.g., Zoom F8n Pro). (e.g., the Zoom F8n Pro).

But all microphones on each side are connected through one multicore, just the front microphone is connected via a single microphone cable. The only reason for this setup is to save weight. Of course you can use an additional 4-channel multicore, but this would mean two more kilograms of weight. Remember it’s you to carry it!

We secured the splitter of the multicore cable to the middle of the side pipe. To secure its position, we wound the red and blue cables (in this example) around the upright pipe.

As the cables of the splitter are 90 cm long, we don’t need additional cables, which also saves weight.



Then, loosely wrap the multicore around the pipe and lead it down the back of the stand.

Do not lead it down from the front, as the additional weight might destabilize the "Decca Tree" in the front.

Now connect every channel to your recorders, do a quick line- and gain-check and hit „Record“.

Happy recording.



Did your first test recording went well? - Great!

Now it’s time to tear it all down again and prepare for your first recording somewhere else.

We recommend you practice a little bit and find your own way of setting things up. If you plan to carry it all in your backpack, you should consider some leight-weight but stable boxes for the

sensitive things like microphones.

Below there is a picture of all the gear used. (Always have spare batteries with you!). In the back you see the windprotection for recording outside.
Even if you are going to record inside, we recommend at least the foam windprotecions. Even the thermal energy generated by the audience's body heat can have an audible effect. So better safe, than sorry.



Believe it or not, it all fits into the backpack on the right. Don’t believe it? - Look at the pictures below.

At about 20 kg, it's not the most comfortable for long hikes, but you can carry it for a few miles. (The transperent plastic boxes are containing the microphones.)

Meanwhile we upgraded the setup a little bit, the 100 cm pipes have been substituted by 50 cm pipes. It’s more convenient for carry things around. And if you screw two 25 cm pipes together and on each end a 50 cm pipe, you have the exact middle of the side-pipes where the two 25cm pipes are joined! And four fingers are about 8 cm wide. So you may consider leaving the tape measure at home (another ~90 g).



