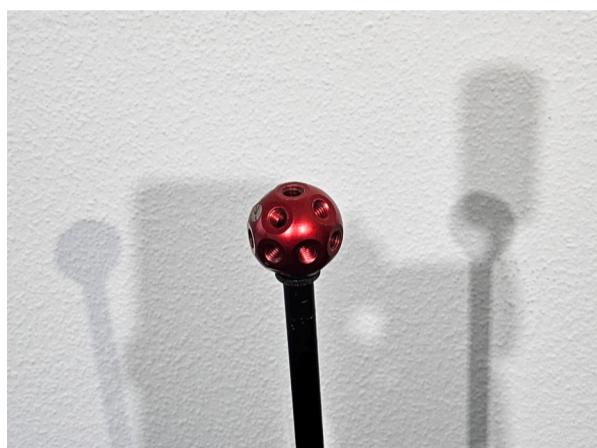




# Setup of a 2D – FOA system with four cardioid SMC and one omni SMC microphone

When you are new to ambisonic, then this might be a little bit special, as it does not record the height information, but for a choir or a band standing in a circle, this is great.

A little remark about the shown gear: This is our own gear and we bought it with our own money. If you like the gear and want to buy it, we provide a “shopping list” on our website.



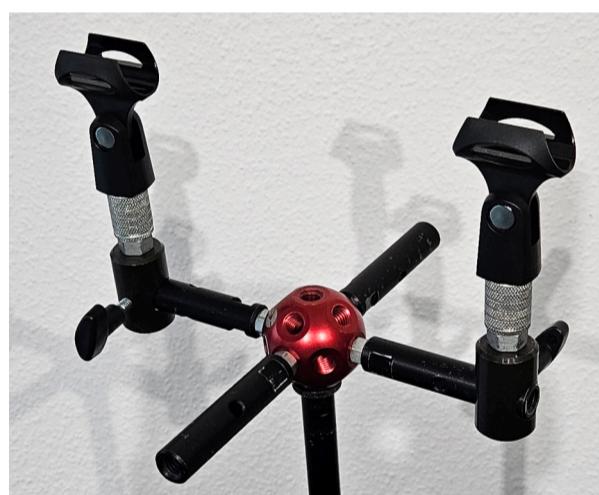
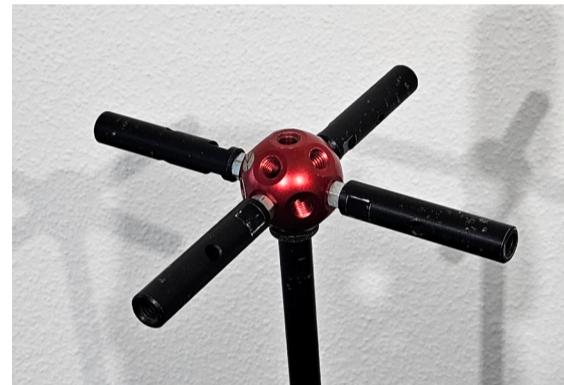
You may buy this gear, but any other gear is fine as well. It is not a question of good or better, its just a question of what is available for you.

Okay! Let's start with a regular microphone stand. Of course yours may look different. No problem.

Now, make sure that you have everything you need on hand. You may want to check the provided shopping list to do so.

Now let's attach the “red ball” to get started.

We need four of the 10 cm long pipes, which we screw into the red ball at an angle of 90° to each other.



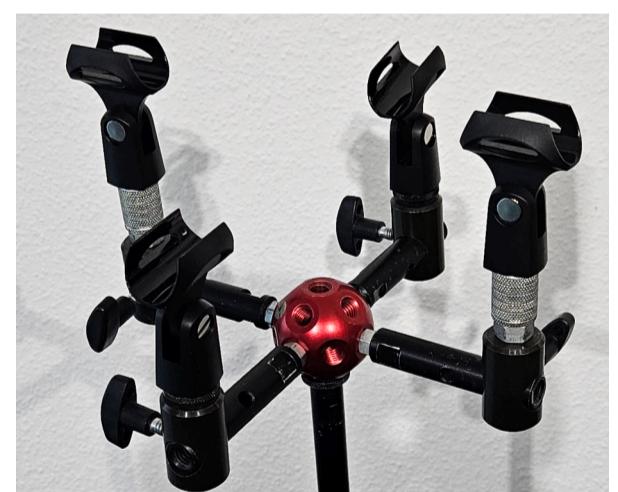
Since two cardioid microphones will be positioned above the others, we need a thread-adapter extension (silver).

Now screw the pipe-to-microphone adapters into the microphone clamps and mount it all onto the tubes.

It is easiest if they are quite far along the end of the pipe, because that is where we will need them.

It's not necessary to tighten the screws yet, as we might move them back and forth a little bit.

Now, let's attach the other thread adapters as shown in the picture.



Here you can see the microphone clamps mounted and aligned to the center and each at an angle of 90° to each other.

You may need to loosen the nut on the pipe-to-microphone adapters slightly in order to align the clamp accordingly and then tighten it again slightly. It is best to use a suitable open-end wrench or pointed pliers for this.

When everything looks fine we start mounting the microphones. For a better visibility we used two pairs with a different color.



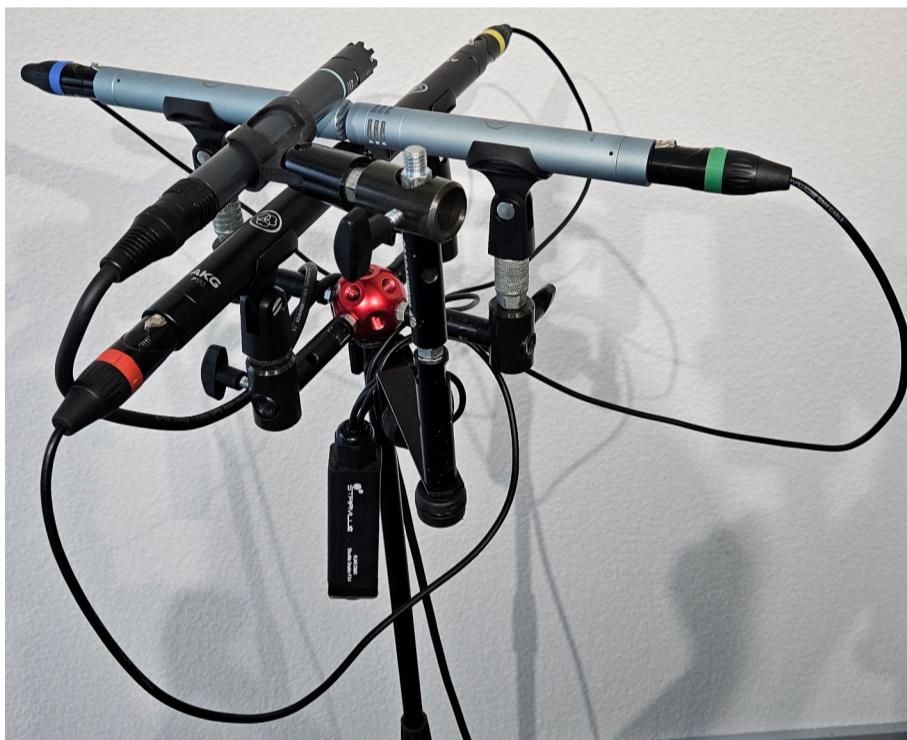


As we want to have an "omni" as well, we need another place to mount it. Here you see an additional clamp with two additional pipes. Make sure this is mounted quite tight already.

Then we add the pipe-to-microphone adapter for the microphone clamp of the omni microphone.



The two pairs of cardioid microphones have been mounted, and the connectors for the four-channel multicore have been connected. You may use separate microphone cables; it doesn't matter. It's more a question of what you have on hand and/or your personal workflow. Make sure the diaphragms of the microphones are as close together as possible. This may vary depending on the microphones used..



This setup is quite robust and solid. It's not too heavy and can be set up in just a few minutes.

As mentioned, this setup is ideal for recording the surrounding area of the microphone system. For example, it's ideal for recording a small choir, an a cappella group, or a small band with acoustic instruments. It's also great for capturing ambient sound, where the height information either adds nothing or might even interfere with the perception.

This setup is an alternative to the two-microphone, figure-of-eight FOA setup. Since the microphones are hard to find, this setup is a great alternative if you are on a budget.

The downside is that you need five channels to record simultaneously. This eliminates the regular four-channel handheld recorders, as they have one channel too few!

We also demonstrated another 2D FOA with just four cardioids in our tutorials. Please take a look!

The advantage of this setup is that it is an FOA in B-format. The omnidirectional microphone is the "W" (world), one pair of cardioids is the "Y," and the other pair is the "X." Since we don't have a microphone for the "Z" (height), we leave this channel empty. No problem!

After you finish recording, copy the five tracks to your DAW.

This picture shows the final setup. Take a closer look at how the "omni" is mounted.

We recommend pointing this system toward the main sound source with the connector that has a yellow ring.

Then, build a bus or subgroup for "X" and "Y." Finally, you feed the two pairs of channels into the corresponding busses/subgroups.

Now comes the "secret trick." The cardioid pointing to the left and rear will have their polarity/phase shifted. That's it!

Finally, feed the three channels, respectively, into your favorite FOA Decoder plugin. Some plugins require a track for "Z." If they need it, give it to them. Just provide an empty track.

Have fun and enjoy!

P.S.: For best results, we recommend that you test this setup with some upfront recordings, to make sure you got anything right.