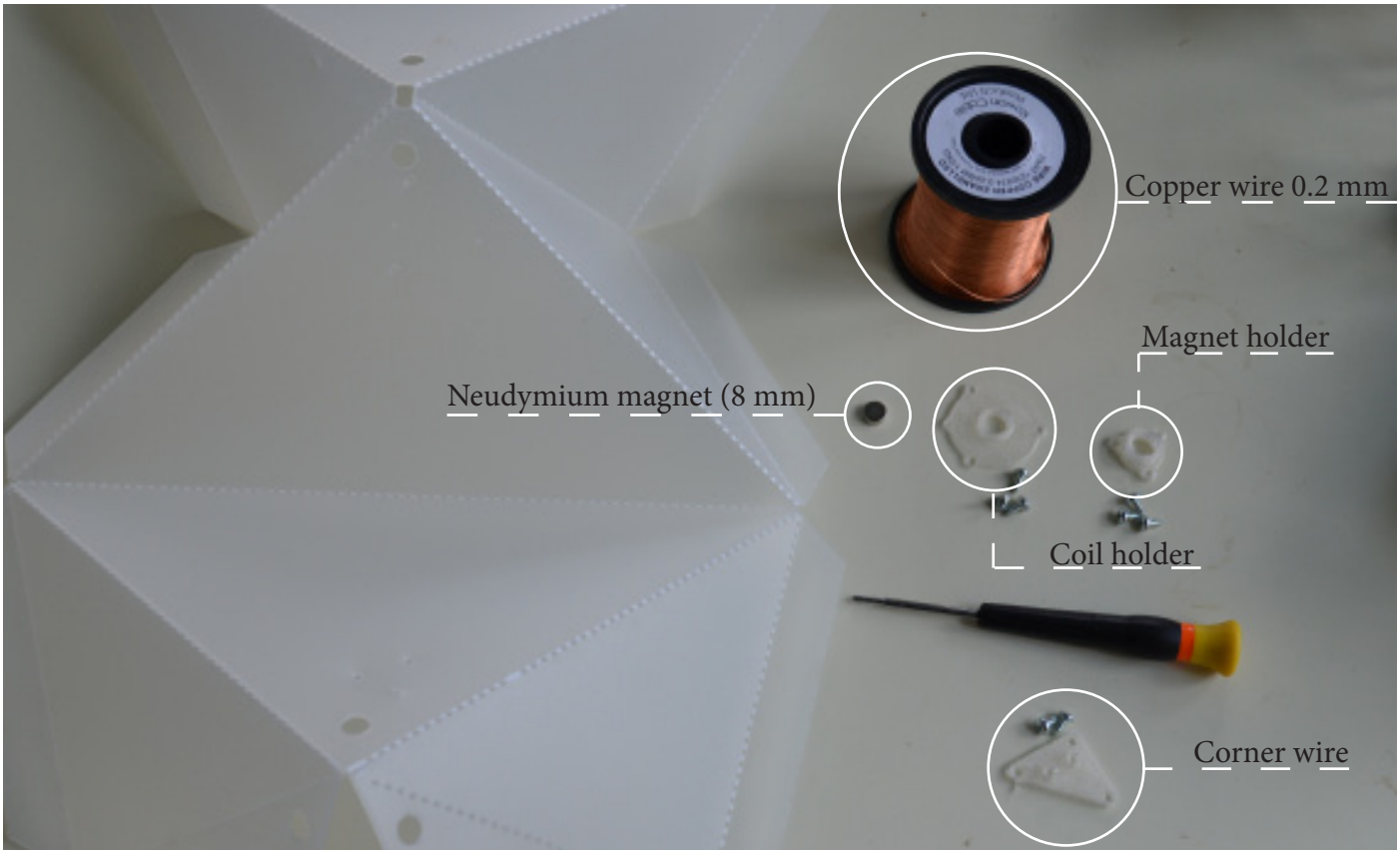
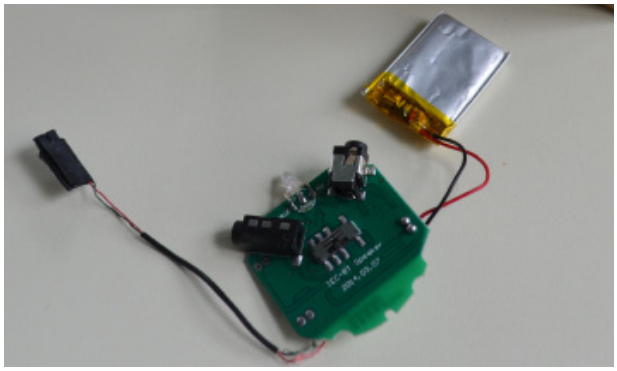
DIY super low-cost speakers and audio transducers

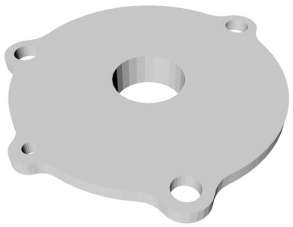
how to



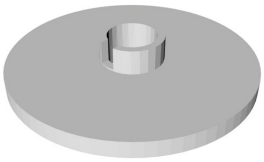


Audio amplifier

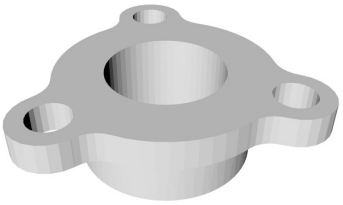
Elements that need to be (3d) printed



Coil holder

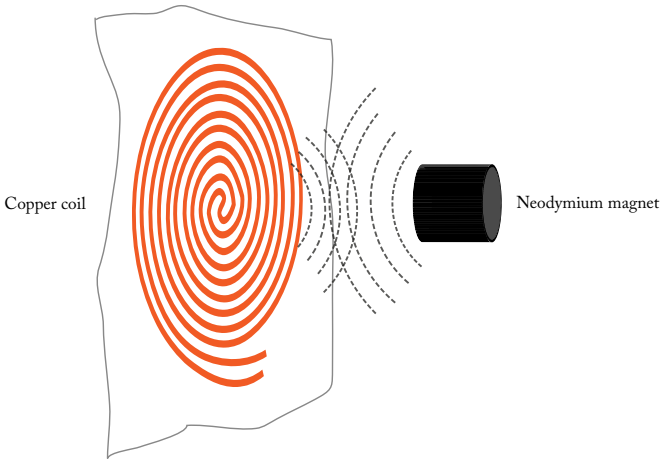


Coil tap



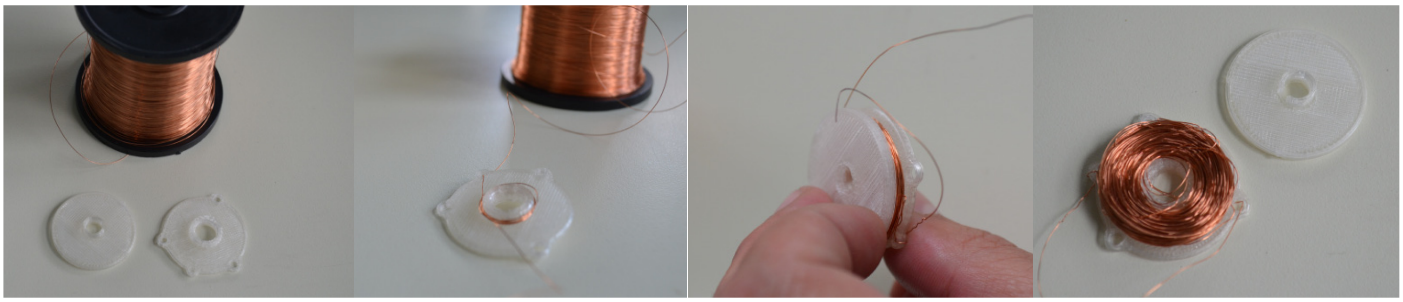
Magnet holder

Standard loudspeaker

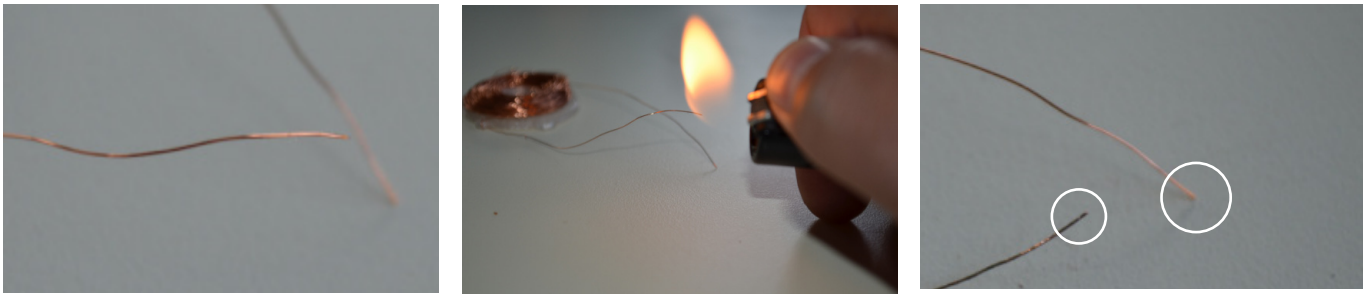


Our (loud)speaker

Making the coil

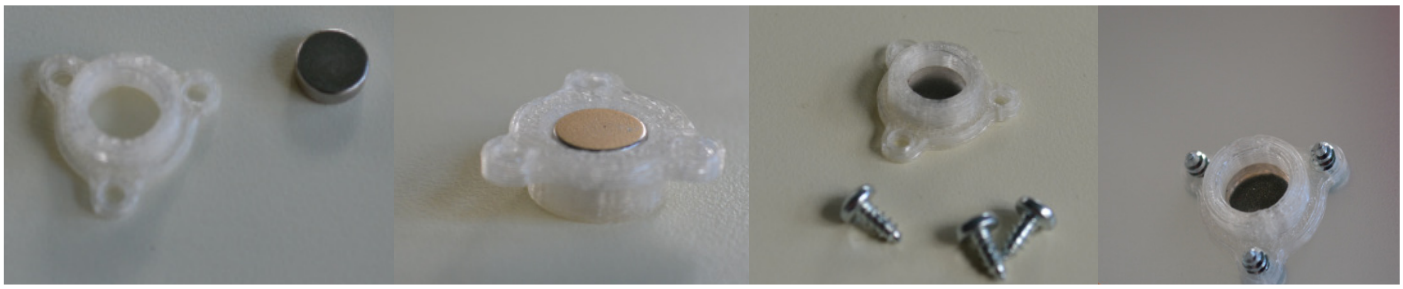


1) Take the coil holder and the coil cap
2) Start to wrap the copper wire around the central part of the holder
3) Attach the holder and the cap together and wrap the wire until it will cover the height
4) Remove the cap



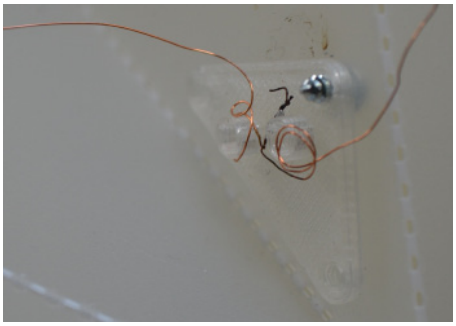
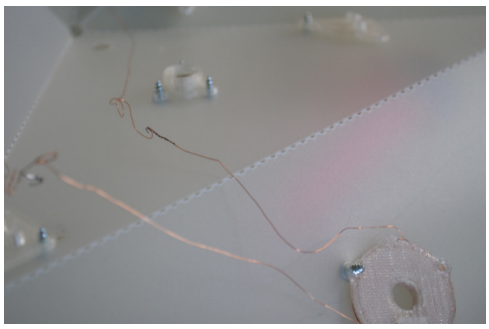
5) Cut the two tips of the wire at the desired lenght (you need to do this for each coil)
6) The copper wire is coated. In order to connect and/or solder it to another wire/element you need to burn it. Then scrap the coat out
7) Now you can connect the two tips to another coil or to the amplifier

The magnet

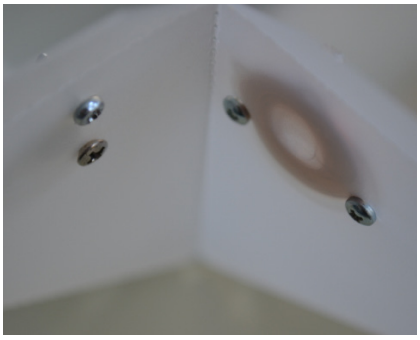
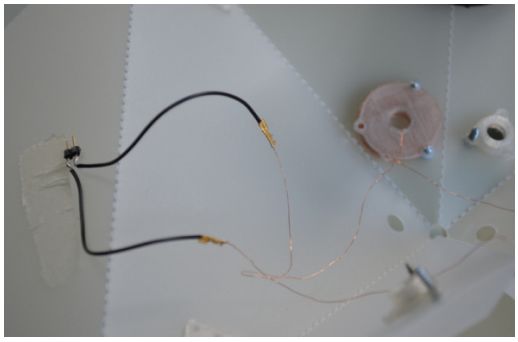
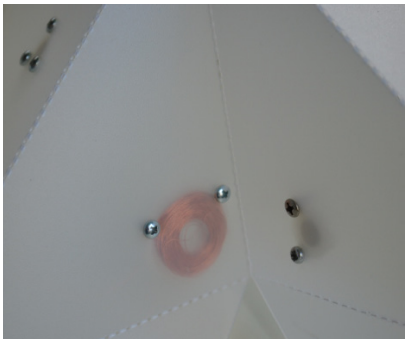


1) Take the magnet holder and the neodymium magnet
2) Insert and fix the magnet inside
3) Then, fix it on the surface with three screws

Wiring

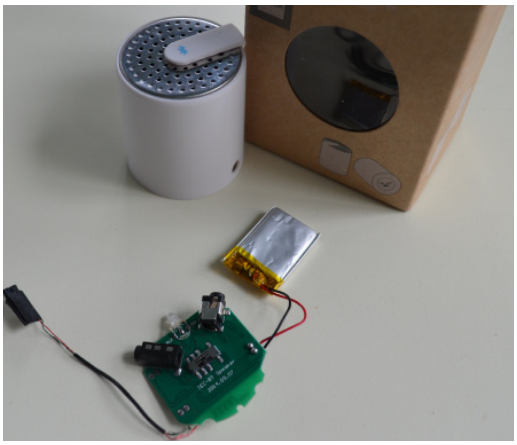




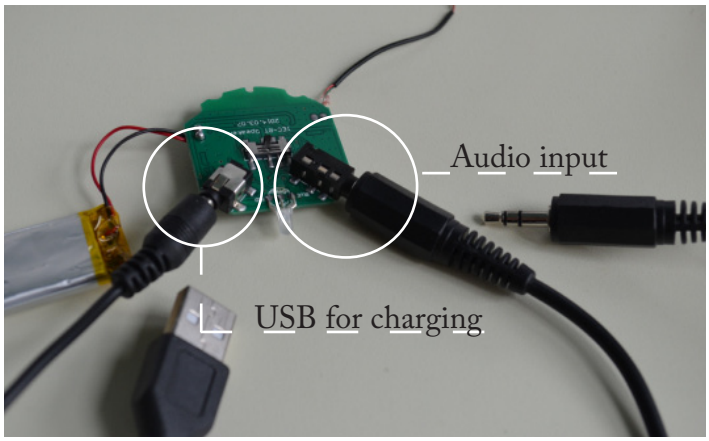
If need to make the wiring a little bit more neat, print this element, fix it on the surface and wrap the wire around it.

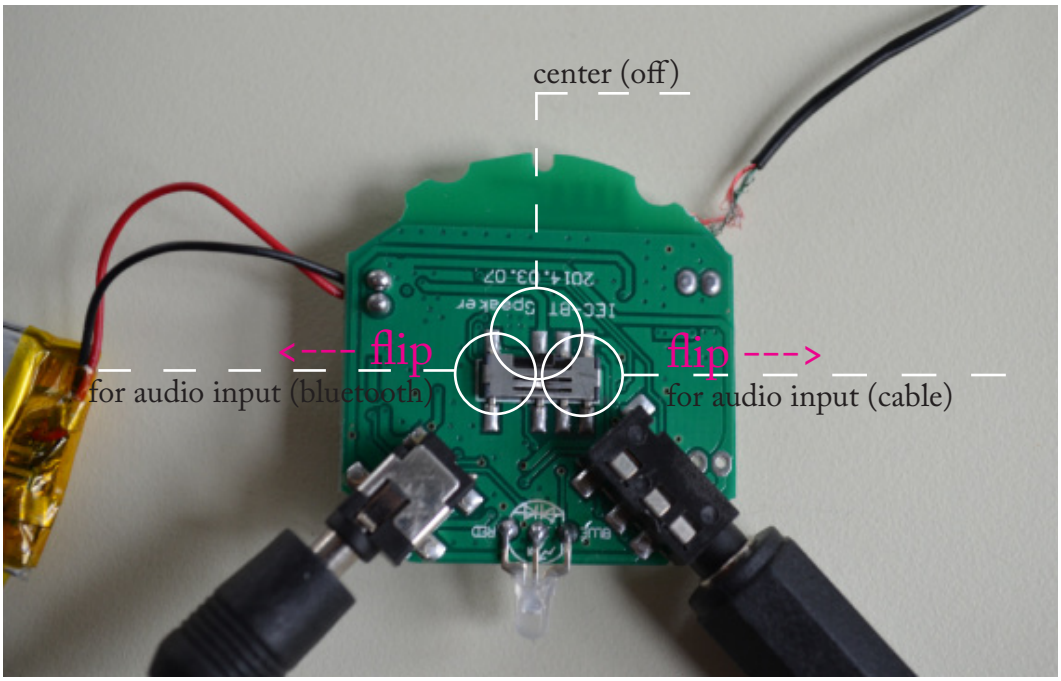
Fix and connect the magnets and the coils. You can connect more coils together (three is a good number) in order to reach a proper impedance (between 4 Ω and 8 Ω).

The audio amplifier

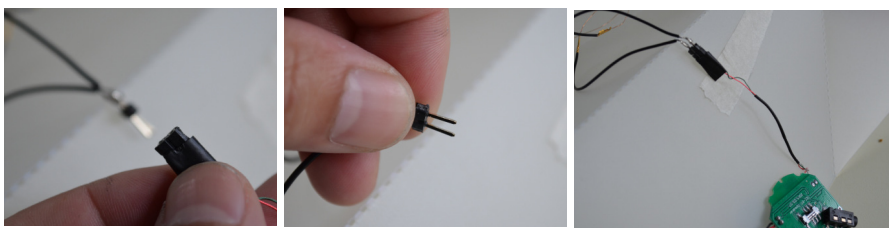




In order to boost the signal you need to add an audio amplifier between the audio input and the speakers.
We found this amplifier from a small and cheap bluetooth speaker from HEMA.
This amplifier can be used with direct audio input (with a 3mm audio jack) or through bluetooth (wireless)



In order to select the desired audio input mode:
- Flip the switch to the mini-jack side if you want a direct audio input (the led will blink)
or
- Flip the switch on the battery side if you want the bluetooth audio input (the led will blink)

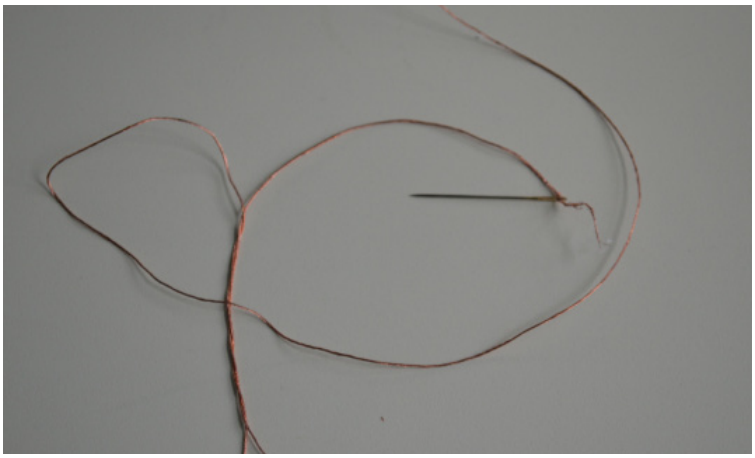


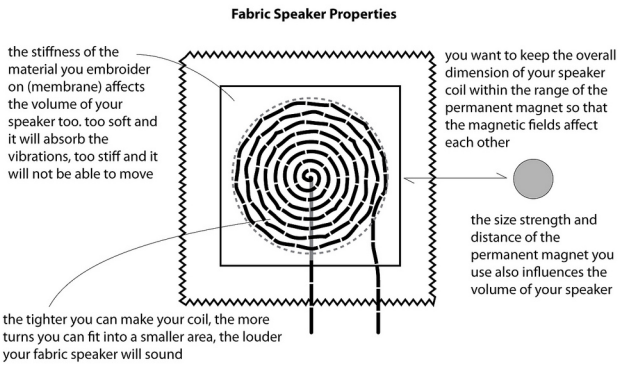
At this point you need to connect the coil(s) to the audio amplifier

Make the coil (conductive thread)

Conductive thread
It's copper based, so you can solder directly on it

Needle





- Sew a spiral in the fabric
- Then check the impedance should be around 4 Ω and 8 Ω. As for the copper wire, you can can coonect more coil together. This is a good way to reach te proper impedance.

Credits

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