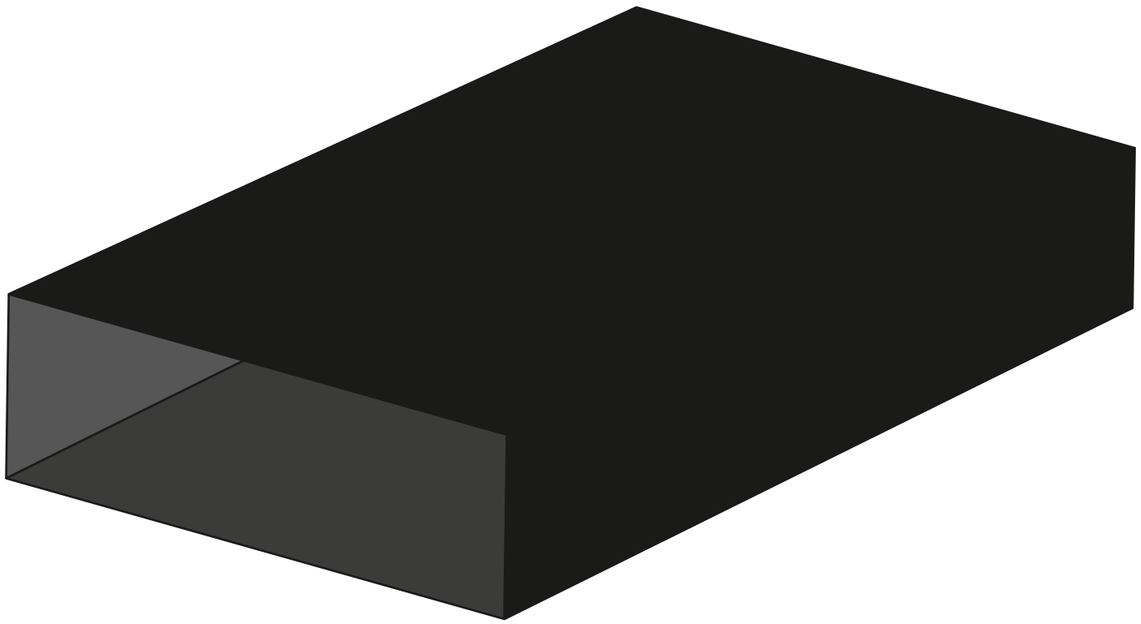
GRAVITATIONAL WAVE RADIO

A project for **kitchen-lab** by >top Schillerpalais, Berlin

The kitchen-radio for the artist-scientist:
Gives the feeling of having a glimpse into a black hole - and listening to space-time being curved at the same moment.

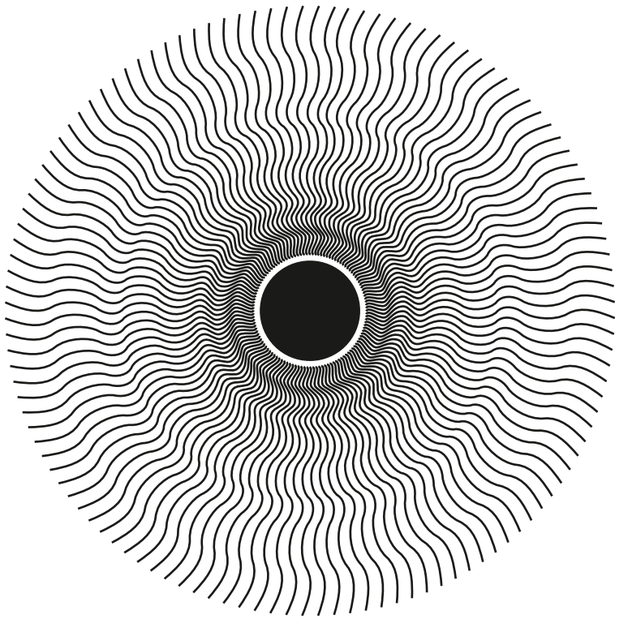


The construction manual of the radio is open-source: Build your own!

The sound of the gravitational wave was published by LIGO.
Please, use only for your private kitchen.

Graviational Wave

RADIO



ON 14 SEPTEMBER 2015 AT 5:51 AM EASTERN DAYLIGHT TIME, LIGO DETECTED IT‘S FIRST GRAVITATIONAL WAVES

Gravitational Waves were predicted by Einstein a hundred years ago. They are an effect of space being curved by gravitation. In September 2015, scientists managed to proove their existance.

Einstein doubted anyone would ever be able to detect them. Reason: gravitation is a comparably weak force. You would need an extremly fine instrument to measure waves of gravitation - and an incident in the universe, that emits enourmous quantities of gravitation.

After decades of development, in 2015, **LIGO (Laser Interferometer Gravitational-Wave Observatory)** in Livingston, Louisiana, and Hanford, Washington, USA, has this extremly fine instrument.

LIGO detected a wave, that was released by the junction of two black holes about 1.3 billion years ago. The black holes had 29 and 36 solar masses. After they united, the new black hole had 62 solar masses. 3 solar masses of energy burst into space.

»About 3 times the mass of the sun was converted into gravitational waves in a fraction of a second – with a peak power output about 50 times that of the whole visible universe.« (source: www.ligo.org, detection-press-release)

Sources:

https://www.ligo.caltech.edu/
https://losc.ligo.org
http://www.black-holes.org
http://www.soundsofspacetime.org
/detection.html

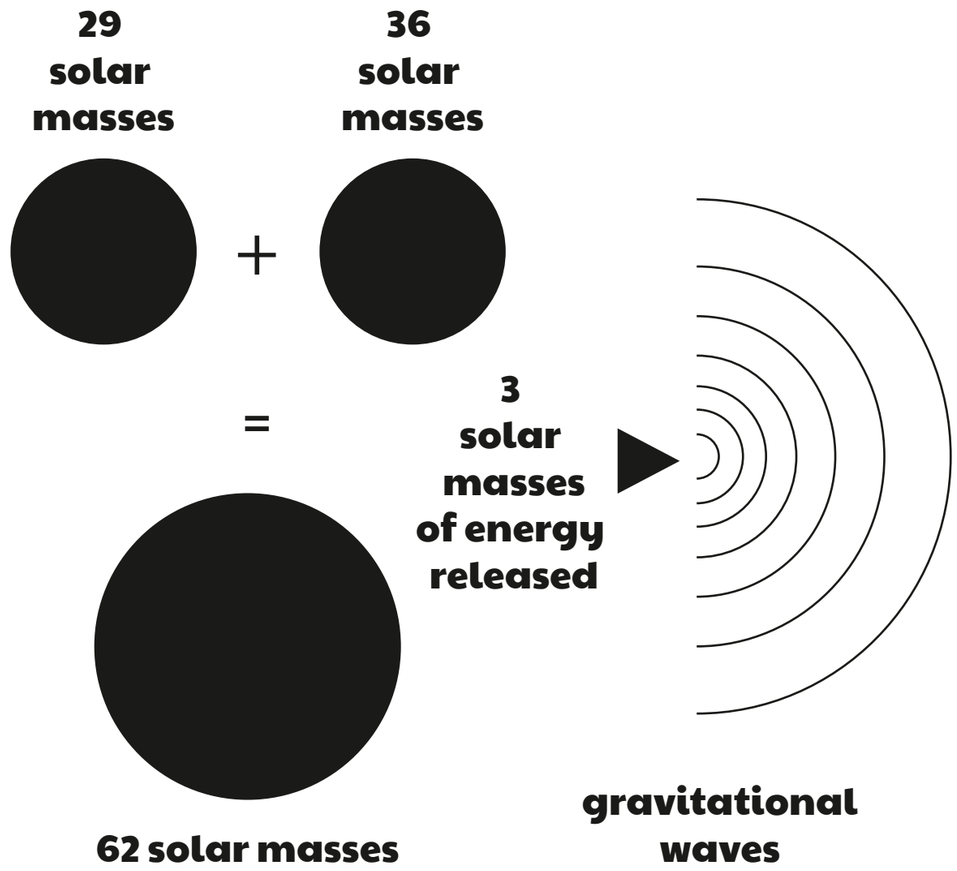
The »sound« of the gravitational wave can be heard an downloaded at:

https://losc.ligo.org/events/GW150914/

Please note: Gravitational waves are not real sound. The sound is only an interpretation of the signal, published by LIGO. But used in the construction described here - the so-called »chirp« makes it into a **Gravitational Wave RADIO.**

Ricarda Wallhäuser, 2016

TWO BLACK HOLES BECOME ONE ...



Some key facts:

LIGO (Laser Interferometer Gravitational-Wave Observatory) made the first observation of two black holes merging together.

The black holes had masses of 29 and 36 times the mass of the sun. They merged to form a single black hole with a mass of 62 solar masses.

An energy equivalent to the mass of three suns was released by the inspiral and merger of these black holes.

This energy release happened over a time period of two-tenths of a second (0.2 sec).

During that brief moment, this system released energy at a rate that was 50 times the energy output rate of all the stars in the entire observable universe. This merger of two black holes happened 1.3 billion years ago.

Source: www.soundsofspacetime.org

The sound-file was published by: http://www.ligo.org
Please only use for your private kitchen or contact LIGO for more.

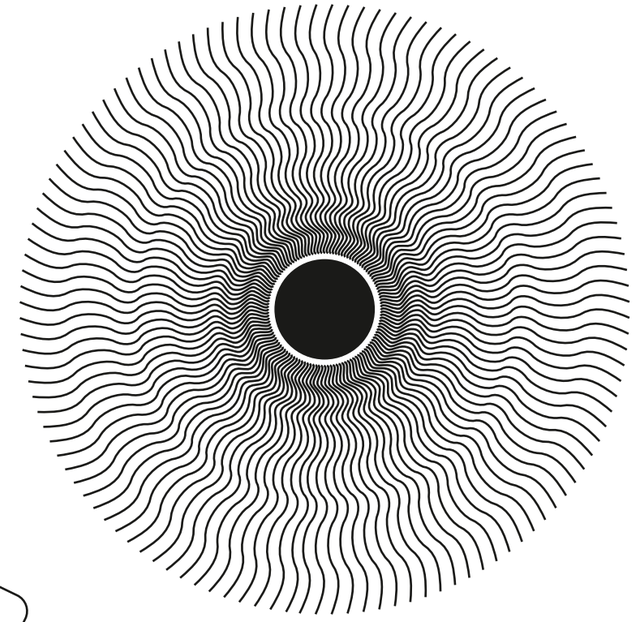
BUILD YOUR OWN RADIO ...

Material: ▭ cardboard, 3 mm thickness

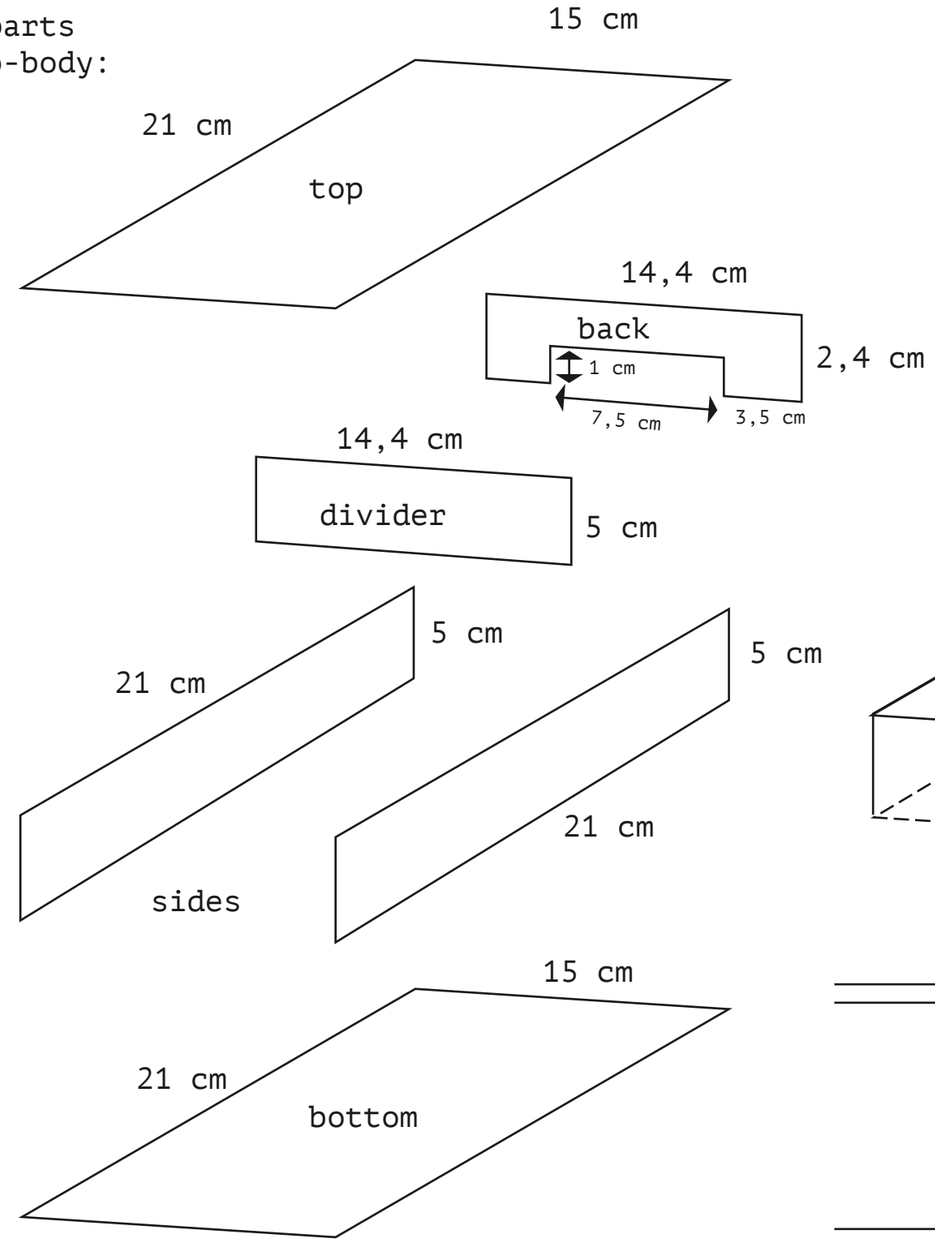
Tools:
- cutter
- ruler
- cutting mat
- glue
- steel ruler

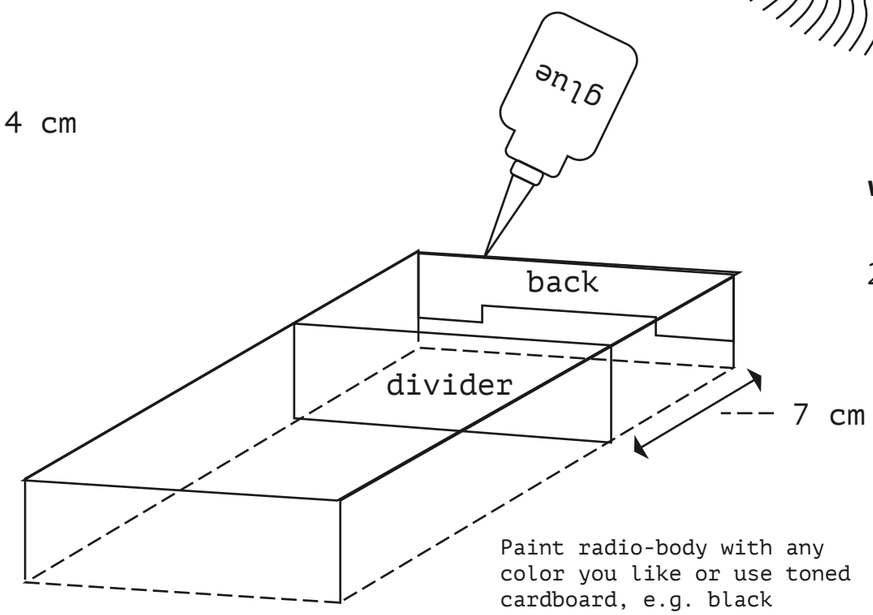
Technic:
- mp3-player
- mini-loud-speaker

Notes: You need to work with a sharp cutter - be careful! This instruction is not for children!



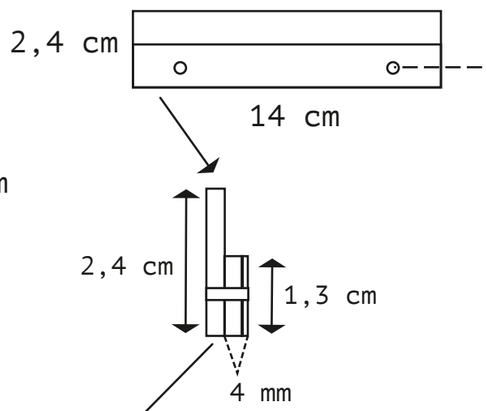
Cut out the parts for the radio-body:

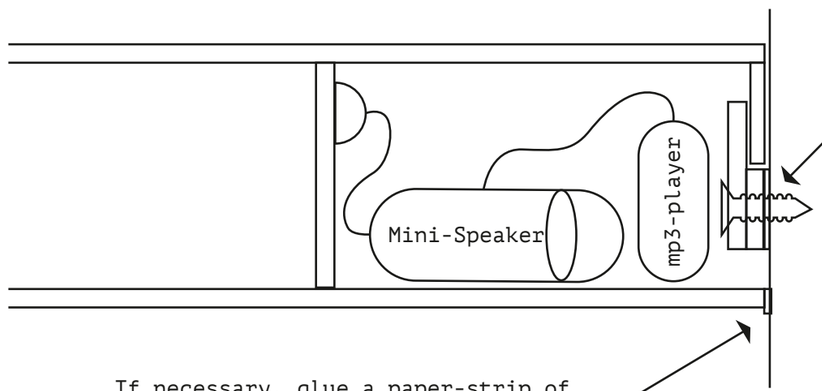




Paint radio-body with any color you like or use toned cardboard, e.g. black (I recommend).

wall-holder





If necessary, glue a paper-strip of 1 mm thickness here to prevent tipping.

Fix wall-holder with two screws to the wall.

Place mp3-player and mini-speaker inside radio.

Start the sound.

Hang the radio-body carefully onto the wall-holder.