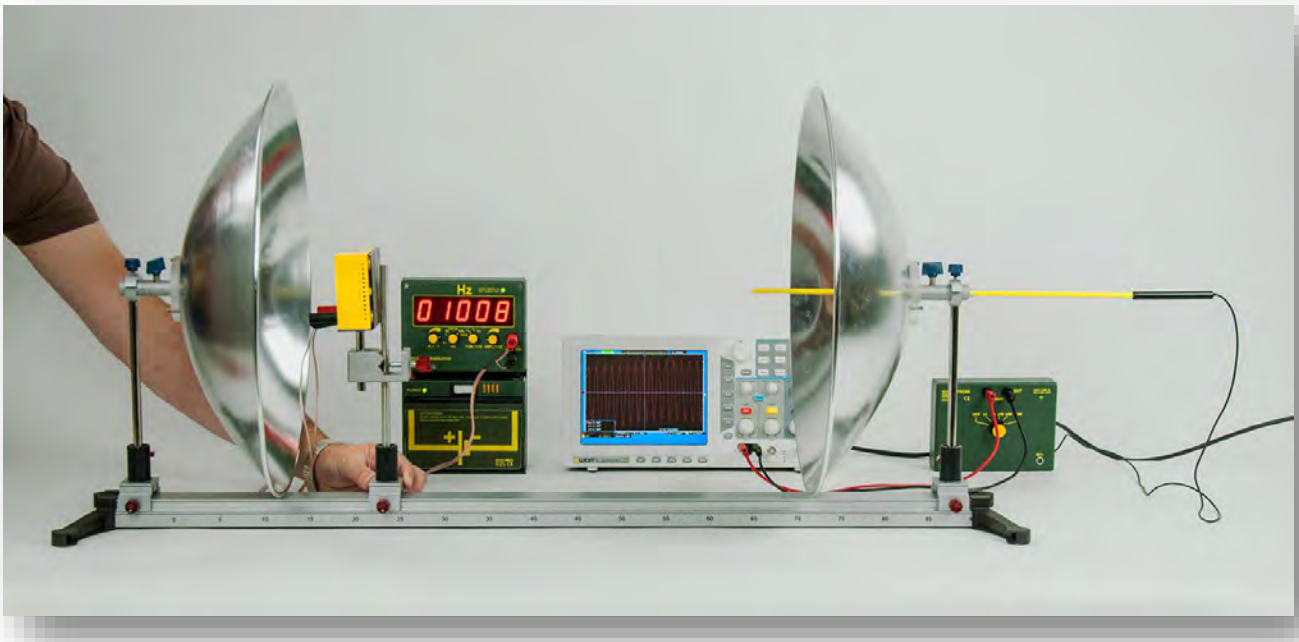
REFLECTION OF SOUND ON A CONCAVE MIRROR 1

AKD 05.06



Material:

Item Code	Qty	Description
DS101-3B	1	Track and Optical bench, demo, L=1000 mm
DW340-2M	1	Measuring microphone "inno"
DE751-3A	1	Oscilloscope, two-channel, 30 MHz, with VGA
DT710-1P	2	Parabolic mirror, D=460 mm
DT710-2H	2	Holder for parabolic mirror, on support
DS093-04	3	Sliding saddle "Sepp", H=40 mm
MB240-1LS	1	MBC Loudspeaker with nose
DS617-1H	1	Holder for MBCs "compact"
P7240-1C	1	Support rod, round, L=250 mm, D=10 mm
DS095-3K	1	Bosshead cross-pattern, demo 03
P3120-4A	1	L-shaped assembly platform
P3120-1G	1	Function generator with digital display "inno"
P3120-1B	1	Rechargeable battery, "inno", 6V/10 Ah
DG520-1E	1	Connecting lead, double, 100 cm
	2	Connecting lead

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Goal:
Sound can be reflected like light. The optimum setting of the sound source on the concave mirror is to be found.

Setup:
Sliding saddles are fixed to the optical bench at both ends. The concave mirrors are fixed in the sliding saddles with their holders. Make sure that the concave mirrors do not rest on the optical bench. A support rod is inserted into the third sliding saddle. A bosshead is attached to it, which holds the holder for building blocks. The sliding saddle is placed 40 cm away from the mirror on the optical bench and the bosshead is adjusted so that the MBCs holder is centered as much as possible in the parabolic mirror. The function generator is plugged into the battery and connected to the loudspeaker with the double cable. The loudspeaker is placed on the holder. The oscilloscope is connected to the measuring microphone. The microphone is inserted from behind into the mirror which is located behind the loudspeaker. The oscilloscope is switched on and the measuring range 50 mV, 1 ms is set. An amplification factor of 30 is set on the microphone.

Experiment:
A frequency of about 1000 Hz is set on the frequency generator. Now move the loudspeaker back and forth on the optical bench. The focal point of the mirror is to be found. This can be recognized by the fact that a maximum amplitude is reached on the oscilloscope.

Result:
The focal point can be found at about 19 cm.

Note:
Care should be taken not to get too close to the microphone with the speaker.
The focal point determined in this way may not be exact, which can lead to the maximum amplitude being found in a two centimeter interval around the mentioned value.
The second mirror in this experiment serves only to fix the microphone and to define a certain space for the experiment. Therefore, it is not important that the microphone is located in the focal point.