Formation of images by lenses and mirrors
Images from a concave mirror

Real images from a concave mirror

Optical bench, S1 profile

Experiment objective

1. Investigate the images formed by a concave mirror for various object distances

Setup

Apparatus

1 Optical bench, S1 profile, 1m	460 310
2 Clamp riders with fixing column	460 313
2 Optical riders with clamp, 45/65	460 311
1 Lamp housing with cable	450 60
1 Set of 2 bulbs, 6 V/30 W, E14	450 511
1 Aspherical condenser with diaphragm holder	460 20
1 Diaphragm and slide holder, on rod	459 33
1 Pair of objects for investigating images	461 66
1 Convex-concave mirror, mounted on rod	459 71
1 Screen, translucent	441 53
1 Transformer, 6/12 V	521 210

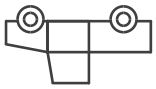
Procedure

- Place the car object (object *A*) into the diaphragm and slide holder such that it appears to be upright and moving towards the right as seen from the optical lamp.
- Set up the concave mirror (f = 10 cm) at a distance a = 13 cm behind the diaphragm and slide holder and turn it on its optical rider by about 15° in the direction of the screen.
- Position the screen in such a way that a sharp and undistorted image of the car *B* can be seen.
- Compare the position and size of the image *B* with the corresponding values for the object *A*.
- Set up the concave mirror at distances a = 20 cm and a = 26 cm behind the diaphragm and slide holder and repeat the experiment for both these distances.

Remark:

In order to make a qualitative comparison between the object *A* and the image *B*, the object can be copied onto paper and held alongside the corresponding image *B*.

Observation

Object *A*	Object distance a	Image *B*
	$f < a < 2f$	
	$a = 2f$	
	$a > 2f$	

Evaluation

An image can be formed on a screen with the help of a concave mirror.

The image *B* which can be seen on the screen is upside-down and back-to-front.

If the object is between one and two times the focal length distant ($f < a < 2f$), the image will be larger than the object itself.

If the object is at exactly twice the focal length ($a = 2f$), the image will be the same size as the object itself.

If the object is at more than twice the focal length ($a > 2f$), the image will be smaller than the object itself.

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