Image generation by a divergent lens

Principle and equipment

Principle

Using parallel and midpoint beams, demonstrate the formation of images by a divergent lens; determine the properties of these images.

Equipment

Position No.	Material	Order No.	Quantity
1	Demo Physics board with stand	02150-00	1
2	PHYWE Multitap transformer, DC: 2/4/6/8/10/12 V, 5 A / AC: 2/4/6/8/10/12/14 V, 5 A	13533-93	1
3	Lamp,halogen,mag.held,12V/50W	08270-20	1
4	Light box 12V/20W,w.magn.base	09804-00	1
5	Opt. block,planoconcave,magn.held	08270-03	1
Additional material:			
	Ruler		
	Water-soluble white board pen		

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Set-up and procedure

- Draw the optical axis on the magnet optics panel.
- Position the concave lens model (optical block): the vertex should be located on a co-ordinate point.
- Label *F* (*f*=- 300 mm).
- Draw in a 50-mm-high object arrows (e.g. with g_1 = 120 mm and g_2 = 200 mm; cf. Fig. 1).
- Place the magnet-held with a one-slit diaphragm lamp on the magnet optics panel and allow a parallel beam to pass through the arrow heads.
- Using the light box generate a midpoint beam through an arrow head (Fig. 1).
- Draw the paths of the beams as completely as possible and also the backward extensions of the refracted parallel beams (dashed line).
- Repeat this procedure for a second object arrow. (If necessary, remove the magnet-held lamp to save space.)
- Remove the lens and the lamps.
- Complete the light paths and draw in the image arrows.

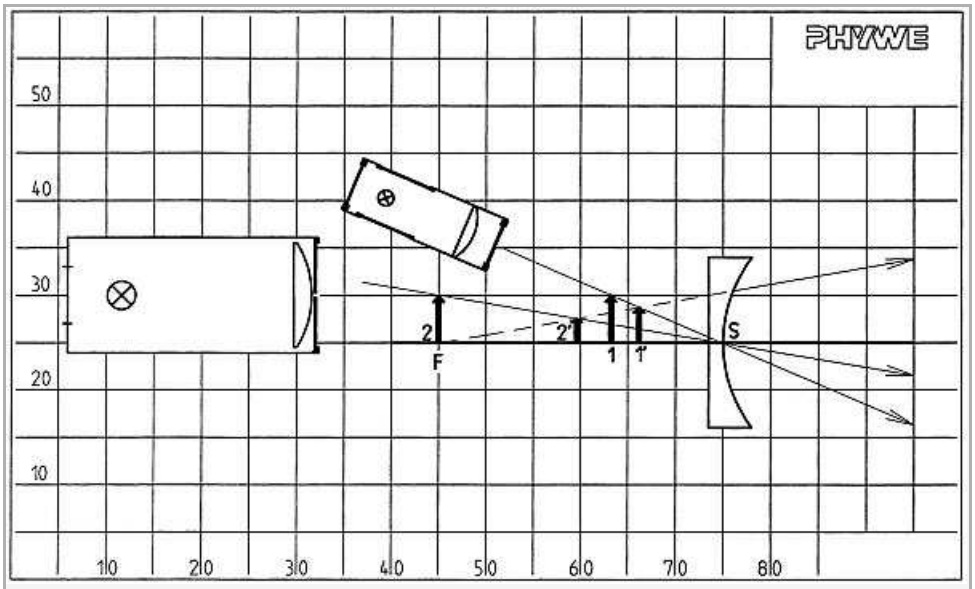

Fig. 1

Observation and evaluation

Divergent lenses always generate upright, reduced, virtual images. The farther the object is from the lens, the smaller the images. All generated images lie within the single focal length.

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