

TWO-BEAM INTERFERENCE

Mod. F-INT/EV

DESCRIPTION

One of the commonest devices used to observe interference phenomena is Fresnel biprism.

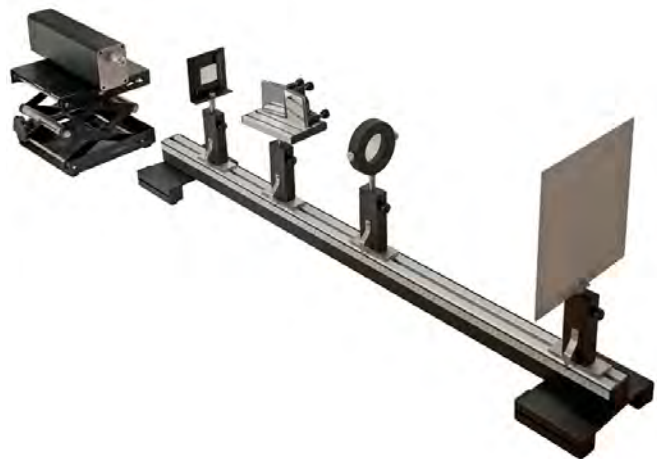
The light beam emitted by a punctiform light source is refracted by this biprism, thus two virtual and coherent images of the source are obtained. The light coming from these two images is superimposed in the interference region where the interference figure can be seen.

On the contrary Fresnel mirror consists of two plane mirrors slightly bent to each other. A punctiform light source reflected by Fresnel mirror, is shown as two near virtual light sources interfering with each other coherently. This device enables to overcome the troubles met in carrying out interference phenomena for the incoherence characterizing two different light sources. In fact, reflecting a single light source will enable to obtain two coherent light sources. The light reflected by Fresnel mirror is a device for obtaining parallel interference fringes. Lloyd's mirror consists of a light source and of a unique mirror (generally non metallic). In this case, the two sources emitting the interfering light beams are the slot (real object) and its image reflected by the mirror. The characteristic interference fringes can also be observed in this case too.

This system consists of an optical bench where proper accessories are mounted. Accessories are mounted on the same bench and they are positioned accurately.

TRAINING PROGRAM

- Realization of two virtual coherent light sources by reflection of a punctiform light source on Fresnel mirror
- Observing the interference between two virtual light sources
- Measurement of the distance between two interference fringes
- Projection of virtual light sources on a screen
- Measurement of the distance between the images output by projection
- Determining the wavelength of laser beam with the distance between interference fringes, the distance between the projections of virtual light sources on the screen, and with the geometrical dimensions of the measuring system
- Experiment of Fresnel mirror with laser
- Experiment of Lloyd's mirror with laser
- Experiment of Fresnel biprism with laser



TECHNICAL SPECIFICATIONS

- Fresnel biprism on a support
dimensions 30 x 40 mm, Prismatic Angle 178°
- Optical bench graduated scale, length 1 m
- He-Ne Laser: wavelength 632.8 nm; power > 2 mW;
dimensions 40 mm x 250 mm (diameter x length);
external dimensions: 300 x 62 x 82 mm
- Adjustable height support for the laser unit
- 1 convex lens \varnothing 50 mm; FL 100 mm
- Microscopic lens 10X
- 2 Fresnel mirrors
- 2 adjustables frames for mirrors
- Vernier caliper
- Measuring tape, 2 m
- Screen

SUPPLIED WITH
THEORETICAL - EXPERIMENTAL
HANDBOOK

