



General Aim

- To study the interference and diffraction phenomena for laser light

Method

Young's Experimental Procedure

Learning Objectives (ILOs)

- Set up an experiment to study the interference and diffraction phenomena for monochromatic light.
- Explain the resulting interference and diffraction spectra.
- Use the experiment to determine the width of a human hair.

Theoretical Background/Context

Monochromatic light (Laser) when passed through a screen with two (one) slits produces an interference (diffraction) pattern on a distant screen. Analyzing the observed pattern shows that equidistant bright and dark fringes are obtained on the observing screen. Also, different patterns could be obtained by using slits of different shapes and /or using ordinary light source instead of the laser source.

Principle of Work

Following Young's arrangement for the double slits experiment, we obtain the interference and diffraction patterns of monochromatic light (laser) and by measuring the distance of consecutive fringes vs the order of the fringes, we could obtain the wavelength of the used laser light, and determine the width of the very thin object in the form of a human hair.