

Fresnel's Biprism.

(1) It is an optical device of producing interference of light Fresnel's Biprism is made by joining base to base two thin prism (A_1BC and A_2BC as shown in the figure) of very small angle or by grinding a thick glass plate.

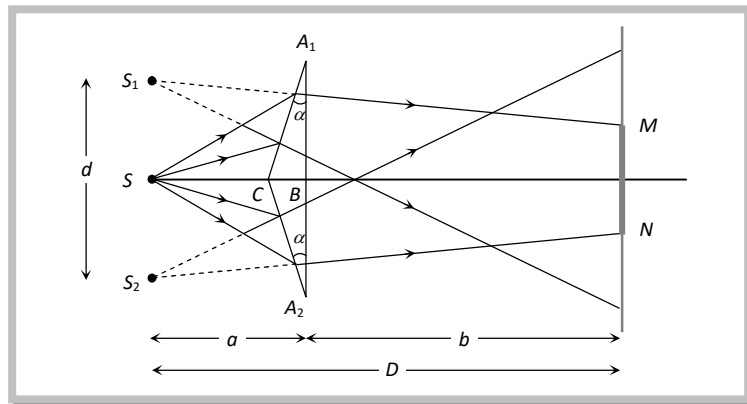
(2) Acute angle of prism is about $1/20^\circ$ and obtuse angle of prism is about 179° .

(3) When a monochromatic light source is kept in front of Biprism two coherent virtual source S_1 and S_2 are produced.

(4) Interference fringes are found on the screen (in the MN region) placed behind the Biprism interference fringes are formed in the limited region which can be observed with the help eye piece.

(5) Fringe width is measured by a micrometer attached to the eye piece. Fringes are of equal

width and its value is $\beta = \frac{\lambda D}{d} \Rightarrow \lambda = \frac{\beta d}{D}$



Let the separation between S_1 and S_2 be d and the distance of slits and the screen from the Biprism be a and b respectively i.e. $D = (a + b)$. If angle of prism is α and refractive index is μ then $d = 2a(\mu - 1)\alpha$

$$\therefore \lambda = \frac{\beta[2a(\mu - 1)\alpha]}{(a + b)} \Rightarrow \beta = \frac{(a + b)\lambda}{2a(\mu - 1)\alpha}$$