Fresnel's Bi-prism

It is an optical device to obtain two coherent sources by refraction of light.

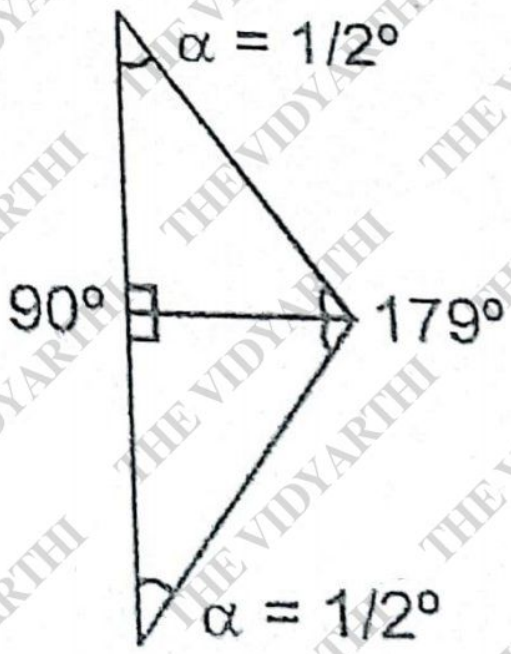
In each prism one angle is right angle and refracting angle is ½°.

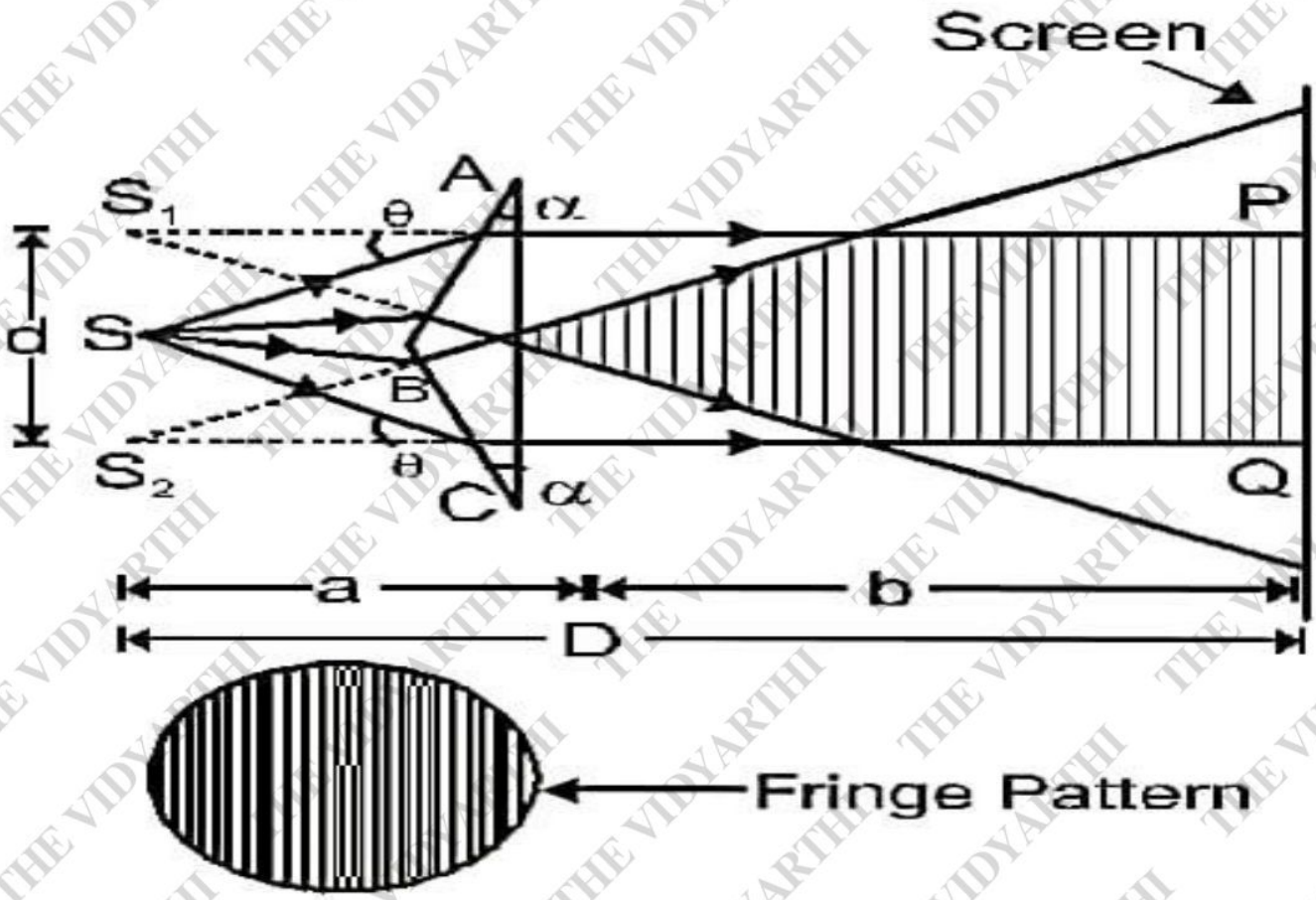
The distance between the source and the screen (eyepiece) is D = a + b,

Where

a= distance between the source and Bi-prism.

b = distance between the Bi-prism and eyepiece.





We know that –

Angle of deviation $\theta = \alpha(\mu-1)$

So by the diagram –

$\tan\theta = d/2a$

If angles are too small then $\tan\theta = \theta$

$\theta = d/2a$

$d = 2a\theta$

$d = 2a\alpha(\mu-1)$

$D = a+b$

$\beta = \lambda D/d$ (β= fringe width)

$\lambda = \beta d/D$

$\lambda = \beta 2a\alpha(\mu-1)/a+b$

$\lambda = 2a\alpha(\mu-1)/a+b$ (wavelength of the light)