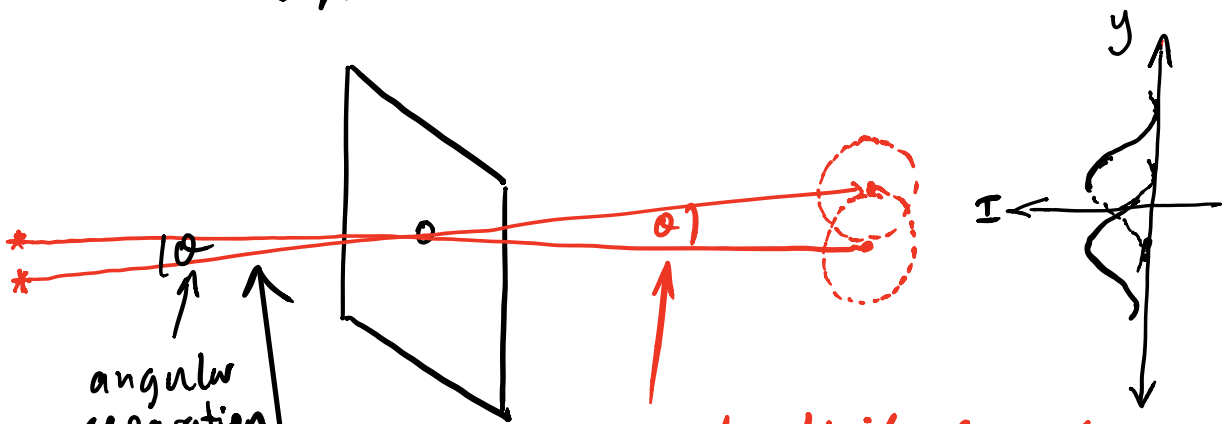
Limit of Resolution. (Rayleigh Criterion)

2 sources of light are said to be resolved when the central maximum of one source overlaps the minimum of the other



$$\theta_{limit} = 1.22 \frac{\lambda}{b}$$

↑ is the size of the hole.

Note: the angular separation at the limit of resolution is the same as the angular limit of resolution

Solving limit of Resolution Problems

Step. 1. Determine the limit of resolution.

$$\theta_{limit} = 1.22 \frac{\lambda}{b}$$

Step. 2. Determine the angular separation between the 2 sources by dividing the vertical separation by their horizontal distance to the screen.

Step. 3. Compare the 2 angles.

If $\theta_{separation} = \theta_{limit}$ then the 2 sources are at the limit of res.

If $\theta_{separation} > \theta_{limit}$ then the 2 sources can be resolved.

If $\theta_{separation} < \theta_{limit}$ then the 2 sources cannot be resolved.

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