Answer on Question #63726, Physics / Optics

Question:

In a biprism expt., the distance of 20th bright band from centre of interference pattern is 8mm. Calculate distance of 30th bright band from centre.

Solution:

Here is the scheme for this experiment:



The source of light C is a narrow slit. The angle α is very small and the interference occurs from two imaginary sources, C' and C".

Let *h* be the distance between imaginary sources, L — the distance from the slit to the screen, X — the distance of the nth bright band from the centre, and λ — wavelength of the light.

These parameters connected by this relation:

For 20th bright band – . For 30th bright band – .

We may express unknown parameters this way: - - , and insert it into second formula:

mm,

Answer: