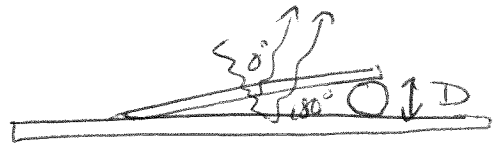


Ch.3 Prob. 76

$$D = 29.45 \mu\text{m}$$

$$\lambda = 589 \text{ nm}$$



Find The number of bright fringes.

since one surface gives a shift of 0° & the other 180° , bright fringes occur when

$$\Delta l = (m + \frac{1}{2})\lambda$$

$$\text{but } \Delta l = 2nt$$

In this case $n=1.00$ since the thin layer is air

$$\text{so } (m + \frac{1}{2})\lambda = 2t$$

solve for m

$$(m + \frac{1}{2})\lambda = \frac{2t}{n}$$

$$m = \frac{2t}{\lambda} - \frac{1}{2}$$

$$m = \frac{2(29.45 \times 10^{-6} \text{ m})}{589 \times 10^{-9} \text{ m}} - \frac{1}{2}$$

$$m = 100 - \frac{1}{2}$$

$$= 99.5$$

99 fringes occur if we start our count at 1. However, m could have a value of 0.

Therefore, there are 100 fringes