

Non Reflective Coatings



π phase shift at each reflection \therefore no relative π phase shift.

Constructive interference $2t = m\lambda$

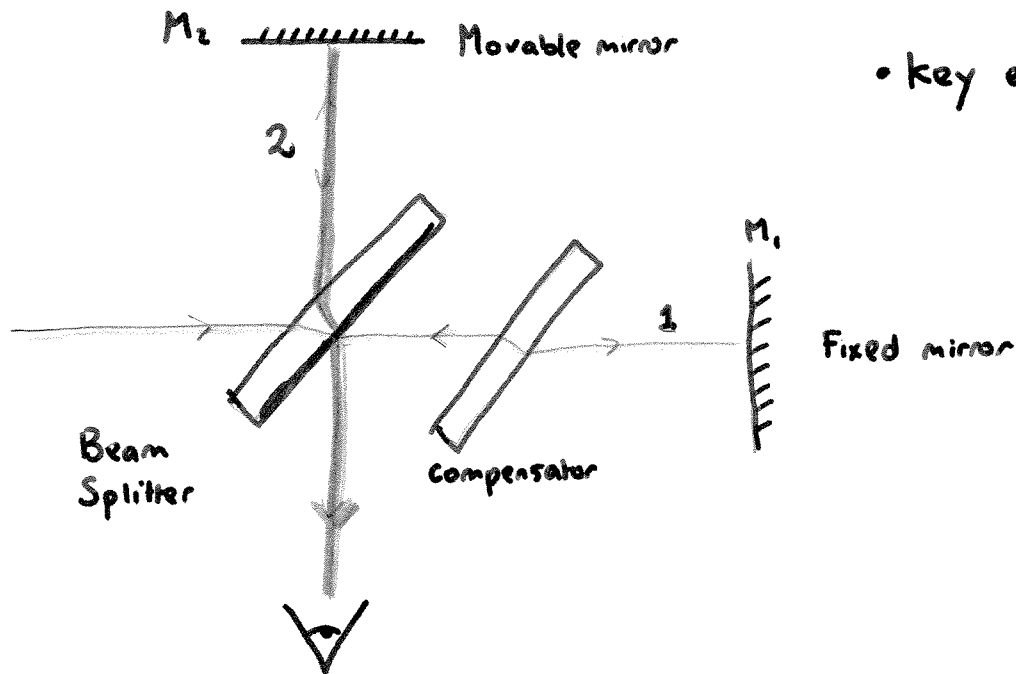
Destructive interference $2t = (m + \frac{1}{2})\lambda$

$$2t = \frac{1}{2} \lambda \quad \Rightarrow \quad t = \frac{1}{4} \lambda \quad \text{no reflection.}$$

e.g. coating MgF_2 $n = 1.38$ $\lambda_0 = 550 \text{ nm}$

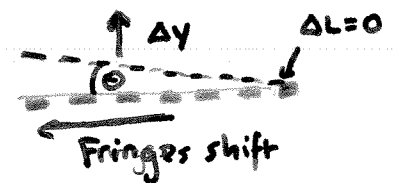
$$t = \frac{1}{4} \left(\frac{\lambda_0}{n} \right) = \frac{1}{4} \frac{550}{1.38} = \underline{\underline{400 \text{ nm}}}$$

MICHELSON INTERFEROMETER

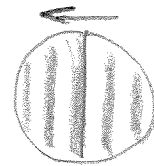


• key expt in relativity.

If $L_1 = L_2$, virtual image of M_1 coincides with M_2 .



$\Delta y = \frac{\lambda}{2}$ fringes shift to left by
fringe separation



m fringes move

$\Delta y = m \frac{\lambda}{2} \Rightarrow \lambda = \frac{\Delta y}{m} \cdot 2$ accurate wavelength measurement.

Michelson Morley Expt : $\Delta L = \pm 2L \frac{v^2}{c^2}$ if there is an "ether"

— NOT OBSERVED .