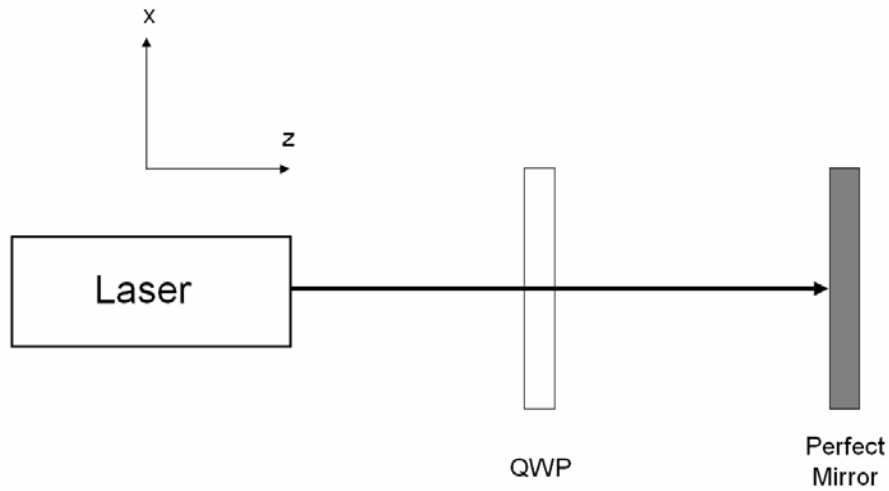


BI-C1) A collimated laser beam ($\lambda = 500\text{nm}$) transmits through a quarter-wave plate (QWP), as shown below. $\hat{k} = \hat{z}$ and $\hat{a} = \hat{x}$ for the laser beam before it passes through the QWP. The fast axis of the QWP is rotated 45 degrees around the z axis. The surface of the mirror is perpendicular to \hat{k} .

a.) Determine the visibility of fringes, if present, in the region between the QWP and the mirror.



b.) If fringes are present, what is the minimum fringe spacing?

BI-C2) Derive the equation for fringe surfaces resulting from interference between two point sources. The equation is: $\frac{y^2}{y_m^2} - \frac{x^2 + z^2}{b^2} = 1$, where $b^2 = (d/2)^2 - y_m^2$. d is the separation of the sources and y_m is the y-axis intercept.