

\*. (4 points) Unpolarized light travelling in the  $z$ -direction is incident upon three polaroid filters with pass directions given by  $+35^\circ$ ,  $-40^\circ$ , and  $+25^\circ$  counter-clockwise from  $+x$ . Determine the fraction of the original light which passes through the three filters.



$$I_1 = \frac{1}{2} I_0$$

$$I_2 = I_1 \cos^2 75^\circ \leftarrow 0.06699$$

$$I_3 = I_2 \cos^2 65^\circ \leftarrow 0.17861$$

$$\Rightarrow I_3 = 0.005982 I_0$$