

59. Eq. 23-38 gives $U = -\vec{p} \cdot \vec{E} = -pE \cos \theta$. We note that $\theta_i = 110^\circ$ and $\theta_f = 70^\circ$. Therefore,

$$\Delta U = -pE (\cos 70^\circ - \cos 110^\circ) = -3.3 \times 10^{-21} \text{ J} .$$