

38. The  $(1 - \cos \phi)$  factor in Eq. 39-11 is largest when  $\phi = 180^\circ$ . Thus, using Table 38-3, we obtain

$$\Delta\lambda_{\max} = \frac{hc}{m_p c^2} (1 - \cos 180^\circ) = \frac{1240 \text{ MeV}\cdot\text{fm}}{938 \text{ MeV}} (1 - (-1)) = 2.6 \text{ fm}$$

where we have extended the result of problem 3 somewhat by noting that  $hc = 1240 \text{ eV}\cdot\text{nm}$  can equivalently be written as  $1240 \text{ MeV}\cdot\text{fm}$ .