

75. The uncertainty in the momentum is $\Delta p = m \Delta v = (0.50 \text{ kg})(1.0 \text{ m/s}) = 0.50 \text{ kg}\cdot\text{m/s}$, where Δv is the uncertainty in the velocity. Solving the uncertainty relationship $\Delta x \Delta p \geq \hbar$ for the minimum uncertainty in the coordinate x , we obtain

$$\Delta x = \frac{\hbar}{\Delta p} = \frac{0.60 \text{ J}\cdot\text{s}}{2\pi(0.50 \text{ kg}\cdot\text{m/s})} = 0.19 \text{ m} .$$