

51. We start with the result of Exercise 49: $\lambda = h/\sqrt{2mK}$. Replacing K with eV , where V is the accelerating potential and e is the fundamental charge, we obtain

$$\begin{aligned}\lambda &= \frac{h}{\sqrt{2meV}} = \frac{6.626 \times 10^{-34} \text{ J}\cdot\text{s}}{\sqrt{2(9.109 \times 10^{-31} \text{ kg})(1.602 \times 10^{-19} \text{ C})(25.0 \times 10^3 \text{ V})}} \\ &= 7.75 \times 10^{-12} \text{ m} = 7.75 \text{ pm} .\end{aligned}$$