

73. (a) Following Sample Problem 43-10, we compute

$$\Delta E \approx \frac{\hbar}{t_{\text{avg}}} = \frac{(4.14 \times 10^{-15} \text{ eV} \cdot \text{fs})/2\pi}{1.0 \times 10^{-22} \text{ s}} = 6.6 \times 10^6 \text{ eV} .$$

(b) In order to fully distribute the energy in a fairly large nucleus, and create a “compound nucleus” equilibrium configuration, about 10^{-15} s is typically required. A reaction state that exists no more than about 10^{-22} s does not qualify as a compound nucleus.