From S.E. $[H]\Psi = i\hbar \frac{\partial \Psi}{\partial t}$

$$\langle E \rangle = \langle K \rangle + \langle U \rangle = \int_{-\infty}^{+\infty} \Psi^* \underbrace{\left\{ -\frac{\hbar^2}{2m}\frac{\partial^2 \Psi}{\partial x^2} + U(x) \right\}}_{[H]} \Psi \, dx$$

energy operator $[E] = i\hbar \frac{\partial}{\partial t}$

$$\underbrace{[H]}\Psi = \underbrace{[E]}\Psi$$

Hamiltonian ↑ depends only on x

energy ↑ depends only on t

they are two different operators, but produce identical results when applied to any solution of S.E.

* See Table 5.2