Particle in a Finite Well (2)

Regions I and III:
$U(x) = U_o$, and $E < U_0$

Because $E < U_0$, these regions are "forbidden" in classical particles.

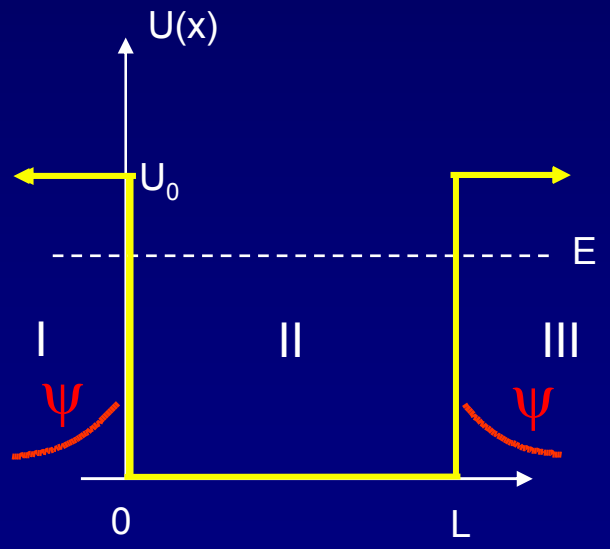
The SEQ $\frac{d^2\psi(x)}{dx^2} + \frac{2m}{\hbar^2}(E-U)\psi(x) = 0$ can be written:

$$\frac{d^2\psi(x)}{dx^2} - K^2\psi(x) = 0$$

In region II this was a + sign.

where: $K = \sqrt{\frac{2m}{\hbar^2}(U_0 - E)}$

$U_0 > E$: K is real.



The general solution to this equation is:

Region I: $\psi_I(x) = C_1 e^{Kx} + C_2 e^{-Kx}$

Region III: $\psi_{III}(x) = D_1 e^{Kx} + D_2 e^{-Kx}$

C_1, C_2, D_1, and D_2, will be determined by the boundary conditions.