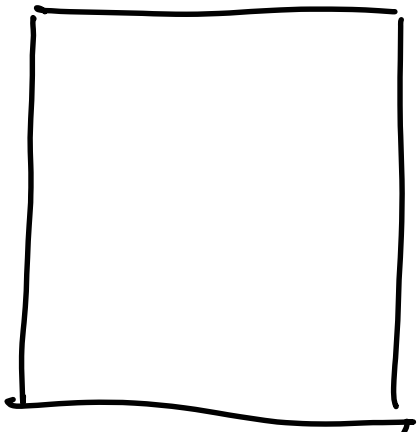
Note Title 19-01-2011

$$\hat{H} = \hat{H}_x + \hat{H}_y$$

$$\psi(x,y) = \psi_x \psi_y$$

$$E = E_x + E_y$$



Degeneracy — more than one state with the same energy

$$\psi_{2,1} = A \sin\left(\frac{2\pi x}{L}\right) \sin\left(\frac{\pi y}{L}\right)$$

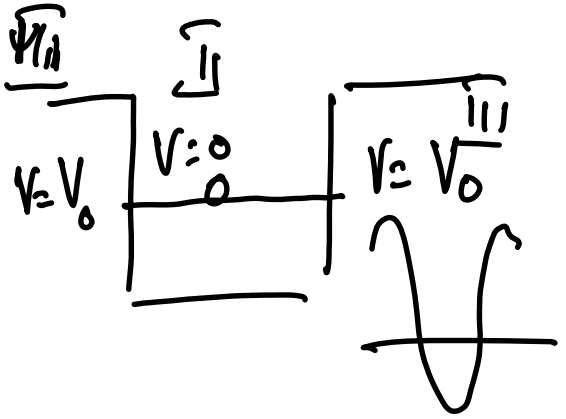
$$\psi_{1,2} = A \sin\left(\frac{\pi x}{L}\right) \sin\left(\frac{2\pi y}{L}\right)$$

Hydrogen atom (E is independent of l & m)

$\frac{1}{r}$

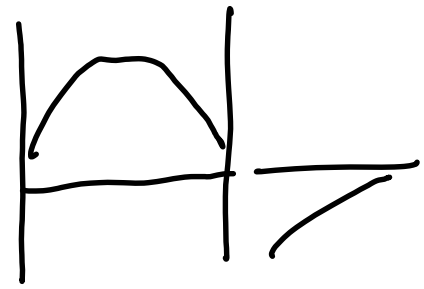
Particle in a finite well

$$\left[-\frac{\hbar^2}{2m}\frac{d^2}{dx^2}\psi_{I,III} + V_0 \psi_{I,III} = E\,\psi_{I,III} \right]$$



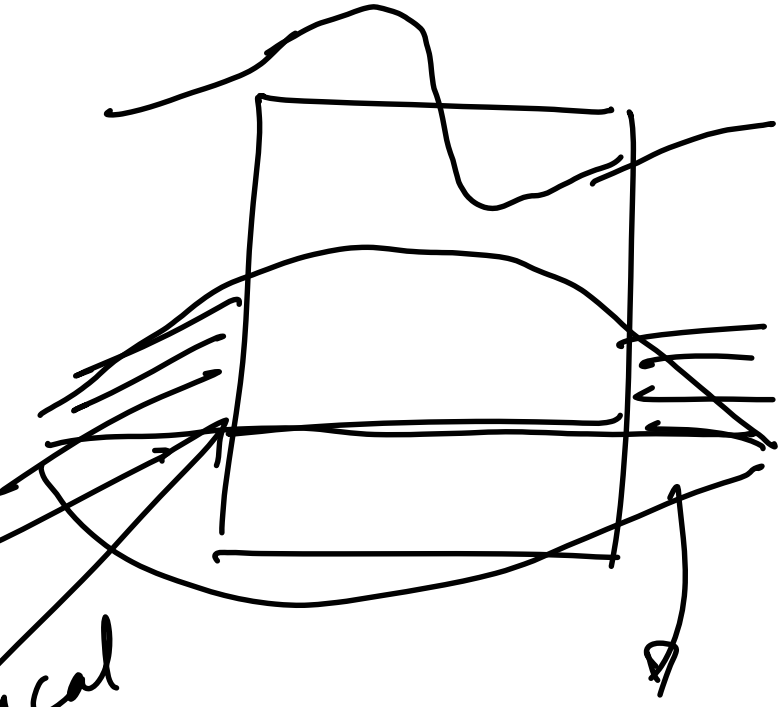
$$\frac{d^2\psi}{dx^2} = \frac{2m(V_0 - E)}{\hbar^2}\psi$$

$e^{\alpha x} + e^{-\alpha x}$



$E = T + V$

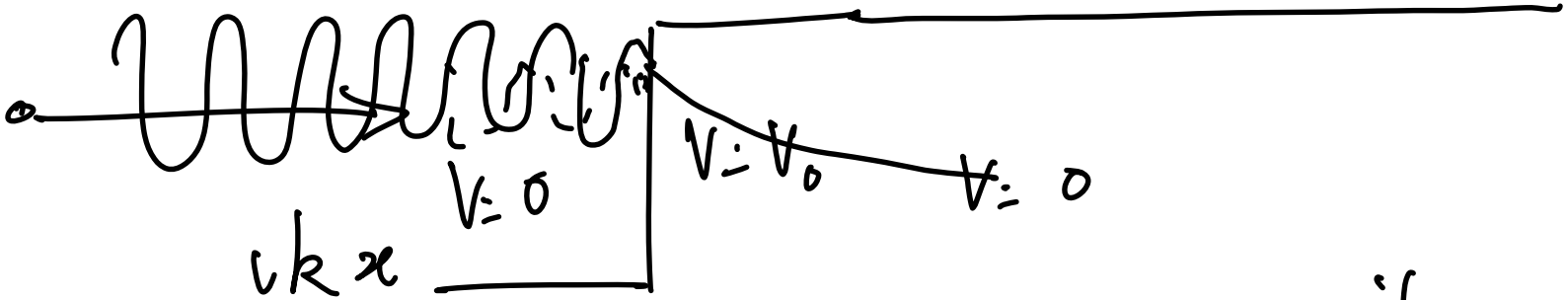
$T < 0$ in the classically forbidden region



$\psi_{II} = A \sin kx + B \cos kx$

$\psi_I = C e^{\kappa x} + \cancel{D e^{-\kappa x}}$

$\psi_{III} = \cancel{E e^{\kappa x}} + F e^{-\kappa x}$

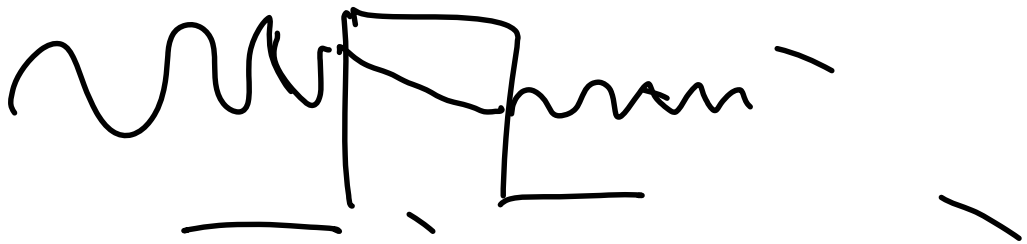


$$\psi_I = A e^{ikx} + B e^{-ikx}$$

L

$A e^{ikx}$

$C e^{-\alpha x} + D e^{\alpha x}$



STM

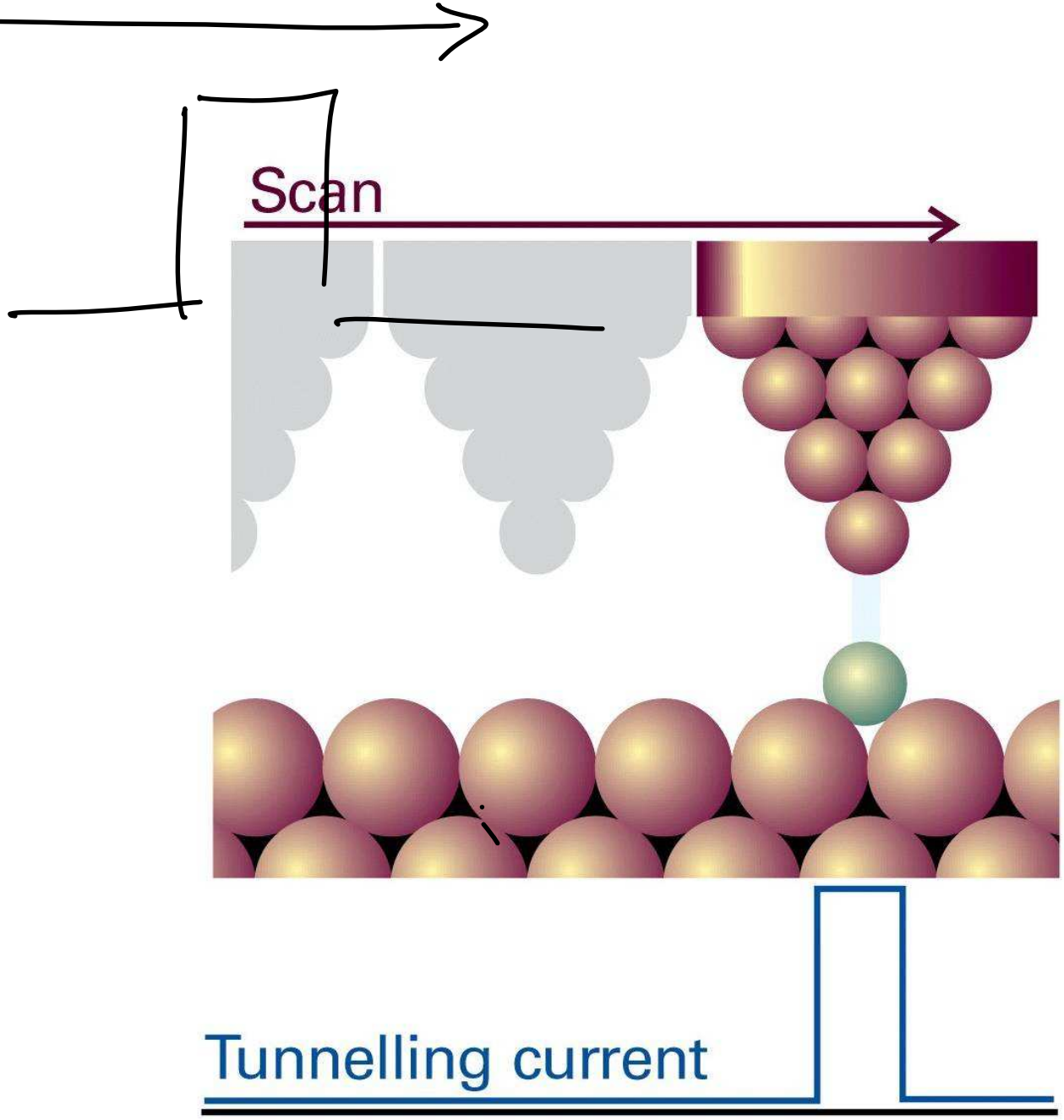


Figure 9-16
Atkins Physical Chemistry, Eighth Edition