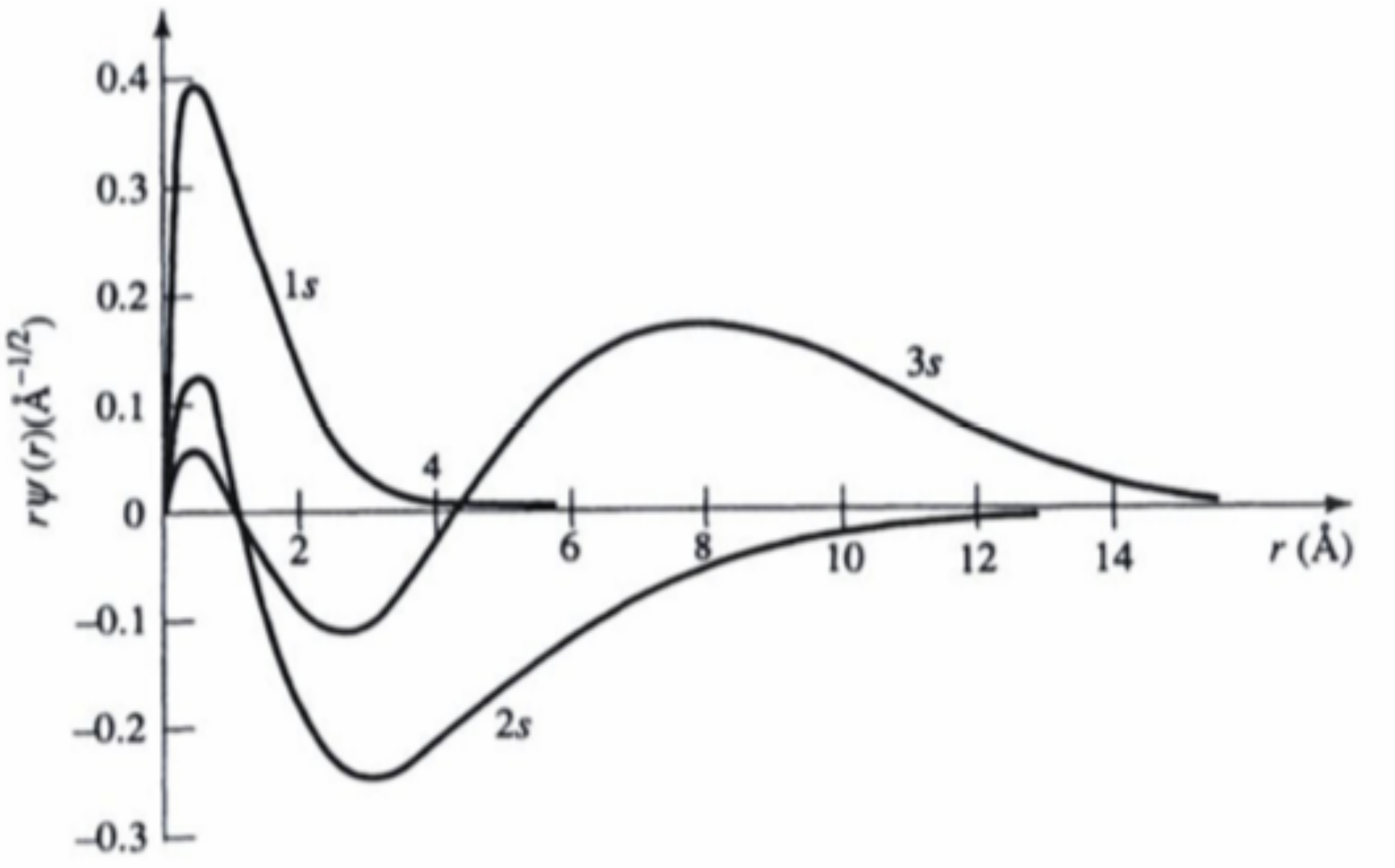
$$H_1|1\rangle = E_f|1\rangle \qquad H_2|2\rangle = E_f|2\rangle$$

$$|\Psi\rangle = c_1|1\rangle + c_2|2\rangle$$

$$H = K + V_1 + V_2$$

$$H|\Psi\rangle = E|\Psi\rangle$$




$$H\left(c_1|1\rangle + c_2|2\rangle\right) = E\left(c_1|1\rangle + c_2|2\rangle\right)$$

$$c_1\langle 1|H1\rangle + c_2\langle 1|H2\rangle = E\left(c_1\langle 1|1\rangle + c_2\langle 1|2\rangle\right)$$

$$c_1\langle 1|H1\rangle + c_2\langle 1|H2\rangle = E\left(c_1\langle 1|1\rangle + c_2\langle 1|2\rangle\right)$$

$$c_1\langle 2|H1\rangle + c_2\langle 2|H2\rangle = E\left(c_1\langle 2|1\rangle + c_2\langle 2|2\rangle\right)$$

$$\begin{array}{cc} E_0 & \beta \\ \left[\begin{array}{cc} \langle 1|\mathbf{H}|1\rangle & \langle 1|\mathbf{H}|2\rangle \\ \langle 2|\mathbf{H}|1\rangle & \langle 2|\mathbf{H}|2\rangle \end{array}\right] \\ \beta & E_0 \end{array} \begin{bmatrix} c_1 \\ c_2 \end{bmatrix} = E \begin{bmatrix} c_1 \\ c_2 \end{bmatrix}$$

$$H = K + V_1 + V_2$$

$$\mathbf{H} = -\frac{d^2}{dx^2} + V_1(x) + V_2(x)$$