

$$k = \frac{n\pi}{b-a}, \quad n = \text{integer}$$

$$E_n = \frac{\hbar^2 k^2}{2M} = \frac{\hbar^2 \pi^2 n^2}{2M (b-a)^2}$$

3) As  $b \rightarrow a$  the particle becomes confined (in the radial direction) in an ever smaller region. By the uncertainty principle the value of  $\langle p_r^2 \rangle$  and, consequently, the kinetic energy goes up.