Particle in a box energy

The energy of the particle in a box is a simple modification of
The energy of a free particle. We have seen that this energy is:

$$E = \frac{\hbar^2 k^2}{2m}$$

Free Space

Particle in a box energy

The boundary conditions determine that values of the wavevector k that are allowed. This in turn determine the quantized values of the energy:

$$k = \frac{n\pi}{L}$$

$$E = \frac{h^2 n^2}{8mL^2}$$

∞ ∞

0   Allowed Region   L