Normalization Coefficients

and

The Finite Symmetric Square Well

The normalization coefficients for the *even parity* states are given by

$$C_n = \left[\frac{\cos^2(k_n L/2)}{\kappa_n} + \frac{L}{2} + \frac{\sin(k_n L)}{2k_n}\right]^{-1/2}, \quad \text{for n=1,3,5,...}$$

and for the *odd parity* states by

$$C_n = \left[\frac{\sin^2(k_n L/2)}{\kappa_n} + \frac{L}{2} - \frac{\sin(k_n L)}{2k_n}\right]^{-1/2}, \quad \text{for n=2,4,6,....}$$

Here, L is the total width of the well with

$$k_n = \sqrt{\frac{2mE_n}{\hbar^2}} \text{ and } \kappa_n = \sqrt{\frac{2m(V_0 - E_n)}{\hbar^2}}.$$