## J98Q.2—Two Delta-function Potential

## Problem

A particle of mass m moves in one dimension subject to the potential

$$V(x) = -a\delta(x+L) + a\delta(x-L), \ a > 0.$$

The system has one bound state.

- a) Derive a transcendental equation relating the energy of the bound state to m, a, and L.
- b) Calculate the energy of the bound state to leading order for small L, and sketch the wave function.