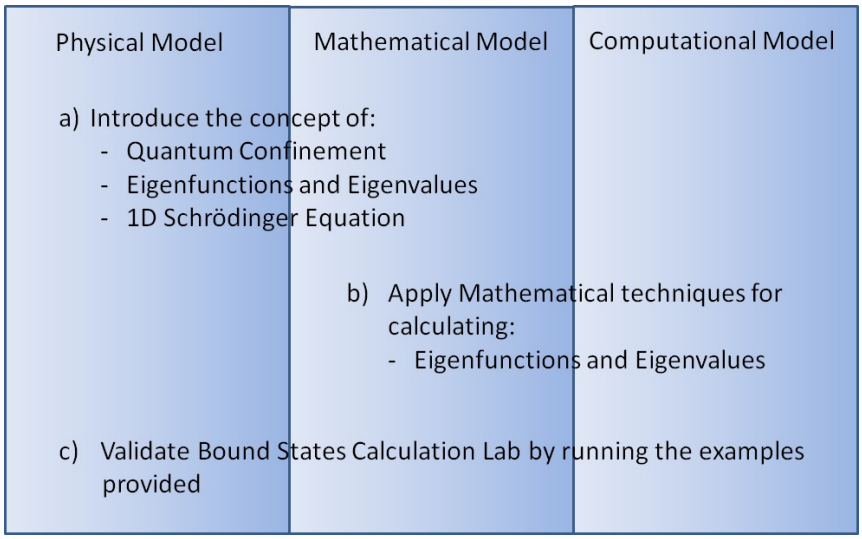
Bound States Lab Learning Materials

By completing the Bound States Calculation Lab, users will be able to: a) understand the concept of bound states, b) the meaning of the eigenvalues and the eigenvectors, and c) the form of the eigenvalues and eigenvectors for rectangular, parabolic and triangular confinement.

The specific objectives of the Bound States Calculation Lab are:



Recommended Reading

Users who are new to the concept of bound states and solution of the Schrodinger equation for bound states should consult the following resource:

1. D. K. Ferry, Quantum Mechanics: An Introduction for Device Physicists and Electrical Engineers, Taylor & Francis.

Theoretical descriptions

* Bound States Calculation Description (tutorial)

* Bound States Calculation Lab - Fortran Code (source code dissemination)

Exercises and Homework Assignments

1. Bound States Calculation: an Exercise

2. Quantum Bound States Exercise

3. AQME Exercise: Bound States – Theoretical Exercise

Solutions to Exercises

Solutions are provided only to instructors!

Evaluation

This test will assess the users conceptual understanding of the physical, mathematical and computational knowledge related to quantum bound states in different confining potentials that occur in real device structures.

Test for Bound States Calculation Lab

Challenge

Users are challenged to integrate what they have learned about Quantum Bound States.

Solve a Challenge for the BSC Lab