

Physics 113 Quantum Theory Seminar

Assignment 10 April 03, 2013

This week we study Time-Independent Perturbation Theory.

Part 1: Readings

Zettili - Chapter 9 Sections 9.1-9.2 Pages 489-507

Boccio - Chapter 10(Pages 825-854 Sections 10.1-10.4,10.9).

Part 2: Problems

1. Z9-08 - A perturbed oscillator energy to 2nd order
2. Z9-21 - Angular Momentum Perturbations
3. Z9-22 - Hamiltonian Matrices
4. Boccio 10.9.3 - Weird Perturbation of an Oscillator
5. Boccio 10.9.4 - Perturbing the Infinite Square Well Again
6. Boccio 10.9.5 - Perturbing the 2-dim Infinite Square Well
7. Boccio 10.9.6 - Not So Simple Pendulum
8. Boccio 10.9.7 - 1-Dimensional Anharmonic Oscillator
9. Boccio 10.9.8 - Relativistic Correction for Harmonic Oscillator
10. Boccio 10.9.9 - Degenerate perturbation theory: spin=1 system
11. Boccio 10.9.11 - Finite Spatial Extent of the Nucleus
12. Boccio 10.9.12 - Spin-Oscillator Coupling
13. Boccio 10.9.18 - Rigid rotator in a magnetic field