

Physics 113 Quantum Theory Seminar

Assignment 11 April 10, 2013

This week we continue to study Time-Independent Perturbation Theory.

Part 1: Readings

Zettili - Chapter 9 Section 9.3 Pages 507-515

Boccio - Chapter 10(Pages 854-901 Sections 10.5-10.8).

Part 2: Problems

1. Z9-27 - Variational Method
2. Boccio 10.9.15 - Another Perturbed Oscillator
3. Boccio 10.9.16 - Helium from Hydrogen - 2 Methods
(correct numerical answers required)
4. Boccio 10.9.17 - Hydrogen atom + xy perturbation
5. Boccio 10.9.20 - A Perturbation with 2 Spins
6. Boccio 10.9.23 - Hydrogen in E/B fields
7. Boccio 10.9.27 - 2-Particle Ground State Energy
8. Boccio 10.9.29 - Hyperfine Interaction in H-Atom
(correct numerical answers required)
9. Boccio 10.9.34 - Variational Method 4
10. Boccio 10.9.38 - Interacting with the Surface of Liquid Helium
11. Boccio 10.9.50 - More Perturbation Practice

Final Problem #1 - Only consult with Professor

- Boccio 10.9.49 A Perturbation Example(solution written up in LaTeX)