

# Physics 113 Quantum Theory Seminar

## Assignment 12 April 17, 2013

This week we study Time-Dependent Perturbation Theory.

### Part 1: Readings

**Zettili** - Chapter 10 Pages 571-597

**Boccio** - Chapter 11(Pages 939-975 Sections 11.1-11.4).

1. Z10-12 - Hydrogen in a crystal field
2. Z10-22 -  $\infty$  square well perturbed by delta function
3. Z10-24 - 3-dim box perturbed by xz potential
4. Boccio 11.5.1 - Square Well Perturbed by an Electric Field
5. Boccio 11.5.4 - 2 spins in a time-dependent potential
6. Boccio 11.5.6 - Sudden Change - Don't Sneeze
7. Boccio 11.5.8 - Another perturbed oscillator
8. Boccio 11.5.12 - Instantaneous Force
9. Boccio 11.5.17 - Oscillator in electric field
10. Boccio 11.5.18 - Spin Dependent Transitions
11. Boccio 11.5.19 - The Driven Harmonic Oscillator

### Final Problem #2 - Only consult with Professor

- Boccio 11.5.5 - Variational Method: Deuteron Ground State (solution written up in LaTeX)