

Phys 558b: Quantum Mechanics

(Fall 2014: Tue-Thu 12pm –1,50pm , KAP 137)

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Office Hours:

Feel free to knock my Office's door at any time or –even better– to take an appointment in class or by email.

Topics Covered: the Rough Guide

- Path integral in quantum mechanics and semiclassical approximation.
- Identical particles and Statistical Mechanics
- Time independent perturbation theory and applications to atoms and molecules
- The variational principle and applications.
- Time dependent perturbation theory, Fermi Golden Rule and applications
- The Adiabatic theorem,
- Other stuff depending on the time left e.g., quantum information

TextBooks

The class *won't* follow closely any specific TextBook i.e., taking notes will be very useful, however the material covered is, for the most part, standard. Here below I list a couple of classic reference books plus a slightly more recent one for the quantum information minded folks

Modern Quantum Mechanics, Addison-Wesley, 1994, Author: J.J. Sakurai.

Principles of Quantum Mechanics, 2nd Ed., Plenum Press, 1994, Author: R. Shankar.

Quantum Theory: Concepts and Methods (Fundamental Theories of Physics), Springer 1993, Author: A. Peres

Material from other sources will be used as well. Links will be provided in class at due time.

Grading

20% Homeworks (a few problems will be assigned approximately on weekly basis)

20% Midterm1 + 20% Midterm 2 (dates to be defined)

40% Final Exam: Tuesday, December 16, 11am-1p.m.

Notice Class participation (attendance, discussions,...) **will** be taken into account in the Final Grade.