Physics 828 (Winter 2011)

Quantum Mechanics II

Lectures: Mon. & Wed. 2:30 - 3:18 and Fri. 1:30 - 3:18 in Bolz Hall 317

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This is the second of a three-quarter sequence designed primarily for graduate students in Physics, a continuation of Physics 827 offered last quarter.

Prerequisites:
(1) Physics 827 (Autumn 2010).
(2) Special functions (e.g., Legendre polynomials, spherical harmonics, Bessel functions) and solution of partial differential equations. These topics were covered in E & M, Phys 834 taught by Prof. Heinz in Autumn 2010.

Syllabus: Outline of topics to be covered in the second quarter.

- Symmetries and Conservation Laws
- Rotations, Angular Momentum, Spin
- Hydrogen Atom
- Addition of Angular Momenta
- Time-independent Perturbation Theory
- Identical particles

The **Text Book** for Physics 827, 828 and 829 will be:
"*Principles of Quantum Mechanics*" (2nd Edition)
by R. Shankar, (Springer, 1994) [ISBN 0-306-44790-8]
Although I will follow Shankar's development of the subject in general, I may also deviate from the book on many occasions.

Other useful **references** are:
"*Quantum Mechanics*" Vols. I & II by C. Cohen-Tannoudji, B. Diu and F.

Laloe, (John Wiley & Sons, NY, 1977).
"*Lectures on Quantum Mechanics*" by G. Baym, (Benjamin, NY, 1969).
"*Feynman Lectures on Physics*" Vol. III by R.P. Feynman, R.B. Leighton and M. Sands, (Addison Wesley, Reading, Mass., 1965).

Grading:

- Home work: 30%
- Mid-term exam: 30%;
- Final Exam: 40%

Exam Schedule:

- Mid-Term Exam: Friday, Feb. 11, 1:30 PM - 3:18 PM
- Final exam: Thu, March 17 1:30 PM - 3:18 PM

All Examinations will be closed-book and no notes will be permitted.

Home Work Assignments:
Home work will be assigned on a regular basis throughout the quarter. You will be able to download the problem sets from the **Course Website:**

www.physics.ohio-state.edu/∼randeria/courses/QM-II-828/physics_828.htm

Students should check the course website for further information.

If you have any questions about this Class, please do not hesitate to contact me by email (randeria@mps.ohio-state.edu) or phone (292 2457), or come to my office (Physics Research Building, Room 2024).