Physics 829 (Spring 2011)

Quantum Mechanics III

Lectures: Mon. & Wed. 2:30 - 3:18 and Fri. 1:30 - 3:18 in 205 Koffolt Lab

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This is the third course of a three-quarter sequence designed primarily for graduate students in Physics, a continuation of Physics 827 and 828.

Prerequisites:
(1) Physics 827 (Autumn 2010) and 828 (Winter 2011)
(2) special functions and PDE's taught in E & M

Syllabus: Topics to be covered in the third quarter:

- Degenerate Perturbation Theory
- Time-dependent Perturbation Theory
- Scattering Theory
- Interaction of Radiation with Matter
- Brief discussions of advanced topics like:
  - Identical Particles
  - Dirac Equation
  - Bell's Inequality

Text Book:
"*Principles of Quantum Mechanics*" (2nd Edition)
by R. Shankar, (Springer, 1994) [ISBN 0-306-44790-8]
Although I will follow Shankar's development in general, I may deviate from the book on many occasions or cover topics not discussed in text-book.

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, Friday, May 6, 1:30 PM - 3:18 PM
- Final exam: Wednesday, June 8, 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-III-829/physics_829.htm

Students should check the course website for further information.

Office Hours:
Thursdays, PRB 2024 8:30 - 9:30 AM (or by appointment).

Grader:
Dr. Vladimir Prigodin (prigodin.1@osu.edu)

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).