Physics 511: Quantum Mechanics I (Fall 2024)

Lectures: Tue, Thu: 11:00-12:20
Place: H116, Harriman Hall.
First meeting: Tuesday, August 26, 2023

Instructor: Alexander Abanov, alexandre.abanov@stonybrook.edu
Office hour: B102, TBA

Teaching assistant : TBA
Office hour: TBA

Main textbook: J.J. Sakurai and Jim Napolitano, "Modern quantum mechanics"

Recommended textbooks:
V. Galitski, B. Karnakov, V. Kogan and V. Galitski Jr "Exploring Quantum Mechanics."
L.D. Landau and E.M. Lifshitz "Quantum mechanics: non-relativistic theory" (Vol. 3).
G. Auletta, M. Fortunato and G. Parisi, "Quantum mechanics."

Grading: Grade = (1/5) Homework + (1/5) Take Home Exam + (1/5) Midterm + (2/5) Final

Exams: Exam policy: no textbooks or print-outs. Personal class notes and assignments with solutions are allowed.

Homework: assigned every week.

From Graduate School Bulletin, Stony Brook University. PHY 511: Quantum Mechanics I First course in a two-part sequence. Topics include basic quantum physics and mathematical apparatus; application to one dimensional examples and simple systems. Symmetries, angular momentum, and spin. Additional topics as time permits.
Fall, 3 credits, Letter graded (A, A-, B+, etc.)

Approximate outline of the course:

1. Basic concepts: Hilbert space, quantum dynamics, measurements.
2. Quantum dynamics in one dimension.
3. Angular momentum, spin.
4. Hydrogen atom.
5. Symmetries in quantum mechanics.
6. Two-level systems. Elements of quantum information and computation.