Atomic and Optical Physics [Physics 721]

Time: Monday / Wednesday 2:30 – 3:50 PM   Room : phys 1219

NOTE: No class on Sep. 29

Instructors:
   Dr. Alexey Gorshkov [Joint Quantum Institute], gorshkov@umd.edu, CSS Room 2102
   Dr. Ian Spielman [Joint Quantum Institute], spielman@umd.edu, PSC Room 2153

Website:
   http://ultracold.jqi.umd.edu/atomic-physics-721/

Base text:
   Lukin atomic physics notes

For reference:
   Atom-Photon Interactions [Cohen-Tannoudji, Dupont-Roc, and Grynberg]
   Atomic Physics [Budker, Kimball, and DeMille]
   Atomic Physics [Foot]
   Photons and Atoms [Cohen-Tannoudji, Dupont-Roc, and Grynberg]
   Physics of Atoms and Molecules [Bransden and Joachain]
   Laser Cooling and Trapping [van der Straten, and Metcalf]
   Quantum mechanics [Sakurai]
   E & M [J. D. Jackson]

Office hours:
   by arrangement

Grade: HW
   [95%] and final exam [5%].

Syllabus:
   1. Basic atomic and optical physics
   2. Basic processes in atomic and optical physics
   3. Open quantum systems
   4. Propagation of light in an atomic medium
   5. Properties of multi-level systems
   6. Stochastic wavefunctions
   7. Adiabatic processes
   8. Atomic motion in laser light
   9. Quantum properties of light interacting with matter
  10. Trapped ions
  11. Atomic matterwaves