Spring 2011

Physics 471 - Introduction to Modern Atomic Physics
Day/Time: TuTh 09:00 AM - 10:20 AM
Location: KPTC 103
Lecturer: Cheng Chin
Office: GCIS E107
Office hours: TuTh 10:20 - 11:00 AM
Email: cchin@uchicago.edu
Website: http://ultracold.uchicago.edu/phys_spring11

Class outline: *17 Lectures, 2 discussions, and 1 lab tour*

Introduction

Wk1	03/29	Tu	9:00~10:20	Atomic structure
Wk1	03/31	Th	9:00~10:20	Atom-field interaction
Wk2	04/05	Tu	9:00~10:20	Scattering Theory HW1

Ultracold Atoms

Wk2	04/07	Th	9:00~10:20	Ion trap (I)
Wk3	04/12	Tu	9:00~10:20	Ion trap (II)
Wk3	04/14	Th	9:00~10:20	Laser cooling and trapping (I) HW2
Wk4	04/19	Tu	9:00~10:20	Laser cooling and trapping (II)
Wk4	04/21	Th	9:00~10:20	Discussion I
Wk5	04/26	Tu	9:00~10:20	Bose-Einstein condensation (I)
Wk5	04/28	Th	9:00~10:20	Bose-Einstein condensation (II) HW3
Wk6	05/03	Tu	9:00~10:20	Lab tour + Discussion II

Precision Measurement

Wk6	05/05	Th	9:00~10:20	Test of fundamental symmetry (Z.T. Lu)
Wk7	05/10	Tu	9:00~10:20	Variation of fundamental constants
Wk7	05/12	Th	9:00~10:20	Atomic and optical clocks
Wk8	05/17	Tu	9:00~10:20	Applications HW4
Wk8	05/19	Th	9:00~10:20	Discussion III (Z.T. Lu)

Modern Topics

Wk9	05/24	Tu	9:00~10:20	1. Optical lattice
Wk9	05/26	Th	9:00~10:20	2. Quantum computation and simulation
Wk10	05/31	Tu	9:00~10:20	3. Degenerate Fermi gas
Wk10	06/02	Th	9:00~10:20	4. Ultracold molecules HW5

Evaluation Problem sets and term paper

Recommended Textbooks
Atomic Physics, D. Budker, D. F. Kimball and D. P. DeMille
Bose-Einstein Condensation in Dilute Gases, C.J. Pethnick and H. Smith