SYLLABUS
Physics 602

Advanced Atomic Physics

Date and time: Fall, 2006, MWF, 11:15-12:05.

NOTE: [I will be out of town on Wed. and Fri. Aug 23 and 25. Dr. J. Sternberg will take my classes for those days. If you cannot meet at these times please contact J. H. Macek by email at jmacek@utk.edu].

Place: Rm Physics 512.


Harold Friedrich

Instructor:
Dr. J. H. Macek
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Course organization: The first meeting of the class will be at 11:15 on Wed in Physics 512 and the second meeting will be on Friday at 11:15. At this time we will determine the number of students enrolled.

At the present time there are two students. If there are 3 or fewer students the course will be taught (optionally) as a reading course.

If there are 4 students enrolled the nature of the course will be decided on Monday, August 28 when I return.

If there are 5 or more students enrolled the course will be taught as a lecture course.

Introduction:
The text for the course is listed above. Editions 1 and 2 may be available as used books. These are acceptable but they are not significantly less expensive than the 3'rd edition. If you presently have an earlier edition, however, you need not get the newer one.

I will also lecture on material not included in the text. There are many references, too numerous to mention, for this material but two that will be used initially are:

1. *Atomic Collisions and Spectra* by U. Fano and A.R.P. Rau (Academic Press 1986). This covers much the same material as our text, however, it is at a much more advanced level.

2. *Computational Atomic Structure an MCHF approach* by C. Frose Fisher, T. Brage, and P. Jönsson. This is a manual that is used with the MCHF Atomic Structure Package available by ftp from several sites. We will not use the programs, however, this is a useful reference for those of you interested in the details of calculations using currently available programs.

Homework will be assigned on a biweekly basis. There will be a mid-term in-class exam and a final take-home exam. Course grade is based on 30%mid-term, 50%final and 20% homework.

Course Outline.

I. This course will be topics-oriented. That is, depending upon the interests of the students the topics will cover Atomic Spectroscopy, Atomic Collisions, or some of the emerging fields such as Bose and Fermion condensates and cold collisions.

II. We will decide on topics when I return on Aug 28.

III. Grading: Each student will be required to do a term paper. In addition I will assign multipart problems that are like mini-term papers.