

PHYS 480L

Fall 2011

Tom Browder

Working in teams of 2 or 3 persons, you will perform the the following experiments in the course of the semester:

- [Gamma Correlation \(p.409-421, p.341\)](#)
- [Speed of Light](#)
- [Interaction of Radiation and Matter \(computer simulation experiments\)](#) hand in answers to the questions.
- [Nuclear Magnetic Resonance](#)
- [Compton Edge and Spectroscopy \(p.336-344\)](#)
- [Modern Optics: Measurements of Polarization Phenomena \(p.159-162, p.201-203\)](#)

This is a writing-intensive course (90% of the course grade). For each experiment you will turn in answers to your self-study questions and a Physical Review Letters style paper reporting the results. The due dates for the 4 reports (first drafts) in Fall 2011 will be:

- 1st draft of Report on Positronium Angular Correlation (Due TBA)
- Final Report on Positronium Angular Correlation (Due TBA)

- 1st draft of report on Speed of Light, (Due TBA)
- Final report on Speed of Light (Due TBA)

- MC experiment and Answers to questions about interaction of radiation and matter

- 1st draft of report on Nuclear Magnetic Resonance (Due TBA)
- Final Report on Nuclear Magnetic Resonance (TBA)

- 1st Draft of Nuclear Spectroscopy (Due TBA)
- Final Report on Nuclear Spectroscopy (TBA)

- TBA (First draft of report on Polarization Phenomena)
- TBA (Final Draft of Polarization Phenomena)

You will work on each experiment for approximately four scheduled lab periods. This is a 2 credit hour lab because you will in general not be able to complete the experiments in the scheduled lab periods. For some labs your team will have to arrange to come in at other times. I am generally available to let you in to the lab (my office is WAT 233, down the hall) and there will also be a key in the WAT217 office of Peter Huang that you can borrow. Note that you will have to make arrangements with me for use of radioactive sources at non-scheduled times. The textbook is : Experiments in Modern Physics by Melissinos and Napolitano (2nd edition). I will also supply some useful handouts (e.g. fast electronics, optics).

Grading:

Written work 90%
5-6 Quizzes 5%
Lab work/participation 5%

Scheduling Items

Belle Analysis Meeting and Analysis School, Sept 25-30
Belle and Belle II General Meetings, Nov 13-20

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Tom Browder / teb@phys.hawaii.edu