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# Physics 511 Topics in Contemporary Physics Spring 2010

## *Interferometry in Experimental Physics*

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### Instructor:

- Eric Adelberger with help from TA Will Terrano

### Course structure, assignments, expectations, quizzes, grading:

- **Overview:** The unifying theme of the course is interferometry. We will explore interesting physics areas ranging from astrophysics to cryptography to fundamentals of quantum mechanics, all from the perspective of experimental interferometry. Reading will be selected directly from brief, landmark papers in the research literature. In general, class sessions will be devoted to group discussions of that day's paper and clarification of the issues therein. The goal is to deepen your understanding of physics by applying theoretical concepts to actual experiments.
- **Reading:** The assigned reading material, posted as PDF files on the PHYS511 Web site, is listed on the course schedule will be assigned no later than the class preceeding the one at which the topic will be discussed. Pay particular attention to the basic ideas and strategies of the paper and be sure to understand the illustrated figures. Don't get "lost in the trees" and fail to see the "forest".
- **Homework:** There will be no traditional "problem sets", but you will be given "Questions to Ponder" worksheets, posted as Word and PDF files on the PHYS511 Web site, with each reading assignment. You are expected to have thought about these Questions **before the class** and to be prepared with answers. I will open each class with introductory and explanatory remarks, we will then divide into 2 smaller groups, each of which will discuss the day's Questions.
- **Quizzes:** There will be brief weekly quizzes to encourage class preparation.
- **Project:** Instead of a final exam you will write an **original** paper that deals with one of the interferometry topics discussed in class. You may analyze in detail some aspects of an assigned paper, analyze a paper that follows up on one of the topics we discussed, or some other experiment paper related to interferometry. I'm happy to review with you the appropriateness of a topic. Your paper is due on the Thursday of finals week, June 10, and should be sent as a PDF file to [phys511@npl.washington.edu](mailto:phys511@npl.washington.edu). The paper should be a minimum of 4 single-spaced pages in 12 point font (figures are not included in the page count). **NOTE:** you will get **no credit** for just downloading a lot of material. I will look for your **original** contribution.

- **Absences:** If you must be absent from class let me know before hand. I will arrange for you to hand in written answers to the “Questions to Ponder” so that you can get credit for that class; missed quizzes can usually not be made up.
- **Grades:** Project ( 35% ) + Quizzes & Class Participation/Performance ( 65% )

**Class meets Tuesday 2:30 – 4:00 pm and Thursday from 2:30 – 4:00 pm in PAB042**

**Office hours, course E-mail and Web page:**

- **Office hours:** immediately after class in C533 or by appointment. I am usually in my lab at CENPA rather than in my office. You can reach me there via phone 543-4294 (if no answer leave a message at 543-4080) or e-mail me (see below) to arrange meeting times.
- **E-mail:** will be used to give important updates. You are encouraged to use it for questions and comments (send to [phys511@npl.washington.edu](mailto:phys511@npl.washington.edu) ) .
- **Course web page:** <http://courses.washington.edu/ega/index.html> will allow you to download .PDF files of the reading material and Microsoft Word or .PDF files of the “Questions to Ponder”.