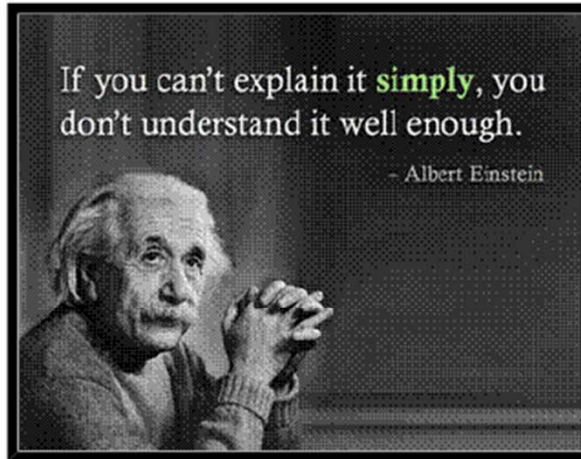


Physics 596 Course Introduction, Fall '11



Physics 596

Graduate Physics Orientation Fall 2011

*The whole of science is nothing more
than a refinement of everyday thinking.*

—Albert Einstein, *Physics and Reality*, 1936

Home

Course Info

Syllabus

Assignments

Resources

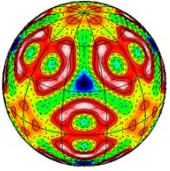
Course Instructors:

Lance Cooper: 218 MRL, 333-2589 (research)
227B Loomis, 333-8702 (departmental)

Celia Elliott: 215 LLP, 244-7725

Course webpage:

<http://online.physics.uiuc.edu/courses/phys596/fall11/>



Our goals for you in Phys 596



Introduce you to research opportunities in Physics, etc.

Help you connect with a research advisor!

Help you learn methods to write and speak persuasively

The scientific community (and just about everyone else!) tends to be skeptical, so you can't rely just on great results!

Help you learn to navigate the scientific literature

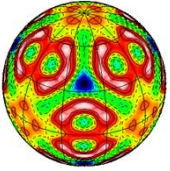
Researching existing literature is critical for planning future work, writing proposals, writing papers, etc.

Help you learn to work in and lead a team

Collaboration is key in science

Provide insights into how the “world of science” works

e.g., how publication process works, what happens at scientific conferences, how to find advisors, how to write and research scientific papers/presentations, etc.

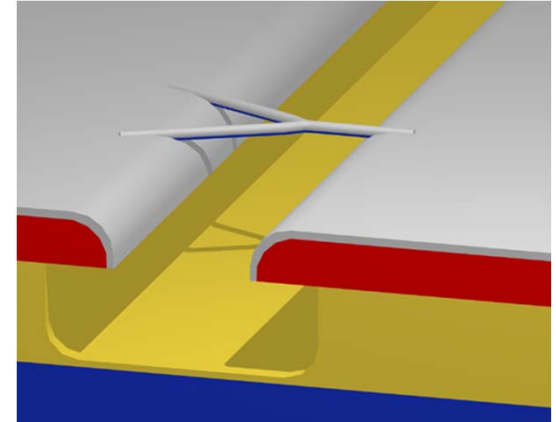


Elements of Phys 596



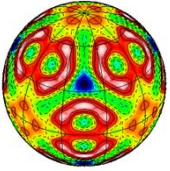
1. Help you find a research group

- How to find an advisor
- Group and individual research presentations throughout the semester



What can you do to find an advisor? More on this later, but basically: take charge of your “grad school” & research education!

- Attend seminars, colloquia
- Review departmental research page
- Talk w/ faculty and graduate students
- Don't assume you already know the research area you want to go into!



Elements of Phys 596

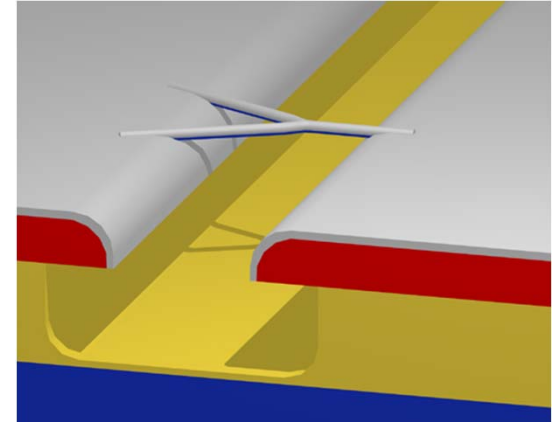


2. Skills essential to researchers

Writing/Presentation Skills

How to create and present journal club
and research talks

How to write persuasive scientific papers



Scientific Scholarship

How to use on-line databases useful for
research

Learning how to do what scientists do

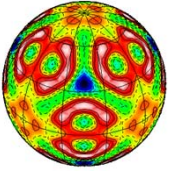
Making estimates in research

Documenting your results

Learning to write referee reports

Scientific Ethics

Real life examples



A typical class will involve...



1. Research talks to help you find an advisor and identify a field of interest

Scheduled so far:

Astrophysics: Charles Gammie, Telemachos Mouschovias

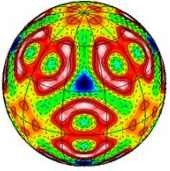
Biological physics: Aleksei Aksimentiev

Condensed matter experiment: Jim Eckstein,
Nadya Mason, Dale Van Harlingen, Laura Greene,
Steve Granick

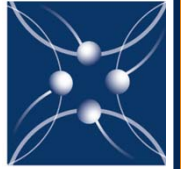
Condensed matter theory: Philip Phillips, Shinsei Ryu

High energy: Tony Liss

Medium energy: Matthias Perdekamp

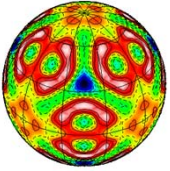


A typical class will involve...



2. Discussions of what a scientist does:

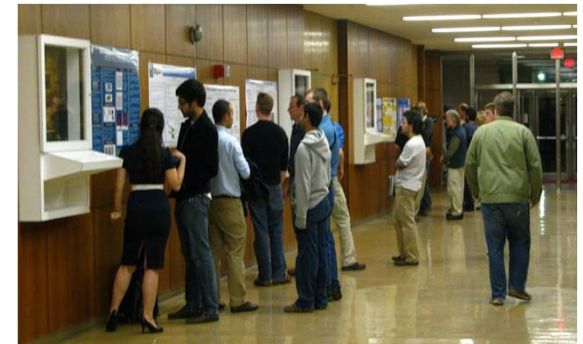
- Scientific ethics issues
- Researching scientific papers
- The publication process
- Refereeing and evaluating scientific work

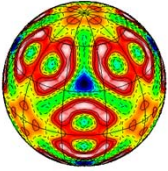


A typical class will involve...



3. Instruction and practice on giving scientific presentations and writing scientific papers
 - Create and present a journal club talk
 - You will also write a referee report on your paper
 - Create a web-based research highlight
 - Learn to write to a general audience
 - Design a scientific poster
 - Present in virtual “poster session”
 - Write a group paper
 - Each group member will write a different section of scientific paper



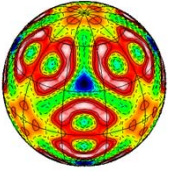


Group assignments foster collaboration

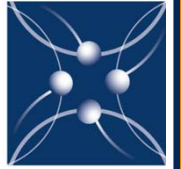


TEAM	Student
TEAM 1	Banerjee, Arka Byard, Courtney Chan, Chun Kit Chan, Pak On
TEAM 2	Chao, Shu-Han Chen, Shu Christman, Elaine Damasco, John Jeffrey
TEAM 3	Chen, Kanuo de la Peña, Gilberto Dwivedi, Vatsal Emmerich, Brandon
TEAM 4	Fang, Yizhi Gao, Zihe Goh, Boon Chong Hamilton, David
TEAM 5	Han, Bo Hinnefeld, John Hsieh, Chang-Tse Huemiller, Erik
TEAM 6	Kim, Hyuneil Leong, Zhidong Maximenko, Yulia Merritt, Jason

TEAM 7	Mondragon, Ian Mukherjee, Anirbit Murphy, Andrew Passias, Vasilios
TEAM 8	Perlova, Tatyana Petersen, Eric Ramamurthy, Srinidhi Rao, Thomas
TEAM 9	Rose, William Rosen, Gregory Xue, Chi Sharma, Sarvagya
TEAM 10	Sheikh, Mohammed Steiner, Charles Tiwari, Apoorv Tsang, Chi Hang Boyce
TEAM 11	Vanacore, Garrett Vig, Sean Wang, Jiang Wang, Xiaoxiao
TEAM 12	Wong, Man-Hong Xu, Caizhi You, Yizhi Zhao, Han Schlax, Kenneth



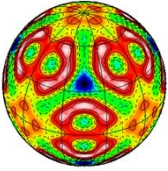
Grading Policy



- Complete the assignments
- You'll critique each other's work. Your work won't be graded so much on content as on the fact that it has been completed *conscientiously!*
- Attendance is required!!

Don't worry about your grade in this class!!

⇒ Beyond grad school, the skills you develop will be far more important than the grades you get here!!



Our agenda

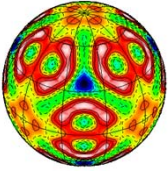


Physics 596 - Course Syllabus - Fall 2011

(Syllabus is subject to change!)

Week	Date	Topics	Lectures	Assignments	Reading
1	Aug 26	Introduction and course expectations Grad student timeline; Fellowship info How to find an advisor Importance of writing/outlines/writing incrementally	slides slides slides slides		
2	Sep 2	Research in Experimental Condensed Matter - Dale Van Harlingen Creating/giving a journal club presentation Publication process; How to write a referee report Effective scientific presentations	slides slides slides	Group Assignment #1 Create and present a group Journal Club PowerPoint talk + individual referee reports	
3	Sep 9	Research in Experimental Condensed Matter - Jim Eckstein Research in Experimental Condensed Matter - Laura Greene How to write an abstract	slides	Group Assignment #2 Develop a group scientific paper mini-Assignment #1 Write an abstract for selected paper	

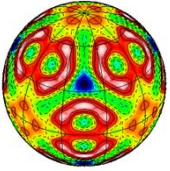
<http://online.physics.uiuc.edu/courses/phys596/fall11/http://online.physics.uiuc.edu/courses/phys596/fall11/>



Our agenda (cont.)



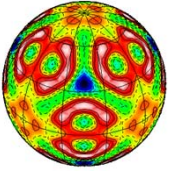
4	Sep 16	<p>Research in Theoretical Astrophysics - Charles Gammie</p> <p>How to use on-line scientific resources</p> <p>Effective Titles/Verbs/Acronyms</p>	<p>slides</p> <p>slides</p>	<p>mini-Assignment #2</p> <p>On-line resource activities</p>	
5	Sep 23	<p>Ethics in research</p> <p>Ethics case studies</p>	<p>slides</p> <p>slides</p>		
6	Sep 30	<p>Research in Experimental Condensed Matter - Nadya Mason</p> <p>Research in Experimental Soft Condensed Matter - Steve Granick</p> <p>Writing a popular highlight</p> <p>Effective use of figures/captions</p>	<p>slides</p> <p>slides</p>	<p>Group Assignment #3</p> <p>Develop a group web-based highlight with figures + captions</p>	
7	Oct 7	<p>Research in Biological Physics - Aleksei Aksimentiev</p> <p>Giving an effective scientific presentation</p> <p>Numbers/Copyright issues</p>	<p>slides</p> <p>slides</p>		



Our agenda (cont.)



8	Oct 14	Journal club presentations			
9	Oct 21	Research in Medium Energy Physics - Matthias Perdekamp Journal Club Talks (cont.)			
10	Oct 28	Research in Theoretical Condensed Matter - Shinsei Ryu Creating a scientific poster	slides	<u>Group Assignment #4</u> Develop a scientific poster for your research project	
11	Nov 4	Research in High Energy Physics - Tony Liss Research talk			
12	Nov 11	Making estimates in research Fermi problem case studies	slides slides		
13	Nov 18	Research talk Research talk			



Our agenda (cont.)



	Nov 21	THANKSGIVING BREAK			
14	Dec 2	Scientific poster session			