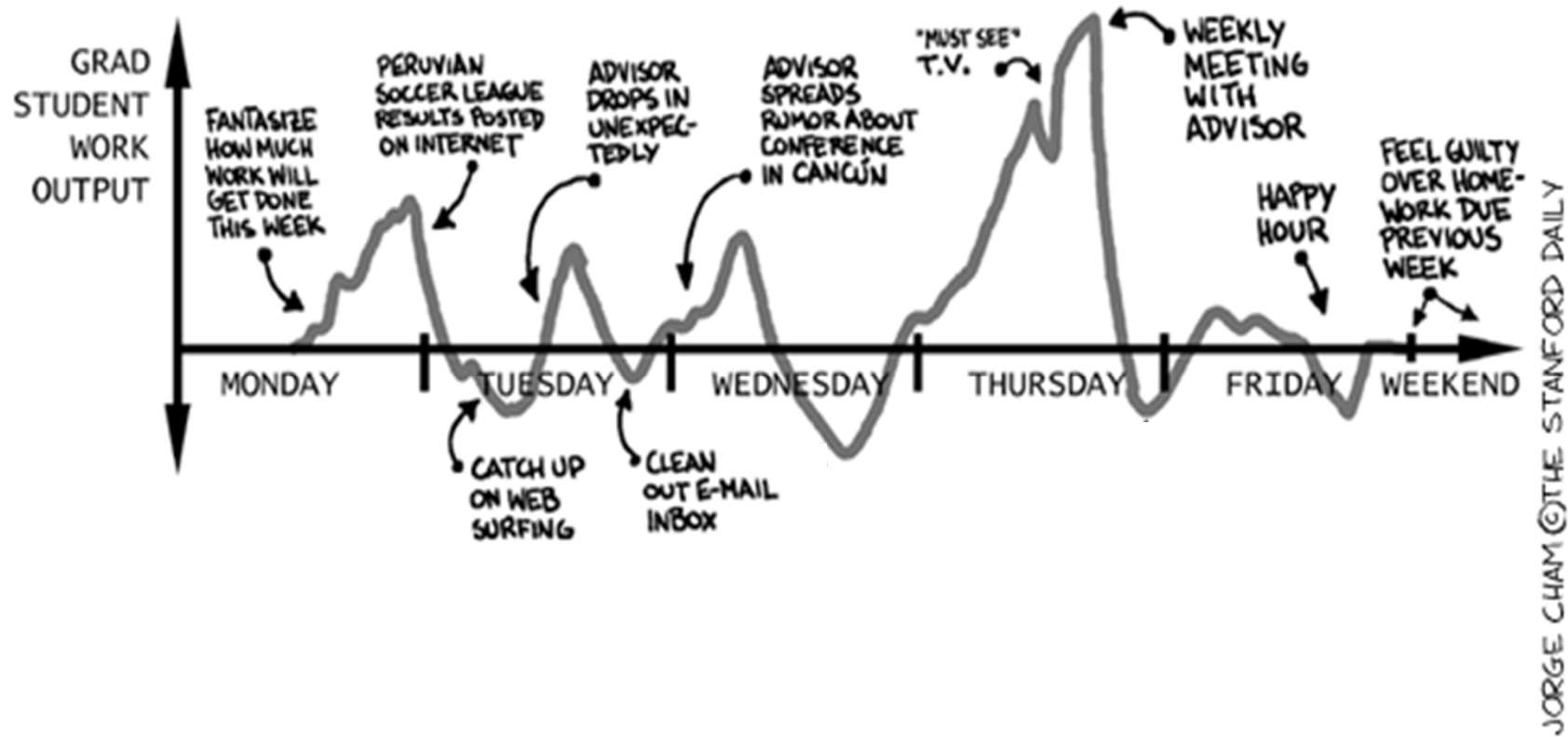
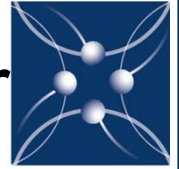
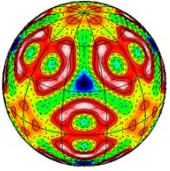


Grad student timeline, Finding an advisor

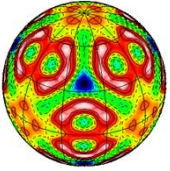




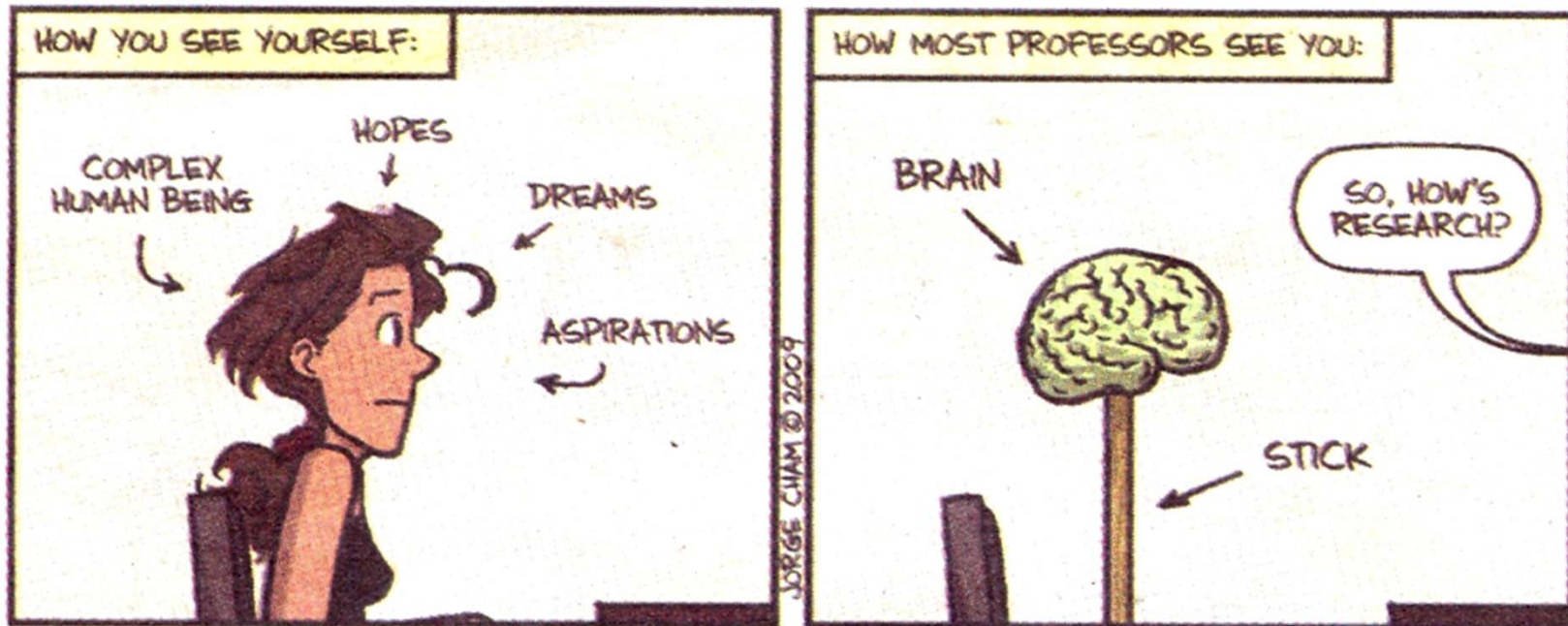
Life cycle of a typical grad student



- First year
 - “lots” of courses (2-3/semester)
 - learn about research opportunities, ‘hang around’ research group
 - Be a teaching assistant -- equivalent in time commitment to 1 course
- First summer
 - start up with and get supported by a research group
 - prepare for qual
- Second year
 - take ‘qualifying’ exam at beginning of year
 - fewer courses, ramp up on research
 - Usually become an RA this year and (maybe) in subsequent years
- Third year
 - courses more specialized, mostly research
 - thesis proposal (“prelim” exam)
- Years 4-N
 - focus is entirely on research
 - you may take an occasional “seminar” course
 - eventually....write thesis, defend thesis

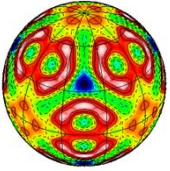


Finding an advisor



WWW.PHDCOMICS.COM

Of course, this isn't true here at Illinois!! ;-)

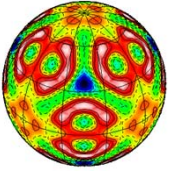


Finding an advisor



- **What does an advisor do?**
 - Guides your PhD research
 - Is main editor of your PhD thesis
 - Introduces you to scientific community
- **How many advisors are there at UIUC?**

Approx. 70-80 professors supervise students for physics PhD (not just Physics!! ~10% of Physics grad students do research in other departments!)
- **How many students are there here?**
 - Approx. 270 students are seeking physics PhD



Key decisions you'll need to make



1. Do you want to be a theorist or an experimentalist?

Theorists like:

Analytical calculations

Mathematics

Developing models

Computers

Does a blackboard full of equations excite you?

Experimentalists like:

Equipment building

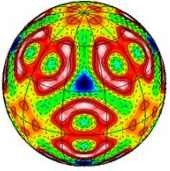
Equipment using

Data Analysis

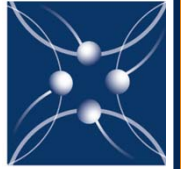
Computers

Does a table with circuit boards, optical mounts, etc., excite you?

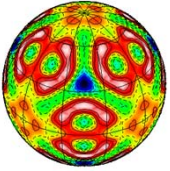
If you want to do both, generally speaking, it's probably a little easier to do theory as an experimentalist than to do experiments as a theorist...



How is it at Illinois?



- About 35% of students do theory, 65% experiment
- Of the students who change (t to e) or (e to t), most started in theory and change to experiment



Key decisions you'll need to make



2. What area of research interests you?

Astrophysics - Physical processes of planets, stars, galaxies,...

Atomic and Molecular Physics - Physics of atomic or molecular systems

Biophysics - Physical processes of biological molecules

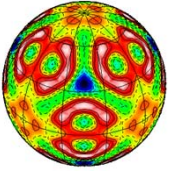
Condensed Matter - Physics of materials, solid phases of matter

Nuclear/Medium Energy Physics - Physics of atomic nucleus, muons, protons, neutrons, other particles

Particle/High Energy Physics - Study fundamental constituents of matter

Physics Education Research - Study how we learn science concepts

Quantum Information - Study/Exploitation of quantum 'weirdness'

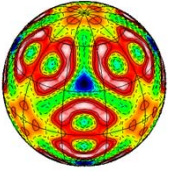


Key decisions you'll need to make



3. What *style* of research/advisor interests you?

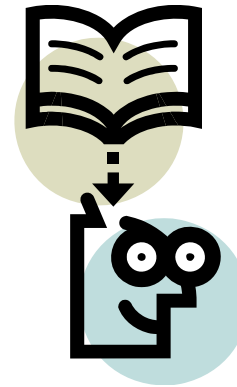
- Large collaborative project vs. Small individual project
(high energy/nuclear vs. condensed matter/biophysics)
- Pure subfield vs Interdisciplinary research
- “Hands on” advisor vs. “Supervisory” advisor
- New project/lab vs Established project/lab

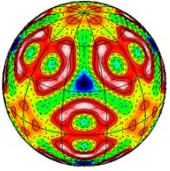


How can you tell what you want?

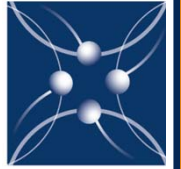


- You just know
- Based upon classes you liked best or did well in
- From undergraduate research projects you liked or didn't like
- By seminars you see that inspired you (or didn't!)





What advisors are looking for

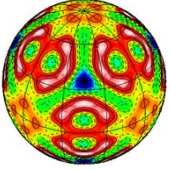


Experimentalists:

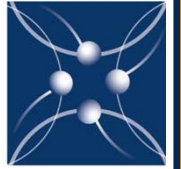
- Most experimental advisors would like, but don't require, laboratory experience...i.e., they will train you
- Those building a new lab may want more experimental background
- Less grade conscious, in general

Theorists:

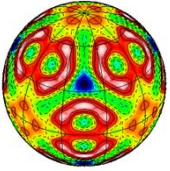
- Theory advisors are generally more grade-conscious
- May want you to have more advanced courses (quantum field theory, etc) before taking you as a student
- Generally want a strong math background



Some Tips



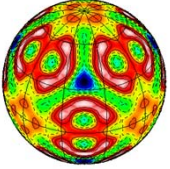
- Don't be too “calculating” about your decision: **research can be hard sometimes, so find something that excites/inspires you!!**
- Don't forget about opportunities outside the physics department
- Explore a little...don't assume you're sure you know what you want to do
- Your quality of life has a definite impact on the quality of research you can do, so find an advisor and group environment you are comfortable in



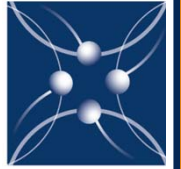
Goals and Time frames



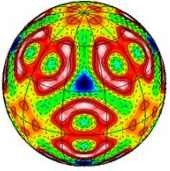
- **Goal:** start with an independent study with an advisor (Physics 597)
- **Time frames:**
 - Hang around the lab/group in Fall 2011 or Spring 2012
 - Try to start formally with a group in Summer 2012, at the latest



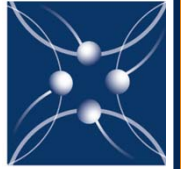
How to find an advisor



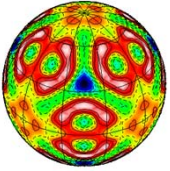
- Identify potential advisors
 - Look over their research pages on www.physics.uiuc.edu
 - Go to their seminars
 - Send them an e-mail to ask if you can meet to talk about their research
 - Talk with grad students of potential advisors



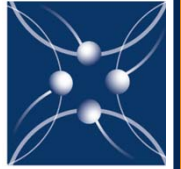
Questions to ask a potential advisor



- Is he/she taking students? If “no”, then when will they take on students?
- Are the advisor’s research projects collaborative (multiple students), or does every student have his/her own project?
- Will you be expected to build a new apparatus (or write new code), or will you be jumping in the middle of a well-developed project?
- Is it likely you’ll be constantly funded during your tenure, or will you be expected to TA periodically?



How to find an advisor



- Once you've identified an advisor you're interested in, get your foot in the door
 - Ask about attending group meetings
 - Ask about getting involved with small projects, even if you're not funded
 - Start early (this semester or next semester!)