

Astronomy 596/496 APA

Lecture 3

Sept. 8, 2016

Announcements:

- Welcome!
- HW was due today

Today's Agenda

- ★ Colloquium Recap
- ★ Astro-Careers: Wordline
- ★ Order of Magnitude
- ★ Colloquium Preview

NSF Graduate Research Fellowship

Due: Oct 28

Eligibility:

- U.S. citizens, nationals, or permanent residents
- undergrad senior, 1st and 2nd year graduate students

Q: why bother?

Q: isn't it a waste of time if I don't get the money?

Need to request letters **now!**

NSF-GRF Information Session

tomorrow Friday, September 9th, 2:00 to 4:00 pm

Multipurpose Room, Ikenberry Commons

Colloquium Review

Q: What is a colloquium?

Q: Why is a colloquium—what's the point?

Q: Who gives colloquiuma? How are they chosen?

Q: Who is the intended audience?

Q: What is challenging about giving a colloquium?

Q: What can you do to prepare to give an awesome colloquium?

this past Tuesday: Prof. Neal Dalal

“Detecting dark matter substructure using gravitational lensing”

Q: What was the talk about?

Q: Key/memorable results?

Q: What did you like about the presentation?

Q: Lingering questions?

Q: Other comments?

Careers: Worldlines

Start: Here and now

Finish: Retirement

Q: Grad school milestones?

Q: Branching points?

World Line Events

Sample list—not complete or unique:

Grad School

- choose grad school
- take classes
- find advisor
- do first research project
- write papers
- give posters, then talks
- take prelim
- write observing/computer time/fellowship proposal
- write thesis
- defend thesis

Path After PhD

Postdoc

then paths diverge

- academia: diverge further along teaching↔research spectrum
first student, tenure, promotion to Full, awards, fame...
- observatory
- national lab
- planetarium
- industry—e.g., big data
- finance
- nonprofit

Order of Magnitude: Milky Way Black Holes

0. Guess the number N_{bh} of black holes in our Galaxy
1. Think of at least two ways to estimate N_{bh}
2. Estimate the distance to the nearest black hole
3. Bonus: Is there more mass in Sgr A* or the other black holes?

Colloquium Preview

Next week, Sept. 13

- Xuening Bai, Harvard

“The microphysics of astrophysics: adventures in computational magnetohydrodynamics”

astrophysical implications of magnetohydrodynamics

Q: what's magnetohydrodynamics?

Q: in what astrophysical systems is MHD important?

- *Q: why is it challenging?*