

# 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 colloquia? 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**

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*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  $N_{\text{bh}}$  of black holes in our Galaxy
1. Think of at least two ways to estimate  $N_{\text{bh}}$
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?*