Is grad school right for me?  
If so, how do I get there?

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What is a PhD?

- Take some piece of knowledge about the universe from (frontier – ε) to (frontier + ε)

- Start out knowing nothing about a topic, and four years later you are the world expert

- “License to think” – allows you to direct research projects, teach @ college/univ, write grants
Why Go to Grad School?

- Participate in the excitement of the intellectual frontier
- Deeper understanding of a subject
- Better/different job prospects
- DON’T Drift into graduate school
What else could I do?

Trends in initial outcomes of physics bachelor’s Classes of 1995 to 2014 (1 year post degree)

Field of Employment

2013-14 data

http://www.aip.org/statistics
What’s a Bachelor’s Degree Worth?
Typical Salaries for Bachelor’s Degree Recipients, Class of 2015

Starting Salary in Thousands

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1 yr post B.S. (2016/7)
1 yr post Ph.D. (2016/7)
10 yr post PhD (2011)

Private Sector
Gov’t Sector
Academic Sector
Who gets a physics PhD?

Physics PhD’s—2012 data N=1762
- 51% US Citizens
- 19% Female
- 10% Age $\geq$ 35
- 12% of US citizens are non-white

Will PhD Programs expand with rise in B.S.?
Newly Hired Faculty Growth < PhD

- 2008 Hire /2004 PhD = 40%
- 2010 Hire /2006 PhD = 26%
- 2014 Hire /2010 PhD = 30%

Jobs like mine: ➔10%
General Academic: <30%
What else can I do with a PhD?

Classes of 1996-7 and 2000-2001
Polled by AIP in 2011

Common Careers of Physicists in the Private Sector
PhDs educated in the U.S. 10-15 years earlier

- Self-employed
- Finance
- Gov’t Contractors
- Health & Medicine
- Industry
  - Engineering
  - Computer Science
  - Physics
  - Other STEM
  - Non-STEM

Most Common Activities:
- solving complex problems
- managing projects
- writing for a technical audience
So if I do go to grad school …

- What happens?
- How long does it take?
- How do I finance it?
- How do I figure out where to go?
- What are grad schools looking for?
“Standard Path” to the Ph.D.

- Take Classes
- Read other people’s ideas, get trained
- Dream New Ideas
- Take Data/Calculate
- Analyze Results
- Present work
- Publish results
- GRADUATE
“Standard Path” to the Ph.D.

- Take Classes: 2-3 years
- Read other people’s ideas, get trained
- Dream New Ideas
- Take Data: 2-4 years
- Analyze Data
- Present work
- Publish results
- GRADUATE
So if I do go to grad school …

- What happens?
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- What are grad schools looking for?
You get **PAID** to go to grad school!!

**PLUS:** Your tuition gets paid & you don’t have to pay off student loans until you graduate.

You don’t add to your savings, but you don’t deplete them, either.

Current UW Rates: $27-31k/yr
Current NSF Fellowship: $34k/yr

Roommates
Used Car, New Computer

* NSF deadline is late October
So if I do go to grad school …

- What happens?
- How long does it take?
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- How do I figure out where to go?
- What are grad schools looking for?
Top Tier? Big? Close to home?

- **Ranking**
  - Rankings are out of date – new hires make a big difference
  - Top tier hire each other’s grads
  - Next tier = schools like UW
  - Lower tiers often have pockets of top-ranked subfields

- **Size**
  - Large comprehensive department lets you change sub-fields
  - Small lets you be a bigger fish in a smaller pond
  - Your professional network = your grad school contacts

- **Interdisciplinary Connections**

- **Geography**

- **Department Climate – Visit!!**
So if I do go to grad school …

- What happens?
- How long does it take?
- How do I finance it?
- How do I figure out where to go?
- What are grad schools looking for?
Selection Criteria

- Probable success depends on traits such as:
  - Commitment
  - Creativity
  - Maturity
  - Confidence
  - Leadership
  - Communication Skills

- Good match between your goals and research in the department (and not too many in one area)
- Successful research (or independent) experience
- Your UG academic performance and GRE
- Meet all deadlines; essay spelling and grammar
UW Admission Statistics

- 700 Apply ⇒ 90 – 100 Admit ⇒ 25 Enroll
- Physics GRE of US Admits:
  - Average in the low 800’s (out of 990)
  - Admission rare below the mid 600’s
- Undergrad GPA:
  - Average 3.8 for last two years
  - Admission rare below ~ 3.4
- Research Experience
  - Expected: Almost everyone has some

UW’s current US News ranking is about 20
What do they know about me?

**GRADES**

**GRE**
Physics + General

**Letters of Rec**
1. Letter of Rec 1
2. Letter of Rec 2
3. Letter of Rec 3

**Personal Statement + Cover Letter**

**Study for the GRE!**
- Very different from classroom exams
- Balance Speed vs. Silly Mistakes
Personal Statement

- Be honest and sincere
  - Show, don’t tell
- Speak to your strengths and goals
  - OK not to know your specialty, but don’t sound wishy-washy
- Tailor and connect to the target department
  - Mention specific research areas, faculty
- Address any irregularities in your record
  - OK for this to be in letters of reference
- EDIT for grammar, spelling, coherence
  - Have someone read your essay
- Give a copy to your references
Letters of Recommendation

- You need 3 letters from people who know you well outside the classroom
  - Thank them if they say you should find someone else

- At least one should be from someone with whom you have done research (either at UW or elsewhere)
  - Summer REU, Local project with results by Autumn Sr Year

- Provide background information
  - Aspects you want them to cover in their letter

- Give plenty of time
  - Send email with a list, including deadlines and links
  - Gently verify/remind as deadline approaches
Overall Advice

- Do research summer after junior year
  - Form a GRE study group wherever you are

- Don’t overload your schedule senior year
  - Applications and visiting weekends = extra half class

- Apply to 7–10 places
  - 2-3 “Reach”, 2-3 “Safety”
  - Don’t apply anywhere you aren’t willing to go

- Stand out from the rest
  - Apply WELL BEFORE the deadline
  - Visit, call and/or email someone you want to work with
    - (but don’t bug them too much....)

- Check that file is complete
  - Contact Grad Assistant by email
  - Follow up on late letters, transcripts, etc.
It’s not for everyone, but ...

- Grad study in Physics can be a grand adventure.
- A Physics PhD prepares you for a wide variety of careers and life experiences.
- If this is what you want, and you are willing to work towards it at subsistence wages for 6 years,