Graduate Resources Advancing Diversity with Maryland Astronomy and Physics

Graduate School in Physics and Astronomy
The Hows, Whys, and Whens

GRAD-MAP Team
Who goes to Graduate School?

People who...

• are excited to do research
• have a related bachelors degree
• want to learn
• just finished college, took time off after college, or first pursued other careers
What is Graduate School in Physics or Astronomy?

Research Degree (Ph.D.) – study of a focused area of physics or astronomy

Your work is original, rigorous and collaborative.

- **Original**: new research, expanding current knowledge
- **Rigorous**: reviewed by colleagues
- **Collaborative**: part of a research group
  - Group sizes range from a few to hundreds!
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Grad School Timeline

Master’s Work
- Classes
- Try out, start research project(s)

Research
- Choose thesis advisor and project
- Thesis Proposal
- Publish paper(s)

Earn Master’s Degree

Years 1 – 2

Years 3 – 4

Years 5 – 7

Thesis Work
- Publish papers
- Conferences/Give talks
- Write Thesis

Apply for jobs

Thesis Defense
The Life of a Grad Student

Less Flexibility
- Attending classes
- Grading / teaching (in some, not all cases)
- Reading academic papers
- Looking for research opportunities/doing research

More Flexibility
- Doing research, meetings with advisor and collaborators
- Preparing research for publication, presentations
- Attending talks
- Travel (conferences, observing, external projects)
Perks of Grad School
You get a **free education**.

You’re **independent**.
You have a **flexible schedule**.

You **get paid** to do research/teach.
You’re **always learning**.

**Travel!**

- Big Sur, CA
- Stockholm, Sweden
- Big Pine, CA
- Rome, Italy
- Santorini, Greece
- Tokyo, Japan
Ph.D. Career Paths

Academia
- Post-doctoral research
- Research Faculty

Government
- NASA
- NSF
- Congress/Staffer

Teaching
- Private schools (K-12)
- Community College/
  Small College Faculty

Industry
- Private Sector
- Consultant
- Technology
- Data analyst
- Finance
How to Navigate a Path to Graduate School

Research Experience
try it out, see what you like,
REUs/Summer Internships,
GRAD-MAP Winter Workshop

Major Coursework
build a strong foundation
in physics/astronomy, math

Mentor(s)/Advisor(s)
talk to them, get advice,
think about letter-writers

CC Students:
Transfer to 4-year college
know what credits will transfer;
plan for degree completion

Physics GRE
study and take it twice

General GRE
study!

Make a Grad School List, Apply
decide what schools look
interesting, and apply to several

Graduate!

Graduate School
How to Navigate a Path to Graduate School

What if...

...you don’t get in to graduate school?
...you don’t feel prepared to go to graduate school?
...you don’t feel ready to commit to a Ph.D.?

Graduate! -> Make a Grad School List, Apply

Graduate School
How to Navigate a Path to Graduate School

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Graduate School

Step 1: Bridge Program or Terminal Master’s Program
Get coursework, research experience, GRE prep, individual mentoring, and other professional development

Step 2: Ph.D. Program
Earn Ph.D. on typical Grad School Timeline (or possibly accelerated, if you come in with a Master’s degree).
Bridge Programs

Research, Mentoring, Coursework, and preparation for graduate school
Funded, may or may not grant a master’s degree
Looking for students with weak spots on their applications!

Fisk-Vanderbilt: [www.vanderbilt.edu/gradschool/bridge/](http://www.vanderbilt.edu/gradschool/bridge/)
Columbia University: [academicplanning.columbia.edu/bridge-phd-program-natural-sciences](http://academicplanning.columbia.edu/bridge-phd-program-natural-sciences)
University of Michigan: [applied.physics.lsa.umich.edu/imes_moore.html](http://applied.physics.lsa.umich.edu/imes_moore.html)
American Physical Society (APS) Bridge program: [www.apsbridgeprogram.org](http://www.apsbridgeprogram.org)
   Includes sites at Florida State University, Indiana University, Ohio State University, University of South Florida, and the University of Central Florida
Princeton University: [www.princeton.edu/physics/graduate-program/bridge-program/](http://www.princeton.edu/physics/graduate-program/bridge-program/)

Terminal Master’s Programs

Research, Mentoring, Coursework, and preparation for graduate school
May or may not be funded, will grant a master’s degree

Cal State Los Angeles: [web.calstatela.edu/dept/physics/Masters%20Degree%20Physics.htm](http://web.calstatela.edu/dept/physics/Masters%20Degree%20Physics.htm)
Wesleyan University: [www.wesleyan.edu/astro/grad-program/](http://www.wesleyan.edu/astro/grad-program/)