Applying to Graduate School (Successfully!)

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Introduction

- Reasons to go to grad school:
  - It is necessary for your desired career
  - It will increase your professional prospects and options
  - It will significantly improve your career
  - It will satisfy your intellectual curiosity / you are passionate about your desired field

- Reasons NOT to go to grad school:
  - You don’t know what else to do after graduation
  - You are avoiding entering the job market (“real world”)
  - Others (family, friends, society, etc.) are pressuring you to go
Application Components

- Transcripts (usually nonofficial)
- Test Scores
  - General GRE
  - GRE Subject Test
- Resume/CV (sometimes optional)
- Statement of Purpose
- Personal Statement (usually optional)
- Letters of Recommendation
Before Applying

- Throughout your undergraduate career:
  - Nurture relationships with professors in your desired field -- naturally!
  - Work hard to perform your best in your classes -- go to office hours
  - Engage in research -- work hard, develop a good relationship with your advisor, and enjoy what you do
  - Become involved -- related outreach, clubs, etc.
The Application Process

- 3rd year: take the General GRE
The GRE Revised General Test

- Computer-based test assessing ability to think critically on a graduate level
  - Verbal reasoning
  - Quantitative reasoning
  - Analytical writing
- Scored on scale between 130 - 170 & 0 - 6 (analytical writing)
- Cost - $205 (U.S.)
- Offered year round -- can take up to 5 times per year, no sooner than once every 21 days
- Suggestions -- take at end of summer before 3rd year, study for at least one month in advance for a few hours every other day, and every day nearing the exam date
Studying for the General GRE

- **GRE website**
  - Sample questions, free downloadable practice exam, free test preparation software
  - [https://www.ets.org/gre/revised_general/prepare/](https://www.ets.org/gre/revised_general/prepare/)

- **Study vocabulary**
  - Make your own flashcards of words you come across while studying
  - Use online flashcards for greek/latin roots and most common words on GRE

- **Test preparation books -- worth your time and/or money**
  - Kaplan
  - Cracking the GRE, 1000+ practice questions
  - Preparation courses/workshops/bootcamps
The Application Process

- 3rd year: take the General GRE
- Summer before 4th year: choose programs
Choosing Programs

- Talk to your advisor/professors in your desired field for school suggestions and general advice
- **Do the research emphases of the program align well with your interests?**
- **Are there at least 2 - 3 faculty with whom you could envision yourself working?**
- Is the program stable and robust? Is it well-respected and does it have a good reputation?
- Do not yet concern yourself with secondary factors such as academic aspects
- If it is important to you, consider geographic location, climate, and setting (urban, suburban, rural)
- Apply to a breadth of schools -- top programs/reach schools, good fits, and safeties
- Do **NOT** apply to a school just because it is a good program -- prioritize your happiness
The Application Process

- 3rd year: take the General GRE
- Summer before 4th year: choose programs
- Late summer: start applications -- fill out personal information
- Late summer/fall: take the GRE subject test
The GRE Subject Test

- For astrophysics/astronomy programs, often highly recommended but not officially required
- Physics test
  - 100 multiple-choice questions, 2 hours and 50 minutes
  - Score on scale between 200 - 990, in 10 point increments
  - Most questions can be answered with first 3 years of undergrad physics
  - But there WILL be things you have not yet learned
  - Mostly classical mechanics (20%), electromagnetism (18%), quantum mechanics(12%), thermodynamics/statistical mechanics (10%) & atomic physics (10%)
- Cost - $150 (Worldwide)
- Offered in April, September, and October
- Suggested study time -- one to two months in advance, consistently studying a couple hours every day, or intensifying as the exam date approaches
Studying for the Subject Test

● Use your course textbooks
  ○ Teach yourself the subject matter with which you are unfamiliar
● Make your own flashcards/cheat sheet with essential equations/concepts
● Test preparation book -- Conquering the Physics GRE
● Preparation courses/workshops/bootcamps
● Free practice exam available for download from ETS
● Tests from previous years with solutions:
  ○ http://grephysics.net/ans/
● A useful website for information from personal experience:
  ○ http://www.physicsgre.com/
The Application Process

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- Late summer: start applications -- fill out personal information
- Late summer/fall: take the GRE subject test
- Early fall: letters of recommendation
Letters of Recommendation

- At least 3 letters are required
- Good candidates for letter writers:
  - Research advisors
  - Professors with whom you have taken upper division (physics) classes
  - Other (physics) professors who can attest to personal qualities that make you a good candidate
- Ask in advance -- give your letter writers time and be respectful
- Gently remind your letter writers of impending deadlines
- Be grateful!
The Application Process

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- Late summer: start applications -- fill out personal information
- Late summer/fall: take the GRE subject test
- Early fall: letters of recommendation
- Early/mid fall: statement of purpose
Statement of Purpose

● The purpose:
  ○ Express your career goals & research interests
  ○ Mention research projects & emphasize individual contributions
    ■ Extensive detail is not necessary
  ○ Explain why the particular program is a good fit for you
  ○ Indicate why you want to and why you should go to graduate school
● Generally 1 - 2 pages
● Convey your maturity and your passion implicitly through your writing
● Write intelligently, but not ornately
● Do not make spelling or grammatical errors
● Tailor a single paragraph to each different institution
● Get feedback from professors/those who have been through the application process in your desired field
● Don’t worry about standing out or being unique -- just be honest!
The Application Process

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- Late summer/fall: take the GRE subject test
- Early fall: letters of recommendation
- Early/mid fall: statement of purpose
- Mid fall: personal statement
Personal Statement

- Usually used for scholarship/fellowship purposes
- Generally 1 - 2 pages
- Not usually required, but recommended
- Personal information goes here -- NOT in the statement of purpose
- Address how your personal history/background has informed your decision to pursue a graduate degree
- Describe challenges you **overcame** as an undergraduate
- Mention relevant activities here, such as outreach and leadership
The Application Process

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● Early fall: letters of recommendation
● Early/mid fall: statement of purpose
● Mid fall: personal statement
● Before submission: polish your CV/resume
Curriculum Vitae

- Comprehensive document containing high detail about accomplishments/career
- Can exceed two pages
- Factors to include:
  - Education
  - Research projects and descriptions
  - Relevant work experience
  - Publications and presentations
  - Awards and honors
  - Relevant leadership positions/volunteering
Don’t forget about fellowships!

- The benefits of external funding
  - Coveted by graduate programs and research advisors alike
  - Freedom in choice of advisor at graduate school
  - Removes financial obstacles to degree progress, e.g. TAing
  - Good practice if you desire a career in academia
  - Prestige

- National and private fellowships
  - NSF GRFP, DOE CSGF, DOD NDSEG, NASA
  - Ford, Soros, Hertz, etc.
  - Institution specific fellowships (diversity)
Applying for Fellowships

● Similar to applying for graduate school
  ○ Content in essays similar to statement of purpose and personal statement
  ○ Why should you go to graduate school? → Why should you get this fellowship?
  ○ Primary difference: research proposal
  ○ The fellowships fund YOU -- not your proposed research project
● Generally for senior undergraduates and first to second year graduate students
● Much more of a crapshoot than graduate admissions
● Persistence is key!
Example: The NSF Fellowship

● About the fellowship:
  ○ Supports graduate students in STEM
    ■ Physical sciences deadline -- October 27, 2017
  ○ $34,000 per year for three year tenure over a 5 year period
  ○ Potential for significant research achievement in science or science education
  ○ Underrepresented groups encouraged to apply
  ○ **Intellectual Merit and Broader Impacts**
    ■ Should be present throughout both research proposal and personal statement, relevant background, & future goals statement

● General advice:
  ○ Just like your graduate essays, start early
  ○ Consult with your research advisors about proposal topics
  ○ When writing, keep in mind that the reviewers read your essays *very quickly* -- clarity is key
  ○ **Solicit feedback!**
Conclusion

- Do not procrastinate on your applications, **SUBMIT EARLY!**
- Graduate applications are evaluated holistically
  - Construct a strong application as a whole, do not worry if you have isolated weaknesses
- Letters of recommendation are probably the single most important factor
- Graduate admission boards are made of people, just like you
- Remember, you are already on your way

**Good luck!**

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References

- https://www.ets.org/gre/revised_general/about
- http://www.idealist.org/info/GradEducation/GoodReasons
- http://www.idealist.org/info/GradEducation/BadReasons
- https://www.ets.org/gre/subject/about
- https://www.ets.org/gre/subject/about/content/physics

Fellowships:
- DOE CSGF - https://www.krellinst.org/csgf/
- NSF GRFP - https://www.nsfgrfp.org
- DOD NDSEG - https://ndseg.asee.org
- NASA - https://science.nasa.gov/researchers/sara/fellowship-programs
- Ford - http://sites.nationalacademies.org/PGA/FordFellowships/PGA_047958
- Soros - https://www.pdsoros.org