Fall 2022 Phys 496 Grad School Q&A Session

Topics

“To be, or not to be” (a graduate student)
• Things to consider when deciding whether to go to graduate school
• What’s life like as a grad student

Applying to graduate school
• Issues to consider: e.g., recommendation letters, statement of purpose

How to choose a graduate school
• Sources of information on schools, faculty, and research

Getting into graduate school
• Some ways to make yourself competitive
Did you enjoy your undergraduate research experience?

Graduate school is (almost) all about research. You must be willing to invest the time (typically 5-7 years) and long hours to get a PhD.

Do the research areas you have been hearing about sound interesting?

It’s important for you to expose yourself to all the different research areas, to see if anything strikes your fancy!

Does the open-ended nature of research appeal to you?

You’ll have guides in your research, but no experts who’ll know the answer for sure!

Are you resilient and not easily distracted or deterred?

You’ll definitely run into road blocks in research, and you’ll need to pull yourself through
Timeline of a typical grad student

• First year
  – some courses (2 to 3 per semester); prep for qualifying exam
  – learn about research opportunities
  – Serve as a teaching assistant

• First summer
  – start up with research group
    • hopefully that is the start of a longer term relationship

• Second year
  – generally you take a ‘qualifying’ exam at beginning of year
  – 1 or 2 courses each semester, ramp up on research
  – Become a research assistant in this and (maybe) subsequent years

• Third year
  – 1 specialized course per year (maybe), mostly research
  – thesis proposal (‘prelim’ exam)

• Years 4-N
  – focus is entirely on research
  – you may take an occasional ‘seminar’ course
Question: “Can we take some time off to [insert activity here] and then go to grad school…or would my chances lessen as a result?”

Answer: There is no rush to go to graduate school, particularly if you’re unsure about your plans and interests. If you decide to take a year off before going to grad school, this probably won’t hurt your chances with most admissions committees. Doing something productive certainly helps but is probably not essential.

You might not want to delay taking GRE exams and transitioning into graduate coursework can be challenging after a prolonged delay.
What’s Grad School Like?

Question: “How is grad school paid for?”

Answer: In grad school you will generally be supported either by a TA or an RA, so you won’t have to work another job to support yourself. Tuition is generally waived in PhD programs.

However, be on the lookout for “professional masters” physics and engineering programs that won’t provide salaried jobs and waiver-generating appointments.
Preparing for Grad School

Freshman/Sophomores
- Get good grades!
- Think about undergraduate research
- Don’t put off laboratory courses!

Juniors
- Undergraduate research!
- Get good grades!
- GRE in April?

Seniors
- Check test deadlines and applications deadlines early!
- Take GREs in **September** or **October**
- Research graduate schools, faculty, and research areas
- Line up recommendation letters early…think carefully about writers
- Polish the statement of purpose…have someone proofread it!
- Apply to schools starting in early December…check deadlines!
Preparing for Grad School

Question: “Should I be taking grad courses before I apply?”

Answer: You should demonstrate a strong foundation in upper level physics and math courses. Grad level classes are not necessary in my opinion…I’d opt for a deeper/broader preparation at the undergraduate level (e.g., more math!) than diving into grad courses. Make sure you’re prepared for the GREs!*

*For a list of schools that do and do not accept GREs, see: [GRE requirements & admissions fees for US/Canadian Astronomy & Physics Programs - Google Sheets](#)
Preparing for Grad School

Question: “How much research experience is needed to be competitive for a top grad program?”

Answer: You’re not competitive if you have NO research experience, but it isn’t necessary to have long experience or multiple experiences.

At least one quality research experience – leading to a satisfied supervisor and a strong recommendation letter – is probably better than several short research activities in which you’re unable to make much research progress or form much of an impression on your advisor.

If you do have an opportunity to explore more than one research opportunity, try sampling different research sub-fields, if possible.
Preparing for Grad School

Other issues:

Grades vs GRE?
At Illinois – and indeed at most places, I think -- grades are weighted more than GRE scores. Math and Physics grades are most important, as are grades in upper level courses.

Don’t slack off your senior year!
If you’re on the borderline for admission, admissions committees often ask for updates of grades and look at course deficiencies.

Interested in theory?
Take more math!

Interested in experimental physics?
Take more labs! Take labs earlier rather than later!

Not sure about your research interests?
Sample different research areas, if possible.
Applying to Grad School

WE CAN'T CHOOSE GRAD SCHOOLS BASED ON HOW GOOD THEIR WEATHER IS!!

YEAH, I GUESS YOU'RE RIGHT...
Question: “What should be included in the statement of purpose?”

Answer: The statement of purpose is very important, as it is one of the only places to put information about your research abilities in your application.

– Emphasize your research experience and enthusiasm for research…describe what got you “hooked” on scientific research

– Explain your interests: don’t be too vague or broad in your descriptions

– Tailor part of the statement to the institution: explain why the institution you’re applying to is ideal for fulfilling your goals…name specific faculty in whom you’re interested

– Have someone edit your SOP…avoid typos and grammatical mistakes!
Question: “Who should I consider for recommendation letters?”

Answer: Recommendation letters are of crucial importance, and they should emphasize your research abilities, if possible.

- You should have at least 1 letter writer who can describe your research abilities.

- If you use a letter writer from a course, choose someone who can comment on special qualifications you have, not just what grade you received.

- Give your letter writers plenty of notice…do not wait until the last minute to ask them to write letters.

- Provide your letter writers with a copy of your CV and, if possible, a draft of your SOP.
# Some Graduate school application deadlines*

<table>
<thead>
<tr>
<th>Deadline</th>
<th>Schools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec. 26–31, ’22</td>
<td>Northwestern, Rutgers</td>
</tr>
<tr>
<td>Jan. 14-21, ’23</td>
<td>Illinois</td>
</tr>
</tbody>
</table>

*Often significantly earlier for fellowship/international applicants
Applying to Grad School

Other issues:

Ask about application fee waivers
Some programs will offer a waiver of the significant application fee if you ask!

Subject GRE test
An increasing number of grad programs don’t require the Physics GRE test:
https://www.gradschoolshopper.com/gradschool/browseby.jsp?q=3&cid=3

APS Webinars on Grad Admissions worth checking out:
November 2016: https://www.youtube.com/watch?v=N9KjNXm-BjU
November 2017: https://www.youtube.com/watch?v=s5nDQ-OvRkQ
Question: “What schools are considered safety schools? How many schools should I apply to?”

Answer: Tough question -- the answer to this of course depends on your grades and GRE scores. The top 10 programs aren’t sure bets for anyone. You should NOT apply just to 2-3 top programs. You should probably apply to 6-10 programs, with a good distribution between “top” and “mid-level” schools. Try going online to see qualifications of different classes.

Check out Gradschoolshopper.com and look for schools with good programs in your field of interest and high acceptance rates.
<table>
<thead>
<tr>
<th>School name</th>
<th>Department</th>
<th>Acceptance rate</th>
<th>Number applied</th>
<th>Number admitted</th>
<th>Number enrolled</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 University of Chicago</td>
<td>Astronomy &amp; Astrophysics</td>
<td>6.59%</td>
<td>273</td>
<td>18</td>
<td>4</td>
</tr>
<tr>
<td>2 New Mexico State University</td>
<td>Astronomy</td>
<td>7.95%</td>
<td>151</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>3 Wesleyan University</td>
<td>Physics</td>
<td>8.89%</td>
<td>45</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>4 Vanderbilt University</td>
<td>Physics &amp; Astronomy</td>
<td>8.94%</td>
<td>179</td>
<td>16</td>
<td>11</td>
</tr>
<tr>
<td>5 Clark University</td>
<td>Physics</td>
<td>9.52%</td>
<td>21</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>6 University of Oklahoma</td>
<td>Physics &amp; Astronomy</td>
<td>9.79%</td>
<td>143</td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>7 University of Wyoming</td>
<td>Physics &amp; Astronomy</td>
<td>10%</td>
<td>90</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>8 University of Maryland, College Park</td>
<td>Astronomy</td>
<td>10.74%</td>
<td>149</td>
<td>16</td>
<td>9</td>
</tr>
<tr>
<td>9 University of Pennsylvania</td>
<td>Physics</td>
<td>11.99%</td>
<td>467</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>10 Kent State University</td>
<td>Chemical Physics</td>
<td>12%</td>
<td>50</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>11 Indiana University, Bloomington</td>
<td>Astronomy</td>
<td>12.28%</td>
<td>57</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>12 University of California, Santa Cruz</td>
<td>Physics</td>
<td>12.45%</td>
<td>265</td>
<td>33</td>
<td>9</td>
</tr>
<tr>
<td>13 Brown University</td>
<td>Physics</td>
<td>12.54%</td>
<td>319</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>14 Columbia University</td>
<td>Physics</td>
<td>12.62%</td>
<td>523</td>
<td>66</td>
<td>28</td>
</tr>
<tr>
<td>15 University of Denver</td>
<td>Physics</td>
<td>12.77%</td>
<td>47</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>16 Wayne State University</td>
<td>Physics and Astronomy</td>
<td>13.16%</td>
<td>76</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>17 University of Chicago</td>
<td>Physics</td>
<td>13.54%</td>
<td>886</td>
<td>120</td>
<td>45</td>
</tr>
<tr>
<td>18 Central Michigan University</td>
<td>Physics</td>
<td>14.29%</td>
<td>28</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>19 Case Western Reserve University</td>
<td>Physics</td>
<td>14.53%</td>
<td>117</td>
<td>17</td>
<td>11</td>
</tr>
<tr>
<td>20 University of California, Irvine</td>
<td>Physics</td>
<td>14.69%</td>
<td>490</td>
<td>72</td>
<td>29</td>
</tr>
<tr>
<td>21 North Dakota State University</td>
<td>Physics</td>
<td>15%</td>
<td>20</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>22 Duke University</td>
<td>Physics</td>
<td>15.86%</td>
<td>250</td>
<td>46</td>
<td>17</td>
</tr>
<tr>
<td>23 University of Mississippi</td>
<td>Physics &amp; Astronomy</td>
<td>16.13%</td>
<td>62</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>24 Georgia State University</td>
<td>Physics &amp; Astronomy</td>
<td>16.36%</td>
<td>110</td>
<td>1R</td>
<td>1R</td>
</tr>
<tr>
<td>Rank</td>
<td>University</td>
<td>Field</td>
<td>Research Rank</td>
<td># Students</td>
<td># Docs</td>
</tr>
<tr>
<td>------</td>
<td>-------------------------------------------------</td>
<td>------------------------------</td>
<td>---------------</td>
<td>-------------</td>
<td>--------</td>
</tr>
<tr>
<td>51</td>
<td>University of Illinois, Urbana-Champaign</td>
<td>Physics</td>
<td>24.88%</td>
<td>852</td>
<td>212</td>
</tr>
<tr>
<td>52</td>
<td>Texas Christian University</td>
<td>Physics and Astronomy</td>
<td>25%</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>53</td>
<td>University of South Florida</td>
<td>Physics</td>
<td>25%</td>
<td>92</td>
<td>23</td>
</tr>
<tr>
<td>54</td>
<td>University of Notre Dame</td>
<td>Physics</td>
<td>25.13%</td>
<td>191</td>
<td>48</td>
</tr>
<tr>
<td>55</td>
<td>University of Texas at Austin</td>
<td>Physics</td>
<td>25.99%</td>
<td>354</td>
<td>92</td>
</tr>
<tr>
<td>56</td>
<td>University of North Carolina, Chapel Hill</td>
<td>Physics &amp; Astronomy</td>
<td>26.23%</td>
<td>183</td>
<td>48</td>
</tr>
<tr>
<td>57</td>
<td>Oregon State University</td>
<td>Physics</td>
<td>26.32%</td>
<td>133</td>
<td>35</td>
</tr>
<tr>
<td>58</td>
<td>University of South Dakota</td>
<td>Physics</td>
<td>26.32%</td>
<td>19</td>
<td>5</td>
</tr>
<tr>
<td>59</td>
<td>Missouri University of Science &amp; Technology</td>
<td>Physics</td>
<td>26.67%</td>
<td>45</td>
<td>12</td>
</tr>
<tr>
<td>60</td>
<td>University of Missouri, St. Louis</td>
<td>Physics &amp; Astronomy</td>
<td>26.67%</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>61</td>
<td>Columbia University</td>
<td>Department of Applied Physics and Applied Mathematics</td>
<td>27.23%</td>
<td>606</td>
<td>165</td>
</tr>
<tr>
<td>62</td>
<td>University of Iowa</td>
<td>Physics &amp; Astronomy</td>
<td>27.54%</td>
<td>138</td>
<td>38</td>
</tr>
<tr>
<td>63</td>
<td>Lehigh University</td>
<td>Physics</td>
<td>27.97%</td>
<td>118</td>
<td>33</td>
</tr>
<tr>
<td>64</td>
<td>University of California, Riverside</td>
<td>Physics &amp; Astronomy</td>
<td>28.23%</td>
<td>294</td>
<td>83</td>
</tr>
<tr>
<td>65</td>
<td>University of Alaska Fairbanks</td>
<td>Physics</td>
<td>28.57%</td>
<td>28</td>
<td>8</td>
</tr>
<tr>
<td>66</td>
<td>University of Minnesota</td>
<td>Physics</td>
<td>28.88%</td>
<td>322</td>
<td>93</td>
</tr>
<tr>
<td>67</td>
<td>University of Texas, Arlington</td>
<td>Physics</td>
<td>28.99%</td>
<td>69</td>
<td>20</td>
</tr>
<tr>
<td>68</td>
<td>Northeastern University</td>
<td>Physics</td>
<td>29.02%</td>
<td>224</td>
<td>65</td>
</tr>
<tr>
<td>69</td>
<td>University of South Carolina</td>
<td>Physics &amp; Astronomy</td>
<td>29.11%</td>
<td>79</td>
<td>23</td>
</tr>
<tr>
<td>70</td>
<td>University of Nevada, Las Vegas</td>
<td>Physics</td>
<td>29.63%</td>
<td>27</td>
<td>8</td>
</tr>
<tr>
<td>71</td>
<td>Carnegie Mellon University</td>
<td>Physics</td>
<td>29.93%</td>
<td>274</td>
<td>82</td>
</tr>
<tr>
<td>72</td>
<td>University of Nebraska, Lincoln</td>
<td>Physics &amp; Astronomy</td>
<td>30.24%</td>
<td>205</td>
<td>62</td>
</tr>
<tr>
<td>73</td>
<td>Purdue University</td>
<td>Physics</td>
<td>30.31%</td>
<td>320</td>
<td>97</td>
</tr>
<tr>
<td>74</td>
<td>The Graduate Center - The City University of New York</td>
<td>Ph.D. Program in Physics</td>
<td>30.6%</td>
<td>134</td>
<td>41</td>
</tr>
<tr>
<td>75</td>
<td>Ohio State University</td>
<td>Physics</td>
<td>30.71%</td>
<td>394</td>
<td>121</td>
</tr>
<tr>
<td>76</td>
<td>University of Illinois, Chicago</td>
<td>Physics</td>
<td>31.45%</td>
<td>124</td>
<td>39</td>
</tr>
</tbody>
</table>

https://www.gradschoolshopper.com/gradschool/rankby.jsp?q=2&cid=3
Choosing Grad Schools

Other issues to consider:

**Don’t be too selective:** Apply to all the programs in which you have a strong interest.

**Aim high!** Don’t be too quick to convince yourself that there are schools you simply can’t get into—but also apply to a “safe” school.

**Don’t put your ‘eggs’ in one research ‘basket’:** Make sure there is more than one research project you’re interested in at a particular school.

**Don’t assume you’re sure about what research area you’re interested in:** Allow yourself the opportunity to shop around.

**Fellowships!** Remember, it’s not just about admission. If your application is in top shape, you can also have a shot at a fellowship…these may have an earlier application deadline.
Choosing Grad Schools

Where to get information on departments:

(1) Departmental websites
   http://www.google.com: Search: “school” + physics

(2) Talk to faculty in your departments

(3) Graduate Programs in Physics, Astronomy, and Related Fields: http://www.GradschoolShopper.com

(4) Rankings:
   PhD.org: http://www.phds.org/rankings/physics
   National Doctoral Program Survey: http://sites.nationalacademies.org/PGA/Resdoc/
Fellowship Deadlines

• NSF: October 21, 2022 (for Physics & Astronomy)
  http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=6201

• Hertz Foundation: ~ October 28, 2022
  http://www.hertzfoundation.org

• National Physical Science Consortium: December 15, 2022
  http://www.npsc.org

• American Assoc. Univ. Women Fellowships: November 1, 2022
  http://www.aauw.org/what-we-do/educational-funding-and-awards/

• Gates: October 12, 2022 (US citizens); December 1, 2022 or January 5, 2023 (non-US, depending on course)
  http://www.gatesscholar.org
Choosing a Graduate School

Other issues to consider:

If you haven’t settled on a research area, think big: Larger schools generally have more diversity of opportunities and research areas.

Go on as many visits as possible: This is a great way to see the true level of activity in a department, to get a feel for the style of the department and of the different research groups, and to get a feel for the community.

Talk to graduate students in the department and research groups you’re interested in: They can provide real insight into the character of the group or department…but consider only first-hand information.

Talk to faculty at Illinois about up-and-coming programs: Illinois faculty in your research area of interest will likely have the most updated information on strong programs you might consider.

Quality of life issues are important!: You’re going to be in grad school for 5-6 years, and so to do your best work, it’s important that you’re comfortable in the environment and with the people you’re working with.
Choosing a Grad School

Question: “How do you find a group/advisor once you’re admitted?”

Issues to consider:

Is your “top choice” faculty member taking students?
Call or e-mail him/her and ask (after admission), ask during visit days

What is the “style” of the group in which you’re interested? (find out from current grad students, by calling or asking during visits)

• Does the faculty member maintain close oversight of students, or does he/she let students work for long periods of time by themselves?

• Are the research projects collaborative (multiple students), or does every student have his/her own project?

• Will you be expected to build a new apparatus (or write new code), or will you be jumping in the middle of a well-developed project?

• Is it likely you’ll be constantly funded during your tenure, or will you be expected to TA periodically?
OTHER QUESTIONS?