Graduate Studies in YOUR Future

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Preparing for Nuclear Science PhD Studies

- Course work
- Research
- GRE exams
- Application
  - Personal statement
  - Letters of reference
- Visit schools
- What to expect as PhD student

(* = where may want to make notes)

What do you want to do after you graduate college?*

- Go to graduate school?
  - PhD or Masters?
  - Which subfield?
- Do something else?
- Go to graduate school eventually?

Preparing for Graduate Studies

- Course work
  - Get to know your instructors
  - Do in-depth work, participate in class
  - Maintain good grades
- Research
  - This past summer
  - Other summers?
  - At your home institution?
- GREs w/ Analytical Writing*
- GRE Subject test (e.g., Chemistry, Physics)

*GREs changed: More reading, more data interpretation

Research Experiences for US Undergraduates: NSF & DOE/SC

- Stipend (≈$5K)
- Housing
- Educational enrichment

- http://www.nsf.gov/crssprgm/reu/reu_search.cfm
- http://science.energy.gov/wdts/suli/

Research Experiences for Canadian Undergraduates

- NSERC-USRA
  http://www.nserc-crsng.gc.ca/Students-Etudiants/UG-PC/USRA-BRPC_eng.asp
- CINP-URS
  http://cinp.phys.uregina.ca/node/179
- TRIUMF undergraduate awards/jobs
  http://www.triumf.ca/undergraduate-student-program

Preparing for Graduate Studies

Learn about which school is right for you:

- Suggestions from faculty or research mentors
  - Graduate program directors at local Univ
- Graduate School recruiting fairs
  - Here at DNP meeting
  - Undergrad Women in Physics meetings
    http://www.aps.org/programs/women/workshops/cuwipapp.cfm
  - Recruiters at recruiting fairs
- Request written materials and go on-line

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- Request written materials and go on-line
- Visit schools before accepting
  - Talk with professors
  - Meet current students
  - Walk around campus, visit the town
- Departments with good climates:
  http://www.aps.org/programs/women/female-friendly/index.cfm

Preparing: What to Expect

- Financial support
  - Ph.D. students in physics, chemistry and related fields are supported
  - Make sure indicate that are interested in financial aid (although Ph.D. programs likely to assume so)
  - Apply for external fellowships:
    NSF Graduate Research
    or fellowships from
    DOD, DHS, DOE, NNSA

Preparing: What to Expect

Forms of Financial support (Ph.D. students)

- Stipend + tuition remission (+ medical benefits)
- Teaching assistant or research assistant or fellowship (or combination of these)
  - Teaching Assistant: teach in classroom, often sections of large introductory lecture or lab courses (≈15 hours/week)
  - Research Assistant: Does research on the project of a faculty advisor (not necessarily your dissertation advisor)
  - Fellowship: no work requirements.
    - Award based on excellent promise

Preparing: What to Expect

- What you will do in a PhD program
  - Course work
    - 1-2 years
  - Qualifying exam
    - Sometimes end of 1st,
    - "always" by end of 2nd year
  - Original Research
    - Something no one has ever done before
  - Write, give presentations, often work in teams, often teach
  - 5-6 years in total
    - Make sure are willing to live where you are studying

Preparing: When to apply

- This past summer (and next?)
  - Do research, start to prepare to take GREs
  - Talk with research mentors about grad study options for you
  - Work on personal statement
- End of junior year/early in senior year
  - Take GREs
    - General, with Writing Sample
    - Subject Test
- Early senior year
  - Decide to which schools will apply
  - Talk to professors about writing letters of reference
- December of senior year
  - Submit applications
- External Fellowships
  - Deadline October of Senior Year

Most programs have deadlines in early January, some in December, especially for financial support

Components of the Application

- Application form:
  - Contact & background info
- Transcripts:
  - All colleges you attended
- Lists of relevant courses
- Application fee
  - ≈$70 per school
- **Personal Statement**
- **Letters of Reference**

Personal Statement*

- What I have done in *proposed field of study*
  - Discuss *your* research project(s)
    - What were *your* most important contributions
- What I want to do
  - Continue to study in-depth and do research in *specify the topic*
    - If not sure of which subfield, OK to say so, but should have some preferred areas (theory or experiment; nuclear or condensed matter, etc.)
  - Become a researcher or professor in this field or work in industry
- Why this school?
  - Excellent faculty doing research in *specific area*
- Or if undecided about sub-specialty, the strengths of the program in many (*specify*) areas of study that interest you
- Well written
  - Have friend or mentor critique
  - Spell and grammar check

Letters of Reference*

- Usually require 3
- People who know you well
  - Course work
  - Your research

- Examples
  - Supervisor of summer research project(s)
  - Professor in a class where you participated actively in discussions
  - Should be high ranked person AND someone who knows you well
- Someone who will be able to say more than "She got an A in my course"

National Opportunities for Financial Support
U.S. Ph.D. students

- National Fellowships:
  - Federal agencies that support the sciences
  - Foundations
    - Merck/United Negro College Fund, Ford Foundation
- Excellent stipends + funds for tuition, etc.
- Apply early fall Senior Year
- Award based on excellent promise
  - In research
    - Based on research experience(s) and research proposal
  - For broader impact
    - Potential for leadership
    - Role model for younger scholars
    - Commitment to enhance diversity
    - Commitment to outreach to community and K-12 schools

External fellowships for nuclear science PhD students
(US citizens, some accept permanent residents)

- **Fall Deadline Season (October-December)**
  - National Science Foundation Graduate Research Fellowship http://www.nsfgrfp.org/
  - U.S. Department of Defense Science, Mathematics, and Research for (SMART) http://smart.asee.org/
  - National Defense Graduate Science and Engineering Fellowship http://www.asee.org/ndseg/
- **Winter Deadline Season (January-February)**
  - DOE Computational Science Graduate Fellowship http://www.krellinst.org/csgf
  - DOE Stewardship Science Graduate Fellowship http://www.krellinst.org/ssgf/

National Opportunities for Financial Support
Canadian graduate students

- CGSM (Master's)

http://www.nserc-crsng.gc.ca/Students-Etudiants/PG-CS/CGSM-BESCM_eng.asp

- PGSD and CGSD (Ph.D.)

http://www.nserc-crsng.gc.ca/Students-Etudiants/PG-CS/BellandPostgrad-BelletSuperieures_eng.asp

- Vanier scholarships (not restricted to Canadian nationals)
  - Requires pre-selection by local university and advisor

http://www.vanier.gc.ca/en/home-accueil.html

Say thank you

- Thank you to letter writers
- Thank you to schools that make you an offer
  - Decline offer(s) as soon as have made a decision, preferably before April 15
- Thank you for invitation to visit and people you met while visiting another school

You are entering the broader physics community:
Your future colleagues, collaborators and friends

Have fun in Grad School

- In-depth study in a particular field
- Doing something no one has done before
- Preparing for challenging career
- ALL of the above

Summary: Preparing for Nuclear Science PhD Studies*

- Course work - Now
- Research –summer 2016 and beyond
  - REU & SULI Deadlines December and January
- GRE exams – early senior year
- Application – December-January deadlines
  - Personal statement
  - Letters of reference
- Apply for external fellowships
- Visit schools before accept – your best match
- Have fun! And THANK YOU