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)

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

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?

Research Experiences for US Undergraduates: NSF & DOE/SC

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

Research Experiences for Canadian Undergraduates

- NSERC-USR
- CINP-URS
  http://cinp.phys.uregina.ca/node/179
- TRIUMF undergraduate awards/jobs
  http://www.triumf.ca/undergraduate-student-program

Graduate Studies in YOUR Future

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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
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
- 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:

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
  - 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 Ph.D. program
- Course work
  - 1-2 years
- Qualifying exam
  - Sometimes end of 1st year
  - "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: What to Expect
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 Tests
- Early senior year
  - Rectify to which schools will apply
  - Talk to professors about writing letters of reference
- December of senior year
  - Submit applications
  - External Fellowships
    - Deadlines 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 projects
- 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

Canadian graduate students

- CGSM (Master’s)
- PGSD and CGSD (Ph.D.)
- Vanier scholarships (not restricted to Canadian nationals)
  Requires pre-selection by local university and advisor

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  - 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/

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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 & BULI 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