Fellowship Opportunities for Graduate Students in Plasma Physics

Panel presentation at the 60th APS-DPP Conference Milwaukee, WI
Nov. 6th, 2018
Participants

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For Applicants to the NSF Graduate Research Fellowship Program
Goals of GRFP

• To select, recognize, and financially support **individuals** who have demonstrated the potential to be high achieving scientists and engineers, early in their careers.

• To **broaden participation** in science and engineering of underrepresented groups, including women, minorities, persons with disabilities and veterans.

**Outcome:** Recruit and retain these individuals in the U.S. STEM workforce
GRFP Unique Features

- **Fellowship**: Awarded to individual
- **Flexible**: Choice of project, advisor & graduate program
- **Unrestrictive**: No service requirement afterward
- **Portable**: Can be used at any accredited U.S. institution
  - MS, PhD, both degrees

- **2010 - 2018**: 2,000 Fellowships yearly
  - 2016: ~16,800 Applications - ~12 % success rate
  - 2017: ~13,200 Applications - ~15 % success rate
  - 2018: ~12,400 Applications - ~16 % success rate
Five Year Awards – $138,000

- Three years of financial support
  - $34,000 Stipend per year
  - $12,000 Educational allowance to institution
- Professional Development Opportunities:
  - GRIP: internships at federal agencies
  - INTERN: other industry/policy/nat’l lab internships
- Career-Life Balance Initiative (family leave)
- Supercomputer access: XSEDE
GRFP Eligibility [NSF 18-573]

• U.S. citizens and permanent residents
• Early-career: undergrad & grad students
• Pursuing research-based MS or PhD
• Science and engineering
• Enrolled in accredited institution in US by Fall

Academic Levels

• 1: Seniors or baccalaureates with no graduate study yet
• 2: First-year graduate students
• 3: Second-year graduate students (at the beginning of the second year)
• 4: >12 months graduate study, with interruption in graduate study of 2+ years

See solicitation NSF 18-573 for further eligibility details
GRFP Application Timeline

**Late October**
- Applications Due

**Early November**
- Reference Letters Due
- Recipients Announced

- Acceptance of Award and Declaration of Tenure/Reserve

**May 1**
- Fellowship Year Begins

**Late March – early April**

**June 1 or Sept. 1**
- APPLY to Graduate Schools!
Plasma Science & Engineering Subfield Deadlines (by 5pm):

1) October 21, 2019:
   • Geosciences: Magnetospheric Physics, Solar Physics

2) October 22, 2019:
   • Engineering: Aeronautical and Aerospace Engineering, Nuclear Engineering, Chemical Engineering, Environmental Engineering, Materials Engineering
   • Materials Research: Photonic materials

3) October 25, 2019:
   • Physics and Astronomy: Plasma Physics, Astronomy and Astrophysics

Reference letter deadline (3 letters): November 1, 2019
• **Intellectual Merit:** How important is the proposed activity to advancing knowledge within its own field or across different fields?

  AND

• **Broader Impacts:** How well does the proposed activity benefit society or advance desired societal outcomes?

  – Separate sections for Intellectual Merit and Broader Impacts; address in both Statements
GRFP Advice for Applicants

• Start early
• Read Solicitation, and read it again
• Read NSF GRFP websites

• Select and confirm reference letter writers
• Pay attention to Merit Review criteria
• Identify several colleagues and have them comment on multiple statement drafts
• Share your application materials and the merit review criteria with reference writers
• Monitor receipt of reference letters (3 required for review)
GRFP Resources

  - Solicitation and links
- NSF GRFP FastLane Website: [www.fastlane.nsf.gov/grfp](http://www.fastlane.nsf.gov/grfp)
  - Application, guides, announcements
- GRFP Website: [www.nsfgrfp.org](http://www.nsfgrfp.org)
  
  *(includes tips for applying, GRFP Experienced Resource List)*
- Phone & e-mail
  - 866-NSF-GRFP (673-4737)
  - info@nsfgrfp.org
Portals for federally-sponsored opportunities in STEM for students

stemundergrads.science.gov

stemgradstudents.science.gov
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<tr>
<th>Office</th>
<th>Resource</th>
<th>Deadline</th>
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<tbody>
<tr>
<td>FES</td>
<td>Funded Research Awards</td>
<td>N/A</td>
<td>Talk to professors, research/Lab scientists</td>
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<tr>
<td>WDTS</td>
<td>Graduate Student Research (SCGSR)</td>
<td>11/15/2018</td>
<td>Supplement for research at Labs &amp; DIII-D</td>
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<td>- science.energy.gov/wdts/scgsr</td>
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<td>FES via ORISE</td>
<td>Postdoctoral Researcher Award</td>
<td>1/31/2019</td>
<td>Two-year award with stipend and supplements</td>
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<td>- <a href="http://www.orau.gov/doe-fes-postdoc">www.orau.gov/doe-fes-postdoc</a></td>
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<td>PPPL</td>
<td>Graduate Summer School</td>
<td>2/1/2019 (held in Aug)</td>
<td>Three sets of five 1.5 hour lectures each</td>
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<td>- 2018: Turbulence, reconnection, &amp; diagnostics</td>
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<td>- gss.pppl.gov</td>
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<td>WDTS</td>
<td>Science Undergraduate Laboratory &amp; Community College Internships</td>
<td>1/10/2019</td>
<td>Provides research opportunities for u’grads</td>
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<td>SC via ORISE</td>
<td>DOE Scholars Program</td>
<td>12/17/2018</td>
<td>Provides experience working at DOE</td>
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<td>- orise.orau.gov/doescholars</td>
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<td>- energy.gov/student-programs-and-internships</td>
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Dr. Matthew Lanctot, FES Program Manager: matthew.lanctot@science.doe.gov
The Fusion Energy Sciences Postdoctoral Research Program offers recent doctoral degree recipients the opportunity to conduct research in the U.S. Department of Energy’s (DOE) fusion energy research and development programs. Participants acquire experience and training in areas of fusion energy science, interact with outstanding scientists and engineers, and have access to advanced equipment and facilities. Appointments are made to a wide range of fusion energy centers.

**Benefits Include**

- **Annual Stipend (paid monthly):** $67,000, plus a supplement towards the cost of health insurance.
- **Relocation Allowance:** $5,000.00, if the assigned hosting facility is more than 50 miles from the current address shown on the application form.
- **Travel Allowance:** One domestic round trip per year to a Fusion related conference or event. Foreign Travel (optional) must be addressed in the application.
DOE SCGSR Fellowship

John W. Brooks
Fellowship recipient
jwb2159@columbia.edu
DOE SCGSR Fellowship

• Benefits
  – Placement at a collaborating DOE laboratory for 3 to 12 months
  – They help you work on your research
  – $3000/month stipend
  – $2000 travel expenses for moving
  – Educational and networking experiences

• Application/Requirements
  – Full time PhD candidate
  – Find a collaborating research scientist at a DOE lab
  – Research proposal (2 pages), letters of recommendation, etc.

• My Experience
  – 4 month placement at PPPL
  – Working with experts in MHD, scrape-off-layers, and control theory
Los Alamos National Laboratory theoretical physicists and chemists are using computers to develop more efficient ways of converting biofuels into electricity by using fuel cells.

The Department of Energy Computational Science Graduate Fellowship (DOE CSGF) program provides outstanding benefits and opportunities to students pursuing doctoral degrees in fields of study that advance the use of high-performance computing to solve complex problems in science and engineering.

The DOE CSGF program is open to senior undergraduates and students in their first year of doctoral study. Access application materials and additional information at: www.krellinst.org/csgf

APPLICATIONS DUE JANUARY 9, 2019
The DOE CSGF has defining benefits that set it apart from other science- and engineering-focused graduate fellowships:

- A yearly stipend of $36,000
- Payment of full tuition and required fees during the appointment period (at any accredited U.S. university)
- A $5,000 academic allowance in the first fellowship year and a $1,000 allowance each renewed year (to be used for the purchase of a computer workstation or for research/professional development expenses)
- Up to four years of total support, depending on renewal
- A twelve-week practicum experience at one of 21 DOE national laboratories or sites, including access to DOE supercomputers
- A rigorous program of study that ensures fellows have solid backgrounds in a scientific or engineering discipline plus computer science and applied mathematics
- An annual program review for fellows, alumni, university and DOE laboratory staff, held each summer in the Washington, D.C. area
The Fulbright U.S. Student Program is the largest U.S. exchange program offering opportunities to students and young professionals to undertake international graduate study, advanced research, university teaching, and primary and secondary school teaching worldwide.

https://us.fulbrightonline.org
Fulbright U.S. Student Program

• For Recent Graduates, and Master’s and Doctoral Candidates

• Applicants for study/research awards design their own projects and will typically work with advisers at foreign universities and other institutions of higher education

• The study/research grant is available in approximately 140 countries

• Campus deadlines: Between August and October

https://us.fulbrightonline.org
NDSEG
National Defense Science and Engineering Graduate Fellowship

D. E. Ruiz and A. Creely

APS DPP Meeting
Graduate student info session
November 6th, 2018
Basic information

- **Website:** www.ndsegfellowships.org

- **About:** Fellowship offered by the DoD for graduate students in sciences and engineering.

- **Finances:** Fellowship covers full tuition and other school fees. Monthly stipend is included to students.

- **Duration:** Up to four years (?)

- **Eligibility:** The NDSEG Fellowship Program is open to US citizens or nationals. Applicants must either be enrolled in their final year of undergraduate studies, or have completed no more than two years of full-time years graduate study.
How to apply?


2. Gather the application material.
   - Application form
     - Contact information, education experience, work experience, certificates, licenses, references, personal statement, proposed research in relevance to DOD, etc.
   - Official school transcripts
   - Three reference forms
   - GRE general test scores

3. Submit everything.

Deadline: December 7, 2018
NESSF graduate fellowships are funded by all four divisions of the Science Mission Directorate:

- Proposal must address science goals of one or more division: 
  Astrophysics, Heliophysics, Planetary Science and Earth Science
- But: proposer must choose a single division
- Students admitted to Masters or PhD programs, in any year of their study, at US universities are eligible: OK to apply in final undergraduate year. But you must have a project and a faculty advisor.
- Awards are single-year; may be renewed, but no more than 3 years in total
- Total award limited to $45k/year; nominally $35k stipend + $10k for tuition, fees and other expenses (including health insurance and travel; excluding equipment, computers)
- Due date: early February (around February 1st to February 8th)
Evaluation criteria include:

• **Scientific Merit of the proposal**
  – Applicants write a 6 page research proposal (single-spaced, page total does not include references)
  – **Important note:** Design of the fellowship application is meant to mimic the actual grant writing process
  – Proposed research should not just be compelling, the proposal should include at least a small literature review, the expected impact, a detailed feasibility plan, and anticipated issues with solutions

• **Relevance of the proposed research to NASA’s objectives**
  – Relevance to objectives of division where proposal is submitted
  – **This is critical, many, if not most, successful proposals tie their research to a NASA mission**

• **Academic excellence based upon**
  – Applicant's transcripts
  – Signed letter of recommendation by the student's academic advisor (only one letter of recommendation unless student is co-advised, then exemptions can be made to accept two letters)
  – applicant’s curriculum vitae
This equal opportunity program is open to all qualified persons without regard to race, gender, religion, age, physical disability or national origin.

The Department of Energy National Nuclear Security Administration Stewardship Science Graduate Fellowship (DOE NNSA SSGF) program provides outstanding benefits and opportunities to students pursuing a Ph.D. in areas of interest to stewardship science, such as properties of materials under extreme conditions and hydrodynamics, nuclear science, or high energy density physics. The fellowship includes a 12-week research experience at Lawrence Livermore National Laboratory, Los Alamos National Laboratory or Sandia National Laboratories.

APPLICATIONS DUE 1.16.2019

BENEFITS
+ $36,000 yearly stipend
+ Payment of full tuition and required fees
+ $1,000 yearly academic allowance
+ Yearly program review
+ 12-week research practicum
+ Renewable up to four years
The Department of Energy National Nuclear Security Administration Laboratory Residency Graduate Fellowship (DOE NNSA LRGF) provides outstanding benefits and opportunities to U.S. citizens who are entering their second (or later) year of doctoral study to work at premier national laboratories while pursuing degrees in fields relevant to the stewardship of the nation’s nuclear stockpile.

LAB RESIDENCY Fellowships include at least two 12-week research residencies at Lawrence Livermore National Laboratory, Los Alamos National Laboratory, Sandia National Laboratories, or the Nevada National Security Site. Fellows are encouraged to extend these residencies to carry out thesis research and other studies at the four DOE NNSA facilities.

BENEFITS
- $36,000 annual stipend
- Payment of full tuition and required fees
- Yearly program review participation
- Annual professional development allowance
- Two or more 12-week-minimum national laboratory residencies
- Renewable yearly

FIELDS OF STUDY
APPLIED SCIENCE AND ENGINEERING
- Pulsed Power Technology
- Particle Accelerators

ATOMIC PHYSICS
- Theory and Modeling
- Experimental Visible/UV/X-Ray Spectroscopy

MULTI-SCALE, MULTI-PHYSICS THEORY, SIMULATIONS AND EXPERIMENTS
- Nuclear Astrophysics
- Fluid Physics (including PIC-Fluid Hybrid Methods, Hydrodynamics, Instabilities and Shock Physics)
- Laser-Plasma Interactions
- Radiation Hydrodynamics and Radiation Magneto-Hydrodynamics
- Dynamic Materials

READ FULL DESCRIPTIONS ONLINE.