

# Fellowship Opportunities for Graduate Students in Plasma Physics

Panel presentation at the 60<sup>th</sup> APS-DPP  
Conference Milwaukee, WI  
Nov. 6<sup>th</sup>, 2018

# Participants

**Lisa Winter**

National Science  
Foundation  
Program Director

**Carrie Black**

National Science  
Foundation  
Program Director

**Raspberry Simpson**

MIT Graduate Student  
NSF GRFP Recipient

**Matt Lanctot**

DOE FES  
Program Manager

**John Brooks**

Columbia U. Graduate  
Student  
SCGSR Recipient

**Noah Mandell**

Princeton U Graduate  
Student  
DOE CSGF Recipient

**Matthew Parsons**

UIUC Graduate Student  
NSF GRFP & Fulbright  
Recipient

**Daniel Ruiz**

Physics Researcher,  
Sandia Nat. Lab  
NDSEG Recipient

**Alex Creely**

MIT Graduate Student  
NDSEG Recipient

**James Juno**

U. Maryland Graduate  
Student  
NESSF Recipient

**Paul Bradley**

Acting Group Leader,  
LANL  
NNSA SSGF Practicum  
Coordinator

**Gabe Shipley**

UIUC Graduate Student  
NNSA SSGF recipient



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**For Applicants to  
the NSF Graduate Research Fellowship Program**

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# Goals of GRFP

NSF GRADUATE RESEARCH FELLOWSHIP PROGRAM

- 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

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- **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



# NSF Graduate Research Fellowships

## 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



### Graduate Research Fellowship Program (GRFP)

**PROGRAM SOLICITATION**  
NSF 18-573

**REPLACES DOCUMENT(S):**  
NSF 16-588



National Science Foundation  
Directorate for Biological Sciences  
Directorate for Computer & Information Science & Engineering  
Directorate for Education & Human Resources  
Division of Graduate Education  
Directorate for Engineering  
Directorate for Geosciences  
Directorate for Mathematical & Physical Sciences  
Directorate for Social, Behavioral & Economic Sciences  
Office of Integrative Activities  
Office of International Science and Engineering

**Application Deadline(s)** (received by 5 p.m. local time of applicant's mailing address):

October 22, 2018

Life Sciences, Geosciences

October 23, 2018

Computer and Information Science and Engineering, Engineering, Materials Research

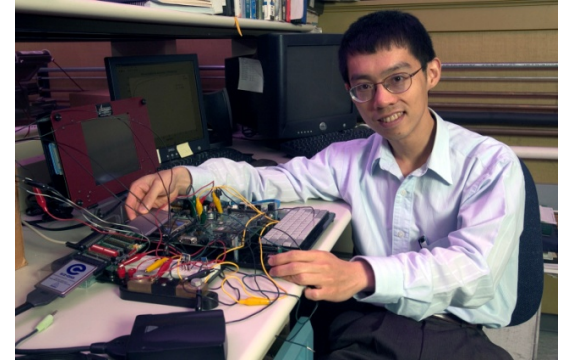
October 25, 2018

Psychology, Social Sciences, STEM Education and Learning



# 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

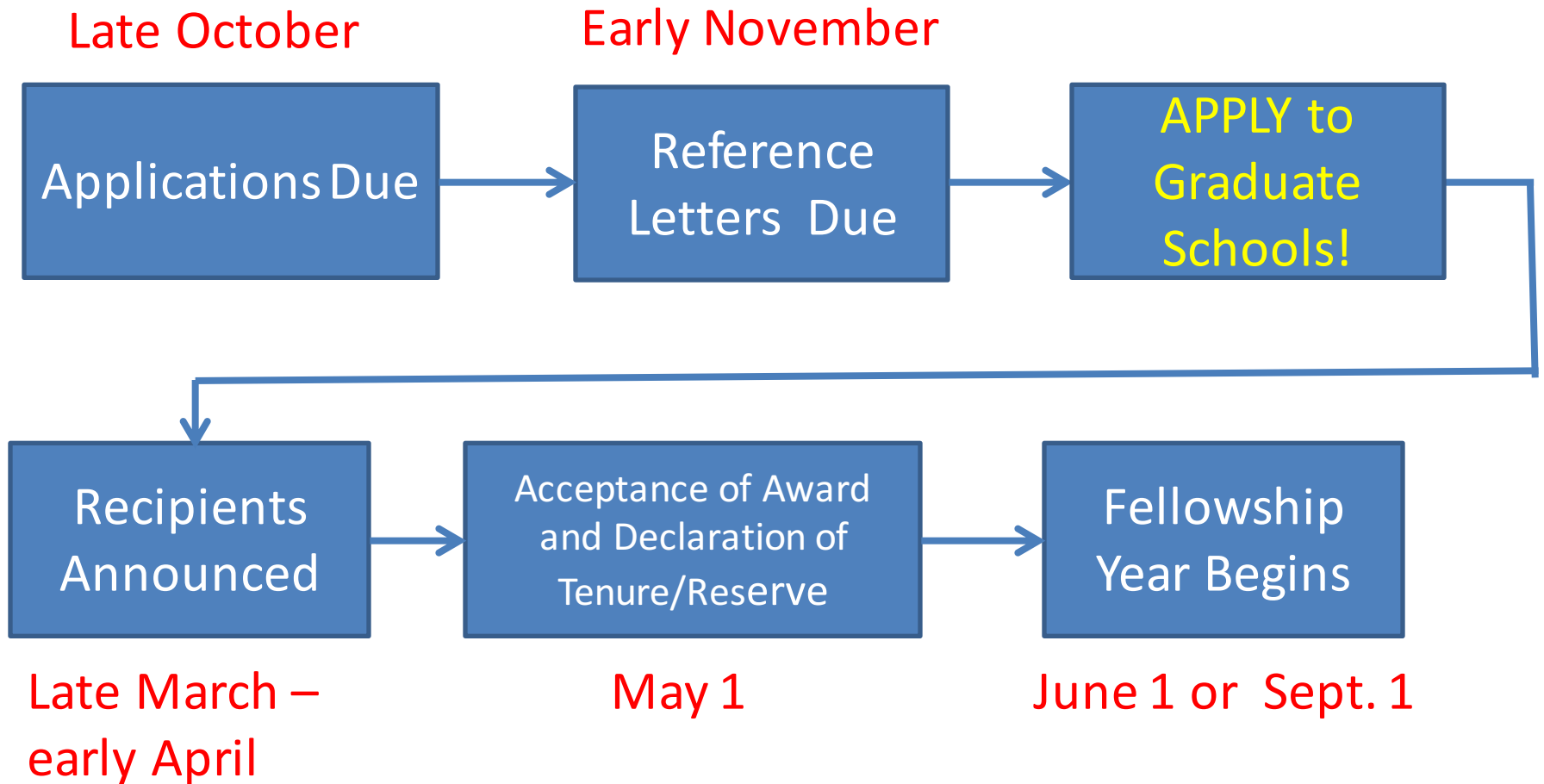
- 1: Seniors or baccalaureates with no graduate study yet
- 2: First-year graduate students
- 3: Second-year graduate students  
(at the beginning of the second year)
- 4: >12 months graduate study, with interruption in graduate study of 2+ years

Only once in  
grad school

*See solicitation NSF 18-573 for further eligibility details*



# GRFP Application Timeline





# GRFP Deadlines

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## **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**



# NSF Merit Review Criteria

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- 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

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- 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

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- NSF GRFP Website [www.nsf.gov/grfp](http://www.nsf.gov/grfp)
  - 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](mailto:info@nsfgrfp.org)







# Portals for federally-sponsored opportunities in STEM for students

[stemundergrads.science.gov](http://stemundergrads.science.gov)

[stemgradstudents.science.gov](http://stemgradstudents.science.gov)

STEM OPPORTUNITIES: Graduate Students | Undergraduate Students

**STEMUndergrads.science.gov**  
*Your Gateway to Federal Opportunities for Undergraduate Students*

Home About Contact

## Narrow Results:

Undergraduate Program Type	>
Undergraduate Level Eligibility	>
STEM Discipline Focus	>
Institutional Location	>
Federal Agency Sponsor	>
Geographic Region	>

Search

STEM OPPORTUNITIES: Graduate Students | Undergraduate Students

**STEMGradStudents.science.gov**  
*Your Gateway to Federal Opportunities for Graduate Students*

Home About Contact

## Narrow Results:

Graduate Program Type	>
Graduate Level Eligibility	>
STEM Discipline Focus	>
Institutional Location	>
Federal Agency Sponsor	>
Geographic Region	>

Search

# Graduate Student Resources from the Department of Energy - Office of Science (SC)

Office	Resource	Deadline	Information/Web link	
FES	Funded Research Awards	N/A	Talk to professors, research/Lab scientists	Graduate Students
WDTS	Graduate Student Research (SCGSR)	11/15/2018	Supplement for research at Labs & DIII-D - <a href="http://science.energy.gov/wdts/scgsr">science.energy.gov/wdts/scgsr</a>	
FES via ORISE	Postdoctoral Researcher Award	1/31/2019	Two-year award with stipend and supplements - <a href="http://www.ornl.gov/doe-fes-postdoc">www.ornl.gov/doe-fes-postdoc</a>	
PPPL	Graduate Summer School	2/1/2019 (held in Aug)	Three sets of five 1.5 hour lectures each - 2018: Turbulence, reconnection, & diagnostics - <a href="http://gss.pppl.gov">gss.pppl.gov</a>	
WDTS	Science Undergraduate Laboratory & Community College Internships	1/10/2019	Provides research opportunities for u'grads - <a href="http://science.energy.gov/wdts/suli">science.energy.gov/wdts/suli</a> - <a href="http://science.energy.gov/wdts/ccl">science.energy.gov/wdts/ccl</a>	Undergraduates
SC via ORISE	DOE Scholars Program	12/17/2018	Provides experience working at DOE - <a href="http://orise.ornl.gov/doescholars">orise.ornl.gov/doescholars</a> - <a href="http://energy.gov/student-programs-and-internships">energy.gov/student-programs-and-internships</a>	

# 2019 FUSION ENERGY SCIENCES POSTDOCTORAL RESEARCH PROGRAM



U.S. DEPARTMENT OF  
**ENERGY**

Office of Science

For more information

<http://www.ornl.gov/doe-fes-postdoc/>

**Application Deadline**  
**January 31, 2019, 4:00 p.m. EST**

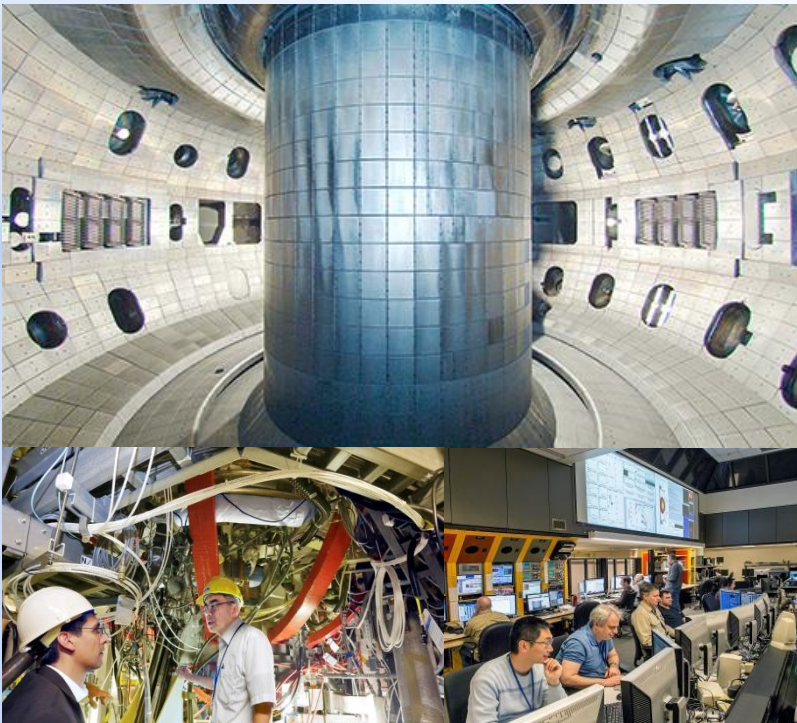


Photo Credits: (Top) Inside the DIII-D tokamak experiment. (Source: General Atomics), (Bottom Left) Elle Starkman/PPPL Communications (CC BY-NC 2.0), (Bottom Right) Elle Starkman/PPPL Communications (CC BY-NC 2.0)



**OAK RIDGE INSTITUTE FOR  
SCIENCE AND EDUCATION**

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.

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# DOE SCGSR Fellowship

John W. Brooks

Fellowship recipient

[jwb2159@columbia.edu](mailto:jwb2159@columbia.edu)



# DOE SCGSR Fellowship

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- 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



**APPLY  
ONLINE**

*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](http://www.krellinst.org/csgf)**

DEPARTMENT OF ENERGY

# COMPUTATIONAL SCIENCE

## GRADUATE FELLOWSHIP

APPLICATIONS DUE  
**JANUARY**

**9**

**2019**

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.





# Benefits & Opportunities

## Fields of Study

NEW Math/Computer Science Track

Eligibility & Program Requirements

## Benefits & Opportunities

Program of Study

2017 Longitudinal Study

News & Events

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

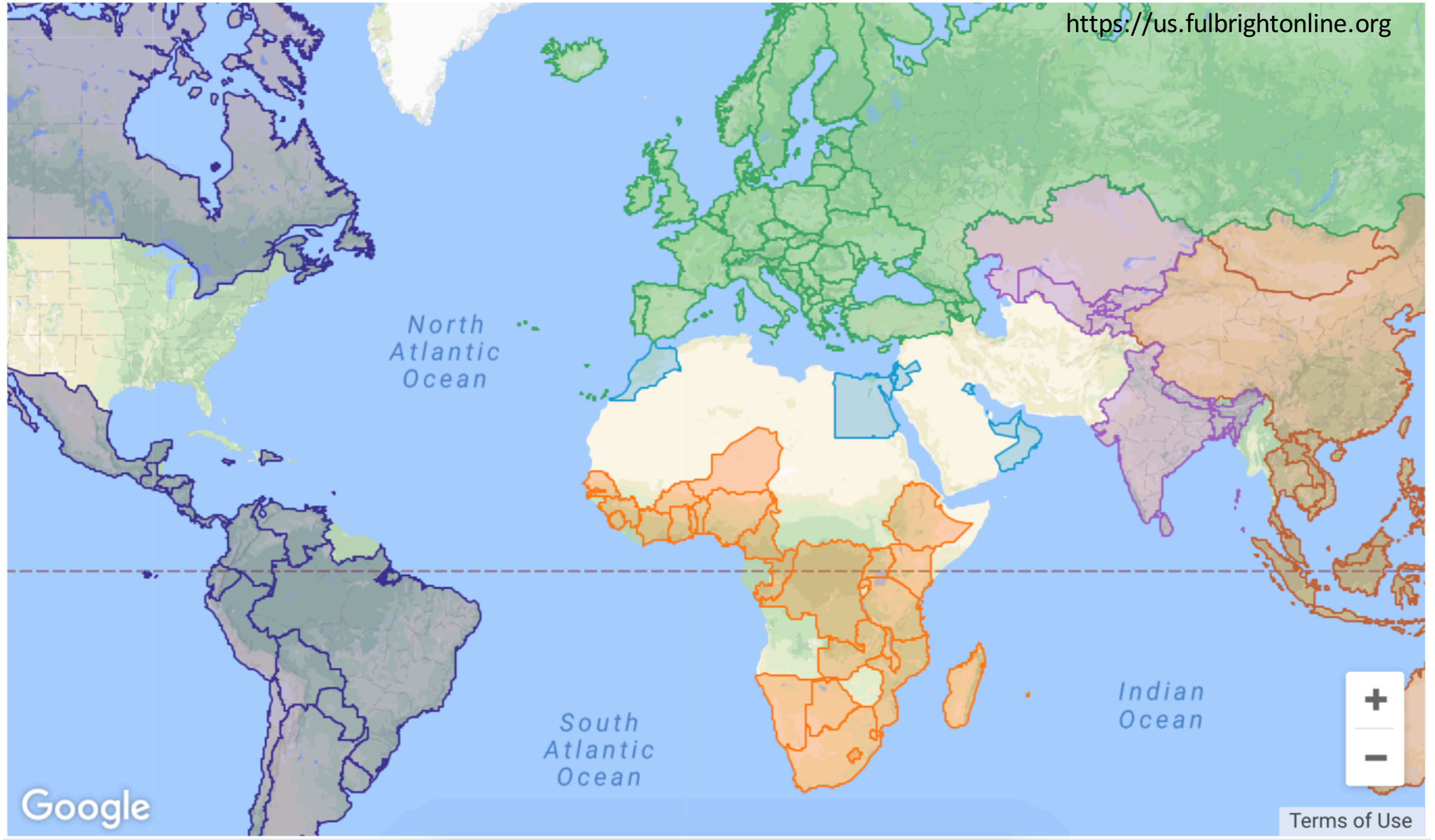




## Fulbright U.S. Student Program

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.





# 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

# **NDSEG**

## **National Defense Science and Engineering Graduate Fellowship**

**D. E. Ruiz and A. Creely**

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



# **NDSEG**

## Basic information

- **Website:** [www.ndsegfellowships.org](http://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?

1. Visit the website **[www.ndsegfellowships.org](http://www.ndsegfellowships.org)** .
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**



# NASA Earth and Space Science Fellowships

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- **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)



# NASA Earth and Space Science Fellowships

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## Evaluation criteria include:

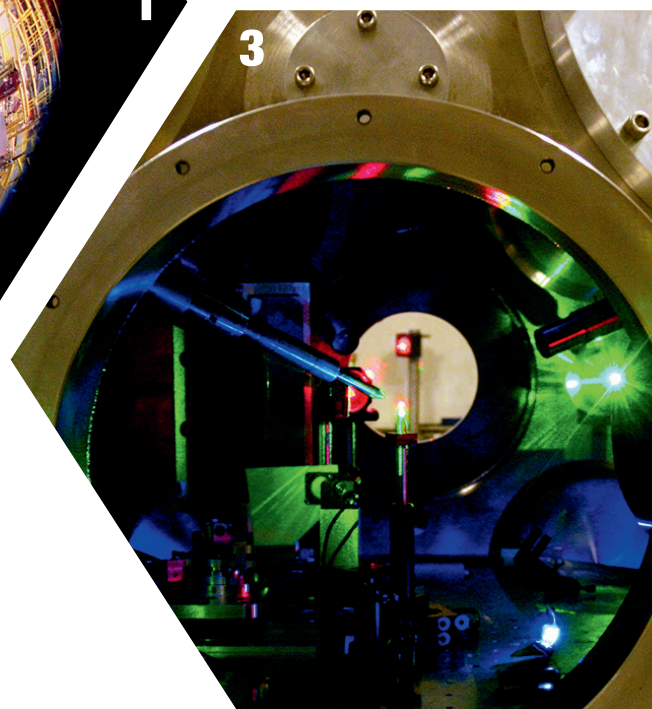
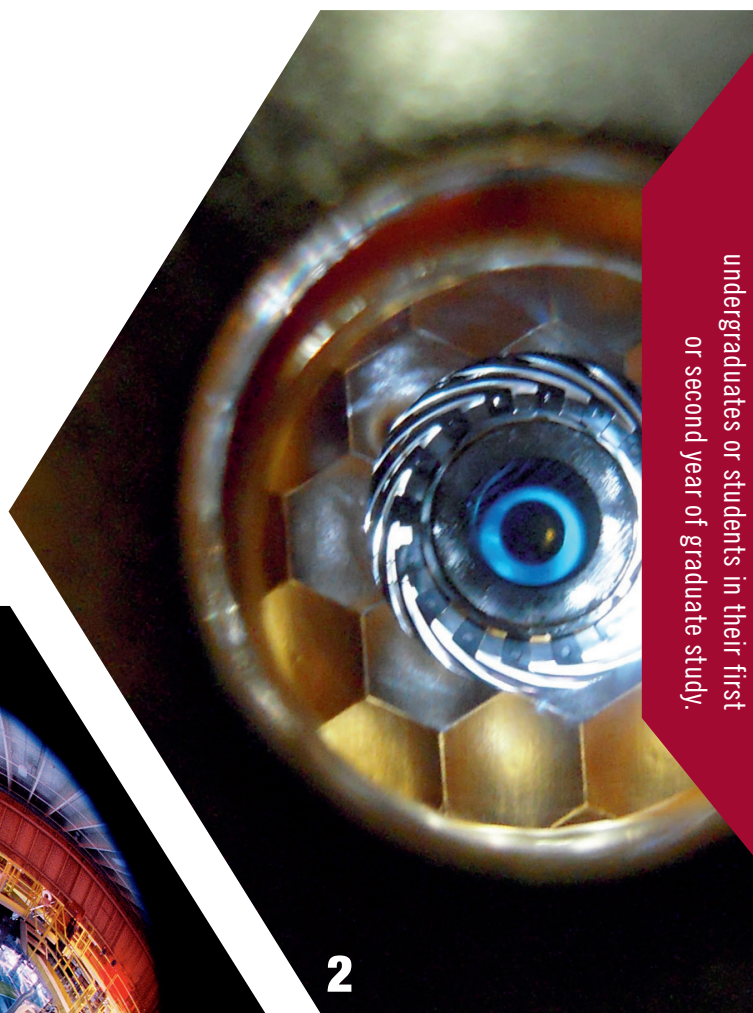
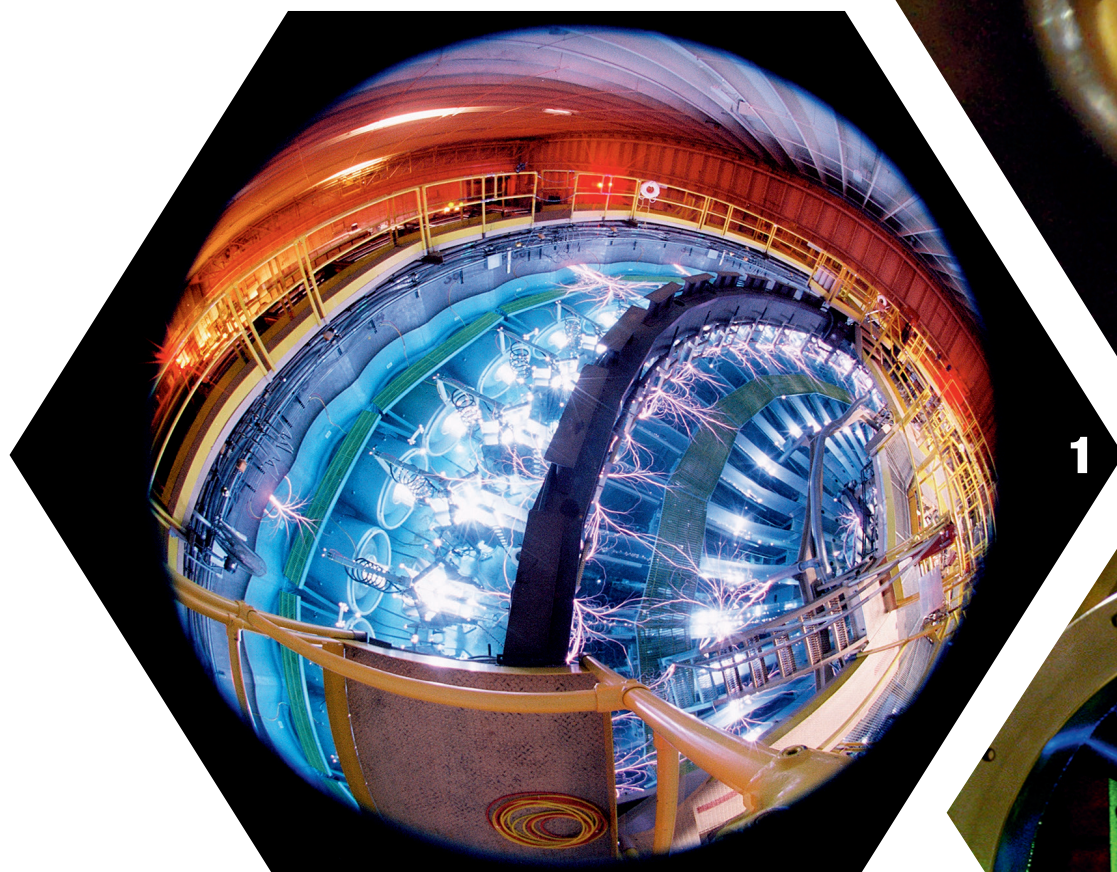
- **Scientific Merit of the proposal**
  - Applicants write a 6 page research proposal (single-spaced, page total does not include references)
  - **Important note:** Design of the fellowship application is meant to mimic the actual grant writing process
  - Proposed research should not just be compelling, 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



DEPARTMENT OF ENERGY NATIONAL NUCLEAR SECURITY ADMINISTRATION

# STEWARDSHIP SCIENCE GRADUATE FELLOWSHIP

- 1 SANDIA NATIONAL LABORATORIES**  
The Saturn pulsed-power machine delivers hard radiation during one of its milestone shots.
- 2 LAWRENCE LIVERMORE NATIONAL LABORATORY**  
A view of a cryogenically cooled National Ignition Facility target as "seen" by the laser through the hohlraum's laser entrance hole.
- 3 LOS ALAMOS NATIONAL LABORATORY**  
A view into an open port of the Trident Laser Facility north target chamber.



**APPLY ONLINE**  
The DOE NNSA SSGF program is open to senior undergraduates or students in their first or second year of graduate study.

**www.krellinst.org/ssgf**



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

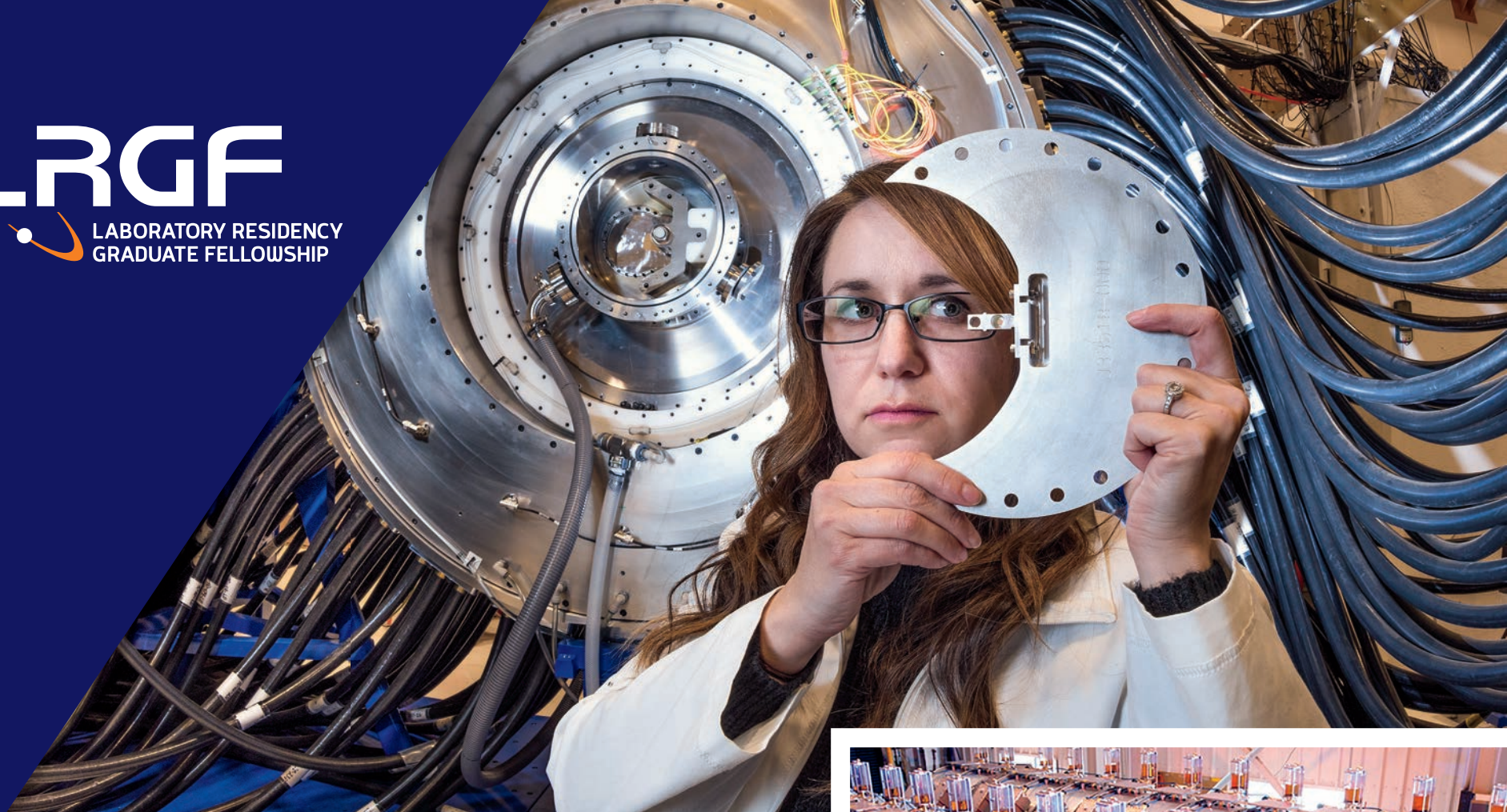
### BENEFITS

- + \$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

*This equal opportunity program is open to all qualified persons without regard to race, gender, religion, age, physical disability or national origin.*







DEPARTMENT OF ENERGY  
NATIONAL NUCLEAR SECURITY ADMINISTRATION

# LABORATORY RESIDENCY GRADUATE FELLOWSHIP

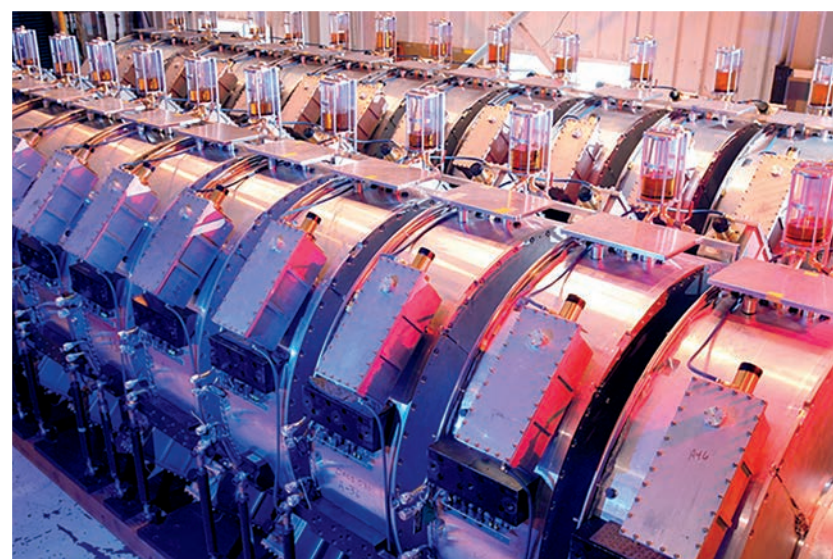
The Department of Energy National Nuclear Security Administration Laboratory Residency Graduate Fellowship (DOE NNSA LRGF) provides outstanding benefits and opportunities to U.S. citizens who are entering their second (or later) year of doctoral study to work at premier national laboratories while pursuing 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

[www.krellinst.org/lrgf](http://www.krellinst.org/lrgf)



*Top: Thor pulsed-power accelerator at Sandia National Laboratories.*

*Bottom: Dual-Axis Radiographic Hydrodynamic Test (DARHT) facility at Los Alamos National Laboratory.*

## APPLICATIONS DUE 3.6.2019

## 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.

*This equal opportunity program is open to all qualified persons without regard to race, gender, religion, age, physical disability or national origin.*



U.S. DEPARTMENT OF  
**ENERGY**

**NNSA**  
National Nuclear Security Administration

