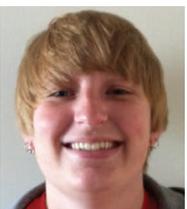


Phenomena such as global climate change, infrastructure deterioration, or the impact of extreme natural events has profound economic and societal impact. Such complex systems involve a wide range of length/time scales and disparate physical processes. The MCS Integrative Graduate Education & Research Traineeship Program seeks to train students to address such complex models in a multi-disciplinary setting.

MCS IGERT Trainees with the assistance of over 20 of JHU's faculty members spanning 8 different departments will gain the interdisciplinary knowledge to succeed as leaders in solving global problems of the future.

APPLICATION PROCESS

- Open only to U.S. citizens and permanent residents; first-generation college students and minorities are strongly encouraged to apply
- Submit an application to one or more of JHU's participating departments. Verify application procedures, deadlines, and requirements directly with the department (s)
- Contact IGERT Program Coordinator, Tanya Waith, twaith@jhu.edu or 410-516-8766 to express specific interest in MCS IGERT
- IGERT Trainees will be selected from a multi-department pool of qualified applicants



The Johns Hopkins University was the first research university in the United States. Founded in 1876, it was a whole new educational enterprise. The university's emphasis on both learning and research - and on how each complements the other - revolutionized U.S. higher education. Today, The Johns Hopkins University has ventured from its home in Baltimore to countries throughout the world - China, Italy and Singapore, among many others. It remains a world leader in teaching, patient care and discovery.

Today, the university enrolls nearly 20,000 full-time and part-time students on three major campuses in Baltimore, MD, one in Washington, DC, and one in Montgomery County, MD, and facilities throughout the Baltimore-Washington area and in China and Italy.

The headquarters campus—Homewood— has nearly 4,600 full-time undergraduates and more than 1,600 full-time graduate students in two schools, the Krieger School of Arts & Sciences and the Whiting School of Engineering.



Contact: MCS IGERT or Tanya Waith
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 Department of Civil Engineering
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 Baltimore, MD 21218

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 E-mail: mcsigert@jhu.edu
igert.jhu.edu/mcs



IGERT

Modeling Complex Systems

The Scientific Basis of Coupling Multi-Physics Models at Different Scales



A unique program funded by the National Science Foundation

Objective: to provide professional development and interdisciplinary training in modeling complex systems to Ph.D. students in 8 departments at Johns Hopkins University

Johns Hopkins University

Integrative Graduate Education & Research Traineeship

Director: Lori Graham-Brady

PROGRAM BENEFITS

- **\$30,000 annual stipend for 2-3 years**
- **Full tuition & health insurance for 2-3 years**
- **Option for dual degree program**
- **Close interaction with faculty from multiple departments**
- **Professional development & communications training series**
- **Cross-disciplinary communication, dissemination, and formulation of competitive research proposals**
- **Career-long network with other IGERT students via electronic portfolios**
- **Mastery of fundamental mathematical skills**
- **Internship opportunities**
- **Experience in outreach activities**
- **Funding for conference travel**
- **Funding for computers**
- **Faculty mentorship programs**

Every member of society is affected by decisions or predictions based on computational simulations of critical processes, such as energy production, environmental protection, and infrastructural integrity. The research conducted through this IGERT Program will address these complex problems directly through science-based coupling of models and parameterizations.

Students enrolled in this interdisciplinary program will be equipped to advance the science of coupling multi-scale/multi-physics models and receive an education that is more holistic than that provided by traditional discipline-specific Ph.D. programs.

Interdisciplinary Sample Project Themes:

- ◆ Linking molecular scale simulations to macroscopic mechanics
- ◆ Modeling emission and transport of aerosols into the atmosphere
- ◆ Evaluating ocean-atmosphere in order to advance models of global warming
- ◆ Understanding fragmentation of planetary bodies that occurs in hyper-velocity impact

PARTICIPATING DEPARTMENTS

- Applied Mathematics & Statistics
- Civil Engineering
- Chemical & Biomolecular Engineering
- Earth & Planetary Sciences
- Geography & Environmental Engineering
- Materials Sciences & Engineering
- Mechanical Engineering
- Physics & Astronomy



Integrative Graduate Education & Research Traineeship

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