Inclusive Graduate Education Network: Changing the Face of Graduate Student Participation in the Physical Sciences

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Hispanic American Bachelor Degrees

US College-Age Hispanic Population

Source: IPEDS, US Census, and APS
African American Bachelor Degrees

Source: IPEDS, US Census, and APS
Underrepresented Minority (URM) Physics degrees

Only ~35 students!

Source: IPEDS, US Census, and APS
Problem in all Disciplines Bridge Components can Solve
NSF INCLUDES

- Future of Work
- Growing Convergence Research
- Harnessing the Data Revolution
- Mid-scale Research Infrastructure
- Navigating the New Arctic
- NSF 2026
- NSF INCLUDES
- Quantum Leap
- Understanding the Rules of Life
- Windows on the Universe

Broadening Participation in STEM at scale
Member Institutions
• 143 in 38 states

Partnership Institutions
• 38 in 18 states
  ▪ 31 PhD
  ▪ 7 MS

- APS Bridge Sites
- APS Partnership Institutions & Previous Bridge Sites
- APS Member Institutions
Bridge Program Achievements

Bridge Program
All Physics PhDs

✧ 23% Women (20%)
✧ 93% URM (6%)
  ▪ 64% Hispanic
  ▪ 24% African American
  ▪ 5% Native
✧ 87% Retention (60%)

168 Students making progress toward PhDs
– All traditionally excluded
Physics GRE "Correlation" with Grad GPA

$r = 0.24; N = 1686$

“Weak” Correlation
• **Bridge:** Increase the fraction of students from underrepresented groups who complete doctoral degrees in the physical sciences to match the levels of undergraduate degrees awarded.

• **Inclusive Practices:** Catalyze the adoption of evidence-based inclusive practices, especially in graduate education, that reduce inequities in doctoral completion for underrepresented groups and benefit all students.

• **Research:** Conduct research and propagate results that distill scalable, effective practices in inclusive graduate education and institutional change within the physical sciences.

• **Transitions:** Establish sustained, cross-sector partnerships within and among critical stakeholders that support the advancement of underrepresented students from undergraduate through professional employment.
### IGEN: Project Partners

**Major Partners**
- American Physical Society
- American Chemical Society
- **American Geophysical Union**
- American Astronomical Society
- Materials Research Society

**Cross-Cutting Hubs**
- Inclusive Practices Hub (workshops, training local champions, national facilitators; RIT)
- Research Hub (graduate education; USC)

**National Laboratories (CIMER)**
- Los Alamos
- Argonne

**Private Sector Corporations**
- General Atomics
- IBM
- Intel Corporation
- Google
- Adding: Corning, ExxonMobil, …
IGEN: AGU Components

- Application aggregation in 2020
- Partnership Departments starting in 2019
  - Establish and propagate resources and advocates to impact admissions and retention practices
  - Developing mentoring materials focused on National Lab environment, but applicable in other areas
  - Establishing pathways to make professional opportunities available to graduates at National Labs and industry
- Enhancing mentoring of undergraduates into graduate studies
- National advocacy through annual meetings (and other channels)
Questions

• How can we reach Earth/Space Science Departments?

• What are the concerns?