APS Bridge Program

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APS Bridge Program

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US Demographics

Source: US Census
Physics / STEM Bachelor Degrees

Source: IPEDS Completion Survey
African American Undergraduate Majors

US College-Age African American Population

- Biology
- Chemistry
- Engineering
- Math & Stats
- Physics
- Earth Sciences

Data from 1995 to 2010 shows a decline in the percentage of African American students majoring in these fields.
Hispanic Undergraduate Majors

US College-Age Hispanic Population

- Engineering
- Biology
- Chemistry
- Math & Stats
- Earth Science
- Physics

1995 2000 2005 2010

105 273

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Percentage of African American Physics Majors from HBCUs

Source: IPEDS
Physics Degrees Awarded to Underrepresented Minorities

- Bachelor's Degrees: ~400 degrees
- Doctoral Degrees: ~40 degrees
- ~30 more PhDs

Source: IPEDS, US Census
9-10% of BS degrees in physics are granted to underrepresented minorities

52 PhDs awarded to minorities in 2010

Sources: IPEDS Completion survey by race, US Census
Joint Diversity Statement

08.2 JOINT DIVERSITY STATEMENT
(Adopted by APS, NSBP, NSHP in 2008)

To ensure a productive future for science and technology in the United States, we must make physics more inclusive. The health of physics requires talent from the broadest demographic pool. Underrepresented groups constitute a largely untapped intellectual resource and a growing segment of the U.S. population.

Therefore, we charge our membership with increasing the numbers of underrepresented minorities in physics in the pipeline and in all professional ranks, with becoming aware of barriers to implementing this change, and with taking an active role in organizational and institutional efforts to bring about such change. We call upon legislators, administrators, and managers at all levels to enact policies and promote budgets that will foster greater diversity in physics. We call upon employers to pursue recruitment, retention and promotion of underrepresented minority physicists at all ranks and to create a work environment that encourages inclusion. We call upon the physics community as a whole to work collectively to bring greater diversity wherever physicists are educated or employed.
APS Bridge Program: Project Goals

• Increase, within a decade, the number of physics PhDs awarded to underrepresented minority students to match the fraction of physics Bachelor’s degrees granted to these groups

• Develop, evaluate, and document sustainable model bridging experiences that improve the access to and culture of graduate education for all students, with emphasis on those underrepresented in doctoral programs in physics

• Promote and disseminate successful program components to the physics community
APS Bridge Program: Key Components

- Recruiting through graduate programs across the US (now 100+ institutions, representing 70% of all doctoral students)
- Spend 1-2 years in a “Bridging program” (Could be Masters or post-bac in design)
  - Take advanced UG or entry-level graduate coursework
  - Graduate-level research
  - Demonstrate ability to do independent research and succeed in graduate-level coursework
  - Receive coaching on preparing graduate admissions package (letters, GRE, statements)
  - Accepted into doctoral program
- Receive mentoring in doctoral program (especially in first years)
- Research into barriers; disseminate successful program elements
- Build a national coalition of departments committed to improving participation
Existing Bridge Programs in Physics

- Fisk / Vanderbilt
- Columbia University
- University of Michigan
- MIT
Bridge Sites

- Recruitment (APS, and institution)
- Admission decisions (how, what criteria)
- Financial support (how much, and timescale)
- Multiple Mentoring (who, how interactions work)
- Community (induction, socialization)
- Coursework (advising, physics and other courses)
- Research (appropriate matching)
- Progress monitoring (coursework, tutors if needed, research “fit”)
- Application coaching (GRE, statements, schools)
Student Eligibility

- Bachelor’s degree in physics or closely related discipline
- US citizen or permanent resident
- Either:
  - Did not apply to graduate program this year
  - Applied but was not accepted
- Be committed to improving diversity in physics
- Meet individual requirements of the institution

Students may not be currently enrolled or have an existing physics graduate degree
Getting Involved

• **Member Institution** (any institution)
  Free; receive information / updates; reduced fees for APS-BP conferences

• **Partnership Site** (Doctoral granting institutions)
  APS COM approval process; recommended site for Bridge Fellows (and others) to attend; demonstrate effective practices in graduate student support

• **Bridge Site** (MS or PhD granting)
  Receive significant funding from APS; build sustainable program; prepare 2+ students each year for graduate study; significant institutional commitment

www.APSBridgeProgram.org
Project Progress

• Bridge Site Selection (2012-2013)
  • 24 Applicants
  • 7 Selected for full Proposals
  • 2 Sites awarded (Ohio State, South Florida)

• Student Recruitment (2013)
  • 28 complete applications
  • 7 selected for Bridge or Grad (direct) programs
  • 2 additional students admitted from site recruitment
  • 12 additional being vied for by other programs
  • ~10-12 into PhD programs from this year

• Admissions Study
Admissions Bias?

GRE Scores for Physics Subject Test

Before Graduate Admission

After Graduate Admission

Source: PhD Recipients from Oregon State University
GRE Physics Scores: Impact of Cutoff Scores

21% of test takers were female

Fraction (F) = 0.28
Fraction (M) = 0.50

Source: ETS

650
GRE Quantitative Scores

Source: ETS, "Factors that can influence performance on the GRE General Test 2006-2007"

GRE Quantitative scores for US Citizens

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