16 April 2015
College Park, MD

APS Education and Diversity Programs

Theodore Hodapp
American Physical Society
Director of Education and Diversity
Departmental Programs

- PhysTEC
- APS Bridge Program
- Conferences for Undergraduate Women in Physics (CUWiP)
- National Mentoring Community

- New Faculty Workshops
- Education conferences
- Physics chairs meeting
- REU site leaders
- Advocating for physics education

- Professional development workshops
- Childcare at meetings
- Mentoring seminar materials
- Ethics case studies
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.
Underrepresented Minorities: Undergraduate Majors

US College-Age Underrepresented Minority Population

- Biological Sciences
- Chemistry
- Engineering
- Mathematics and Statistics
- Physics
- Earth Sciences
- URM

Percentages from 1995 to 2010:
- Biological Sciences: 10% - 15%
- Chemistry: 15% - 20%
- Engineering: 5% - 10%
- Mathematics and Statistics: 5% - 10%
- Physics: 25% - 30%
- Earth Sciences: 5% - 10%
- URM: 30% - 35%
52 PhDs awarded to minorities in 2010

9-10% of BS degrees in physics are granted to underrepresented minorities

US College-age minority population

Sources: IPEDS Completion survey by race, US Census
APS Bridge Program: Key Features

- Recruiting through graduate programs (now 115+ institutions), undergrad programs – 41 applicants in 2014

- Bridge Sites (6):
  - Year 1: Advanced undergraduate courses, introduction to grad-level research, active mentoring, progress monitoring, social integration into grad school (APS funds)
  - Year 2: Take 1st year grad courses, apply to PhD program, research underway (Department funds)

- Ancillary Students (Partnership Institutions):
  - 69 graduate programs look at “other” applications, recruited additional 8 offers to these students (2014)
  - Beginning approval of APS “COM approved” Partnership Institutions; national recognition of program
  - No direct support for students, some travel support possible

- APS monitors progress of all students; conduct research
Bridge Programs in Physics

**APS Sites:**
- Cal State Long Beach
- Florida State University
- Indiana University
- Ohio State University
- University of Central Florida
- University of South Florida

**Non-APS Sites:**
- Columbia University
- Fisk / Vanderbilt
- MIT
- Princeton University
- University of Chicago
- University of Michigan
Bridge Program Achievements

National Achievement Gap

<table>
<thead>
<tr>
<th>Year</th>
<th>Project Goal</th>
<th>Project Achievement</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>5</td>
<td>10</td>
</tr>
<tr>
<td>2014</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>2015</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2016</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>2017</td>
<td>20</td>
<td>20</td>
</tr>
</tbody>
</table>
GRE Physics Scores: Impact of Cutoff Scores

Source: ETS

0.25 (F)
0.46 (M)
650
Physics GRE: Impact of Cutoff Scores

- Fraction (White) 0.09 (Black)
- Fraction (Hispanic) 0.34 (Hispanic)
- Fraction (Asian) 0.61 (Asian)

Graph shows the fraction of different racial groups above various score cutoffs.
NMC Plans

- Increase URM degree completion in physics
- APS identifies / connects mentors
- Mentors recruit mentees (locally)
- Provide an annual gathering of mentors and mentees to:
  - Spread best-practices; conduct professional skills workshops; connect students and their mentors with others (9-10 October 2015)
- Provide merit-based honors
- Needs-based scholarship program
- Track student progress
- Math Alliance has developed a network of 350+ mentors providing local mentoring to 600+ undergraduates
This material is based upon work supported by the National Science Foundation under Grant No. 1143070

Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.