Collaborative Efforts: American Physical Society and Historically Black Colleges and Universities

HBCU SPIN-UP Regional Workshop
Hampton, University
Hampton, VA
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SPS Success Story

Then →

Now ←
Outline

• APS Joint Diversity Statement
• Some statistics…
• The Pipeline
• APS Programs in
  • Diversity
  • Careers
  • Education
  • Outreach
• Now and Beyond…
08.2 JOINT DIVERSITY STATEMENT
(Adopted by APS, NSBP and 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.
African Americans represent ~ 40% of all URM Physics Bachelor’s Degrees (US Citizens and Permanent Residents)

Source: IPEDS Completion Survey
The Pipeline

- High School
- Undergraduate
- Graduate (MS)
- Graduate (PhD)
- Faculty

% that do not apply to graduate school
% who were not accepted, or opted out of graduate school
% that drop out without a PhD
APS Programs

• Diversity
  – Minority Bridge Program
  – Minority Scholarship
  – Committee on Minorities (COM)
  – Committee on the Status of Women in Physics (CSWP)

• Careers
  – Physics Insight
  – Future of Physics Days
  – Job Center
  – Professional Development
  – Career Development Speaker Grants
  – Committee on Careers and Professional Development (CCPD)

• Physics Education
  – Physics Education Teacher Coalition (PhysTEC)
  – Physics Education Research (PER) Speakers List
  – ComPADRE Digital Library
  – Committee on Education (COE)

Outreach: Synergistic activities that can engage students

The “WOW” Factor

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• Bring minority PhD graduation rate into parity with bachelor rate (roughly double) in 10 years
• Spawn sustainable “Bridge Experiences” (~5)
  – “Transitional” Master’s
  – Post-bac year(s)
• Improve mentoring / support at doctoral institutions (~20)
• Spread best-practice ideas, advocate on issues
• Change physics department culture to improve graduate education for all students
• Work collectively / centrally (APS) where actions are appropriate and cost-effective
What Are Students Saying?

• “Make physics more interesting...classes are hard and boring some times”
• “What can I really do with physics?”
• “Do I really want to be like my professors when I grow up?”
• “Are there young minorities in physics?”
• “How can I get more information”
• “Why don’t physicists wear deodorant?”
Any high school senior, college freshman or sophomore who is an African American, Hispanic American or Native American U.S. Citizen or Permanent Legal Resident

New - $2000; Renew - $3000

Provides funding and mentoring to minority students. Receives an APS mentor (COM) and a local mentor as well.
Do Students Know?

• If you ask an undergraduate student what PhDs are doing, they will most likely tell you that they are a professor?
• Do students know what a physics degree is worth?
• Do they know about REU programs (PAID!!!!!)

Source: AIP
Physics InSight slide shows inform and excite students about careers and opportunities in physics.

Physics Careers Webinars offer interactive discussion, career guidance and advice from fellow physicists. Free and offered monthly.

Future of Physics Days are a part of the APS March and April meetings with events to enable undergraduates to meet their peers, present research results and network with other physicists.

APS’ award-winning Career Center job board posts the best in physics and related fields.

Funding for undergraduates to present research at meetings, Career and Professional Development Training… and much more
...committed to improving the education of physics and physical science teachers
<table>
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<tr>
<th>Institution</th>
<th>(funding period)</th>
<th>Before PhysTEC</th>
<th>Years 1-3</th>
<th>Years 4-6</th>
<th>Post-funding</th>
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*Number of physics certifications averaged over 319 institutions in 15 states. Note that all PhysTEC teachers are more highly qualified than the minimum standard in most states.
Outreach
Engaging the Students

• The APS Outreach Department offers several resources to engage students through creative thinking:
  – PhysicsCentral.Org
  – Physics Quest Kits
  – Comics
  – Posters
  – Science Festivals
  – Activity Books
  – Mini Grants
  – Outreach Volunteer

→ The “WOW” Factor ←
Outreach
Engaging the Students

How many cheeseburgers do you need to eat to row across the Atlantic Ocean?

What is the most dangerous part of being a human cannonball?

\[ \text{Cannonball Range} = \frac{v^2 \sin(2\theta)}{g} \]
Can Students Benefit

• “Free” Membership
• Travel assistance to meetings
• Mentors outside of their institution
• Networking opportunities for graduate school and jobs
• Access to journals
• Cool Toys!
CALL OR EMAIL!!!

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“Individually, we are one drop. Together, we are an ocean.”
Ryunosuke Satoro