Overview and History: Conferences for Undergraduate Women in Physics

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http://www.aps.org/programs/women/workshops/cuwip.cfm
Outline

• Motivation
• History
• Conference Formats
• National Structure
• Challenges
• The Future
Motivation

- US Producing 6000+ Physics Bachelor’s per year.
- Fraction of female Bachelor’s degrees level at 20% (slight drop?)
- Number of female Bachelor’s rising, but not as fast as males.

[Graph showing the percent of physics bachelor's degrees earned by women from 1981 to 2010.]

http://www.aip.org/statistics
Motivation

• The pipeline leaks.

Data: IPEDs Completion Survey
Motivation

• Female students often isolated.
  – 43% of all Bachelor’s from institutions with ≤5 degrees/year.
  – At Ph.D. granting institutions, median number of all degree recipients is 12.

• Few female faculty mentors
  – 43% of four-year schools have no female faculty
  – 40% of Ph.D. granting institutions have 0 or 1 female physics faculty

<table>
<thead>
<tr>
<th>Percentage of Physics Faculty Members Who Are Women</th>
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<tbody>
<tr>
<td>by Academic Rank</td>
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<tr>
<td>Year</td>
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<tr>
<td>(%)</td>
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<tr>
<td>Full Professor</td>
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<td>(%)</td>
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<tr>
<td>Associate Professor</td>
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<td>(%)</td>
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<td>Assistant Professor</td>
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<td>(%)</td>
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<td>Instructor / Adjunct</td>
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<td>(%)</td>
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<tr>
<td>Other ranks</td>
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<td>(%)</td>
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<tr>
<td>by Highest Degree Offered by Department</td>
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<td>(%)</td>
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<tr>
<td>PhD</td>
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<td>(%)</td>
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<td>Master’s</td>
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<td>(%)</td>
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<tr>
<td>Bachelor’s</td>
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<td>(%)</td>
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<td>OVERALL</td>
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<td>(%)</td>
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</table>

The year in the table refers to the spring semester; for example, 2010 represents the 2009-10 academic year.

* These data were not collected in this survey year.

http://www.aip.org/statistics
Conference History

- First conferences at Southern Cal in 2006 & 2007
- Yale also heavily involved in early years.
- Growth due to:
  - Better advertising [especially 2012 (APS) & 2013 (SPS)]
  - Better regional coverage
  - Word of mouth
  - Repeat attendees

1000 attendees in 2014 is ~20% of all female college physics majors.

CUWiP Attendance by year

- 29 attendees in 2006
- 71 attendees in 2007
- 235 attendees in 2008
- 337 attendees in 2009
- 324 attendees in 2010
- 402 attendees in 2011
- 685 attendees in 2012
- 875 attendees in 2013
- 1006 attendees in 2014

Year:
- 1 site 2006
- 3 sites 2007
- 5 sites 2008
- 6 sites 2009
- 8 sites 2010
- 10 sites 2011
- 12 sites 2012
- 15 sites 2013
- 18 sites 2014

Attendees:
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2013 Colorado School of Mines Conference

2014 University of Maryland Conference
Conference Timing/Schedule

• Conferences held in January, the weekend of Martin Luther King, Jr. holiday

• Typical schedule:
  – Students arrive, Friday (Jan 17, 2014)
    • Check in, welcome
    • Some talks/panels Friday evening
    • Some sites have lab/facility tours on Friday
  – Conference continues all day Saturday
  – Conference concludes Sunday mid-afternoon.

• Many benefits to the mid-January weekend
  – Fall semester can be used for organization/applications
  – Winter term not yet in full swing

• Downside is weather may affect travel.
Conference Format

• Each site determines format, agenda

• Typically:
  – Presentations from speakers (academia, industry)
    • Speakers asked to present at an undergrad level
    • Also asked to address challenges and issues they faced.
  – Workshops/Panels
    • Careers
    • grad school
    • undergrad research
    • balancing work/family
    • communicating/writing
  – Tours of facilities or campus research labs
  – Student research poster session
  – Informal discussions
  – Meals, breaks, fun events for networking

• National keynote talk ties the sites together

more in Mette’s talk
Financial Model

• Philosophy: student costs should be minimal
• Financial considerations should never be a limitation to attendance.

• Support to students provides for:
  – Food
  – Lodging
  – Some travel expenses (costs shared with home institutions)
  – Other expenses (facilities, speakers)

• Students pay $25 registration fee only.
  – Support available for students unable to afford fee.
6-Mar-14 CUWiP History/Overview
Kevin Pitts (kpitts@illinois.edu)
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• Challenges
• The Future
National Structure

• Originally “grass roots”
  – Conferences fully run locally
  – No formal national organizing structure. Informal group of conference organizers.
  – Sites collaborated on DOE, NSF proposals
  – Regular phone calls to share information.

• In 2012, began working on a more formal collaborative structure
  – National Organizing Committee
  – Formal collaboration with APS
  – Formal procedure for site selection

• 2013-2014 (prepare for Jan 2014 conferences) first year for National Organizing Committee and formal APS Collaboration
Organization

• Several years, grass roots national committee
  – Daniela Bortolello, Purdue
  – Bonnie Fleming, Yale

• Formal national organizing committee (2013)
  – Daniela Bortolello, past chair
  – Pat Burchat, Stanford, chair
    • Organized the very successful 2012 Stanford Conference
    • Instrumental in formalizing the NOC structure and the collaboration with APS
  – Kevin Pitts, Illinois, chair elect
  – APS Education & Diversity, CSWP
    • Featuring: Ted Hodapp, Deanna Ratnikova
  – 2013 and 2014 site organizers
  – Evaluation team

6-Mar-14

CUWiP History/Overview

Kevin Pitts (kpitts@illinois.edu)
2014-2015 Organization

- Pat Burchat, Stanford, past chair
- Kevin Pitts, Illinois, chair
- Mette Gaarde, Louisiana State, chair elect
  - Mette ran the 2014 LSU Conference
- Ted Hodapp, APS
- Deanna Ratnikova, APS
- 2014 and 2015 site organizers
Benefits of APS Collaboration

• Opportunity to submit multi-year grant proposals. APS becomes the source of continuity.

• Centralize many functions such as application and registration.
  – Previously, each site responsible for setting up online application/registration system.

• APS brings a great deal of organizational insight and experience
  – Office of Education and Diversity incredibly knowledgeable

• Offers an opportunity to do fundraising across years and across sites.
Funding

• Sources: host institutions, donations, federal government.

• Our experience: host institutions willing to provide significant funding and in-kind contributions.

• Tremendous support from DOE Office of Science and National Science Foundation.
  – DOE Office of HEP, Office of Nuclear Physics, Fusion Science, Basic Energy Sciences
  – Previously: year to year proposals
  – Now: three year grants from both entities.
  – Federal funds used mostly for participant support (NSF funding supports assessment)

• Donations/other funding sources vary from site to site.
  – Collaborating universities
  – Alumni
  – Industry
  – Labs, other facilities
Feedback/evaluation

• NSF supports conference evaluation.
  – Pre-conference surveys
  – Post-conference surveys
  – Focus groups

• Overall evaluation of the conferences is extremely positive
  □ 90-95% say the conferences met their expectations
  □ 80-85% say the conference helped improve their self-confidence

• Tremendous experience for student organizers.
Challenges

• Geographic balance of sites
  – Some regions oversubscribed
  – Sufficient demand for 2 conferences in the Midwest and West

• Maintaining a good balance/emphasis between graduate school and broader career opportunities
  – Very easy for conferences to be too oriented to academia

• Growing pains associated with more sites and new APS collaboration
  – This will get much better quickly

• Passing along experiences & best practices from year to year.
  – This is improving, but still a challenge

• Must work to improve diversity

• Planning for future conferences and sites

• Equitable disbursement of funds.

• Technology for keynote address

• Advertising
• Receiving 8-10 proposals per year
• Many of those are repeat hosts.
• Need new hosts.
• Need more sites to balance geography
Future

• Conference size currently well-matched to demand.
• Continued growth anticipated due to word of mouth and better advertising
• To sustain, we’ll need new sites to host
Summary

• Conferences for Undergraduate Women in Physics are a SUCCESS
• The model is working, we are making a difference.
• We have momentum, we need to keep it going.

2014 University of Utah Conference