Conference for Undergraduate Women in Physics

Yale University
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Elissa Dunn (Yale), Bonnie Fleming (Yale), Elizabeth Jerison (Yale), Allison Kaptur (Yale), Eleanor Millman (Harvard), Rachel Miller-Ziegler (Yale), Christine Nattrass (Yale), Elise Novitski (Yale), Lauren Rosenblum (Yale)

The Conference for Undergraduate Women in Physics at Yale (CUWPY) is a three-day conference for physics majors in the northeastern United States, with sister conferences run by the University of Southern California and the University of Michigan. CUWPY's goal is to encourage young women to continue in physics by providing them with the opportunity to experience a professional conference, information about graduate school and professions in physics, and access to other women in physics of all ages with whom they can share experiences, advice, and ideas. The conference program includes research talks by faculty, panel discussions about graduate school and careers in physics, presentations and discussions about women in physics, laboratory tours, student research talks, a student poster session, and several meals during which presenters and students interact with each other. Conference participants are asked to fill out evaluations before and after the conference so that we can gauge the success of the conference. We discuss how conferences for undergraduate women can improve recruitment and retention of women in physics.

Introduction

CUWPY is an annual three day conference for undergraduate women in physics. The first conference took place on January 18-20, 2008. This year the conference will be held on January 16-18, 2009 with simultaneous sister conferences at the University of Southern California (USC) and University of Illinois at Urbana-Champaign (Illinois). The conference has two overarching goals. One goal is to give young women the confidence, motivation, and resources to apply to graduate school and successfully complete a Ph.D. The other goal is to make undergraduate women aware of physics career opportunities. The idea for the conference originated with two USC graduate students and originally targeted the state of California.

Statement of Need

The low representation of women in physics is an issue of international concern and has been highlighted by events such as the recent 2nd IUPAP International Conference on Women in Physics. This disparity points to an untapped resource of talented women who could contribute to the scientific community and future developments in science. The percentage of degrees awarded to women in physics in the USA is much lower than in some other countries.

In the American Institute of Physics report, Women in Physics and Astronomy, 2005, the US ranked 12 out of 19 countries for percentage of PhDs awarded to women and 11th out of 20 countries for percentage of Bachelor's Degrees awarded to women. The representation of women in physics drops as one goes higher up the academic ladder. One of the key transitions is from undergraduate school to graduate school. Nationally 22% of Physics Bachelors degrees were awarded to women. In contrast only 18% of Physics PhDs were awarded to women. Perhaps even more striking is the fact that only 13% of the US citizens receiving PhDs were women.

Objectives

The overall goals of the conference are:

- To foster an undergraduate culture in which women are encouraged and supported to pursue and succeed in higher education in physics.
- To give young women the confidence, motivation, and resources to apply to graduate school and successfully complete a Ph.D.
- To strengthen the network of women in physics nationally.

To meet these goals, the specific objectives for the conference are that the participants leave with:

- Increased awareness of current research and career options in physics.
- Greater familiarity with the graduate school experience.
- Resources for applying to and being successful in graduate school, as well as general resources for women in physics.
- A network of women in physics.
- Knowledge of career opportunities for women with a BS in physics.

Figure 1: 2008 Conference participants

Program

The conference takes place over a weekend and features research talks by distinguished faculty, aimed at exposing undergraduate women to a broad range of current "hot topics" in physics research. There are also presentations on career options, graduate school applications, and issues faced by women in science. Additional sessions include lab tours, undergraduate research presentations, and small group discussion on graduate school life and ways to succeed as women in physics. All meals are provided and lodging costs are covered, allowing the student participants to interact with one another and with the speakers.

Figure 2: Conference participants on a laboratory tour

Conference Survey Results

Students were given a survey before and after the conference in 2008. Figure 3 demonstrates that women are more likely to apply to graduate school in physics or another science and to seek a career in physics or another science after attending the CUWPY. Figure 4 demonstrates that CUWPY is useful for network building; after attending the conference, women knew more physics majors, more female physics majors, and more professional physicists.

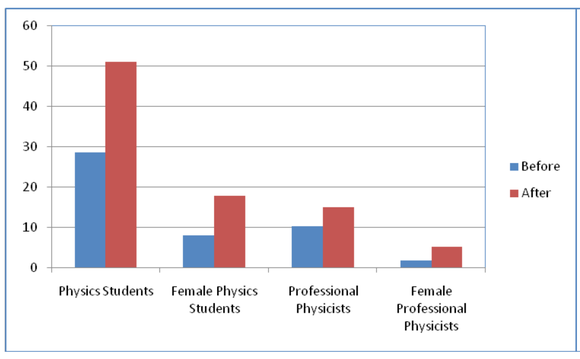

Figure 4: Response to the question: "Approximately how many (students/professionals, etc.) do you know?" With responses before the conference shown in blue, on the left bar, and responses after the conference shown in red, on the right bar.

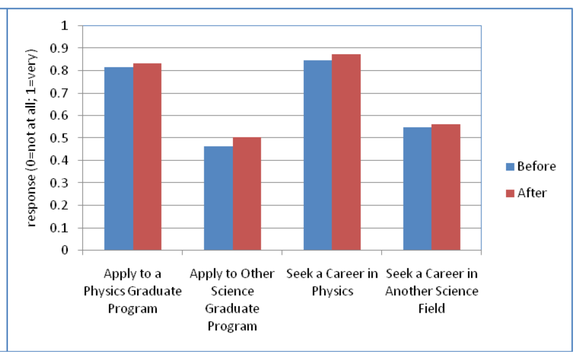

Figure 3: Response to the question: "What is the likelihood that you will…." With responses before the conference shown in blue, on the left bar, and responses after the conference shown in red, on the right bar.

In addition there was a brainstorming session where students were asked to make suggestions for what could be done to improve the recruitment and retention of women in physics. Some of the suggestions were:

Mentorship and advising:

- Stronger advising for beginning students, possibly including student mentors
- Outreach to high schools to encourage women in science

Community building:

- More social activities for female physics students and the physics community in general
- Social space such as a physics student lounge
- Integrate undergraduate and graduate communities
- Weekly colloquia for undergraduates
- Physics communities in on-campus housing

Outreach to smaller colleges:

- Visits from graduate students for role models and to encourage students to apply to a wide variety of graduate schools
- Visits from faculty from other institutions
- More partnerships between colleges to allow students at smaller schools access to necessary classes
- Lab tours for institutions with fewer research opportunities

Research exposure:

- Research opportunities for freshman women in physics
- Seminar/class on different research areas
- Website/e-mail about summer research programs at other universities

Educating the community:

- Respond publicly to false statements about women's abilities
- Give department heads a list of female faculty to invite to speak

Conclusions

The 2008 CUWPY was a huge success. Undergraduate women had a chance to present their research, meet other female undergraduates, meet female graduate students, tour research labs, learn about graduate school, and meet successful professional physicists. Attendees also learned about the obstacles facing women and how they could prepare themselves to overcome them. The conference also generated a list of suggestions for ways in which physics departments could improve the environment for women to increase recruitment and retention of women. The 2009 conference will build on these successes and provide an opportunity for more women to benefit from these activities.

Acknowledgements

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