

# CSWP, IBM, and Diversity

The APS/IBM Research Program for Undergraduate Women  
and Other Diversity Initiatives

Barbara Jones, IBM Almaden Research Center, San Jose, CA

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Physics of the APS (CSWP)
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## The APS Committee on the Status of Women in Physics (CSWP)

The Committee on the Status of Women in Physics (CSWP) was founded in 1972 to address the encouragement and career development of women physicists. The Committee consists of nine volunteer members appointed by the President of the APS. Throughout its 30 year history, CSWP has been an active sponsor of studies, programs and publications to foster women in physics.

Administrator: Sue Otwell, APS  
[otwell@aps.org](mailto:otwell@aps.org)

The APS, through the [Committee on the Status of Women in Physics](#) (CSWP), is committed to encouraging the recruitment, retention, and career development of women physicists at all levels.

- Workshops for women physicists provide valuable communication and negotiations training.
- The site visit program assists physics department chairs in making their atmosphere more welcoming to women.
- The [Blewett Scholarship](#) allows women to return to scientific research after an absence.
- Publications feature the accomplishments of women in physics and encourage young women to consider physics as a career.

## Site Visit Program (CSWP and COM)

- **Site visits are conducted at the request of a department chair or lab director.**
- By speaking with graduates, undergraduates, faculty, employees, and administrators, an experienced team of primarily women physicists evaluates the strengths and weaknesses of the department/lab in communicating with and supporting women.
- **The goal of these meetings is to provide the site visit team with the quantitative and qualitative information they need to assess the climate for women or minorities in the host facility.**
- **Following the visit, the site visit team writes a **confidential** report to the department chair/lab director, detailing the findings of the visit and offering simple, practical suggestions on improving the climate for minorities or women.**
- **One year after the visit, the department chair/lab director is asked to respond in writing to the team, describing actions taken to improve the climate.**

### Aims:

- Identify a set of problems commonly experienced by URM and/or women physicists,
- intervene to solve many of these generic problems, and
- address problems arising in the particular physics department or lab visited and help improve the climate for minorities or women (both students and faculty) in the facility.

List of institutions where site visits have been conducted:

Indiana University 2007	Univ of California/San Diego1998
JILA/Boulder 2006	Princeton University1998
Univ of Michigan2005	Columbia University1997
NIST/Gaithersburg *2005	Univ of Colorado/Boulder1997
NIST/Boulder *2005	California Inst of Technology1996
Iowa State University2005	SUNY at Stony Brook1994
Univ of Washington2004	Univ of Texas/Austin1994
Colorado School of Mines2004	Stanford University1994
Univ of Arizona2004	Harvard University1994
Purdue University2003	Univ of Rochester1994
Univ of Minnesota2003	North Carolina State Univ1994
Duke University2003	Michigan State University` 1993
Ohio State University2003	Univ of New Mexico1993
Argonne National Lab *2002	Kansas State University1993
Univ of Wisconsin2002	RPI1992
Univ of Iowa2002	Williams College1992
NASA/Goddard (with COM) *2002	Univ of Illinois at Urbana Champaign1992
Univ of Maryland (return visit)2001	University of Pennsylvania1991
William & Mary2000	Bryn Mawr College1991
UCAR/NCAR *2000	University of Virginia1991
Penn State Unviersity2000	University of Maryland1990

Some conclusions from the study of the first 15:

- The most important ingredient for a positive climate was a department chair who communicates well with faculty and students and female students in particular. The chair needs to listen to concerns, to care enough to act both publicly and privately to effect needed changes, and to clarify behavior that will not be tolerated.
- Other suggestions that were often included in the reports were inviting more women to the department as seminar speakers and arranging for them to interact with students, and
- organizing social events (ie, pizza) that build a sense of community among women and among all students and faculty.
- Teaching assignments that protect students as much as possible from arrogant faculty members
- Good TA training programs that include some sensitivity training

## **Publications & Reports**

### **[Best Practices for Recruiting and Retaining Women in Physics](#)**

Suggestions compiled by the CSWP to assist departments in finding and keeping women physics faculty, postdocs, graduate and undergraduate students. Available in pdf format.

### **[IMPROVING THE CLIMATE FOR WOMEN IN PHYSICS](#)**

**[Dr. Judy R. Franz, Executive Officer, The American Physical Society, College Park, Maryland](#)**

[JudyFranzclimate.pdf.Ink](#)

### **[Physics in Your Future](#)**

For middle and high school girls. No charge to students, parents, educators, guidance counselors, and groups who work with young women.

### **[The Gazette](#)**

The official newsletter of the Committee on the Status of Women.

## Female Friendly Physics Graduate Programs: Survey by the Committee on the Status of Women in Physics

The APS [Committee on the Status of Women in Physics \(CSWP\)](#) has compiled a survey of graduate programs in physics that should be helpful to those interested in assessing the climate for women at various graduate schools. Department chairs (or their assignees) were asked the five questions below. The responses, for each institution, can be obtained by clicking on the name. *Note that the responses are written by department chairs (or their assignees), so the APS and CSWP assume no responsibility for the accuracy of the information submitted.*

The questions are:

How many tenure track or tenured faculty-- male/female?

How many graduate students ?-- male/female?

Is there a family leave policy for graduate students? If so, describe.

Is there family health insurance available for graduate students? Is it included in the stipend?

In a paragraph, please describe why someone applying to graduate school who is interested in a female friendly department should choose your institution.

The institutions listed are below. If you are a department chair, and would like to add (or change) your institution's contribution, please email Sue Otwell ([women@aps.org](mailto:women@aps.org)) for the website address where data can be entered.

**151** total surveys as of today

## **Workshops & Meetings**

**2007**

### **[Professional Skills Development for Women Physicists](#)**

March 4, 2007; Denver, Colorado

April 13, 2007; Jacksonville, Florida

One day workshops for women physicists conducted by professional facilitators.

### **[Gender Equity: Strengthening the Physics Enterprise in Universities and National Laboratories](#)**

May 6- 8, 2007; [APS Headquarters](#), College Park, Maryland

This workshop brought together chairs of 50 major research oriented academic physics departments as well as 20 to 25 physics related division directors of major national laboratories. The goal is to double the number of women in physics in the next 15 years by informing, educating and providing chairs of physics departments and physics oriented national laboratories' division directors the tools necessary for gender equity.

### **[Networking Breakfasts with influential women speakers at the March and April APS meetings](#)**, yearly

Archive of Workshops & Events: [2006](#), [2005](#), [2004](#)

## Scholarships and Internships

### **APS Scholarships**

#### **[M. Hildred Blewett Scholarship](#)**

This scholarship for women in physics enables women to return to physics research careers after having had to interrupt that career for family reasons.

#### **[APS/IBM Research Internship for Undergraduate Women](#)**

The internship is a salaried position at an IBM research location and is designed to encourage women students to pursue graduate studies in science and engineering.

#### **[APS Scholarship for Minority Undergraduate Physics Majors](#)**

Any African American, Hispanic American, or Native American U.S. citizen or permanent resident who is majoring or planning to major in physics, and who is a high school senior, college freshman, or sophomore is eligible to apply.

### **Other Awards**

#### **[American Association of University Women](#)**

Fellowship and awards are offered in support of aspiring scholars, teachers and activists in local communities, women at critical stages of their careers, and those pursuing professions where women are underrepresented.

#### **[Association for Women in Science \(AWIS\)](#)**

Two awards are offered: (1) a predoctoral program award for advanced students in the natural and social sciences, (2) the Kirsten R. Lorentzen award for college sophomores or juniors studying physics or geoscience.

## **Speakers Program**

The Women in Physics Speakers Program is an online list of names and talk titles of 320 women, indexed by field and state.

## **[Travel Grants](#)**

## **Resources**

APS and its [Committee on the Status of Women in Physics](#) (CSWP) have collected numerous resources that can encourage the recruitment, retention, and career development of women physicists at all levels. They are organized by these topics:

**[Gender Equity](#)**

**[Studies and Reports](#)**

**[Academia](#)**

**[Networking, Careers, Mentoring](#)**

**[Gender Issues](#)**

**[Other Reports](#)**

**[Postdocs](#)**

**[Profiles of Women in Science](#)**

**[Associations and Related Links](#)**

# **The IBM/APS Research Internship for Undergraduate Women**

I. History

II. Program Implementation: Selection of Interns  
and Internships

III. Conclusions: Challenges, successes, key  
elements

## I. Introduction: History and Background

Goal: to increase the number of women who attend graduate school in science and engineering

- Originated at IBM Almaden, with a group of concerned employees at many levels
- Recognition of the critical nature of undergraduate years
- Internship: provide students with technical experience, a mentor, an environment of Ph.D.'s

### Highlights:

- Applicant to be female sophomore or junior at US college or university
- Major in chemistry, physics, materials science or engineering, computer science or engineering, or chemical, electrical, or mechanical engineering
- A minimum 3.0 GPA
- Awardees to be offered an internship at IBM Almaden, IBM Yorktown, or IBM Austin Research Labs
- A grant of \$2500
- An IBM mentor
- Paid travel during the academic year to visit IBM mentor
- At least one new award a year; sophomores eligible for renewal

IBM asks APS and CSWP to be a co-sponsor of the award.

- NSBE already a sponsor of the internship for African American students
- APS contacted in late 1998.
- With help of CSWP, in 2000 the APS Council votes to officially co-sponsor the award.
- Name of the internship to include APS
- At least one member of the selection committee to be a member of, or appointed by, CSWP.
- APS to publicize the award.
- APS to serve as the collection site for the applications and forward them to IBM. IBM to do all subsequent admin tasks. (Later changed to on-line applications run from IBM server.)

## **II. Program Implementation**

### **Advertising**

- Due date near end-January
- Program information posted on IBM external web site, APS CSWP site
- Notices sent to FIAP, DCOMP membership, US Physics Chairs; also APS Internship web site
- Notice posted in WIPHYS
- Now around 190 applications yearly
- 50% physics, 20% materials science/ engineering, 10-15% CS, 15-20% chem
- "Physics-based" advertising leads to a range of majors, with uniform excellence across subject fields
- Applicant pool excellent each year, not a single applicant who should not have applied. Many applications from smaller colleges, women of color.

## **Intern selection**

Academic achievement, personal motivation, compatibility of student interests with current IBM activities

Candidates must have demonstrated interest and motivation in scientific fields

Candidates supply resume, transcript, essay, 2 letters of recommendation from professors.

The essay is critical.

Selection teams in each broad subject area. Each team chooses top 30% in their area, then whole committee reads all the top 30 or so choices.

Final list selected, calls made until max. number of interns allowed by IBM have accepted.

## **Intern placement and mentors**

Students are assigned a research project to mesh with their experience, talents, and stated interests.

The mentor is also assigned, and can be separate from the technical supervisor.

There is an active student community during the summer, both internally and externally.

Help is provided with housing.

There is a summer seminar series for the students in which IBM people present their work tailored for this audience.

At the end of the summer the students give a presentation of their own.

At the end of the summer, students are surveyed about their experiences in the program.

### **III. Conclusions: challenges, successes, key elements**

#### **Challenges**

What about the "middle level"? Truly superb students will land on their feet with or without the program.

Students who are truly passionate about research, but who may not have 4.1 GPA, may be the ones to most benefit.

Finding and preparing the best mentors is a challenge.

Advance preparation for the summer is a must, as is understanding that an undergraduate will not be like a postdoc.

Continuity with students once they leave undergraduate can be difficult; tracking must be established

## **Key elements**

A pool of volunteers, who were enthusiastic and worked hard, plus a chair willing to champion the program

IBM Almaden Lab Director Robert Morris, and his predecessor John Best, who gave funding and full support for the program. Other IBM Executives, who gave support and money to extend the program Division-wide.

Attracting the best candidates, through thorough advertising and good intern placement. Small colleges especially need to be reached, as many of our best interns came from small schools (some I'd never heard of before).

1999: Two awardees

2000: Four awardees

2001: Program is made IBM Division-wide!

Five awardees at Almaden, 3 at Watson

2002: Four awardees at Almaden, 2 at Watson

2003: Three awardees at Almaden, 1 at Watson

2004: Three awardees at Almaden, 2 at Watson

2005: 2 at Almaden

2006: 2 at Almaden

2007: 2 at Almaden

**What happened?**

**-- A product of its own success: by 2005, many programs, all of them bringing women, plus programs for URM**

## A sea change since 1999

- Growing **institutional** awareness of the extent of the problem for women and minorities in the physical sciences (see also NSF programs)
- Appreciation of the critical role of mentoring and internship experience during the undergraduate years to keep women focused on eventual research careers
- Undergraduates can have summer projects in industry which have real impact

## IBM and Diversity

“The employees of IBM represent a talented and diverse workforce. Achieving the full potential of this diversity is a business priority that is fundamental to our competitive success. A key element in our workforce diversity programs is IBM's long-standing commitment to equal opportunity.

Business activities such as hiring, promotion and compensation of employees are conducted without regard to race, color, religion, gender, gender identity or expression, sexual orientation, national origin, disability or age. In respecting and valuing the diversity among our employees, and all those with whom we do business, managers are expected to ensure a working environment that is free of all forms of harassment.

This policy is based on sound business judgment and anchored in our IBM principles. Every manager in IBM is expected to abide by our policy, and all applicable laws on this subject, and to uphold IBM's commitment to workforce diversity.”

## IBM and Diversity, cont'd

IBM hired women and blacks in 1899 — 20 years before women were given the right to vote and 10 years before the National Association for the Advancement of Colored People was founded.

IBM also hired its first employee with a disability in 1914 — 76 years before the Americans with Disabilities Act; and IBM was the first company to support the United Negro College Fund in 1944.

In 1953 Tom Watson Jr. (founder's son) codified the company's nondiscrimination policy.

It was used in negotiations in the South, and also to state IBM's policy in all other countries in which it did business, including South Africa.

## Conclusions and Summary

The APS/IBM Internship is a very successful program, attracting nearly 200 superb women applicants yearly. **We encourage other industrial labs to start similar programs of their own.** Advantages: shared candidate pool. (I will be happy to provide help in starting any such other program.)

The pipeline in physics is still quite leaky. Not enough women getting PhD's, not enough going on to professional research careers.

Women undergraduates need to be encouraged to take several years of math in college, and to find opportunities to try working in a lab (not just processing data). Mentors need to be long-term, and coach women all through graduate school. **My experiences working in Bell Labs in the '80's were decisive for me; other women need to have similar opportunities.**