Vol. 22, No. 1 Spring 2003

CSWP Gazette

The Newsletter of the Committee on the Status of Women in Physics of the American Physical Society

INSIDE

Letter from the Editor: In Favor of Programs for Women in Physics

Barbara Jones, IBM Almaden, Past Chair, CSWP

It has been my pleasure to be the Chair of the Committee on the Status of Women in Physics for the past year. During this time, as well as during the two years previous to that during which I was a member of the Committee, I have seen the issue of affirmative action come up in the context of women in physics in several areas, and heard from many of its detractors. Although this is a large subject which I cannot hope to cover in entirety, I would like to bring up a few aspects and provide a supportive point of view, in the hope of stimulating thought and discussion on this matter.

Counter-argument #1: Internship and hiring programs for women are a form of affirmative action; they are bad, and probably illegal, because they discriminate against men.

My Reply: Addressing the "bad" or fairness issue first, one may debate which is worse: having a few additional programs targeted at women, in the background of a large number of programs open to both genders; or having a significant imbalance in the proportion of women to men in senior ("permanent") physics positions? Many other strong arguments aside, in this era of uncertain funding for physics and widespread public misunderstanding of the role of physics and scientific principles, it can be argued that it makes sense to have the makeup of our field in terms of gender (as well as ethnic and other) balance reflect as closely as possible their proportions in the population as a whole, or risk the field as being viewed as science done "by a subgroup, for a subgroup."

Many prominent corporations, including government contractors, have long had programs that target under-represented groups in recruiting and in some cases summer internship programs (Bell Labs and IBM, just to name two). It is actually because discrimination on the basis of sex and ethnicity is forbidden to government contractors that such programs exist throughout industry; far from being illegal, they are typically supported at the highest levels of management and Human Resources. Not only can they be viewed as the

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CSWP to Offer Special Panel Discussion on Title IX at APS March Meeting

Dongqi Li, Argonne National Laboratory, Chair, CSWP

On Oct. 9, 2002, the US Senate Committee on Commerce, Science, and Transportation held the first-ever hearing on Title IX and Science. On December 19, 2002, some of the related legislation, such as requesting the National Academy of Sciences to assess gender differences in the careers of science and engineering faculty, were signed into law. What are the potentials and consequences of reinforcing Title IX in the classrooms and labs in addition to in sports? What are the alternatives? How to use the momentum to further improve the climate for women in physics? These are some of the questions that will underlie the special panel discussion planned for the March Meeting in Austin, TX.

Title IX of the Educational Amendments of 1972 prohibits sex discrimination by any educational institution receiving federal funds. So far it has mainly made dramatic yet controversial impacts to women's sports, although it applies to all activities. Debra Rolison of the Naval Research Laboratory initiated and advocated the idea of utilizing Title IX to advance women in science, proposing that the government could withhold federal funding from the institutions that fail to address the issue. Meanwhile, alternative approaches have been explored. For example, the Association for Women in Science (AWIS) has received funding from the National Science Foundation's ADVANCE program to explore best

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Publication Information

The CSWP GAZETTE, a newsletter of the American Physical Society Committee on the Status of Women in Physics (CSWP), is mailed free of charge to all those listed on the "Roster of Women in Physics," all U.S. physics department chairs, and others upon request. Because editorial responsibility rotates among CSWP members, please address all correspondence to: CSWP Gazette, American Physical Society, One Physics Ellipse, College Park, MD 20740-3844 or email to: otwell@aps.org

In Favor of Programs for Women in Physics, continued

right thing to do, it is good business sense. It is also viewed in a positive light by the government.

The key here is that the students hired under these programs are as skilled, trained, and able, if not more so, than often the ones hired by the usual routes. Programs such as summer internships are a recruiting tool; to actually get the offer of employment the women must have the same high level of qualifications as any other summer student. If the intent is not to provide advantage but to eliminate disadvantage, the fairness issue would seem to fall solidly on the side of such programs.

A sub-argument to the above is, instead of having set-aside programs for women, why not target a position (or award, etc.), and publicize it in places where women are more likely to read it? This would be great, if it could actually be made to work. But how to advertise such opportunities in a place where not only women are more likely to read it (and feel encouraged to apply), but most eligible women are able to find out about it? Women physicists do not typically group themselves in enclaves, although there are certainly a few notable women's colleges. Activities such as the Women in Physics (WIPHYS) and CSWP Friends list serves target those with an interest in women in physics, but to truly reach a broad range of eligible women, the advertising itself must be broad. This naturally would result in a broad range of applicants, representing the proportions already existing in the field at that level, and what is more, would likely further discourage some women from applying. Any suggestions on how to effectively target programs at women, especially those at the undergraduate and lower graduate levels where there are not easily accessible lists of women in physics, would be a valuable contribution to the discourse in this area.

Counter-argument #2: Awards and prizes just for women are counter-productive.

This argument goes on to say that such awards could be viewed as lacking impact compared to awards for the community as a whole. What is more, APS bylaws stipulate that the same work cannot be given more than one award, which excludes the woman awardee from being eligible for the more general (and presumably more prestigious) awards.

My Reply: This is of course an area of continued debate, but I would like to give some arguments as to why these awards are a very good thing. At first glance this would seem to be a different issue than the one covered in counter-argument #1, but in fact I would argue that in many ways the argument is the same. Certainly such awards are fair, in the background of a large number of other awards both available to all, and historically certainly not over-biased towards women awardees (in fact rather the opposite). As above, the key is that the awardees be as capable and worthy as those receiving other prizes. If one looks at the list of awardees of, for example, the Maria Goeppert Mayer Award, one sees that this is certainly so.

A further point to make for awards is that there are in fact many "set-aside" programs, and that they are more the rule than the exception. There are awards for young researchers less than 10 years from the granting of their Ph.D., for those who work with one instrument (computers, for example) rather than another, and for those

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Special Events at APS March Meeting

Monday, March 3

CSWP/FIAP Networking Breakfast
7:00 am - 9:00 am
Hyatt Regency Hotel, Hill Country C
Cost: $20 ($10 students).
Pre-registration recommended – see http://www.aps.org/educ cswpbreakreg.html
(You need not be registered for the Meeting to attend this event)

Wednesday, March 5

*Session 2A. Special Panel Discussion * "Women in Physics: Title IX and the Need for Change"*
3:30 - 5:30 pm
Convention Center, Room 8C

CSWP Reception

5:30 pm – 7:00 pm
Convention Center, Waller Creek Room
Cash bar and light fare

Thursday, March 6

*CSWP/GMAG Invited Session W7 – "Magnetism and Dimensionality: Bulk, Films and Lateral Nanostructures" **
11:15 am - 2:15 pm
Convention Center, Room 17A

***Sessions are open to meeting registrants.**

In Favor of Programs for Women in Physics, continued

who are in one field rather than the other. Are we to view an award for one physics subgroup with less regard than another, just because it has fewer members, and therefore the applicant pool is smaller? Traditionally this is certainly not the case, unless – and here is the rub – one views (or is concerned about others viewing) all the members of the subgroup as being in some way inferior. I am concerned that this is at the heart of many of these concerns about awards for women. I would argue that excellence should be rewarded wherever it is found, and it is up to us, as a community of those interested in advancing the cause of women in physics, to hold these awards in the highest regard, and to encourage others to do so as well. The awards are a wonderful opportunity for a woman physicist to be recognized, and add to the number of awards available to her.

The argument that research thus awarded becomes ineligible for other prizes should typically have low impact; active researchers who receive APS awards are often productive enough to regularly provide new results as input for future awards. And the same argument would hold for all other specialty prizes – a young researcher award given, for example, in the 9th year after Ph.D. would likewise make that recent work ineligible for additional awards. But the assumption is that the young person will go on to even more glorious work later, the same assumption which should be made for women receiving an award just for women.

In summary, I have touched on just a few of the issues concerning programs for women in physics, but my belief is that many of the points in their favor are universal. I certainly hope to stimulate discussion which will lead to more good ideas about promoting the cause of women in physics. I would like to thank my fellow committee members on CSWP for their support and productive work throughout the year, and in particular for lively discussions on the above topics, and for making some of the good points I have noted above.

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CSWP to Offer Special Panel Discussion, continued

institutional policies. AWIS Executive Officer, Catherine Didion, Executive Director, will discuss the AWIS Academic Climate Project and how it is making a difference for women in academe. Judy Franz, APS Executive Officer, and Secretary General, International Union of Pure and Applied Physics (IUPAP), will address international aspects to increasing the participation of women in physics. She was one of the organizers of the IUPAP international conference on women in physics, whose goals were resolutions and recommendations to be directed to various institutions, granting agencies, and national governments. The conference resolutions were recently adopted by the IUPAP General Assembly. She will also discuss particular aspects of physics that have retarded women's entry into the field. All the panelists are long-time advocates of women in science issues and are well qualified to bring insights to the current discussions on Title IX for science and beyond. More information about the speakers and their topics can be found on the CSWP web site: www.aps.org/educ/cswp/panel03.html.

Each panelist will make an individual invited presentation. Then there will be an opportunity for questions and in-depth discussions as an integral part of the session.

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Order your FREE copy of the "Celebrate Women in Physics" poster!

Simply return this form to APS and receive a free copy of this full-color poster. Single copies are free of charge, please call 301-209-3231 for information on bulk orders.

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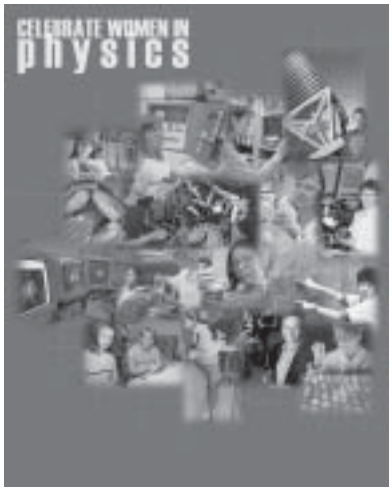

Mail to: Sue Otwell • APS • One Physics Ellipse • College Park, MD 20740

CSWP to Offer Special Panel Discussion, continued

Following the panel there will be a reception featuring a cash bar and light fare for those who wish to continue the discussion. The panel discussion will be held in the Austin Convention Center, Room 8C, on March 5, Wednesday, 3:30pm-5:30 pm. The reception will be at 5:30 – 7:30 pm in the Convention Center, Waller Creek Room. Please come and share your views. And bring your colleagues or fellow students, male or female, for some stimulating discussions!

More Events Focus on Women in Physics at March Meeting

Dongqi Li, Argonne National Laboratory

CSWP/FIAP Networking Breakfast

Padmasree Warrior

Attendees at the March meeting may wish to mark their calendars for several other CSWP-sponsored events, including the CSWP/FIAP Networking Breakfast (www.aps.org/educ/cswp/breakreg.html). The breakfast will be held on Monday, March 3, from 7:00 am-9:00 am in the Hyatt Regency Hotel, Hill Country C. The cost is $20, $10 for students. It is free for the first 50 students who sign up, thanks to the generous contribution from the FIAP (please contact Sue Otwell, otwell@aps.org). Our speaker this year is Padmasree Warrior, Senior VP/Chief Technology Officer for Motorola, who has made key contributions, both managerial and technical, to the development of innovative transistors for cellular phones.

Padmasree has extensive experience in all aspects of the semiconductor industry including profit and loss management, manufacturing, operations, technology and business development. An 18-year Motorolan, she has diversified experience in technology development and transfer, engineering, and manufacturing. She has been instrumental in driving innovative methods for technology commercialization realizing early "time to revenue" for the corporation. She has held many leadership positions within Motorola, was appointed vice president in 1999 and was elected a corporate officer in 2000.

Padmasree received her master's degree in chemical engineering from Cornell University in Ithaca, New York, and her bachelor's degree in chemical engineering from the Indian Institute of Technology (IIT) in New Delhi, India. She is a distinguished alumnus of IIT Delhi, and also serves as the Motorola executive liaison for Cornell University.

Padmasree was one of six women selected nationwide to receive the prestigious "Women Elevating Science and Technology (WEST)" award from Working Woman magazine in June 2001. As a community leader, she served on the Texas Governor's Council for Digital Economy, and is a member of the Texas Higher Education Board review panel. She also participated on the selection board for White House Fellows in 2001. Padmasree is an outside Director on the Board of Ferro Corporation.

On Thursday, March 6, CSWP and the Topical Group on Magnetism and Its Applications (GMAG) will co-sponsor an invited technical session (W7) on Magnetism and Dimensionality: Bulk, Films and Lateral Nanostructures The technical session will be held in the Convention Center, Room 17A from 11:15 am - 2:15 pm. It will offer a glimpse of cutting-edge research and development on magnetism featuring five excellent women speakers. Besides offering scientific exchange at the highest level, the event will also illustrate through example the wide range of excellent women speakers available for invited talks, and offer role models for aspiring women students. Information, including speakers, titles, and abstracts of the five talks, is at www.aps.org/meet/MAR03/baps/abs/S8070.html).

Coming Attractions … CSWP-Sponsored Events at April Meeting

More events focusing on women in physics are planned for the APS Meeting in Philadelphia, April 5-8, 2003! Information will be posted on the internet at and at http://www.aps.org/meet/APR03/ and at http://www.aps.org/educ/cswpindex.html.

CSWP Networking Breakfast
Tueday, April 8, 7:00-9:00am
Guest speaker, Sherry Yennello, Texas A&M University

Invited Session – High Energy Density
Sunday, April 6, 10:45 am
Co-sponsored with the Division of Plasma Physics

Reception
Co-sponsored with the Committee on Minorities and the Forum on International Physics. *Date and time to be announced*

The Presence and Participation of Women in Physics and Astronomy

J. Scott Long, Indiana University

SINCE 1973 there have been rapid and remarkable increases in the presence and participation of women in science and engineering. These changes are documented in the recent report, *From Scarcity to Visibility: A Study of Gender Differences in the Careers of Doctoral Scientists and Engineers* by the Panel for the Study of Gender Differences in the Career Outcomes of Science and Engineering Ph.D.s. of the National Academy of Sciences (Long 2001).[1] The report includes data on Ph.D. production and labor force participation for the fields of physics and astronomy. For other career outcomes, there were too few women in physics and astronomy to allow analysis within each field. Accordingly, many of the results given below are based on all fields of science and engineering, often using statistical controls for field differences. These findings should provide insights into what is happening to women in physics and astronomy. The approach in this article is to follow the pipeline, from receipt of degree, to entry into the labor force, and then through the academic ranks.

Figure 1 shows that the percent of Ph.D.s awarded to women in the physical sciences (including astronomy, physics, chemistry, oceanography, and geosciences) grew from 6 percent in 1973 to 24 percent in 1999. The percent of degrees to women was smaller in physics and astronomy, with 20 percent of the degrees to women in astronomy in 1999 and 13 percent of the degrees in physics, which corresponds to only 32 degrees to women in astronomy and 160 in physics. The greater overall increases in the physical sciences as a whole reflects the greater presence of women in fields such as chemistry and geoscience.

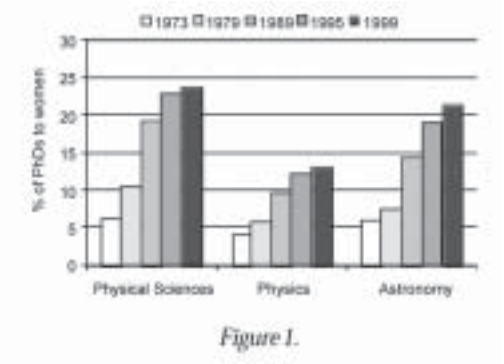

Figure 1.

Increases in the number of women among new Ph.D.s do not translate directly into increases in the proportion of women in the S&E labor force, as shown in Figure 2.

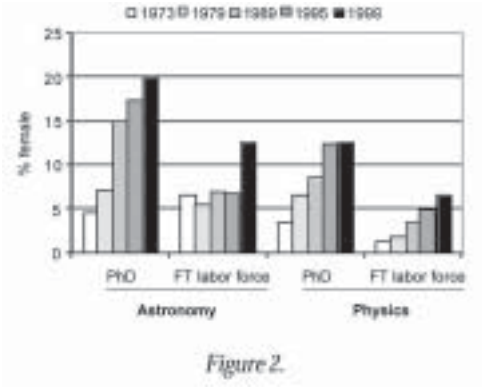

Figure 2.

There are two basic reasons for the slower increase in labor force participation. First, each new cohort of Ph.D.s is only a small fraction of the total number of scientists in the labor force. A change in the percent women in a new cohorts has only a small effect on the total percent of women already in the labor force. Second, women are much less likely to be fully employed than are men, as shown in Figure 3.

Figure 3.

The total height of each bar shows the percent of scientists and engineers who are not working full time, with the divisions within each bar indicating the specific labor force status. In 1973 women were 20 percentage points more likely to be less than fully employed, decreasing to an 11 point difference in 1995. Part time employment for women decreased between 1973 and 1979, leveling off around 12 percent. There was a steady decrease in the percent of women who were seeking work, from 4 percent in 1973 to 1 percent in 1995. The difference between male and female Ph.D.s in the percent seeking work was reduced to less than ½ point from a difference of 3 points in 1973. There are much larger gender differences in the percent of scientists who are no longer in the scientific labor force.

Overall, differences between men and women in full time labor force participation add up to less accumulated work experience and less valuable

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A great deal of the gender differences in full time labor force participation is associated with marital status and familial obligations.

experience for women over the course of their careers, a factor that is important for understanding the gender differences in career outcomes that are described below. While there has been improvement since 1973, female Ph.D.s continue to be substantially less likely than men to be fully employed in scientific occupations, with roughly 10 percent of the potential professional work of female doctorates being lost.

A great deal of the gender differences in full time labor force participation is associated with marital status and familial obligations. Before examining these effects, it is important to understand that men and women differ in their chances of being married or having children, although these differences have decreased since 1973. Still, male scientists are more likely to be married than female scientists, as shown in Figure 4.

Figure 4.

And, given the demands of a scientific career and the greater likelihood that women will undertake more of the responsibilities of raising children, it is not surprising that male scientists are more likely to have children as shown in Figure 5.

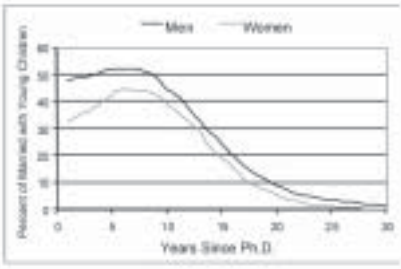

Figure 5.

Figure 6 shows that during the first fifteen years after the Ph.D. over half of the women working part time indicate that this is due to family obligations, while only around 10 percent of the men give this as the reason for not working.

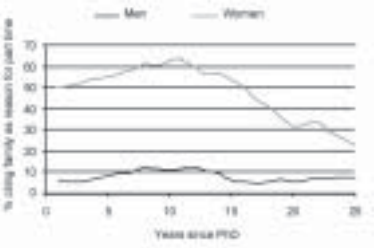

Figure 6.

The same effect is shown in Figure 7 which presents the percent of men and women who are working full time by their marriage and family obligations.

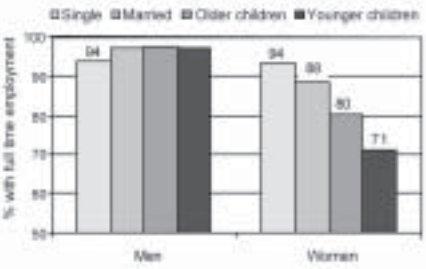

Figure 7.

Four familial statuses are considered: single without children, married without children, married with one or more child between 7 and 18 living at home, and married with one or more child younger than 7 living at home. Among men, those who are single are least likely to be working full time, with small increases for married men and those with children. In contrast, single women are most likely to be working full time. Being married without children decreases the predicted proportion of women working full time by 5 percentage points. Having older children at home decreases the proportion by 8 more points, while being married with young children decreases the proportion with full time employment by 22 points. As a consequence of the opposite effects of marriage and children for men and women, an identical 94 percent of single men and single women are expected to be working full time. That is, differences between men and women in labor force participation are eliminated if we compare single men to single women.

Before considering gender differences in career outcomes for academic scientists, it is important to emphasize that even if these outcomes were identical for men and women (which they are not), they would not reflect the substantial number of women who obtained the doctorate but are not in the full time labor force.

The rapid change in the percent of academic positions held by women is largely the result of increases in the proportion of new Ph.D.s who are women, which has important implications for the age structure in academia. The average academic woman received her degree more recently than the average academic man, and the difference between the average career age (i.e., years since the Ph.D.) for men and women is increasing. The effects of changes in the growth of academia and the increased entry of women can be seen with a population pyramid, which is a pair of horizontal

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histograms, one for men and one for women. Each bar represents the percent in an age-sex group (e.g., women between 1 and 3 years from the Ph.D.) relative to the size of the total population. The shape of a pyramid reflects the number of each sex entering the population (e.g., new Ph.D.s) and the number leaving through death or retirement.

Figure 8 shows how the more rapid increase in the number of women with Ph.D.s and their increasing entrance into academia has affected the age structure.

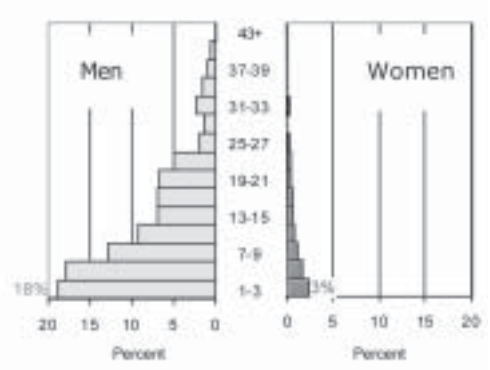

Figure 8.

In 1973 (Figure 8), men represented a much larger proportion of all academics. The longer bars for young scientists, those with career ages of 1-3 and 4-6, show that incoming cohorts were larger than prior cohorts. For example, 18 percent of academic scientists are men within three years of their Ph.D., with women within three years of the Ph.D. representing only 3 percent of the academic labor force. By 1995 (Figure 9), things had changed substantially. First, the proportion of men overall is reduced, as indicated by the lesser difference in the areas of the two halves of the pyramid. Second, the size of incoming cohorts of men has stabilized, as reflected by the similar sizes of the bars for men between age categories 1-3 and 25-27. For women, in contrast, each younger cohort is larger than older cohorts. By 1995, new female Ph.D.s grew to 4 percent of academics, while new men dropped to less than 8 percent. Even with the rapid increase in the percent of women receiving Ph.D.s and entering academia, women are far from being half of the academic labor force. Further, while there has been a substantial increase in the percent of women with academic jobs, the question remains whether there is a correspondingly large increase in the presence of women among all types of positions and institutions. To address this issue, we examine gender differences in the types of jobs held by men and women in academia.

The most fundamental distinction among academic positions is between tenure track positions and off-track positions. Scientists with tenure track positions have the possibility of advancing through the faculty ranks and attaining the job security provided by tenure. In comparison, off-track positions have lower pay, fewer resources, and less security. They include temporary teaching positions, research positions funded by soft money, visiting scholars, adjunct faculty without tenure track appointments elsewhere, postdoctoral fellows, and lower level administrative positions. From 1979 to 1995, the percent of all full time academic jobs that were on-track decreased from 84 percent to 79 percent.

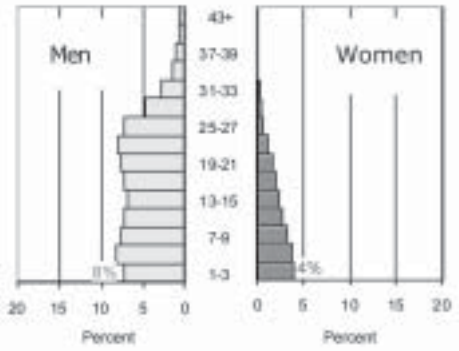

Figure 9.

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As shown by the light bars in Figure 10, throughout this period men had a 14 percentage point advantage over women in obtaining tenure track positions. While the lack of change suggests that there has been little progress for women in becoming members of the faculty, these overall figures mask broad differences in the availability of faculty positions at different stages of the career (e.g., postdoctoral fellowships are off track positions that occur within a few years of the Ph.D.). To adjust for age differences we estimated the proportion of men and women in tenure track positions after statistically controlling for career age. Differences in the adjusted proportions of men and women in their 15th career year are shown by the darker bars. In 1979 there was only a small decrease from the observed to the adjusted difference. That is, the observed gender difference in the percent with tenure track positions *cannot* be explained by the younger age of female academics. By 1989, however, the observed difference was substantially reduced by adjusting for age, with a somewhat smaller reduction in 1995. Much, but not all, of the difference between men and women in their success in becoming faculty is due to differences in the stage of the career. The recent entry of women into science and engineering has contributed to the smaller percent of women who are faculty.

From 1979 to 1995 there was little change in the percent of tenure track faculty who had received tenure. For men roughly 80 percent had tenure in each year, while for women the number increased

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The most fundamental distinction among academic positions is between tenure track positions and off-track positions.

The increasing entry of women into academia means that they are younger compared to men, which makes the average female faculty member less likely to be tenured compared to the average male faculty member.

slightly from 56 percent in 1979 to 62 percent in 1989, dropping to 60 percent in 1995. Throughout this period, a nearly constant 20 percentage points more men than women were tenured, as shown by the light bars in Figure 11.

Figure 10.

The apparent lack of progress for women is due largely to the shifting age structure for women. The increasing entry of women into academia means that they are younger compared to men, which makes the average female faculty member less likely to be tenured compared to the average male faculty member. Further, there are differences in tenure rates across types of institutions (e.g., major research universities, liberal arts colleges). Adding statistical controls for professional age, type of institution, field, and other variables substantially reduces gender differences in the predicted proportion of scientists and engineers with tenure, as shown by the dark bars in Figure 11. In 1979 the observed difference was reduced from 24 points to an adjusted difference of 17 points; in 1989 the observed difference of 19 points was reduced to 6 points, dropping to 4 points in 1995. Overall, by 1995 gender differences in being tenured are largely the result of differences in career age and to a lesser extent to differences in types of employing institutions. However, even after these controls, men continue to be more likely to be tenured.

Progress in the academic career is marked by advancement in rank, culminating in promotion to full professor, and it is in this outcome that past research has provided the strongest evidence for the unequal treatment of women in academia. This is a central problem since with rank advancement comes the prestige, resources, and authority that are critical for a successful career in science.

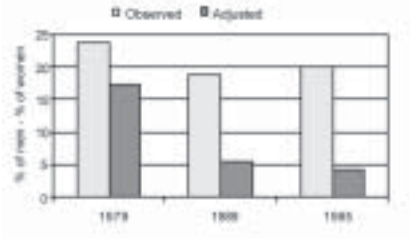

Figure 11. Adjusted rates controlled for field, age, & Camegie type

The light bars in Figure 12 show a nearly constant observed difference of 27 points in the percent of men and percent of women who are full professors. But, like tenure, academic rank is highly dependent upon career age. The dark bars show the effects of statistically controlling for differences in the age structures for male and female faculty, as well as differences in field and type of institution. The age-adjusted differences show a decrease in the over-representation of men from 20 points in 1979 to less than 10 points in 1995. Still, even after controlling for gender differences in career age, field of employment, and type of institution, men continue to have an almost 10 percentage point advantage in being full professors.

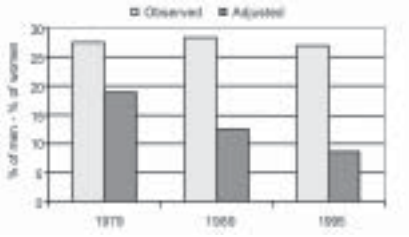

Figure 12. Adjusted rates controlled for field, age, & Camegie type

Overall, there have been remarkable changes in the representation of women in science and engineering. In all aspects of the career, from the receipt of the Ph.D. to entry into the labor force to attaining the rank of full professor, women are an increasing presence, both in absolute number and as a proportion of all scientists and engineers. As positive and encouraging as these changes are, it is equally clear that substantial differences remain. Women as a group remain less well-represented and less successful than men in every dimension of the career. While women have clearly made enormous gains in their participation in science and engineering, it is also clear that these advances represent neither unconditional success in overcoming gender inequalities nor assurance of continuing progress in the future.

[1] Primary data are from the 1973, 1979, 1989, and 1995 panels of the *Survey of Doctorate Recipients* (SDR), a biennial survey of a sample of doctoral scientists, engineers, and humanists who completed the *Survey of Earned Doctorates* (SED). Additional data from the SED were also used. For details, see Long (2001).

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APS Names Twenty-One Women Fellows for 2002

Sue Otwell, APS Staff

Twenty-one women are among the 192 new Fellows of the American Physical Society. Each new fellow is elected after careful and competitive review and recommendation by a fellowship committee on the unit level, additional review by the APS Fellowship Committee and final approval by the full APS Council. Only 1/2 of 1% of the total APS membership is selected for Fellowship in the Society each year. A listing of all 2002 Fellows, as well as information on the Fellowship program and how to nominate an individual, may be found at http://www.aps.org/fellowship/2002 index.html.

The 2002 Women Fellows are:

Julie Ann Borchers
National Institute of Standards and Technology
For her insightful neutron investigations into interlayer exchange interaction phenomena in magnetic thin films and superlattices.

Laurie Jeanne Butler
University of Chicago
For fundamental and pioneering contributions to the understanding of non-adiabatic effects in molecular photophysics and photoreactivity.

Marcela Carena
Fermi National Accelerator Laboratory
For her outstanding contributions to the physics of Higgs bosons and Supersymmetry.

Yu-Jiuan Chen
Lawrence Livermore National Laboratory
For revolutionizing the achievable beam quality of linear induction accelerators and advancing the state-of-the art of flash x-ray radiographic technology.

Mei-Yun Chou
Georgia Institute of Technology
For seminal contributions to the development and application of electronic structure techniques, applied successfully to studies of structural and electronic properties of materials.

Janet Marie Conrad
Columbia University
For her leadership in experimental neutrino physics, particularly for initiating and leading the NuTeV decay channel experiment and the Mini-BooNe neutrino oscillations experiment.

Anna C. Hayes
Los Alamos National Laboratory
For her contributions to studies of the weak interaction in nuclei, in particular providing the nuclear-structure calculations of the underlying weak matrix elements.

Barbara A. Jones
IBM Almaden Research Center
For outstanding contributions to theories of impurity magnetism and spin transport in magnetic nanostructures.

Susan Takacs Krueger
National Institute of Standards and Technology
For significant contributions to the advancement of biological physics in determining the structures of important biomolecular complexes and biomimetic membranes through innovative use of neutron small angle scattering and reflectometry.

Barbara F. Lasinski
Lawrence Livermore National Laboratory
For development and application of particle-in-cell codes for laser-plasma interaction physics, and a long series of contributions to the understanding of the physics of targets for high-power laser experiments.

Margaret A. Norris McMahan
Lawrence Berkeley National Laboratory
For her creative leadership and initiative in bringing nuclear science to students, teachers, and the public.

Adriana Moreo
Florida State University
For important contributions to computational techniques and their application to the manganites, d-wave superconductors and other correlated electronic systems.

Marjorie Ann Olmstead
University of Washington
For innovative studies of interface formation between dissimilar materials, especially the competition between thermodynamic and kinetic constraints in controlling morphologies and properties of heterostructures.

continued on page 10

Have you moved? Changed jobs? Changed fields? Take a moment to update your name/address/qualifications on the Roster of Women in Physics. This database also serves as the Gazette mailing list. See pages 14-18.

Need to reach more women and minority candidates for job openings in your department of institution? Consider a search of the APS Roster of Women and Minorities in Physics (see www.aps.org/educ/roster.html).

APS Names Twenty-One Women Fellows, continued

Karine M. Rabe
Rutgers University
For fundamental contributions to the development and application of theoretical and computational methods for the study of structural phase transitions in solids.

Elizabeth H. Simmons
Boston University
For contributions to the study of electroweak and flavor symmetry breaking, especially the origin of the top-quark mass, and for suggesting incisive tests of physics beyond the standard model.

Linda Siobhan Sparke
University of Wisconsin-Madison
For studies of the structure and dynamics of galaxies, using orbital motions to probe both time-steady and time-varying gravitational potentials, and the distribution of dark matter.

Carol Elizabeth Tanner
University of Notre Dame
For her contributions to the understanding of atomic structure through precision measurements of atomic lifetimes and transition amplitudes.

Laurette Stephanie Tuckerman
CNRS, France
For applying dynamical systems theory to hydrodynamic instabilities, especially to Couette flows, thermal convection, and Faraday and Eckhaus instabilities, and for developing numerical methods that make bifurcation-theoretic computations feasible.

Leposava Vuskovic
Old Dominion University
For important and sustained work on electron collisions with ground state and excited atoms by creating a number of remarkable experimental techniques.

K. Birgitta Whaley
University of California, Berkeley
For her contributions to theoretical understanding of quantum nanoscale phenomena, especially in superfluid helium droplets, and to control of decoherence in quantum information processing.

Mohana Yethiraj
Oak Ridge National Laboratory
For important neutron scattering studies of vortex structure, spin and lattice dynamics of high temperature and other superconductors.

Chung-Pei Michele Ma is 2003 MGM Award Winner

Sue Otwell, APS Staff


Chung-Pei Michele Ma

We congratulate Chung-Pei Michele Ma, of the University of California, Berkeley who is the 2003 winner of the Maria Goeppert-Mayer Award for her important contributions to theoretical astrophysics, particularly in the areas of relativistic evolution of density perturbations, testing of struc-ture formation models with massive neutrinos, and the clustering and dynamics of dark matter halos around galaxies.

The award is given annually to recognize and enhance outstanding achievement by a woman physicist in the early years of her career, and to provide opportunities for her to present these achievements to others through public lectures in the spirit of Maria Goeppert-Mayer.

The MGM award consists of $2,500 plus a $4,000 travel allowance to provide opportunities for the recipient to give lectures in her field of physics at four institutions and at the meeting of the Society at which the award is bestowed, and a certificate citing the contributions made by the recipient. The award was established through sponsorship in 1985 by the General Electric Foundation (now the GE Fund).

Maria Goeppert-Mayer received the Nobel Prize in Physics in 1963 for her discovery of the magic numbers and their explanation in terms of a nuclear shell model with strong spin-orbit coupling. She shared the prize with J.H.D. Jensen. She was the first person to investigate the theoretical basis of nuclear pairing which plays an important role in the shell model of the atomic nucleus.

A complete listing of all MGM Award Winners may be found on the APS Prizes and Awards website at http://www.aps.org/praw/mgm/index.html

DPP Announces First Recipient of Weimer Award

Martha Redi, Princeton Plasma Physics Laboratory

Yu Lin

The first recipient of the Katherine E. Weimer Award is Professor Yu Lin of Auburn University. Professor Lin was selected from among a very strong field of nominees and was honored at the annual meeting of the American Physical Society Division of Plasma Physics (DPP) in Orlando, November 11-15, 2002. Her citation is as follows:

"For her creative and significant contributions to theoretical and computational research in nonlinear physics in the boundary layers of space plasmas"

Professor Lin's primary area of research is in the field of nonlinear physics in the boundary layers of space plasmas. She received her PhD in space physics in 1993 from University of Alaska, Fairbanks and became an Assistant Professor in the Physics Department at Auburn University in 1994. Dr. Lin was awarded tenure and promoted to Associate Professor in 1999. She has published 37 papers in refereed journals, and received the following honors and awards:

C.T.Elvey Memorial Award for the best student in the College of Natural Science, University of Alaska, 1991
Ed Hones Space Physics Award for the best PhD thesis in Space Physics, 1993
Office of Naval Research (ONR) Young Investigator Award, 1995-1998
National Science Foundation Career Award, 1995-2000
Editor's citation for excellence in refereeing for Geo physical Research Letters, 2001

The Katherine E. Weimer Award is a new early career award for women which was established in 2001 by the Division of Plasma Physics to recognize and encourage the scientific accomplishments of women in plasma physics. This field has notably few women, 4%, compared to 8%, the average of the other divisions of APS. The award is named after Dr. Katherine E. Weimer, a pioneering woman research physicist at the Princeton Plasma Physics Laboratory (details at http://w3.ppl.gov/~redi/~weimer)

Dr. Weimer made many important contributions to research advancements in magnetohydrodynamic equilibrium and stability theory for magnetically confined plasmas. Her obituary, written by John Johnson and John Greene, appeared in the September, 2002 *Physics Today.*

The Katherine E. Weimer Award is a new early career award for women

Book Review : "Landing Your First Job: A Guide for Physics Students"

Richard Conroy, Harvard University

What do you do with a physics degree? An education in physics provides many useful transferable skills; the goal of all graduates is to sell these skills to potential employers whether in academia, industry or the service sector. Unfortunately however, there are not very many *Employment 101* classes offered, so how do students find out how to land their first job?

The internet has revolutionized both the job market and the process of looking for a job. Navigating the often torturous process of identifying, applying for and successfully negotiating for a position points up the need for a comprehensive resource. *Landing Your First Job* is a first attempt at providing such a resource, useful to both students and careers advisors. John Rigden has made a good effort at taking together both generic careers advice and mixing it with information from the AIP to provide a guide for soon-to-be physics graduates looking for their first non-academic job.

The booklet is laid out to reflect the temporal sequence of a job search, starting with the foundations which can be laid in the freshmen and sophomore years, through identifying personal skills and potential employers, to the interview process and the final contract negotiation. Although this is a sensible layout for a one-time read, it can be confusing when looking back through to find particular information or a reference as individual sections are not distinct.

Interspersed with the text are full page infographics from the AIP which are insightful for everything from how long it takes to finish a PhD, to who employs masters graduates and potential salaries. There is little or no mention of them however in the text, which is disappointing, as elucidation of the information provided would significantly strengthen content, for example detailing the different forms of employment bachelor and doctoral students enter into after completing their degrees, as well as for masters students.

Near the start of the booklet are lists of internet sites and other publications useful in the job hunting process and the major employers of physics graduates, which provide an excellent resource. Important points are colorfully highlighted throughout the booklet, and self-assessment

continued on page 12

Book Review, continued

quizzes are provided to engage the reader and help in identifying their strengths and weaknesses.

Much of the information is of a generic nature, applicable to any graduate, dealing with the difference between a resume and CV and how it should be formatted through to the types of questions commonly asked at interviews. The information related to any one section of students, either in terms of the degree they are graduating with or the type of job they are looking for, is limited. In as much as physics graduate students need to appeal to a wider range of employers through the use of generalized buzzwords and positive action verbs, it is important to tailor advice to reflect the different skills and ambitions of all graduates. In future additions of the booklet a welcome addition would be a more comprehensive section dealing with compensation and future career development with respect to a first job.

Landing Your First Job provides much sound advice. From personal experience, I do however have a few small niggles. Eye-catching cover letters do work, especially if carefully crafted and backed up. Additional personal information on a resume can be helpful under some circumstances as interviewers will often pick up on these topics as a way to help a candidate relax at the beginning of the interview process. Graduates with higher degrees in particular are often asked to give a brief description of their work generally in front of a lay audience and therefore need to be prepared for this as part of an interview.

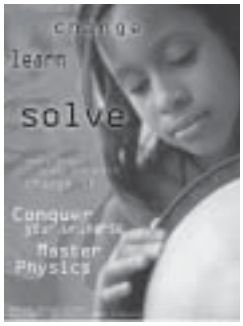
Physics graduates have always been one of the more employable disciplines, due to jobs requiring both specific and generic transferable skills gained from a physics degree. This booklet will strengthen the approach of any physics graduate or advisor by providing them with strong background information. I would recommend it to both groups and I look forward to seeing future editions.

Landing Your First Job is available from the American Institute of Physics Career Services. Please see http://www.aip.org/careersvc/resources.html for information on ordering or telephone 301-209-3193.

"Physics in Your Future"

Sue Otwell, APS Staff

Copies of the updated edition of the booklet, "Physics in Your Future", are now available. The booklet is available at no charge to students and their parents, educators, guidance counselors, and groups who work with young women. To order or to view an electronic version, please go to http://www.aps.org/educ/cswp/future.html. Shipping is free, however we reserve the right to limit quantities.



New Minorities in Physics Poster Created

Arlene Modeste Knowles, APS Staff

The American Physical Society is pleased to present this beautiful color poster created by the APS Committee on Minorities in Physics. This striking 15" X 20" poster is particularly aimed at minority middle and high school students, but will encourage all students, to master physics and gain a better understanding of their physical universe. It would make a great addition to any classroom, study hall, or any place where students are learning. Interested in obtaining a free copy of the poster? Send an email to knowles@aps.org with your mailing address and a brief explanation of how you plan to use the poster. Copies are limited.

Nominate a Woman for APS Fellowship!

The Committee on the Status of Women in Physics encourages APS members to nominate a woman for fellowship in the American Physical Society. You can easily check and see if someone is already a fellow by searching on their name in the APS online member directory at www.aps.org/memb/enter-directory.html. Fellows are clearly marked "[Fellow]" after their name.

The APS Fellowship program was created to recognize members who made have made advances in knowledge through original research and publication or made significant and innovative contributions in the application of physics to science and technology. They may also have made significant contributions to the teaching of physics or service and participation in the activities of the Society. Each year, no more than one-half of one percent of the then current membership of the Society is recognized by their peers for election to the status of Fellow in the American Physical Society. More than 200 women have been elected to fellowship in the APS. *All APS Members are eligible to nominate, and all APS members are eligible for nomination.*

Complete information on how to nominate a women to fellowship can be found at http://www.aps.org/fellowship/ or you may write to:

Executive Officer, American Physical Society, One Physics Ellipse, College Park, MD 20740
ATTN: Fellowship Program, *Phone*: (301) 209-3268, *email:* fellowship@aps.org

The APS Fellowship program was created to recognize members who made have made advances in knowledge through original research and publication or made significant and innovative contributions in the application of physics to science and technology.

Nomination Deadlines

Fellowship nominations may be submitted at any time, but must be received by the deadlines listed below for the next review. All nominations should be sent to the above address. Deadlines are approximate as we go to press. Please check the APS website at http://www.aps.org/fellowship/deadlines.html for the most current information. The names of new Fellows will be announced in the March issue of the APS News.

DIVISIONS	
Astrophysics	05/01/2003
Biological Physics	04/01/2003
Chemical Physics	02/15/2003
Computational Physics	04/14/2003
DAMOP (Atomic, Molecular, Optical)	03/31/2003
DCMP (Condensed Matter)	01/30/2003
Fluid Dynamics	02/15/2003
Polymer Physics	04/15/2003
Laser Science	04/01/2003
Materials Physics	02/15/2003
Nuclear Physics	04/01/2003
Particles and Fields	04/01/2003
Physics of Beams	03/15/2003
Plasma Physics	04/01/2003
FORUMS	
Physics & Society	04/01/2003
History of Physics	04/01/2003
International Physics	04/01/2003
Industrial and Applied Physics	02/20/2003
Education	04/15/2003
TOPICAL GROUPS	
Few Body	04/10/2003
Precision Measurement & Fundamental Constants	04/01/2003
Instrument & Measurement Science	04/01/2003
Shock Compression	04/01/2003
Gravitation	04/01/2003
Magnetism and Its Applications	04/01/2003
Statistical & Nonlinear Physics	04/01/2003
Plasma Astrophysics	04/01/2003
APS GENERAL NOMINATIONS	06/01/2003

Listserves for Women in Physics

APS members are invited to join **Friends of the CSWP** , a moderated listserve for those interested in working more closely with the committee. Friends are invited to suggest topics/issues for discussion by the committee, speakers for invited sessions, names of well-qualified women physicists for fellowship/awards/prizes, etc. Friends will receive e-mail notices of Committee activities, reports, and will receive copies of the Gazette, the CSWP's newsletter. Details at http://www.aps.org/educ/cswp/friends.html.

Not a member of APS? Consider joining WIPHYS, the Women in Physics listserve which is open to anyone who is interested in the topic of women in physics. Examples of postings include notices of conferences and events, newly published reports, job openings, on-line mentoring, and advice on teaching. More information can be found at http://www.aps.org/educ/cswp/wiphys.html

The American Physical Society 2002-2003 Travel Grants for Women Speakers Program

The APS Committee on the Status of Women in Physics (CSWP) is pleased to announce the 2002-2003 "Travel Grants for Women Speakers" Program. This program is designed to increase the recognition of women physicists.

Funding is Available for the 2002-2003 Academic Year! Apply online at www.aps.org/educ/cswp/travelgrant.html

Purpose

The program is intended to expand the opportunity for physics departments to invite women colloquium/seminar speakers who can serve as role models for women undergraduates, graduate students and faculty. The program also recognizes the scientific accomplishments and contributions of these women physicists.

Grant

The program will reimburse U.S. colleges and universities for up to $500 for travel expenses for one of two women colloquium/seminar speakers invited during the 2002-2003 academic year.

Qualifications

All physics and/or science departments in the United States are encouraged to apply. Canadian and Mexican colleges and universities are also eligible, provided that the speakers they invite are currently employed by U.S. institutions. Invited women speakers should be physicists or in a closely related field, such as astronomy. Speakers should be currently in the U.S. The APS maintains the Women Speakers List which is available online at (www.aps.org/educ/women-speaker.html. However, selection of the speaker need not be limited to this list. Neither of the two speakers may be a faculty member of the host institution.

Guidelines

Reimbursement is for travel and lodging expenses only. Honoraria or extraneous expenses at the colloquium itself, such as refreshments, will not be reimbursed.

Application

The Travel Grants for Women Speakers Application Form (www.aps.org/educ/cswp/travelgrant.html) should be submitted to APS identifying the institution, the names of the two speakers to be invited and the possible dates of their talks. Please note that funds for the program are limited. The Travel Grants for Women Speakers Application Form should be submitted as early as possible, even if speakers and dates are tentative, or if the speakers are scheduled for the spring semester. The application form will be reviewed by APS, and the institutions will be notified of approval or rejection of their application within two weeks. Institutions whose applications have been approved will receive a Travel and Expense Report Form to submit for reimbursement.

See page 15 for application form.

Women Speakers List

Need a speaker? Consider consulting the American Physical Society Women Speakers List (WSL), an online list of over 300 women physicists who are willing to give colloquium or seminar talks to various audiences. This list serves as a wonderful resource for colleges, universities, and general audiences. It has been especially useful for Colloquium chairs and for those taking advantage of the Travel Grant Program for Women Speakers. To make the WSL easy to use, we have made the online version searchable by state, field of physics, or speakers' last names.

If you'd like to search the list to find a woman speaker, go to http://www.aps.org/educ/women-speaker.html

Women physicists who would like to be listed on the Women Speakers List or those who'd like to modify their existing entries can do so at http://www.aps.org/educ/women-speaker-enroll.html or see page 16.

APS also has a companion program for minority speakers. Information on the Travel Grant Program for Minority Speakers can be found at http://www.aps.org/educ/com/travelgrant.html The Minority Speakers List can be found at www.aps.org/educ/minority-speaker.html.

2002-2003 Travel Grants For Women Speakers

♦ Application Form ♦

This form is also available on the Internet at www.aps.org/educ/cslwip.html

This form must be filled out and approval received from the APS in order to be eligible for up to $500 travel reimbursement. Please note that submitting this application form does not guarantee reimbursement. You will be notified within two weeks of receipt of this application whether or not it has been approved.

DATE: _____

INSTITUTION: _____

ADDRESS: _____

APPLICATION PREPARED BY (VERY IMPORTANT):

NAME: _____ **TITLE:** _____

PHONE: _____ **FAX:** _____

EMAIL: _____

Please list information on the speakers below. If speakers, dates or titles of talks are tentative, please indicate.

DATE OF COLLOQUIUM: _____

SPEAKER'S NAME: _____

HOME INSTITUTION: _____

ADDRESS: _____

PHONE: _____ **FAX:** _____ **EMAIL:** _____

TITLE OF TALK: _____

_____

DATE OF COLLOQUIUM: _____

SPEAKER'S NAME: _____

HOME INSTITUTION: _____

ADDRESS: _____

PHONE: _____ **FAX:** _____ **EMAIL:** _____

TITLE OF TALK: _____

_____

Please return this form to:

Arlene Modeste Knowles, Travel Grants for Women Speakers Program
The American Physical Society
One Physics Ellipse
College Park, MD 20740-3844
Tel: (301)209-3232 • Fax: (301)209-0865 • Email: travelgrant@aps.org

Women Speakers List (WSL)
Enrollment/Modification Form 2002-2003

Additions/Modifications may also be made on the Internet at www.aps.org/educ/cswp.index.html
An online copy of the WSL is also available.

The *Women Speakers List* is compiled by The American Physical Society Committee on the Status in Physics (CSWP). The list is updated continuously online and published each summer. Comments, questions and entries should be addressed to:
Women Speakers List · APS · One Physics Ellipse · College Park, MD 20740-3844 · (301) 209-3232

To enroll or update your current entry, please fill out this form completely and return it to the address above.
Please print clearly or type.

Title/ Name ❒ Dr. ❒ Prof. ❒ Mrs. ❒ Ms. _____ **Date** _____

Institution _____ **Telephone** _____

Address _____ **Fax** _____

_____ **Email** _____

City _____ **State** _____ **Zip Code** _____

If you have moved out of state, list previous state: _____

❒ **New Entry** ❒ **Modification**

For which audiences are you willing to speak? (Please check all that apply)
❒ Middle school ❒ High school ❒ General Audiences ❒ Colloquium

To register a new title, give the title as you want it to appear in the left column below. Then check the section(s) where it is to be inserted. To delete a title, indicate the title and check the appropriate box below. A limit of four total entries will be imposed. You may use additional pages if you are submitting more than four modifications. PLEASE TYPE OR PRINT LEGIBLY PAYING PARTICULAR ATTENTION TO FORMULAS. WE REGRET THAT WE ARE UNABLE TO INCLUDE ILLEGIBLE ENTRIES.

TALK TITLE			PHYSICS SUBFIELD (limit 4)		
1.	❒ Add this title	❒ Delete this title	❒ Accelerators ❒ Astrophysics ❒ Atomic ❒ Biological/Medical ❒ Chemical/Statistical ❒ Computational ❒ Condensed Matter	❒ Education (pedagogy etc.) ❒ Environmental/Energy ❒ Fluid ❒ General ❒ Geophysics ❒ History ❒ Industrial	❒ Interface/Device ❒ Molec/Polymer ❒ Nuclear/Particle ❒ Optics/Optical ❒ Plasma
2.	❒ Add this title	❒ Delete this title	❒ Accelerators ❒ Astrophysics ❒ Atomic ❒ Biological/Medical ❒ Chemical/Statistical ❒ Computational ❒ Condensed Matter	❒ Education (pedagogy etc.) ❒ Environmental/Energy ❒ Fluid ❒ General ❒ Geophysics ❒ History ❒ Industrial	❒ Interface/Device ❒ Molec/Polymer ❒ Nuclear/Particle ❒ Optics/Optical ❒ Plasma
3.	❒ Add this title	❒ Delete this title	❒ Accelerators ❒ Astrophysics ❒ Atomic ❒ Biological/Medical ❒ Chemical/Statistical ❒ Computational ❒ Condensed Matter	❒ Education (pedagogy etc.) ❒ Environmental/Energy ❒ Fluid ❒ General ❒ Geophysics ❒ History ❒ Industrial	❒ Interface/Device ❒ Molec/Polymer ❒ Nuclear/Particle ❒ Optics/Optical ❒ Plasma
4.	❒ Add this title	❒ Delete this title	❒ Accelerators ❒ Astrophysics ❒ Atomic ❒ Biological/Medical ❒ Chemical/Statistical ❒ Computational ❒ Condensed Matter	❒ Education (pedagogy etc.) ❒ Environmental/Energy ❒ Fluid ❒ General ❒ Geophysics ❒ History ❒ Industrial	❒ Interface/Device ❒ Molec/Polymer ❒ Nuclear/Particle ❒ Optics/Optical ❒ Plasma

Roster of Women and Minorities in Physics Enrollment Form

he Roster is the basis for statistical reports on women and minority physicists; mailing lists corresponding to announcements, publications of the APS Committee on the Status of Women in Physics (CSWP); and confidential searches. The Rosters will not be made available to commercial or political organizations as a mailing list, and all information provided will be kept strictly confidential. Although the Roster is employed to serve women and minority physicists, enrollment is open to anyone interested in issues affecting these groups. Please give a copy of this form to others who might be interested in joining the Roster, or in receiving the newsletters.

Please complete all entries on BOTH SIDES OF THE FORM and indicate changes if this is an update of a previous entry. After completing this form, please return to:

The Roster of Women and Minorities in Physics ◆ The American Physical Society ◆ One Physics Ellipse ◆ College Park, MD 20740-3844

Please indicate whether you are interested in receiving:

❒ **The *Gazette,* CSWP (women's) newsletter**

❒ ***C.O.M....MUNICATIONS*** **(minorities) newsletter ❒ Employment Announcements**

Is this a modification of an existing entry?:

❒ **yes ❒ no ❒ not sure**

NAME: _____

(last) (first) (middle)

Previous last name (if applicable): _____ Date of Birth _____/_____/_____

GENDER:
❒ Female
❒ Male

Ethnic Identification

❒ Black ❒ Native American ❒ Caucasian (Non-Hispanic) ❒ Other (please specify)
❒ Hispanic ❒ Asian or Pacific Islander _____

Mailing Label Information (Foreign addresses: Use only the first three lines, abbreviating as necessary.)

In this section, please print information exactly as it is to appear on your mailing label. Where boxes are provided, print one character within each box, abbreviating where necessary.

NAME AND TITLE

ADDRESS Line 1:

ADDRESS Line 2:

ADDRESS Line 3:

CITY/STATE/ZIP

Daytime Phone ___ ___ ___ – ___ ___ ___ – ___ ___ ___ ___ Fax: ___ ___ ___ – ___ ___ ___ ___

Fax or e-mail Number: _____

Educational Background

Degrees	**Year Received (or expected)**	**Name of Institution**
BA or BS	_____	_____
MA or MS	_____	_____
Ph.D.	_____	_____
Other _____	_____	_____

Thesis Title (Highest Degree) (Abbreviate to 56 characters total)

_____

PLEASE REMEMBER TO COMPLETE SIDE II OF THIS FORM

Current Employment Information (28 Characters per line)

Employer: _____

Department/Division: _____

Position: _____

Professional Activity Information

CURRENT WORK STATUS (Check One)

1 ____ Full-time Studies
2 ____ Part-time Studies
3 ____ Part-time Studies/Employment
4 ____ Post Doc./Res. Assoc.
5 ____ Teaching/Precollege
6 ____ Faculty, tenured
7 ____ Faculty, nontenured
8 ____ Long-term/Permanent Employee
9 ____ Inactive/Unemployed
10 ___ Retired
11 ___ Self-employed
12 ___ Other (please explain)
_____
_____

TYPE OF WORKPLACE FOR CURRENT OR LAST WORK

1 ____ University
2 ____ College - 4 year
3 ____ College - 2 year
4 ____ Secondary School
5 ____ Government
6 ____ National Lab
7 ____ Industry
8 ____ Non-Profit Institution
9 ____ Consultant
10 ___ Other (Please explain)
_____
_____

TYPE OF WORK ACTIVITY

Please check four numbers from the list below of the activities in which you engage most frequently.

1 ____ Basic Research
2 ____ Applied Research
3 ____ Development and/or Design
4 ____ Engineering
5 ____ Manufacturing
6 ____ Technical Sales
7 ____ Administration/Management
8 ____ Writing/Editing
9 ____ Teaching - Undergraduate
10 ___ Teaching - Graduate
11 ___ Teaching - Secondary School
12 ___ Committees/Professional Org.
13 ___ Proposal Preparation
14 ___ Other (please specify)
_____
_____

DEGREE TYPE (Highest)

1 ____ Theoretical
2 ____ Experimental
3 ____ Both
4 ____ Other (please explain)
_____
_____

FIELD OF PHYSICS

(check up to 4 in each column)

Current Interest	Highest Degree	
1 ____	1 ____	Astronomy & Astrophysics
2 ____	2 ____	Acoustics
3 ____	3 ____	Atomic & Molecular Physics
4 ____	4 ____	Biophysics
5 ____	5 ____	Chemical Physics
6 ____	6 ____	Education
7 ____	7 ____	Electromagnetism
8 ____	8 ____	Electronics
9 ____	9 ____	Elementary Particles & Fields
10 ___	10 ___	Geophysics
11 ___	11 ___	High Polymer Physics
12 ___	12 ___	Low Temperature Physics
13 ___	13 ___	Mathematical Physics
14 ___	14 ___	Mechanics
15 ___	15 ___	Medical Physics
16 ___	16 ___	Nuclear Physics
17 ___	17 ___	Optics
18 ___	18 ___	Plasma Physics
19 ___	19 ___	Physics of Fluids
20 ___	20 ___	Thermal Physics
21 ___	21 ___	Solid State Physics
22 ___	22 ___	General Physics
23 ___	23 ___	Condensed Matter Physics
24 ___	24 ___	Space Physics
25 ___	25 ___	Computational Physics
26 ___	26 ___	Accelerator Physics
27 ___	27 ___	Superconductivity
28 ___	28 ___	Surface Science
29 ___	29 ___	Non-Physics
30 ___	30 ___	Quantum Electronics
99 ___	99 ___	Other (please specify)
		_____

APS Membership Information

Are you an APS member?:

❒ No Check here if you wish to receive an application - ❒

❒ Yes Please provide your APS membership number, if available, from the top left of an APS mailing label:

___ ___ ___ — ___ ___ ___ ___ ___ ___

Office Use Only

Date of entry: _____

Roster#: _____

Initials _____

Thank you for your participation. The information you have provided will be kept strictly confidential and will be made available only to CSWP and COM members and APS liaison personnel. Please return this form to the address on the reverse side.

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