CSWP

Gazette

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

The Editor for this issue is Richard Wolfson; the Assistant Editors are Amy Halsted and Ricki Bar-Zeev

In this Issue:

CSWP CELEBRATES 20TH YEAR WITH SPECIAL EVENTS AT 1992 MARCH AND APRIL APS MEETINGS

The APS Committee on the Status of Women in Physics (CSWP) is proud to commemorate its 20th anniversary by hosting the following special events at the APS March Meeting in Indianapolis, IN and the April Meeting in Washington, DC:

CSWP Reception
Sunday, March 15, 7:00–9:00 p.m.
Indiana Convention Center
Room 160

Professor Bunny Clark (Ohio State), 1992 CSWP Chair, will host an open reception for women and men attending the APS March Meeting. All friends of the committee are heartily invited to attend.

Symposium: Pathfinders—Women Physicists in Positions of Influence
Tuesday, March 17, 5:30 p.m.
Indiana Convention Center
Room 141

Three women physicists who have achieved advanced positions in non-academic environments discuss their experiences as women in a field predominantly male.

Kathleen C. Taylor, head of the Physical Chemistry Department at General Motors Research Laboratories, will describe her experiences as "A Physical Scientist in the Automobile Industry." **Jill Wittels,** Vice President of Engineering at Loral Infrared & Imaging Systems, will explain how "You Can Get There From Here." **Aviva Brecher,** a senior Physical Scientist and Technology and Policy Analyst for the U.S. Department of Transportation, will discuss "Random Walks in Physics—An Alternative Career Path."

The symposium will be chaired by Mildred S. Dresselhaus, MIT, and former President of APS.

Panel Discussion: Women Physicists: Observations on the Changing Milieu—Now and Then
Wednesday, March 18
5:00 p.m.
Indiana Convention Center
Room 211/12

Last year, the CSWP sponsored a panel discussion at the March APS meeting. The response to that session was so positive that we are enthused about continuing this tradition. During the 20th Anniversary celebration, we are especially pleased to present four speakers who have been working on several fronts to increase the awareness of the issues relevant to women physicists.

Vera Kistiakowsky, MIT, will speak on "The Origins of the Committee on Women in Physics: How Much Has Changed, and How Little;" **Irene Engle,** U.S. Naval Academy, will discuss "Contemporary Vignettes: Women Physicists—Where Are We? What Is Our Collective Goal? What Is Our Direction? How Fast Are We Moving?" **Patricia Cladis,** AT&T Bell Labs, will present a talk on "Women in Physics: Where Are We Now? Where Do We Go From Here?" and **Barbara Hope**

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Cooper, Cornell and 1992 Maria Goeppert-Mayer awardee, will address "The View from a Research University."

CSWP Reception

Tuesday, April 21, 7:00–9:00 p.m.
Ramada, Rooms 2/3

The APS Committee on the Status of Women in Physics (CSWP) is hosting an open reception at the Spring APS/AAPT meeting in Washington, DC. **Vera Kistiakowsky,** MIT, will speak on "The Origins of the Committee on Women in Physics: How Much Has Changed, and How Little." Bunny Clark, Ohio State University, and 1992 CSWP Chair, will host the reception. Please plan to join us.

A PASSION FOR PHYSICS: THE STORY OF A WOMAN PHYSICIST
BY JOAN FREEMAN
Reviewed by Richard Wolfson

When Joan Freeman was five or six years old, her doting mother gave her a wonderful doll, whose most remarkable talent was closing its eyes when reclined. Fascinated by the mechanism that worked the eyelids, young Joan began to experiment, and finally poked at the eyelids with a pin. To her horror, a large chip broke off one lid. Although "overcome with remorse" that she had "disfigured" her mother's gift, Joan not only earned her mother's forgiveness, but also gave her mother an early hint of her interest in things mechanical.

That interest helped carry her a long way, from her native Australia to the Cavendish Laboratory in England and on to the leadership of a new tandem Van de Graaff accelerator group of the British Atomic Energy Research Establishment at Harwell. Her autobiography, *A Passion for Physics: The Story of a Woman Physicist*, takes its reader through the decades in which Freeman's early interest matured into delight, fascination, and professional commitment to experimental physics. At the same time, her initially modest expectations for educational accomplishment grew into the ultimate vision of graduate study at the world–famous Cavendish. Looking back, Freeman expresses her philosophy in the simplest of terms: "physics is a delight, and physics is fun." For that reason, she argues, more young women ought to be encouraged to study physics.

Why physics? Freeman initially intended to study chemistry, since physics wasn't offered in girls' high schools. But university admission seemed to warrant greater preparation in chemistry than was available to her. With her characteristic persistence and her mother's constant support, Freeman attempted to enroll in evening classes at the Sidney Technical College. When the head of the chemistry department told her the school was "no place for a young schoolgirl" and suggested she "go back to your domestic science," she instead marched down the hall to the physics department, whose chair was more receptive. She enrolled at Sydney Tech, bolstered her scientific background, and swept with numerous academic honors and scholarships into Sydney University.

Even though an act of blatant sexism turned Freeman from chemistry toward physics, her perception of her career is of one touched only in minor ways by gender discrimination. Yet by today's standards she faced a host of not–so–subtle biases. In her first job after earning her university degree, wartime radar work at the Council for Scientific and Industrial Research's Radiophysics Laboratory, she and colleague Ruby Payne–Scott were singled out for the tedious job of carrying secret documents to the public library and waiting hours in the dark while they were photocopied. Later both women were hounded by the laboratory's librarian for personal habits that would have been entirely acceptable in a man. Ruby Payne–Scott faced a more serious problem: She had to confess to "living in sin" with a man to whom she was actually married, because at the time married women were not allowed government employment in permanent positions. Much later, in accepting a job at the Harwell nuclear laboratory, Freeman found her starting salary "appreciably less than the equivalent for a man," but more important to her was that it seemed "a princely sum." It was only near the very end of her career that "sex discrimination . . . seemed to be confronting me seriously for the first time . . . ." Twenty–seven years earlier she had signed a contract calling for retirement at age 60; men joining Harwell with her had until 65. Harwell management simply refused to extend her employment. At many other points in her career Freeman faced obstacles that may or may not have been gender related; an inspiring aspect of her autobiography is the perseverence and cunning she applied to overcome these obstacles.

Although Freeman's autobiography is subtitled *The Story of a Woman Physicist*, and is sprinkled with the particular joys and sorrows of a woman's experience in this male–dominated field, the book is at most marginally sympathetic with many of the concerns being raised today by groups like the CSWP. And the book is not just for women physi-

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ARE STUDENT RATINGS UNFAIR TO WOMEN?

by Neal Koblitz
University of Washington

In the March-April issue of the AWM *Newsletter,* I asked for information on whether or not student ratings tend to discriminate against women. The purpose of this article is to report briefly on the response to my query.

I was extremely pleased to receive a large number of quite varied responses. Some people wrote their general impressions and described their personal experiences. Others generously sent me reprints of papers on the subject, or gave me advice on where to look for more material. To my surprise, it turns out that quite a lot has been written on this question, but not in journals which mathematicians normally read (see the bibliography below).

I will not attempt a systematic survey of the research and opinions on the subject. For this the reader is referred to the short list of references below, which includes the papers which I found to be the most interesting (more extensive lists of papers can be found in their bibliographies). Rather, I will summarize my own conclusions based on the material that was sent to me.

A few of the letters I received and some of the early studies indicate that often women receive equal or higher student rating numbers than men. In many situations students perceive (probably correctly) that the women instructors tend to be more sensitive to their needs, more concerned and caring, and more dedicated to teaching than the male instructors (it also helps if the woman is thought to be lenient)—and as a result reward them with higher ratings. This causes some people to conclude that there is little or no discrimination against women in student ratings.

However, a more careful examination of the question shows that the reality is more complex. Note that the traits listed in the last paragraph which may lead to high ratings for women are compatible with sex-stereotyped expectations of women as "mother figures." According to Kierstead *et al.* [6], "Taken as a whole, [our] results suggest that if female instructors want to obtain high student ratings, they must be not only highly competent with regard to factors directly related to teaching but also careful to act in accordance with traditional sex role expectations. In particular, . . . male and female instructors will earn equal student ratings for equal professional work only if the women also display stereotypically feminine behavior."

Thus, the difficulty for women would tend to occur in cases where instructors have to adopt a "get-tough" approach. Such a situation is much more likely to arise in a math department than, for example, in psychology or sociology, because (1) mathematics departments typically are called upon to perform the role of enforcer of academic standards, with service courses acting as a "weeding out" device for the engineering and science departments, and (2) the discrepancy between students' high school preparation and study habits and the demands of college work is especially glaring in mathematics.

If an instructor feels compelled to put students under pressure (assigning a lot of homework, giving challenging exams), then only the most serious and mature students are at all likely to respond with high ratings at the end of the course. Most students are inclined to "punish" the instructor. There is considerable evidence that the "punishment" is more severe if the instructor is female.

> [According to] Susan Kay's classroom studies . . . male students were far more likely to give lower ratings to those female faculty perceived to be hard graders . . . . This finding is consistent with a series of experiments at the University of Dayton that indicated that college students of both sexes judged female authority figures who engaged in punitive behavior more harshly than they judged punitive males . . . . ([8], pp. 484–485)

See also the studies by Kierstead *et al.* [6] and Bennett [3], which lead to similar conclusions.

Bennett, in particular, found that women will be rated highly only if they are especially accessible to the students and spend a lot of time with them, while men can receive equally high ratings while remaining more aloof. In other words, students tend to allow men but not women to spend most of their time on research and other nonteaching activities without penalizing them in the ratings: ". . . male instructors are judged independently of students' personal experiences of contact and access, whereas female instructors are judged far more closely in this regard. In this sense women are negatively evaluated when they fail to meet this gender appropriate expectation . . ." ([3], pp. 177–178).

One of the most interesting studies was made in the 1970s by Ellyn Kaschak [5]. Fifty male and fifty female students were given a set of descriptions of the teaching methods and practices of professors in various specialties. In the forms received by half of the students (25 males and 25 females) the professors were given names of the opposite gender from the professors in the forms received by the other half of the students. Kaschak found that the *male students were biased against women*, while the female students were not.

The possibility of sex discrimination is one complex and controversial aspect of the broader question of the validity of student ratings as a measure of teaching effectiveness. It would take us too far afield to discuss some of the other problems identified in the many studies that have been conducted. But it is worth noting that, generally speaking, math departments are usually put at a special disadvantage if administrators and faculty in other departments have excessive confidence in the meaning of student rating numbers and in the value of cross-department comparisons. A larger proportion of our students take courses as requirements rather than electives and view the subject as difficult. This tends to bring down math department ratings across the board and leads to an unjustified belief on campus that the math department has worse teachers than other departments.

People outside of the mathematical sciences often have a naive faith in the value of numbers and are less aware than we are of the pitfalls in taking raw statistics at face value.

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> . . . [S]tudent rating scales are a form of measurement and, according to American Psychological Association standards, should be accompanied by information about the meaning, interpretation, and limitations of the scores—yet most student ratings are not accompanied by such information; [in fact,] promotion and tenure decisions are usually made by an array of administrators and faculty committees who are naive about the standard criteria for measurement instruments, and hence do not know how to interpret the results or do not realize their limitations ([9], p. 88)

In practice, the treatment of student ratings by college administrations varies considerably. On the one hand, McMaster University (Hamilton, Ontario) is among the institutions that have conducted careful studies of the validity of student ratings and seem to have adopted a cautious and sophisticated approach to the subject. At the other extreme, I received letters from two different women in the mathematical sciences at a university in western Canada, complaining bitterly of the unfair and cynical way that administrators at their university are using student ratings as a weapon against the faculty, especially the female faculty.

And at the University of Arizona, the director of an office of "Instructional Research and Development" circulated a tract [1] to faculty members purporting to correct certain "myths" held by sceptics. "Myth 7" is: "Gender of the student and the instructor affects[s] student ratings." The article proceeds to refute this "myth" by means of a highly selective and distorted citing of the literature. Of course, someone in the math department at the University of Arizona is not likely to be aware of the numerous studies that give convincing support to Myth 7 (none of which are mentioned in [1]), and so could easily be taken in by the self-serving and intellectually dishonest propaganda.

Some Conclusions

1. Student ratings can provide valuable feedback to the instructor her/himself, but they cannot be properly understood by someone who is not familiar with the nature of the course being rated, the characteristics of the students, and the pedagogical objectives of the instructor.

2. On the student rating forms, questions which are very specific (e.g., "promptness in correcting exams," "availability for office hours") are less likely to invite biased responses than questions of a general nature ("rate the instructor overall").

3. In certain teaching situations which are frequently encountered in math departments (especially in introductory-level courses), students tend to discriminate against women instructors on the rating forms.

4. Math departments and administrators have an ethical and legal obligation not to base promotion and salary decisions on data which are biased against women.

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A LETTER TO THE EDITOR

I was first astonished and then appalled to read in Professor Wolfson's comment (*CSWP Gazette,* July 1991) that discriminatory attitudes of students were permitted to lead to the resignation of a female faculty member at his institution. No matter how "seriously" student opinion is taken, an educational institution must proceed on the basis that, while people are entitled to their prejudices, it is illegitimate to permit these prejudices to hamper the diversification of the faculty. Vague appeals to some future educational campaign to eradicate student sexist biases is a "cop out." I question whether the physics department at Middlebury in fact took any action to prevent this undesirable outcome. For example, they could have "showcased" their female faculty member to demonstrate explicitly to the students the high regard and respect they had for her as a physicist. They could have carefully evaluated the details of student questionnaires to filter out biased responses or at least interpret them for reappointment and tenure reviews, etc. They could have provided a system of moral support to emphasize that lack of appreciation by students due to prejudice does not mean that good teaching has not occurred.

I am also puzzled by Professor Wolfson's complaints about the difficulty of hiring women faculty. He in fact had four women in his list of top candidates and two in his short list of six candidates. He was able to interview one of these women. That fact that his department chose not to make her an offer seems to have very little to do with the number of women in the candidate pool, the number of women interviewed, or the fact that there were restrictions on the research area. No search process can ever be guaranteed to produce a new female faculty member, nor should it (unless the position has been developed for the purpose of diversification). The best that can be done is to make sure as many women as possible become aware of the existence of the position (e.g., by using the Roster of Women in Physics), to ensure that the selection process is not only unbiased but sensitive to the fact that resumés and letters of recommendation may be written and interpreted differently for men and women, to construct the interview process to present the institution as a congenial environment for female faculty, and to ensure that subtle personal biases and attitudes regarding women play no role in the final selection.

I don't wish to imply that I believe that the number of women either applying for or obtaining physics faculty positions is adequate. I strongly agree with Professor Wolfson's final conclusion that "increasing the number of women in physics classrooms should be a top priority of the entire physics community."

Beverly K. Berger
Professor of Physics
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Letters to the Editor

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THE SCIENTISTS' INSTITUTE FOR PUBLIC INFORMATION

The Scientists' Institute for Public Information (SIPI) is a national, nonprofit organization working to improve public understanding of science and technology. Recognizing that most Americans get nearly all their information by turning on their TVs or radios, or opening the pages of a newspaper or magazine, SIPI seeks to bridge the gap between scientists and the media.

SIPI's best-known program is the Media Resource Service, established in 1980. The MRS is a free telephone referral service for journalists who are seeking reliable sources of information for quotes or background information. Reporters who call the MRS are referred to scientists, engineers, physicians, and policymakers who have agreed to field media queries. When the issue in question is controversial, the MRS staff provides the names of experts representing a broad spectrum of views.

SIPI is interested in making sure that female and minority scientists are well represented in the pool of talent which the media draws upon via the MRS. We invite you to suggest qualified scientists who will help with this effort.

In addition to the MRS, SIPI organizes a series of roundtable briefings designed to bring scientists and journalists together to discuss specific issues. Recent sessions have focused on such topics as nuclear waste disposal, military technology and budget priorities, teen pregnancy, domestic violence, human gene therapy, and AIDS.

In an effort to broaden this outreach, SIPI has developed similar programs with state and regional press associations, the Radio-Television News Directors Association, and the nation's journalism schools.

SIPI's Defense Writers Group is comprised of about 20 members of the Pentagon press corps who convene over breakfast once or twice each month in Washington, DC, for an opportunity to question and exchange views with a prominent defense expert.

SIPIscope, a quarterly newsletter, serves as a forum for discussion of current issues in science policy, as well as a review of media coverage of science and technology.

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cists: much of its theme involves overcoming doubts about academic and professional stature that are shared equally—although discussed less openly—by men. This reviewer was particularly amused by Freeman's description of her first encounter with a lathe. "There was an enormous bang" as the chuck key, which she had forgotten to remove, shot across the room. I had done just the same thing, with the same consequence, in the same circumstance!

A Passion for Physics is written in a delightful style that combines homespun modesty with the growing excitement of a successful professional career at the forefront of research first in radiophysics and then nuclear physics. Mixed with descriptions of the physics endeavor itself are wonderful character sketches of diverse individuals who inhabit our profession, most of whom brought positive traits to bear on Freeman's own professional development. If anything is omitted, it's Freeman's personal life. One gets the impression that little else but physics has occupied her. Maybe that's so, but there are occasional hints of more. It would be nice to know how the pieces fit together.

Freeman has advice for women hoping to succeed in physics. At four very separate points in the book she states clearly what she feels are the necessary qualities: "enthusiasm, perseverance, and an independent spirit." Her life, as detailed in this book, is a tribute to those qualities.

Richard Wolfson, a member of the CSWP, is a professor of physics at Middlebury College.

BARBARA HOPE COOPER WINS 1992 MARIA GOEPPERT-MAYER AWARD

Barbara Hope Cooper of Cornell University has been named the 1992 Maria Goeppert-Mayer Award recipient, in recognition of her scientific achievements demonstrating her potential as an outstanding physicist. Her citation reads as follows: "For her innovative studies of ion–surface interactions in the hyperthermal energy range. Combining experimental data from a highly versatile ion spectrometer with theoretical modelling, she has developed accurate ion–surface interaction potentials and provided detailed information about energy deposition and scattering mechanisms."

Dr. Cooper received her B.A. in Physics from Cornell in 1976 and her Ph.D. from CalTech in 1982. In 1983, she became an Assistant Professor at Cornell, where she became an Associate Professor in 1989. When she first arrived at Cornell as an Assistant Professor, she initiated a research plan of applying a new technique for surface science: hyperthermal ion scattering, using ions of 10 eV to 10 keV energy to probe the interaction of slow atoms and molecules with surfaces. At this time, the only other group in the world working to develop the necessary tools for such a technique was a group in The Netherlands. Dr. Cooper raised the money to buy equipment, and with a half a dozen bright students, planned experiments, designed and built the apparatus, and modeled the scattering process on a supercomputer. In 1988, the years of hard work paid off when she and her students began to obtain very significant results on the nature of charge bonding at metal surfaces. Her work on modeling has generated a comprehensive simulation code for calculating scattering trajectories of hyperthermal ions from surfaces, and computational techniques for determining nonadiabatic resonant charge transfer to scattered alkali atoms. The CSWP joins the Selection Committee in congratulating Dr. Cooper.

The Maria Goeppert–Mayer Award was established in 1986 and is sponsored by the General Electric Foundation. It is presented each year to an outstanding woman physicist in the early years of her career. The award consists of $2,000, plus a travel allowance of $3,000 for the recipient to present lectures in her field at four institutions of her choice, and at the APS meeting at which the award is bestowed. The award is designed to acknowledge the achievement of an individual, and also to increase her visibility and inspire those who hear her speak. Dr. Cooper will present her talk at the APS March Meeting in Indianapolis when she will officially receive the award.

A nomination form for the 1993 Maria Goeppert–Mayer Award will appear in an upcoming issue of the *Gazette*. Rules and eligibility as stated on the form specify that the award is given to a woman not later then ten years after she has received her Ph.D. degree, or the equivalent career stage, for scientific achievements that demonstrate her potential as an outstanding physicist. The award is open to any woman of any nationality and the lectures may be given at any institution in any country within two years after the award is made. Supporting information should include at least one letter of recommendation and a current *curriculum vitae* of the nominee. Additional supporting letters are helpful. Send names of proposed candidates and supporting information ***before September 1992*** to Helen R. Quinn, Stanford University, Linear Accelerator Center, SLAC Bin 81, P.O. Box 4349, Stanford, CA 94305.

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APS WELCOMES NEW DIRECTOR OF PHYSICS PROFESSION PROGRAMS

On September 3, 1991, the American Physical Society welcomed Bonnie L. Brownstein as the new director of Physics Profession Programs. In this capacity, she is also the new primary APS Staff Liaison to the CSWP.

Dr. Brownstein holds a Doctorate in science education from Columbia University and has extensive experience with developing and implementing a variety of educational programs in science and mathematics. She is President and co-founder of the Institute for Schools of the Future, a nonprofit institution chartered by the State University of New York Board of Regents. The Institute is dedicated to improving the quality of all levels of science and mathematics education through the use of emerging technologies, developing new teaching materials and techniques, and exploring ways to involve the scientific community in improving science education. These programs have been targeted towards increasing the numbers of women and minorities who take science courses and pursue careers in scientific and mathematic fields. In addition, she is a Senior Project Director at the Center for Advanced Study on Education, Graduate School, University Center, the City University of New York. She is also the founder and former Director of Educational Programs for the New York Academy of Sciences.

The CSWP joins The American Physical Society in welcoming Dr. Brownstein.

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THE EFFECT OF GENDER AND RACE ON MENTORING, COLLABORATION, AND RESEARCH: SOME PRELIMINARY ANALYSES

(The following excerpt of this preliminary report is printed here with the permission of the authors. -*Ed.*)

by Kathryn B. Ward,
Sociology, Southern Illinois University at Carbondale
and Linda Grant,
Sociology, University of Georgia

The United States faces a critical shortage of scientists to fill academic and nonacademic positions in the 1990's. Recruitment of underrepresented groups—women and minorities—has been identified as an essential strategy for meeting scientific personnel needs. Mentoring frequently is heralded as a critical component in recruitment and retention of underrepresented groups,

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yet the process of mentoring for these groups has rarely been systematically studied in depth. This issue is the focus of research we have conducted over the last 18 months, assisted by funding from the U.S. Department of Education and the Spencer Foundation.

We recently conducted a questionnaire study of a national sample of women and men chemists, physicists, and sociologists in academic departments with graduate programs. We developed the questionnaires after consultations with women and men scientists in these three disciplines and pretested them with scholars in these fields.

Mailed questionnaires returned by over 600 scientists (50% return rate) provided information about their experience with mentors during graduate and post-graduate training, their past and current patterns of scientific collaboration, and their involvement in mentor more-junior scholars, and, in particular, women and minorities. The questionnaire included, in addition to quantifiable information, a series of open-ended items, which have evoked thoughtful and detailed responses from participants. This phase of the research has been supported by the U.S. Department of Education. Data have been collected, coded, and computerized, and we have begun preliminary quantitative and qualitative analyses.

Dr. Kathryn Ward, with the aid of a small grant from The Spencer Foundation, has conducted more than 50 interviews with women and men scientists in these disciplines at career stages ranging from graduate student to senior professor, probing in depth positive and negative aspects of mentoring relationships. These interviews have included 14 minority scientists, among them African American Americans, Chicano/as, Puerto Ricans, and Filipinos. Ten women and five men in each discipline were interviewed. In some cases interviews were supplemented with ethnographic observations of laboratory work groups. Articulate scientists have elaborated on the role of mentoring in career development of underrepresented groups. These materials are being analyzed, using techniques of analytic induction appropriate for qualitative materials.

To our knowledge, this rich combination of quantitative and qualitative data is unique in the study of scientists' experiences. Questionnaire data from a representative sample of scientists at various career stages establish patterns of mentoring and collaborating, while qualitative interviews allow exploration of subtle but powerful aspects of mentoring relationships that affect careers of diverse scientists. The cross-disciplinary design allows pinpointing of general themes across disciplines and identification of issues specific to each field.

Analyses to date suggest that mentoring is a complex process that operates differently across disciplines and for persons of varying racial and gender groups. In all disciplines white males report finding mentors more readily than do women and minority men. Mentors of white men are more senior and professionally active and provide more explicit career-related guidance and sponsorship funding and academic positions.

Women and minority scientists are less likely to collaborate with mentors on research and publication, an activity that enhances initial job placement and early publication. Women and minority scientists are also more likely than white males to report negative and exploitative experiences related to mentoring. Such experiences range from lack of attention from mentors, to pressures to abandon preferred lines of research and advance the mentor's projects, to racism and sexual harassment.

These data suggest that men and women mentors who are particularly effective with women and minorities organize work groups like families and/or small businesses and tend to be attentive to personal and professional issues affecting the work groups. These mentoring styles fit more closely the expressed needs of women and minority scientists.

There are disciplinary differences in typical mentoring relationships, with chemists and physicists likely to use a work group or research shop model. This involves working with others in a large collaborative team, with proteges taking on ever-more-demanding tasks as their careers develop. One's dissertation usually is derived from the mentor's project, and more senior students or postdoctoral fellows, as well as the laboratory director, take on mentoring roles. Some sociologists work with research teams directed by mentors, but others have mentors who operate more as lone scholars, making connections with their mentors later in their graduate careers than white men.

Each mentoring style has advantages and disadvantages for women and minority scientists proteges. The research shop model facilitates entry into research careers but risks over-dependence on mentors and concentration on research agendas based primarily on mentors' interests. Scientists trained in this context feel well socialized for their researcher/teacher roles. The lone scholar model provides less support for the student-to-researcher transition and early productivity, but preserves the junior scholars' autonomy in articulating independent research programs. Scientists, especially women and minorities, trained in this mentoring context report feeling underprepared and inadequately socialized for professional roles. Many flounder early in their academic careers, feeling insecure and having difficulty beginning, completing, and publishing research.

Scholars in all three disciplines report that women and minority mentors are more interpersonally supportive than are white men, but less well-connected professionally and less effective in making professional connections on behalf of the proteges. Women and minority scholars also do more mentoring—especially of underrepresented groups—at all career levels from undergraduates through postdoctoral fellows. We found evidence of mentoring networks, with scholars who have been well-mentored themselves, more frequently engaging in mentoring junior scholars later on and rating effective mentoring as an important component of their work. Scientists who had been poorly mentored are less comfortable with mentoring roles.

Ed.- Drs. Ward and Grant intend to write a book based on these data that will have applicability in academic and non-academic fields, and plan to expand their study to include the effects of mentoring in non-academic (industrial and governmental) environments.

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Colloquium Speakers List of Women in Physics Enrollment / Modification Form
January 1992

The ***Colloquium Speakers List of Women in Physics*** is being compiled by The American Physical Society's Committee on the Status of Women in Physics. The list will be maintained by the APS office in a geographical listing and a listing by field. Comments, questions, and entries should be addressed to :

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To register a title, give the title as you want it to appear (first word and proper nouns capitalized) in the left column below, and check the section(s) where it is to be inserted. If you wish to register more than four talks, please use an additional copy of this form, stapling them together.

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COLLOQUIUM SPEAKERS LIST OF WOMEN IN PHYSICS

compiled by the

COMMITTEE ON THE STATUS OF WOMEN IN PHYSICS

January 1992

SECTION I: Speakers by geographic area, with address and phone numbers.

SECTION II: Talk titles by physics subfield, with speakers' names and affiliations.

The PHYSICS COLLOQUIUM SPEAKERS LIST is compiled and maintained by the APS Committee on the Status of Women in Physics (CSWP). For further inquiries, enrollment information, or up-dates to the list, please contact Ricki Bar-Zeev, APS Headquarters, 335 East 45th Street, New York, New York 10017.

I. PHYSICS COLLOQUIUM SPEAKER INFORMATION, as of January 1992

This first section lists speakers, with addresses and phones, by geographic area (alphabetically within each subsection), together with references to the sections where talk titles appear. The symbol "*" identifies those listed in the section for GENERAL AUDIENCES. The symbol "+" demotes individuals who have indicated an interest in working with high school (h+) or middle school (m+) students, where the "+" alone indicates both. The geographic section abbreviations in brackets are used for reference in the second section.

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\+ **Dr. Beth Hufnagel**
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Dr. Marjorie Olmstead
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CONDENSED MATTER PHYSICS
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II. COLLOQUIUM TITLES BY FIELD

This second section lists the speakers and titles, grouped by physics subfield and alphabetically by speaker within each group. Please refer to the first section for address and phone information on the speakers. The two-character abbreviation after each name refers to a geographic region in the first section.

ACCELERATOR PHYSICS

Dr. Eva Bozoki, Brookhaven [NE]
1. *Synchrotron radiation and its use*

Dr. Ling-Lie Chau, UC Davis [SW]
1. *Weak decays of charm and beauty particles and cp noninvariance*

Dr. Andrea Palounek, LBL [SW]
1. *Physics and detectors at the SSC*

Dr. Betty P. Preece [SE]
1. *Elementary particles: Lecture demos for teachers K-12*

Dr. Cynthia A. Volkert, AT&T [NE]
1. *Damage produced in silicon by high energy ion beams*

Dr. Dorothy S. Woolum, Cal State-Fullerton [SW]
1. *Trace element microdistribution analysis by PIXE*

ASTROPHYSICS

Dr. Elise Albert, USNA [EC]
1. *Interstellar gas in the galactic hole*

Dr. Fran Bagenal, U of Colo [MW]
1. *The peculiar role of Io in the magnetosphere of Jupiter*
2. *Voyages through giant planet magnetospheres*

Dr. Sallie Baliunas, Ctr for Astrophysics [NE]
1. *Solar and stellar magnetism*

Reta Beebe, NM State [SW]
1. *Winds and clouds of the giant planets*
2. *Hubble space telescope observations of the giant planets*

Dr. Bonnie J. Buratti, Caltech/JPL [SW]
1. *Comets: Rosetta stones of the solar system?*
2. *Icy moons of the solar system*

Dr. Bel Campbell, Univ. of NM [SW]
1. *Disks and jets in star formation*

Dr. Judith Cohen, Caltech [SW]
1. *The Keck telescope project*
2. *Trends in globular cluster research*

Dr. Lynn R. Cominsky, Sonoma State Univ [SW]
1. *X-ray binaries: An overview*

Dr. Carol Jo Crannell, NASA [EC]
1. *Imaging high-energy emissions from solar flares*
2. *Using balloon-borne platforms for observations of solar flares*
3. *The physics of high-energy solar processes in solar flares*

Dr. Irene M. Eagle, US Naval Acad [EC]
1. *Idealized Jovian magnetosphere shape and field*

Dr. Katherine Freese, MIT [NE]
1. *Fundamental physics and dark matter*
2. *The inflationary universe: New directions*
3. *Magnetic monopoles and cosmology*

Dr. Shadia R. Habbal, Ctr for Astrophys [NE]
1. *Exploring the dynamic nature of the magnetic field on the sun*

Dr. Martha P. Haynes, Cornell Univ [NE]
1. *Extragalactic sociology: Environmental effects on galaxy evolution*
2. *Large-scale structure in the universe*

Dr. Jacqueline N. Hewitt, MIT [NE]
1. *Gravitational lenses*

Dr. Juliette W. Ioup, Univ of New Orleans [SE]
1. *Digital filtering for tethered satellite dynamics measurements*

Dr. Christine Jones, Harvard [NE]
1. *Hot gas in early type galaxies*
2. *Einstein x-ray images of the structure of clusters of galaxies*

Dr. Kate Kirby , SAO [NE]
1. *Atomic and molecular processes in astrophysics*

Dr. Gillian R. Knapp, Princeton [NE]
1. *Gas, dust, and star formation*
2. *The life and death of stars*

Dr. Deborah A. Konkowski, USNA [EC]
1. *Cosmic strings*

Dr. Lucy-Ann McFadden, Cal Space [SW]
1. *What the asteroids tell us about solar system formation*
2. *Small solar system objects: Interrelationships among asteroids, meteorites, and comets*
3. *Planet-crossing asteroids: Their nature and origins*

Dr. Karie Meyers, Occidental College [SW]
1. *Variability in Seyfert Galaxies*

Dr. Nancy D. Morrison, U of Toledo [MW]
1. *The fundamental properties of massive stars*

Dr. Theresa Nagy, NASA [EC]
1. *Binary star light curve modeling*

Dr. Anneila Sargent, Caltech [SW]
1. *Searching for forming planetary systems*
2. *Merging galaxies*
3. *Molecular clouds and star formation*

Dr. Janet Sisterson, Harvard U [NE]
1. *Measuring cross sections for long lived radioisotopes produced by proton beams*

Dr. Virginia Trimble, UC-Irvine [SW]
1. *Supernova: Bigger and better bangs*
2. *The universe you don't see: Existence and nature of dark matter*
3. *Formation and evolution of close binary systems*

Dr. Belinda J. Wilkes, SAO [NE]
1. *Quasars in full (multi-wavelength) view*
2. *Tour of the Universe*

Dr. Dorothy S. Woolum, Cal State-Fullerton [SW]
1. *Meteorites and what they tell us about the solar system*
2. *Nucleosynthesis of the heavy elements*
3. *Interpreting solar system elemental abundances of the N=50 neutron shell*

BIOLOGICAL & MEDICAL PHYSICS

Dr. Beverly S. Cohen, NYU Med Ctr [NE]
1. *Deposition of ultrafine particles on the human tracheobronchial tree: A determinant of the dose from radon daughters*
2. *Sampling airborne particles for estimation of inhalation exposure*

Margaret C. Foster, SUNY [NE]
1. *X-ray microanalysis as a tool for physiology*

Dr. Suzanne Gronemeyer, St Jude Hosp [SE]
1. *Clinical magnetic resonance imaging*

Dr. Joyce J. Kaufman, Johns Hopkins Univ [EC]
1. *Ab-initio quantum chemical calculations on drugs and biomolecules*

Dr. Sonja Krause, RPI [NE]
1. *Transient electric birefringence studies of muscle proteins*

Dr. Susan Lea, SFSU [SW]
1. *Accretion onto magnetized neutron stars: numerical models*

Dr. Arlene J. Lennox, Fermilab [MW]
1. *Neutrons against cancer: The clinical experience of Fermilab*

Dr. Carmay Lim, Harvard [NE]
1. *Enzyme catalysis: Mechanism of ribonuclease A*

Prof. Eugenie Mielczarek, George Mason U [EC]
1. *Iron transport and storage compounds in living systems: Mossbauer spectroscopy*

Dr. Marilyn E. Noz, NYU [NE]
1. *Local area networks in an imaging environment*

Dr. Elizabeth Rauscher, Tecnic Research [SW]
1. *Magnetic flux control of pain*

Prof. Geraldine L. Richmond, Univ of OR [NW]
1. *The spectroscopy of metal ions bound to proteins and polymers*

Dr. Beverly A. Rubik, Temple Univ [EC]
1. *Frontier issues in physics and biophysics*

Dr. Petra Schmalbrock, Ohio State [MW]
1. *Magnetic resonance imaging and spectroscopy*
2. *Investigations of flow with magnetic resonance*
3. *Pulse sequence development for magnetic resonance imaging*

Dr. Janet Sisterson, Harvard [NE]
1. *Medical applications of proton beams*
2. *Proton radiation therapy at the Harvard Cyclotron Laboratory*

Dr. Sara A. Solla, Bell Labs [NE]
1. *Statistical mechanics of neural networks*

Dr. Claudia Tesche, IBM [NE]
1. *MEG: A technique for imaging brain function with superconducting devices*

Dr. Audrey V. Wegst [MW]
1. *Medical physics in diagnostic radiology*
2. *Quality control in nuclear medicine and diagnostic radiology*
3. *Placental transfer of radionuclides and fetal radiation dose*

CHEMICAL & STATISTICAL PHYSICS

Dr. Juana V. Acrivos, San Jose St [SW]
1. *Solid state physical chemistry of high T_c superconductors*
2. *Dynamics of triplet states in organic conductors*

Dr. Estela Blaisten-Barojas, Johns Hopkins [EC]
1. *Molecular dynamics simulation of clusters and polymers*

Dr. Nancy Brown, Lawrence Berkeley Lab [SW]
1. *Theoretical and experimental chemical kinetics*
2. *Energy transfer*

Dr. Sally Chapman, Barnard [NE]
1. *Classical and semiclassical studies of molecular reaction dynamics*

Dr. Joan M. Frye, Howard Univ [ED]
1. *Photodissociation dynamics studied using tunable diode laser spectroscopy*

Dr. Sandra C. Greer, Univ of MD [EC]
1. *Chemical reactions of critical points*
2. *Equilibrium polymerization as a phase transition*

Prof. Judith Herzfeld, Brandeis Univ [NE]
1. *Self-assembly in crowded soluions: Nonideality and long range order*
2. *Solid-state NMR studies of light-driven proton pump*

Dr. Juliette W. Ioup, Univ of New Orleans [SE]
1. *The always-convergent iterative technique of deconvolution*

Dr. Joyce J. Kaufman, Johns Hopkins [EC]
1. *Ab-initio quantum chemical calculations on large molecules and molecular systems*
2. *Ab-initio quantum chemical calculations on drugs and biomolecules*

Dr. Kate Kirby, SAO [NE]
1. *Energy storage in metastable molecular systems*

Dr. Branka M. Ladanyi, Colorado St [MW]
1. *Solvation and chemical reaction dynamics in polar media*
2. *Computer simulation of fluid properties of spectroscopic interest*

Dr. Marsha I. Lester, Univ of PA [EC]
1. *Photodissociation and photoionization of van der Waals complexes*

Dr. Carmay Lim, Harvard [NE]
1. *Nonequilibrium effects in chemical kinetics*
2. *Dynamics of gas-surface interactions*

Dr. Susan R. McKay, Univ of ME [NE]
1. *The random field problem: Phase diagrams and thermodynamics*
2. *Spin glasses and chaos*
3. *Renormalization group methods and exactly-solvable models of phase transitions*

Dr. Cherry A. Murray, AT&T Bell Labs [NE]
1. *Colloidal crystals*
2. *Two-stage melting in two dimensional colloidal crystals*

Dr. Kathie Newman, Notre Dame [MW]
1. *Demonstration of ordering in unusual quaternary semiconductor Alloys*

Dr. Mary Jo Ondrechen, Northeastern Univ [NE]
1. *Predicting the spectroscopic properties of discrete mixed-valence systems*
2. *The role of polarizable bridging ligands in discrete-molecular, conducting, and superconducting systems*

Dr. Mary Beth Ruskai, U Lowell/U Mich [NE]
1. *Relative entropy in quantum statistical mechanics: inequalities, extremal properties, and estimation*
2. *Mathematical analysis of the stability and breakup of diatomic molecules*

Dr. Marie-Louise Saboungi, Argonne [MW]
1. *Order in disordered materials*
2. *Metal-nonmetal transition in alloys*

Dr. Roberta P. Saxon [SW]
1. *Theoretical studies of multiphoton processes*
2. *Theoretical study of Rydberg molecules*

Prof. Jodye Selco, Univ of Redlands [SW]
1. *Spectroscopy and kinetics of transient species*

Dr. Sara A. Solla, Bell Labs [NE]
1. *A statistical mechanics approach to optimization problems*
2. *Statistical mechanics of neural networks*

CONDENSED MATTER PHYSICS

Dr. Juana V. Acrivos, San Jose State [SW]
1. *Solid state physical chemistry of high T_c superconductors*
2. *Dynamics of triplet states in organic conductors*

Dr. Sheila Bailey, NASA [MW]
1. *Advances in photovoltaics*
2. *Space photovoltaics*

Dr. Estela Blaisten-Barojas, Johns Hopkins [EC]
1. *Molecular dynamics simulation of clusters and polymers*

Prof. Jill C. Bonner, Univ of RI [NE]
1. *Spin-Peierls transitions*
2. *Quantum effects in spin dynamics*

Dr. Alison Chaiken, NRL [EC]
1. *Integrated magnetics*
2. *Superconducting intercalation compounds*

Dr. Meera Chandrasekhar, Univ of MO [MW]
1. *Semiconductors and quantum wells under hydrostatic pressure*

Dr. Shirley Chiang, IBM [SW]
1. *Scanning tunneling microscopy of metals on semiconductors*
2. *Atomic force microscopy*
3. *Imaging molecules on surfaces by scanning tunneling microscopy*

Dr. Deborah D. L. Chung, SUNY Buffalo [NE]
1. *Carbon fiber composites*
2. *Materials for electronic packaging*

Dr. Esther Conwell, Xerox [NE]
1. *Differences between one-and three-dimensional semiconductors*
2. *Metal-insulator transition in doped trans-polyacetylene*
3. *Solitons, polarons, and photoconductivity in polyacetylene*
4. *Conducting polymers*

Dr. Denice Denton, Univ. of Wisconsin [MW]
1. *Effects of moisture on the dielectric properties of polyimide films*

Dr. Stephanie B. DiCenzo, AT&T [NE]
1. *Photoelectron spectroscopy of supported metal clusters: The molecular-metallic transition*

Dr. Vicky Diadiuk, MIT Lincoln Lab [NE]
1. *Fabrication and characterization of semiconductor microlens arrays*

Dr. Renee D. Diehl, Penn State [NE]
1. *LEED studies of alkali metals adsorbed on transition metals*

Dr. Flonnie Dowell, Los Alamos [SW]
1. *Molecular modeling of complex materials*
2. *New phase and molecule predictions for partially-ordered chains*

Dr. Mildred Dresselhaus, MIT [NE]
1. *Intercalation and superlattices*
2. *Liquid carbon*

Dr. Georgia Fisanick, AT&T [NE]
1. *Periodic Structures in laser-materials interactions*

Dr. Judy R. Franz, Univ of Al/Huntsville [SE]
1. *Do Coulomb gaps exist?*
2. *Metal-nonmetal transitions in expanded liquid mercury*

Dr. J. Tinka Gammel, NOSC [SW]
1. *The search for metallic sandwich wrap; Conductivity in low dimensional systems*

Dr. Laura H. Greene, Bellcore [NE]
1. *High T_c oxide superconductors*
2. *Metallic superlattices*
3. *Proximity effects in novel superconductors: Heavy fermions and high T*

Dr. Elisabeth Gwinn, UCSB [SW]
1. *Nonlinear dynamics in semiconductors*
2. *The quantum hall effect in parabolic wells*

Prof. Judith Herzfeld, Brandeis Univ [NE]
1. *Self-assembly in crowded solutions: Nonideality and long-range order*
2. *Solid-state NMR studies of light-driven proton pump*

Gina I. Hoatson, W&M [EC]
1. *^{2}H-NMR studies of liquid crystals and solids*
2. *Orientational order in binary mixtures of liquid crystals*

Dr. Frances A. Houle, IBM [SW]
1. *Interdependence of excitation and reaction in laser-solid interactions*
2. *Charge carriers and semiconductor etching*
3. *Photochemical deposition of thin films: Gas phase and surface chemistry*

Dr. Juliette W. Ioup, Univ of New Orleans [SE]
1. *Orthogonality of measured normal modes in underwater acoustics*

Dr. Deborah Jackson, Hughes Research [SW]
1. *Teaching old atoms new tricks*
2. *Interference effects between different optical harmonics*

Dr. Shirley A. Jackson, Rutgers [NE]
1. *Magnetic polarons in diluted magnetic semiconductor superlattices*
2. *Zone-folding and quasi-direct optical transitions in semiconductor superlattices*
3. *Excitonic magnetic polaron effects in stressed diluted magnetic semiconductors*

Dr. Barbara A. Jones, IBM [SW]
1. *The two-impurity Kondo model: Numerical renormalization group study*

Dr. Kathlen Kash, Bellcore [NE]
1. *Optical properties of quantum wires and dots*

Esfir Katsnelson, Northwestern Univ [MW]
1. *Optically induced variation of magnetic and photo-electric properties of ferrites*
2. *Laser induced variation of infrared and optical spectra of ferrites*
3. *Detailed study of IR absorption and reflection spectra of Mn-Zn ferrites*
4. *Ferrospinels are perspective materials for ferromagnetoelectrics*

Dr. Joyce J. Kaufman, Johns Hopkins [EC]
1. *Ab-initio quantum chemical calculations on large molecules and molecular systems*

Prof. Karen L. Kavanagh, UC, San Diego [SW]
1. *Atomic diffusion in GaAs*
2. *High resolution X-ray scattering from semiconductors*

Dr. Jacqueline Krim, Northeastern Univ [NE]
1. *Nanotribology of adsorbed films*
2. *Floppy disks and fractal dimensions*

Dr. Kei May Lau, UMass/Amherst [NE]
1. *Quantum-size and strain effects in semiconductor heterostructures*
2. *Organometallic chemical vapor deposition technology*

Dr. Gabrielle G. Long, NIST [EC]
1. *Small angle neutron and x-ray scattering by ceramics*

Dr. Weili Luo, Univ of Chicago [MW]
1. *Dynamics of spin glasses*
2. *Magnetic properties of a quenches ferrofluid system*

Dr. Rosemary A. MacDonald, NIST [EC]
1. *Modelling porous media: Application to macromolecular separation*

Dr. Susan R. McKay, Univ of ME [NE]
1. *The random field problem: Phase diagrams and thermodynamics*
2. *Spin glasses and chaos*
3. *Renormalization group methods and exactly-solvable models of phase transitions*
4. *Phase diagrams and models of chalcogens adsorbed on nickel surfaces*

Dr. Laurie E. McNeil, Univ of NC [EC]
1. *Delight in disorder: Structural studies of chalcogenide glasses*
2. *Layered materials the old-fashioned way*

Dr. Patricia M. Mooney, IBM [NE]
1. *Deep level defects in III-V semiconductors*
2. *DX centers in III-V semiconductor alloys*
3. *Influence of DX centers on heterojunction device characteristics*

Dr. Cherry A. Murray, AT&T Bell Labs [NE]
1. *Surface enhanced Raman scattering*
2. *Colloidal crystals*
3. *Two-stage melting in two-dimensional colloidal crystals*
4. *Ordering in Abrikosov flux lattices of high T_c superconductors*

Dr. Barbara Neuhauser, SFSU [SW]
1. *The design and fabrication of an ultralow temperature bolometer for detection of solar neutrinos and dark matter*

Prof. Gertrude F. Neumark, Columbia Uni [NE]
1. *Luminescence characterization of materials: ZnSe*
2. *Doping problems in wide-band-gap semiconductors*

Dr. Kathie Newman, Notre Dame [MW]
1. *Studies of local structure and its effects in semiconductors*
2. *Electronic studies of ordered semiconductors*

Dr. Marjorie Olmstead, U Washington [NW]
1. *Formation of the interface between a polar insulator and a non-polar semiconductor*
2. *Initial stages of semiconductor interface formation*

Dr. Mary Jo Ondrechen, Northeastern Uni [NE]
1. *The role of polarizable bridging ligands in discrete-molecular, conducting, and superconducting systems*

Dr. Carmen Ortiz, IBM [SW]
1. *Physics of magnetic thin films*
2. *Physics of laser irradiation of thin films*

Dr. Elga Pakulis, IBM [NE]
1. *Microwaves as a probe of high temperature superconductors*

Prof. Martha Pardavi-Horvath, GWU [EC]
1. *Charge-uncompensated magnetic garnets*
2. *Modeling of magnetic recording process*

Dr. Julia M. Phillips, Bell Labs [NE]
1. *Materials issues in high T_c, superconducting thin films*

Dr. Talat S. Rahman, Kansas St Univ [MW]
1. *Dynamics of ordered overlayers on metals*
2. *Surface reconstruction and surface phonon dispersion - a lattice dynamical study*
3. *Surface lattice dynamics and electron energy loss spectroscopy*
4. *Dynamics of associative desorption of hydrogen from metal surfaces*

Prof. Geraldine L. Richmond, Univ of OR [NW]
1. *Nonlinear optics as a probe of solid/liquid interfaces*

Dr. Marie-Louise Saboungi, Argonne [MW]
1. *Order in disordered materials*
2. *Structure of liquids*
3. *Metal-nonmetal transition in alloys*

Dr. Pia N. Sanda, IBM [NE]
1. *Polymeric photoconductors*

Dr. Rozalie Schachter, Amer Cyanamid [NE]
1. *GaAs devices grown by non-arsine MOVPE*

Dr. Lynn F. Schneemeyer, AT&T [NE]
1. *High temperature superconductors*

Dr. Mary Silber, CalTech [SW]
1. *Pattern formation in nonequilibrium systems*

Prof. Mary Beth Stearns, Ariz St Univ [SW]
1. *Origin of magnetism in 3D metals*
2. *Structural and magnetic behavior of multilayered films*

Dr. Katherine Strandburg, Argonne [MW]
1. *Quasicrystals and random tilings*
2. *Phase diagram of a quasiperiodic crystal model*
3. *Melting in two dimensions*

Dr. Janet Tate, Oregon St Univ [NW]
1. *High temperature superconductivity*

Dr. Claudia Tesche, IBM [NE]
1. *Testing quantum mechanics with superconducting circuits*
2. *MEG: A technique for imaging brain function with superconducting devices*

Dr. Tineke Thio, NECI [NE]
1. *Hopping conductivity and magnetism in pure La2CuO4+y*

Dr. Judith A. Todd, USC [SW]
1. *Microstructure-mechanical property relationships in advanced structural materials*
2. *A new look at interphase precipitation reactions*

Dr. Cynthia A. Volkert, AT&T [NE]
1. *Damage produced in silicon by high energy ion beams*
2. *Density changes in silicon due to the creation and annealing of point defects*
3. *Viscous flow of metallic glasses*

Dr. Gwo-Ching Wang, RPI [NE]
1. *Two-dimensional phase transitions studied by low-energy electron diffraction*

Prof. Mary Anne White, Dalhousie Univ [FO]
1. *Thermal properties of clathrates: Tempest in a teapot?*

Dr. Alice E. White, AT&T Bell Labs [NE]
1. *Mesotaxy: Single-crystal growth of buried silicide layers by ion implantation*
2. *Ion-beam-induced damage in $YBa_2Cu_3O_{7-\delta}$: A mobility edge?*

Dr. Barbara A. Wilson, JPL/CalTech [SW]
1. *Novel infrared detectors based on semiconductor heterostructures*

Dr. Jane E. Zucker, AT&T [NE]
1. *Spectroscopy of exitons and phonons in quantum wells*
2. *Nonlinear optics below the band edge in quantum wells*

ENVIRONMENTAL/ENERGY PHYSICS

Dr. Sallie Baliunas, Ctr for Astrophys [NE]
1. *Sun, stars, and climate*

Dr. Nancy J. Brown, Lawrence Berkeley Lab [SW]
1. *Combustion-generated air pollutants*

Prof. Janice Button-Shafer, Univ of MA [NE]
1. *Physicists' views of the strategic defense initiative*

Dr. Beverly S. Cohen, NYU Med Ctr [NE]
1. *Deposition of ultrafine particles on the human tracheobronchial tree: A determinant of the dose from radon daughters*
2. *Sampling airborne particles for estimation of inhalation exposure*

Dr. Luisa F. Hansen, Lawrence Livermore [SW]
1. *Neutron and gamma-ray transport through materials of interest to fusion reactors*

B.K. Lunde [MW]
1. *Capital costs of building design*

Dr. Elizabeth A. Rauscher, Tecnic Research [SW]
1. *A model of population dynamics*

Dr. Martha H. Redi, Princeton [NE]
1. *The 1990's: A critical decade for fusion energy*
2. *Recent research in transport: Plasma physics and controlled fusion*

FLUID & PLASMA PHYSICS

Dr. Barbara Abraham-Shrauner, Univ of WA [MW]
1. *Symmetries, sophus lie and nonlinear systems: The secret method*

Dr. Fran Bagenal, U of Colo [MW]
1. *Voyages through giant planet magnetospheres*

Dr. Mary L. Brake, Univ of MI [MW]
1. *Novel methods of copper vapor laser excitation for isotope separation*
2. *The UM GEC reference reactor*

Dr. Weili Luo, Univ of Chicago [MW]
1. *Magnetic properties of a quenches ferrofluid system*

Dr. Martha H. Redi, Princeton [NE]
1. *The 1990's: A critical decade for fusion energy*
2. *Recent research in transport: Plasma physics and controlled fusion*

Dr. Helen L. Reed, Arizona St Univ [SW]
1. *Stability and transition of laminar viscous flows*

R. Mary Silber, Georgia Tech [SW]
1. *Pattern selection in convection*
2. *Symmetry-breaking bifurcations and spatial pattern formation*
3. *Pattern formation in non-equilibrium systems*

GEOPHYSICS

Dr. Fran Bagenal, U of Colo [MW]
1. *Voyages through giant planet magnetospheres*
2. *The peculiar role of Io in the magnetosphere of Jupiter*

Dr. Nadine G. Barlow, Johnson Space Ctr [SW]
1. *Planetary geophysics*
2. *Past and future exploration of Mars*
3. *Impact cratering as a geologic process*

Dr. Prabha Durgapal, Welex [SW]
1. *An analytic model for electromagnetic wireline tools for geophysical exploration*

Dr. Juliette W. Ioup, Univ of New Orleans [SE]
1. *Inversion of seismic data using Fourier coefficients*
2. *The modified image method for airborne eletromagnetics*

Dr. Christine E. Krohn, Exxon [SW]
1. *Reservoir description: Seismic opportunities well to well*

Dr. Elizabeth A. Rauscher, Tecnic Research [SW]
1. *Resonant magnetic field pulsations and the mechanisms of the earth ionosphere excitation modes*

Dr. Sara A. Solla, Bell Labs [NE]
1. *A scaling model for crack propagation and fracture*

INTERFACE & DEVICE PHYSICS

Dr. Susan D. Allen, Univ of Iowa [MW]
1. *Laser deposition and etching*
2. *Dust, holes and wires: Laser processing for electronics and optics*

Dr. Sheila Bailey, NASA [MW]
1. *Advances in photovoltaics*

Dr. Alison Chaiken, NRL [EC]
1. *Integrated magnetics*

Prof. Siu-Wai Chan, Columbia Univ [NE]
1. *Grain boundaries in high temperature superconductors*
2. *How crystals dance to each other*

Dr. Meera Chandrasekhar, Univ of MO [MW]
1. *Semiconductors and quantum wells under hydrostatic pressure*

Dr. Shirley Chiang, IBM [SW]
1. *Scanning tunnelling microscopy of metals on semiconductors*
2. *Atomic force microscopy*
3. *Imaging molecules on surfaces by scanning tunnelling microscopy*

Dr. Deborah D.L. Chung, SUNY Buffalo [NE]
1. *Materials for electronic packaging*

Dr. Denice Denton, Univ of Wisconsin [MW]
1. *A solid state humidity sensor device*

Dr. Vicky Diadiuk, MIT Lincoln Lab [NE]
1. *Fabrication and characterization of semiconductor microlens arrays*

Dr. Mildred Dresselhaus, MIT [NE]
1. *Intercalation and superlattices*

Dr. Laura H. Green, Bellcore [NE]
1. *Heavy fermion*
2. *Metallic superlattices*
3. *Proximity effects in novel superconductors: Heavy fermions and high T_c*

Dr. Frances A. Houle, IBM [SW]
1. *Interdependence of excitation and reaction in laser-solid interactions*
2. *Charge carriers and semiconductor etching*
3. *Photochemical deposition of thin films: Gas phase and surface chemistry*

Dr. Deborah Jackson, Hughes Research [SW]
1. *Lightwave technology*

Dr. Shirley A. Jackson, Rutgers [NE]
1. *Magnetic polarons in diluted magnetic semiconductor superlattices*
2. *Zone-folding and quasi-direct optical transitions in semiconductor superlattices*

Prof. Karen L. Kavanagh, UC, San Diego [SW]
1. *What is an interface?*
2. *High resolution X-ray scattering from semiconductors*
3. *Scanning tunnelling microscopy of semiconductor interfaces*

Dr. Kei May Lau, UMass/Amherst [NE]
1. *Quantum-size and strain effects in semiconductor heterostructures*

Dr. Carmay Lim, Harvard [NE]
1. *Dynamics of gas-surface interactions*

Dr. Patricia M. Mooney, IBM [NE]
1. *Influence of DX centers on heterojunction device characteristics*

Dr. Cherry A. Murray, AT&T Bell Labs [NE]
1. *Surface enhanced Raman scattering*

Dr. Marjorie Olmstead, U Washington [NW]
1. *Formation of the interface bwteeen a polar insulator and a non-polar semiconductor*
2. *Initial stages of semiconductor interface formation*

Dr. Talat S. Rahman, Kansas St Univ [MW]
1. *Dynamics of ordered overlayers on metals*
2. *Surface reconstruction and surface phonon dispersion - a lattice dynamical study*
3. *Surface lattice dynamics and electron energy loss spectroscopy*

Shang-Fen Ren, Univ Il/Urbana [MW]
1. *Anisotropy of optical phonons and interface modes in GaAs-AlAs superlattices*
2. *Optical phonons in GaAs/AlAs quantum wires*
3. *Electronic properties of sulfur treated GaAs (001) surfaces*
4. *Electronic and optical properties of GaAs (001) surfaces with (2x4) reconstruction*

Prof. Geraldine L. Richmond, Univ of OR [NW]
1. *Nonlinear optics as a probe of solid/liquid interfaces*

Dr. Rozalie Schachter, Amer Cyanamid [NE]
1. *GaAs devices grown by non-arsine MOVPE*

Prof. Mary Beth Stearns, Ariz St Univ [SW]
1. *Structural and magnetic behavior of multilayered films*

Dr. Gwo-Ching Wang, RPI [NE]
1. *Two-dimensional phase transitions studied by low-energy electron diffraction*
2. *Kinetics of 2D ordering studied by high resolution low energy electron diffraction*
3. *Growth of large lattice mismatch metal-semiconductor heteroepitaxy thin films by MBE*

Dr. Margaret Weiler, Loral Infrared & Imaging [NE]
1. *HgCdTe photodiodes for infrared imaging systems*

Dr. Alice E. White AT&T Bell Labs [NE]
1. *Mesotaxy: Single-crystal growth of buried silicide layers by ion implantation*
2. *Mechanisms of formation of buried oxide layers by ion implantation*

Dr. Cindra Widrig, Utah State [SW]
1. *Scanning tunnelling microscopy and chemical applications*

Dr. Barbara A. Wilson, JPL/Caltech [SW]
1. *Novel infrared detectors based on semiconductor heterostructures*

Dr. Jane E. Zucker, AT&T [NE]
1. *Spectroscopy of excitons and phonons in quantum wells*
2. *Nonlinear optics below the band edge in quantum wells*

MOLECULAR & POLYMER PHYSICS

Dr. Esther Conwell, Xerox [NE]
1. *Solitons, polarons, and photoconductivity in polyacetylene*
2. *Conducting polymers*

Dr. Flonnie Dowell, Los Alamos [SW]
1. *Molecular modeling of complex materials*
2. *Molecular theories for polymers*
3. *New phase and molecule predictions for partially-ordered chains*

Dr. Sandra C. Greer, Univ of MD [EC]
1. *Equilibrium polymerization as a phase transition*

Prof. Judith Herzfeld, Brandeis Univ [NE]
1. *Self-assembly in crowded solutions: Nonideality and long-range order*
2. *Solid-state NMR studies of light-driven proton pump*

Dr. Joyce J. Kaufman, Johns Hopkins [EC]
1. *Ab-initio quantum chemical calculations on large molecules and molecular systems*
2. *Ab-initio quantum chemical calculations on drugs and biomolecules*

Dr. Sonja Krause, RPI [NE]
1. *Transient electric birefringence studies of muscle proteins*
2. *Polymer morphology changes in electric fields: Immiscible polymers*
3. *Membrane pore structure studies using scattering methods*

Dr. Rosemary A. MacDonald, NIST [EC]
1. *Modelling porous media: Application to macromolecular separation*

Dr. Mary Jo Ondrechen, Northeastern [NE]
1. *Predicting the spectroscopic properties of discrete mixed-valence systems*

Prof. Geraldine L. Richmond, Univ of OR [NW]
1. *The spectroscopy of metal ions bound to proteins and polymers*

Dr. Linda Stuk, Univ of Texas [SW]
1. *Diffusion of small molecules in polymers, or: Why are there no plastic beer bottles?*

NUCLEAR & PARTICLE PHYSICS

Prof. Karen Barad, Barnard College [NE]
1. *Numerical simulations of quantum chromodynamics*

Dr. Cynthia Bilchak, Shippensburg Univ [NE]
1. *Quarks, Gluons and other colorful stuff*

Prof. Janice Button-Shafer, Univ of Ma [NE]
1. *Utilization of polarized targets and polarized beams in nuclear and particle physics*
2. *Is there a fifth force?*

Prof. Jolie A. Cizewski, Rutgers Univ [NE]
1. *Symmetry and supersymmetry in heavy nuclei*
2. *Symmetries in super deformed nuclei*

Dr. Bunny C. Clark, Ohio State Univ [MW]
1. *Relativistic effects in nuclear physics*

Prof. Cynthia Z. Gossett, Univ of WA [NW]
1. *The giant dipole resonance in hot nuclei*
2. *Hard photon production in heavy ion collisions*

Dr. Luisa F. Hansen, Lawrence Livermore [SW]
1. *Microscopic optical model potentials in the analysis of nucleon-nucleus scattering*

Dr. Gail G. Hanson, Indiana Univ [MW]
1. *Physics of the neutral weak vector boson Z0*
2. *Physics and detectors at the superconducting supercollider*

Dr. Lorella M. Jones, Univ of IL [MW]
1. *Quark and gluon jets - trails of color in a colorless world*

Dr. Noemie Benezer Koller, Rutgers [NE]
1. *Studies of nuclear structure via magnetic moment measurements*

Dr. Deborah A. Konkowski, USNA [EC]
1. *The nature of singularities in general relativity*

Dr. Corinne A. Manogue, Oregon St Univ [NW]
1. *The Klein paradox: Rolling relativistic quantum balls uphill*
2. *Changing topology: The trousers problem*
3. *The rotating vacuum*

Prof. June L. Matthews, MIT [NE]
1. *Probing the nucleus with high-energy photons*
2. *How many nucleons does it take to scatter a pion?*

Dr. Marilyn E. Noz, NYU [NE]
1. *Group theoretical examples in relativistic quantum mechanics*

Dr. Andrea Palounek, LBL [SW]
1. *Physics and detectors at the SSC*

Dr. Betty P. Preece [SE]
1. *Elementary particles: Lecture demos for teachers K-12*

Dr. Sathyavathi Ramavataram, Brookhaven [NE]
1. *Nuclear shell models*
2. *Continuum theories of nuclear reactions*
3. *Polarization phenomena in nuclear reactions*
4. *Model calculations at intermediate and high energies*

Dr. Elizabeth A. Rauscher, Tecnic Research [SW]
1. *Cosmology models, strings and particle physics*

Dr. Susan J. Seestrom, Los Alamos [SW]
1. *The nucleus as an amplifier of violation of parity and time reversal invariance*
2. *The pion as a probe of isospin effects in nuclei*

Dr. Junko Shigemitsu, Ohio State [MW]
1. *Uses of lattices in elementary particle physics*

Dr. Elizabeth H. Simmons, Harvard [NE]
1. *Why do we need a superconducting super collider?*

Dr. Janet Sisterson, Harvard [NE]
1. *Measuring cross sections for long lived radioisotopes produced by proton beams*

Prof. Johanna Stachel, SUNY [NE]
1. *Collisions between ultra-relativistic heavy ions*

Dr. Julia A. Thompson, U of Pittsburgh [EC]
1. *Anomalous electron production at low transverse momentum*
2. *CP violation: Collaborative physics research in the USSR*

Dr. Sallie A. Watkins, Univ of So Colorado [MW]
1. *The beta ray work of Lise Meitner*

Dr. Dorothy S. Woolum, Cal St-Fullerton [SW]
1. *Interpreting solar system elemental abundances of the N=50 neutron shell*
2. *Trace element microdistribution analysis by PIXE*

OPTICS & OPTICAL PHYSICS

Dr. Susan D. Allen, Univ of Iowa [MW]
1. *Dust, holes and wires: Laser processing for electronics and optics*

Dr. Vicky Diadiuk, MIT Lincoln Lab [NE]
1. *Fabrication and characterization of semiconductor microlens arrays*

Dr. Sarah L. Gilbert, NIST, Boulder [MW]
1. *Trapping and laser cooling of ions and neutral atoms*

Dr. Helen Vogele Gourley, System Sci Group [SW]
1. *Heat and light in optical systems*
2. *Optical properties of surfaces: How to use them in system design*

Dr. Juliette W. Ioup, Univ of New Orleans [SE]
1. *Higher order correlations and spectra*

Dr. Katharine J. Jones, Naval Avionics Ctr [MW]
1. *All about lasers*
2. *Optical computing*
3. *Solitons*

Dr. Cherry A. Murray, AT&T Bell Labs [NE]
1. *Surface enhanced Raman scattering*

Dr. Marilyn E. Noz, NYU [NE]
1. *Group theoretical examples in relativistic quantum mechanics*

Dr. Carmen Ortiz, IBM [SW]
1. *Physics of laser irradiation of thin films*

Liwen Pan, Univ. Maryland/NIST [EC]
1. *Atoms in intense laser fields*

Dr. Mary S. Tobin, HDL [EC]
1. *Optical properties of doping superlattices*
2. *Introduction to optical phase conjugation*

Dr. Reeta Vyas, Univ of Arkansas [SE]
1. *Resonance fluorescence from a two-level atom driven by squeezed light*
2. *Fluctuation properties of squeezed light*

Dr. Margaret Weiler, Loral Infrared & Imaging [NE]
1. *HgCdTe photodiodes for infrared imaging systems*

TALKS FOR GENERAL AUDIENCES

Dr. Elise Albert, USNA [EC]
1. *Stellar evolution: Life and death of a star*

Dr. Susan D. Allen, Univ of Iowa [MW]
1. *More and more about less and less: The meaning of a PhD*
2. *The use of selective ignorance in interdisciplinary research*
3. *Women in science: What's a nice girl like you doing in a business like this?*
4. *Is there a laser in your future?*

Dr. Priscilla Auchincloss, U. of Rochester [NE]
1. *The climate workshop: Changing the classroom experience for women in science and engineering*

Dr. Bran Bagenal, U of Colo [MW]
1. *Voyages through giant planet magnetospheres*

Dr. Sheila Bailey, NASA [MW]
1. *Solar power in space*
2. *Power for space station freedom*

Dr. Sallie Baliunas, Ctr for Astrophys [NE]
1. *Solar and stellar magnetism*
2. *Sun, stars, and climate*

Prof. Karen Barad, Bernard College [NE]
1. *Quarks and supercomputers*

Dr. Nadine G. Barlow, Johnson Space Ctr [SW]
1. *Past and future exploration of Mars*
2. *Impact cratering as a geologic process*
3. *Planetary science: Between the earth and stars*

Reta Beebe, NM State [SW]
1. *Winds and clouds of the giant planets*
2. *Hubble space telescope observations of the giant planets*

Dr. Cynthia Bilchak, Shippensburg Univ [NE]
1. *Quarks, Gluons and other colorful stuff*

Dr. Eva Bozoki, Brookhaven [NE]
1. *Synchrotron radiation and its use*

Dr. Mary L. Brake, Univ of MI [MW]
1. *Plasmas that glow in the dark*

Dr. Bonnie J. Buratti, Caltech/JPL [SW]
1. *Comets: Rosetta stones of the solar system?*
2. *Icy moons of the solar system*

Prof. Janice Button-Shafer, Univ of MA [NE]
1. *The Strategic Defense Initiative - physicists' views*

Dr. Bel Campbell, Univ of NM [SW]
1. *Star formation: The sound and the fury*
2. *Does astronomy matter?*

Dr. Yue Cao, U Hawaii [NW]
1. *Atomic hydrogen isotopes generated by β decay of T_2 stored in solid molecular hydrogen isotope lattice*

Dr. Shirley Chiang, IBM [SW]
1. *The scanning tunneling microscope: A microscope that sees atoms*

Dr. Deborah D. L. Chung, SUNY Buffalo [NE]
1. *Materials for electronic packaging*
2. *Metal-matrix composites*
3. *Carbon fiber composites*

Dr. Beverly S. Cohen, NYU Med Ctr [NE]
1. *Radon in your home*

Dr. Lynn R. Cominsky, Sonoma State Univ [SW]
1. *X-ray visions of the universe*

Dr. Denice Denton, Univ of Wisconsin [MW]
1. *Microfabrication of integrated circuits: An overview*

Dr. Irene M. Engle, USNA [EC]
1. *Big machine computing using a desktop system*

Dr. Helen Vogele Gourley, System Sci Group [SW]
1. *How to find a job in industry*
2. *Future work: The individual scientist and new modes of working*

Dr. Suzanne Gronemeyer, St Jude Hosp [SE]
1. *Clinical magnetic resonance imaging*

Dr. Shirley W. Harrison, retired [NE]
1. *Contributions of women to astronomy and space science*
2. *The poor crescent moon*

Dr. Martha P. Haynes, Cornell Univ [NE]
1. *Extragalactic sociology: Environmental effects on galaxy formation*
2. *Large scale structure in the universe*

Dr. Caroline L. Herzenberg, Argonne [MW]
1. *Women scientists and engineers of antiquity and the Middle Ages*
2. *Advances in science: Discoveries by women*
3. *Women scientists of the Manhattan Project*

Dr. Katharine J. Jones, Naval Avionics Ctr [MW]
1. *On this matter of girls and mathematics*

Prof. Karen L. Kavanagh, UC, San Diego [SW]
1. *What is an interface?*

Dr. Sonja Krause, RPI [NE]
1. *Introduction to polymers*

Dr. Christine E. Krohn, Exxon [SW]
1. *Communication skills for industrial scientists*

Dr. Susan Lea, SFSU [SW]
1. *X-rays from collapsed stars*

Dr. Arlene J. Lennox, Fermilab [MW]
1. *Neutrons against cancer: The clinical experience at Fermilab*
2. *A woman's career in physics*

Dr. B. K. Lunde [MW]
1. *Use of fiber optics by the telephone company*
2. *Development and marketing of a technical product*

Prof. June L. Matthews, MIT [NE]
1. *What is inside the inside of the atom, and what holds it together?*

Prof. Lillian C. McDermott, U of Washington [NW]
1. *Identifying and addressing conceptual difficulties in physics*
2. *Preparing precollege teachers to teach physics*
3. *What we teach and what is learned: Closing the gap*

Dr. Lucy-Ann McFadden, Cal Space [SW]
1. *A guided tour of the solar system through the eyes of robot spacecraft*

Dr. Theresa Nagy, NASA [EC]
1. *Comets as viewed by the media through the ages*

Dr. Barbara Neuhauser, SFSU [SW]
1. *The search for dark matter*

Dr. Mary Jo Ondrechen, Northeastern Univ [NE]
1. *The role of polarizable bridging ligands in discrete-molecular, conducting, and superconducting systems*

Dr. Andrea Palounek, LBL [SW]
1. *Physics and detectors at the SSC*

Prof. Martha Pardavi-Horvath, GWU [EC]
1. *Magnetic recording*

Dr. Betty P. Preece [SE]
1. *Elementary particles: Lecture demos for teachers K-12*
2. *Science math careers that work for women and minorities*
3. *Physics demos for teachers K-12*

Dr. Elizabeth A. Rauscher, Tecnic Research [SW]
1. *The nature of the scientific method and scientific discovery*

Dr. Martha H. Redi, Princeton [NE]
1. *The 1990's: A critical decade for fusion energy*

Dr. Beverly A. Rubik, Temple Univ [EC]
1. *The new physics: Toward an emerging paradigm*
2. *Frontier issues in physics and biophysics*
3. *The Universe is a symphony and all of us are the musicians*

Dr. Mary Beth Ruskai, U. Lowell/U Mich [NE]
1. *The role of creativity, intuition, abstraction, and objectivity in science*

Dr. Nora H. Sabelli, NCSA [MW]
1. *Supercomputers and science: Who needs supercomputers? Why?*

Dr. Marie-Louise Saboungi, Argonne [MW]
1. *Structure of liquids*

Dr. Anneila Sargent, Caltech [SW]
1. *Searching for forming planetary systems*

Dr. Petra Schmalbrock, Ohio State [MW]
1. *The basics of magnetic resonance imaging and spectroscopy*

Dr. Elizabeth H. Simmons, Harvard [NE]
1. *Why do we need a superconducting super collider?*

Dr. Janet Sisterson, Harvard [NE]
1. *Medical applications of proton beams*
2. *Measuring cross sections for long lived radioisotopes produced by proton beams*

Dr. Katherine Strandburg, Argonne Natl Lab [MW]
1. *Quasicrystals and random tilings*
2. *Melting in two dimensions*
3. *Phase transitions in flatland*

Dr. Linda Stuk, Univ of Texas [SW]
1. *Chaos in physics and chemistry*

Dr. Beverley A. P. Taylor, Miami Univ [MW]
1. *The physics of toys*

Dr. Claudia Tesche, IBM [NE]
1. *Testing quantum mechanics with superconducting circuits*
2. *MEG: A technique for imaging brain function with superconducting devices*

Dr. Julia A. Thompson, U of Pittsburgh [EC]
1. *CP violation: Collaborative physics research in the USSR*
2. *Relativistic heavy ions & close-packed quarks*

Dr. Judith A. Todd, USC [SW]
1. *The earliest metals smelting in Europe*
2. *Studies of the African Iron Age*

Dr. Virginia Trimble, UC-Irvine [SW]
1. *Cosmology: Man's place in the universe*
1. *Supernovae: Bigger and better bangs*
3. *The universe you don't see: Existence and nature of dark matter*

Dr. Reeta Vyas, Univ of Arkansas [SE]
1. *How photons come out of a light source*
2. *Trip to a nuclear world*

Dr. Sallie A. Watkins, Univ of So Colo [MW]
1. *A woman's place in early 20th century physics*
2. *Two discoveries, two responses*
3. *Lise Meitner and the discovery of fission*

Dr. Audrey V. Wegst [MW]
1. *Experiences in the developing countries using nuclear medicine: 2 years with the IAEA*

Prof. Mary Anne White, Dalhousie Univ [FO]
1. *Chemistry of materials: from fudge to photocopying*

Dr. Alice E. White, AT&T Bell Labs [NE]
1. *Materials modification using ion beams*

Dr. Cindra Widrig, Utah State [SW]
1. *Scanning tunneling microscopy and chemical applications*

Dr. Belinda J. Wilkes, SAO [NE]
1. *Tour of the Universe*

Dr. Dorothy S. Woolum, Cal. St-Fullerton [SW]
1. *Meteorites and what they tell us about the solar system*
2. *Nucleosynthesis of the heavy elements*

CSWP ANNOUNCES 1991-1992 "TRAVEL GRANTS FOR WOMEN COLLOQUIUM SPEAKERS" PROGRAM

The APS Committee on the Status of Women in Physics (CSWP) is pleased to announce that the "Travel Grants for Women Colloquium Speakers" Program is entering its second year. The program is designed to stimulate the recognition of women physicists. The response to last year's program was much greater than anticipated. Twice as many requests were received as we could fund. This year, the APS Executive Board has generously doubled the funding for this program.

Purpose: The program is intended to expand the opportunity for physics departments to invite women colloquium speakers who may prove role models for women undergraduate and/or graduate students and faculty. The program also reinforces the awareness of the accomplishments of women physicists.

Grant: The program will reimburse institutions for up to $500 for travel expenses for either of two women colloquium speakers invited during the 1991-1992 academic year.

Qualifications: All physics and/or science departments are encouraged to apply. Invited women speakers should be physicists or in a closely related field, such as astronomy or geophysics. For your convenience, a copy of the CSWP Colloquium Speakers List for Women in Physics has been included in this packet, but selection need not be limited to this list.

Guidelines: Reimbursement is for travel and lodging expenses only. Honoraria or extraneous expenses at the colloquium itself, such as refreshments, are not reimbursable. Travel by car is reimbursable at 25¢ per mile.

Application Procedure: Institutions will be reimbursed in the order applications are received. Institutions must submit the attached application form together with any receipts for the travel expenses for either one of the two speakers. Requests for Travel Grants should be submitted **after** both women speakers have actually spoken. For the convenience of institutions who have scheduled speakers for later in the academic year, **four** travel grants will be reserved for those institutions which submit a letter of intention to file, with the dates of the anticipated colloquia and the names of the speakers. Both speakers must have actually presented their talks by April 15, 1992.

For further information, please feel free to contact: The Travel Grant for Women Colloquium Speakers Program, APS, 335 East 45th Street, New York, NY 10017 or 212-682-7341.