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GUEST EDITORIAL: *The Problem with Low Statistics*

By Mary Hall Reno, University of Iowa



Mary Hall Reno

When I graduated from college with a bachelor's degree in Physics in 1980, I was sure that the social change of the women's movement would bring a wave of changes in the broader world, and in my physics world. The wave of female physics majors that I expected would certainly arrive over the ten or twenty year time scale. Here we

are in 2008, and what I see is a ripple, not a wave.

What has kept the number of women low in physics? If the answer to question of gender imbalance in physics were easy, women would already make up a larger fraction of physicists.

Medicine and law have seen dramatic changes in the makeup of their students. In 1965, 8% of first-year medical students were women. In 1975, the percentage was already 24%, and by 1995, it was larger than 40%.¹ The large majority of medical school students complete

the MD degree. Law school enrollment statistics show a similar trend, from 4% of the first-year enrollment in 1965, to 40% in 1995.²

Physics graduate school enrollment has not kept up. According to the AIP statistics on degree attainment, 4% of physics PhDs in 1973 were awarded to women, increasing to 14% in 2005. A factor of more than three increase! This increase is not good enough — there are still often only a handful of women at any physics event or meeting.

Is the physics playing field unbalanced?³ Small statistics make it hard to determine. A recent New York Times on-line discussion (the TierneyLab⁴) emphasized to me the difficulties of small numbers with frequent references to anecdotal data. An unbalanced playing field can be attributed to individual personalities or situations. (As in, "well, she is a special case".) It makes it hard to determine "is it me or is it the system?"

The APS and the American Association of Physics Teachers have expressed a joint goal of doubling the number of physics majors, focusing on increasing the representation of women and under-represented

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Three Blewett Scholarships Awarded

By Nadia Ramlagen, APS Writing Intern

Congratulations to the recipients a Hildred M. Blewett Scholarship for 2008: Janice Guikema of Johns Hopkins University, Firouzeh Sabri of the University of Memphis, and Ya Li of Hampton University. The Blewett Scholarship is a one year award of up to \$45,000 that aims to enable young women scientists to return to physics research, after having to interrupt their careers for family reasons. Recipients can use the funds for expenses related to child care, salary, travel, equipment, and tuition fees.

Despite having different backgrounds and academic histories, these three women are dedicated

physicists and mothers striving towards the same goal. They are determined to continue doing exceptional research in Condensed Matter Physics, Materials Science, and Nuclear Physics while raising young children.

Born in New Jersey, Janice Guikema received her undergraduate degree in Physics from Cornell University and her PhD from Stanford University, where she used a scanning magnetic microscope to study vortices in high-temperature superconduc-

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The Editor for this issue:

Catherine Fiore
Chair 2008
MIT

Managing Editor
Sue Otwell, APS Staff

*Members of the
Committee*

Catherine Fiore,
Chair 2008
MIT

Nora Berrah
Western Michigan
University

Nancy M Haegel
Naval Postgraduate
School

Apriel Hodari
CNA Corporation

Eliane Lessner
Argonne National
Laboratory

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Pennsylvania

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of Engineering

APS Liaisons

Theodore Hodapp
Director, Education &
Diversity

Sue Otwell
Women & Education
Programs Administrator

Leanne Poteet
Graphic Designer

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Julia Phillips Wins George E. Pake Prize

By Ernie Tretkoff, APS News Staff Writer

Julia Phillips is the recipient of the 2008 APS George E. Pake prize, for her leadership and pioneering research in materials physics for industrial and national security applications.

Phillips has been interested in science since she was a child. She grew up in a small town in Illinois. There she had a good view of the stars at night, and she developed an interest in astronomy. She also recalls being particularly inspired by a science lesson in fifth grade on determining distances using triangulation. The class had been measuring the distances to masking tape rectangles in the school hallway; when the teacher told her the same method was used to find the distances to stars, Phillips was inspired. Her mother also encouraged her interest in science by ordering science kits for her and her brother.

Phillips chose to major in physics in college. "Basically my reasoning was that it was the most fundamental of the sciences, and I would need it for chemistry and I would need chemistry for biology," she says. "I started in physics and never really moved."

She earned her PhD in applied physics at Yale University, where she worked on atomic physics. After her PhD she went to work at Bell Labs. "I was hired specifically to do 'not atomic physics.' The directions were no more specific than that. I had a lot of freedom and wonderful mentoring," she says.

At Bell Labs her research covered a variety of materials physics topics. She worked first on what she calls "lunatic fringe molecular beam epitaxy." Most molecular beam epitaxy work in those days focused on compound semiconductors, usually involving changing the composition of the semiconductor or its thickness in order to get different electronic or optical properties. Phillips was instead working on combining semiconductors with layers of insulators and metals. "There was a lot of cool science that came out of that," she says.

After seven years she moved to the chemistry and materials division of Bell Labs, where much of her work centered on complex oxides. During that time she worked closely with solid state chemists, which was a useful collaboration, she says. "They just look at the periodic table differently and can see things that physicists will never see in the periodic table."

One of the things she appreciated about working in industry was the efficiency. "There was the expectation that you would do good work, and you were given resources to do that," she says. In addition, collaborations formed as needed. "Staff members have to assemble into groups to do something that takes advantage of the strengths of all of them," she says. "That ability to have group effort spontaneously form and then disintegrate when the need dies is very different from what you experience in a university."

In 1995, after 14 years at Bell Labs, Phillips moved to Sandia National Laboratories, where she is Director of the Physical, Chemical, and Nano Sci-

ences Center. Research at Sandia spans a broad range of topics, from fundamental science to engineering technology for national needs such as energy and security. Phillips' center works on the most fundamental condensed matter and materials science research at Sandia. The center has a large effort in fundamental compound semiconductor research. Some of that work is on wide bandgap gallium nitride compounds for solid state lighting and other applications. Other research in the center focuses on low dimensional physics, approaches to quantum computing, generating and detecting radiation in the terahertz regime, surface science, and nanoscience.

Phillips no longer does her own research, but says she doesn't miss it much. "I've learned that the aspects that excite me the most are at a bigger scale than what goes on in any one lab," she says.

As Director of the Physical, Chemical, and Nano Sciences Center she works to "balance the tension between doing blue sky research and connecting it back to the needs of the laboratory," she says. Her organization has over 160 staff members, and Phillips knows all of them. She keeps up with what they are working on and what interests them. Phillips influences the direction of the lab, not by telling individuals specifically what to work on, but by helping them understand how their work fits in with the lab's missions. She also serves as a matchmaker, "helping match some of the fundamental science folks with more applied folks, so their work and their perspectives can enrich each other," she says.

Another aspect of her job is "to the extent that I can, trying to keep the bureaucratic drivel from completely drowning folks," she says.

One of the things she likes most about her job is working with bright people. "The thing that's been particularly nice is that it's been a vehicle to enable me to work with some of the smartest folks on the planet," she says.

Phillips says she hasn't experienced outright discrimination as a woman in a male-dominated field, though she has observed some inappropriate behaviors. "What does exist is more subtle," she says. Now, as a manager, she tries to act as a mentor and role model for women, and to counter some of the subtle problems women experience. For instance, she has observed that women tend to get talked over in meetings, so when Phillips runs a meeting she makes an effort to notice when someone wants to speak.

When not at work, Phillips spends time with her family. Her husband is a neurobiologist, and her two daughters are in high school. Phillips also plays the flute, accompanied by her husband, who plays the piano. The family lives on 17 acres about ten miles outside of Albuquerque, where they have an orchard and raise sheep. Phillips has also been involved in the professional community in many ways, and served as President of the Materials Research Society in 1995.

Blewett Scholarships Awarded, *continued from page 1*

tors. She is currently a postdoc in the experimental condensed matter physics group at Johns Hopkins University.

Her research during the scholarship year will focus on the properties and applications of graphene, a single sheet of carbon atoms that flake off of graphite. Since it was discovered a few years ago, graphene has been at the forefront of experimental physics research, mainly because of its novel electronic, optical and mechanical properties. The material is also free of defects (hardly ever missing a carbon atom), which makes designing very small, stable, graphene structures at room temperatures feasible.

She plans to fabricate a Hall probe sensor out of graphene, to determine if the material is sensitive enough to rival current other materials used to make Hall probes. In addition, she will also use scanning probe microscopy to study the local behavior of the charge carriers in graphene.

“My goal is to add to new knowledge about graphene and to exploit its properties for some useful devices,” Janice explains.

Janice and her husband Seth previously held postdocs at Texas A&M University, when her son David was born in 2006. Since teaching appeared like a good option for balancing career and family, she accepted a half time lecturer position in physics at Texas A&M. “I enjoyed teaching, but I missed research even more. I found that after my teaching duties and caring for my baby I had little time for fruitful research,” she says.

In January of 2008, her husband received a faculty position at Johns Hopkins University in Baltimore. Deciding that she was ready to do research, Janice negotiated a half-time research position with the faculty at Hopkins.

“The Blewett Scholarship came up and I thought ‘let me apply for that, then I can have more freedom to do what I’m interested in’. With the scholarship I’ll be able to work a little bit more and hire one or two undergraduates. That will help with a lot of the time-consuming sample preparation,” she says.

Firouzeh Sabri was born in Tehran, Iran and received her undergraduate degree in Physics from Swansea University, Wales and her PhD from the Cavendish laboratory at University of Cambridge, where she worked on gallium arsenide metal insulator semiconductor transistors. Currently, her research is focused on materials science at the University of Memphis, Tennessee. Her work funded by the Blewett Scholarship will involve studying the UV (ultraviolet) degradation of two types of materials. She plans to determine extent of damage and how the mechanical strength and stability of the materials are compromised by UV radiation.

“What is interesting is that the amount of UV

radiation damage on these materials is pretty strong, and the process of this damage is poorly understood,” she explains.

Firouzeh was previously a postdoc at University of Florida, Gainesville when her research was stopped after her husband was offered a position near Memphis, Tennessee. Shortly afterward, she relocated to Memphis with her young son Kian. There she accepted a teaching position in the department of Physics at the University of Memphis, where she is pursuing a successful research career.

In this day and age, young women scientists are experiencing less discrimination as societal norms and expectations shift, and as more women choose to enter scientific fields. “I have to say that I’ve never been discriminated against during my education. As a young single woman I’ve never felt anyone hold me back. No one pushed me through either, but I’ve never felt any discrimination. I’ve been treated as an equal, which is fantastic,” says Firouzeh.

However, she points out that, “I did definitely sense a noticeable change in people after I had a child. It seems like when employers find out you have a young child, they automatically prepare themselves for you to not be productive”.

“I think that people, potential employers, whoever they are, they have to try and eliminate those things and judge you based on your capabilities and knowledge and not your family life. Because if you are someone who wants to get the job done, you will,” she says.

Ya Li was born in China, where she received her undergraduate degree in Physics and Masters degree in Condensed Matter Physics from Tongji University. She came to the United States and received another Masters degree from the University of Houston.

In 2003 she moved to Jefferson Lab in Virginia to work on her dissertation, studying duality in meso- electron production. “The most exciting thing about Jefferson Lab is that they have a high luminosity electron beam, which is great for studying the structure of matter on the nucleon scale,” Ya says. After halting her career for a few years, she is currently resuming her graduate studies at the nearby Hampton University and working on a new experiment for her dissertation.

“In the past four years our family has grown rapidly. Three new babies came into our lives, it was wonderful. My first child is Jacob, who is 3. My second child is Owen, who is 2. And we have a little girl, Yealiya who is 3 months old,” Ya says.

Her husband Tim is the co-chief of operations at Jefferson Lab. His job requires him to take unregulated rotational shifts needed to keep the Lab’s accelerator running 24 hours a day 7 days a week.



Janice Guikema

“My goal is to add to new knowledge about graphene and to exploit its properties for some useful devices.”



Firouzeh Sabri

“Potential employers have to judge you based on your capabilities and knowledge and not your family life. Because if you are someone who wants to get the job done, you will.”

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Success Story: Four Women, One Victory

By Yevgeniya V. Zastavker, Debbie Chachra, Rebecca Christianson, and Alisha Lilly Sieminski,
Franklin W. Olin College of Engineering

This is how our story, very ordinary by some measures and quite extraordinary by others, begins. Ordinary... Four scientists, all of us women, we were full of ideas, energy, and enthusiasm. All junior faculty, we were eager to jump-start our research programs. Most of us had little previous experience of grant writing as PIs or co-PIs, and we were well aware of the dismal odds that our first large proposal would be funded. Less ordinary... With no previous record of



Confocal Microscopy Team,
from left to right:
Rebecca Christianson,
Yevgeniya V. Zastavker,
Debbie Chachra, and
Alisha Lilly Sieminski.
Photo by Michael
Maloney, Franklin
W. Olin College of
Engineering.

MRI grant writing (let alone winning), our brand-new school had no institutional experience for us to draw upon. Much less ordinary... At the time the proposal was due, one of us had just given birth, one was five months pregnant, one was at a wedding on the other side of the planet, and another was an adjunct professor with no certain future at the school. Nevertheless, with our limited experience and our oversized dreams, we produced a grant proposal for the NSF's Major Research Instrumentation (MRI) program, and we were awarded... drum roll, please... nearly half a million dollars in equipment funds for a confocal microscopy system. Ordinary or extraordinary, that's how our story began.

The four of us are faculty at the Franklin W. Olin College of Engineering (Needham, MA), a new engineering college that graduated its first class of students in May of 2006. Building a new school has been a rewarding process, but it hasn't left us with a lot of time for research; hence, our eagerness to boost our current research programs and get the new ones off the ground quickly and efficiently. With no science majors, a small pool of students at the school (about 300 in total), no graduate students, and lab spaces that were only recently completed, asking for a half a million dollar piece of equipment seemed gutsy, at best. Yet, we had a lot going for us:

We formed a multidisciplinary team. Given its small size (only about 35 faculty), Olin doesn't have departments, and the faculty offices and labs aren't segregated by research field. This made it fairly natural that one day, the four of us, in our different fields, started a conversation along the lines of, "Wouldn't it be cool if we had a confocal microscope?" Yevgeniya (Zhenya) V. Zastavker, a biophysicist, was in the midst of understanding sterol crystallization, a process similar to formation of gallstones in gall bladder bile. Rebecca Christianson, an experimental soft condensed matter physicist, was eager to delve deeper into her optical investigations of ordering in colloidal suspensions. Debbie Chachra, a material scientist, intended to continue her work with biological materials like bone. Finally, Alisha Lilly Sieminski, a bioengineer, wanted to augment her research on how the stiffness of materials affected cellular behavior with direct observations. All of us had distinctly different research plans, but we were all passionate about our work, and we needed to add the ability to do three-dimensional imaging to our scientific arsenals.

We had an exceptional student body. We had access to 300 of the most remarkable students. Hailing from all over the U.S., our student body consisted of (and still does) nearly equal numbers of men and women, the result of an institutional commitment to gender equity. Enrolled in a rigorous engineering program with a strong emphasis on project-based learning, as well as hands-on curriculum and pedagogy, our students had already demonstrated their ability to perform research with the existing equipment, including an x-ray diffractometer and a scanning electron microscope. Therefore, as far as the new equipment was concerned, it was just a matter of training and experience — we knew the students would take a full advantage of this opportunity.

We had a large audience. We had existing collaborations with other local institutions, including neighboring Wellesley College and Brandeis University. In terms of the 'broader impact' of funding this equipment, we could therefore convincingly argue that undergraduate students from a wide range of backgrounds, at Olin and elsewhere, would have access to this cutting-edge piece of equipment — it wasn't just going to be locked away for the exclusive use of a few select researchers

We had done our homework. Debbie learned that the Major Research Instrumentation (MRI) program, under which we were eventually funded, has a special funding program for non-PhD granting institutions (RUI). Rebecca spent time exploring the various NSF Directorates to see how many undergraduate research

Success Story, continued from page 4

programs were being funded, what types of programs seemed fundable, and what type of equipment/money appeared at higher frequency. Once we had chosen a directorate, we called the program director to discuss our proposal and get our many questions answered.

We had each other! The actual writing of the grant was an exercise in how a team of four committed researchers could overcome logistical obstacles. Despite having just given birth, Zhenya was ‘volunteered’ to be a PI, partly because her research was the most strongly dependent on the use of a confocal microscope, and partly for strategic reasons (her work was beyond the initial exploratory stages). Debbie was attending a family wedding in India, but she took advantage of the magic of e-mail and of time differences to collaborate on the text of the proposal. Rebecca, who was five months pregnant, and Alisha, who was still a visiting faculty at the time, held down the fort. Writing was therefore an intensely collaborative process, and the careful attention of all four of us in polishing the language and creating a well-crafted package was likely a factor in its success.

After the rush of finalizing the proposal, we sent it off, and then settled in to the long months of waiting. As the school year ended and spring turned to summer, we began checking the NSF website again, and then one day, we saw the magic word, “Awarded.” E-mails flew out to our crew, and there was definitely some hootin’ and hollerin’ heard in the otherwise quiet hallways as we celebrated and began to plan our new acquisition.

Since we purchased our system, we have certainly put it to good use. With the new experimental capabilities, Zhenya has been exploring new biomolecular and synthetic systems expanding her research to novel environments. As Rebecca has explored sample details for her colloidal systems, she has also trained research students, faculty and staff in the use of the confocal microscope. Debbie and Rebecca are investigating the structure of nest cell linings from *Colletes inaequalis* bees, a polymeric substance that might be a good example of a bioderived plastic that is nevertheless robust and water-resistant. Alisha was able to use her success in getting this grant proposal funded to help leverage her into a permanent position, and has been working intensely with the confocal since then — she describes it as “a dream come true.” This instrument

has given her chance to directly image cells on substrates, validating the conceptual schematic she’s been working with for years, while also enabling her to be a full partner in collaborations. As a result, Alisha has submitted a number of grant applications that focus on integrating models with experimental data from the microscope.

Of course, the four of us are at Olin because we are deeply involved in undergraduate education, and student ability to access this equipment was one of the major aspects of our proposal. To this end, Rebecca, Alisha and Zhenya developed a new microscopy course, of which learning to use the confocal imaging technique was the centerpiece. Student projects have included examination of water-oil emulsions, wheat bran, water bears, neurons, and elodea (an aquatic plant), as well as discovering as-yet unidentified helical structures in Tabasco® sauce. A few student researchers have been extensively trained on the microscope and can use it unsupervised, which routinely elicits disbelief from our colleagues at other institutions, who can’t fathom that, not only are some of our undergraduates allowed to work alone with a half a million dollars of delicate equipment, but that they also can produce compelling research.

Looking back, we can’t describe with certainty all factors that led to our success, both in terms of being awarded funding and our resultant activities with the confocal microscope. We can, however, say that the confocal microscope has given us a number of new pathways towards being role models to many Olin students, especially women. We have continued creating and re-creating our curricular and pedagogical models with the goal of recruiting and retaining women at Olin, especially those interested in our research fields — soft-condensed matter and biological engineering. We have generated an even warmer climate (mostly figuratively, but occasionally literally when the microscopy lab starts getting stuffy after hours of use!) for our many students interested in bioengineering and the biological sciences, the majority of whom are women. And the four of us, together with our students, continue to defy the masculine worldview of science and engineering with which many students, of both genders, arrive on campus. With our love of research and teaching, ‘can-do-it’ attitude, and the amazing energy that our team generates, we are just getting ready to reach new heights.

Are you looking for a graduate school that is “female friendly”?

Check out the results of an informal survey and read what departments say about themselves at:

www.aps.org/programs/women/female-friendly/index.cfm



Ya Li

“There are a lot of women working in the lab and studying science at the University. But from my own situation, I can see obstacles for women to focus on physics research or teaching, especially when they have children.”

Blewett Scholarships Awarded, *continued from page 2*

With no family in the area, it is difficult to arrange traditional child care for their three young children.

“I was really overwhelmed by this situation and so I took 2 years leave from research, I didn’t finish my PhD thesis work. But I really wanted to go back to physics; I didn’t want to take too long of a leave to keep me from coming back,” she says.

Ya remarks, “There are a lot of women working in the lab and studying science at the University, women are very active in physics. But from my own situation I can see obstacles for women to focus on physics research or teaching, especially when they have children.”

Hildred M. Blewett was a particle accelerator physicist, whose compassion and dedication to physics prompted her to make a generous bequest to APS after her death in 2004, at age 93. Her intent was to help women overcome some of the many obstacles they face in the field by providing financial assis-

tance in the form of scholarships. Originally born in Canada, Blewett began her career at General Electric (GE) in Schenectady New York, in the 1940s, a time when women physicists were scarce. The few who entered physics were widely discriminated against. With little or no support, women researchers could expect an inimical and lonely working environment.

While at GE, Blewett maintained her drive and intellectual strength; there she developed a method of controlling smoke pollution from factory chimneys. In 1947 a young Blewett moved to Brookhaven National Laboratory, where she and her then husband John Blewett, were among the original team members. Blewett later worked at Argonne National Laboratory, and then at CERN in Switzerland. She retired from CERN in 1977 and relocated to Vancouver.

CAREER CORNER

Question: How do I switch from physics to patent law?

Answer: This may be the easiest career transition available IF (and this can be a big if) you really like to write about technical subjects. Practicing patent law requires spending many hours a day drafting letters, patent applications, and similar materials. Patent lawyers do virtually no “technical” work such as programming, calculating, setting up experiments and the other familiar tasks of the practicing physicist. If that sounds good to you, then start calling patent law firms and tell them you want to talk to them about working in patent law. Most large firms and many smaller firms are constantly on the look-out for new talent.

Physicists can be very valuable to patent law firms because their expertise can be applied to many different fields and they can work in several different capacities. Without any additional credentials, physicists can be hired as technical advisors who assist attorneys in preparing patent applications. Spending a few months studying for (and passing) the patent bar

exam administered by the United States Patent and Trademark Office (USPTO) qualifies you to practice as a patent agent. Agents can prepare and prosecute patent applications before the USPTO, but can’t litigate or become a partner in a law firm. For that, you need a law degree, which takes three years of full-time study in law school or 4-5 years of night school. Even if our long-term goal is to be a lawyer, starting as a technical advisor has many advantages. You will gain valuable experience and in some cases law firms will foot the bill for law school. At the very least, they will be very understanding about the burdens placed on part-time law students and they will likely hire you as an attorney when you are done.

This column is brought to you by the APS Committee on Careers and Professional Development. Comments? Additional career-related questions? Send them to careers@aps.org.

SPS Plans Lecture Series on Women in Physics

By Ramona Valenzuela, Florida International University

The Society of Physics Students (SPS) at Florida International University (FIU) recently renewed its chapter membership in the National Society of Physics Students as a commitment to involvement in the physics community. A major topic that concerns us is the role of women in physics. Large disparities in gender, as well as underrepresented groups, in physics departments nationwide is cause for concern. We plan to work towards bridging the gap in gender ratios in physics through educating our undergraduates and providing role models for underrepresented groups, as well as opportunities for mentorship and inspiration. Due to several factors, it can be difficult for an undergraduate to pursue their education without a mentor, especially considering the lack of role models for underrepresented groups. In response to this crisis we have created a lecture series called Women in Physics, to do our part to help mentor and inspire the new faces of physics.

In the previous years, we have invited guest speakers from different disciplines in physics to introduce our undergraduate and graduate student communities to the world of physics and the many opportunities for research. Mentors and role models can inspire students to pursue fields of research, and the lecture series allows our student population to gain an idea of what it takes to be involved in the discipline.

Gary White, Director of the National SPS, was so impressed with our chapter's "recent boom in activity" that he visited FIU in the Spring of 2008 to speak about different career opportunities in physics. He discussed non-academic careers other physicists have taken, and he broadened our horizons as to what we can do with our degrees. He also showed us why it is not a good idea to throw away extra spandex which can be useful to model the dynamics of our universe. Seth Marder from Georgia Tech spoke about new material technologies, research with polymers, and how his research will lead to the new generations of television screens (less than three millimeters in thickness) that we can roll up and carry around in our back pocket. Jennifer Curtis, a biophysicist from GeorgiaTech, spoke about her experimental research with optical tweezers, models for complex polymer cellular networks, and shared her experiences as a new physics faculty member.

Invited speakers in our upcoming Women in Physics Lecture Series include Ted Hodapp and Monica Plisch, the Director and Assistant Director of Education and Diversity for the American Physical Society, and Beverly Hartline, Dean of the College of Mathematics, Natural Sciences, and Technology, Delaware State University. Other confirmed speakers are Ruth Howes, Marquette University, coauthor of *Their Day in the Sun: Women of the Manhattan Project*; Laurie McNeil, Chair of the Physics Department, University of North Carolina Chapel Hill; Nancy Forbes, an independent science policy consultant and writer; and our physics department's very own Caroline Simpson and



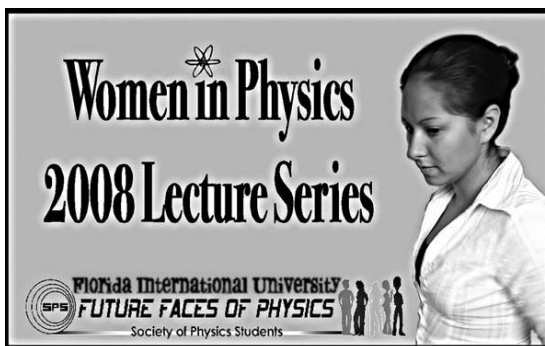
Yesim Darici. Topics will include issues women face in physics, resources for support in career development, the speakers' scientific careers, physics research, involvement in outreach and mentoring activities, and experiences in non-academic career paths.

We have many determined future female and male physicists in our department. Our hope is that they will become aware of issues that can affect women physicists and that they will gain insight on how to deal with them. Through the knowledge of what resources are available for support throughout their careers, our female and male physics students can work together to become well-equipped to deal with situations that could unfortunately arise regarding gender discrimination.

Learning how far our speakers have come in their individual scientific careers will serve to inspire both our female and male students alike.

In keeping with its commitment to help students transform themselves into contributing members of the professional physics community, the SPS National Council recently adopted "Future Faces of Physics" as the theme for the 2007-2008 academic year. With this theme, the council aims to raise visibility and focus on issues of student diversity in physics. Details at http://www.spsnational.org/news/2007/future_faces.htm.

SPS Chapter, FIU. *TOP ROW: Victor Maxwell, Raul Chavarria, Rahul Patel, Cristobal Ceron. BOTTOM ROW: David Jones, Idaykis Rodriguez, Denisse Olarte, Irene Perez, Ramona Valenzuela, Priscilla Pamela, Vashiti Sawtelle.* Photo by Eric Brewe.



Dr. Lin Yin to Receive 2008 Weimer Award

By Catherine Fiore, MIT, CSWP Chair



Lin Yin

Dr. Lin Yin of Los Alamos National Laboratory has been chosen to be the recipient of the 2008 Katherine E. Weimer Award. She was selected from a strong field of candidates and will be honored at the annual meeting of the American Physical Society Division of Plasma Physics (DPP) in Dallas, November 17-21, 2008. The citation is: "For major contributions to the understanding of instabilities and magnetic reconnection in space plasmas and of the physics of relativistic laser-plasma interactions through complex modeling."

Dr. Yin has been invited to summarize her research at the meeting, and the title for this presentation is "Instabilities and magnetic reconnection in space plasma and the physics of laser-plasma interactions" Dr. Yin has made very significant contributions to understanding the physics of magnetic reconnection, applying this to multiple space plasma physics problems such as slow-mode shock formation in the Earth's magnetotail as well as to studies of electron and ion kinetics during reconnection in electron-positron plasmas. More recently, she has studied non-linear laser plasma interactions and has done groundbreaking work in ion-beam generation through the interaction of ultrashort-pulse lasers with solid-density inertial fusion targets.

Dr. Yin earned her BS degree in physics in her native China before pursuing an MS degree at California State University at Northridge. She received her PhD from UCLA in late 1998 (thesis: *Plasma waves near the Earth's bow shock and in the distant magneto-*

tail) under the direction of Professors George Morales and Maha Ashour-Abdalla. Following postdoctoral work at UCLA on the dynamics of the Jovian current sheet, she joined Los Alamos National Laboratory as a Director's Postdoctoral Fellow. In 2001 she was promoted to Technical Staff Member in the Plasma Physics Group of the Applied Physics Division, where she has contributed to research on a wide range of topics. She has received recognition for her work in kinetic full-scale particle-in-cell simulations and in hybrid and Hall-MHD simulations that include the effects of the electron pressure tensor, collisionless magnetic reconnection, slow-mode shocks, kinetic Alfvén waves and more. She has published 24 first-author articles (53 refereed journal articles altogether). She has given 3 APS-DPP invited talks as well as one to the AGU. She has also received two DOE-NNSA Defense Program Awards of Excellence.

The award was established by the Division of Plasma Physics in 2002 to honor the memory of Dr. Katherine Weimer (1919-2000), a pioneering woman physicist at the Princeton Plasma Physics Laboratory. Dr. Weimer made many important contributions to understanding magnetohydrodynamic equilibrium and stability theory for magnetically confined plasmas. The award is presented every 3 years to recognize and encourage outstanding achievement in plasma science research by a woman physicist in the early years of her career. Previous recipients are Professor Yu Lin of Auburn University (2002) and Dr. Elena Belova of PPPL (2005).

Childcare Grants for APS Meetings

Sue Otwell, APS Staff

When a physicist is the primary caregiver, childcare responsibilities present an additional hurdle to attending APS meetings. At the same time, attending APS meetings is critical to career advancement, in terms of getting one's work recognized, learning about the work of others, networking, and participating in professional service.

Last year for the first time, the Committee on the Status of Women in Physics offered modest grants to assist parents with the extra costs associated with bringing a very young child to the March or April meeting or with arranging for extra care for a young child left at home.

The program was very successful, and the reactions from caregivers who participated were enthusiastic. Consequently, CSWP will again offer modest grants. Any parent wishing to take advantage of such assistance must submit a childcare application form, which will be available on the meeting website at www.aps.org/meetings/index.cfm. The amount of sup-

port requested must be justified up to the maximum available of \$300 per family. The meeting website will also provide an informal bulletin board for those interested in sharing childcare. The convention site/hotel will be asked to provide a list of childcare providers in the area, however neither the CSWP nor the APS will vet or endorse any specific provider and will assume no liability.

There will be a small unsupervised play area in the convention center (March) or the hotel (April) for parents/caregivers and children to relax (bring your own toys!).

All applications received by the deadlines will be reviewed by a subcommittee of the CSWP. If the number of requests for grants exceeds the funding available, preference will be given to applicants in the early stages of their careers.

Parents who are awarded the grants will be asked to submit an expense form and receipts after the meeting, showing that they did incur the expenses claimed.

Workshops Offer Professional Development Training for Women Post Docs and Faculty

The postdoctoral associate stage is generally thought to be one of the leakiest points in the pipeline for women physicists. It is also one of the least defined roles in the scientific community, yet among these young women are the future leaders of the field. In 2008, APS offered two workshops focused on post docs and junior, tenure-track women faculty. In 2009, the workshops will be offered for post docs and tenured women faculty, and in 2010, for post docs and women scientists in research facilities. Women of color are especially encouraged to participate.

Beginning in 2005, with the support of the National Science Foundation, APS launched a series of successful career development workshops held in conjunction with the annual meetings of the society. These were modeled on a successful outline developed by the Committee for the Advancement of Women in Chemistry (COACH). The workshops, which continued in 2006 and 2007, focused on first strengthening communications skills of the participants, and second on negotiating strategies for career advancement. Each workshop was aimed at a different population: tenured faculty, non-tenured faculty and finally at those in non-academic physics research. More than 160 women physicists have participated to date.

APS is again offering these sessions on communications and negotiations, this time with a focus on post docs. In 2009, the workshops will be offered on Sunday, March 15 (Pittsburgh) and Friday, May 1 (Denver) just prior to the APS annual meetings. The all-day workshops are conducted by professional facilitators and are limited to a maximum of 35 participants. Participants separate into two groups (post docs and women faculty) for the day's activities to allow them interact with each other and with the facilitators. Participants discuss a variety of case studies and are encouraged to bring their own experiences for discussion as well.

The atmosphere is intense and busy, but highly supportive. The facilitators provide one-on-one coaching as the participants practice negotiating for a new job with a prospective employer or communicating their point of view to a hypothetical committee. There is often much laughter as the day progresses and everyone has a chance to network and socialize at lunch and at the reception sponsored by CSWP at the end of the day.

Information on how to apply will be available on the CSWP website at www.womeninphysics.org in October. This current series of workshops is supported by Award 0752540 from the National Science Foundation.



Jane Tucker and Ernestine Taylor, facilitators



Facilitator Barbara Butterfield and Lamya Saleh



Judy Franz (left) with participants.

“This has been an incredibly empowering experience! Workshops of this sort will make a gargantuan difference in the lives and careers of very many women scientists. Thank you very much for giving us the opportunity for growing, learning, strengthening, and finding a new sense of self-esteem, power and ‘can do’ attitude!”

—a faculty member

“It helped me in knowing my strength and improving it and to know my negative and to overcome it. Thank you for this wonderful experience!”

—a post doc

During their funding year, the recipients used their money for whatever would help most, for example, to hire a manager, data collector, graduate student, postdoc, or lab technician.

The Problem with Low Statistics, *continued from page 1*

minorities. I believe this is the right approach. Almost half of high school physics classes are populated by young women.⁵ We teach many undergraduates in our introductory courses. Our “gateway courses” should bring people into the physics major.

One difference between medicine and law on the one hand, and physics on the other, is that many men and women want to be doctors and lawyers. Few men, and many fewer women aspire to be physicists. Physics departments need to make it easier for students, while they are in college, to decide to become physics majors. There aren’t many 18 year olds who are entirely sure what they want to be their major course of study. And not many of that subset are still in the same major program at age 20. Good doctors and lawyers don’t come just from the biology and history tracks. Some come from physics! We need to make sure that the entry to the physics major is just as open as the medical and law tracks are.

I can do my own low statistics analysis of my daughter’s high school graduating class. Thirteen students of the approximately 450 graduating seniors had a high school GPA of 4.0. Eleven of them were young women. The physics program should be available to bright students with many interests, not only the students signed up for Physics 1 on day 1.

1 From the Association of American Medical Colleges website <http://www.aamc.org/members/wim/statistics/stats07/start.htm>

2 From the American Bar Association website <http://www.abanet.org/legaled/statistics/charts/stats%20-%206.pdf>

3 See S. Towers, *A Case Study of Gender Bias at the Postdoctoral Level in Physics, and its Resulting Impact on the Academic Career Advancement of Female*, arXiv:0804.2026 [physics.soc-ph] for one view.

4 <http://tierneylab.blogs.nytimes.com/2008/07/23/sex-bias-and-data/>

5 From the American Institute of Physics statistics <http://www.aip.org/statistics/>.

AAPT Committee on Women in Physics Sponsors Variety of Activities

By Brian A. Pyper, PhD, Brigham Young University-Idaho, AAPT Committee on Women in Physics 2008 Chair

The AAPT Committee on Women in Physics is happy to promote what we hope will be a regular addition to the Gazette reviewing some of our activities. The Committee meets twice each year in conjunction with the AAPT annual winter and summer meetings to review recent activities, plan sessions for upcoming conferences, and invite interested friends to get involved in the committee’s work.

At the AAPT winter meeting in Baltimore we sponsored several sessions of general interest that were well-attended. Sessions on Women in Science Policy and Issues in Equity were popular and informative. We also sponsored a workshop on Negotiating a Career in Science by Marina Milner-Bolotin from Ryerson College. The summer meeting in Edmonton,

Alberta, July 23 -26, 2008, showcased several very good talks in sessions sponsored by the committee. A session organized by Marina again highlighted the work of Canadian Women in Science, and a session we co-sponsored with the AAPT Graduate Education Committee on Hot Topics in Geophysics was also interesting and popular.

We are looking forward to the AAPT Winter 2009 Meeting to be held together with AAAS in Chicago Feb. 12-16 and the Summer Meeting to be held July 25- 29 in Ann Arbor, Michigan. Since the US delegation to the IUPAP meeting in Seoul will have returned by then, we are planning a jointly-sponsored session in Chicago reporting on the IUPAP proceedings. We’ll hope to see you there!

New! *Career Development Speaker Travel Grant Program to provide assistance to physics departments that are trying to increase their career development activities and to raise the career awareness of students seeking undergraduate and graduate physics degrees.*

The Committee on Careers and Professional Development will reimburse up to \$600 for one of two speakers invited to give presentations at colleges or universities on topics concerning careers in physics. Act quickly as there are a very limited number of Travel Grants available!

For more information and to fill out the online application, please visit www.aps.org/careers/educator/travelgrant/index.cfm

ASK THE PHYSICS MENTOR

Mary Hall Reno, University of Iowa, is the Physics Mentor for this issue.

My university extends the tenure clock for childbirth or adoption for both men and women. I am ambivalent about taking the offer of an extra year, in part because it is an administrative policy not to mention the clock extension to outside tenure reviewers. I worry about how that year will be viewed by my referees. Are there risks that by taking the extra year, I would be held to a different standard than if I went up for tenure at the usual time?

Answer: Your question is a good one. I'm not sure I have a good answer. In my view, if the opportunity to extend the maximum appointment before tenure is offered, accept now and decide whether or not to use the extra time later. At my university, the extra year is automatically allotted. Most institutions allow a faculty member to request consideration for tenure early. If the extra year, or in some cases, two years, make a difference in presenting a strong tenure dossier, then use all the time. But if you don't need the extra time, don't use it just because it is available.

Could using the extra time on the tenure clock work against you in the tenure deliberations? Most institutions make explicit in internal documents the policy that tenure candidates with extended tenure clocks should not be held to a higher standard than candidates proceeding on the usual schedule. It is less common to make this same explicit statement to external reviewers. This omission worries me because external letters reflect the prevailing culture of the field, and tenure clock extensions are not historically the norm. Unintended bias may be hard to spot in letters of review.

The question of disclosure to external reviewers

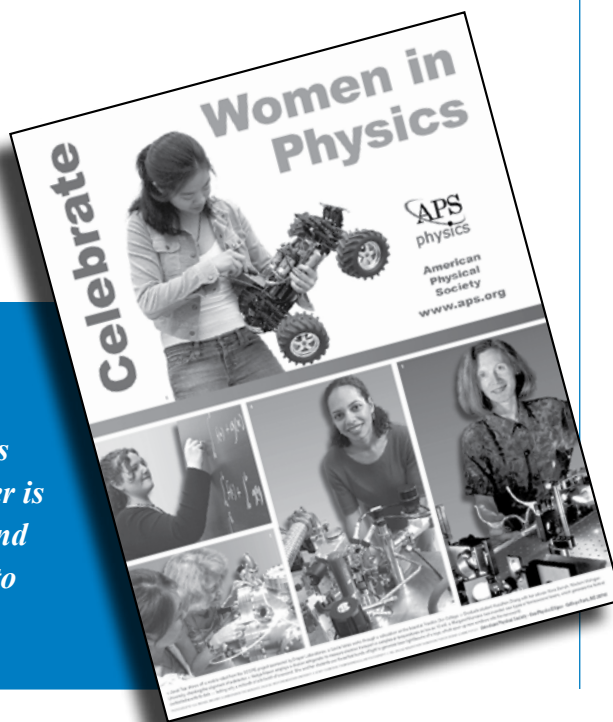
is one of the issues addressed by the Work Life Law Center of UC Hastings College of the Law www.worklifelaw.org/. One of their ten model policies and practices to promote gender equity in academia is to "eliminate bias by clearly communicating policies to internal and external reviewers."

So I'm not answering your question directly. Instead, I advise you to talk to people you trust at your own institution. Find out the official policies already in place related to tenure, and with the help of your on-site mentors, learn about the unofficial policies as well. Meet with other faculty members who have taken (and not taken) the tenure clock extension recently and find out how it worked for them.

We invite our readers to weigh in on this and other career related questions.

Do you have a question for the Physics Mentor? Send it to women@aps.org. A member of the Committee on the Status of Women in Physics will offer suggestions in the next issue of the Gazette. No name, institution or other identifying feature will be attached to your question.

The Committee on the Status of Women in Physics has created a full color poster illustrating some of the exciting possibilities for young women in physics. The free poster is 16" x 20" and is available at no charge. Send a message to women@aps.org and be sure to include your full mailing address.



This may be your last issue of the Gazette!!

Dear Gazette Reader,

About 3 months ago, we sent an email out to our readers explaining that we are converting the APS Roster of Women and Minorities, which is also used as the Gazette mailing list, to a new web-based system. Although we used the old Roster mailing list for this issue of the Gazette, we will now begin using the new Roster system, which has been purged of outdated records. If you did not receive the email we sent out to you, your record may have been purged from our system and you will no longer receive the Gazette.

If you are a Gazette subscriber who did not receive an email from us, but who would like to continue receiving the Gazette, please visit www.aps.org/programs/roster/enroll.cfm to re-register and select The Gazette Mailing List as your Roster group.

Questions? Contact Arlene Modeste Knowles at roster@aps.org.

We'd love to keep you reading the Gazette!!

Enroll in the Roster of Women and Minorities in Physics Today

The APS Roster of Women and Minorities in Physics is a confidential database that contains the contact, educational, and employment information of hundreds of women and minority physicists. It is widely used by prospective employers to identify qualified women and minority physicists for job openings, and a host of other opportunities. The Roster also serves as the mailing list for the Committee on the Status of Women in Physics (CSWP) newsletter, the *Gazette*.

Enroll now at www.aps.org/programs/roster/enroll.cfm

Benefits of enrolling in the Roster:

- Receive employment notices (women and minorities only)
- Be a part of an extensive, searchable listing of women and minorities in physics. APS membership is not required
- Sign up to receive the *Gazette*, a CSWP newsletter chock full of information for and about women in physics
- It's 100% free

Institutions can use the Roster to:

- Broaden their job searches and advertise employment opportunities to women and minorities for a nominal fee
- Identify qualified candidates for awards, fellowships, colloquia, and more
- Conduct targeted searches

Anyone can enroll and receive the *Gazette* and other information related to women or minority issues. However, only women and minorities will be able to receive employment announcements.

Enroll now at www.aps.org/programs/roster/enroll.cfm

Have you moved? Changed jobs? Changed fields?

Take a moment to update your name/address/qualifications on the Roster of Women in Physics.

www.aps.org/programs/roster/enroll.cfm



The American Physical Society 2008-2009 Travel Grants for Women Speakers Program

Limited funding is available for the
2008-2009 academic year!
Apply online at
[www.aps.org/programs/
women/speakers/
travel-grants.cfm](http://www.aps.org/programs/women/speakers/travel-grants.cfm)

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 2008-2009 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/programs/women/speakers/enroll.cfm. 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/programs/women/speakers/travel-grants-app.cfm) 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 following page 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:
www.aps.org/programs/women/speakers/index.cfm.

Women physicists who would like to be listed on the Women Speakers List or those who would like to modify their existing entries can do so at:
www.aps.org/programs/women/speakers/enroll.cfm or see page 15.

APS has a companion program for minority speakers. Information on the Minority Speakers List and the Travel Grant Program for Minority Speakers can be found at:
www.aps.org/programs/minorities/speakers/index.cfm.

2008-2009 TRAVEL GRANTS FOR WOMEN SPEAKERS

◆ APPLICATION FORM ◆

This form is also available on the Internet at www.aps.org/programs/women/speakers/travel-grants-app.cfm

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: _____		
DEPARTMENT: _____		
ADDRESS: _____		
CITY: _____	STATE: _____	ZIP: _____
APPLICATION PREPARED BY (Required):		
NAME: _____	TITLE: _____	
PHONE: _____	FAX: _____	
EMAIL: _____		

Please list information on the speakers below and indicate if speakers' dates or talk titles are tentative.

DATE OF COLLOQUIUM: _____		
SPEAKER'S NAME: _____		
HOME INSTITUTION: _____		
HOME DEPARTMENT: _____		
ADDRESS: _____		
CITY: _____	STATE: _____	ZIP: _____
PHONE: _____	FAX: _____	
EMAIL: _____		
TITLE OF TALK: _____		

DATE OF COLLOQUIUM: _____		
SPEAKER'S NAME: _____		
HOME INSTITUTION: _____		
HOME DEPARTMENT: _____		
ADDRESS: _____		
CITY: _____	STATE: _____	ZIP: _____
PHONE: _____	FAX: _____	
EMAIL: _____		
TITLE OF TALK: _____		

Please return this form to:

Pahola Elder, 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

◆ ENROLLMENT/MODIFICATION FORM ◆

Additions/Modifications may also be made on the Internet at www.aps.org/programs/women/speakers/enroll.cfm
An online copy of the WSL is also available.

The *Women Speakers List* is compiled by the American Physical Society Committee on the Status of Women in Physics (CSWP).
The list is updated continuously online. 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: _____

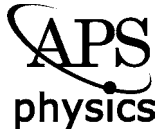
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For which audiences are you willing to speak? (Please check all that apply)

- Middle school High school General Audiences Colloquium

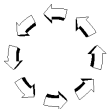
To register a new title, give the title as you want it to appear in the left column below. Then check the section(s) where it is to be inserted. To delete a title, indicate the title and check the appropriate box below. A limit of four total entries will be imposed. You may use additional pages if you 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.

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Committee on the Status of Women in Physics
One Physics Ellipse
College Park, MD 20740-3844

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