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Northwest Conference on Undergraduate Women in Physics

The Physics Department organized and hosted the first annual Northwest Conference on Undergraduate Women in Physics at the UO Center in Portland on April 14-15, 2011. The UO College of Arts and Sciences and Office of Equity and Institutional Diversity provided financial support for the conference. An energetic group of over 50 female physics majors from community colleges, colleges, and universities in the region heard research talks, viewed undergraduate research posters, participated in panel discussions, and networked with fellow female physicists. UO Physics students Liza Brost, Vasha Dutell, Susan Kasper, Courtney Klosterman, Kendra Nyberg and Jimmy Utterback organized the conference, with help from the physics office staff and Department Head Steve Kevan.

UO Physics alum Stacey Sorensen, who earned her PhD in 1989 with Bernd Crasemann and is now on the faculty at Lund University in Sweden, gave the keynote address to the conference, threading an interesting perspective on life as a female scientist with synchrotron radiation physics and inner shell atomic processes. Dr. Gertrude (Gert) Rempfer from the Portland State Physics Department joined the group for lunch and open questions. This accomplished physicist and role model made seminal contributions to the development of modern electron microscopes. We were saddened to learn that Dr. Rempfer passed away earlier this year at the age of 99.

As was our intent, this year the Northwest Conference on Undergraduate Women in Physics linked with a network of similar conferences held over the Martin Luther King weekend at half a dozen sites across the country. The Northwest Conference on Undergraduate Women in Physics at the age of 99.

As was our intent, this year the Northwest Conference on Undergraduate Women in Physics linked with a network of similar conferences held at half a dozen sites across the country. The Northwest conference was hosted by the University of Washington and had over 80 attendees, several from our Department.

Message from the Department Head

The most important part of being a Department Head is hiring excellent new faculty. This has been particularly true recently as we entered a decade in which nearly half of our faculty are likely to retire. Guided by an updated strategic plan, we have hired three new assistant professors in the past two years: Eric Corwin, Spencer Chang, and Ben McMorrin. Stephanie Pollock, and probably another assistant professor and a new astronomy instructor, will be joining us soon, and we have requested to run two more searches in the 2012-13 academic year. These energetic new hires are rapidly changing the face of our Department, and you will be reading much more about their activities and accomplishments in upcoming issues of this newsletter. I look forward to keeping track of their progress in my new position discussed separately in these pages.

- Steve Kevan
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Bringing Science Awareness to Non-Science Majors

UO faculty have developed a multi-departmental Science Literacy Program (SLP) that will bring new approaches to general education science courses. Funded by a 1.5 million dollar grant from the Howard Hughes Medical Institute, the SLP aims to increase the level of science literacy among UO non-science majors by using teaching approaches that emphasize inquiry-based learning, actively engaging students in discovering concepts for themselves. The program is co-directed by Michael Raymer (Physics) and Judith Eisen (Biology) and spans the departments of Biology, Chemistry, Geological Sciences, and Physics.

The SLP hopes to inspire non-science students to understand the importance of science in their lives, and to civilization and culture. One primary goal is to motivate students to keep up with science related issues in the media after college.

The program also serves to train and mentor graduate students and undergraduates who serve as co-instructors. Science faculty partner with student co-instructors to design interdisciplinary courses that incorporate active learning and inquiry based methodologies. After co-developing and co-instructing a course, “The Physics Behind the Internet,” undergraduate physics major Daniel Lincoln said, “I liked the satisfaction of having just presented a lecture clearly and understandably. It’s similar to the joy of having just presented a part in a play, but with the added satisfaction that, perhaps, the audience will understand what you love a little clearer.”

Interdisciplinary courses being offered through the program include Scientific Revolutions (Physics and Geology), Information, Quantum Mechanics, and DNA (Physics and Chemistry) and Science, Policy and Biology (Biology and Chemistry). In 2011-12, the SLP organized the Science Literacy Teaching Journal Club and hosted workshops in science pedagogy by visiting experts.
Simons Selects John Toner

John Toner

moves. Constantly dying and being replaced as the swarm which may contain millions of individuals that are for many other organisms that flock, such as bacteria, Josephson junction arrays and supersolids. Including physics includes, in addition to flocking, liquid to air in public. Everyone learns from his interactive inquisitiveness. John believes no question is too naïve Toner is known in the UO Physics Department as a basic sciences and mathematics. Marilyn Simons to advance the frontiers of research in theoretical condensed matter style.

2012-13 sabbatical, spending the fall at IBM Yorktown Foundation has selected Toner for a fellowship in recognition of his pioneering work, the Simons.

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Toner is known in the UO Physics Department as a particularly active member of the weekly colloquium audience, welcoming all invited speakers with his inquisitiveness. John believes no question is too naïve to air in public. Everyone learns from his interactive style.

Toner’s research in theoretical condensed matter physics includes, in addition to flocking, liquid crystal and superconducting glasses, novel phases of Josephson junction arrays and superlattices. Including birth and death within his theory is also important for many other organisms that flock, such as bacteria, which may contain millions of individuals that are constantly dying and being replaced as the swarm moves.

Alumnus Profile - Gene Ice

Gene Ice, PhD 1977, is currently director of the Materials Science and Technology Division of the Oak Ridge National Laboratory and Editor of the Journal of Synchrotron Radiation. An avid kayaker, he was attracted to Oregon both by the Physics Department, and by the location of the U of O along the Willamette River. He joined Professor Bernard Grasman’s studies of x-ray scattering from molecular hydrogen, working with a new synchrotron hard x-ray source at Stanford. This ultimately spawned in Gene’s PhD thesis - the third thesis to arise from work at the new source. While at Oregon, Gene met and married his wife of 33 years Rosalyn McKown. Gene worked with Gra-semann for another two years, before joining the Oak Ridge National Labor.

Miriam Deutsch, who joined the UO faculty in 2000, is now Associate Professor of Physics and Director of the interdisciplinary Oregon Center for Optics. Her research group investigates how light travels in complex nanostructured materials. Such artificially structured materials, called metamaterials, can exhibit strong optical nonlinearities as well as novel dispersive characteristics.

Miriam Deutsch - In Search of the Ultimate Sensor

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Miriam invented a new concept for ultra-sensitive sensing using metamaterials, and is beginning an NSF-funded research program to investigate it. When light travels in a metal-dielectric optical waveguide in close proximity to another material, extremely small changes in the properties of the material can give rise to large changes in light transmission. This ultra-sensitive scheme makes it possible to sense, for example, tiny changes of fluid flow rates in a micro-fluidics flow system. Such systems, in which fluids flow through tiny volumes where capillary forces can dominate, have the potential to revolutionize many areas of science and technology such as biology and fuel cell research.

Miriam is especially excited to bring knowledge from fundamental physics and optics research into an area where new measurement capabilities can be implemented in the wider world. She finds it enormously gratifying to see new ideas created by her research group develop into potentially important technologies that can positively impact society.

Miriam is also a science outreach innovator. Several years ago, she developed an educational program to create excitement in science among middle- and high-school girls. SPICE – Science Program to Inspire Creativity and Excellence – brings local students to the university for a week of hands-on explorations in science, followed by year-round activities. Investigations include calculating the speed of light with a microwave, chocolate and marshmallows in “S’Mores at the Speed of Light;” using spectroscopy to identify the mystery gas in the “Electrocuted Pickle;” and analyzing crime scene evidence with cabbage juice and fingernail polish remover. That’s real-world science!

Steve Kevan Appointed Deputy Director for Science at Berkeley ALS

Steve Kevan has been appointed as the next Deputy Director for Science at the LBNL Advanced Light Source (ALS), and will step down as department head at the end of June, to assume his new role in Berkeley July 1. Steve has a thirty-year association with the Advanced Light Source in Berkeley, a very productive synchrotron radiation facility that focuses in particular on soft x-ray research.

Steve’s association with the ALS began with its original conception by David Shirley. Steve’s thesis advisor, in 1982. Since then he has organized and attended countless related conferences, workshops, and other meetings. He cites his interest in developing a program at the ALS as the motivation for joining the UO faculty in 1987. His Oregon research group was one of the first to use the ALS in 1993 and he has served as an ALS Science Advisory Committee member since 1998. He now leads design and construction of a new coherent soft x-ray beam line and associated research program, to which he will add these new management responsibilities. Given the intensity of these activities, Steve comments that he finds his retirement being located in Berkeley for an extended period very attractive right now and the recently emptied nest at home has left him with the flexibility to make this possible. He plans to commute weekly between Eugene and Berkeley, so he will remain a familiar face around the Physics Department. The Department congratulates Steve on this step in his career, expresses appreciation for his excellent job of guiding our ship during the past five years, and wishes him bon voyage on his push into new “waters.”

You Can Support UO Physics

Have you wondered how to support UO physics students? It’s easy, through the University of Oregon Office of Development. To learn more, go to the physics web page: http://physics.uoregon.edu, and click on the “Give Now” link.