

Oregon State University

# PHYSICS NEWSLETTER

## June 1998

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### KEN KRANE TO STEP DOWN AS PHYSICS CHAIR

Ken Krane, who has headed the Physics Department since 1984, will give up his position as Physics Department Chair at the end of summer '98. The Department will miss his strong, enlightened leadership in difficult times at the University, during which both state and federal funding have suffered severe cutbacks.

Besides occupying what is usually considered a fulltime job as chair, Ken has maintained his research program in nuclear physics, has carried a substantial teaching load, has continued his work as a widely recognized physics textbook author, and has been president of the faculty senate. He has initiated a helpful mentoring program for physics graduate students interested in college teaching. Ken is looking forward to returning to full-time teaching and research this fall.

At the time of this writing, no one had yet been appointed to succeed Ken, but the new chair is expected to be chosen from present faculty members.

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### STUDENTS AND PROFS SURVIVE FIRST YEAR OF PHYSICS PARADIGMS

The new upper division curriculum is one (academic) year old. A class of Juniors has gone through the paradigms, the curriculum based on case studies which are not confined to a single traditional subject. As an example, the paradigm on central forces combines subject matter from classical, quantum, and mathematical physics. The paradigms are each three weeks long, but, with seven contact hours per week. they are quite intensive both for students and professors,

Another innovation of the paradigms is that they include a laboratory with computer experiments, physical experiments, and composition. Students have been enthusiastic about the paradigms, leading to improved retention, one of the principal goals of the new curriculum.

An objective evaluation of the paradigms is being made by experts from the Department of Science and Mathematics Education at OSU, and the Physics department will make comparisons of results on the graduate record exams for students coming through the paradigms with those who came from our earlier subject-based curriculum.

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## **NEW PROCEDURES IN OPTICS COURSE FOR TECHNICIANS**

Our HP outreach course, Ph 208, "Optics for Technicians", is going very well this term, according to Cliff Fairchild, who created the course and has been its instructor for the last two years. Cliff says, "We have brought the course to a higher level of quality by computer automation of two of the course's dozen or so experiments. These two experiments needed the improved measurement precision and data analysis provided by automation, and our students are enthusiastically supportive of the changes. Tim Taylor did nearly all of the hardware adaptations and computer programming needed for this computer automation."

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## **TIM TAYLOR WINS AWARD**

Tim Taylor, who is in charge of our physics demonstration program, has won the OSU Exemplary Employee Award for 1995-1996. A report on this award was missed in last year's newsletter, so we're making up for it in this issue. Those of you who know him may have some inkling of the enormous contribution that Tim makes to the running of the department. Thanks and belated congratulations, Tim!!

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## **MECOP NEWS**

Our Engineering Physics (EP) students continue to participate in OSU's engineering internship program. Besides receiving excellent experience and helpful contacts with Oregon businesses. MECOP interns are well paid at about 70% of the salary of an entry level engineer.

Kyle Schlueter, who is graduating this June with a Bachelor's degree in EP returned Spring quarter from his second internship, this one at ESI (Electroscientific Industries). Ben McMorrان, Diedrich Schmidt, and Sarah Svoboda are currently away on internships at Oregon Freeze Dry, ESI, and Planar Systems, respectively.

For 1998-89 six EP students, including four transfers from Oregon community colleges, have applied and interviewed for MECOP internships. They expect to be notified about acceptance into MECOP in late June.

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### **CLIFF FAIRCHILD AND VIC MADSEN RETIRE THIS YEAR**

Cliff Fairchild with 36 years of service and Vic Madsen with 35 will be retired at the end of this academic year. Cliff plans to continue his research and will be doing part-time teaching for awhile. Vic says that he will not continue teaching but will work on some research projects which he hasn't had time for the last three years, while working with the undergraduate major program.

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### **TERESA BURNS WILL BECOME PROFESSOR AT COASTAL CAROLINA UNIVERSITY**

Teresa Burns, who has been a teaching Postdoc in our department from 9/96 to 6/98, has accepted a tenure track position as Assistant Professor of Physics at Coastal Carolina University in Conway, S.C. Teresa, who received a Carter award nomination in 1997 for undergraduate teaching, takes with her outstanding skills as a teacher. Her presence will be a definite asset to her future department.

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### **RUBIN LANDAU AND BILL WARREN RETURN FROM SABBATICAL**

In January, Ruben Landau returned from a year long sabbatical at the University of California, San Diego. He spent roughly half his time at the San Diego Supercomputer Center (SDSC) and half at the Institute for Nonlinear Science (INLS). While at SDSC, he worked on several projects related to computational science education, and used their state-of-the-art facilities to complete a text book. The book, Computational Physics, Problem Solving with Computers, is based on the course of the same name in the department, and is co-authored with one of the department's

former PhD students, Manuel Paez (now a Professor of Physics at the University of Antioquia in Medellin, Colombia, SA). Some of the work Rubin did at SDSC was explorations into ways to enhance the book using the multimedia capabilities of the World Wide Web.

Rubin's research at the Institute for Nonlinear Science was an interdisciplinary project which used techniques and tools derived from nonlinear dynamics (a course he has been teaching at OSU) to analyze human brain wave pattern. The patterns were recorded using the most advanced magnetic encephalograph, some 72 superconducting quantum interference devices attached to a helmet. The analysis used nonlinear techniques familiar from pattern recognition in oceanography to determine the effectiveness of yoga treatment for people suffering from obsessive compulsive disorder.

About his sabbatical Bill Warren says, "I was on sabbatical leave during Winter, Spring and Fall 1997. The first two months were spent at the Institute of Solid State Physics of the University of Tokyo where I was involved in NMR experiments on unusual magnetic oxides and in high precision magnetic susceptibility studies of donors in silicon. The remainder of the year was spent in Germany where I divided my time between Marburg and Giessen Universities. In Marburg I worked mainly on the completion of a book with coauthor F. Hensel in the properties of fluid metals near their liquid-gas critical points. In Giessen, I did electron spin resonance experiments on donors on silicon, complementing the susceptibility studies done in Tokyo."

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### **CORINNE MONOGUE BRINGS DAUGHTER TO WORK**

Alyssa Dray shadowed her mother, Professor Corinne Manogue, on "take your daughter to work" day, 4/23/98. According to Corinne, Alyssa learned to multiply  $i$  and  $j$  of octonian algebra before she could multiply 2 times 3. In the meantime, she has learned to multiply 2 times 3.

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### **AMY DROEGEMEIER ACCEPTS POSITION AT TRIQUINT**

Amy, an MS student working with Janet Tate, will soon take a position as Reliability Engineer at TriQuint Semiconductor in Hillsboro. TriQuint Semiconductor designs, develops, manufactures and markets high-performance digital, analog, mixed-signal and radio-frequency gallium arsenide intergrated circuits (ICs) for customers worldwide. She'll be starting June 22.

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## OUR RECENT PHD'S

**Bianca Hermann** (MS 92, Tate) recently completed a PhD in Physics (with distinction) at the Freie Universitaet Berlin. She has a postdoctoral position at the University of Basel in Switzerland, where she will do her Habilitation. Bianca recently married Peter Haier, 5/98.

**Goran Karapetrov** (PhD 96, Tate) is a postdoc at Argonne National Laboratory.

**Brandon Brown** (PhD 97, Tate) is completing a 1-year course in Science Communication at UC Santa Cruz, and has done radio and magazine reporting. He has a one-year fixed-term appointment as Asst. Professor at University of San Francisco.

**Irene Dumkow** (PhD 98, Tate) is a postdoc at the Max Planck Institut fuer Festkoerperforschung in Stuttgart, Germany.

**Tom Swanson** (PhD 96, McIntyre) completed a two and one half year postdoctoral position at Triumpf at UBC, working on trapping of radioactive potassium atoms for nuclear symmetry experiments. In June he will be starting another postdoctoral position at the U.S. Naval Observatory in the Washington, D.C. area. The project is building a cesium fountain atomic clock.

**Ernesta Meintjes** PhD 98, Warren) is now a post-doctoral fellow in the Department of Biomedical Engineering at the University of Cape Town, South Africa. She will be working in "functional neurosurgery," helping to develop magnetic resonance imaging techniques that permit real-time 3D imaging during brain surgery.

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## ALUMNI NEWS

As a result of last year's mailing we can report the following news on OSU Physics and Engineering Physics alumni:

**Russ Altermatt**, BS in Engineering Physics, 1971, is a project manager in Altermatt Associates, an acoustics consulting company specializing in architectural acoustics in Portland.

**Anupama Bhat**, BS in Physics, 1993, is a graduate student working on a PhD in Electrical Engineering at the University of California at Berkeley. From 1993 to 1995 she worked in the Ink-Jet Business Division of Hewlett-Packard in Corvallis.

**Theron Bradley Jr.**, BS in Physics 1969, is the manager of the Naval Reactors Idaho Branch Office. He is responsible for operation, testing, training, and maintenance for four nuclear reactor plants and a sizable nuclear fuel R&D and handling facility,

**Matt Brewster**, BS in Physics 1995, is a graduate student in astronomy at the University of Arizona studying molecular spectra in the laboratory as a calibration for detection of the same species in astronomical observations.

**Douglas Buettner**, BS in Physics, 1988, MS in Physics, 1991, is a contract consultant for the Jet Propulsion Laboratory working on innovated computer automation solutions of high temperature and pressure autoclave. Likewise, for the CMDL (Capture Media development Lab), which created the silica-aerogel for insulating panels for the Mars Pathfinder flight experiment. Previously, he worked for Northrop Aircraft Division. Currently he is working for Xontech as a technical analyst.

**Steve Casebolt**, MS in Physics, 1973, worked for Boeing as a flight control Engineer for five years. He is currently Physics teacher at Lawrenceville School, in NJ.

**Mark DelGrande**, BS in Physics, 1985, who also received an MS in Physics at the Air Force Institute of Technology (AFIT), has worked at the Air Force weapons laboratory, the Lawrence Livermore National Laboratory, and has been a professor at the Academy. He is currently pursuing a PhD degree in nuclear engineering at the AFIT.

**Joseph T. Elliot**, MS in Physics, 1989, is working as a motorcyclist safety instructor in California.

**Troy Freeman**, BS in Physics, 1991, is a Sales Manager for the western US for the Mott High Purity company.

**Jonathan Hanson**, MS in Physics, 1974, PhD in Geophysics, 1977, is a technical consultant for the mining and oilfield drilling industry. He previously worked at Lawrence Livermore National Lab and Terra Tek, Inc.

**Steven Hill**, BS in Physics, 1994, works in customer service for Northcoast Electric in Portland, a company which supplies automation equipment to manufacturing companies.

**John Holeman**, BS in Physics, 1996, has worked for Mitsubishi Silicon in Salem but recently returned to OSU to pursue graduate work in computer science.

**James Jacobs**, BA in Physics, 1983, who received an MS and PhD at the University of Washington in 1983 and 1991, respectively, is an Associate Professor at the University of Montana in Missoula.

**Michael Allen Lambert**, B.S. in Engineering Physics, 1989, went on to graduate school at UC, Davis, CA., receiving a PhD in Engineering Applied Science in 1996. He works in the Center for Applied Scientific Computing at Lawrence Livermore National Laboratory, where he is a computational physicist. He says that his interest in numerical methods grew from his experiences in OSU courses in Physics taught by Henri Jansen and in math courses.

**Michael Morgan**, MS in Physics, 1991, is a member of the sales force for North Santiam Veneer, Inc. He says that his physics training has helped him do some quantitative analyses involved in his work.

**Mark Mulvey**, BS in Physics, 1995, works for Computer Science, Inc, in the doing electromagnetic testing of military aircraft at Edwards Air Force Base in California.

**Richard Nisely**, PhD in Physics, 1971, is a Senior Analyst for Science Applications International Corporation (SAIC) in Virginia. He leads a group of analysts supporting the system engineering of advanced sensors for military applications.

**Howard F. Savage**, BS in Physics, 1950, who also received an MS in physics from the University of Washington, has retired from NASA's Ames Research Center. He has five children including one PhD, three Master's degrees and one BS.

**Joseph Smith**, B.S. in Physics, 1996, works for Precision Measurement and Instrument Corp. in Philomath, OR.

**Sue Ellen (Dalien) Sprute**, BS in Physics, 1981, who also received an MS in Electrical Engineering from Arizona State, has worked for Jet Propulsion Laboratory, Motorola, and as an independent contractor for Orbital Science Corporation, where she was in charge of software for the GPS tracking weather Balloon system. She took last summer off to be with her 3 children but expected to return to work in the Fall.

**Amy (Spofford) Stevenson**, BS and BA in Physics, 1994, will soon receive an MS in Physics from the University of New Mexico, where, with the help of Rubin Landau and the Albuquerque Reserch Center, she organized a course in Computational Physics. She and her husband Eric have moved to Maui, where Amy has a job in a Supercomputer Center which is run jointly by the department of Defense and University of New Mexico. Eric hopes to teach Chemistry, probably in high school,

**William Richard Stride**, BS in Physics, 1988, has worked as a computer programmer in the Boston Area and is now a cabinet maker. He would like to hear from people who knew him at OSU (Call, write, or email the Physics Department for the address).

**Gayle Tanner**, BS in Physics and Engineering Physics, 1996, just finished her first year as a molecular-biology graduate student after transferring from Harvard to Princeton, where she is working on computational neuroscience. Gayle and alum Andy Wittenberg (see below) are planning to marry (each other) this June.

**Andy Wittenberg**, BS in Physics, 1995, has completed his third year of graduate school at Princeton, where he's building a computer model of the tropical Pacific Ocean and atmosphere. The eventual goal is to understand the decade-to decade changes in the behavior of El Nino.

***Douglas Wolfgram***, BS in Engineering Physics, 1979, is president of GRAFX Group, Inc., an interactive marketing company in Southern California. He also founded Healthcare training systems, which provides interactive training via the Internet to hospitals, labs and healthcare facilities around the world.

***Keith Wrolsted***, BA in Physics, 1965, who also received a PhD in Geophysics from OSU in 1978, works for Unilocal Geotechnology Division doing seismic modeling.

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