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# Physics

Volume 1, Issue 1, January, 2007

## Letter From the Chair

Dear Friends,

It has been many years since we have distributed a newsletter, and as a result we have quite a few things to share with you.

Since our last newsletter in 2000, six new faculty members have joined the department. You will find a short description of these outstanding new professors later in this newsletter. The Department has not grown, however, since several faculty members have retired. These retired faculty members are John Gardner, David Griffiths, Carl Kocher, Ken Krane, Rubin Landau, Phil Siemens, Al Stetz, and Allen Wasserman. Currently, Ken Krane, Rubin Landau, and Al Stetz are still active in the Department on part time teaching and/or research appointments. I can assure you, however, that hiring these young faculty members in the Department resulted in an infusion of new enthusiasm! We are currently advertising for another faculty position.

A sad change to report is the passing away of several emeritus faculty members. David Griffiths will be truly missed, and it is too unfortunate that he was not able to enjoy his retirement very long and to fulfill all plans he had made. Please see the obituary written by Rubin Landau in this newsletter. Also, Mel Cutler (retired 1988) and David Burch (retired 1989) passed away.

We report two first occurrences. We are now awarding BS degrees in Computational Physics; the first graduate was Jon La Follet. We are also awarding MS degrees in the Professional Science Masters program; the first graduate was Lisa Eccles.

Physics is newsworthy even to the general public. Viktor Podolskiy was just featured on KEZI news, where he described his work towards faster optical communication. John Gardner was on KEZI news a while ago talking about his special printers for the visually impaired.

A former student, Steve Gass (1986 BS Physics) is profiled in Time Magazine, (May 15, 2006 pg A16) for his invention of the SawStop.

I wish everybody a great 2007, keep thinking physics!

**Henri Jansen**

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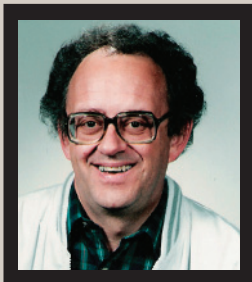
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Janet Tate's Laboratory

# Physics

## In Memoriam

### David John Griffiths



**15 June 1938 –  
15 January 2005**

Dave Griffiths passed away on January 15, 2005 at home surrounded by family after a brief illness. He had just retired from Oregon State University in June 2003 after 36 years in the professorial ranks and was looking forward to following many of his diverse and passionate interests.

David studied physics at undergraduate and graduate levels at the University of British Columbia in Vancouver, the city in which he grew up and whose hockey team he cherished. He received his Ph.D. in 1965 after research on radiation from oriented nuclei and optical Faraday rotation of parametric resonances in various materials. He then became a research fellow in the Department of Electrical Engineering at the University of Southern California, and was made a faculty member there after one year. David did original research on type II superconductors at USC until 1967, when he came to OSU.

While at OSU, David did research on a number of topics in solid state physics including superconductivity, amorphous materials, X ray diffraction, and the hypervelocity impact of small particles. He undertook research sabbaticals at Oak Ridge National Laboratory and at the National Research Laboratory in Saclay, France, and spent a number of summers working on the Stardust program at Jet Propulsion Laboratory. His research, seminars and work with graduate students displayed the clarity and depth of a thoughtful, well-organized and caring physicist who was enthusiastic about his work.

David taught classes at all levels, did not complain if the load was heavy or the subject was one he had not taught before, and was an excellent teacher in all. In some sense this is to be expected since he had the “gift of the gab”, a keen interest in most every subject, a true caring for people around him, and an infectious laugh that let everyone know that while he took his work most seriously, he did not take himself all that seriously. In 1978 he received the OSU Carter Award for excellence in instruction, in 1986 he received the Alpha Lambda Delta outstanding teacher award, and from 1986-90 he was a guest lecturer as part of the American Institute of Physics’ Visiting Professor Program.

As part of David’s strong commitment to community and university service, he was active in Corvallis politics, especially those dealing with land-use issues. He gave many hours to work with the Faculty Senate and other committees at OSU, including eight years in the Senate, two years on the Senate’s Executive Committee, and five years as chair of the Condon Lecture Committee. He also was a strong supporter of a faculty union at OSU, which he hoped would be a vehicle to obtain more leverage in discussions with the Administration regarding improved and more equitable salaries for all faculty, and not just the superstars.

On a personal level, David, with his combination of keen intellect and laughter that echoed down the halls, was a fun and rewarding person to be around. He read voraciously and diversely, and loved to discuss the latest books he was reading (especially when they revealed the historical proof of some conspiracy). He was as fundamentally good and responsible a person as could be found, and brought out the best in others. His children carry this spirit as their heritage, while we who knew him grieve the loss of his treasured friendship. There is a bench dedicated to David in the park near the historical end of Circle Boulevard, upon which one can sit and enjoy the beautiful view across the valley to the Cascades.

RHL

# Physics

## New Faculty

**Ethan D. Minot** will join the department in January 2007 as an Assistant Professor. He received his Ph.D. from Cornell University in 2004. His research focus is on the development of nanoscale biosensors using semiconducting carbon nanotubes. In pursuit of single-molecule sensitivity, he investigates interactions between charged molecules in aqueous solution and electron transport in single-nanotube transistor devices.

**David Roundy** joined the department in September 2006 as an Assistant Professor. He received his Ph.D. from University of California at Berkeley in 2001. His research concentrates on computation of electronic, mechanical and other properties of condensed matter systems including superconductors, nanotubes and defects in semiconductors. Currently, he is focusing on the creation of a classical density functional to describe water, and application of this approach to aqueous interfaces and systems in aqueous solution.

**Günter Schneider** joined the department in September 2006 as an Assistant Professor. He is an OSU Physics Department Alum; he received his Ph.D. in 1999. He studies properties of advanced materials and systems on the nanoscale using a variety of computational methods. Current research focuses (i) on the thermodynamics of metal clusters using Monte Carlo simulations with empirical and ab-initio potentials, and (ii) the study of transport in systems with reduced dimensionality and strong correlations using a real-time approach within the density matrix renormalization group.

**Oksana Ostroverkhova** joined the department in January 2005 as an Assistant Professor. She received her Ph. D. from Case Western Reserve University in 2001. Her research involves the Organic Photonics and Electronics Group which explores light-matter interactions in organic optical materials. Of particular interest are the basic physics of exciton and photogenerated charge carrier dynamics in organic semiconductors and inorganic-organic polymer nano-composites, photophysical and electronic properties of individual molecules in studies of complex environments, and applications of organic molecules in nanoscale electronic and all-optical devices.

**Viktor Podolskiy** joined the department in September 2004 as an Assistant Professor. He received his Ph.D. from New Mexico University in 2002. His research includes some fundamental problems of electromagnetism in composite media, development of new nanostructured materials, photonic devices, and interplay of optical phenomena on nano- and micro-scales.

**Yun-Shik Lee** joined the department in September 2001 as an Assistant Professor. He received his Ph.D. from University of Texas in 1997. His research focuses on terahertz spectroscopy and ultrafast carrier dynamics in semiconductors using femtosecond lasers. Major activities are (i) development of new schemes to manipulate terahertz (THz) pulses using optical rectification in nonlinear crystals (LiNbO<sub>3</sub>, ZnTe, and GaAs), (ii) optical and THz measurements at cryogenic temperature to investigate exciton dynamics in semiconductor quantum wells (QWs) under strong THz fields, and (iii) study of large amplitude motions in proteins via THz time-domain spectroscopy (THz-TDS) investigating the feasibility of using THz spectroscopy for biosensing and analysis. In May 2006, Dr. Lee was awarded tenure and promoted to Associate Professor.

# Physics

## 2005-06 Bachelors Degrees

### SUMMER 2005

**Daniel M. Noval**

BS, Physics/Engr Physics

### FALL 2005

**Joshua A. Clements**

BS, Engr Physics

### WINTER 2006

**Benjamin F. Burnett**

BS, Physics

### SPRING 2006

**Timothy M. Anna**

BS, Physics

**Kyle C. Augustson**

BS, Physics/Computational Physics  
Attending graduate school at University of Colorado, Astrophysics.

**Connelly S. Barnes**

HBS, Computational Physics  
Attending Princeton University, Computer Science.

**Micah J. Briedwell**

BS, Physics  
Working as an Electrical Engineer at Rockwell Collins.

**Philip C. Carter**

BS, Computational Physics  
Attending graduate school at Christopher Newport University, Computational Physics.

**Matthew W. Christensen**

BS, Physics

**Micah C. Eastman**

BS, Physics  
Attending graduate school Portland State University, Physics.

**Douglas J. Fettig**

HBS, Physics  
Attending graduate school at University of Rochester.

**Susan A. E. Guylor**

BS, Physics

**Nathan B. Paul**

BS, Physics

**Joseph W. Peterson**

BA, Physics  
Coaching a water polo team at a high school in Beaverton and preparing to apply for graduate studies in physics or medical physics.

**Zack Peterson**

BA, Physics  
Working for Bredero Shaw Oil, setting up a new quality control lab.

**James C. Sanders**

HBS, Physics

**Christopher S. Smith**

HBS, Physics

**Christopher J. Somes**

BS, Physics

**Joshua P. Stager**

BS, Physics

**Alison L. Stonekliff**

BS, Physics

**Brett A. Valenti**

BA, Physics  
Attending graduate school at Oregon State University, Mechanical Engineering.

**Brent M. Valle**

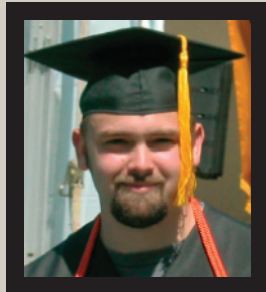
BS, Physics  
Attending graduate school at Case Western Reserve University.

**Roger H.C. Wong**

BS, Physics/Engr. Physics

# Physics

## COMPUTATIONAL PHYSICS PROGRAM FIRST GRADUATE



Jon La Follet, a computer whiz who wasn't sure he wanted to attend college after graduating from high school in a small Oregon logging town, has received Oregon State University's first Bachelor of Science degree in computational physics in June 2003.

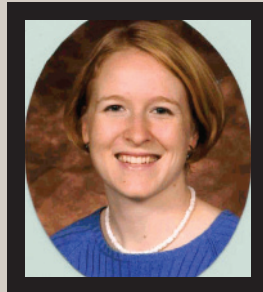
La Follet grew up and attended high school in Molalla, a town with a population of about 3,600 nestled in the foothills of the Cascade Mountains about 60 miles south of Portland.

La Follet attended Clackamas Community College in Oregon City for two years before transferring to OSU. He graduated with a double major in physics and computational physics.

"I don't really feel like a pioneer," said La Follet. "I actually didn't realize the computational physics curriculum was so new."

The degree represents a milestone not only for La Follet, 23, but also for the university, its pioneering physics professor Rubin Landau, and organizations such as the National Science Foundation and the National Partnership for Advanced Computational Infrastructure (NPACI), which supported Landau's efforts to establish the computational physics for undergraduates program at Oregon State University.

## FIRST PROFESSIONAL SCIENCE MASTERS GRADUATE



In September, Elizabeth ("Lisa") Eccles passed her final oral exam and became the first student to complete our new Professional Science Masters program in Applied Physics. The PSM program was designed specifically to prepare graduates for employment outside of academia. In addition to a core of graduate-level physics courses, the curriculum includes courses in business, communications and ethics. An off-campus internship replaces the traditional Masters Thesis or research project.

A graduate of Linfield College, Lisa began study in the OSU Physics Department in Fall, 2004. After completing her course work, she obtained an internship this past summer at the Jet Propulsion Laboratory (JPL) in Pasadena, California. The laboratory is affiliated with the California Institute of Technology and NASA. At JPL, Lisa worked with Dr. Charles Hays studying the effects of very low temperatures on the transmission of light through optical fiber cables. In addition to her work in the lab, Lisa had a chance to exercise her new business and communication skills when participating in a "real world" program review for JPL administrators.

Since September, Lisa has been employed as a Product Engineer by WaferTech in Camas, Washington. The Camas semiconductor "foundry" produces silicon chips for use in applications such as cell phones, computer monitors, and video games. She divides her time between "failure analysis," using tools like the electron microscope to find the mechanisms of chip failure, and "yield analysis," studying steps of the manufacturing process to identify problems that can lower the yield of marketable chips. She likes to compare her work to that of a detective on the television program CSI. Lisa reports that her new job is "certainly challenging which makes it very rewarding for a first job out of school!"

**Information on the Professional Science Masters Program in Applied Physics is available at <http://professionalmasters.science.orst.edu>.**

# Physics

Grad student Katrina Hay helps a 7th grader who is about to discover that atmospheric pressure can implode a soda can.

## Association for Women in Science (AWIS) workshop 2003

### "Discovering the Scientist Within"

OSU Department of Physics  
Photographs courtesy of Dara Easley;  
Demos set up by Tim Taylor.



Grad student Emily Townsend shows the 7th and 8th graders the harmonic in the musical tones they're producing.



So this is angular momentum?



Grad student Pom Wattanakasiwich reacts with delight as a 7th grader produces a loud note from a resonating glass tube.



# Physics

## CONTRIBUTIONS

Many thanks to the following donors whose generous contributions during between July 1st 2004 and June 30th 2006 helped fund faculty search and graduate student recruitment.

Mr. & Mrs. Daniel Allred  
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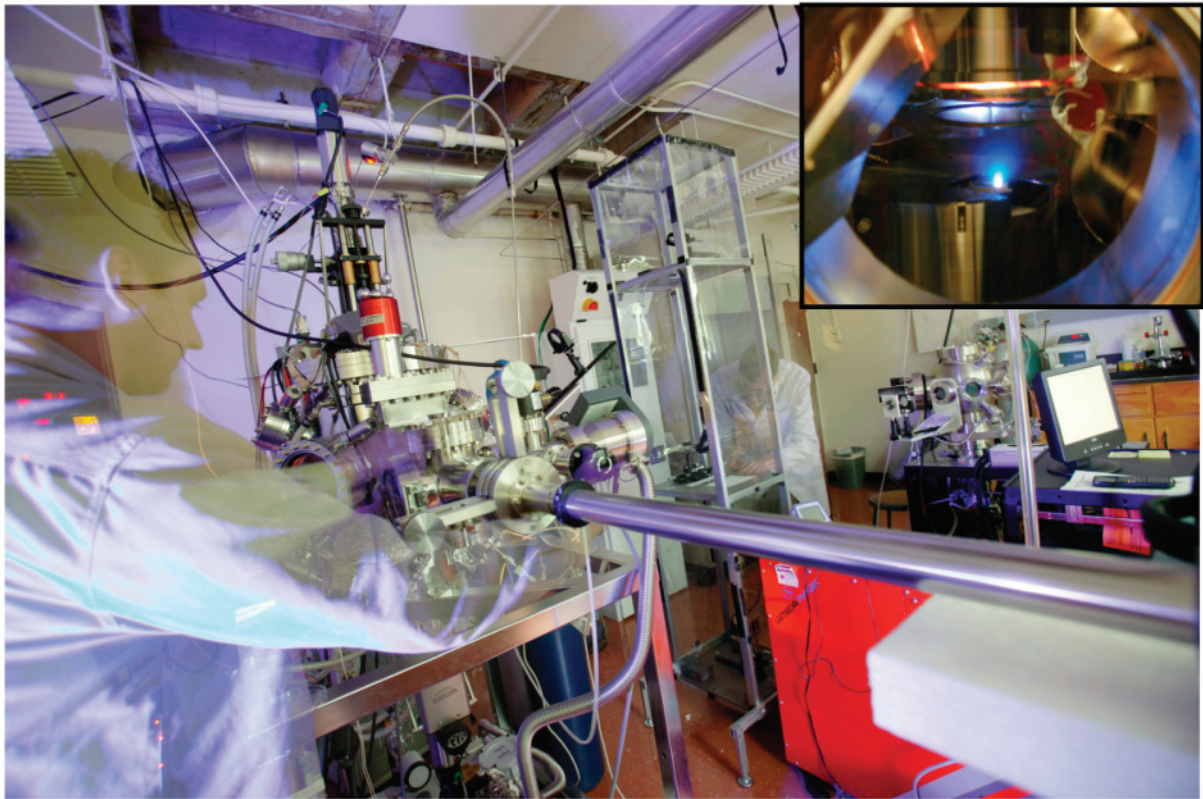
There are several ways you can support the Physics Department -

**Donations:** You can make donations of any amount to several different scholarship funds or to the general Physics Department fund.

**Speakers:** The grad students and the SPS are always looking for interesting and fun speakers, preferably OSU Physics graduates. Come and share where you have gone with your degree. It will serve to motivate current students!

Contact **Anne Ruggiero**, Director of Development  
College of Science, (541) 737-3603 for details on contributions

or contact **Paula Rhodaback** (541) 737-1681 to donate your time!



Janet Tate's laboratory recently acquired a second pulsed laser deposition chamber. The accompanying photograph shows graduate students Robert Kykyneshi and Paul Newhouse working with the deposition systems.