

RESONANCES

NEWS OF INTEREST TO FLORIDA STATE UNIVERSITY PHYSICS ALUMNI

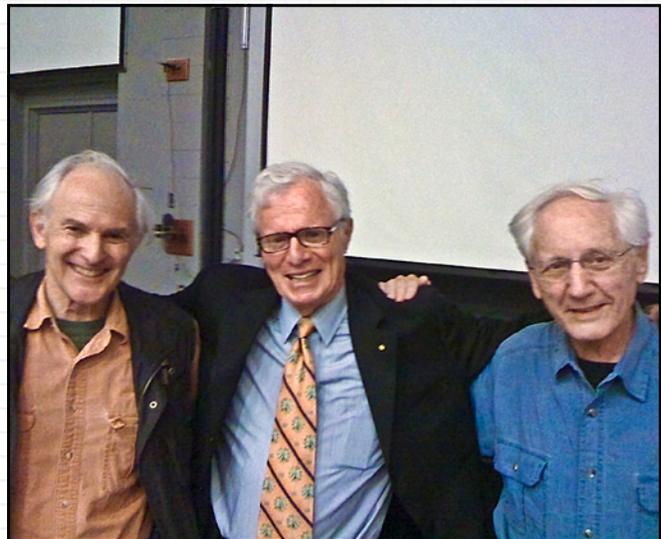
Spring 2011



A message from our chair

As always, it is a great pleasure for me to present to you the Department of Physics newsletter for Spring 2011. We have had another outstanding year and I hope you will enjoy reading about some of the highlights of our award winning faculty, staff, alumni, and students. Further details and other stories may be found on our webpage at www.physics.fsu.edu along with this and previous newsletters.

Undoubtedly one of the most enjoyable events of the past year was the return of one of our most famous alumni, Dr. Philip J. Wyatt, founder and CEO of Wyatt Technology Corporation. Philip obtained his Ph.D. in 1959 from FSU and was recently honored with the first APS Prize for Industrial Applications of Physics in 2009. On the 16th of September, 2010, he came home and gave a fabulous colloquium to a packed audience entitled "The importance of physicists in industry with examples from a personal odyssey." He spoke about "the unique role played by physicists in industry and the need to increase their numbers with particular emphasis on the great physics driven firms of the past." Photos from Philip's talk are given above. In the lower one he is arm in arm with Sir Harry Kroto (left) and Dr. Hans Pendl (right). Thanks to Dr. Kroto's team, a video of Philip's presentation is available at Harry's GEOSSET website: <http://geoset.fsu.edu/newPresentations.html> for everyone to enjoy.



Finally, thanks to Drs. Yang and Cao for compiling the newsletter and to Scott Baxter for putting it together.

Very best regards and please don't hesitate to drop us a line; we always love to hear from you. You can reach me directly at chair@phy.fsu.edu

MARK RILEY

Chair and Professor

Kemper receives major physics award

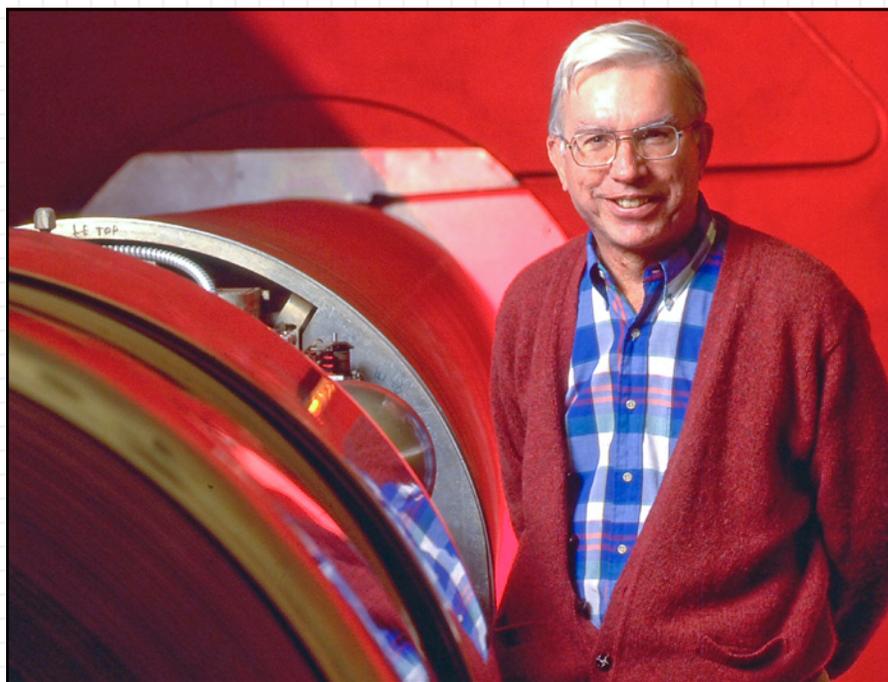
For the past eight years, Kirby W. Kemper has been best known to many in the Florida State University community as the university's vice president for Research. What they may not know is that while performing those administrative duties, he has maintained his laboratory and continued to conduct nuclear physics research in FSU's Department of Physics, where he first arrived as a postdoctoral researcher in 1968.

It is for those four decades as an outstanding teacher and researcher that Kemper has been chosen by his peers for a prestigious honor: The Southeastern Section of the American Physical Society has selected him to receive its 2010 Francis G. Slack Award, given for "excellence in service to physics in the Southeast."

"I am extremely humbled by this recognition," Kemper said of the award. "Not many people get to spend their entire career doing something they love, so I'm one of the fortunate few. Working with students, both in the classroom and in the lab, has always been an extraordinarily rewarding experience for me. Being honored by my colleagues in this manner is simply icing on the cake."

The Francis G. Slack Award is named for a distinguished Vanderbilt University scientist who was a charter member of the Southeastern Section of the American Physical Society and who contributed significantly to its development. The award recognizes those who have worked unselfishly to:

- Bring about significant new research facilities in the southeastern United States;
- Significantly strengthen and raise the stature of physics departments in the region;
- Provide significant leadership and work to strengthen and build the Southeastern Section of the American Physical Society; Sigma Pi Sigma, The Physics Honor Society; the Society of Physics Students; and other regional organizations;
- Develop physics consortia of universities and/or research institutions that have benefited the Southeast and the nation; and
- Carry out other service and administrative



Kirby Kemper

activities such as organizing major conferences held in the region, as well as international exchanges and public outreach to K-12 students.

"Kirby is someone who has worked tirelessly for the good of physics in our region (and nationally too), and his impact has been truly extraordinary on many levels throughout his long and outstanding career," said Mark Riley, FSU's Raymond K. Sheline Professor of Physics and chair of the Department of Physics. "His is a rare record indeed, and 'unselfish' is a most apt description of his life in the service of physics.

"There is no doubt he has been a huge influence in raising the stature of FSU physics throughout the past four decades," Riley said.

A nuclear physicist by training, Kemper served as chairman of the physics department from 1997 to 2003. He joined the physics faculty at FSU in 1968, three months after receiving his Ph.D. from Indiana University.

In 2002, Kemper was awarded the ultimate accolade of his fellow academics at Florida State, being named a Robert O. Lawton Distinguished Professor. In nominating him

for the honor, Nobel Laureate Robert Schrieffer, former chief scientist of the National High Magnetic Field Laboratory, described Kemper as "a highly distinguished nuclear physicist with an outstanding worldwide reputation."

In the laboratory, Kemper has been recognized numerous times for his groundbreaking research. His current interests are in the study of nuclear polarization phenomena, as well as the use of radioactive beams to probe nuclear structure far from stability. He has more than 260 refereed publications to his credit.

In the classroom, meanwhile, Kemper is known for his devotion to undergraduate teaching and graduate training — he directed the physics department's graduate education program for six years in the 1980s — as well as for an "infectious enthusiasm" that has won him praise from three generations of students. In addition, he has worked for many years to explain the importance of scientific research to the general public.

The Francis G. Slack Award was presented to Kemper at the Southeastern Section of the American Physical Society's annual meeting in October 2010 in Baton Rouge, Louisiana.

Three FSU physicists recognized by university

Each year Florida State University recognizes outstanding research accomplishments by professors and research scientists. The Department of Physics is proud to announce that three members of the department have been selected for this year's awards. Professor Per Arne Rikvold has received the Distinguished Research Professor Award, Professor Ingo Wiedenhover has received the Developing Scholar Award, and Dr. Edmund Myers has received the Distinguished University Scholar Award.



Per Arne Rikvold

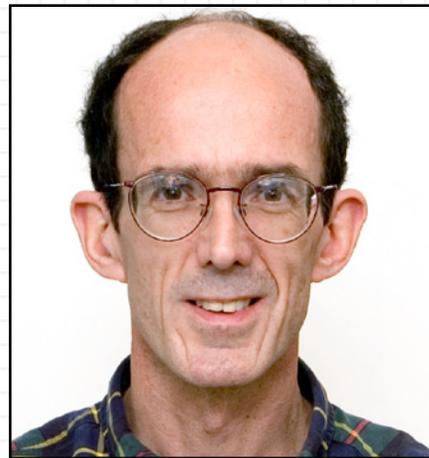
The Distinguished Research Professor Award recognizes and honors outstanding scholarly research and/or creative activity among those Florida State University faculty with the rank of Full Professor, having national and international visibility. It is the third-highest faculty award at The Florida State University, following the Robert O. Lawton award and the Daisy Parker Flory award. Recipients of this award receive a one-time stipend and the distinction of using the title "Distinguished Research Professor" while employed at The Florida State University.

Per Arne Rikvold is the Florida State University James G. Skofronick Professor of Physics. He received his M.S. in Solid State Physics from the University of Oslo, Norway, in 1976,



Ingo Wiedenhover

and after further studies in Japan, Switzerland, and Germany, he received his Ph.D. in Physics from Temple University in 1983. He has been on the Physics faculty at FSU since 1987. His research specialty is computational studies in nonequilibrium statistical mechanics with interdisciplinary applications to electrochemistry, magnetism, computer science, biology, and engineering. In these areas he has directed the research of fifteen undergraduates, eleven graduate students, and thirteen postdocs at FSU, and, with his many collaborators and apprentices in the U.S. and abroad, he has written over 190 articles in professional journals and books. He is a Fellow of the American Physical Society and a Foreign Member of the Norwegian Academy of Science and Letters, and



Edmund Myers

his research has been supported continuously by NSF since 1991.

The Developing Scholar Award is designed to recognize FSU faculty who are several years advanced into their careers. This competition is intended to help identify FSU's future academic leaders.

Ingo Wiedenhover is an Associate Professor at the Florida State University Physics Department and serves as the Associate Director for Operations at the John D. Fox accelerator laboratory. He received his Ph.D. from the University of Cologne, Germany in 1995, carried out Post-doctoral work at Argonne National Laboratory and worked as research faculty at the National Superconducting Cyclotron Laboratory before joining the FSU

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Probing the 'Dark Ages' at FSU

The fourth meeting of the 3rd Coast Astronomical Society on "Probing the Dark Ages" was hosted by The Florida State University astrophysics group in the Department of Physics from May 19–21, 2010.

The annual meeting is a major event to exchange ideas, and to foster and coordinate collaborations between the Astronomical Institutions of the southeast and to get ready for the next "big wave" in astronomy.

Some 50 astronomers and astrophysicists from about a dozen institutions came to Tallahassee to discuss issues related to the so-called "dark ages" before the re-ionization of the Universe. Topics discussed included the formation, evolution and explosions of the of the first generation of stars and Gamma-Ray Bursters, the distribution of dark matter and the nature of the dark energy. This is a major event and a strong indicator of the recognition of FSU as a driving force at the forefront of astrophysics.



The 4th Meeting of the 3rd Coast Astronomical Society on "Probing the Dark Ages"

Article cited over 1000 times honored by publisher

An article co-authored by FSU Distinguished Research Professor Stephan von Molnár, the Robert A. Kromhout Professor of Physics and former Director of MARTECH, has been acknowledged by the publishers with a singular honor of a signing by the authors at the 2010 March meeting of the American Physical Society.

The article, entitled: "Mixed-valence Manganites" by J.M.D. Coey, M. Viret and S. von Molnár, *Advances in Physics* 48 (2), 167-293 (1999) has been cited 1,226 times.

A sabbatical by the first author, J.M.D. Coey, as a visiting scientist at MARTECH facilitated this review. It was requested by *Advances in Physics* at a time when that journal had the highest impact rating in the UK. It is now being honored by Taylor and Francis, the publishers, by being printed again in a current issue concomitant with the signing by the authors.



S. von Molnár (left) and J.M.D. Coey (right) signing copies of the reprint at the 2010 American Physical Society meeting, Portland, OR.

Parenthetically, a second now "classic" paper also had its genesis at MARTECH.

S.A. Wolf, D.D. Awschalom, R.A. Buhrman, J.M. Daughton, S. von Molnár, M.L. Roukes, A.Y. Chtchelkanova, D.M. Treger, "Spintronics: A Spin-Based Electronics Vision for the Future", *Science*, 294, 1488-1495 (2001). This article has been cited 3544 times.

The article is one outcome of a joint DARPA/NSF panel von Molnár chaired to evaluate the research activities in spintronics world wide at that time.

Researchers to study exploded stars

A pair of Florida State University astrophysicists have received new three-year grants totaling \$738,000 from the National Science Foundation (NSF) to advance their research on supernovae. Such research could yield new understanding of a mysterious force known as dark energy that is believed to account for the vast majority of the energy in the universe.

Christopher Gerardy, an assistant professor in the Department of Physics, is the primary investigator on a \$371,000 grant titled “New Observational Constraints on Thermonuclear Supernovae.” Meanwhile, Associate Professor Peter Hoeflich is the lead researcher on a \$367,000 grant from the NSF titled “Interaction of Thermonuclear Supernovae with Their Environment.”

“One of the most stunning discoveries of the past decade was the realization that the universe is expanding at an accelerating rate, which suggests the existence of a mysterious form of energy that we currently know very little about,” Hoeflich said. “Given the name ‘dark energy,’ this force comprises approximately 70 percent of the energy budget of the universe.

“Thermonuclear stellar explosions—so-called Type Ia supernovae — have been the main tool for this discovery,” he said. “A better understanding of these objects is necessary to decipher the nature of the dark energy, with implications for all physics.”

Type Ia supernovae play a crucial role in



Christopher Gerardy

helping researchers develop a better understanding of fundamental physics, the origin of elements, and cosmology (the study of the universe), Gerardy added.

“These exploded stars are astrophysical laboratories that essentially allow us to study nuclear and atomic physics, as well as hydrodynamical and radiation transport effects, under extreme conditions,” he said. “Type Ia supernovae offer potential answers to questions that have intrigued astrophysicists for years: How is matter created? What happens when stars die? And exactly why is the universe expanding?”

Gerardy and Hoeflich’s grants supplement an ongoing group grant provided to FSU’s physics department by the NSF to



Peter Hoeflich

study “Supernovae and Cosmology,” as well as several grants provided by NASA and the Jet Propulsion Laboratory to support research with the Hubble Space Telescope and the Spitzer Space Telescope.

“It is a recognition of the growing national and international role of the newly established research group in astrophysics and cosmology that was founded at Florida State in 2006,” said Mark Riley, FSU’s Raymond K. Sheline Professor of Physics and chairman of the Department of Physics. “The new grants will allow further growth of the astrophysics group, which consists of two faculty members, one postdoctoral researcher, six doctoral students and a large number of undergraduates who are involved in research projects.”

Nuclear physics: Doubly magic tin

The technologies for performing experiments with beams of short-lived exotic nuclei continue to advance quickly, both at the national laboratories and at a few university laboratories such as the John D. Fox Superconducting Accelerator Laboratory at FSU.

In the May 27 issue of *Nature*, Paul Cottle wrote a “News and Views” piece “Nuclear physics: Doubly Magic Tin” intended for a general audience about an experiment performed using an exotic Sn-132 beam at the Holifield Radioactive Beam Facility at Oak Ridge National Laboratory. Cottle describes the technical challenges of such experiments and predicts that the results of these experiments will “illuminate the cosmological origins of the heavy elements.”



Nature from 27 May 2010 with Paul Cottle’s article on pages 430–431

Two materials researchers get prestigious NSF CAREER awards

BARRY RAY

SPECIAL TO RESONANCES

A pair of Florida State University researchers who are exploring the properties of two very different types of materials have earned major recognition—and support—for their work.

Sachin Shanbhag, an assistant professor in the Department of Scientific Computing, and Oskar Vafek, an assistant professor in the Department of Physics and member of the Condensed Matter Physics research group at the National High Magnetic Field Laboratory, have won prestigious Faculty Early Career Development (CAREER) Awards from the National Science Foundation (NSF). The awards are designated for young scientists who are still in the early stages of their academic careers and are intended to help them build upon previous accomplishments in their respective areas of research.

“Florida State is developing a critical mass of talented young faculty members who will be leaders in their fields for decades to come,” said FSU Vice President for Research Kirby W. Kemper. “This is another tangible example of the scholarly rigor that Florida State is already known for and continues to emphasize. Our congratulations go to Professor Shanbhag and Professor Vafek for this important recognition.”

Vafek, a theoretical physicist, is conducting research on a class of materials that includes graphene, a one-atom-thick sheet derived from the mineral graphite that is made entirely out of a hexagonal array of carbon atoms. Graphene’s remarkable electronic properties make it a potential candidate for use in numerous technological applications, which has sparked tremendous interest in the scientific community and in industry.

His CAREER Award, which comes with NSF funding of \$84,000 a year over five years, will support integrated research, education and outreach activities, including the development of “wiki-books,” digital learning tools that will assist in the teaching of undergraduate and graduate-level physics courses. Using wiki-books, students work as teams to write certain chapters and edit others, thus sharpening their scientific writing skills while improving their understanding of often-complex concepts. (See <http://wiki.physics.fsu.edu> to view the physics department’s wiki page.)

“I feel honored and exceptionally privileged to receive this award,” Vafek said. “I view it as a bestowal of opportunity, and responsibility, to pursue experimentally motivated and curiosity-driven theoretical research. I am also aware that I have greatly benefited from the stimulating and collegial atmosphere of the magnet lab and the FSU physics department, both of which have unreservedly supported the proposed line of research and educational activities.”

Shanbhag, meanwhile, is a computational scientist who utilizes incredibly high-powered computers to develop a better understanding of the behavior of synthetic polymers derived from petroleum. (About 10 percent of the world’s crude oil supply is diverted



Oskar Vafek



Sachin Shanbhag

toward non-energy needs and is converted into such petrochemicals.)

Synthetic polymers are used in the manufacture of a great many of the things around us - everything from computers to cars, buildings, packaging, Teflon and home insulation, just to name a few.

“Even the world within us—think cellulose, DNA and proteins—is primarily polymeric,” Shanbhag said. “So learning how different polymers act and move under different environments is important.”

With his CAREER Award, which will provide \$82,000 per year in funding over five years, Shanbhag will continue to develop computational models of polymer dynamics. Developing such knowledge “will help us build better and cheaper synthetic polymers, or use existing polymers more optimally,” he said.

Shanbhag cited two examples of how this might benefit society:

- Lighter cars and airplanes could be made by substituting metal with polymer composites, thus reducing their weight without affecting performance. Since these newer materials are easier to process and lighter, their usage brings down the vehicles’ cost and makes them more fuel-efficient.
- The human body is replete with examples where an understanding of the motion of a polymer (such as DNA) through a complex dense environment (such as the cell) is vital. The delivery of therapeutic genes to target cells is one immediate area where such knowledge could be exploited.

He was quick to share the credit for the NSF award.

“I’ve benefited enormously from the excellent computational resources available at FSU through the Department of Scientific Computing and the High Performance Computing Center,” Shanbhag said. “The center is a gem. The staff who manage these resources are terrific, and that has been instrumental in allowing me to focus on the science, instead of babysitting and troubleshooting the machines.

“My background is in engineering, so I also benefit enormously from collaborators and friends throughout the university in-

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FSU physicists have ‘front-row seat’ for collider experiment

BARRY RAY

SPECIAL TO RESONANCES

Scientists at the colossal Large Hadron Collider (LHC) facility located beneath the Swiss-French border have turned up the dial on the highest-energy experiment ever attempted—and their colleagues in the Florida State University Department of Physics now have a bird’s-eye view of the proceedings.

A small office within the university’s physics department is one of 35 sites worldwide—and one of just eight in the United States - that has been set up with video and Internet feeds that connect directly with the LHC. Via these feeds, Florida State researchers and their students will be able to monitor experiments at the collider around the clock—and even make changes based on what they observe.

“This is a tremendously exciting time to be involved in high-energy physics,” said Harrison Prosper, Florida State’s Kirby W. Kemper Professor of Physics and a Distinguished Research Professor. “The Large Hadron Collider has the potential to unlock many of the mysteries of the universe that science has pondered for more than a century. Our students are quite fortunate to have a front-row seat as history is being made.”

All of the 35 sites, including Florida State’s, “went live” on Tuesday, March 30, 2010—the date that the LHC, the world’s most powerful atom-smasher, was turned up in an attempt to reach a world-record energy level of seven teraelectronvolts. Scientists hope that such a massive amount of energy will allow them to recreate conditions similar to those that existed during the Big Bang; barring techni-

cal problems, the collider is expected to run at that level for 18 to 24 months.

Just how powerful is 7 teraelectronvolts? Prosper offered an automotive analogy.

“If every person on Earth owned a car, and the batteries from all those cars were connected together in a series, the voltage across this enormous chain would be huge—but still only one-fiftieth of the voltage needed to increase the energy of a proton from zero to 3.5 teraelectronvolts (that is, 7 teraelectronvolts when two protons collide),” he said.

In all, some 30 members of Florida State’s physics department, including faculty members, research scientists, postdoctoral researchers and graduate students, are involved in a specific experiment at the LHC known as CMS, short for “Compact Muon Solenoid.” CMS is an international collaboration involving some 3,600 scientists, engineers and technicians from 38 countries that uses a large machine known as a particle detector to record data on various nanoparticles released when the LHC smashes protons together with tremendous force.

“Among other things, we’re hopeful that these powerful collisions will provide us with our first glimpse of a still-theoretical fundamental particle known as the Higgs boson,” said Todd Adams, an associate professor of high-energy physics at Florida State and a CMS participant. “Science still doesn’t fully understand what gives mass to all matter in the universe; we think that the Higgs boson may hold the answer.”

Adams added that observations culled from data gathered by CMS could also help explain the nature of so-called “dark matter,” which is believed to comprise about four-fifths

of all matter in the universe—but which has never been directly observed because it isn’t composed of atoms, unlike the form of matter that is most familiar to us.

In the new “CMS center” at Florida State, researchers and students will be able to sit at several computer workstations to monitor the progress of the CMS experiment and make minor adjustments as needed. They also will be able to observe live video of the connections on a pair of large, high-definition TV screens that were recently installed.

“The 35 CMS centers will be a great tool for promoting collaboration and helping scientists all over the world to communicate with one another on this massive experiment,” said Andrew Askew, an assistant professor of physics at Florida State and another CMS participant.

“What’s more, this is a truly historic event,” he said. “The Large Hadron Collider is the single largest machine, and represents the largest scientific endeavor, in all of human history. It will generate the highest level of energy ever achieved by mankind, and Florida State will be front and center for all of that.”

Every member of Florida State’s High Energy Physics Group is involved in the LHC project in some way. The group includes theoretical physicists Jeff Owens, Laura Reina, Takemichi Okui and Bernd Berg, and experimental physicists Todd Adams, Andrew Askew, Susan Blessing, Kurtis Johnson, Sharon Hagopian, Vasken Hagopian, Harrison Prosper and Horst Wahl.

Three other Florida universities - Florida Atlantic University, Florida International University and the University of Florida—also unveiled CMS centers on March 30, 2010.

New battery-charging method suggested by simulations

Lithium-ion batteries are essential to a number of modern technologies, from portable phones to electric or hybrid cars, and improvements to the battery technology is an active research area. This is the theme of the cover story in the March 21, 2010, issue of the prestigious journal, *Physical Chemistry Chemical Physics*, by postdoc Ibrahim Abou Hamad and Prof. Per Arne Rikvold from our department and Profs. Mark A. Novotny and David O. Wipf from Mississippi State University. Based on large-scale Molecular Dynamics simulations, the authors suggest a novel method to significantly reduce the charging time for Li-ion batteries by applying an oscillating electric field in addition to the conventional DC charging field.

Ibrahim Abou Hamad is a Post-doctoral Research Associate with Professor Per Arne Rikvold. His research efforts include energy storage, network modeling, electrochemical deposition, and modeling for medical/pharmaceutical applications.

Per Arne Rikvold is the Florida State University James G. Skofronick Professor of Physics. He received his M.S. in Solid State Physics from the University of Oslo, Norway, in 1976, and his Ph.D. in Physics from Temple University in 1983. His research specialty is computational statistical mechanics with interdisciplinary applications to electrochemistry, magnetism, computer science, biology, and engineering. He is a Fellow of the American Physical Society and a Foreign Member of the Norwegian Academy of Science and Letters.

Mark Novotny received his BS in physics from North Dakota State University in 1973 and his PhD in physics from Stanford Uni-



Ibrahim Abou Hamad and Prof. Per Arne Rikvold

versity in 1978. His research spans many areas of computational physics, including materials physics and non-equilibrium statistical mechanics and cross-cutting areas in computer science. He is the Head of the Department of Physics and Astronomy at Mississippi State University. He is a Fellow of the American Physical Society.

David Wipf received his B.S. in chemistry from the University of South Dakota in 1984 and his Ph.D. in chemistry from Indiana University, Bloomington in 1989. He is

currently a Professor of Chemistry at Mississippi State University. His recent research interests include developing new materials for lithium and lithium-ion batteries. He maintains a research interest in developing instrumentation and electrodes for the scanning electrochemical microscope and related scanning probe microscopes. These methods are applied to investigate microscopic reaction-rate heterogeneity at various surfaces, with interest in corrosion and electrocatalytic activity.

Two Materials researchers—continued from page 6

dustrial engineering, chemical engineering, physics, math and chemistry,” he said.

In addition to Shanbhag and Vafek, two other Florida State faculty members have won NSF CAREER Awards in recent months. Karen M. McGinnis, an assistant professor in the Department of Biological Science,

and Michael Shatruk, an assistant professor in the Department of Chemistry and Biochemistry, also received the awards and accompanying funds to advance their research.

“These four young faculty members, and many others like them here at FSU, are

pushing the boundaries of knowledge in their respective fields,” Vice President Kemper said. “Through their hard work, and with the continued support of the National Science Foundation and Florida State, our society will be the ultimate beneficiary of their cutting-edge research.”

Teen scholars bring complex physics theory to life

KATHLEEN LAUFENBERG

SPECIAL TO RESONANCES

Old-school knowledge teamed up with new-school technology at the Magnet Lab this summer when two computer-savvy 17-year-olds collaborated with top physicists. The result is scientific eye candy.

Eric Pelz, a 17-year-old senior at Spanish River Community High School in Boca Raton, and Ryan-David Reyes, a 17-year-old senior at Rickards High School in Tallahassee, spent their summer designing simulations that visually depict complex theories.

"I could spend 30 minutes trying to explain this to you, or 30 seconds showing it to you," Physics Professor Vladimir Dobrosavljevic said, pointing to a computer screen where one of the teens' simulations played. "Frankly, I didn't believe that I would be sitting here watching this running on the computer. It's amazing."

The teens' interactive graphics allow students and others to see some of the poorly understood behaviors of magnetite. Magnetite (or lodestone) is one of only a few minerals attracted to a magnet.

Their programs depict the electron activity inside of magnetite, which you can see for yourself on the group's website; the program runs well in the Safari browser, which can be downloaded free here.

On the right side of the screen, you'll see variables that include temperature, the amount of impurities in the magnetite and its electric-field strength. As you increase or decrease the values of the variables, the mineral's ability to carry a current changes. And so do the graphics on the screen.

"My work enabled the group to see how the particles interact as the simulation took place," Pelz said. "I coded the algorithms in Java, tweaked and optimized it for speed, and added all of the GUI



Ryan-David Reyes, Yohanes Pramudya and Eric Pelz

(Graphical User Interface) elements that you see." "They really helped us a lot, and I think they really learned a lot of science in the process," said Dobrosavljevic, director of the Mag Lab's Condensed Matter Science Theory program.

When he lectures about magnetite, he added, the simulations will allow his students to see what he's talking about.

The two academically gifted high-schoolers were part of the Young Scholars Program, which accepts applications from any of Florida's top-achieving juniors and seniors interested in science, engineering and health careers. If accepted, the teens live on the Florida State University campus for six weeks while they take classes and work with professors and researchers. FSU picks up the tab.

"It was unreal to work with the scientists," Pelz said. "At the start of our collaboration, I have to admit I was a bit intimidated by the huge research going on at the Mag Lab."

As he got to know graduate student Yohanes Pramudya and Professor Dobrosavljevic, however, "it surprised me how family-like the relationships between the scientists and their grad students were."

Reyes is still tweaking his computer program for the Magnet Lab, one that will display the simulations in three dimensions.

"The coolest thing I did was having the experience of being challenged in a way that I never really had before—writing the program—and then surpassing the expectations of both the scientists and grad students," Reyes said. "I'll always remember how much I enjoyed becoming part of this family."

The Young Scholars Program includes formal course work in mathematics, computer science and science ethics as well as electives in molecular biology or modern physics. The emphasis is on problem solving, integrating theory with application, and the ethical framework of science and technology.

the PHYSICS AWARDS CEREMONY



The FSU Physics Department held its annual awards ceremony on April 15, 2010. Many of our outstanding students were honored for their accomplishments, of which a small sample is presented here. At top left, Alison Pawlicki displays the Lannutti Award with Professor Jeff Owens. At upper right, Professor Sam Tabor is shown with students receiving Sigma Pi Sigma awards. At lower right, Dr. Tabor poses with Naureen Absan, winner of the John D. Fox award. And at lower left, Robert Throckmorton displays his Dirac-Hellman Award, with Professor Bernd Berg.

Three FSU physicists—continued from page 3

faculty in 2001. He co-authored over 100 articles in reviewed journals. He received the U.S. Department of Energy “Outstanding Junior Investigator” award in 2002. His research interests are in Experimental Nuclear Physics, in particular the physics of exotic nuclei and nuclear astrophysics. He performs experiments at the National Superconducting Cyclotron Laboratory (NSCL) and established a new research program with the RESOLUT facility at FSU’s John D. Fox accelerator laboratory. He was elected as chair of the User Executive Committee of the NSCL in 2007 and elected to the FRIB User Committee in 2009.

The Distinguished University Scholar award is the highest award Florida State Uni-

versity bestows on research faculty and recognizes long records of outstanding research accomplishment. Recipients of this award receive a one-time stipend and the distinction of using the title “Distinguished University Scholar” while employed at Florida State University.

Edmund Myers obtained his B.A. in Physics from the University of Oxford (Merton College), UK, in 1978, and then his D.Phil. in Experimental Atomic Physics, also from Oxford, in 1982. He carried out postdoctoral work at Rutgers University and Bell Laboratories, Murray Hill, NJ. In 1986 he joined the faculty at Florida State as Staff Physicist, supervising the development and operation of

the FSU Superconducting Linear Accelerator for over 15 years. Concurrently he developed an internationally recognized program in Atomic Physics that has been funded by the National Science Foundation since 1998. His research interests include laser spectroscopy of highly-charged ions, atomic mass measurements at the highest levels of precision using Penning ion traps, and tests of fundamental physics and the determination of fundamental constants. In 2003 he was elected a Fellow of the American Physical Society. Although undergraduate teaching is not a formal requirement of his position he is currently lead instructor for a 15-section Astronomy Laboratory for non-science majors.

FSU's Adams to lead Fermilab scientists

More than 3,000 scientists from around the world conduct research at the Fermi National Accelerator Laboratory, better known as Fermilab, each year. Now those researchers have a new leader: Associate Professor Todd Adams of the Florida State University Department of Physics.

Adams, a member of the FSU faculty since 2001, has been elected chair of Fermilab's Users Executive Committee (UEC) for a one-year term. Fermilab, located in Batavia, Ill., is the premier particle physics laboratory in the United States, and the UEC is the organizing body that represents its visiting and laboratory-based scientists, known collectively as "users."

"Fermilab is the nation's top particle physics laboratory, and it is a great honor to be elected chair of the Users Executive Committee," Adams said. "It is an exciting time in particle physics, and I look forward to the challenges of the coming year."

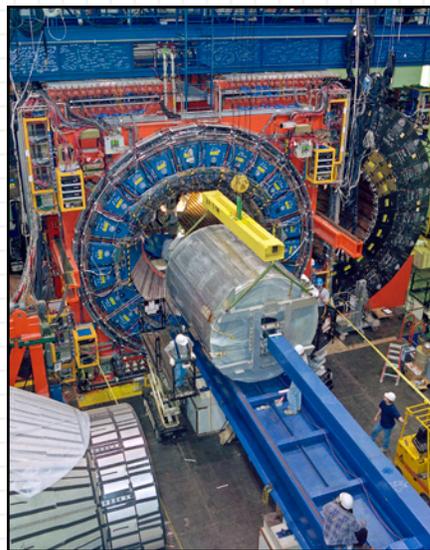
At Fermilab, the UEC is charged with representing the lab's users to its Directorate, to various funding agencies, and to Congress. As such, the committee and its chair play a vital role in ensuring that the views of the Fermilab users community are conveyed accurately to their respective audiences and that users are kept abreast of issues of potential interest to them.

"Being elected chair of this critically important committee by a user group consisting of some 3,000 members speaks volumes about the leadership skills of Dr. Adams and the esteem in which the community holds the High Energy Physics Group at The Florida State University," said Mark Riley, FSU's Raymond K. Sheline Professor of Physics and chair of the Department of Physics. "Congratulations to him on this marvelous achievement."

Among other responsibilities, the Fermilab UEC (along with the SLAC National Accelerator Laboratory Users Organization in Menlo Park, Calif., and the US Large Hadron Collider Users Organization) visits Washington, D.C., each winter to meet with



Todd Adams



Fermilab's Tevatron

members of Congress and officials from the executive branch over a three-day period. Last year, approximately 35 users visited more than 200 U.S. senators and representatives to promote science funding, particularly for particle physics research. In addition, meetings were held with officials of the U.S. Department of Energy (including Under Secretary Steven E. Koonin), the National Science Foundation, the Office of Management and Budget, and the Office of Science and Technology Policy. The UEC, led by its chair, provides the majority of the organizational effort for the trip.

The committee also sponsors an annual meeting of Fermilab users each June. More than 1,000 users attend the two-day meeting, which highlights laboratory activities and features presentations from distinguished guests from Washington and other national and international laboratories. Other activities involve issues important to non-U.S. users such as visas, improving the quality of life at Fermilab, and providing outreach training and opportunities for the users. Five subcommittees coordinate these activities.

The UEC consists of 13 members, six of whom are elected each year to serve two-year terms. The past chair serves an additional year to provide experience.

Adams was elected to the UEC in summer 2009 and will continue on the committee until 2012. Previous UEC members from Florida State University include Sharon Hagopian (1980-1982, 2002-2005), Joseph Lannutti (1982-1984) and David Levinthal (1984-1986). Hagopian also served as UEC chair in 2003-2004.

Adams has performed research at Fermilab since 1997, when he was a postdoctoral associate. Since joining Florida State, he has worked on the DØ experiment at the Tevatron with FSU faculty and scientists Andrew Askew, Susan Blessing, Sharon Hagopian, Harrison Prosper and Horst Wahl. The DØ collaboration of some 600 scientists analyzes the results of collisions of protons and antiprotons to study the basic particles of matter.

In addition to his research at Fermilab, Adams is one of 15 faculty members, postdoctoral researchers and students from Florida State's physics department who are involved in a specific experiment at the LHC known as CMS, short for "Compact Muon Solenoid." CMS is an international collaboration involving some 3,600 scientists, engineers and technicians from 38 countries that uses a particle detector to record data on various subatomic particles.



Eva Crowdis (center), with the plaque commemorating her Gabor Award, with Gabor representative Michael Leatzow (far left), FSU interim provost Dr. Robert Bradley (left) and Derrick Brooks (right), a member of the FSU Board of Trustees.

Crowdis wins Gabor Award, FSU's highest staff honor

We are pleased to announce that Eva Marie Crowdis, Assistant to the Chair and Office Administrator, was awarded the 2010 Gabor Superior Accomplishment Award.

The Gabor Award is the highest honor bestowed on a staff member at FSU. Eva was recognized at the Fourth Annual Employee Recognition Awards ceremony on November 1. The award is based on superior accomplishments that result in or contribute to Florida State University's efficiency and/or effectiveness.

Eva started working at FSU in 1993 and came to the physics department at the end of 1996. She has held her current position since July 2004. Eva is one of the reasons the physics department is such a very special place. She works tirelessly for the good of the "physics family" and is richly deserving of this honor.

At the ceremony, the selection committee noted Eva's many accomplishments in the past year but made particular note of the two large international physics confer-

ences held in December 2009, "DREB 09" and "HADRON 09" when hundreds of physicists from around the world descended on Tallahassee and FSU. Holding such major international meetings on campus brings enormous recognition, not only to our department, but to the university as a whole. These fabulous successes would not have been possible without her "superior" contributions to making sure everything ran so smoothly. Congratulations once again, Eva!