

Department of Physics and Astronomy

at the University of Georgia



www.physast.uga.edu

December 1, 2010 Volume I

Greetings from the Department Head



Dr. Bill Dennis

Greetings from the Department of Physics and Astronomy! This Fall marks the first year that the Department has distributed an annual newsletter to all of its alumni, and we hope that you will enjoy being kept apprised of exciting new developments within the Department. We currently face a diverse set of challenges,

whether it be following through on our strategic entry into high-visibility, high-pay-off research fields, or growing and enhancing our undergraduate majors and graduate programs.

We are pleased to announce that a new faculty member in Computational Biophysics, Dr. Michael Bachmann will be joining the faculty next Spring. Dr. Bachmann will bring to the Department an exciting program on the structure formation of macromolecules such as polymers and proteins. Another important development on campus this year was the opening of a new "nanobio" clean room facility. This \$2.3 million facility is one of only a few such clean rooms in the world that is targeted to the interface of nanotechnology with biology and will be a boon to our faculty and students who perform research in this area.

With a record-breaking enrollment of over 100 students in our majors programs, we are committed to enhancing the learning experience and educational environment of our undergraduate majors. Our focus is on curriculum development in upper level courses. In addition to offering exciting elective courses in modern topics such as MRI physics and quantum computation, we are working hard to provide our undergraduates with enhanced laboratory and research experiences.

The graduation of eight Ph.D. students and an incoming class of 12 students in 2010 attests to the vibrancy of our graduate program. Nevertheless we are committed to improving the graduate experience by providing graduate students with enhanced opportunities to present their work at conferences for example.

As one of our graduates you know from personal experience the unique value of an education in Physics and Astronomy. Thus we ask for your support. During these times of reduced state support, your contribution is critical in enabling the Department to improve our undergraduate learning experience, enhance graduate student research, and modernize the educational and

research environment. I thank you for your past support of the Department of Physics and Astronomy, and I greatly look forward to hearing from you.

Physics Addition Opens

On June 16, 2009, the much anticipated opening of the new \$3.2 million addition and renovation to the Physics and Astronomy Building was marked by a ceremony attended by many of UGA's top leadership, including President Michael F. Adams.

The new three-story addition, which is on the north end of the 50-year-old building, provides significant added space for research and graduate education. Four large, new, state-of-the-art research laboratories on the first two floors will have a great impact in



recruiting new top-tier faculty to the department. The new headquarters for the Center for Simulational Physics on the third floor of the addition includes substantial new office space for graduate students, long-term visiting

scientists, and the CSP director and secretary, plus a large conference room that doubles as a classroom and serves as the new home for the annual Workshop on Computer Simulation Studies in Condensed Matter Physics, now in its 23rd year, which draws participants from all over the world.

Several renovations to the existing building were part of this project, as well. A new, 40-student instructional lab for Physics 1112 and 1212 allows the department to accommodate more students in these rapidly growing courses. Upgraded facilities for graduate students will help the department in recruiting top students to continue their studies here. And finally, some much-needed infrastructure modernizations enhance the operational efficiency of existing research labs.

The new addition is an invaluable and much-needed resource for the department. Stop by next time you're in Athens, and we'll be happy to give you a tour!

Faculty Awards and Accomplishments

Professor Yiping Zhao named Director of UGA Nanoscale Science and Engineering Center



In July 2009, Dr. Yiping Zhao became the third Director of the UGA Nanoscale Science and Engineering Center (NanoSEC). With nearly 50 affiliated faculty members from 15 departments across campus, NanoSEC is the organizational backbone for the diverse research and educational activities on

campus in the fields of nanoscience, nanotechnology, and nano-bio studies.

In late 2009, Dr. Zhao oversaw the completion of the \$2.3 million Nano-Bio Cleanroom. This state-of-the-art user facility puts UGA squarely at the forefront of nano-bio research. Dignitaries from across campus, including Dr. Dale Threadgill, participated in the Opening Ceremony in May 2010. The workshop held in conjunction with this event featured top international scholars in nanotechnology. Construction on Phase II of the nano-bio cleanroom facility began in October.

Under Dr. Zhao's leadership, NanoSEC has fostered numerous collaborative and individual grant proposals, including two highly prestigious NSF CAREER awards; has instituted a weekly interdisciplinary research seminar, now in its third semester; has launched a newly designed website; and has published its first annual newsletter.

Associate Professor Kanzo Nakayama Wins UGA Creative Research Medal

Dr. Kanzo Nakayama received a 2010 Creative Research Medal for his ground-breaking theoretical work in hadron physics. Dr. Nakayama has played a major role in unraveling what is the least understood property of Quantum Chromodynamics, namely confinement, whereby quarks are prevented from being observed isolated in nature. Dr. Nakayama and his collaborators have recently developed a new theory based on a field theoretic approach, which is being applied with great success to describe a variety of photoproduction processes that are currently used as probes of hadronic structure. This theory is consequently having a considerable impact, since it can be used to analyze the data that is being taken at major hadron physics laboratories worldwide.



Assistant Professor Craig Wiegert Wins Richard B. Russell Undergraduate Teaching Award

Dr. Craig Wiegert received a 2010 Richard B. Russell Award for his transformative undergraduate teaching. Dr. Wiegert has not only taught over 3000 students over the past six and a half years, he has made a major positive impact on all aspects of undergraduate instruction.



Dr. Wiegert has improved the way we teach our large section-size service courses, re-evaluated and improved our undergraduate majors program, aided and encouraged both junior and senior faculty to become better classroom instructors, and interacted with high-school teachers through a learning community to elevate the quality of incoming freshmen. He has been a departmental pioneer in the use of instructional technologies and recently obtained a UGA Learning Technologies Grant to enhance the introductory physics laboratory curriculum.



Assistant Professor Zhengwei Pan Awarded Prestigious NSF CAREER Grant

In January, Dr. Zhengwei Pan was selected to receive a CAREER Award, "the National Science Foundation's most prestigious award in support of the early career-

development activities of those teacher-scholars who most effectively integrate research and education" in their professional endeavors.

Supported by this award, Dr. Pan will target a very challenging issue in nanomanufacturing: to synthesize rare-earth-activated, multicomponent, luminescent nanomaterials in the form of one-dimensional nanobelts. While previous nanowire research mainly focused on elemental or binary systems, the incorporation of more components into nanowires will enable Dr. Pan to create novel classes of functional nanomaterials.

To share the beauty and wonder of nanomaterials with the general public, Dr. Pan and his collaborators have turned images from his research into works of art, called NanoArt. Their work has already appeared in shows, galleries, and museums in Athens, Atlanta, Chicago, and Nashville. Further advancing this novel but effective outreach activity is central to the educational component of Dr. Pan's CAREER Award.

Spotlight on Assistant Professor Inseok Song: *Moon Forming Collisions*



Millions of planetesimals, rocks in space with diameters up to about 100 miles, collide with each other to form full-fledged planets such as Earth, Mars, Venus. As planets grow and the reservoir of planetesimals dries out, collisions become less frequent. On rare occasions, even full-grown planets collide with each other resulting in cosmic

spectacles. When our Earth was only about 30 million years old, the young Earth collided with a Mars-sized planet. From the ashes of this collision, our Moon was created. Because the Moon has played a very important role in the rise and survival of intelligent species on the Earth, it is interesting to ponder, "Do all planetary systems experience collisions between planets?" Assistant Professor of Astronomy Dr. Inseok Song and his students have conducted state-of-the-art observational research to shed light on this question.

When planets collide, a huge amount of dust particles are generated. These particles intercept light from central stars and re-radiate it at longer wavelengths. By detecting large excess radiation at infrared (IR) wavelengths, one can identify stars that recently underwent planetary collisions. Dr. Song has searched for strong IR-excess stars during the past decade and has found most of the ones that are currently known.

Ordinarily, ambiguities exist in identifying the origin of the dust causing the observed IR excess. For a given strong mid-IR excess, the data can be equally well explained either by myriad collisions among planetesimals or by one gigantic planetary collision. Recently Dr. Song has been able to resolve this ambiguity for one of the strong IR-excess stars. He has obtained a spectrum of one of the dustiest stars in the Pleiades cluster using *Spitzer*, the NASA infrared space satellite, and the spectrum clearly shows signs of an extraordinarily energetic environment that can only be explained by a collision between two grown planets. It is the first unambiguous result implying that planetary collisions are rather common in the universe. This important result is soon to be published in the *Astrophysical Journal*.

Dr. Song, himself an alumnus of UGA, earned his Ph.D. here in 2000 under the direction of Astronomy professor Dr. Jean-Pierre Caillault. He returned as an assistant professor in 2008.

Alumnus Spotlight: Sean Kirkpatrick



One of the Department of Physics and Astronomy's outstanding alumni is former undergraduate and graduate student, Dr. Sean Kirkpatrick. Sean graduated with a B.S. in Physics in 1991 and a Ph.D. in Physics in 1995. He completed his dissertation under Dr. Bill Dennis, and went on to fulfill a postdoctoral appointment at the University of Illinois. In 1997, Sean received a National Research Council Fellowship to the U.S. Naval Research Laboratory, in Washington, DC.

In 1999, he established a new nonlinear ultrafast physics laboratory for the Air Force Research Laboratory (AFRL) at Wright-Patterson AFB near Dayton, Ohio, and in 2004, was asked to take over an Advanced Technologies office in Washington, DC. Dr. Kirkpatrick is currently overseeing advanced capabilities development in the Enabling Systems Division of the Office of Space and Intelligence, Office of the Secretary of Defense. He also serves as an adjunct professor within the Department of Physics and Astronomy.

At UGA, Sean received the Linville L. Hendren Memorial Scholarship for Outstanding Proficiency in Physics in 1987, 1988, 1990, and 1991. He has since been awarded several scientific and technical achievement awards, including the AFRL Cleary Scientific Award, the Air Force Innovation Award, and two National Meritorious Citations. Dr. Kirkpatrick has two patents, has contributed to several books, and has over one hundred publications.

In 2009, Dr. Kirkpatrick decided to show his appreciation for the Department by creating the Sean M. Kirkpatrick Award for Outstanding Achievement in Graduate Research. Given annually to a graduate student for excellence in research, this award provides the recipient with a \$1,000 research budget. We would like to thank Dr. Kirkpatrick for his contribution to the department.

Alumni Give Colloquia

Two alumni of the Department of Physics and Astronomy returned to UGA to present departmental colloquia this academic year.



On March 25, 2010, Dr. Carl Liebig, then a postdoctoral researcher in the School of Mechanical Engineering at Purdue University, visited the Department and gave a colloquium entitled "Damage Control: Using Coherent Phonon Oscillations to Control Material Damage". Dr. Liebig received M.S. and Ph.D. degrees from the Department in 2000 and 2006, respectively. Both his masters and doctoral research were conducted under the supervision of Dr. Bill Dennis.

In 2001, he received a UGA Outstanding Teaching Assistant Award. Carl is currently a staff scientist at the Air Force Research Laboratory at Wright-Patterson AFB near Dayton, Ohio.

On April 22, 2010, Dr. Kevin Seale visited UGA from his home institution, Vanderbilt University, where he is an Assistant Professor of the Practice of Biomedical Engineering. He presented the Undergraduate Awards colloquium entitled, "The Searle Systems Biology and Bioengineering Undergraduate Research Experience at Vanderbilt University: Equipping Students of all Disciplines For Careers in Post-Reductionist Biology and Medicine". As an undergraduate at UGA, Kevin received the Charles H. Wheatley Award for Excellence in Physics in 1992 and the Linville L. Hendren Memorial Scholarship in 1993. He earned a B.S. in Physics here in 1993, before going on to Vanderbilt University, where he obtained his M.S. and Ph.D. degrees in Biomedical Engineering in 1996 and 2000, respectively. Following a successful stint in industry, Dr. Seale returned to academia to assume his current position at Vanderbilt.



Spotlight on Doctoral Student Joydip Ghosh



The Department awarded the 2010 Anderson-Pioletti Award for Outstanding

Early Graduate Student to Mr. Joydip Ghosh. Joydip started in the Ph.D. program in Fall 2008, having already completed a year of postgraduate study at George Mason University. In Summer 2009, he began working with Dr. Michael Geller on research in the area of theoretical quantum computing. "[H]is enthusiasm for physics and dedication to research excellence was immediately apparent," reports Dr. Geller.

His first research project, recently published in the journal *Physical Review A*, was to assess the accuracy of a general approach developed by the Geller group to the construction of the so-called "controlled-NOT" logic gate that is central to quantum computing. Using differential geometry, Joydip was able to derive a simple, elegant and exact formula for the Hilbert-space averaged accuracy of a quantum operation acting on a pair of quantum bits, or qubits.

Although currently working on another controlled-NOT project, Joydip will soon be moving to a new area of research in the Geller group and the group of Dr. Phillip Stancil called quantum simulation, which focuses on the use of quantum computers to simulate complex quantum phenomena such as molecular collisions and chemical reactions. Joydip is likely to make important contributions to this area as well. Geller avers: "It is a pleasure to work with Joydip, and I look forward to a long and productive collaboration with him."

Department Participates in Young Dawgs Summer Program

Several research groups in the Department, including those of Drs. Bill Dennis, Chad Fertig, and Susanne Ullrich, hosted area high school students during Summer 2010 in cooperation with the Young Dawgs Summer Program. This program—a partnership between the University of Georgia, the Clarke County school district, and the ACC Department of Leisure Services—is designed to provide college-level research experiences for outstanding local

high school students. Each participating Young Dawg spent up to eight weeks over the summer on an independent research project, under the supervision of the professor and senior graduate students in the group to which they were assigned. On July 14 the students delivered oral presentations on their work in front of the nearly 50 Young Dawgs campus-wide, many proud family members and research supervisors, as well as the Young Dawgs organizing committee.



The work of James Waugh, a rising senior at Athens Academy, in Dr. Ullrich's molecular dynamics lab was deemed particularly noteworthy by the organizing committee, who selected James as one of three students to give an additional presentation at the Young Dawgs closing ceremony luncheon. In his presentation, James discussed the basics of ultraviolet (UV) femtosecond time-resolved photoelectron spectroscopy (TRPES)—the technique used by the Ullrich group to investigate electronic excited state dynamics in gas-phase biomolecules—and detailed his work developing a deep UV source for use in the TRPES experiment. Says Ullrich of the contributions James made: "Previous attempts to employ this technique were unsuccessful, but we are happy to say that James' intuitive thinking and hard work have made this experiment a success. The group plans to continue developing this deep UV source for extensive use in the coming years."

Dust and Ice Workshop

At the end of March, the Center for Simulational Physics (CSP) hosted a workshop on the Role of Dust and Ice in Astrophysical Environments. The meeting was co-sponsored by the CSP and the Department in conjunction with the Southeast Laboratory Astrophysics Community (SELAC). Over a three day period, more than 50 participants enjoyed talks by 20 invited speakers as well as a lively poster session. Participants came from every corner of the U.S. as well as from Canada and Mexico.

The meeting focused on recent advances in laboratory studies (both experimental and theoretical) on dust grains, interstellar ices, and polycyclic aromatic hydrocarbons (PAHs); their observational signatures; and their role in astronomical and atmospheric environments. It brought together laboratory astrophysicists, surface scientists, observational astronomers, and computational astrophysicists to highlight recent work, to discuss outstanding issues, and to look toward future progress motivated by observations from the next generation of space-, airborne-, and ground-based telescopes. For additional information, please see the workshop website: <http://www.physast.uga.edu/workshop/dustandice/>.

CURO Apprentices Working with Physics Faculty

Two first-year Physics majors, Cameron Zahedi and Katherine Manrodt, were among 28 entering Honors students chosen for the Apprentice Program sponsored by the UGA Center for Undergraduate Research Opportunities (CURO). The goal of this selective program is to "enrich the academic experience" of bright, promising undergraduates from historically underrepresented groups "by engaging them in research during their first and second years." Katherine and Cameron are the first Physics majors ever chosen to be CURO apprentices.



For his research project, Cameron is working under the direction of Assistant Professor Dr. Craig Wiegert to develop online

interactive math tutorials tailored to the needs of students in introductory physics courses. Katherine, meanwhile, has teamed up with Associate Professor Dr. Steven Lewis on a NASA-sponsored project to predict atomic sticking coefficients on astrophysically relevant ice and dust grains, using classical molecular dynamics computer simulations.



Student Awards and Accomplishments

- Undergraduate student Whitney Ingram won two awards at the 4th Annual Fall Peach State Louis Stokes Alliance for Minority Participation (PSLSAMP) Conference which took place at Fort Valley State University from November 12-14, 2009. Her awards include first place in oral presentation in the category of Mathematics and Physical Sciences and second place in poster presentation in the category of Mathematics and Physical Sciences. Whitney works in the Nanoscience laboratory of Dr. Yiping Zhao.
- Doctoral Student Junqi Yin was selected this fall to receive the 2011 James L. Carmon Scholarship for students who have used computers in innovative ways. Junqi won this award for his outstanding accomplishments in adapting Monte Carlo simulation algorithms for the novel GPU (graphics processing unit) architecture, achieving a performance acceleration of two orders of magnitude compared to simulations on conventional CPUs. Using this code, he has already been able to resolve a longstanding controversy regarding a particular type of magnetic phase transition. Junqi is a student in the Center for Simulational Physics, doing his doctoral research with Physics professor Dr. David Landau.



Whitney Ingram receiving the Hendren Scholarship



Jason Langley

- Doctoral student Jason Langley was awarded the Paul D. Coverdell Neuroimaging Program Fellowship of the John and Mary Franklin Foundation for 2009-10. In addition to the fellowship stipend, Jason receives \$3,500 in annual research funds and \$1,000 in annual travel funds to present work at a conference or acquire additional training. Jason's research, in the MRI Physics laboratory of Dr. Qun Zhao (see the article on page 6), focuses on contrast-enhanced magnetic resonance imaging.
- Doctoral student Sairam Tangirala was awarded "Best Computational Science Electronic Poster" for his poster titled *The Dynamic Scaling Study of Vapor Deposition Polymerization: A Monte Carlo Approach* at the 2009 TeraGrid Conference. He was also awarded "Best Computational Science Poster" for his poster titled *Polymer Chain Aggregates in Vapor Deposition Polymerization* at the 2010 TeraGrid Conference. Sairam is a senior graduate student in the Center for Simulational Physics, working with Dr. David Landau.
- Recipients of the Department's annual Graduate Awards were as follows: Bill Cummings Award for Outstanding Student & Teaching Assistant – Daniel Seaton; Anderson-Pioletti Award for Outstanding Early Graduate Student – Joydip Ghosh; Sean M. Kirkpatrick Award for Outstanding Achievement in Graduate Research – Jason Langley; and Outstanding Teaching Assistant Award – Jason Langley and David Lyons.
- Recipients of the Department's annual Undergraduate Awards were as follows: Linville L. Hendren Memorial Scholarship for Outstanding Proficiency in Physics – Whitney Ingram; Physics and Astronomy Award for Excellence in the Study of Physics and Astronomy – Jaimie Pate; Ted L. Simons Memorial Award for Outstanding Junior Physics Student – Daniel Cellucci; and Charles H. Wheatley Award for Excellence in Physics at the Senior Level – Clare Saunders.
- The following undergraduates were awarded a B.S. in Physics or Physics and Astronomy in 2010: Amanda Brouillette, Richard Eberle, Jordan Hall, Umar Khokhar, Matthew Millard and Christopher Zornes.



Observatory Open House Draws Big Crowds

One Friday evening every month during the academic year, the Department of Physics and Astronomy opens its doors and the nighttime sky to the general public. People come from all over Northeast Georgia to these Observatory Open House nights to get a tour through the heavens, guided by our knowledgeable and enthusiastic Astronomy faculty and students. Astronomy enthusiasts of all ages climb the stairs to the top of the Physics Building to take their turn peering through the research-grade 24" telescope to view some of the most fascinating objects the night sky has to offer. In addition to the large telescope in the observatory dome, several smaller telescopes are stationed on the roof, each one staffed by an Astronomy student to assist the visitors and explain what they are viewing.

Visitors to Observatory Open House have been treated to breathtaking, up-close views of Jupiter, Saturn, Mercury, nebulas, binary stars, and many other amazing astronomical objects. Many come away feeling they have just viewed something awe-inspiring. "Even after a long day at work, I get energized by the awe-struck reactions of the visitors—particularly the children. It makes it all worthwhile, a truly rewarding experience," says Dr. Loris Magnani, who along with fellow Astronomy professor Dr. Robin Shelton, runs the Observatory Open Houses.

By sharing our resources with the public, the Department of Physics and Astronomy is able to give back in a truly spectacular way. We hope that you can join us next time you're in Athens. For more information about the observatory open house, as well as dates and times, please visit our website at <http://www.physast.uga.edu/observatory/schedule>.

Spotlight on Assistant Professor Qun Zhao: *MRI Physics Lab*

The Magnetic Resonance Imaging (MRI) Physics Laboratory was founded in 2006 by Physics professor Dr. Qun Zhao. The lab is located at the Bioimaging Research Center in the Paul C. Coverdell Center on the UGA south campus. Dr. Zhao and his research team are pushing the frontiers of MRI physics in four general areas:

- Experimental MRI physics and engineering, including design and construction of radio-frequency coils for enabling multinuclear magnetic resonance, in which distinct nuclear isotopes (^1H and ^{31}P) are detected;
- Computational MRI, including modeling and computation of magnetic fields and their gradients using the finite-difference time-domain (FDTD) method, for carrying out positive contrast generation, phase unwrapping, and other analysis techniques;
- MR applications in biomedicine, including cancer detection and diagnosis via contrast-enhanced imaging using magnetic iron oxide nanoparticles, magnetic drug delivery for cancer treatment, and multinuclear spectroscopy for measurement of phospholipids in cancerous tumors; and
- functional MRI (fMRI), a neuroimaging method using MRI to measure the hemodynamic response related to neural activity in the human brain and thereby correlate this neural activity to specific cognitive functions triggering the hemodynamic response.



In the four years he has been at UGA, Dr. Zhao has been very active in training students in MRI physics research. Already one graduate student has completed an M.S. degree under his direction, and half a dozen undergraduates have trained in his lab. There are currently four doctoral students doing their dissertation research with Dr. Zhao. As profiled earlier in this newsletter, one of his doctoral students, Jason Langley, has been awarded the prestigious Paul D. Coverdell Neuroimaging Program Fellowship and received the Department's newly established Sean M. Kirkpatrick Award for 2010. For more information on the MRI Physics Lab at UGA, please visit their website at <http://www.physast.uga.edu/~qzhao/>.

Opportunities to Contribute

World-class education in Physics and Astronomy has always been a top priority in this Department, and we have a variety of exciting initiatives underway to enhance the learning environment for our majors and graduate students. These initiatives would benefit greatly from the active support of our alumni and alumnae. Some of our highest priorities are: equipping an undergraduate Advanced Laboratory befitting a 21st-century Physics and Astronomy department; modernizing our Astronomy Observatory, including replacing the 50-year-old dome and fitting the 24-inch telescope with an infrared camera; establishing a Student Travel Fund to better enable our majors and graduate students to present their research at scientific meetings; and outfitting a state-of-the-art SCALE-UP classroom in the Physics Building (see <http://scaleup.ncsu.edu> for more information on the SCALE-UP concept). If you would like to contribute to making these worthy goals a reality, please see the form attached below for more information or contact Joan Roeber-Jones at 706-583-0825 or jrjones@uga.edu. We thank you for your support.

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Donations can also be made through our website. Please go to <http://www.physast.uga.edu/> for information.

Graduate Degrees Conferred

The following graduate students were awarded a Ph.D. in Physics in 2010: Christopher Gay, *Chemistry and Physical Processes in Early Universe Structure Formation* (advisor: Phillip Stancil); James Hao, *Cellulose Hydrolysis with Evolving Substrate Morphologies* (advisor: Heinz-Bernd Schüttler); Shijun Lei, *Galactic Diffuse Hot Gas: Shadowing Observations and Joint Analyses* (advisor: Robin Shelton); Yongjun Liu, *Surface-enhanced Raman Scattering from Ag Nanorod Array Fabricated by Oblique Angle Deposition* (advisor: Yiping Zhao); Yi-Ying Lu, *Cr³⁺ Activated Gallate-Based Near-Infrared Long-Persistent Phosphors* (advisor: Zhengwei Pan); Shinya Miyake, *Photoprocess Effects in the Early Universe* (advisor: Phillip Stancil); Lijun Pang, *Monte Carlo Studies of Interface Behavior in Ising Films* (advisor: David Landau); Emily Pritchett, *Superconducting Quantum Computation: Devices, Gate Design, and Quantum Simulation* (advisor: Michael Geller); Daniel Seaton, *Wang-Landau Simulations of Thermodynamic Behavior in Homopolymer Systems* (advisor: David Landau); Wilson Smith, *Novel Photocatalyst Oxide Nanostructure Engineered by Oblique Angle and Glancing Angle Deposition* (advisor: Yiping Zhao); Tucker Swindell, *Given a Moderately Diffracting Crystal, Does the Choice of Data Reduction Approach Effect the S-SAD Phasing Results?* (advisor: B.C. Wang); Bo Wen, *IR-UV Double Resonance Spectroscopy on NO-X van der Waals Complexes* (advisor: Henning Meyer). Ben Ruskin (advisor: Inseok Song) was awarded an M.S. in Physics.



Tucker Swindell receiving his PhD

Jeff Deroshia Wins Franklin College Staff Excellence Award



Jeff Deroshia, a Systems Administrative Associate in the Department, was one of five recipients of the 2010 Franklin College Staff Excellence Award. This marks the fourth consecutive year in which the College has recognized a member of our staff with this prestigious award, following Sherri McElroy in 2007 (the award's inaugural year), Mike Caplinger in 2008, and Tom Barnello in 2009.

A member of our technical staff since 2001, Jeff has shared responsibility for all computing and networking facilities in the Department. In addition he has, in recent years, expanded his work portfolio by educating himself in the area of web and database programming and using these skills to enhance the efficiency of departmental operations.

Jeff has done an outstanding job in a highly challenging, mission-critical position for the last nine years.

In Memoriam

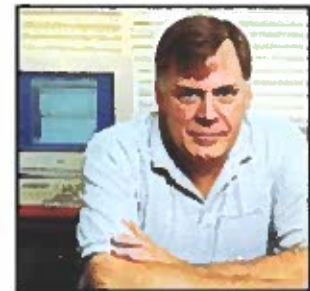
Marion M. Duncan Jr., Professor of Physics Emeritus, passed away on April 14, 2010. Dr. Duncan served as Department Head from 1968 to 1975 and as Chairman of the Physical Sciences Division of the Franklin College from 1968 to 1990. Dr. Duncan held an international reputation in the fields of both Nuclear and Electron and Atomic Physics. Although he retired in 1994, Dr. Duncan continued to come to the Department daily to collaborate with his colleague Dr. Henning Meyer.



Donald G. Burkhard, Professor of Physics Emeritus, died on May 20, 2010, at his home in Athens. Dr. Burkhard was invited to join the University of Georgia

Physics faculty in 1965 to become the Head of the Department of Physics and Astronomy. He has published both in the field of molecular physics and in the field of optics. Even though he retired from the University of Georgia in 1988, he continued working on his research until shortly before his death.

Retirements and Promotions



Dr. Timothy Heil, a faculty member in the Department for over 30 years, retired in May 2010. Dr. Heil contributed in many ways to the Department over the years, including serving as the graduate coordinator and advising a number of Ph.D. and M.S. students. In recent years, Dr. Heil focused his efforts on developing the Physics 1010 course, which services the University's General Education curriculum. By his last year at UGA, this course attracted nearly 1,000 students per year, making it the most popular course in the Department.

Mrs. Dale Richardson retired in May 2009 after serving as Graduate Coordinator Assistant for over 19 years. "Dale was fun to have around," said Associate Head Steven Lewis. "We all miss her infectious sense of humor and wish her well in retirement."

Dr. Phillip Stancil and Dr. Yiping Zhao were promoted to the rank of Professor in Spring 2010.

New Graduate Students for Fall 2010



The Department of Physics and Astronomy welcomed 11 new graduate students this fall. They are: Pradip Basnet, University of Massachusetts-Dartmouth, Dartmouth, MA; Reece Boston, Georgia College and State Uni-

versity, Milledgeville, GA; Beth Bushong, Franklin and Marshall College, Lancaster, PA; Renata Cumbee, Francis Marion University, Florence, SC; Yanting Deng, Nankai University, Tianjin, China; Xu Han, Jilin University, Changchun, China; Yizhuo He, Nankai University, Tianjin, China; Tara Hufford, Loyola University, Chicago, IL; Qiongge Li, East Tennessee State University, Johnson City, TN; Kai Qi, Nanjing University, Nanjing, China; and Kyle Walker, University of Toledo, Toledo, OH.

A reception was held on August 11th to welcome our new arrivals. The Department offers our best wishes for their future success at the University of Georgia.

Please update your Alumni Info with us on our website!

Please visit our website at www.physast.uga.edu to view all of the latest news and events going on in the department. Also, you can visit www.physast.uga.edu/alumniinfo to update your current home and business addresses and your current employment with us. We appreciate you taking the time to register this information with us. You can also become a fan of the Department of Physics and Astronomy on Facebook. Just go to facebook.com and type in UGA Department of Physics and Astronomy to find us!

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Department of Physics and Astronomy
The University of Georgia
Physics Building
Athens, GA 30605-2451



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