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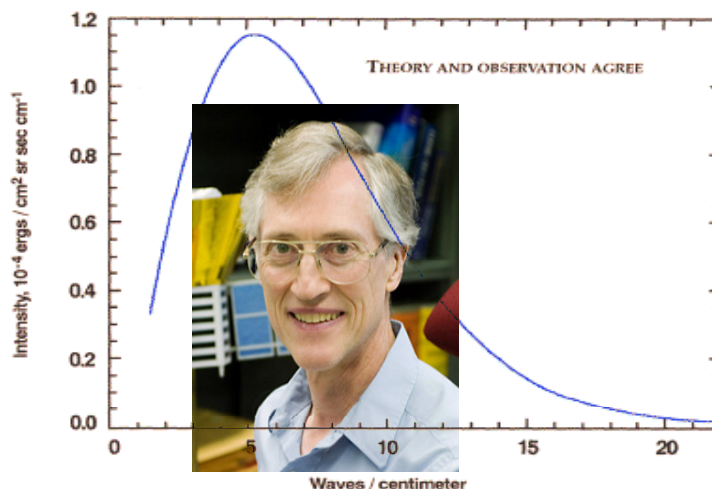
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John Mather, Katzenstein Distinguished Lecturer

Friday, November 16, 2007

Nobel Laureate John Mather of the NASA Goddard Space Flight Center in Greenbelt, Maryland will deliver this year's Katzenstein Distinguished Lecture, "From the Big Bang to the Nobel Prize and on to James Webb Space Telescope," on Friday November 16, 2007. In 2006, Dr. Mather shared the Nobel Prize in physics with Professor George Smoot of the University of California at Berkeley for "their discovery of the black body form and anisotropy of the cosmic microwave background radiation."

In 1992, the Cosmic Background Explorer (COBE) satellite team announced that they had mapped the primordial hot and cold spots in the cosmic microwave background radiation. These spots are related to the gravitational field in the early universe, only instants after the Big Bang, and are the seeds for the giant clusters of galaxies that stretch hundreds of millions of light years across the universe. The team also showed that the big bang radiation spectrum agrees exactly with the theoretical prediction, thus confirming the Big Bang theory. According to the Nobel Prize committee, "the COBE project can also be regarded as the starting point for cosmology as a precision science." Dr. Mather not only served as project manager for a team of more than one thousand researchers and engineers, but he also had primary scientific responsibility for the Far Infrared Absolute Spectrophotometer (FIRAS) experiment that revealed the black-

body form of the microwave background radiation measured by COBE. Dr. Smoot had main responsibility for measuring the small variations in the temperature of the radiation on the COBE project. In a book written for the general public, Dr. Mather chronicled his team's work on COBE. "The Very First Light: The True Inside Story of the Scientific Journey Back to the Dawn of the Universe" was co-written with John Boslough and published by Basic Books in 1996.

At the NASA Goddard Space Flight Center, Dr. Mather is a Senior Astrophysicist in the Observational Cosmology Laboratory, working on infrared astronomy and cosmology. As an NRC postdoctoral fellow at the Goddard Institute for Space Studies in New York City, he led the proposal efforts for COBE (74-76), and came to the Goddard Space Flight Center to be the Study Scientist (76-88), Project Scientist (88-98), and also the Principal Investigator for the FIRAS instrument on COBE. As Senior Project Scientist (95-present) for the upcoming James Webb Space Telescope, he leads the science team and represents scientific interests within the project management. He has served on advisory and working groups for the National Academy of Sciences, NASA, and the NSF (for the ALMA, the Atacama Large Millimeter Array, and for the CARA, the Center for Astrophysical Research in the Antarctic). He is a member of the Astrophysics Subcom-

mittee of the NASA Advisory Committee and of the Standing Review Board for the Kepler project.

Dr. Mather received his physics Bachelor's degree from Swarthmore College in 1968 and his physics Ph.D. from the University of California at Berkeley in 1974. A Fellow of the American Physical Society and a member of the National Academy of Sciences and the American Academy of Arts and Sciences, he has been the recipient of numerous awards and prizes in addition to the Nobel Prize: the 1993 Dannie Heineman Prize for Astrophysics, American Astronomical Society and American Institute of Physics; the Rumford Prize, American Academy of Arts and Sciences in 1996; the Benjamin Franklin Medal in Physics from the Franklin Institute in 1999; the Presidential Rank Distinguished Performance award, NASA, 2003; and the Cosmology Prize, with COBE Team, Peter Gruber Foundation, 2006.

Physics of the Small But Not Too Small

Gayanath Fernando's "Metallic Multilayers and Their Applications" will be published by Elsevier later this year. The book describes a class of artificial materials that have novel applications and advance our understanding of physics at small (nanometer) length scales. Ultra-thin metallic multilayer sandwiches in computer technology are examined. Fundamental aspects of such systems are reviewed using both simple quantum mechanics and sophisticated and detailed theoretical approaches.

Giant magnetoresistance (GMR), discovered in the late 1980s, is the effect of a magnetic field on the electron transport in a multilayer, leading to significant changes in its resistance. Other properties of multilayer systems, such as stability, growth, and confinement, are also addressed. Theoretical and experimental methods used in such work are described in some detail, with special attention to density functional methods and recent improvements. Included are magnetic anisotropy, exchange-bias, tunneling magnetoresistance (TMR), spin-torques in thin films, and Hubbard cluster work on planar systems. This will be a handy reference for anyone interested in learning about these artificial structures and their uses.

Joint NES APS/AAPT Meeting to be Held in Storrs

The annual fall joint meeting of the New England Sections of the American Physical Society (APS) and the American Association of Physics Teachers (AAPT) will take place on October 19-20, 2007 in Storrs, Connecticut. It is being held in conjunction with the Institute of Materials Science Bio-Nanotechnology Conference. The technical programs will focus on "Carbon in the 21st Century." Carbon has assumed great scientific and technological importance in recent years. It comes in many forms: the backbone of biological molecules, diamond, graphite, nanotubes, bucky balls, and single sheet graphene. The last three forms have only recently been synthesized and are leading materials for nanoscience and nanotechnology. The APS Meeting will center on discussions of the new science and technology opportunities em-

bodied in these materials.

The Bio-Nanotechnology Conference will be held on Friday morning while the NES-APS/AAPT meeting will be on Friday afternoon and all day Saturday. The APS invited speakers - Walter De Heer, Georgia Tech; Tony Heinz, Columbia; Philip Kim, Columbia; Antonio Castro Neto, Boston University; and Lisa Pfefferle, Yale University - will address different branches of physics with the common thread of modern-day carbon, including nanotubes, fullerenes and graphene. The Friday evening post-banquet speaker will be Harry Kroto, from Florida State University, who shared the 1996 Nobel Prize for chemistry with Richard Smalley and Robert Curl of Rice University, Texas (later that year he received a Knighthood by Queen Elizabeth II). The invited speakers for the Bio-Nanotechnology Conference

include Xiaowu (Shirley) Tang, University of Waterloo; Alexander Star, University of Pittsburgh; and **James Rusling**, UConn.

In addition to the plenary talks, both the APS and AAPT sections will include contributed oral talks and poster sessions, and the AAPT will have workshops on Saturday afternoon. The AAPT contributors include Christine Broadbridge, Southern Connecticut State University; Eugenia Etkina, Rutgers; Bill Gerace, Ian Beatty, UMass; **George Gibson**, UConn; Larry Gould, University of Hartford; Russell Harkay, Keene State College; Fred Myers, Glastonbury Public Schools and **David Perry**, UConn; and. Topics include the physics of music and photography, question driven instruction, global warming, and experimentation in the classroom.

Mali Balasubramanian at Argonne

We were delighted to have a visit and lecture from Mahalingam Balasubramanian, who received his Ph.D. in 1996. His thesis work, which focused on XAFS studies and site selectivity in metallic alloys, was carried out under the supervision of Professors Joseph Budnick and Douglas Pease. Mali was a member of the scientific staff at Brookhaven National Laboratory before moving to Illinois and currently has over 60 publications. Mali visited Storrs for two days, during which he presented the solid state seminar on April 26 and subsequently met with faculty and various students on Friday for research discussions. His talk “Application of In Situ XAFS: Structural Study of Li Intercalation in Battery Materials” focused on in-situ XAFS studies of lithium intercalated bat-



Mali and his wife, Kanchana, and lovely seven-year old Roshini enjoy their home just outside Chicago.

tery materials. His studies provide important local information on specific site activity and changes in the charging and discharge processes. At present, Mali is a physicist at the Advanced Photon Source located at the Argonne National Laboratory. In addition to the work he presented, he is actively using synchrotron techniques to elucidate structure-property relationships in a number of intermetallic alloys, superconducting materials, nanostructures and hydrogen storage materials. Mali is currently directing a project on the development of new synchrotron techniques for the in-situ characterization of electrochemical systems. His responsibilities also include the general operation and user support of the Pacific Northwest Consortium (PNC)-X-ray Operations and Research (XOR) beamlines at the Advanced Photon Source.

Andrey Dobrynin named APS Fellow

Andrey Dobrynin, an Associate Professor of Physics and a member of the Polymer Program in the Institute of Materials Science, has been named a Fellow of the American Physical Society “for his contributions to the theory of charged polymers.” Andrey earned his Ph.D. in Polymer Physics at the Moscow Institute of Physics and Technology, USSR. Andrey held research positions at the Institute of Mineralogy, Geochemistry, and Crystal Chemistry of Rare Elements in Moscow, Russia, Eastman Kodak Co., the University of Rochester, the Ecole Supérieure Physique Chimie Industrielles in Paris, France and the University of North Carolina before he arrived in Storrs in 2001.

Andrey has studied charged polymers, widely used in industry, for the past 10 years. “It is particularly nice that Andrey was awarded this early in his career. It speaks to the quality of his work in the polymer field,” says **William Stwalley**, Head of the Department of Physics, “It is very prestigious.” **Harris Marcus**, Director of the Institute of Materials Science, says “Andrey is a superior theorist in polymers and the way polymers behave.”

SMART Fellowship

Donald Telesca, a third year graduate student working in the area of experimental condensed matter physics under the supervision of **Boris Sinkovic**, has recently been awarded a Science, Mathematics, and Research for Transformation (SMART) fellowship sponsored by the Department of Defense (DoD). Approximately 100 awards were given, out of a competitive applicant field of over 1500. The fellowship includes an annual stipend for the next two years, full tuition, health insurance, paid summer internships and post-graduation employment placement with the National Security Agency. The SMART

program is managed by the Naval Postgraduate School (NPS) on behalf of the Office of the Secretary of Defense. The American Society for Engineering Education (ASEE) works with NPS to administer the program. Don’s project is to understand the magnetic and electronic properties of novel materials for application in spintronics, an emerging area of multidisciplinary research for the manipulation of electron spin and charge. A long range goal is possibly a new paradigm in information technology. Don’s state-of-the-art experimental techniques, at UConn and Brookhaven and Lawrence Berkeley National

Laboratories, directly probe the spin character of participating electronic states. We acknowledge collaboration with IBM Research Labs at Almaden, CA.

The DoD offers scholarships to undergraduate, master's, and doctoral students who have demonstrated ability

and special aptitude for training and education in Science, Technology, Engineering and Mathematics (STEM) fields, with career opportunities to continue research in civil service roles following graduation.

The Norman Hascoe Lectures on the Frontiers of Science

The Department of Physics is entering its ninth year of a lecture series funded by Mr. Norman Hascoe of Greenwich, Connecticut, aimed at exciting undergraduates with scientific interests in frontier areas of science. Each lecture is open to the public and is followed by a reception and an informal panel discussion. We enjoyed several wonderful lectures this past year:

1. Valy Vardeny, University of Utah, "Spin Physics in Organic Semiconductors"
2. Raymond Laflamme, University of Waterloo Perimeter Institute, "Quantum Computing"
3. Ali Yazdani, Princeton University, "Quantum Tunneling of Electrons and the Riddle of High Temperature Superconductivity"
4. Antonio Castro Neto, Boston University, "Drawing Conclusions from Graphene"
5. Joe Campbell, University of Virginia, "Photodetectors: UV to IR"
6. Keiji Morokuma, Emory University, "Computational Studies of Chemical Reactions of Complex Systems: Nano Structures, Catalysts, and Enzymatic Reactions"
7. Victor I. Klimov, Los Alamos National Laboratory, "Spin Physics in Organic Semiconductors."

Nanoscale science involves application of the concepts and techniques of physics to systems at a higher level of complexity (e.g. the supramolecular and macromolecular) and is the focus of major federal research funding initiatives. Numerous disciplines are making advances in nanoscale science. We hope to expand our lecture program even more next year. We have scheduled Sir Harold Kroto, Florida State University, for Monday, October 22, 2007. "Science, Society and Sustainability" promises to be an exciting lecture and we are looking forward to Professor Kroto's visit.

Reynolds Distinguished Lecture

The Charles A. Reynolds Distinguished Lecture in Physics was presented this year on April 18 by **David Goldhaber-Gordon** from the Physics Department at Stanford University.

Professor Goldhaber-Gordon spoke about "Correlated Electrons in a Designer Semiconductor Nanostructure." The structures he studies are nano-dots of semiconductor weakly coupled to current and gate leads, as in a field effect transistor. At very low temperatures, single electrons can be seen to tunnel off and onto the central dot. The whole structure can be described through the use of the Kondo Model, a single localized state embedded in a traditional conduction band. It was first proposed to describe magnetic impurities in metals but predicts

in exquisite detail the behavior of these nano-dot systems.

Professor Goldhaber-Gordon specializes in experimental condensed matter physics, particularly spins of electrons confined to submicron semiconductor structures. He has been at Stanford since Fall 2001, in the new Geballe Lab for Advanced Materials. His experiments elucidate behavior of semiconductor electrons confined to small "boxes," thereby restricted to discrete quantized states instead of continuous free states. This emerging field is called mesoscopic physics or, more recently, nanoscale physics. It explores length scales between the microscopic size of atoms and the macroscopic scale of everyday objects. David comes from a long

line of eminent physicists, including his father Fred Goldhaber at SUNY Stonybrook, his grandfather Maurice and his grandmother Gertrude Goldhaber from Brookhaven National Laboratory, and his great-uncle Gerson Goldhaber, who participated in the discovery of the J/Psi particle.

The lecture series is named in honor of Charles Reynolds, who served as Professor of Physics in our department from 1952 – 1971, when he passed away. He was an eminent low temperature physicist, notably, a co-discoverer of the isotope effect in superconductors. This effect, discussed in condensed matter physics textbooks, established that phonons were responsible for the pairing of electrons that leads to superconductivity.

ICAP 2008 to be held in Storrs

The 21st International Conference on Atomic Physics (ICAP 2008) will be held July 27 – August 1, 2008 at the University of Connecticut in Storrs. This conference, one of a continuing series, will showcase forefront research in basic atomic, molecular and optical (AMO) physics, emphasizing atoms and their interactions with each other and with external fields. A website with more details is under construction and will be linked to our home page (<http://www.phys.uconn.edu>).

The ICAP meetings grew out of the molecular beams conferences of the Rabi group, beginning at NYU in 1968. Later conferences have been held in even-numbered years, alternating between North America and other locations, including Europe and Brazil, with plans for future confer-

ences in Asia. Historically, topics have included quantum electrodynamics, tests of basic symmetries (PCT), precision measurements (including atomic clocks and fundamental constants), laser spectroscopy, ultracold atoms and molecules, Bose-Einstein condensates, degenerate Fermi gases, optical lattices, quantum computing/quantum information with atoms and ions, coherent control, and ultrafast and intense field interactions. Notably, all invited talks are plenary and many participants have been Nobel laureates. The conference will be preceded by a one-week Summer School for new AMO researchers, organized by the Harvard-MIT Center for Ultracold Atoms in Cambridge, MA.

Joe Budnick elected AAAS Fellow

In October, 2006, Professor Joseph Budnick was elected a Fellow of the American Association for the Advancement of Science (AAAS), for his “efforts on behalf of the advancement of science or its applications [that] are scientifically or socially distinguished.”

Joe worked at IBM Research Labs after finishing his Ph.D. at Rutgers, followed by Fordham University and the National Science Foundation, before arriving at UConn in 1974. As Head of the Physics Department, Joe initiated outreach programs with the Connecticut Science Teachers Association – twice hosting the state high school science fair – established an off-campus master’s degree program with Perkin Elmer Corp., and strengthened ties with the United Technologies Research Center.

Joe’s own research examines properties of magnetic and superconducting materials. He is an expert in many experimental techniques, including x-ray absorption fine structure (XAFS), nuclear magnetic resonance, electronic transport, and muon spin rotation. He is well known for the discovery, along with Vincent Cannella and John Mydosh, of a unique form of magnetism, known as the gold-manganese spin-glass. He was a co-developer of the X-Ray Absorption Beam Line X11 at the National Synchrotron Light Source at Brookhaven National Laboratory. Joe’s current research includes high temperature superconductivity, nanomagnetism, and ruthenium oxide magnets.

Outstanding Academic Achievement Award

On May 4, 2007, **Hashini Mohottala** received an award for Outstanding Academic Achievement by a graduating woman from the Graduate School, sponsored by the Provost’s Commission on the Status of Women and the UConn Women’s Center.



She completed her Ph.D. in January 2007, under the supervision of Professors **Barrett Wells** and **Joseph Budnick**.

Hashini studied the copper oxide based, high temperature superconductors. She discovered that these materials are not electronically homogeneous, but rather break up into separate magnetic and superconducting phases. The central result of this project was published in *Nature Materials*, volume 5, pages 377-382, May 2006 and has been presented at several interna-

tional conferences.

Hashini, a great motivator and communicator, has been an outstanding leader in our department and the UConn community. She served as president of the Physics Graduate Students Association and was one of two principal organizers of a graduate student-only seminar series. Hashini worked to help her home country, Sri Lanka, which was devastated by the tsunami of December 26, 2004. She led efforts of our students and staff to provide relief supplies. This project resulted in Sri Lankan students as a group receiving a nomination for the CT Higher Education Community Service Award for performing exemplary community service. They received a certificate for the nomination at the Community Service Award Ceremony on April 21, 2005.

Hashini is currently teaching at Bridgewater State College in Massachusetts while seeking a permanent position in Sri Lanka. Her generous spirit and commitment to education and research will make her an asset to any institution.

Ara Chutjian to Present Second Edward Pollack Lecture

The second Edward Pollack Distinguished Lecture will be presented on Friday, September 28, 2007, by Dr. Ara Chutjian of the Jet Propulsion Laboratory (JPL), Caltech, Pasadena, CA. Dr. Chutjian, leader of the Atomic and Molecular Physics team at JPL and a Senior Research Scientist, is a Caltech faculty associate and a Fellow of the American Physical Society. Chutjian's research involves space physics - both laboratory observations and studies with JPL's space probes. In 1997, he received NASA's Exceptional Scientific Achievement medal. Chutjian's talk "Highly Charged Ion Collisions in Astrophysics" will focus on laboratory measurements of x-ray emission and charge-transfer collisions from highly-charged oxygen, carbon, nitrogen and other ions found in the solar wind with target gases found in comets, such as water vapor and carbon monoxide. Strong x-ray emission has been observed recently with Chandra and other NASA space-based observatories from all comets as they approach the Sun. The JPL measurements aim at a detailed understanding of the comet x-ray emissions observed from space. Prof. Ed Pollack obtained NASA support for a research collaboration on these problems with Dr. Chutjian a few years ago, work continued by others in our department.

This memorial lecture is an annual event. Prof. Pollack, who was a mainstay of our department since the 1960s, died on February 11, 2005. Ed taught a wide variety of physics courses at UConn and, with his graduate students, made impressive research contributions in the field of experimental atomic and molecular physics. He was an outstanding teacher and took great pride in the accomplishments of his advisees. Born in 1931, in New York City, Ed received his B.S. degree in 1952 from the City College of New York (CCNY), a school long known for producing first-rate physics graduates. After completing his M.S., he served in the U.S. Army in 1954, undertaking research at Fort Detrick in Maryland. Subsequently, he taught physics at New York University and CCNY, earning a doctorate from NYU in 1963. Ed immediately received an appointment to teach physics at UConn during the administration of President Homer Babbidge, and made the university his professional home for over four decades. The Edward Pollack Endowment for Physics, initiated by Ed's family, provides funding for this distinguished lecture series in the field of atomic, molecular and optical physics.

Mercator Professorship Awarded to Gerald Dunne

Gerald Dunne spent the 2006/2007 academic year on sabbatical, with 6 months at the University of Adelaide (Australia), supported by the University of Adelaide Distinguished Visitors Programme, and 6 months at the Institut für Theoretische Physik, Universität Heidelberg, after being awarded a Mercator Professorship by the Deutsche Forschungsgemeinschaft (the German Research Foundation). **Adolfo Huet**, a UConn Physics Ph.D. student working with Dr. Dunne, also spent the Spring 2007 semester in Heidelberg, supported in part by the Connecticut/Baden Wurttemberg student exchange program. Both Gerald and Adolfo also studied German (with uneven success!) at the Max Weber Haus, and Dr. Dunne gave lecture courses on Euler-Heisenberg Effective Actions, at Heidelberg and at the Mitteldeutsche Physik Combo in Jena, Leipzig and Halle.

Sigma Pi Sigma Inductees and Events

Sigma Pi Sigma was established in 1921 to recognize and encourage outstanding scholarship in physics and service to the physics community. On Friday, April 27, 2007, we were pleased to induct fifteen students into the UConn chapter, including ten undergraduates and five graduates. The undergraduates were **Kristen Basiaga, Matthew Demas, Kaitlin Harley, David Hoogewerff, Chanisa Lycke, Gregory Petropoulos, Christine Ploen, William Stobierski, Taylor Wender, and Alexander Young**. Graduate students honored were **Bethany Adams, Gokce Basar, Ryan Carollo, Richard Crudo, and Ilkyoung**

Shin.

That Friday was Sigma Pi Sigma Day. The Society of Physics Students (the Physics Club) hosted the colloquium speaker, Prof. **Allan Weatherwax** from Siena College. They accompanied Allan on tours of Physics laboratories, hosted a lunch, and had an extensive physics discussion with him. Allan gave them instructions on how to volunteer for research trips to Antarctica. Afterwards, the graduate students met with the speaker and discussed his research.

Prof. Weatherwax' talk was "Solar Storms and Space Weather." These storms affect satellite transmission and

our electrical power grid. He described his research with undergraduates studying the near-earth space environment and phenomena, such as storms from solar flares and the northern lights. Students working with him travel by transport plane to Antarctica, northern Greenland, and Alaska to set up and run experiments. They live there for extended periods. The day was capped off with a banquet for the inductees, their guests, and members of the Physics Department. It was an excellent opportunity to honor our best students - the future of our profession.

SupraMagnetics receives SBIR grant

A start-up company in Southington, CT will receive \$600,000 in federal grants to develop an advanced superconducting wire that will have applications in particle physics. The wire could also bolster the efficiency of hospital MRI machines and equipment used by chemical and pharmaceutical companies to study the molecular structure of compounds.

Leszek Richard Motowidlo

started SupraMagnetics, Inc. in 2004 and plans to develop a more cost-effective product. Motowidlo's company is one of four small businesses in Connecticut that received almost \$3.4 million combined in grants last year from the Small Business Innovation Research program of the Department of Energy, which is aimed at helping innovative companies develop new technolo-

gies. Les Motowidlo received his M.S. in physics in 1976 with Prof. **David Markowitz** and his Ph.D. in 1981 in Materials Engineering under the supervision of Prof. **James Galligan**. Les received an Alumni Award from the School of Engineering in 1996 for his outstanding contributions to both the science and engineering applications of superconducting materials.

2007 Physics Olympiad

On May 24, 2007, the second Annual UConn Physics Olympiad took place at the Storrs campus. Twenty-three teams from Connecticut high schools participated in five tasks to determine the winner of the competition. The hands-on tasks were all physics related and ranged from the very basic to the first-year college level: electricity and magnetism, center of mass and torque, density, kinematics and mass distribution. We hosted almost 100 students from 13 high schools in the state. After months of planning, we are very pleased to report that the Physics Olympiad was an absolute success and again received rave reviews from teachers and students alike.

The stated mission of the UConn Physics Olympiad is to support physics teachers and students of Connecticut by complementing their physics curriculum and connecting high school science programs with the resources available at UConn. Within the framework of a collegiate game, we provide high school students with the opportunity to look at physics in new ways by participating in inquiry-based tasks. Students engage in hands-on science and make connections to real world challenges. The UConn Physics Olympiad provides an atmosphere for developing fun and creative ways of doing science.

With much energy and enthusiasm, the Olympiad

got students to find their way through a vector labyrinth, design circuits for maximum total current, build free-floating water towers to hold the load at the top, create a launcher for the largest range, and determine ideal release angles for boats crossing moving rivers. The result? Participating students evaluated their experience: "Overall, it was a very good experience, so I don't think you should change anything." "[The tasks] were all relatively challenging and interesting." "The events ran very smoothly." "It was fun and interesting." "Excellent!" "Keep using demos that can't be done easily in high school."

Teachers were also pleased with the Olympiad. Dr. Joshua Schmidt, from Marianapolis Preparatory School, wrote: "I was very impressed with the event in general. The kids got to do some hands-on activities in a problem-solving setting. I'm convinced that

these are the kinds of things that people remember. You are doing a great thing by putting the things they learn in some sort of context that shows them that physics is part of life. Thank you for that." Another teacher wrote "my students enjoyed the day."

Want more info on the Olympiad? Check out www.phys.uconn.edu/olympics/. Interested in assisting us in sponsoring this incredibly effective outreach effort? Our

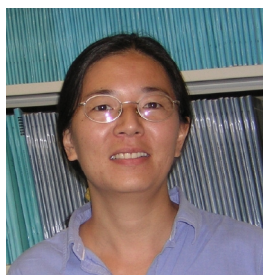
participants could be wearing hats provided by your company next year. Please contact Carol Guerra (carol@phys.uconn.edu).



Pictured is a team working on the "aquatower" - designing a new boat that stores cargo above water.

Arrivals/Departures

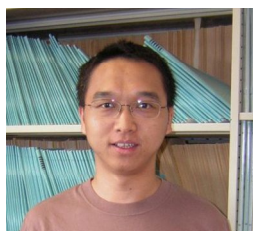
We are pleased to welcome **Vasili Kharchenko**, a leader in X-ray astrophysics, to Storrs. Vasili joined our department this past January, in the Physics Department's first bridge position with the prestigious Harvard-Smithsonian Center for Astrophysics located in Cambridge, Massachusetts. Vasili has been a physicist at the Center since 1993, and previously Professor of Physics at the St. Petersburg Technical University in Russia (formerly the Leningrad Polytechnical Institute in the USSR). Vasili's research spans many fields of physics. In Russia, he worked on both theoretical condensed matter systems, such as quantum dots or superconductors, and atomic collisions. Vasili has enlarged his scope to include atmospheric physics and astrophysics since he began at the Smithsonian Astrophysical Observatory (SAO) in 1993. He continues to collaborate with the SAO, more recently becoming one of the theoretical physicists working with the Chandra X-Ray Observatory team. This multibillion dollar research project is studying the X-ray universe from galaxies to stars, planets and even comets.



This fall semester, **Shan-Wen Tsai** will join us as a Visiting Professor. She is currently a professor at the University of California at Riverside and we're hoping to convince her to join our faculty permanently. Shan-Wen is a condensed matter theorist, specializing in renormalization-group approaches to many-body interactions. These calculations help reveal the fundamental behavior of many materials, among them graphite, high temperature and organic superconductors, nanoscale-wire networks and atoms in artificial lattices. Prior to working at the University of California, she held postdoctoral appointments at Boston University and the University of Florida. She received her Ph.D. from Brown University under the direction of Professor Brad Marston. Shan-Wen has a diverse international background, having grown

up in Canada and then receiving her B.S. degree from the University of Sao Paulo in Brazil. We are excited to welcome Shan-Wen to Storrs and look forward to the contributions that she will make to the department during her stay.

Dr. **Elena Kuznetsova** is joining the theoretical atomic, molecular and optical (AMO) physics group as a postdoctoral fellow with Professors **Robin Côté** and **Susanne Yelin** in summer 2007. Elena did her undergraduate studies at Nizhny Novgorod State University in Nizhny Novgorod, Russia with a diploma thesis on instabilities of blood flow in large human arteries, and joined the research group of Professors Olga Kocharovskaya and Marlan Scully at Texas A&M University in 1999. She received her Ph.D. in Spring 2005, followed by a postdoctoral fellowship in the same group before coming to UConn. Elena's background is in theoretical quantum optics, where she is an expert in electromagnetically-induced transparency in solids. Presently, her goal is to build a quantum computer using different setups involving cold polar molecules. She will also be collaborating with researchers at the Institute for Theoretical Atomic, Molecular, and Optical Physics (ITAMP) at the Harvard-Smithsonian Center for Astrophysics.



Qinghai Wang, a postdoc working in the particle and field theory group with 14, has moved to Singapore. Qinghai is an expert in quantum field theory and mathematical methods in theoretical physics. Qinghai and his wife, Rong, have new positions at the Singapore Management University. We wish them all the best in their new home.

Professor **Munir Islam** recently announced his retirement after 40 years of service to the University of Connecticut and the Department of Physics. Munir was born in Pakistan and received his B.S. and M.S. degrees at the University of Dacca, now in Bangladesh. He then went to Imperial College, University of London, on a scholarship from the Royal Commission to do his doctoral work. After completing his Ph.D. in 1961, Munir continued postdoctoral research in elementary particles and high energy physics at Imperial College and Brown University before joining our faculty in 1967.



Munir has worked extensively in the field of high-energy scattering theory, primarily with applications to the strong interactions that operate inside nuclei and inside the nucleons (protons and neutrons) that make up nuclei. This is one of the outstanding research areas in modern theoretical physics, and Munir plans to continue his research on proton structure. He is currently collaborating with his former student, Dr. **Richard Luddy** (UConn Ph.D. 2006). They are looking forward to the planned measurements of proton-proton scattering at the Large Hadron Collider at CERN (European Center for Particle Physics Research) in Geneva. These measurements will test their model of proton structure.

In Memoriam

Dwight Hills Damon (February 26, 1931 – September 15, 2006)

Dwight Damon, Emeritus Professor of Physics, passed away last September. Dwight had a long productive career at UConn, retiring in 1997 after 27 years of service to the Department of Physics and the Institute of Materials Science (IMS). He then assisted the Center for Learning In Retirement (CLIR), also at UConn, presenting classes on science and society and serving as treasurer.

He was born in Northampton, grew up in Amherst, Massachusetts, and graduated from Amherst College with a B.A. in physics in 1953. His class was among the first at Amherst in which physics with calculus was a part of the core curriculum. He was a member of the Phi Beta Kappa and Sigma Xi honor societies. Dwight received his Ph.D. in condensed matter physics from Purdue University in 1961, followed by a position as a research scientist at the Westinghouse Electric Co. Research Laboratory in Pittsburgh. He joined the faculty at UConn in 1970, hired by Dr. Paul G. Klemens, then Head of the Department of Physics, with whom he had worked at Westinghouse. His first research at UConn involved the revival and continuation of a program in low temperature physics started by Prof. Charles Reynolds. At UConn he helped develop and was an active researcher in the Polymer Program of IMS. An associate director of IMS, he was instrumental in creating its Electrical Insulation Research Center. Dwight also implemented the Polymer Program's polymer physics curriculum.

Dwight married the former June M. Olson on May 29, 1955; they had two daughters: Candace and Inger. On October 29th of last year, Dwight's family held a reception in celebration of his life. His daughters gave a rich picture of

their multi-dimensional father that the following summary only begins to convey.

Dwight was an exemplary teacher. Teacher was both a professional role and a "dad role." The core of what he passed on was a conviction that because the only life of which we can be certain is this one, it makes sense to think hard about what will make us happy in this life and strive to attain those conditions. Candace spoke in detail about her list of "happy-making conditions" – all there because her Dad taught her they should be.



"Happiness is hugs and kisses.

My dad was a lot more physically affectionate than most dads of his generation. I always knew he loved me. In the last few weeks, my son, Otis, has started running around, arms wide open, making kissy noises. It always makes me smile, always gets him a kiss, and always reminds me of my dad."

"Happiness is a good argument.

A good argument is, first of all, about something that matters, and second, it is an exchange of ideas based on analysis of facts, not feelings. Although you are certainly allowed to assert as fact that which you are not so sure is fact, and, if you were arguing with my dad, you'd better be prepared to assert equally quickly where you found this "fact." Finally, although winning an argument is certainly a bonus, it isn't necessary. What is necessary is enjoyment of the exchange while it's ongoing, and understanding of when to stop so that you remain friends when you've done so."

"Happiness is a work and civic life that engages your mind and your heart." What made Dwight happy was an active civic life in which he got to argue with people about the application of the American political ideals he held dear. Happiness was also having the time to actively

engage in raising his daughters. In Dwight's view, money and prominence ranked pretty low on the scale of what would make you happy.

"Happiness is marriage to your best friend." Your best friend will value your hopes and ambitions, always be

faithful, make you laugh with regularity, and hold you when you cry.

A favorite game of the Damon family was the fantasy dinner party: whom to invite (Thomas Jefferson? George Steinbrenner?), what to serve,

what the conversation would be. Dwight insisted that Pericles be a perpetual guest. Candace and Inger described Dwight's admirable life in all its aspects. At UConn we knew the same fine man and are happy for that.

Thomas I. Moran (November 8, 1930 – December 5, 2006)

Some senior faculty and alumni will remember fondly our colleague, Prof. Emeritus Thomas I. Moran, who died December 5, 2006 of progressive supranuclear palsy (PSP), a neurological disease he battled courageously for more than 9 years. Tom served the Physics Department for 27 years from September 1964 to May 1992, when he retired. He was born in upstate New York (Amsterdam), attended Union College, and received his Ph.D. from Yale under W.W. Watson. Following his



Ph.D., he worked as a research physicist with General Electric and as a postdoc with John Trischka at Syracuse on mo-

lecular-beam electric resonance research. He then joined Brookhaven National Laboratory as a research associate with Victor Cohen (I.I. Rabi's first student) on beam measurements of nuclear magnetic moments. Before arriving at UConn, he spent a year in Heidelberg on a combination of Humboldt and Fulbright Fellowships.

Tom's colleagues and students will remember him as a superb but tough teacher and experimental researcher. On his retirement, one former student (Frank Menotti) wrote about his skillful teaching and mentoring but complained about his "propensity for whistling the complete Brandenburg Concertos around the laboratory." Prof. Moran put considerable effort into the development and instruction of the undergraduate laboratories and into undergraduate teaching in general. He had thousands of undergraduate students in classes and several graduate students in the lab. His research at UConn centered on molecular beam measurements of vibrational

lifetimes of alkali halide molecules, for which he designed and built a special apparatus. His Ph.D. student and long-time friend, David Bedding, in turn became a physics professor at the UConn Waterbury Campus.

Tom had many other interests outside of physics: there was "Tom Moran, the roofer" and "Tom Moran, the auto mechanic, plumber and electrician" and "Tom Moran the builder, small-plane pilot and mechanic." Other interests included language study (German and Japanese), classical music and bicycling. Besides his devoted wife, Antonia, a member of the political science faculty at Central Connecticut State University, Tom leaves their son, Matthew and the children of his first marriage, Rebecca, David, Michael and their spouses, eight grandchildren and a brother William. Tom was an independent thinker with high expectations of himself and his students. He will be greatly missed by his colleagues, former students and friends in the Physics Department.

ENDOWMENT NEWS

Your endowment contributions continue to add to our “quality of life” in important ways. The endowment of Drs. **Henry and Constance Katzenstein** once again brought a Nobel Laureate to campus for a tenth annual “Katzenstein Distinguished Lecture.” Additionally, this fund provides a monetary prize for the best undergraduate physics paper of the year. The winner of the 2007 Katzenstein Prize was **Sarah Bouckoms**, an advisee of Professor **Cynthia Peterson**. The annual award is for the best physics essay by a graduating senior and is given at the Sigma Pi Sigma banquet. Sarah’s essay “Analysis of light curves for the RV Tauri star RU Cen,” was based on her research carried out at the University of Canterbury, Christchurch, New Zealand, where she spent her senior year. Sarah is one of many who have been attracted to the pulsating variable stars, and her project was to find the most accurate method of determining the star’s temperature. Sarah plans to continue her studies and recently applied for admission to the Gateway Antarctica program sponsored by the University of Canterbury.

The University of Connecticut Excellence in High School Physics Teaching honor was awarded to Mr. **Robert McAndrew**, of the South Windsor High School. Mr. McAndrew was cited for his genuine interest in help-

ing his students to understand the natural world around them and encouraging them to think creatively, skills they will use for a lifetime.

The **Georgiana and Marshall Walker** endowment rewards the student voted by the faculty as the best Teaching Assistant of the year. Congratulations to **James O’Brien**, this year’s winner.

Maturing funds include those established by **Isaac S. Blonder** (our first physics major, B.S., 1938), **Paul Klemens** (Professor of Physics and Department Head 1967-74), and **Nagavarapu S. Mohan** (Ph.D., 1975). Ike’s (the Isaac S. and Lois W. Blonder Graduate Fellowship in Physics), Paul’s (the Ruth and Paul Klemens Endowment), and Mohan’s (the Nagavarapu Graduate Award in Physics), are all intended to support graduate students doing research. This year, joining this important group of donors is another endowment for graduate student support, the **Dwight Hills Damon** Graduate Fellowship in Experimental Physics, and the **Edward Pollack** Endowment

for Physics, which supports an annual distinguished lecture in Atomic, Molecular, and Optical Physics. These significant endowments were initiated by the Damon and Pollack families and augmented generously by many others. Income from the graduate student funds is being used to attract the best physics graduates from across the country. **Franz Rueckert**, who arrived last fall from San Diego State University, was the recipient of awards from both the Klemens and Nagavarapu endowments for his outstanding credentials. Franz is working in experimental condensed matter physics under the supervision of Professor **Barrett Wells**.

We are grateful to all those who contribute to these funds. Many of you respond to the general solicitations sent out by the University; we would be delighted if you used the fund numbers on the next page to direct such contributions to the Physics Department. They make a world of difference to us, both to our morale and to our effectiveness in assisting our students.

Making a Gift

There are many ways of making a gift including checks; marketable securities; planned or estate gifts; and through payroll deduction for University employees. Checks should be made payable to The University of Connecticut Foundation, with a cover note directing your gift. All gifts are eligible for tax deductions as The University of Connecticut Foundation, Inc., is recognized as a 501(c)(3) non-profit organization. Donors have the option of remaining anonymous if they wish.

STAY IN TOUCH

We've added a feature to our departmental web page that also assists our Alumni Office in updating their records. We would like to start an email distribution list for our Physics Alumni so that we can update you promptly when we have important news to share. Please help us by logging on to our site <http://www.physics.uconn.edu> and clicking onto the link for Alumni. That will take you to a page that requests your contact info, including your email address. There is also a place for any comments you would like to send us. We want to keep in touch and keep you posted. Thank you for your assistance.

I/we would like to support the Physics Department programs.

Please direct my gift of \$_____ to:

- Dwight Hills Damon Graduate Fellowship in Experimental Physics (31028-2014)
- Edward Pollack Endowment for Physics (30958-2014)
- Ruth and Paul Klemens Endowment (30951-2014)
- Endowment for Physics Research and Graduate Education (30911-2014)
- Marshall and Georgiana Walker Graduate Award Fund (30876-2014)
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- Isaac S. and Lois W. Blonder Graduate Fellowship in Physics (30743-2014)
- Nagavarapu Graduate Award in Physics (30723-2014)
- Physics Department Unrestricted Fund (20351-2014)

Matching Gift

- I work for a matching gift company. The form is enclosed.

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Should you wish to support one of these efforts, please send your contribution directly to the University of Connecticut Foundation with the fund number of the program of interest to you written on your check.

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Thank you for your support!

Any news about yourself that you are interested in sharing? We have enjoyed the unsolicited mail we receive as a result of our newsletters so now we're actively soliciting. Please send suggestions to: David Markowitz, Editor, at the Department address.

SAVE THE DATE

November 16, 2007

Invitations for the Katzenstein dinner are about to be mailed. If you are interested in attending but do not receive your invitation by the end of September, please contact Kim Giard at 860-486-4924, email: kim.giard@uconn.edu.