



# Department of Physics Newsletter

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## Past Inspires Present: Einstein at CCNY and “*einsteins in the city*” Conference

“It gives me the greatest pleasure, on this, my first visit to America, to have this opportunity of meeting the student body of this great university. I appreciate very much your friendly reception and applause and extend to you all my heartiest good wishes.” With those words in German, Albert Einstein addressed the student body of the City College of New York assembled at the Great Hall. It was his sixth address at CCNY and the first open to students during his first visit to the United States in 1921.

It was in April 14, 1921 that Einstein first came to CCNY, his first appearance before a scientific gathering in this country, to listen to an account of his theory of gravitation by Edward Kasnar. After complimenting the speaker for his lucid presentation, Einstein outlined the limitations of Newtonian mechanics, and his motivation for developing a more general theory. He then gave four lectures on four consecutive days on his theories that revolutionized Physics and impacted Philosophy and other disciplines. The first of these lectures was on *The Special Theory of Relativity*, and was given on Monday, April 18, 1921. It was followed by lectures on *The Development of the Special Theory*, *The General Theory of Relativity and Gravitation*, and *The Ether and Gravitation*. The lectures were given at the Doremans Hall at CCNY and were attended by distinguished physicists, mathematicians, and teachers of philosophy from around the country. Professor Morris R. Cohen of CCNY wrote a review of the lectures in the April 29, 1921 issue of *The Campus*, the student newsletter. The Einstein lectures were a source of gratification for the College.

When the Physics community was celebrating 2005 as the World Year of Physics in recognition of the

centennial of Einstein’s 1905 papers it was only fitting that CCNY would commemorate the 100 years of the Einstein Papers and the role it played in Einstein’s first visit to the US. The College rose to the occasion by organizing a Student Research Conference, “*einsteins in the city*” on April 11-12, 2005. The multidisciplinary conference attracted graduate and undergraduate students from different universities in metropolitan New York, various corners of the country, and from as far as Austria. Students made poster presentations of their research covering a variety of topics that included bioengineering, biological systems and behavioral science, computer science, condensed matter and materials science, environmental science and ecology, general science, hydrodynamics and transport phenomena, mathematics and economics, molecular biology, biochemistry and organic chemistry, nanoscale science and technology, networks and systems, photonics, and remote sensing. Five of the posters were selected for oral presentation as well. Special guests at the conference included four CCNY alumni who went on to earn Nobel prizes for their works: Herbert Hauptman and Jerome Karle, 1985 Nobel Laureates in Chemistry; Arthur Kornberg, 1959 Nobel Laureate in Physiology and Medicine, and Leon Lederman, 1988 Nobel Laureate in Physics.

A highlight of the program on Monday, April 11 was the Nobel Laureates Panel: *What we don’t know will hurt us: scientific literacy and science policy in the US*. It was moderated by Myriam Sarachik, Distinguished Professor of Physics at CCNY, and was addressed by all four laureates. Ms. Cornelia Dean, science editor of the New York Times, was also a panelist. The panel was preceded by Professor

Michio Kaku's plenary lecture, *The Role of CCNY in Albert Einstein's Quest to 'Read the Mind of God.'* A major attraction of the second day was the breakfast with the Nobel Laureates and other distinguished guests that provided students a unique opportunity to meet and socialize with the illustrious alumni. The second day also featured talks by recent CCNY graduates who are making their marks as prominent researchers in their fields. Included in this 'new generation of researchers' are Professor Peter Delfyett of the University of Central Florida, Professor Kathleen Stebe of Johns Hopkins University, Dr. Arden Werner of Fermi National Accelerator Lab, and Dr. Paul West of Hospital for Special Surgery in New York. The conference ended with an awards luncheon for the winning posters.

## **Physics Faculty Members Win Major Awards**

### **Double Crown for Myriam Sarachik**

Myriam P. Sarachik, Distinguished Professor of Physics at the City College of New York, continues garnering awards and accolades for her seminal contributions in Condensed Matter Physics. Her recent major awards include the 2005 Oliver E. Buckley Condensed Matter Physics Prize (with Gabriel Aeppli and David Awschalom) of the American Physical Society (APS) and the 2005 L'OREAL-UNESCO for Women in Science Award.

The Oliver E. Buckley Condensed Matter Physics Prize was established "to recognize and encourage outstanding theoretical or experimental contributions to condensed matter physics." AT&T Bell Laboratories (now Bell Laboratories, Lucent Technologies) endowed the prize in 1952 in memory of Oliver E. Buckley, an influential president of Bell Labs. It consists of \$10,000 (to be divided equally among the recipients) and a certificate with the appropriate citation. The Buckley Prize was presented at a special ceremonial session of the 2005 APS March Meeting in Los Angeles, CA. Professor Sarachik was cited "*for fundamental contributions to experimental studies of quantum spin dynamics and spin coherence in condensed matter systems.*"

The L'OREAL-UNESCO for Women in Science Award was initiated in 1998 by the cosmetics company L'OREAL in partnership with the United Nations Educational, Scientific and Cultural Organization (UNESCO) to elevate the role of

women in the scientific community by highlighting and rewarding their contributions. Every year five established female scientists from different parts of the world receive the L'OREAL-UNESCO awards, each of which is \$100,000 cash. An international jury of their peers selects the winners for their commitment to breakthrough science. Dr. Sarachik was selected as the 2005 North American Laureate "*for important experiments on electrical conduction and transitions between metals and insulators.*" She was awarded a Doctor of Science *honoris causa* by Amherst College on May 29, 2006.

Professor Sarachik has been a prominent figure in experimental Condensed Matter Physics and a leader in the Physics community. Her research over more than 40 years of her professional career has encompassed metal-insulator transitions in doped semiconductors, disordered metallic alloys, superconductivity, hopping transport in solids, two-dimensional electron systems, and molecular magnets. Kondo cited her early measurement of the anomalous resistivity of alloys containing magnetic impurities as major experimental evidence in support of the Kondo Effect. Her more recent research on single molecule magnets is not only of basic scientific interest, but has potential novel applications in high-density storage of information, and quantum computation as well. Her wide spectrum of research activities in Condensed Matter Physics is recorded in over 150 published articles in leading scientific journals.

In addition to her accomplishments as a reputed condensed matter physicist, Dr. Sarachik distinguished herself as a teacher and mentor of undergraduate and graduate students and post-doctoral research associates, and as a leader of the Physics community. She served as the President of the American Physical Society in 2003. She received the 2004 Sloan Public Service Award from the City of New York for blazing "trails as a scientist, researchers, teacher, mentor and humanitarian." Professor Sarachik is a member of the National Academy of Sciences and a fellow of the American Academy of Arts and Sciences.

### **Hernan Makse Wins Mayor's Award**

Hernan A. Makse, Associate Professor of Physics at CCNY is a winner of the 2005 Mayor's Awards for Excellence in Science and Technology. The awards are administered by the New York Academy of

Sciences (NYAS), and recognize “the important role members of the science and engineering communities play in the success of the City.” Each year the NYAS, in association with the New York City Department of Cultural Affairs, manages the nomination, evaluation, and review process for the awards in four categories: Biological and Medical Sciences; Physical Sciences and Mathematics; Engineering and Technology; and Young Investigator. The Mayor chooses winners from a list of finalists provided by the NYAS. Professor Makse is one of the two recipients of the Young Investigator Award that is given to scientists and engineers under the age of 40.

The press release that announced the awards noted, “Dr. Makse has made important theoretical contributions to the field of granular materials and allied areas of soft condensed matter physics, with profound implications for the understanding of glasses and other disordered systems. Granular materials are ubiquitous, important for such different materials as pharmaceutical and to the preservation on barrier islands. A major highlight of Makse's work has been to place the thermodynamics of granular materials on a firm footing. His demonstration of self-similarity in network structures like the internet may have important implications for network security.”

Dr. Makse received his Licenciatura in Physics from Universidad de Buenos Aires, Argentina in 1991 and Ph. D. in Physics from Boston University in 1997. After postdoctoral research at the Cavendish Laboratory, University of Cambridge, UK, College de France, Paris, and Schlumberger-Doll Research, Ridgefield, Connecticut, he joined the Benjamin Levich Institute and the Department of Physics at CCNY in 2000. Dr. Makse runs the Complex Systems Laboratory at the Levich Institute and carries out research in different soft condensed matter physics topics that include complex networks, granular flows, micromechanics and jamming in disordered systems, non-equilibrium kinetic roughening, scaling in complex systems and porous media.

### **Harry Lustig Receives an Honorary Doctorate**

The City College of New York conferred an honorary Doctor of Science Degree on Dr. Harry Lustig, a theoretical nuclear physicist, at its 160th

Commencement Exercises, Thursday, June 1, 2006. Dr. Lustig served CCNY with distinction in various capacities as a physics faculty, Chair of the Physics Department, Dean of the Science Division, and Provost. His research focused on nuclear reactions and Mossbauer effect. As Chair of the Physics Department, he was instrumental in establishing the department as a physics research and education entity of international acclaim. As Dean and Provost, he promoted establishment of research and education centers at CCNY that included the Sophie Davis School of Biomedical Education, and Institute for Ultrafast Spectroscopy and Lasers. His devotion to CCNY and commitment to excellence in science are credited for laying the foundation for the CCNY's Flagship status in the 21<sup>st</sup> Century. Professor Lustig went on to serve as the Treasurer of the American Physical Society (APS) for over 10 years, retiring in 1996. He guided APS with great care and skill through many changes including relocation of headquarters to College Park, Maryland, and growth of its operating budget from \$10 million to over \$30 million. Beyond his accomplishments as a scientist and science administrator, Professor Lustig was engaged in raising general public awareness of issues at the intersection of science, history, art and modern life. Examples of such activities include his lectures on plays with scientific themes, and organization (with Dr. Brian Schwartz) of a symposium on the history and physics of Michael Frayn's play, *Copenhagen*, that reenacts the 1941 visit of Werner Heisenberg to Niels Bohr. Even in retirement, Professor Lustig remains active in APS and as an Adjunct Professor of Physics and Astronomy at the University of New Mexico.

### **External Review of the Department Notes Impressive Gains, Urges Greater Investment of Resources**

CCNY Physics Department's External Review Committee, consisting of Jerome Friedman (1990 Nobel Laureate in Physics) of the Massachusetts Institute of Technology, Anthony Johnson of the University of Maryland at Baltimore County, and Robert Richardson (1996 Nobel Laureate in Physics) of Cornell University recently presented its report on the state of the Department. The committee members based the report on their visit to the department on April 27 and 28, 2005, when they heard reports on the research and teaching activities of the department, visited research laboratories, and met with the faculty

members, the Department Chair, the Dean of Science, and the Provost.

The report supports the recent perception in the community that the department is making progress to regain its previous stature. The report cites the hiring of nine new faculty members over the last five years in condensed matter physics, laser physics and mediphotonics, theoretical high energy and mathematical physics; cutting-edge research programs with established collaborations with the broader research community; high morale and enthusiasm among the faculty; increase in graduate and undergraduate student recruitment; as well as strong and dedicated leadership for the progress. While the report commends the Department for maintaining its strength in photonics, broadening its condensed matter program, strengthening its theory program, and developing a small but excellent program in biophysics, it notes that “the size of the department is marginal for it to continue its rise to the rank of a notable department” and that a few of the groups “sit on the verge of instability; the loss of even one faculty member would severely hamper the productivity of the group.”

The report urges addition of new faculty members in biophysics and theory, and recommends that retiring faculty be replaced and additional faculty hired to strengthen some research areas. The committee members find the infrastructure and services inadequate, but are relieved that a new building on the south campus will replace the current building. “The impressive gains over the last decade cannot continue, or even be maintained, without addressing the serious issues of faculty salary, teaching load and of low graduate student stipends along with lack of health insurance,” the report concludes. To realize the required “greater investment of resources into the Physics Department” the report further suggests that the major resources for physics be “concentrated in only one or two campuses.”

Since the Report, new faculty members in biophysics, Dr. Ronald Koder, and condensed matter theory, Dr. Alexander Punnoose, have joined the department.

## New Faculty Members

Three faculty members joined the department since Fall 2004.

**Ronald Koder** joined the department in the Spring of 2006. He obtained his undergraduate degree in Chemistry from the University of Missouri-Columbia

in 1992, performing his thesis research in enzymology with Peter Tipton. After a brief period as a synthetic organic chemist at Monsanto Co. in St. Louis, he went on to do his graduate work in Biophysics at Johns Hopkins University with Anne-Frances Miller, carrying out NMR and enzymological experiments on flavins and flavoenzymes, earning his Ph.D. in 2000. He subsequently began his postdoctoral work in the department of Biophysics at the University of Pennsylvania with P. Leslie Dutton and A. Joshua Wand, working on the *de novo* design and NMR analysis of artificial hemoglobin proteins.

His research interests are in computational protein design, design and synthesis of novel enzymatic cofactors, and nuclear magnetic resonance. His current projects include the design of novel enzyme systems for cancer therapy and the design of protein-based photovoltaic devices.

**Matthias Lenzner** joined the department in the Fall of 2004. He studied physics at the Friedrich-Schiller University in Jena, Germany, where he obtained his Diploma degree in 1986 and the Ph.D. in 1989. His area of research was on optoelectronic switching in semiconductors. After receiving his Ph.D. he spent six months with the semiconductor group of Vilnius University, Lithuania and the year of 1991-92 with the University of New Mexico in Albuquerque, NM. His research during this period centered on the investigation of laser-matter interaction in the widest sense (time-resolved measurements, generation of short high voltage pulses in semiconductors, and carrier diffusion processes).

He worked with the femtosecond laser group of the Vienna University of Technology, Austria from 1994-2000. There he developed a laser system including an oscillator, an amplifier and a pulse compressor that generated the shortest laser pulses available at that time. Later he was involved in the application of these pulses for generation of x-ray radiation in noble gas plasmas and in the investigation of laser-induced breakdown in gases and solids. One of his special research interest is the investigation of ultrafast processes in laser-solid interaction.

Starting 2001, he worked for several years as a Research and Development manager for a company in Berlin, Germany that developed and manufactured laser systems for refractive eye surgery. At CCNY Professor Lenzner is establishing his femtosecond laser laboratory.

**Alexander Punnoose's** joined the department in the Fall of 2006. His scientific interests lie in the study of the electronic properties of disordered, low dimensional, strongly correlated systems. His research on metal-to-insulator transition in high mobility two-dimensional electron (hole) systems has culminated in the development of a two-parameter scaling theory, in which the metal-insulator transition is seen as a new type of quantum critical phenomenon in the two-dimensional electron gas, arising from the interplay of disorder and electron-electron interactions. Dr. Punnoose is working to establish a research program to investigate the theoretical aspects of this quantum critical phenomenon. In addition, he is exploring the effects of spin-orbit interactions on the transport properties of low dimensional semi-conducting systems.

Dr. Punnoose received his B. Sc. in Physics from Indian Institute of Technology, Kharagpur, India in 1991. He earned his M. Sc. and Ph. D., both in Physics, from Indian Institute of Science, Bangalore, India in 1993 and 1998, respectively. He was a Post Doctoral Fellow at Weizmann Institute of Science, Israel from 1998 to 2002, and at Bell Labs, Murray Hill, NJ from 2002 to 2005. He then worked as a Research Associate at the University of Wisconsin at Madison for one year.

### **CUNY-CAT Re-designated**

The Center for Advanced Technology (CAT) at the City University of New York (CUNY) was re-designated by the New York State Office of Science, Technology and Academic Research (NYSTAR) for another ten years. The Center was established in 1993 to foster photonics research and development with emphasis on collaboration with New York State industries for economic development. Dr. Robert R. Alfano, Distinguished Professor of Science and Engineering at the City College of New York, is the director of the CUNY-CAT, one of 15 Centers for Advanced Technology at leading universities in the state. A ceremony to celebrate the re-designation was held at the CUNY Graduate Center on June 15, 2005. It was attended by CUNY Chancellor Mathew Goldstein, CCNY President Gregory Williams, CUNY Executive Vice Chancellor for Academic Affairs Selma Botman, NYSTAR deputy Executive Director Joshua B. Toas, representatives from several photonic industries, faculty members, students and administrators from different CUNY campuses. Mr. Toas presented Professor Alfano a \$10 million

promotional check, in recognition of potential annual funding of \$1 million for 10 years. "The Center for Advanced Technology at CUNY is helping New York grow as a high-tech power house," said Dr. Russell Bessette, Executive Director of NYSTAR in a statement.

CUNY-CAT counts 37 faculty members from six CUNY campuses as principal investigators participating in various photonics research projects in collaboration with industrial partners. The center has trained over 150 undergraduate students, 85 graduate students, 60 postdoctoral research associates, and 75 technicians. Many of those trained are now employed at state industries, an indication of the center's commitment to provide a skilled photonics workforce to local industries. Included among CUNY-CAT's industrial partners are: Alcoa, Applied Nanoworks, Con Edison, Corning, IBM, Lockheed Martin, Mediscience Technology Corp., Northrup Grumman, Pfizer, and Quantronix. While CUNY-CAT's activities are pursued by affiliated faculty members at different CUNY campuses, its 'primary home' is at the Institute for Ultrafast Spectroscopy and Lasers at the CCNY Physics Department. The Physics Department faculty members affiliated with the CAT includes, besides Professor Alfano, Professors Gayen, Lenzner, and Petricevic.

### **Physics Department Homecoming**

The Physics Department organized a homecoming event for its alumni on Friday, May 6, 2005. The goal was to rejuvenate contact with former students of the department, many of who have gone on to build successful careers in academia, government, industry, and other sectors. After the morning coffee hour Professor Michael Lubell and Professor Myriam Sarachik made brief remarks welcoming the attendees. The morning session featured Professor Michio Kaku who presented a talk entitled, "*CCNY and the Theory of Everything*." The afternoon session included tour of selected research laboratories, meeting with the faculty, and talk "*Ultrafast Modelocked Semiconductor Lasers – Physics and Applications*," by Professor Peter Delfyett of University of Central Florida. The event ended with closing remarks by Professor Maria Tamargo, the Dean of Science at CCNY.

## Faculty Activities and Achievements

### New Books by Kaku and Nair

**Michio Kaku**, Henry Semat Professor of Physics, has completed two new books (his ninth and tenth books). The first, *Einstein's Cosmos* (W. W. Norton), is a new biography of Albert Einstein, published for the Einstein centennial in 2005. Most biographies of Einstein are written by professional biographers, who often gloss over the science and concentrate on his personality and social activities. This book takes the perspective of the physicist: how Einstein was led to his ideas, what motivated his work, and what he was trying to accomplish with his unified field theory. It focuses on three physical "pictures" that guided Einstein to find special relativity, general relativity, and the (unfinished) unified field theory.

The second book, *Parallel Worlds* (Doubleday), is about the cutting edge of cosmology and quantum physics. The book begins with an introduction to cosmology, leading to the theory of inflation and the multiverse. The middle of the book concerns string theory, M-theory, and quantum cosmology, which permit the possibility of parallel universes and perhaps time travel. The last part of the book focuses on the ultimate death of the universe and the possibility that an advanced civilization may embark upon a dangerous but plausible path: to leave the universe.

*Quantum Field Theory: A Modern Perspective* (Springer, 2005) is a graduate text by **V. Parameswaran Nair**, Professor of Physics at CCNY. The text grew out of courses on field theory and particle physics that the author taught at Columbia University and the City College of CUNY. The first 12 chapters deal with standard topics that are commonly covered in a standard course on quantum field theory, while the last 8 chapters deal with some of the developments over the last three decades.

Distinguished Professor **Joseph L Birman** was a Visiting Professor of Physics at the Technion, Haifa, Israel during December 2005 - January 2006. There he presented the Physics Department Colloquium on "Dynamical Symmetry, Supersymmetry and Electrodynamics in Nearly Ferroelectric Superconductors" on January 12, 2006. Professor Birman was also the scientific co-organizer, with Professor Sultan Catto (Graduate School & Baruch College) and Mr Bogdan Nicolescu (Graduate School & Baruch College) of the "26th International Colloquium on Group

Theoretical Methods in Physics" held at the Graduate School & University Center of CUNY from 26-30 June 2006.

Professor **David Schmeltzer** visited the Theory Division of Los Alamos National Lab for ten days this summer. There he presented an invited colloquium entitled, "The Spin Hall Effect" on August 24, 2006.

### Undergraduate Students Receive Awards

**Merlin Brito**, a physics major who graduated in December 2005, won the first prize in the Undergraduate Research Division at the "*einsteins in the city*" conference held at CCNY on April 11-12, 2005 (see the lead article in this issue). His award winning poster presentation was titled, *Fabrication and Spectroscopic Properties of Thin Films of CdS:DAB, an Organic-Inorganic Nanoscale Light Emitter.*" The work was carried out at the Institute for Ultrafast Spectroscopy and Lasers at CCNY. Mr. Brito starts his career at the US Patent Office in Washington DC this September.

The following undergraduate students received 2006 awards given by the Physics Department. **Mr. Gennady Khirich** and **Mr. Christopher Negron** received the *Sidney Millman Scholarship Award* that is given to a junior physics major demonstrating high potential. The *Sonkin Medal* was awarded to **Mr. Imtiaz Tanveer** and **Mr. Claude Telesford** for demonstrating the best performance in the Physics laboratory course(s) and/or in experimental research. **Mr. David Graybill** received the *Ward Medal* that is awarded to the graduating physics major with the highest GPA in physics and math courses. The *Zemansky Introductory Physics Prize* is awarded to students who demonstrate outstanding scholarship in Introductory Physics 20700 or/and Physics 20800 courses. This year's recipients of the prize are: **Mr. Redwan Ahmed**, **Mr. Ali Amin-Mansour**, **Ms. Carolyn A. Falkenstein**, **Ms. Hai Yan Gaw**, **Mr. Volodymyr Gayovyy**, **Ms. Cory Ip**, **Mr. Youngjin Kang**, **Ms. Leah C. Kelley**, **Ms. Ujuka A. Obi-Eyisi**, **Mr. Daniel P. O'Reilly**, **Ms. Jingyi Pan**, **Mr. Dan T. Pham**, **Mr. Kalu Chibueze Uga**, and **Mr. Haralabos A. Vassos**.

### Recent PhD's

**Yasuhiro Abe** received his Ph.D. in February 2006. His thesis, "*Construction of Fuzzy Spaces and Their*

*Applications to Matrix Models,*” was carried out under the supervision of Professor V. P. Nair.

**Jamal Ali** defended his thesis entitled, “*Light Propagation in Paint and Prostate Human Tissue Using Visible to Mid-IR Spectroscopy and Imaging Techniques*” in October 2004. Dr. Robert R. Alfano, Distinguished Professor of Science and Engineering, was his thesis advisor.

**Hsuan Yeh Chung** finished his Ph. D with Professor David Schmeltzer. The title of his thesis is “*Transport of Spin and Charge in Nanosystems.*”

**Xiaohui Ni** graduated in February 2006. His thesis, “*Light Propagation in Turbid and Condensed Media,*” was carried out under the supervision of Distinguished Professor Robert R. Alfano. Dr. Ni is pursuing his postdoctoral research at the Institute for Ultrafast Spectroscopy and Lasers at CCNY.

**Yifan Song** defended Ph. D thesis, “*Studying Proton Pumping Mechanism of Bacteriorhodopsin and Cytochrome C Oxidase with Multi-Confirmation Continuum Electrostatics,*” in June 2006. Professor Marilyn Gunner was Dr. Song’s mentor.

**Oleksandr Yelnykov’s** Ph. D thesis, “*Pure Yang-Mills, Noncommutative Chern-Simons Theory and Noncommutative Quantum Mechanics: A Hamiltonian Approach,*” was conducted under the supervision of Professor V. P. Nair. He graduated in February 2005.

**Hepeng Zhang** received his degree in October 2004. Distinguished Professor Herman Cummins supervised his thesis entitled, “*Light Scattering Study of Salol, Exploring the Effects of Rotation-Translation Coupling.*”

**Zhenyu Zhu** graduated in February 2005. Professor Marilyn Gunner supervised Dr. Zhu’s thesis, “*MCCE calculation of quinone dependent electron and proton transfers in Rhodobacter sphaeroides bacterial photosynthetic reaction centers.*”

## New Graduate Students

Students who start their graduate education in Physics in the Fall 2006 semester include **Mr. Dario Capasso, Mr. Yuliang Jin, Mr. Jian Li, Ms. Yunpu Li, Mr. Wei Liu, Ms. Xiang Ma, Ms. Natalia Romero Kalmanovitz, and Mr. Bo Wen.** Mr. Capasso received his undergraduate education from Naples University in Italy. Mr. Yuliang Jin, Mr. Jian Li, and Mr. Wei Liu come from Fudan

University, People’s Republic of China (PRC) under the Mini-CUSPEA program. Ms. Romero Kalmanovitz received her BS and MS degrees from Tel Aviv University in Israel. Ms. Yunpu Li received her undergraduate education at Shanghai Jiao Tong University. Ms. Xiang Ma received her BS from the University of Science and Technology China, and Mr. Bo Wen from Nanjing University, PRC.

## Transitions

**Dr. Huong Nguyen** joined Marshall University, Huntington, West Virginia as an Assistant Professor of Physics in Fall 2005. She received her Ph. D. and was pursuing postdoctoral research under the tutelage of Distinguished Professor Joseph Birman.

**Dr. Yimin Wang** joined the Keck School of Medicine, University of Southern California as a Research Assistant Professor in May 2006. He was a research associate at the Institute for Ultrafast Spectroscopy and Lasers at CCNY.

**Dr. Min Xu** joins the Fairfield University, Connecticut as an Assistant Professor of Physics in Fall 2006. He received his Ph.D. under the supervision of Distinguished Professor Melvin Lax (deceased), and was pursuing postdoctoral research at the Institute for Ultrafast Spectroscopy and Lasers.

**Dr. Tuan Le** is spending a year as a research associate in Professor Lenzner’s group since January 2006. He is on a leave of absence from Femtolaser, a manufacturer of femtosecond lasers based in Austria. Dr. Le received his Ph. D from Vienna University of Technology in 2001.

## Outreach Activities

### Summer Research Experience for High School and Middle School Students: NASA-DoD Science Day at CCNY

Fifteen high school students and three middle school students participated in the Third NASA/DoD Summer Research Program at CCNY directed by **Dr. Robert Alfano**, Distinguished Professor of Science and Engineering. The goal of the program is to provide students with opportunities to participate in cutting-edge research and develop critical skills that are involved in the pathway to become a scientist. The six week long program (shortened this summer for laboratory renovations at the Marshak Science Building) is sponsored by the NASA University Research Center for Optical Sensing and Imaging,

and DoD Center for Nanoscale Photonics at CCNY. Faculty members from Physics, Chemistry, Earth and Atmospheric Sciences, and Electrical Engineering Departments and senior research scientists from the Institute for Ultrafast Spectroscopy and Lasers mentored the students. The research topics included synthesis and spectroscopic and microscopic studies of semiconductor quantum dots, optical spectroscopy for cancer detection, Cr<sup>4+</sup>-activated nanocrystals and porous glass, ferromagnetism in dilute magnetic semiconductors, effects of fluorescence self absorption of algae in sea water, x-ray diffraction study of minerals produced in large volcanic eruptions, statistical assessment of aerosol concentrations in New York city, terahertz spectroscopy, ice detection, and laser tissue welding. **Dr. Peter Gross** and **Ms. Charlene Chan Lee**, high school faculty members, were the instructors and coordinators of the program.

The highlight of the program was the NASA/DoD Research Day celebrated on August 4, 2006. The day's programs featured poster presentation by students on their research, and talks: "*Hyperspace*, *Time Travel*, *Parallel Universes*, and *Reading the Mind of God*" by Professor Michio Kaku of CCNY, and "*A Tour of Planet Earth*" by Astronaut Mario Runco, Jr. of NASA Johnson Space Center.

**Professor Richard Steinberg** taught a six-week long enrichment class as part of the "CCNY Summer Scholars Program." Thirty-one high school students studied science in an interactive way with a focus on observational astronomy.

## Physics Club News

The Physics Club undertook several on-campus and off-campus activities during the 2005-2006 academic year. These included a trip to Brookhaven National Laboratory (BNL), a trip to the American Museum of Natural History, a pizza party to promote new club membership, and various open-house video presentations to generate interest in physical sciences among general student population.

The BNL trip on April 17, 2006 attracted 17 students and 5 faculty members (Professors Boyer, Petricevic, Smith, Tu and Vitkalov) from the Physics Department. After a brief welcome by Ms. Elaine Lowenstein, our host at BNL, we watched "*Discovery*," a video overview of research activities at BNL. We visited the Tandem Van de Graaff Lab and the Information Technology Division before

lunch. The afternoon tour included the Linear Accelerator Lab and Instrumentation facility. Overall the trip was a rewarding experience. A smaller group consisting of only the Physics Club members visited the American Museum of Natural History. The main attraction was the movie, "*Cosmic Collisions*."

Our on-campus activities included video presentation of the PBS mini-series "*The Elegant Universe*" by Brian Greene. The mini-series attracted students and faculty members from several departments and showed significant attendance in most viewings. We had the pizza party on the first week of April. The election of Physics Club officers for the next academic year was held in May. Plans for the upcoming year include improvement of the physics clubroom/ undergraduate physics major lounge, presentation of various educational video programs, and tour of industrial research laboratories.

(Contributed by Jonathan Maltz)

## Alumni Corner

### Ashok Puri Wins Presidential Award for Mentoring

**Ashok Puri** is a recipient of the 2005 Presidential Award for Excellence in Science, Mathematics and Engineering Mentoring (PAESMEM). Dr. Puri received his Ph. D. in Physics in 1982 under the supervision of Distinguished Professor Joseph Birman. He is currently a University Research Professor in the Department of Physics at the University of New Orleans. The National Science Foundation (NSF) administers PAESMEM to honor "individuals and institutions that have enhanced the participation of underrepresented groups-- such as women, minorities and people with disabilities – in science, mathematics and engineering education at all levels."

In a press release announcing the 2005 awardees the NSF cites that Dr. Puri

"works to support the retention and matriculation of minority students at his university, as well as those children identified and served in K-12 outreach activities. Moreover, he supports the recruitment of students through participation in science fairs, by visiting classrooms and conducting science demonstrations in public schools. .... One of the greatest strengths of his mentoring program is the effort to systematically address under-preparation of undergraduate



minority students in science, technology, engineering and mathematics.”

Each PAESMEM includes a \$10,000 grant for the award recipient to continue mentoring and a Presidential commemorative certificate. The 2005 winners included 10 individuals and 1 institution.

Dr. Puri received his B. S. and M. S. degrees in Physics from Utkal University, Orissa, India in 1973 and 1975, respectively. His research interests are in rough surface modeling, metal and semiconductor surfaces, pulse propagation through absorbing media, resonant tunneling through heterostructures, applications of density functional theory, and electromagnetic response of geophysical strata.

### ***In Their Own Words***

#### **Building Understanding of Introductory Physics: Jerry Touger**

After getting a BA in physics from Cornell University, I came to CCNY in the fall of '66. At City, I did my dissertation work with Myriam Sarachik. In the fall of '74 I took a full-time teaching position at Curry College in Milton, MA, near Boston, returning that October to defend my dissertation. I've been at Curry ever since, advancing from Assistant Professor to Professor and at various times serving as Chairperson or Acting chair of my department. At Curry I was able to develop my own courses and course materials, some with NSF support. (I reported on this work in the American Journal of Physics and the Journal of College Science Teaching.) I've also been involved with the physics teaching profession more broadly. I've chaired the Committee on Research in Physics Education of the American Association of Physics Teachers (AAPT), am a past president of the AAPT's New England Section, and have done curriculum development for TERC in Cambridge, MA.

For over fifteen years, starting in 1984, I maintained an active research association with the Physics Education Research Group at the University of Massachusetts at Amherst, supported at various times by three successive NSF Research Opportunity Awards and a Visiting Research Professorship. This work was reported in several journal articles and in the proceedings of four international conferences.

In the early 1990's, I began working on an introductory textbook for the algebra-based physics course. My intent was to produce a text that would be

strongly informed by PER, and which I hoped would be more supportive than previous textbooks of the active engagement approaches to physics teaching that are having increasing success in the classroom. More than a decade and 900 pages later, *Introductory Physics: Building Understanding* was published by John Wiley & Sons in December 2004.

The past 30+ years have also generated, with my wife Hallie's more-than-equal partnership, two grown daughters of whom we're inordinately proud. Both are now living in Brooklyn. Molly is an education officer for the Medicare Rights Center and Naomi has an entry-level position with a Manhattan architecture firm. Hallie, meanwhile, has co-authored five mystery novels (under the pen-name G.H. Ephron) for St. Martin's Press, and under the name Hallie Ephron recently published a book on writing mysteries for Writer's Digest Press.

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