



Department of Physics Newsletter

Volume 7 Fall 2011 - Spring 2012

Undergraduate Program Grows, Graduates Shine

The story of the undergraduate program over the last several years has been one of growth and improvement. The total enrollment in all physics courses has increased from 781 in Fall 2001 to 1086 in Fall 2006 to 1669 in Fall 2011. What is even more significant, the number of physics majors has gone from 13 in 2001 to 26 in 2005 to 46 in 2011. Astronomy has seen explosive growth, from less than a 100 students a few years ago to over 500 students each semester recently.

But numbers don't tell the whole story of rebuilding a program student by student. It is the story of Eder Izaguirre, CCNY valedictorian for 2007, who came to New York from Honduras at the age of 16. His spoken English was limited, grades in high school were low, and he had little real interest in science. "I came to City not knowing what I wanted to do for the rest of my life," he said, "here I found my true calling—physics." Eder is pursuing a Ph.D. degree in Physics at Stanford. It is the story of Jonathan Maltz, working with Professor Lenny Susskind, himself a City College alumnus, at Stanford. Or of Chris Negron who went to MIT, Gennady Khirich who went to Yale, Luis Apolo who went to NYU, Alisa Agafanova who went to UC San Diego. It is the story of Theresa Carranza-Fulmer who "first arrived in 2006 after Hurricane Katrina," earned her BS in Physics, went to University of Michigan to pursue graduate studies and received a 2012 NSF Graduate Research Fellowship; and of others like her.



Above all this is the story of Georges Ndashimiye. Georges was born in Rwanda and managed to survive the genocide of 1994, fleeing to a refugee camp in Katana, Congo. But the camp was attacked one morning, the family scattered in all directions hoping some members would survive. Georges' was the lucky direction, his father and sister

who fled another way were shot to death. The William J. Clinton Foundation brought him to City College, where he

pursued his dream of becoming a physicist, winning the Ward Medal awarded by the College. Today he is working towards his Ph.D. in Applied Physics at Stanford University. The Physics Department thus continues to exemplify the CCNY's commitment to access and excellence, as well as, the diversity of its student body.

(V. P. Nair contributed to this story.)

OSA Student Chapter Formed

Giovanni Milione

Physics graduate students Giovanni Milione, Laura Sordillo, Jeff Secor, and Joel De Jesus formed the first student chapter of the Optical Society of America (OSA) at the City College of New York. Chapter members also include undergraduate physics majors Kamonash Chakraborty and Evgueni Chepelevski. During the last



few months since its inception, the chapter members have been involved in a number of physics and optics related activities including education outreach, networking, and professional development.

Giovanni Milione and Joel De Jesus attended the Student Leadership conference in October 2011 in San Jose, CA in conjunction with the OSA Frontiers in Optics conference and learned about the various resources that OSA makes available to students' chapters. In February 2012, Laura Sordillo and Giovanni Milione attended the International OSA Network of Students (IONS-11) Conference in Paris. They were among more than 100 optics and photonics graduate students from around the world. The CCNY chapter and the Columbia University chapter will co-host the IONS-NY 4 Conference in October 2012. The chapter also organized active participation in the event organized by the CUNY chapter at the Graduate Center of CUNY. Six graduate students and two undergraduate students from CCNY presented their work. The education and outreach activities of the members include mentoring the research work of high school and undergraduate

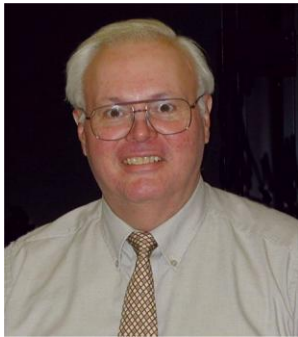
students, serving as judges at the New York City Science and Engineering Fair, and holding optics demonstration for the students of Montebello Road Elementary School in Montebello, New York. The Chapter members look forward to a more active year ahead.

(Giovanni Milione is the founding president of OSA Student Chapter at CCNY)

Physics Faculty Members Honored

Twin awards for Robert Alfano

Distinguished Professor **Robert Alfano** recently won two awards for his lifelong contributions to the field of optical spectroscopy and lasers. He is the first winner of the annual Britton Chance Biomedical Optics Award introduced this year by SPIE, the International Society for Optics and Photonics. The Britton Chance Biomedical Optics Award “honors contributions to optical methods and devices that have significant promise to accelerate or have already facilitated new discoveries in biology or medicine.”



Alfano received the award on 24 January 2012 during the Optical Biopsy X Conference at SPIE Photonics West in San Francisco. Alfano was honored for his contributions to optical biopsy, the use of light and fluorescence, absorption, excitation and Raman spectroscopic techniques for detection of diseases, in particular different types of cancer.

The Association of Italian American Educators (AIAE) has chosen Dr. Alfano to receive the AIAE “Lifetime Achievement Award.” The award “honors outstanding Italian American Educators from various areas, recognizes the accomplishments and dedicated efforts of individuals such as yourself who enhances the positive image of Italian Americans in our community,” said the letter from AIAE Awards Committee to Dr. Alfano. The formal presentation of the award is scheduled for April 29, 2012.

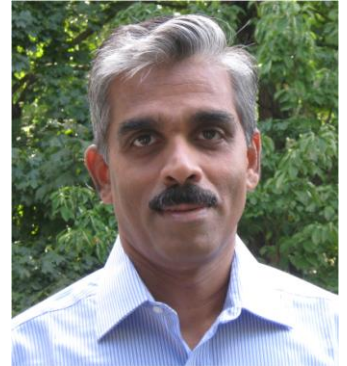
Nair named Distinguished Professor

V. Parameswaran Nair, Professor of Physics at City College and Chair of the department from Feb 2007 to June 2010, was recently named Distinguished Professor in recognition of his accomplishments over the course of his thirty-year career as a theoretical physicist.

Dr. Nair completed his B.Sc. and M.Sc. degrees at the University of Kerala in India. He then came to Syracuse University where he obtained his Ph.D. in 1983. He did

postdoctoral research work at the Institute for Advanced Study in Princeton and at the Kavli Institute for Theoretical Physics in Santa Barbara. He joined the faculty of Columbia University in 1987 and came to City College in 1993.

Dr. Nair's early work was on realizing protons and neutrons as solitons made of mesons, an idea which had been proposed by Tony Skyrme but which had never been proven. The full understanding of this possibility came with the work of Edward Witten at the Institute for Advanced Study at Princeton in 1983.



Nair has worked on a number of other topics in high energy physics, mostly related to the mathematical and topological aspects of the various theories. One of the continuing themes of his work has been a Hamiltonian approach to the Yang-Mills theories in two spatial dimensions, where he and his collaborators were able to calculate the string tension, a key parameter for the theory. Their result is in very good agreement with numerical estimates based on large scale simulations.

Another important contribution has been in the early identification of the role of *twistors* in scattering theory. In 1998, Nair produced a formula for a certain subclass of collision processes which related the esoteric mathematical idea of twistors to scattering of particles. In 2003, Witten constructed a Twistor String Theory, which incorporated Nair's work. Building on Witten's work, Twistor String theory has helped to uncover amazing new symmetries for collision processes.

Zemansky Chair for Greenberger

Physics faculty recently voted Professor **Daniel M. Greenberger** to Mark W. Zemansky Chair of Physics. The chair is named after Mark W. Zemansky, Professor of Physics at the City College of New York, and the 1956 recipient of the Oersted Medal awarded by the American Association of Physics Teachers in recognition of notable contributions to the teaching of physics.

Dr. Greenberger is a 1950 graduate of the Bronx High School of Science, a class that included two Physics Nobel Laureates Steven Weinberg and Sheldon Glashow, and Myriam Sarachik, the APS Buckley Prize winner and former president of the APS, among other luminaries. He received his B.S. from MIT in 1954, and MS and Ph. D. from the Univ. of Illinois in 1956 and 1958, respectively. His early work was in high energy theory and neutron interferometry. In 1986, on a sabbatical at the Technical

University of Vienna, he along with Mike Horne and Anton Zeilinger discovered the GHZ (Greenberger-Horne-Zeilinger) theorem, a much improved version of Bell's theorem in quantum mechanics. Since then his research



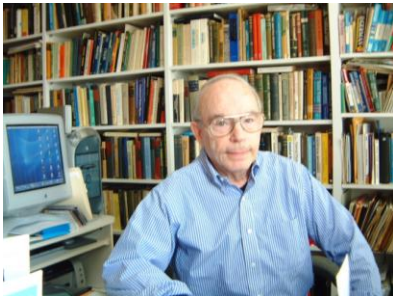
has focused on fundamental problems in quantum theory, mostly using quantum optics. Some high points of his career include publication of a two-issue festschrift by the journal *Foundations of Physics* on his 65th birthday, being elected a fellow of the APS, and being hired as a consultant by the Nobel Prize Committee in physics.

With Professor Zeilinger, he founded the APS topical group on Quantum Information for the APS. He organized a number of meetings on quantum mechanics, and serves on the editorial boards of a number of journals.

Soon after assuming the chaired position, Professor Greenberger organized the Zemansky Lecture, "Quantum Games, Quantum Information, and the Foundations of Quantum Mechanics," given by Professor Anton Zeilinger on April 1, 2011.

Physics Symposium Honors Herman Cummins

In October, 2010, leading physicists from the US and abroad, family, and friends, joined CUNY Chancellor Matthew Goldstein, CCNY President Lisa Staiano-Coico and City College faculty members at a symposium to celebrate the life and work of the late Distinguished



Professor of Physics, Herman Z. Cummins (1993-2010).

For over fifty years, Herman was a seminal, and highly honored, figure in the world of physics. When he came to City

College in 1974, he established his laser spectroscopy laboratory as one of the leading research sites in the world. His cutting-edge investigations covered statistics of radiation-matter interactions; elastic, quasi-elastic and inelastic light scattering; and applications of light scattering and neutron scattering techniques to the study of materials, including bio-materials. His influential and elegant experiments provided extraordinary insight into problems ranging from the physics of phase transitions and the mobility of biological molecules to patterns

created by growing crystals and the mechanisms that cause liquids to change into glasses.

The October symposium drew an exceptionally distinguished roster of speakers who addressed developments in the areas of physics to which Herman dedicated his career. They included: Dr. Manuel Cardona, Director Emeritus, Max-Planck-Institute for Solid State Research; Dr. Chandra Varma, Distinguished Professor of Physics, University of California at Riverside; Dr. Robert Leheny, Professor of Physics, Johns Hopkins University; and Dr. Harry Swinney, the Sid Richardson Foundation Regents Chair of Physics, University of Texas at Austin. As importantly, the event was a time to remember Herman, the honorable man. The symposium closed with friends dating from Herman's graduate student days at Columbia to the end of his career at City College, who shared their reminiscences of a person who had touched so many.

Stemming from this event; and from Herman's legacy of \$20,000 to the Physics Department for a Lecture Series in his name, the Department of Physics has embarked on a fund-raising campaign to establish a Cummins Lecture Series. On the occasion of this annual lecture, the Department also plans to provide an award to an exceptional graduate student, designated as a "Cummins Scholar", who will deliver a lecture on his/her work.

(Jiufeng Tu, Physics Department, CCNY)

Contribute to the Cummins Fund

Physics Alumni and others receiving this Newsletter are invited to contribute to the Cummins Fund. The fund will support the annual Cummins Lecture and Cummins Student Award. Please consider: a \$1,000 gift as a *Friend of Herman*, a \$2,500 gift as a *Good Friend of Herman*, a gift of \$5,000 as a *Very Good Friend of Herman*, or a contribution at any level. An arrangement for paying over 2 years can be made if requested. Checks should be made to "The City College Fund/CUMMINS" and mailed to: **The City College Fund, 160 Convent Avenue, Shepard Hall Room 166, New York, NY 10031.**

New Faculty Members

The department recently added the following two new faculty members.

Lia Krusin-Elbaum joined the department in the Fall of 2010. After receiving her Ph.D. degree in Solid State Physics from New York University in 1979, she joined the IBM T. J. Watson Research Center as a Research Staff Member. She pursued a variety of complex materials related research that included glassy dynamics and the

unusual magnetic properties of insulating spin glasses, electronic transport in thin metal films, as well as semiconductor and superconductor devices. Since 1988, the main focus of her research effort has been to explore macroscopic magnetic and charge transport behavior of high temperature (T_c) superconductors. She contributed to



establishing basic superconducting parameters, and to the understanding of pinning of magnetic vortices and vortex dynamics in high- T_c materials. She is particularly associated with orders of magnitude enhancement of the current carrying capability of the cuprate superconductors via irradiation with high energy heavy ions and GeV protons. In 1994, she played a leading role in inventing defect creation via an internal nuclear fission process induced by protons or neutrons, proposing a way for large scale applications of ceramic superconductors. Her more recent research interests include magnetic and magneto-transport properties (including those at ultrahigh magnetic fields) of strongly correlated materials, such as cuprates, manganates, pyrochlores, or vanadates, with particular emphasis on low-dimensional and nanostructured materials, nanoscale magnetism, nonlinear dynamics, and quantum phase transitions.

Dr. Krusin-Elbaum is a recipient of 10 IBM Invention Achievement Awards and holds over 27 US Patents and applications. Her work has been reported in nearly 150 articles in technical journals, and in over 40 invention publications in the IBM Technical Disclosure Bulletin. She was elected a Fellow of The American Physical Society in 1993. Dr. Krusin-Elbaum has served on a number of DOE, NSF and LANSCE (Los Alamos Neutron Science Center) panels reviewing efforts to modify materials by particle irradiations. She has served as an elected member of the National High Magnetic Field Laboratory User's Committee and a Member-at-Large of the APS' DCMP Executive Committee.

At CCNY she is focusing on the newly discovered materials' class of topological insulators. She has developed a VLS (vapor-liquid-solid) growth/synthesis technique of these materials. By using a variety of exfoliation and doping techniques she is working on materials' modifications to achieve defect/vacancy and doping control required for fundamental studies, and to obtain a platform for band-gap engineering via device gating needed to examine (and control) the nature of the unusual quantum edge/surface states. She is establishing a lab with experimental probes that include electronic and thermal magneto-transport in extreme quantum limit (at high magnetic fields & low temperatures). She is presently

a co-Director of NSF funded CCNY-Columbia MIRT on "Building Functional Nanoarchitectures in van der Waals Materials".

Brian Tiburzi joined the faculty in the Fall of 2011 as a joint fellow with the RIKEN-Brookhaven Research Center. He obtained his undergraduate degree in physics and mathematics from Amherst College in 1999, and carried out thesis research with advisors Kannan Jagannathan and Barry Holstein (UMASS, Amherst) on how to renormalize the Schrödinger equation. He then studied Nuclear Theory at the University of Washington, Seattle with Gerald Miller (CCNY '67), and his doctoral work focused on unraveling the spin structure of the proton through quark dynamics on the light front. After earning his Ph.D. in 2004, Dr. Tiburzi began his post-doctoral work, first in the Nuclear and Particle Theory group at Duke University, and then in the Maryland Center for Fundamental Physics at the University of Maryland, College Park. In the Fall of 2010, he joined MIT's Laboratory for Nuclear Science as a research scientist.



Dr. Tiburzi's research interests lie at the intersection of nuclear and particle theory. Modern nuclear physics seeks to understand the properties of protons and neutrons, and their nuclear interaction directly from the theory of strong interactions, Quantum Chromodynamics. Dr. Tiburzi has spent over 14 million processor hours with his collaborators, computing properties of the nucleon using lattice gauge theory simulations on supercomputing clusters. His current research interests include aspects of chiral symmetry breaking, and computation of the electroweak properties of the nucleon.

Claude Telesford takes charge of introductory Physics labs

The Physics Department warmly welcomes Mr. Claude Telesford, Senior College Laboratory Technician, who is in charge of the introductory physics laboratories for Physics 20300, 20400, 20700 and 20800. Mr. Telesford grew up in the Caribbean twin island state of the Republic of Trinidad and Tobago. He came to CCNY in 2002 and completed his Bachelor of Science in Physics *Magna cum Laude* in February 2006. He continued to take physics graduate courses here while teaching Physics and Chemistry at Rice High School in Harlem, NY. Rice High School closed in 2011 and Mr. Telesford returned to Trinidad. He joined the department on January 1, 2012.

Faculty Activities and Achievements

Michio Kaku, Henry Semat Professor of Physics, continues to blaze new trails in communicating the excitement of science and making futuristic predictions. A recent highlight is his weekend interview with the *Wall Street Journal* entitled, "Captain Michio and the World of Tomorrow" (interviewed by Brian Bolduc, March 10, 2012). Professor Kaku is a sought-after speaker and ambassador of science.



He was the 2011 Commencement speaker at the Rose-Hulman Institute of Technology. However, his flight from Moscow was cancelled, and with the help of the modern technology he loves to promote, Dr. Kaku managed to get a video presentation of his speech in time for the commencement.

"Boundaries are being broken by technology," he told the class of 2011. On April 15, 2011 he discussed the best-and-worst-case scenarios for the nuclear crisis in Japan with David Letterman on *The Late Show*. The Chattanooga State Technical Community College's President's Lectures Series hosted a Physics of the Future Speaking Engagement by Dr. Kaku on April 5, 2012. He has a quite busy speaking arrangement promoting his new book, *Physics of the Future: How Science Will Shape Human Destiny and Our Daily Lives by the Year 2100* (Doubleday, March 15, 2011).

Distinguished Professor **Joseph L Birman** was an invited participant in the International Workshop "From Laser Dynamics to Topology of Chaos" at CORIA, Universite de Rouen, France, 28-30 June, 2011. The workshop was held in celebration of the 70th Birthday of Professor Robert Gilmore of Drexel University. Professor Birman is the recipient of the Andrei Sakharov Prize of the American Physical Society in 2010. He is also the Vice-Chair of the Committee of Concerned Scientists and a member of the Board of Advancing Human Rights 2011.

Richard Steinberg's book, *An Inquiry Into Science Education, Where The Rubber Meets The Road* (Sense Publishers, 2011; ISBN 978-94-6091-689-2 hardback, ISBN 978-94-6091-688-5 paperback) "examines educational issues relevant to a general audience from the perspective of a scientist with a focus on inquiry and reasoning." The book draws from Steinberg's sabbatical-year experience as a full time science teacher in an underprivileged neighborhood high school in New York

City. Intended for educators in general and science teachers in particular, the book argues "that science education should be an active, purposeful process which promotes functional understanding and critical thinking."

Professor **Carlos Meriles** was the recipient of an "Alexander von Humboldt Fellowship" to carry out research worked in the Wrachtrup group at the University of Stuttgart, Germany.

Undergraduate Students Receive Awards

Theresa Carranza-Fulmer, a 2011 graduate and currently a graduate student at the University of Michigan is a recipient of a 2012 NSF Graduate Research Fellowship. She also received the prestigious Rackham Merit Fellowship at the University of Michigan, Ann Arbor. "I am extremely grateful for CCNY because they welcomed me with open arms when I first arrived in 2006 after Hurricane Katrina," Theresa writes in her blog about her experience at CCNY.



Physics Department gives out several awards and scholarships to undergraduate students. Listed below are recent recipients of those awards. **Kyle Lawlor** received the *Sidney Millman Scholarship Award* that is given to a junior physics major demonstrating high potential. The *Sonkin Medal* was awarded to **Theresa Carranza-Fulmer** and **Edison Castro** for demonstrating the best performance in the Physics laboratory course(s) and/or in experimental research. **Simon Divilov** and **Ruben Gepner** received the *Ward Medal* that is awarded to the graduating physics major with the highest GPA in physics and math courses. **Alisa Agafonova** is the recipient of the *Bernard Hamermesh Scholarship*, which is awarded to the outstanding graduating Physics major, who has demonstrated some of the skills, knowledge, technique and imagination necessary for a successful Experimental Physicist and who shows promise of being an active contributor to the research efforts in some branch of Experimental Physics. *Harry Soodak Memorial Award* given to a deserving physics major student entering the junior year went to **Simon Divilov** (awarded in Fall 2010).

The *Zemansky Introductory Physics Prize* is awarded to students who demonstrate outstanding scholarship in Introductory Physics 20700 or/and Physics 20800 courses. The 2011 recipients of the prize are: **Maurice Diong**, **Yuval Adelstein**, **Ru Chen**, **Tenzin Getso**, **Benjamin Conable**, **Jeremy Neiman**, **Jason Zhang**, **Jan Stepinski** and **Haiming Deng**.

Graduate Students Also Rise

Giovanni Milione, currently a Physics PhD student at the CUNY Graduate Center, was recently awarded the prestigious National Science Foundation Graduate research fellowship. The fellowship provides up to \$40,500 per year for 3 years for doctoral research. Giovanni's research focuses on the interaction of optical vortex beams (light bearing high orbital angular momentum) with matter under the supervision of Distinguished Professor Robert Alfano at the Institute for Ultra fast Spectroscopy and Lasers (IUSL) at CCNY. Giovanni is a United States Army veteran who served in the Iraq war and received his Bachelor's in Physics from Stony Brook University.

Giovanni also received a scholarship from SPIE – the International Society for Optics and Photonics, was a member of the winning team for the City College Kaylie Entrepreneurship competition, and has published in prestigious journals, such as, the *Physical Review Letters*. He presented his research results in several technical conferences, which include SPIE Photonics West, Conference on Lasers and Electro optics (CLEO), and Frontiers in Optical Science, the Annual Meeting of the Optical Society of America (OSA). He was a finalist in the Emil Wolf outstanding student paper competition twice at the OSA Frontiers in Optical Science conference. Giovanni has also attended workshops at the Abdus Salam International Center for Theoretical Physics in Trieste, Italy and the Pan American Science Institute in Bogota, Colombia.

Giovanni is active in a number of outreach and leadership activities. He is a founder and president of the OSA Student Chapter at CCNY (see the story in this issue), a member of the Physics Department Executive Committee, and serves as a mentor for several New York City high school students participating in the New York City Science and Engineering Fair.

Yunpu Li was chosen the "2011 Outstanding Teaching Assistant of the year" by the CCNY Physics Department. In addition to excellence in teaching lab instruction, Yunpu recorded vivid videos of introductory physics lab experiments which serve as useful learning tools.

Recent PhD's

Upali Aparajita received her Ph. D. in June 2010. Her thesis "*Non-Local Electrodynamics in a Nearly-Ferroelectric Superconductor*," was carried out under the supervision of Distinguished Professor Joseph Birman, and was co-sponsored by Prof Sultan Catto of Baruch College. Dr. Aparajita is presently an Adjunct Professor of Physics at Queens Community College of CUNY.

Dario Capasso carried out his research under the supervision of Professor Alexios Polychronakos. He defended his thesis entitled, "*Horava Gravity: Symmetries and Generalized Particle Dynamics*" in August 2011. Dr. Capasso is presently a postdoctoral research associate in our department working with Professor Greenberger on foundational questions in quantum mechanics.

Ertan Eryilmaz completed his Ph. D. thesis in September 2010 under the supervision of Professor Ranajeet Ghose of the Department of Chemistry. The title of his thesis is, "*Structural and Dynamical Features of Protein P7 from Bacteriophage PHI 12: Insights into a Functional Role in the Cystoviral Polymerase Complex*."

Yunpu Li defended her thesis, "*A study of Optically Pumped Nuclear Magnetic Polarization on Gallium Arsenide*," in January 2012. Professor Carlos Meriles is her thesis advisor. She just received a job offer as a Nuclear Magnetic Resonance Spectroscopy Scientist at Philips Research, in Briarcliff Manor, NY.

Kun Wang completed his thesis, "*Potential Energy Landscape of Particulate Matter*," in February 2012. Professor Hernan Makse was his mentor.

Zhizun Xu graduated in May 2011. His thesis, "*Crystal Growth and Neutron Scattering Studies of High-Temperature Superconductors*" was carried out under the tutelage of Professor Jiufeng Tu.

Qiang Zhang defended his thesis, "*Growth of semiconductor nanostructures by MBE for the study of electron and nuclear spin enhancement and other physical phenomena*," in January 2010. Professor Carlos Meriles co-mentored his thesis with Professor Maria Tamargo of the Department of Chemistry. Dr. Zhang is currently a postdoctoral research associate at the University of Arizona.

Jun Zhang's thesis, "*Statistical, DFT and Continuum Electrostatics Analysis of Histidine Ligated Hemes in the Non-Redundant Heme Database in Model Complexes and in Cytochrome C Oxidase*" was supervised by Professor Marilyn Gunner. Dr. Zhang graduated in September 2010.

Zhong Zheng graduated in February 2011. Professor Marilyn Gunner supervised Dr. Zheng's thesis, "*Studying Heme Electrochemistry in Heme Proteins and Quinone Binding in Purple Bacterial Reaction center Using Multi-Conformation Continuum Electrostatics*."

New Graduate Students

Graduate students in the Ph.D. program, who came to the department in 2011 Fall, are: *Mr. Zhiyi Chen, Mr. Vasiliou Deligiannakis, Ms. Inna Korzhovska, Mr. Kai Luo, Mr. Isroel Mandel, and Mr. Arthur Parzygnat*. These students

came to CUNY Graduate Program in Physics in 2010 Fall. *Mr. Joel DeJesus and Mr. Mark Kanner*, members of the CUNY incoming class of 2009, also decided to pursue thesis research at CCNY. Students who entered the Master's program during the 2011-2012 academic year are: *Mr. Sean Byrnes, Mr. Korrigan Clark, Ms. Anjali Jaiman, Mr. Yoichi Matsumara, Ms. Aileen Nielsen, Mr. Joseph O'Harrow, Mr. Ray Sameshima, Ms. Ariana VanGelder, and Mr. Wifang Zhou*. The department extends warm welcome to these new graduate students.

In Memory

*The Department of Physics mourns the loss of several members. Emeritus Professors **Joseph Aschner, Herman Cummins, Martin Kramer, Harry Lustig, Seymour Lindenbaum, Leonard Roellig, Harry Soodak, Peter Tea, Jr., and Chi Yuan** passed away within a span of few years. We recently lost our former office manager **Mrs. Bertha Danziger**, chief machinist **Mr. Russel Hinchliffe**, and coordinator of introductory teaching labs **Mr. Juan Pajeulo**. We print reminiscences of the accomplishments and contributions of some of them by friends and colleagues in this issue, and plan to do the same for others in the next issue of the newsletter.*

Harry Lustig (1925-2011)

Harry Lustig, professor emeritus of the CCNY Physics Department and former treasurer and acting executive secretary of the American Physical Society (APS), died of prostate cancer on 17 March 2011 in Santa Fe, New Mexico.



Harry was born in Vienna, Austria in 1925 and fled Nazi persecution with his family on the last passenger vessel to leave Naples, Italy before the outbreak of World War II. He immigrated to the U.S. in November 1939; in 1942 he enrolled at CCNY. Drafted into the Army shortly thereafter, Harry returned to Europe on the same ship his family sailed on from Italy,

which had been transformed into a troop transport.

Returning after the war, he earned his bachelor's degree in physics in 1948 at CCNY and his doctorate from the University of Illinois at Urbana-Champaign in 1953, the same year he joined City's physics department. In his autobiographical notes, Harry wrote: "...I had several job offers and chose to accept the one from City College of New York. A compelling reason was that I wanted to repay the debt that I owed to the College and to the City."

Harry was Chair of physics from 1965-70; Dean of Science from 1972-82; and Provost and Vice President for Academic Affairs from 1982-85, when he retired and became Treasurer of the American Physical Society.

Harry Lustig was deeply committed to CCNY's mission of academic excellence combined with access to higher education. His greatest achievement and source of pride was the building of an outstanding Physics Department at CCNY. Shortly after he was elected chair in 1964, he obtained a \$1 million grant from NSF to establish a center of excellence in physics. With additional resources provided by the college, he recruited outstanding faculty by following his oft-stated principle to hire people who were better than he was. Within seven years, CCNY was ranked in the top 20 of the nation's roughly 160 PhD-granting physics departments.

Harry Lustig played a key role in recruiting Dr. Robert E. Marshak, an eminent physicist, as CCNY's eighth President. He was instrumental in the creation of the Sophie Davis School of Biomedical Education, the Institute of Oceanography, and the Benjamin Levich Institute for Physico-Chemical Hydrodynamics.

Harry's research and publications were in the areas of theoretical nuclear physics and the Mössbauer effect. He also contributed to the field of energy studies, to science education, to international cooperation in science, and to the economics of scientific publishing. He held visiting appointments at Stanford University and the Universities of Colorado, Illinois, and Washington. In 1964-65 he was a Fulbright Professor at University College, Dublin; and from 1970-72 he was Senior Officer in the Department of Science and Technological Education at UNESCO, Paris.

After his retirement in 1986, Harry embarked on a second career as treasurer (and acting executive secretary for nearly a year), of APS. He established a range of new programs, launched the first successful capital campaign, and increased the net worth of the society nine fold.

Following his retirement, Harry's interests were increasingly focused on the history of physics. Among his publications were, with E. M. Henley, a 1998 biographical memoir of the late President Marshak; and *To Advance and Diffuse the Knowledge of Physics - an account of the one-hundred year history of the American Physical Society*, *Am. J. Phys.* **68**, 595-636 (2000).

Throughout his life, Harry was active in defending and promoting free speech and deeply involved in the important issues of his day. He was a bon-vivant and a connoisseur of excellent food, wine, mushrooms, music...And he had a wonderfully wry sense of humor.

To quote the editor of the CCNY *Alumnus Magazine*, Harry was "a remarkable man who played an extraordinarily important role at CCNY."

(*Myriam P. Sarachik, Physics Department, CCNY*)

Harry Soodak
(1920-2008)

Harry Soodak, Emeritus Professor of Physics at the City College of New York, died September 30, 2008 at age 87. Prof. Soodak was born Dec. 24, 1920 and was educated at The City College, Columbia University, and Duke University, receiving the Ph.D. from Duke in 1944. After being associated with the Manhattan Project at Oak Ridge National Laboratory (working on the physics of nuclear reactors) for four years, he served as a Research Associate at M.I.T. for nearly three years. Prof. Soodak gave several courses in nuclear physics and reactor theory at Oak Ridge; according to Research Director Alvin M. Weinberg, these courses were “phenomenally successful.” Prof. Soodak was elected a Fellow of the American Nuclear Society in 1962.



Harry taught physics at the City College of New York for nearly half a century, retiring in 1992. Harry’s students all knew that he could always be counted on to put their needs first; they loved him for this as much as they admired and respected his total mastery of whatever it was that he was teaching at the time. Harry was known to all as physics

major advisor, and in that capacity he gave close, individual attention to each and every major, fashioning a program to precisely fit the needs of the student at hand. When Harry was presented with an Outstanding Teacher Award in 1987, letters of praise and admiration from former students literally poured in; these letters were filled with gratitude for the great impact that Harry had had on the lives of so many of these young people. For example, one former student wrote “I carry a piece of him with me always.”

He loved reading about, thinking about, and talking about ideas and was always open to the views of others. He also possessed a truly extraordinary generosity of spirit and was thoroughly committed to humane and unselfish values. He will be very much missed by all who knew him.

(Martin Tiersten, Professor Emeritus of Physics, CCNY)

Peter L. Tea, Jr.
(1924-2008)

Peter Tea, Emeritus Professor of Physics at the City College of New York, died Dec. 16, 2008 at age 84. Prof. Tea was born May 13, 1924 and was educated at CCNY and Columbia University, receiving the Ph.D. from Columbia in 1955. Peter taught physics at City College for

nearly half a century, retiring in 2003. His teaching was widely admired by both students and colleagues, many of whom sought Peter’s advice whenever questions relating to physics education arose. Peter also was a gifted craftsman, having constructed some impressive demonstration equipment himself, including an outstanding loop-the-loop apparatus (far superior to the standard type) and a prize-winning cycloidal pendulum. As a Research Associate at the Lamont Geophysics Lab of Columbia University, he designed the insulation for the seismometer package left on the moon by Neil Armstrong. His concern for students led to his being the director of the tutoring lab for as long as I can remember. In addition to his great interest in physics and teaching, Peter loved and was knowledgeable in many other areas of human endeavor, including all the arts as well as history and philosophy. He was also quite a baseball slugger, having helped the faculty to beat the graduate students many times back in the days when we still had those match-ups. He was especially interested in drama and was a member of a local dramatic group for which his services included constructing stage sets as well as acting. Peter was a truly “good guy,” a person of great integrity who was thoroughly committed to humane and unselfish values. Those of us who were privileged to know him as a colleague and friend will always remember his unfailing good humor, his warmth, and his kindness that could always be counted on.

(Martin Tiersten, Professor Emeritus of Physics, CCNY)

Bertha Danziger Remembered

We were saddened by the news of the passing in October 2011 of Mrs. Bertha Danziger, formerly the office manager of the Physics Department. She had retired over twenty years ago after many years of service. She served at the crucial time that the physics department underwent its metamorphosis after having obtained its NSF departmental development grant. During her time the office had half a dozen secretaries, a dozen laboratory and shop technicians and around forty five faculty members. The office ran smoothly under her stewardship. One still can marvel at how she managed to raise seven young children at the same time that she took on such potent responsibilities.

She always had a good-natured approach to the students, faculty, administration, and staff. Some of the remarks of faculty members provide various perspectives of how she was viewed by us:

“I am so saddened to hear of Mrs. Danziger’s passing away. I remember her fondly for her days while she was the Physics Department Secretary in Shephard Hall. She was ever cheerful in serving the members of the faculty, and was ever so kind to me as a new young member of the

family. Please do help convey our heartfelt condolence to her family”;

“I’m very saddened to hear that Mrs. Danziger died. She was for many years the heart and soul of this department”.

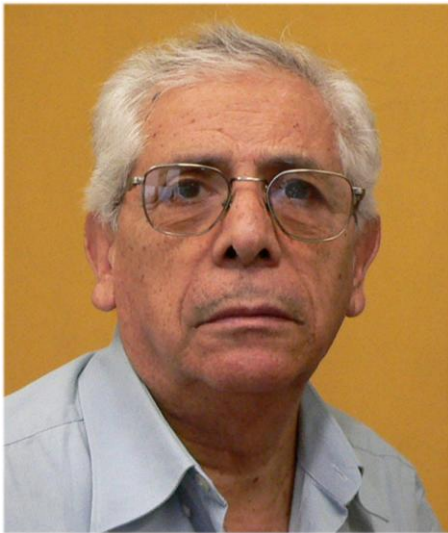
“Bertha Danziger was a very warm and devoted member of the Physics Department --very much a problem-solver and helped keep us moving smoothly and in harmonious spirit. She organized the only (as far as I know) glatt-kosher Chanukkah-Christmas-Kwanza (end of year) party anywhere”.

“It is sad news, and I pray for her departed soul. When I started here as a postdoc, she was the office manager.”

(Joel Gersten, Physics Department, CCNY)

Remembering Juan Pajuelo

Mr. Juan Pajuelo, a Senior College Lab Technician in the Department of Physics, passed away on February 7, 2011. Juan served the department in many ways, the most important being as the supervisor of the introductory Physics labs. To many of us Juan represented most of what worked in our introductory teaching labs. We all know the antiquated state of the pieces of equipment in the labs, yet Juan managed to run the labs rather smoothly. During day sections, he would always be around, trouble



shooting as needed. If a teaching assistant was teaching a lab for the first time, he would make it a point to be around, and go from station to station helping students. He did not need to be told, he did it on his own. He was patient with the students and helped them

make up missed labs in another section when possible, so that they did not have to wait for semester-end make-up classes. He cared deeply for students and wanted them to learn. I have seen him to be quite firm with students who came in very late, and insist that they attend another section for the whole period to do the experiment right. Juan was a warm, kind, soft spoken, friendly person with a pleasant smile and wide interests. Sometimes he used to inquire about teaching assistants who had long since graduated, as if they were part of his extended family.

The news of Juan’s death due to heart attack came as a shock to the members of the department, and many of them shared their fond memories of him with others. The general sentiment was captured in the e-mail from the department chair that announced his death, “His loss creates a huge hole. I for one find it hard to imagine the department without him.” In a memorial held in the Department of Physics on September 15, 2011 friends and colleagues paid tributes to Juan’s memory, which might be viewed on the Internet at:

www.youtube.com/watch?v=p5pGSDHvqDk.

(Swapna K. Gayen, Physics Department, CCNY)

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