Alumni/ae Notes

'54

Arthur Winston (PhD. Thesis advisor: Louis Osborne) Currently the Director of Tufts University's Gordon Institute, Arthur has been elected the 2004 President of the IEEE. The IEEE is the world's largest professional organization with 380,000 members in 150 countries.

'55

Paul D. Goldan (SB. PhD '64, University of Illinois, Urbana) As a senior research scientist at the NOAA Aeronomy Laboratory, Paul has been involved in many field research programs delving into air pollution resulting from human activities. These have ranged from the first stratospheric measurements of chloro-fluoro-carbons in 1976, which confirmed their role in the formation of the "Ozone Hole," to quantifying the role of emissions from trees in summer ozone formation in the forested southeastern U.S., and detailing the role in Houston's air pollution problem of the reactive hydrocarbons released by the petro-chemical industry there.

Elisha Huggins (SB. PhD '62, California Institute of Technology) Lish is working on the program MacScope II, which turns a Mac (and, hopefully, a Windows) computer into an audio oscilloscope that handles Fourier analysis. The scope enables exercises from the *Physics2000* text that he and Anne produced and made available on the web at *Physics2000.com*. (Some Tacoma Narrows clips and a field plotting program are available there as a free download.) The writing took place in Hanover, NH, and on the Island of Moorea, next to Tahiti.

George J. Rubissow (SB. Thesis advisor: Victor Weisskopf. SM '58, *electrical engineering*. PhD '73, *biophysics*, University of California, Berkeley) George is still trying to make the best red wines in the Napa Valley (*http://rubissowsargent.com*) and is deeply involved in a startup company in the musical education field. He also continues activities in international business with a foundry modernization project with AvtoVAZ automobile plant in Togliatti, Russia, as well as projects in modernizing a Russian molasses plant to produce Maltose (he's looking for technical and financing assistance on the Maltose project). George feels there is so much more and not enough time to do it! He lives in Paris, Reno, and Napa, and occasionally Bucharest (his wife is Romanian). Whew...

H. Henry Stroke (PhD. Thesis advisor: Jerrold Zacharias) Henry celebrated the 40th anniversaries of both his faculty tenure at NYU and that of his first publication in *Physics Review*. Currently, he's continuing research at the ISOLDE mass separator at CERN. In addition, Henry recently revived, as co-editor with F. J. de Heer, a new *Comments on Atomic, Molecular and Optical Physics* journal with Physica Scripta (Royal Swedish Academy of Sciences).

'57

Sol Aisenberg (PhD. Thesis advisor: Wayne B. Nottingham) Sol has created a web site to provide help and advice for new inventors (*http://inventing-solutions.com*). The site also provides a draft of his paper on extending gravitational theory to show that there is no need for dark matter; that the expansion of the universe is not accelerating; plus a reason for "tired light" and why the Hubble constant decreases with distance. Sol hopes his colleagues find this interesting and invites comments to *itgplus@earthlink.net*.

Richard McCall (PhD '57, SB '52) This year, Richard has finally completely retired from consulting. He and his wife Mary are dividing their time between their house in Woodside, CA, and a cabin in the redwoods south of Carmel. He completed and published a book (*Nebraska Farm Life WWI to WWII*) describing the life of his three surviving siblings and himself while growing up. It was quite a change from the technical writing he had previously done and was an enjoyable experience.

Ross W. Newsome, Jr. (SB. Thesis advisor: Irwin Pless. PhD '63, University of Michigan) Ross took early retirement from AT&T in 1989, which he had joined in 1983. He implemented an information system to assist in the creation and administration of a conglomerate of data bases that supported a new billing system. Upon retirement, Ross began to explore physics again at a low temperature lab in the Physics Department at Rutgers University, where he's currently writing up recent measurements of the pyroelectric coefficient and the specific heat of a ferroelectric copolymer film at liquid helium temperatures.

Bjarne E. Ursin (SB) Bjarne is Honorably Retired with two physics degrees and 40 years in classified research for the U.S. Navy and M. I. He is currently sailing Alaska, British Columbia, and Washington waters in a staysail ketch. Bjarne's favorite reading: quantum gravity and string theory.

'58

William Bertozzi (PhD '58, SB '53. Thesis advisor: Peter Demos) Some highlights of this past year for Bill include: contributing to the justification of the 12 GeV upgrade of Jefferson Lab; starting a group to begin the development of a novel technique to detect dirty bombs, materials and explosives in sea-going containers, air cargo and trucks, based on Nuclear Resonance Fluorescence; making accurate measurements of the "spin structure" of the neutron in the valence quark regime and gaining new insight about the origin of the angular momentum of the neutron; completing the first measurement of the distorted relative momentum distribution of proton-proton and neutron-proton pairs at close proximity in nuclei; and experimenting successfully with teaching quantum physics to freshmen.

Alumni Spotlight

James (Jim) Earl (SB '53, PhD '57)

"The person who introduced me to Rossi's group was Stan Olbert. He came to MIT from Europe as a displaced person, and lived for several years at my fraternity house. My mentor in the group was William Kraushaar, whom I had met when we both worked at the MIT synchrotron, but I interacted with Rossi on a nearly daily basis. I also formed close associations with George Clark, Herb Bridge, Bob Williams, and John Linsley, who were senior members of the group; and with Frank Scherb, Al Brenner, Raymond Stora, Jim Strickland, Tom Cline, and Yash Pal, who were fellow students. Other associates included M. Oda, S. Hayakawa, B.V. Sreekantan, and J. Hersil, who all visited the group for varying periods of time. At the time, I did not realize that these people would be lifetime friends or that they would someday be responsible for major advances in physics."

"When my son, Matthew, was a student at John Hopkins University, he asked me what major to specialize in. I told him if he majored in Physics, he could then do anything. The same logic applied when he undertook graduate work in physics at Boston University. After he finished his PhD thesis on proton decay, he went to the University of Maryland — not in physics, but in radiation oncology. I think this history shows that my advice was valid."

Jim and his wife Sylvia have been great friends of the Physics Department. From 1953 to 1957, Jim was associated with Bruno Rossi, so it seemed perfectly natural for the Earls to support the Rossi graduate fellowship. Most recently, Jim and Sylvia have been instrumental as early supporters of the Department's Green Center renovation project. To learn more about the Earls' support of the Green Center, see page 63.

Walter Charles Braun (PhD) Walter has been spending time on some simple modeling of the Earth's climate (assuming a gray atmosphere) on a PC. Also, he has been studying thermodynamics and statistical mechanics and trying to establish a simple connection between them that students and workers in related areas of application (*i.e.* atmospheric physics) can understand. Walter welcomes responses and correspondence and can be reached at *wcbraun@aol.com*.

Vigdor L. Teplitz (SB. Thesis advisor: M. W. P. Strandberg) On leave from Southern Methodist University, Vic completed two and a half years at the White House Science Office (Office of Science and Technology Policy), dealing with national security issues. He returned to SMU for the fall semester, but shortly thereafter began three more years of leave to serve as Chief, University Programs, and Astrophysicist at the Goddard Space Flight center in Greenbelt, MD.

'60

Henry R. Hirsch (PhD '60, SB '54. Thesis advisors: Francis Bitter, George R. Harrison) On September 30, 2002, Henry retired after 39 years on the faculty of the Department of Physiology, College of Medicine, at the University of Kentucky. He now pursues his lifelong hobby: the study of science and engineering.

'62

George E. Ioup (SB) George is a University of New Orleans Professor of Physics and Geophysics and Director of UNO at Stennis Space Center. He was recently elected a Fellow of the Acoustical Society of America for contributions to signal processing in underwater acoustics. George has also been selected a University Research Professor by UNO in recognition of his research accomplishments.

Gary J. Linford (SB. Thesis advisor: Charles Townes) After attending to the needs of aging parents during the past several years, Gary and his wife and are now attempting to revive their physics and optics scientific consulting business in Wyoming. They've been contacting former associates who worked on inertial confinement fusion projects both in the USA and Europe, to urge the establishment of a new "Manhattan Project" to develop the ICF drivers needed to build the Prometheus Fusion Test Reactor designed by a McDonnell-Douglas consortium some years ago. The idea is to replace our dependence on fossil fuels with an exportable commodity having highly favorable environmental properties, while providing exciting career opportunities for young physicists.

'63

Robert M. O'Donnell (SB. Thesis advisor: David Frisch). Robert is a member of the Senior Staff at MIT Lincoln Laboratory. He was recently elected a Fellow of the Institute of Electrical and Electronic Engineers (IEEE) "for contributions to advanced surveillance and tracking radars" and serves on the Board of Governors of the Aerospace and Electronics Systems Society of the IEEE.

'64

Bob Howie (SB) Upon graduation from MIT, Bob pursued a career involving computer software architecture, design, and implementation in many industrial areas: aerospace, storage management, design automation, and health care. Although he has never worked a day in physics, the education he received from MIT in physics taught him how to analyze and solve problems in many aspects of his professional life.

Verne L. Jacobs (SB. Thesis advisor: John C. Slater. PhD '68, University of California, Berkeley) Verne's research activities at the Naval Research Laboratory have centered on theoretical investigations of radiative processes involving many-electron atomic systems in electron-ion beam interactions and high-temperature laboratory plasmas. Recently, he has been developing density-matrix approaches for quantum coherent electromagnetic interactions in ensembles of atomic systems and semiconductor heterostructures.

Patricia (Page) Wilcox (SB) Highlights of the past year for Page: birth of a third grandson, Harry William Carter, and completion of a Master of Public Health degree at the Ohio State University. Her MPH thesis, showing a possible link between dioxins and deaths due to lymphatic and hematopoietic disorders in Ohio, is online at *http://www.ohiolink.edu/etd/view.cgi?osu1042487547*.

'65

Elsa Garmire (PhD. Thesis advisor: Charles Townes) Elsa was elected to the Council of the National Academy of Engineering and began her service last summer, 2002. She is the Sydney E. Junkins Professor of Engineering Sciences at Dartmouth College, where she came in 1995, and served two years as Dean of Thayer School of Engineering. Elsa has become active in the drive to increase the technological literacy of our citizens and in our educational system.

Juris P. Svenne (PhD. Thesis advisors: F. M. Villars, Arthur Kerman) Juris is a Professor in the Department of Physics and Astronomy at the University of Manitoba, Canada. Recently, he and colleagues have developed a complete, coupled and connected theory of the coupled 3-body and 4-body system of three nucleons and one dynamical pion, which may be created or absorbed on any of the three nucleons or any two- or three-body subsystems of the 3N system. In addition, they have a practical approximation scheme for performing numerical calculations on the complicated coupled set of equations of the full theory. He had a six-month sabbatical at Padova, where great progress was made on this work. The results of this theoretical work is attracting the attention of experimentalists, and causing some controversy among theorists, since some of these results go counter to previous theory.

'67

Richard J. Stein (SB. PhD '72, Polytechnic Institute of Brooklyn) Richard actually uses physics in his job, even if only very basic stuff. He owns Cooke Vacuum Products, in Connecticut, a manufacturer of high vacuum systems for research and industrial thin film applications. Richard has the pleasure of working with customers doing interesting things, and gets to innovate quite often. Sometimes, he makes a few components for MIT. Please contact at *cooke@snet.net*.

Michael D. Zuteck (SB. Thesis advisor: Roshi Aggarwal) Michael's most recent work has been in design studies of the size limits for blades of large wind electric turbines that generate grid power, and ways to make these blades easier and more cost effective to manufacture. This work is sponsored by Sandia National Labs. MW wind turbines with rotors of over 200' diameter have now become common, and his work shows no serious technical barriers for the blades of turbines over twice that size. The limit will be shipping and handling. This is good news for the effort to provide more of our energy from renewable, non-polluting sources, and wind is already a cost effective energy source in many areas.

'68

Aviva Brecher (SB) Aviva is a National Technical Expert at the Department of Transportation's Volpe Center, across the street from MIT's East Campus. For a brief bio, see *http://www.volpe.dot.gov/ourwork/ntlexprts.html*. She is now in the second of her two-year term as a Sigma Xi distinguished lecturer (see *http://www.sigmaxi.org/programs/lectureships/0304.shtml*). Aviva has been reaching out to university audiences across the country to inform and educate them on current transportation science, technology, and policy issues. Topics include: *Bringing Magnetic Levitation Trains to the US: Technology and Policy Challenges; Balancing Transportation, Energy and the Environment — Problems, Progress and Prospects; Electromagnetic Fields and Health Hazards — a Physicist's Perspective; and Transportation in 2050: Technologies and Outlook*.

Owen Franken (SB. Thesis advisor: Minor White) Briefly, in the last academic year, as in every academic year since he graduated, Owen has done absolutely nothing whatsoever in the field of physics, having chosen to change careers and work as a photographer, living now in Paris (land of the cheese eaters) and working mostly in food and wine and travel, having covered wars and other serious business before that. Please see his "What Matters" column on the MIT Alumni site (*http://alumweb.mit.edu/whatmatters/200107.shtml*) or visit *www.owenfranken.com*. Owen works frequently for the *New York Times* Travel and Dining sections, and other (usually) appreciative clients worldwide.

'69

Robert W. Boyd (SB. Thesis advisor: Karl Ingard. PhD '77, University of California, Berkeley) Robert is the M. Parker Givens Professor of Optics and Professor of Physics at the Institute of Optics, University of Rochester. During the past year, he has been interested in the development of optical delay lines based on ultra-slow light propagation. Robert and his group recently developed a method of producing slow light ($v = 57$ m/s) using a novel quantum coherence technique that operates in a room temperature solid — ruby in the case of their initial experiment. Details can be found in M. S. Bigelow, N. N. Lepeshkin, and R. W. Boyd, *Phys. Rev. Lett*. **90**, 113903 (2003).

Karen Kolling (SM '69, SB '65. Thesis advisor: Alan Lazarus) Karen retired after a career working in software research and development at Digital Equipment, Tymshare, and the Xerox Research Center Computer Science Lab in Palo Alto, where the personal computer was developed. She and her cat are about to move from California back to the family home in Rhode Island, where she plans to enjoy walking on the beach. Karen is undecided between remaining in retirement and a career change, perhaps finding a job as a software engineer in a physics group, for although she enjoys computer science, she has always missed physics. She also wants to build a small replica of a Viking longship, but has a first goal of trying her inexperienced hand at building a wooden rowboat.

'70

Vic Elias (SB) Vic is a Professor of Applied Mathematics at the University of Western Ontario, currently on sabbatical with a research appointment at The Perimeter Institute for Theoretical Physics in Waterloo, Ontario. Prior to this, he served as Director of the University of Western Ontario Theoretical Physics PhD Program. Vic's wife D'vorah and their four children, ages 16 to 24, are all into music and theatre arts. He notes that they are a pleasure to be around.

Barbara Sollner-Webb (SB. Thesis advisor: Salvador Luria) After getting her PhD in Biology from Stanford, followed by postdoctoral work at the NIH and Carnegie, Barbara joined the faculty of Johns Hopkins University School of Medicine, where she has been for over 20 years (professor for the last 15), in the Department of Biological Chemistry. Her lab's main efforts are in the molecular biology of gene expression. Her husband, Denis Webb, works in microwave electronics and their daughter Lisa just graduated from Dartmouth and is now at Yale. Only their four-legged "children" (pet horses, pot belly pig, and St. Bernard) are still home, but all are delights.

'71

Gary Gibian (SB. Thesis advisor: K. N. Stevens) Gary continues to work as a scientist with Planning Systems, Inc. A grant received a few years ago from the NIH to advance and apply their Navy sensor array work to hearing aids has resulted in further work, including a current project applying that technology to automatic speech recognition. Gary's part in these acoustics projects has been part-time for the past few years, with the bulk of his time spent doing software testing for an R&D effort for the FAA under a subcontract for MITRE. As time permits, he enjoys music as a hobby, although a couple of years ago he did play some professional dates with his son and hopes to do so with his daughter in the next year or so.

Frank Heile (SM. Thesis advisor: Ken Johnson) After leaving MIT, Frank earned his PhD in Physics from Stanford University under Professor Martin Perl. He then switched to software engineering and worked for three different medical imaging companies for the next decade. Following that, Frank spent 14 years at Altera Corporation (programmable logic devices), becoming a director of software engineering. He retired at age 51, and has been enjoying life since then with his wife Ann and daughter Lisa (aged 11).

'72

Richard J. Borken (PhD '72, SB '68. Thesis advisor: George W. Clark) Richard retired from Honeywell Corporation as a Vice President in the Corporate Technology Office, and he and his wife are enjoying their home on Lake Vermilion in northern Minnesota. But they're not crazy — they've been spending the worst part of the winter in New Mexico. A highlight of the past summer was a visit to their home in the north woods by Richard's thesis advisor, Professor George Clark, and his wife.

James N. Hallock (PhD '72, SB '63. Thesis advisor: Harald Enge) James is manager of the Aviation Safety Division at the U.S. DOT Volpe Center, next door to MIT in Kendall Square. After the space shuttle Columbia broke up on reentry, he was asked to join the Columbia Accident Investigation Board (CAIB). The CAIB is an independent group chartered to determine the cause of the accident and make recommendations on means to prevent further accidents in the future. The 13 members are analyzing the information (debris, sensors, photos, etc.) and will begin writing the final report next month. It is interesting to note that many of the Board members have one or more physics degrees.

Michael Mills (PhD. Thesis advisor: William Bertozzi) Michael is the Chief Scientist and Technical Director at ENSR, an international environmental and engineering consulting firm headquartered in Westford, MA. In addition to managing ENSR's Research and Development Program, he provides expert witness testimony in cases involving the release of toxic and flammable chemicals. During the past year he has also played a key role in the development of mercury emission standards for coal-fired power plants.

'75

Mitch Tyson (SB) Mitch has recently taken the position of interim CEO of AmberWave Systems. This company is working to commercialize strained silicon technology, which improves the performance of semiconductors. After 15 years with PRI Automation, which automated semiconductor factories, Mitch finds it fun to be working in a company that is more directly involved in the physics of semiconductors. Also, there are lots of fellow MIT grads among the 40 employees!

'76

Joseph H. Abeles (SB, *physics and electrical engineering.* Thesis advisor: William Bertozzi. PhD '82, Princeton University) Joe has entered his 15th year at Sarnoff Corp., where he's privileged to participate in and facilitate a number of exciting collaborative photonics and physics activities. Collaborators include the University of Central Florida, Princeton University, Photonic Systems, Inc., and HRL Laboratories. Active areas include advanced mode-locked lasers, RF/analog signal processing using photonic devices, atomic clocks, advanced dense wavelength division multiplexing, extremely high peak, and average energy femtosecond optical sources, and opto-electronic integration. In 2003, Joe participated in efforts involving super high efficiency diode lasers and precision inertial navigation employing Bose-Einstein condensates and magneto-optical traps. He's also involved in MentorNet, an organization that facilitates intergenerational experience transfer in our field, fostering gender diversity. Please visit *http://alum.mit.edu/www/jabeles*, or email *jabeles@alum.mit.edu*.

Zachary H. Levine (SB, *physics and math*. Thesis advisor: Rainer Weiss) In 2002, Zachary shared a Department of Commerce Silver Medal for alerting the semiconductor industry's photolithography community of the importance of intrinsic birefringence in calcium fluoride and related materials, which are slated to be used in 157nm lithography. His main ongoing research interest is three-dimensional imaging of micrometer-scale structures using X-ray microscopy and scanning transmission electron microscopy.

Clyde Mitchell (SB. Thesis advisor: Joel Yellin) Clyde's involvement in physics is regrettably limited to certain high technology ventures. He practices business law in Manhattan at his law firm, Claugus & Mitchell, and can be reached at *clydemitchell@alum.mit.edu*. Clyde married in 1994 and is an avid windsurfer.

Ricardo L. Sanchez (SB. Thesis advisor: John King) Ricardo left the hard sciences to pursue the much harder challenges of medicine. For instance, dealing with truly multivariate non-linear systems that become unstable as people become patients and dealing with a hospital management culture left over from a time when resources were practically unlimited, thus requiring very limited management skill. He has chaired the Emergency Departments of hospitals at various states of enlightment, including the Brigham and Women's, the Washington Hospital Center, Montefiore Medical Center, and the best of all, Saint Francis Hospital, in Hartford, CT. After graduating from course VIII, Ricardo went to Brown (M.Sc. Chemistry), back to MIT (now defunct Department of Nutrition; M.Sc.), returned to Brown (M.D.), Harvard (M.P.H.), and Johns Hopkins (Emergency Medicine). After all of that, he still believes that there is nothing like MIT!

Dan Seligson (SB. Thesis advisor: Michael Feld) Dan has been working with the Society of Physics Students at Berkeley (where he got his PhD) on a career development seminar, marching before them several people who started out in physics but ended up somewhere else. They're contemplating a follow-up seminar, with the working title, "The Working World for Physics Students." Please contact Dan at *daniel.seligson@mindspring*.com if you are interested in or knowledgeable about this topic. Finally, Dan has been writing a short history of lithography in the semiconductor industry. Making it short is the difficult part.

David G. Stork (SB. Thesis advisor: Edwin Land) David is Chief Scientist of Ricoh Innovations, Consulting Professor of Electrical Engineering, and Visiting Lecturer in Art History at Stanford University. He was one of four scientists invited to a major symposium to analyze artist David Hockney's controversial theory that Renaissance artists used optical devices such as concave mirrors while painting. Stork's optical analyses of Renaissance paintings strongly argue against the Hockney theory, and Stork has been publishing scholarly articles, giving colloquia and plenary lectures in physics and art history departments internationally, explaining this counter-evidence.

'77

Richard R. Forberg (SM. Thesis advisor: Marc A. Kastner) After 20 years in the corporate environment, Richard is now an independent business and marketing consultant to small and medium-sized companies in various high-tech specialties, including networking systems, software, semiconductors, telecommunications, and parts of the emerging nanotech world.

Chung-Yin Lo (PhD. Thesis advisor: Houng Cheng) Chung-Yin's recent work shows that Riemannian space-time necessarily includes a frame of reference with the Euclidean-like structure and a time coordinate that is compatible with local clocks. He proposes an experiment on horizontal local light speeds to help identify the physical metric of the earth. The expected further experimental support of the Maxwell-Newton Approximation, which is independent of the Einstein equation, will establish unequivocally the indispensable crucial role of Einstein's equivalence principle. Concurrently, the Schwarzschild solution is proven invalid in physics.

Steven R. Rogers (PhD '77, SB '72. Thesis advisors: Karl Ingard, Chiang C. Mei) Steve lives in Israel, where he has been designing electron beam machines for use in semiconductor process control.

'79

James F. DeBroux (SM. Thesis advisor: Margaret L. A. MacVicar) Jim is the Project Manager for Assessments at SYColeman in Arlington, VA. SYColeman is the result of a 2003 merger of two L-3 Communications companies. His customers include the U.S. Army Space and Missile Defense Command (for whom the company is conducting an assessment of their directed energy programs and strategy) and the L-3 Corporate Headquarters (for whom it is conducting assessments of the Small Diameter Bomb and precision guided munition data links.)

Mahmoud Shahram (SM. Thesis advisor: Roshi Aggarwal) As Director of R&D at Synopsys, Inc., Mahmoud has been instrumental in developing noise analysis and characterization capability for static timing simulators. His R&D team has also developed a noise library characterization utility; currently, two patents have been submitted in this area and technical papers are being written. Mahmoud has also been acting as a technical liaison for the Synopsys Foundries Program, where the team has recently designed and developed a 90nm test chip. In addition, he manages the Direct Silicon Access Lab, performing wafer level transistor and interconnect characterization for RF parameter extraction, model development, simulation tool calibration, and correlation to silicon.

'81

Joseph A. Paradiso (PhD. Thesis advisor: Ulrich Becker) Joe was appointed Associate Professor at the MIT Media Lab in July 2002, and granted the Sony Career Development Chair in Media Arts and Sciences. Prior to that, he was a Principal Research Scientist directing the Responsive Environments Group at the Media Lab.

Jim Pekar (SB. Thesis advisor: William Bertozzi) Jim has been promoted to Associate Professor of Radiology at the Johns Hopkins University, where he also serves as Manager of the F. M. Kirby Research Center for Functional Brain Imaging at the Kennedy Krieger Institute (*http://mri.kennedykrieger.org*). He is known for his work on magnetic resonance techniques for the study of brain physiology and function, and for contributions to exploratory data analysis for functional brain mapping.

'82

Lawrence M. Krauss (PhD. Thesis advisor: Roscoe Giles) Lawrence was awarded the 2002 Andrew Gemant Award and the 2002 Science Writing Award by the American Institute of Physics (the latter for his book, *Atom*). He also delivered the Milton Freshman Lecture at Syracuse, the Chancellor's Lecture at Vanderbilt, and the Hamilton Lecture at Princeton this past year. Lawrence received his first honorary degree, a D.Sc. from Carleton University in Canada. He remains Chair of the Physics Department at Case Western Reserve University, where he recently created the Center for Education and Research in Cosmology and Astrophysics.

'84

José Miguel Figueroa-O'Farrill (SB. Thesis advisor: Alan Guth) Last year, José continued his research in string theory at the School of Mathematics, University of Edinburgh, where he was recently promoted to Reader. Among the results of his research were the discoveries of the nullbrane (a simple time-dependent string background) and of a plane wave vacuum of IIB string theory (together with the classification of ten- and eleven-dimensional vacua). Both results have received some attention, particularly the wave solution, which underlies much of the recent work on the gauge/gravity correspondence.

Alberto C. Sadun (PhD '84, SB '77. Thesis advisor: Philip Morrison) This past year, Alberto has been doing theoretical work on extragalactic jets, and observational work on quasar and other AGN flux variability. He had the pleasure of co-authoring an article for the *Astrophysics Journal* with his mentor and PhD thesis advisor, Philip Morrison, on the unusual morphology of the radio galaxy Hercules A. He continues as chairman of the Physics Department at the University of Colorado, Denver, but will be stepping down from that position this summer, after a six-year tenure. Alberto looks forward to spending more time on research and with family.

Mark Skinner (SB, *physics and humanities*. Thesis advisors: George Clark, Robert Jones. PhD '91, University of Wisconsin) Mark moved to Maui in 1999, working for Boeing at the AMOS Observatory and the Maui High Performance Computing Center as a senior research scientist. Recent highlights include getting the AEOS (gamma ray) burst camera up and running, with some recent observations of GRB030329. He is also working on the Pan-STARRS optical sky survey telescope system.

'85

Corbin Covault (SB. Thesis advisor: Jim Elliot) Corbin is a faculty member of the Department of Physics at Case Western Reserve University in Cleveland, OH. His research mostly involves experiments to detect gamma-rays and high energy cosmic rays. Together with his wife Dianne Tobey Covault ('89) and two stunningly beautiful little girls, Linnea and Glennis, he is very much enjoying life in Cleveland since moving there two years ago.

Fulvio Melia (PhD. Thesis advisor: Paul Joss) This year, Fulvio has completed two popular science books. The first, *The Black Hole at the Center of Our Galaxy*, will be published by Princeton University Press, and available at the end of April 2003. The second book, *The Edge of Infinity — Supermassive Black Holes in the Universe,* published by Cambridge University Press, will be released in September 2003. Fulvio is currently a Professor of Physics and Astronomy at the University of Arizona, and Associate Editor of the *Astrophysical Journal Letters*. Please visit *www.pup.princeton.edu/titles/7480.html* to learn more.

Don Monroe (PhD '85, SB '80. Thesis advisor: Marc A. Kastner) Don joined Bell Labs right after his doctorate, moving to Agere Systems in 2000. At Agere, only a couple of islands of device physics remain, including reliability, where Don's working. In the summer of 2002, he served on the committee investigating misconduct in organic electronics experiments by Hendrik Schön. While Don felt that the episode was a sad one for physics, he found it highly satisfying to come to a definitive conclusion and help the field move forward.

'86

Sharon Klotz (SB. Thesis advisors: Bernard Burke, Howard Eiland) Sharon is the Director of Exhibitions at the Brooklyn Children's Museum, and prior to that was part of the creative team which launched The Tech Museum of Innovation in San Jose, CA. Her project team at the Brooklyn Children's Museum was recently awarded a National Science Foundation grant to develop, design, and implement an exhibition focused on natural science inquiry. For Sharon, participating and leading within the museum field is a pleasure and an honor. There she has learned that the best exhibits are like good writing: they quickly get out of their own way, leaving the visitor to find her own creativity and her own metric of independent thought.

'87

Stefano Forte (PhD. Thesis advisor: Roman Jackiw) In late 2002, Stefano was appointed a full Professor of Theoretical Physics at the University of Milan — a return to academia after several years as a research physicist in the Italian national institute of nuclear physics in Rome. Stefano's research is still in particle physics and field theory, but having to teach undergraduates forces him to go back to the rest of physics, which is surely a good thing!

Peter Magill (PhD. Thesis advisor: David Pritchard) In spring 2001, Peter returned to a job with AT&T Labs. In September 2002, he took over as head of the Optical Systems Research Department there, where they do research on all aspects of fiber optic communications from ultra-long haul to access. His department has 10 full-time PhDs studying non-linearities, 40 Gb/s transmission, polarization mode dispersion, reconfigurable optical add/drops, tunable transmitters and dispersion compensators, coarse wavelength division multiplexing, and other topics.

Alfred Tang (SB. Thesis advisor: Toyoichi Tanaka) Alfred's curiosity led him to study philosophy and theology for many years after his degree from MIT. He returned to physics in 1997 and received his PhD in high energy theory in 2002. He's currently a postdoc in the Physics Department of Baylor University. His research interests are very diverse, and he collaborates with the Max Planck Institute at Heidelberg and the MIT J-Lab on light-front quantum field theory and lattice gauge theory with QDP++, respectively. He also spends a little bit of time on the theory of dusty plasma and environmental physics.

'88

Roel Hammerschlag (SB. Thesis advisor: Patrick Zurek) Roel was recently awarded a MacArthur Foundation Research and Writing Grant (together with co-researcher Patrick Mazza). The purpose of the grant is to critically assess the proposed "hydrogen economy" and features a unique, adversarial research structure in which Roel

acts as the hydrogen critic advancing a set of six skeptical theses. His co-researcher acts as the hydrogen advocate to disprove the theses. The research is being conducted under the auspices of the Institute for Lifecycle Energy Analysis (*www.ilea.org*), the non-profit organization Roel founded in 2000.

Jens Karlsson (SB '88, PhD '94, *mechanical engineering*. Thesis advisor: R. Mann) In June 2003, Jens moved from the University of Illinois to Georgia Tech, where he's an Associate Professor in the Woodruff School of Mechanical Engineering, and a participant in the Georgia Tech/Emory Center for the Engineering of Living Tissues.

'89

Jason Crain (SB. Thesis advisor: John Greybeal) Jason has recently returned from a year's sabbatical at IBM Research in Tokyo and is currently Director of the COSMIC Research Centre at the University of Edinburgh, where he has been on the Faculty since 1995. The COSMIC Facility is an interdisciplinary institute aimed at developing and using advanced laser and optical systems for applications at the interface between the physical and life sciences.

Barbara Hughey (PhD. Thesis advisor: Daniel Kleppner) In August 2002, Barbara left the small instrumentation company where she had worked for seven years and returned to MIT as a lab instructor. She teaches the junior-level "Instrumentation and Measurement" course in the Department of Mechanical Engineering. She really enjoys working with the students and building up new experiments for them.

'91

Dan Gochberg (SB. Thesis advisor: Steven Strogatz) Dan was recently appointed an Assistant Professor at Vanderbilt University, with a primary appointment in radiology and a secondary appointment in physics. He works on magnetic resonance imaging, developing new techniques for the *in vivo* measurements of magnetization transfer between the solid and liquid parts of tissue. There is evidence that this quantity may correlate to myelin content in white matter, and therefore be a useful measure of the degree of pathology in demyelinating diseases such as multiple sclerosis. Dan's enjoying Nashville, although he still does not like country music.

Matt McCluskey (SB. Thesis advisor: Jonathan Wurtele) Matt's three-year grant from the National Science Foundation ("Local Vibrational Modes of Impurities in Semiconductors") was renewed this year. His semiconductor and high-pressure physics group at Washington State University has been investigating hydrogen in zinc oxide, conjugated molecules under pressure, and vibrational interactions in semiconductors. The latter work was recently published in *Physical Review Letters* (Vol. **90**, article 095505).

'92

Lerothodi Leeuw (SB. Thesis advisor: Ron Remillard) In the past year, Lerothodi started a postdoctoral research position at the University of Toledo in Ohio, working with Prof. A. N. Witt on devising analytical tools for the structure of dust clumps in reflection nebulae and selected nearby galaxies.

'93

Bill Robertson (SM. Thesis advisor: Toyoichi Tanaka) This past year has been the most stressful and satisfying of Bill's career. He left his job at KLA-Tencor (Bedford, MA) in November and along with his wife Lauren and their daughter Lucy (age two), left their home of the past four years in Chelsea, MA, to venture west to Santa Fe, NM. He began a new job at Los Alamos National Lab in the Nuclear Materials Technology Division. It had long been a dream of the Robertsons to live in northern New Mexico, and Bill's new job is a great challenge and opportunity. In January, their son Tate was born, who has since developed quite a charming smile!

'94

Daniel Aalberts (PhD '94, SB '89. Thesis advisors: Nihat Berker, G. Bekefi) Williams College recently promoted Daniel to Associate Professor of Physics (with tenure). Over spring break, he and his wife Danielle visited Daniel's PhD advisor, Nihat Berker, in Istanbul. There, Daniel gave two research talks and a voice recital.

'96

Hyun-Woo Lee (PhD. Thesis advisor: Leonid Levitov) In August 2002, Hyun-Woo was appointed an Assistant Professor of Physics at Pohang University of Science and Technology in Pohang, Korea.

Risa H. Wechsler (SB) Risa received her PhD in Physics at the University of California, Santa Cruz in 2001, and has been a postdoc at the University of Michigan since then, studying cosmology and galaxy formation theory. In fall 2003, she will begin a position as a NASA Hubble Fellow at the University of Chicago's Center for Cosmological Physics and as a Fermi Fellow at the Enrico Fermi Institute.

'97

Omar Saleh (SB. Thesis advisor: Ray Ashoori) Omar had a fairly eventful year: last summer, he got married. On returning from his honeymoon, he wrote his thesis and graduated from Princeton with a PhD in Physics (thesis advisor: Lydia Sohn). Then, last December, he moved to Paris to start a postdoc doing research in single molecule biophysics at the Ecole Normale Supérieure (with David Bensimon and Vincent Croquette).

'98

Sergei Krupenin (SB. Thesis advisor: Jesus del Alamo) After graduating from Stanford with Masters degrees in Electrical Engineering and in Management Sciences, and co-founding a software company, Sergei is now with ACCESS Systems America, the U.S. subsidiary of ACCESS Co. of Tokyo. ACCESS is one of the original developers of the i-mode technology, and as their Director of Wireless Industry Solutions he works with wireless operators and handset manufacturers throughout Asia and the Americas. Sergei resides in Oakland, CA.

'99

Felix Dashevsky (SB. Thesis Advisor: Richard Milner) The highlights of Felix's activities for the past academic year include: graduating from the Boston University School of Law in May 2002; achieving admittance to the New York State Bar in March 2003; and practicing law in New York City.

Ricardo Schiappa (PhD. Thesis advisors: Kenneth Johnson, Jeffrey Goldstone) This past summer, Ricardo left Harvard's Physics Department after three years as a postdoctoral research fellow (and after a total of eight years in the U.S., all spent in Cambridge, MA) to return to his hometown of Lisbon, Portugal. There, he began a joint academic position last September as an Assistant Professor at the Lisbon-UCP University (in Physics and Mathematics) and as a Researcher with the Portuguese Science Foundation (FCT).

'00

Thomas Sunn Pedersen (PhD. Thesis advisors: Miklos Porkolab, Robert S. Granetz) Thomas is an Assistant Professor in the Department of Applied Physics and Applied Mathematics at Columbia University. In the summer of 2002, he received a Department of Energy Plasma Physics Junior Faculty Award to build the Columbia Non-neutral Torus (CNT), an experiment to conduct the first investigations of the physics of non-neutral plasmas confined on magnetic surfaces. The experiment, an ultrahigh vacuum, tabletop stellarator, will be used to confine pure electron plasmas and partly neutralized plasmas and may lead to the first laboratory creation of a positron-electron plasma. Further details can be found at *http://www.ap.columbia.edu/CNT*.

Yoshi Uchida (PhD. Thesis advisor: Peter Fisher) Yoshi has been working with Prof. Giorgio Gratta at Stanford University on the KamLAND reactor anti-neutrino experiment, which started taking data in early 2002. Much of the year was spent heavily involved in the data analysis that culminated in the publication of the group's first results in January 2003. Yoshi was very happy to return to MIT recently to present these results at an MIT LNS colloquium. He is currently working on the next round of papers to come from KamLAND, while helping his colleagues on R&D for the EXO double beta decay experiment.

'01

Baruch Feldman (SB. Thesis advisor: Uwe-Jens Wiese) After completing his consultancy at the UN Population Fund (UNFPA) in July 2002, Baruch began working full time on a Master of Public Administration degree from Baruch College, CUNY, and expects to finish by August 2003. In the fall, Baruch will enter the physics PhD program at the University of Washington, Seattle, studying theoretical particle physics.

Martin Tiberg (SB, *physics and mathematics*. Thesis advisor: David Pritchard) After receiving a M.Sc. in Engineering Physics from the Royal Institute of Technology, Sweden, Martin has worked partly with nanotechnology R&D at ABB, and partly with his own start-up, TibTech. TibTech has applied for a patent, secured some funding, and started the product development of an authentication method called "Privacy Protection." The method uses cryptographic techniques to protect the user's privacy in central biometric authentication systems. The market introduction of Privacy Protection is scheduled for the fall of 2003. Email Martin if you happen to stop by Sweden: *tiberg@alum.mit.edu*.

'02

Teresa Fazio (SB. Thesis advisor: Ulrich Becker) Teresa, a Second Lieutenant in the United States Marine Corps, completed the United States Marine Corps Basic Officer Course in January 2003. She is currently stationed in Quantico, VA, awaiting the start of the Communications Officer Course. Teresa will report to the 1st Fleet Service Support Group, Camp Pendleton, CA, in January 2004.

Kendall McConnel (SB. Thesis advisor: Kate Scholberg) Kendall is currently in Japan working on the K2K long baseline neutrino experiment at KEK, a Japanese national lab. Earlier in the year he helped reconstruct Super-Kamiokande (and splashed around in the tank) and since then has been working shift, upgrading hardware, and reanalyzing old data for the SciFi group. ●