Alumni/ae Notes

'51 **Josef Eisinger** (PhD) Josef has published his second book on his favorite physicist, *Einstein at Home* (Prometheus Books, 2016), based upon a historian's discussions with the physicist's Berlin housekeeper. Josef had earlier published *Einstein on the Road* (Prometheus Books, 2011), culled from Einstein's 1922-1933 travel diaries.

Roy Weinstein (SB; PhD '54. Thesis supervisor: Martin Deutsch) is a professor of physics emeritus at the University of Houston, and notes that although he is in his 90th year, he is still quite active in research. On April 8, 2016, *phys.org* reported on his most recent discovery in its article, "Physicists discover flaws in superconductor theory."

'54 **Arthur Winston** (PhD. Thesis supervisor: Louis Osborne) received the 2015 Robert S. Walleigh Distinguished Contributions to Engineering Professionalism Award of the IEEE-USA, the organization's highest honor. The award was given in recognition of Arthur's "leadership through innovation; mentoring and promoting engineering management; entrepreneur practices; as well as the creating of new policies of national interest."

'57 **Edward A. Friedman** (SB; PhD '63, Columbia University) recently published an essay on nuclear terrorism in *Public Interest Reports*, an online journal of the Federation of American Scientists (FAS), as well as an op-ed on the FAS web site marking the 30th anniversary of the Chernobyl disaster. This past April, he was one of four speakers at an FAS forum in Washington, D.C., focusing upon lessons learned from the Chernobyl disaster. Edward is a professor emeritus of technology management at the Stevens Institute of Technology.

Murray Muraskin (SB) published a paper in *Physics Essays*, showing that a small number of mathematical aesthetic principles can be cast into a system of nonlinear equations that are in general non-integrable, as well as discussing techniques to handle the non-integrability.

'61 **Hale Bradt** (PhD. Thesis supervisor: George Clark) Last summer, Hale published a compilation of highly literate letters his father had written during his service in the Pacific theater during World War II. Tragically, his father's story ended in suicide shortly after the war. Hale's work, *Wilber's War, An American Family's Journey through World War II*, also includes the stories of the challenges faced by those on the home front during the soldiers' long deployments. Please visit *wilberswar.com* to learn more.

William Feldman (SB) recently co-authored a paper published in the *Journal of Geophysical Research: Space Physics*, "Long-duration neutron production by nonflaring transients in the solar corona." The paper reviews data from the neutron spectrometer aboard the MESSENGER spacecraft (for which Bill was the principal co-investigator), while in orbit about Mercury. These data were used to study neutron enhancements to identify events that may have been generated at or near the Sun by solar transients. They found six such events that were interpreted to produce an extended solar exosphere of moderate-energy neutrons, protons and electrons.

'62 **Jose Alonso** (SB; PhD '67. Thesis supervisor: Lee Grodzins) continues to work with MIT professor of physics Janet Conrad on the IsoDAR sterile neutrino experiment, looking for a deployment of a high-power cyclotron as a neutrino source next to the KamLAND detector in Japan. This reconnection with MIT has been a thrilling opportunity for Jose, 15 years post-retirement from LBNL, not least seeing all the changes that have taken place at MIT since the '60s. This past summer, Jose and his wife Carol (PhD '70) returned to Boston to celebrate the 90th birthday of their PhD advisor Lee Grodzins.

'63 **Gerald Scott** (SB. Thesis advisor: T. J. Thompson) enjoys exploring diverse applications of physics in his retirement, such as digital processes of color photography and image creation; elements of proposed optical projection systems for a system installation at his church; and purging the church's computer systems of a ransomware virus. Gerald has also learned to play and tune a pipe organ. He finds that curiosity and the desire to continue learning are the most important remaining facets of his MIT education.

'64 **Verne L. Jacobs** (SB. Thesis advisor: John Slater) continues full-time employment as a research physicist in the materials science and technology division of the U.S. Naval Research Laboratory. His research activities are in theoretical atomic and condensed matter physics, with emphasis on non-linear and quantum optical phenomena. Verne collaborates with colleagues at Harvard and looks forward to visits to Cambridge, MA, which include seeing friends at MIT.

James E. Spencer (SB; PhD '69. Thesis supervisors: Harald Enge, Arthur Kerman) In his retirement, Jim continues to work on a number of fairly fundamental physics problems that have always intrigued him. However, he notes that as his wife Nancy is still working at SLAC, his primary job nowadays is being her chauffeur.

Warren Wiscombe (SB) went to Caltech to continue his physics studies after MIT, but switched to applied math because he couldn't stand the "mystical nature" of modern physics. He then entered the nascent field of climate science and happily remained there for his entire career, retiring from NASA in 2013. Warren now enjoys traveling, as well as teaching older adults in the Osher Lifelong Learning Program about climate, paleoclimate and exoplanets.

'65

Sanford (Sandy) Morganstein (SB. Thesis advisor: George Clark) volunteers at Chicago's Adler Planetarium, inspired by the organization's mission to explore and understand the universe, as well as his own desire to help young Americans develop an interest in science and mathematics and better prepare for 21st century careers. One of Sandy's favorite activities at the Adler is helping high school students with high-altitude balloon launches, which brings back fond memories of his MIT thesis work in early explorations of cosmic X-rays.

'66

Roland N. Pittman (SB. Thesis advisor: David Frisch) Last September Roland received an award recognizing his research contributions in the field of microcirculation at the 10th World Congress for Microcirculation (Kyoto, Japan). In addition, the second edition of his monograph, *Regulation of Tissue Oxygenation*, was published in Summer 2016.

Stephen Senturia (PhD. Thesis supervisor: George Benedek) retired in 2003 after 36 years as a professor of electrical engineering at MIT. After wrapping up some other technology-based activities, he began writing fiction in 2011. His first novel, *One Man's Purpose* (FriesenPress), was published in November 2015. It is an academic thriller, placed in the fictional Cambridge Technology Institute, which bears an eerie resemblance to MIT. More details are available at *stephendsenturia.com*.

'67

Richard J. Stein (SB. Thesis advisor: M. W. P. Strandberg) continues to work at Stein Labs building research equipment, some of which is used by university departments of material science and physics.

'68

Aviva Brecher (SB) retired this past July after 28 years as a senior physical scientist and national technical expert on transportation, safety, environment and health at the USDOT Volpe Center. In her final year she co-authored technical reports on topics such as advanced lithium batteries or other wireless propulsion for electric transit vehicles; rail energy efficiency technologies and strategies; the safety impacts of fuel efficiency technologies for mid- and heavy-duty vehicles; and how to monitor and reduce airport greenhouse gas inventories. Aviva also served for eight years as the Federal Labs Consortium Technology Transfer for Volpe Center liaison. She and her husband Kenneth (SB '65) are learning to relax while spending more time with their California family and traveling the world.

Ian Glass (PhD. Thesis supervisor: George Clark) Since his retirement, Ian has focused upon historical issues. Last year he wrote his sixth book, *The Royal Observatory at the Cape of Good Hope: History and Heritage*. This institution, which existed from 1820 to 1971, was the predecessor of the South African Astronomical Observatory where Ian spent most of his career working in infrared astronomy. Former classmates may also be interested in Ian's reminiscences of MIT, available at *saao.ac.za/~isg/MIT.pdf*.

Michael Riordan (SB; PhD '73. Thesis supervisor: Jerome Friedman) and co-authors Lillian Hoddeson and Adrienne W. Kolb are happy to report the many favorable reviews of their book detailing the history of the SSC, *Tunnel Visions: The Rise and Fall of the Superconducting Super Collider* (University of Chicago Press, November 2015). Michael's U.S. lecture tour on the topic will expand to Europe this fall.

'69

Robert W. Boyd (SB. Thesis advisor: K. Uno Ingard) and co-authors M. Zahirul Alam and Israel De Leon, report in their paper, "New Photonic Material with Huge Nonlinear Optical Response," (*Science* 352, 795; 2016), that under conditions known as "epsilon near zero" (ENZ) the degenerate semiconductor indium tin oxide (ITO) has a huge enhancement in its nonlinear optical response. They conclude that this material and other materials under development could constitute a game changer for the field of photonics.

Benjamin Rouben (PhD) continues as an adjunct professor of nuclear science and engineering at both McMaster University and the University of Ontario Institute of Technology, teaching nuclear science, reactor physics, reactor kinetics, nuclear fuel management, and power plant operation. He recently

co-authored two chapters on reactor statics and reactor kinetics for the e-book, *The Essential CANDU*. Benjamin serves as the Secretary/Treasurer of the University Network of Excellence in Nuclear Engineering and is the Executive Director of the Canadian Nuclear Society.

Thomas L. Wilson (PhD. Thesis supervisor: Bernard Burke) left the U.S. Naval Research Laboratory in December 2015, where he had been a member of the scientific staff, to join the National Science Foundation (NSF) as a program director. Tom is in the electromagnetic spectrum management unit, where he deals with issues that affect NSF-funded radio astronomical facilities.

'70

Carol Travis Alonso (PhD. Thesis supervisor: Lee Grodzins) is now a full-time equestrian and trainer; last fall she successfully competed in the U.S. National Dressage Championships in Lexington, KY. This past summer, Carol and her husband Jose (SB '62, PhD '67) returned to Boston to celebrate the 90th birthday their PhD advisor Lee Grodzins.

Bob Johannsen (SB) During this past year, Bob has been studying centrifugal forces in gymnastics as he learns how to do "giants" on the high bar. So far, he notes, he has not needed to add any relativistic corrections.

'71

Sekazi K. Mtingwa (SB *Physics & Mathematics*; PhD '76 *Physics*, Princeton University) received the 2015 Distinguished Service Award from the American Nuclear Society in recognition of his initiative and leadership of the APS POPA study, "Nuclear Workforce Readiness." Sekazi was also elected a 2015 Fellow of the American Association for the Advancement of Science for his "distinguished contributions to accelerator physics and nuclear energy policy, and for major efforts to promote physics research at U.S. minority-serving institutions and in Africa."

'74

David Leinweber (SB *Physics & Electrical Engineering*; PhD *Computer Science*, Harvard University. Thesis advisors: Eric Cosman, Harald Enge) is the lead data scientist at Tri Alpha Energy (TAE), a privately-funded fusion research firm in California, where data science initiatives span supercomputer simulations, experimentation and machine operations. David's book on his earlier career in computers and financial technology, *Nerds on Wall Street: Wired Markets in a Wired World* (Wiley) was published in 2009. In 2010, he was named "Innovator of the Decade" by *Automated Trading* magazine.

'76

Dan Seligson (SB. Thesis advisor: Michael Feld) After the publication in 2014 of his novel *Moby Dx: A Novel of Silicon Valley*, whose characters travel the tunnels beneath MIT and Paris before arriving in Palo Alto, CA, Dan devoted 2015 to *Taboo*, a novel examining political correctness and American views on Islam. While *Taboo* awaits publication, he's absorbed in research for the next one, whose working title is *The Life*.

'77

Peter Fiekowsky (SB) has been focusing upon shifting the global climate goal from 2°C to a "healthy climate with zero°C warming." He launched a Healthy Climate event at the Paris talks and an Earth Day op-ed in Silicon Valley. Peter has found it challenging to get climate leaders to publicly discuss the option of 0°C, so he's seeking courageous MIT community people willing to partner with him and speak on its behalf.

Michael G. Littman (PhD. Thesis supervisor: Daniel Kleppner) received Princeton University's 2015 School of Engineering Distinguished Teaching Award. Michael teaches a number of courses, ranging from the history of engineering to the computer control of model trains, as well as the art and science of motorcycle design. He's also working with the Smithsonian and the University of Virginia to develop kits to enable middle and high school students to recreate historic inventions using 3D printing methods.

'78

Yaneer Bar-Yam (SB; PhD '84. Thesis supervisor: John Joannopoulos) has published this past year on the use of multi-scale methods in biological and social sciences (*Complexity*); global food prices (*PNAS*); and outbreaks in response to the Ebola epidemic (*PLoS Currents*). His lab at the New England Complex Systems Institute also produced several guidelines and policy statements on how best to address the Zika outbreak in South and Central America. In addition, Yaneer co-authored a book on modern military conflicts, *Conflict and Complexity: Countering Terrorism, Insurgency, Ethnic and Regional Violence*, and gave a number of invited lectures on complex systems science and policy.

Gerald L. Epstein (SB *Physics & Electrical Engineering*. Thesis advisors: Rainer Weiss, Erich Ippen) returned earlier this year to the White House Office of Science and Technology Policy (OSTP), where he had earlier served in 1996 and 2001, as assistant director for biosecurity and emerging technologies in the National Security and International Affairs Division. Having spent his career working on science, technology, and security

policy issues, Gerald comes to OSTP on detail from the U.S. Department of Homeland Security, where he is deputy assistant secretary for chemical, biological, radiological, and nuclear policy.

Bill Gallagher (PhD. Thesis supervisor: Brian Schwartz) recently retired from IBM Research after 37 years. He then joined Taiwan Semiconductor Manufacturing Company in Hsinchu, Taiwan, as a technical director working on magneto-resistive random access memory technology. Bill has spent the last 20 or so years developing aspects of this technology, now widely pursued. It is based in part on spin-polarized tunneling phenomena, first studied at MIT's Francis Bitter National Magnet Laboratory where Bill did his PhD thesis research.

'79 **Jeffrey H. Hunt** (SB. Thesis advisor: Michael Feld) represented The Boeing Company at two quantum technology conferences this past year, serving on the industrial science panel at each event, addressing the significance of quantum technologies for information assurance.

Peter Reynolds (PhD. Thesis supervisor: H. E. Stanley) received a U.S. 2015 Distinguished Presidential Rank Award. Established in 1978, this award program recognizes a select group of senior career employees who have a "sustained record of exceptional professional, technical, and/or scientific achievement recognized on a national or international level." Peter was among those honored at a black tie reception and banquet at the U.S. State Department on April 21, 2016.

'80 **Tim Brunner** (PhD. Thesis supervisor: David Pritchard) After 26 years at IBM, Tim moved to Global Foundries Inc. His primary focus is EUV lithography, which is finally achieving capability for manufacturing chips. He also works on metrology methods for characterizing and mitigating the impact of non-lithographic processing steps on lithographic imaging quality.

'81 **Jim Pekar** (SB. Thesis advisor: William Bertozzi) was made a Fellow of the International Society of Magnetic Resonance in Medicine (ISMRM) for his "contributions to the development of methods for the acquisition and analysis of magnetic resonance data reporting on brain physiology and function." Jim has also twice received the ISMRM's Outstanding Teacher Award. He is an associate professor of radiology at Johns Hopkins University and serves as manager of the F.M. Kirby Research Center for Functional Brain Imaging at the Kennedy Krieger Institute.

'84 **Philip Kaaret** (SB. Thesis advisor: Philip Morrison) is a professor of physics and astronomy at the University of Iowa. Last fall, NASA approved $3.7 million in funding for his proposal to build HaloSat in collaboration with the Goddard Space Flight Center. HaloSat is a CubeSat that will measure soft X-ray emission from the halo of our Milky Way galaxy. The sum of baryons observed in the local universe falls short of the number measured at the time of the cosmic microwave background—the "missing baryon" problem. HaloSat should help determine if the missing baryons reside in the hot halos' surrounding galaxies.

'85 **Stacy McGaugh** (SB. Thesis advisor: George Clark) is chair and professor of astronomy and physics at Case Western Reserve University and director of the Warner and Swasey Observatory. This past June she was a participant in "Shaking up the Dark Universe" at the World Science Festival.

'87 **Andrea Ghez** (SB; PhD '92 *Physics*, California Institute of Technology) was awarded the 2016 Bakerian Medal and Lecture of The Royal Society (UK) for her "acclaimed discoveries using the techniques of optical astronomy, especially her sustained work on the motions and nature of the stars orbiting the black hole in the centre of our Galaxy." Andrea is a professor of physics and astronomy at UCLA, the Lauren B. Leichtman & Arthur E. Levine chair in astrophysics, and director of the UCLA Galactic Center Group.

'88 **John L. Harton** (PhD. Thesis supervisors: E. S. Hafen, I. A. Pless) Last summer John completed five years as chair of the physics department at Colorado State University at Fort Collins, where he has been on the faculty since 1995. Returning to the classroom he taught freshman physics with calculus, which he really enjoyed. He's now finishing a paper on the Auger Observatory, describing the spectral calibration of the Auger fluorescence telescopes while advising two PhD students on the HAWC gamma-ray detector. John's also working on papers with the DRIFT directional dark matter experiment. As Auger and DRIFT wind down, he anticipates a new research direction, possibly in climate change.

'89 **Daniel Aalberts** (SB; PhD '94. Thesis advisor/supervisor: George Bekefi, Nihat Berker) had fun this past year developing a condensed matter physics course at Williams College, where he is a professor of physics. Daniel and colleagues recently published, "Codon influence on protein expression in *E. coli* correlates with mRNA levels," in *Nature* (2016).

Mark Andersen (SB *Physics & Political Science*) is a senior director for global products analytics and strategy for Cimpress. He's married to Lori Andersen (SB '89), a pediatrician, and their second of three children entered Washington University this fall. Mark enjoys sailing on the Charles with Boston Community Boating and doing research on the early period of the U.S. Civil War.

Ofelia C. de Hodgins (SM. Thesis supervisor: Keith Johnson) reports that she successfully participated in the 2015 Lean Six Sigma World Conference.

'91 **Joseph Lehar** (PhD. Thesis supervisor: Bernard Burke) continues as head of computational biology at Verily, Google/Alphabet's life sciences company. He frequently travels to Boston and invites former MIT classmates still based in the area to contact him at *jlehar@alum.mit.edu*.

'93 **Marla Dowell** (PhD. Thesis supervisor: June Matthews) is chief of the Applied Physics Division at the National Institute of Standards and Technology (NIST) and was featured in the 2016 SPIE Women in Optics Planner. Marla and her husband John Perkins (PhD '94) reside in Boulder, CO, with their two children. The family enjoys an active Colorado lifestyle of hiking, mountain biking, skiing and soccer.

Zoltán Haiman (SB *Physics & Electrical Engineering*. Thesis advisor: Walter Lewin) is a professor of astronomy at Columbia University where his research interests include the use of weak gravitational lensing for cosmology; the formation of massive black holes in the early universe; and mergers between supermassive black holes (SMBHs). In Fall 2015 his work uncovering evidence for a compact SMBH binary in the early universe (based on the relativistic Doppler modulation of its optical and ultraviolet emission within a four-year period), was published in *Nature*. In 2016 Zoltán was awarded a Simons Fellowship in Theoretical Physics.

'03 **Alex Wissner-Gross** (SB *Physics/Electrical Engineering/Mathematics*. Thesis advisor: Bolek Wyslouch) was named a 2016 Small Business Administration Emerging Business Leader. He was also a contributing author of the Amazon's #1 new release in artificial intelligence, *What to Think About Machines That Think*. For more details, visit *alexwg.org*.

'04 **Laura Colón-Meléndez** (SB) successfully completed her PhD in physics at the University of Michigan, Ann Arbor.

'05 **Michael Childress** (SB. Thesis advisor: Vladan Vuletic) In Fall 2015 Mike joined the faculty at the School of Physics & Astronomy, University of Southampton (UK) as a Lecturer in Astronomy.

'06 **David Chan** (PhD '06. Thesis advisor: John Joannopoulos) co-founded Jermain Capital LLC with Adrian Devenyi (PhD '00). Jermain Capital is an emerging markets low-net hedge fund trading across multiple asset classes in up to 30 countries. As senior portfolio manager, David develops quantitative trading strategies and portfolio risk analytics. Jermain is headquartered in Midtown Manhattan and will launch in the second half of 2016.

'07 **Keisuke Goda** (PhD. Thesis supervisor: Nergis Mavalvala) has extended his ultrafast methodology to spectroscopy, demonstrating the world's fastest stimulated Raman microscopy and the world's fastest fluorescence microscopy, as published in multiple *Nature* journals. His research group at the University of Tokyo has grown to encompass 50 members.

Christine Corbett Moran (SB *Physics & Electrical Engineering*) took a one-year leave from her postdoctoral fellowship at Caltech in the Theoretical Astrophysics Including Relativity (TAPIR) group to serve for 11 months as a winterover scientist for the South Pole Telescope at the Amundsen-Scott South Pole Station. She will return to Caltech in 2017 after an exciting 2016 doing physics in Antarctica.

'08 **Jeremy Jacox** (SB) received his PhD in immunobiology from Yale University this past May under the guidance of Ruslan Medzhitov. His thesis concerned intercellular control circuits regulating growth factors in tissues and the melanoma microenvironment. During his time at Yale, he met and married his sweet-

heart, Elizabeth Deschene, and they have since welcomed two darling daughters into the family, Charlotte and Olivia. After a final year of medical school, Jeremy will pursue a physician-scientist residency in oncology.

Dennis V. Perepelitsa (SB *Physics/Mathematics & Computer Science*. Thesis advisor: Joseph Formaggio) In Fall 2016 Dennis joined the faculty of the University of Colorado, Boulder, as an assistant professor of experimental nuclear physics. His research focuses upon exploring the phenomena of heavy ion collisions at the Large Hadron Collider at CERN and the Relativistic Heavy Ion Collider at Brookhaven National Laboratory. In addition, Dennis was named a 2015 Blavatnik Regional Awards Finalist.

'09 **Josiah Schwab** (SB. Thesis advisor: Saul Rappaport) received his PhD in physics from the University of California, Berkeley, in May 2016. For the next few years, he will be a Hubble Fellow at the University of California, Santa Cruz.

'12 **Anshuman Panda** (SB. Thesis advisor: Barton Zwiebach) is a graduate student in the joint PhD program in physics and quantitative biomedicine at Rutgers University, focusing upon cancer research in the field of immune checkpoint therapy. Anshuman received the 2016 Gallo Award for Scientific Excellence at the annual retreat of the Cancer Institute of New Jersey.

'14 **Prashanth S. Venkataram** (SB. Thesis advisor: Marin Soljačić) is a third-year PhD student in the department of electrical engineering at Princeton University, focusing on fluctuational electrodynamics at the nanoscale, particularly the influence of geometrical effects on van der Waals or Casimir forces in soft matter systems. He's supported by a National Science Foundation Graduate Research Fellowship and recently received an Early Career Award from his department in recognition of his achievements during the first two years of graduate work.

'15 **Prajwal T. Mohanmurthy** (SM. Thesis supervisors: Joseph Formaggio, Richard Milner) is a Swiss National Fellowship research scientist at the Paul Scherrer Institute (PSI) involved in the neutron electric dipole moment experiment, while concurrently pursuing a PhD at ETH Zurich. Prajwal is also a visiting research assistant at MIT's LNS, working with Joseph Formaggio on Project8. That group is pursuing novel experimental proposals to search for CPT/Lorentz symmetry violations and probe the muonic charge radius crisis.

Mingming Yang (PhD. Thesis supervisor: Christoph Paus) traveled this past April to Alaska, where she gave a talk at the Pratt Museum, "From the Discovery of the Higgs Boson to the Meaning of Life." Based upon her experiences as a physics graduate student in a collaborative research environment, in her talk Mingming considers "the role of the individual, the value of particle physics, and the beauty of nature." She gave a similar presentation in June at Boston's Museum of Science, and plans to continue with her worldwide travels.