

News & Events in Physics

On September 23, 2010, the Physics Department hosted a reception in the newly-renovated Laboratory for Nuclear Science (LNS) common room (26-502) renamed the Lourie Family Common Room. This renovation was possible thanks to the generosity of **Robert and Lisa Lourie**. Robert earned his S.B. degree in physics in '82 and Ph.D. in '86 at the LNS. Members of the LNS, including faculty, graduate students, postdocs, and staff, joined the celebration. Professor **Bill Bertozzi**—Robert Lourie's thesis advisor—attended, with remarks from LNS Director Professor **Richard Milner**, Physics Department Head **Ed Bertschinger**, and Robert Lourie.

NEW LOURIE FAMILY COMMON ROOM CELEBRATION



Robert and Lisa Lourie outside the new Lourie Family Common Room.



Department Head Ed Bertschinger with Robert and Lisa Lourie.

On October 8, 2010, the Department held a 10th anniversary celebration in honor of its flagship postdoctoral fellowships program, the Pappalardo Fellowships in Physics, thanking program founders **Neil and Jane Pappalardo** for their generosity and support. During the morning's events, former Pappalardo Fellows, who'd arrived from Europe and across the U. S., spoke briefly about their current research and enjoyed the chance to reconnect with each other and old friends at MIT. In the afternoon, a public symposium was held featuring former Pappalardo Fellows, and now Professors of Physics, **Henriette Elvang** (University of Michigan, Ann Arbor), **Michael Fogler** (University of California, San Diego), **Jocelyn Monroe** (MIT), **Robert Simcoe** (MIT), **David Tong** (University of Cambridge), and **Arpita Upadhyaya** (University of Maryland).

10TH ANNIVERSARY CELEBRATION OF THE PAPPALARDO FELLOWSHIPS IN PHYSICS



Neil and Jane Pappalardo celebrate with current and former Pappalardo Fellows.

BREAKFAST LECTURE SERIES:
ZWIERLEIN AND PAUS

Professor **Martin Zwierlein** gave the fall breakfast talk on November 15, 2010, at the MIT Faculty Club. In his talk on “Ultracold Atomic Gases—Model Matter Close to Zero,” Prof. Zwierlein presented several experiments that have allowed his group to create strongly interacting fermionic superfluids and nonequilibrium ferromagnets. For the year’s second breakfast talk, on May 9, 2011, Prof. **Christoph Paus** spoke at the MIT Faculty Club on “Searching for and Finding the Higgs: A Personal View.” Professor Paus reviewed what the available data and the Standard Model tell us about the Higgs boson, and described the present status of the Tevatron and Large Hadron Collider (LHC) searches at CERN in Geneva.

2011-2014 PAPPALARDO FELLOWSHIPS
IN PHYSICS COMPETITION

The MIT **Pappalardo Fellowships in Physics**, a leading postdoctoral fellowships program within the international physics community, completed its 12th annual competition in January 2011 with the acceptance of four new fellows for the 2011-2014 appointment cycle: **Laura Lopez** (experimental astrophysics), a 2011 Ph.D. from the University of California, Santa Cruz; **Silviu Pufu** (string theory), a 2011 Ph.D. from Princeton University; **Joshua Spitz** (experimental nuclear and particle physics), a 2011 Ph.D. from Yale University; and **Andrea Young** (condensed matter experiment), a 2011 Ph.D. from Columbia University.

Detailed biographies, including research descriptions and publications for all Pappalardo Fellows (present, incoming and former), are available on web.mit.edu/physics/research/pappalardo/index.html. The MIT Pappalardo Fellowships in Physics program was initiated, and is sustained, by funds generously provided by **Neil and Jane Pappalardo**.



Laura Lopez



Silviu Pufu



Joshua Spitz



Andrea Young

The Department celebrated its sixth annual Patrons of Physics Fellows dinner on April 8, 2011. Over 65 guests gathered for a dinner and reception in the Pappalardo Community Room. **Colton O'Connor**, a **2010–11 Whiteman Fellow**, **Dragos Velicanu**, a **2010–11 Frank Fellow**, and **Ivana Dimitrova**, a **2010–11 Whiteman Fellow**, were student presenters. They spoke about their pathways to physics, what led them to MIT, and their current research. They also thanked their donors, as well as all donors who are members of the Patrons of Physics Fellows Society, for making graduate fellowship support possible. The annual Patrons dinner is a great opportunity for the students to get to know the donors who are supporting them. **George Elbaum**, founding member, concluded the evening with remarks on why he gives to fellowships. He also spoke about the increase of international students at MIT, in the Physics Department, and in the Whiteman Fellowships, which makes him very happy. Patron donors who also attended were George's wife **Mimi Jensen**, **Hale and Dorothy Bradt**, **Bob Johnson**, **Riccardo Di Capua**, **Tom Frank**, **Curt Marble**, and **Howard and Colleen Messing**.

6TH ANNUAL PATRONS OF PHYSICS FELLOWS DINNER



Photos this page: Bryce Vickmark

Riccardo Di Capua (right) with Di Capua/Whiteman Fellow Benji Yoshida.



Colleen and Howard Messing with Messing Fellow Katherine Deck (center).



George Elbaum and Mimi Jensen (front row, center) with their Whiteman Fellows.

TOM FRANK '77, PhD '85, HOSTS PROFESSOR FARHI IN GREENWICH, CT

Tom Frank '77, PhD '85, hosted Professor **Edward Farhi** in Greenwich, CT, on February 16, 2011, with a cocktail reception and talk. Professor Farhi, Director of MIT'S Center for Theoretical Physics, spoke on "Quantum Money." Dean of Science and physics faculty member **Marc Kastner** introduced Tom Frank, thanking him for hosting this event and for his generous support of graduate students. Tom was a student of the late Professor Richard Yamamoto and enjoyed his time at MIT. In attendance were **Thomas Cardello**, **Marina Chen**, **Michael Lawler**, **Tim Lu** and **Yanjing Wei**, **Michael Mendelson**, and **Hu Yang**.



Erin McGrath

Tom Frank (left) and Prof. Edward Farhi.

10TH ANNUAL PAPPALARDO FELLOWSHIPS IN PHYSICS SYMPOSIUM

The Department's prestigious postdoctoral fellowships program, the **Pappalardo Fellowships in Physics**, held its 10th annual symposium on May 13, 2011, featuring public talks by five of its outstanding young physicists. Attended by a broad cross-section of members and friends of the MIT physics community, featured speakers included Fellows **Mustafa Amin** (cosmology), **James Battat** (experimental nuclear and particle physics), **Kirill Korolev** (soft condensed matter/biophysics), **Lu Li** (condensed matter experiment), and **Fa Wang** (condensed matter theory). Among the audience were program founder and benefactor **Neil Pappalardo** and his wife **Jane**, daughters **Melissa Frost** and **Sheila Lemke**, son **Michael**, and son-in-law **Todd Lemke**. Joining them were longstanding Department friends Meditech CEO **Howard Messing** and his wife **Colleen**, **Curt Marble**, and **Mark and Joanne Mueller**.

For more information on all aspects of the Pappalardo Fellowships in Physics program, please visit web.mit.edu/physics/research.

(MIT150 Physics Events

A two-day symposium celebrating the achievements

of MIT's women researchers in science and engineering was held in Kresge Auditorium on March 28-29, 2011. Chaired by Physics Department Head **Ed Bertschinger**, the welcome address featured introductory remarks from MIT President **Susan Hockfield**. Dean of Science and Donner Professor of Physics **Marc Kastner** chaired a panel discussion on "Shaping Policy in Academia and Across the Nation," joined by former Dean of Science (and now Chancellor of the University of California, Berkeley) Professor of Physics Emeritus **Robert J. Birgeneau**.

Among a stellar list of MIT women faculty speaking about their research breakthroughs were Professor of Physics **Nergis Mavalvala** ("Exploring the Warped Side of the Universe") and Professor of Physics and Ellen Swallow Richards Professor of Earth, Atmospheric, and Planetary Sciences **Sara Seager** ("Exoplanets and the Search for Habitable Worlds"). Institute Professor Emerita **Mildred Dresselhaus** participated in a panel discussion on "Effective Practices for Recruitment, Mentoring, and Retention," while Ed Bertschinger effectively synthesized the two-day event's range of topics in his closing remarks on "Successes and Challenges."

(MIT150 SYMPOSIUM—"LEADERS IN SCIENCE AND ENGINEERING: THE WOMEN OF MIT"

On Friday evening, April 29, 2011, the Department of

Physics and MISTI (MIT International Science and Technology Initiatives) co-sponsored a public talk by Assistant Professor of Physics **Markus Klute** on recent, intriguing results of the international scientific collaboration underway at CERN's Large Hadron Collider (LHC) experiment. Klute explained how the LHC was built to fulfill a paradoxical mission: to complete the Standard Model of particle physics by detecting its last missing piece—the Higgs boson—and to discover the building blocks of a more complete theory of nature to finally replace the Standard Model. The MIT team working on the CMS (Compact Muon Solenoid) experiment at the LHC stands at the forefront of this new area of particle physics. They will use the data collected in 2011 and 2012 to answer the question of whether or not the Higgs boson exists, or if the Standard Model has to be extended.

(MIT150—"MIT AND THE WORLD'S LARGEST SCIENCE EXPERIMENT: HUNTING THE HIGGS BOSON AT CERN"



Professor Markus Klute (second from left) leads volunteers from the audience, including colleague Prof. Christoph Paus (left), in a mini, hands-on 'particle experiment' using balls of Play-Doh,® each containing a hidden object. To simulate how LHC scientists probe for properties of matter in particle physics, Prof. Klute tasked his volunteers with discovering the shape of their hidden objects by probing the Play-Doh® ball with a paper clip.

Duncan Ralph

MIT150—PHYSICS DEMONSTRATION EXHIBIT & JUNIOR LAB TOUR

For MIT's "Under the Dome" Open House on April 30, 2011, the Department's Technical Services Group members were joined by an enthusiastic group of student volunteers in showcasing a multitude of interactive exhibits and large-scale lecture demos to nearly 200 children and their parents.

Group Manager **Andy Neely**, alongside technical instructors **Alex Shvonski**, **Eli Sidman**, and **Matthew Strafuss**, led presentations and guided visitors through interactive exhibits covering classical physics concepts

from kinematics and dynamic motion, to electromagnetism, resonance, and oscillations. Both hands-on desktop experiments and "theatrical" lecture hall demos were on display, as well as multiple screenings in the TEAL classroom.

Over in building 4, Junior Lab manager and Physics Lecturer **Sean Robinson** ('99, PhD '05) led a team of students, staff, and alumni in presenting a collection of Junior Lab experiments, which tell the story of how modern physics was discovered in the early 20th century.



Photos this page: Kathleen Searle

Physics technical instructor Matt Strafuss uses a spinning bike wheel as a gyroscope to explain the conservation of angular momentum to a young visitor.



Junior Lab's spherical electromagnet used in the "relativistic dynamics" experiment to measure the electron's mass and charge.