Volume 49 – Number 5
Wednesday – October 6, 2004

TechTalk
SERVING THE MIT COMMUNITY

NEWS

COMING ATTRACTIONS

Undergraduates from 20 colleges in 13 states and Puerto Rico visited campus last weekend to try graduate school at MIT on for size. Many of them decided it was a good fit. The Oct. 1-3 campus preview weekend program, called Converge, was considered a success by all involved.

Page 3

NEW APPOINTEE FOR OSP

Patrick Fitzgerald has been appointed director of the Office of Sponsored Programs, effective Oct. 1, succeeding Julie Norris, who retired Sept. 30 after leading OSP for 10 years.

Page 6

NEW IT ADVISORY COUNCIL

A council has been formed to advise the provost and executive vice president on policy and priorities for IT infrastructure and services.

Page 6

RESEARCH

RESEARCH, REASSESS, RECYCLE

Minimizing landfill is not enough, say the MIT researchers who have developed new metrics for assessing the performance of firms that recycle scrapped electronic equipment, a major source of toxic pollutants.

Page 4

NO MORE CHADS?

A two-day conference organized by the Caltech/MIT Voting Technology Project opened with a discussion of lessons gleaned from 2000. Other sessions addressed ballot design, voter authentication, security, reliability and Internet voting at the conference called "Voting Technology: Innovations for Today and Tomorrow."

Page 5

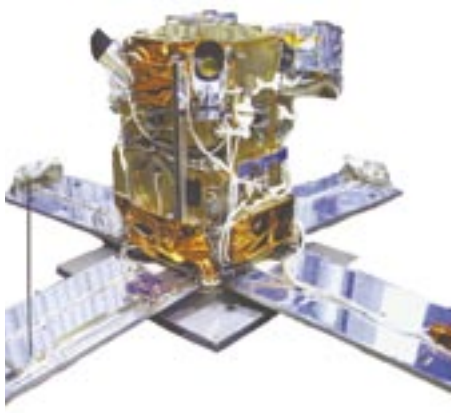
ARTS

THE SCIENCE OF DANCE

The unique movement vocabulary of dancer/choreographer Elizabeth Streb has been compared to sports, circus, physics experiments, Hollywood stunt work and hard labor. She will be in residence at MIT Oct. 18-21, and will present the 2004 Abramowitz Memorial Lecture titled "Outerlimits: The Analysis and Accomplishment of Wild Action and Real Moves" on Monday, Oct. 18.

Page 7

FEATURED STORY



HETE-2's detection of three recent powerful blasts from three wholly different regions in space left scientists scrambling.

Page 4

Frank Wilczek wins Nobel Prize in physics

His work shows distance makes the quark grow fonder

Elizabeth Thomson
News Office

Professor Frank Wilczek, MIT's Herman Feshbach Professor of Physics, has won the 2004 Nobel Prize in physics for a "colorful" discovery in the world of quarks, the building blocks of the atomic nucleus.

The work, which involves the dominant, or "color," force between quarks, is key to several major problems in particle physics and beyond. Wilczek, 53, shares the prize of about $1.3 million with David J. Gross of the University of California at Santa Barbara, and H. David Politzer of the California Institute of Technology.

Wilczek was in the shower when the call from Sweden came at 5:30 a.m. Tuesday. "It was this person with a beautiful accent, and it was so early, so I was immediately hopeful," said Wilczek's wife, Betsy Devine. "Frank came in, dripped all over the floor, and talked to half the Swedish Academy."

The three won "for the discovery of asymptotic freedom in the theory of the strong interaction," according to the Royal Swedish Academy of Sciences.

Asymptotic freedom is a phenomenon whereby quarks behave as free particles when they are close together, but become more strongly attracted to each other as the distance between them increases. This theory forms the key to the interpretation of almost all experimental studies involving modern particle accelerators.

"Thanks to their discovery, David Gross, David Politzer and Frank Wilczek have brought physics one step closer to fulfilling a grand dream, to formulate a unified theory comprising gravity as well—a theory for everything," the Academy said in announcing the prize.

"What this year's laureates discovered was something that, at first sight, seemed completely contradictory. The interpretation of their mathematical result was that the closer the quarks are to each other, the weaker is the 'colour charge.' When the quarks are really close to each other, the force is so weak that they behave almost as free particles.

PHOTO / **DONNA COVENEY**

Winner of the 2004 Nobel Prize in physics, Frank Wilczek.

"The converse is true when the quarks move apart: the force becomes stronger when the distance increases. This property may be compared to a rubber band. The more the band is stretched, the stronger the force.

"This discovery was expressed in 1973 in an elegant mathematical framework that led to a completely new theory, Quan-

See **NOBEL**
Page 5

Wilczek thanks Mother Nature and country at press conference announcing his Nobel Prize

Elizabeth Thomson
News Office

PHOTO / **DONNA COVENEY**

Nobel laureate Jerome Friedman (left) congratulates colleague Frank Wilczek on winning this year's Nobel Prize in physics.

MIT's newest Nobel laureate, Frank Wilczek, thanked the United States, Mother Nature and his wife Betsy Devine at a press conference Oct. 5 in his honor.

"I'm very happy and relieved," Wilczek said about winning the Nobel Prize. "I'd be lying if I said that it came as a shock. I've thought for a long time that the theory is very, very important." He shared the Nobel Prize with two other researchers for the theory of asymptotic freedom in quarks, which is key to interpretating most experimental studies involving modern particle accelerators.

"I've had an unpleasant week and a sleepless night" during the week the Nobels were announced for the last several years, Wilczek said. "And I'm very glad that that's all over with."

"An occasion like this is, first of all, an occasion to give thanks," he said, before paying homage to his parents, who are first-generation Americans. "My grandparents immigrated here under very difficult circumstances around World War I, and my parents grew up in difficult circumstances during the Depression. They strove to get me a good education."

He also thanked the United States "for

See **CONFERENCE**
Page 5

Khoury gives primer on Syrian politics

Sarah H. Wright
News Office

Historian Philip S. Khoury, dean of the School of Humanities, Arts, and Social Sciences, located Syria in the context of its own history and in the context of Middle Eastern and international relations in a 90-minute talk Sept. 29 sponsored by the Security Studies Program.

A skillful and efficient portraitist, Khoury provided listeners crowded into Room 38-615 with a memorable sense of the personality of Hafiz al-Asad, father of Bashar al-Asad, Syria's current ruler, and the forces uniting and dividing the country's population of 18 million people.

Philip S. Khoury

After independence in 1946, Syria, the birthplace of both Arab nationalism and the Baath Party, ranked second only to Bolivia in number of coups. Supported by his own Alawite religious sect with its extensive influence in the military and the Baath Party, Hafiz al-Asad seized exclusive power in 1970. He expanded his base by tying the merchant and industrial classes to his regime and by eliminating all serious challengers. His "widespread repression" of a Muslim Brotherhood uprising in 1982 sent a "chilling message throughout the country that is remembered to this day," Khoury said. "No Arab leader or regime was more successful in imposing stability."

Despite his domestic political success, Asad lacked the charisma of better-known leaders such as Gamal Abdul Nasser (1918-1970), president of Egypt, or Saddam Hussein, formerly of Iraq. "He had an ascetic's personality, like Arafat; they hated each other," Khoury said.

The cramped conference room where Khoury spoke provided a sense of Asad's ruling style. "His toolkit for governance was to preside over exhaustingly long diplomatic meetings, conducted in windowless rooms with no access to bathrooms. He'd ply people with coffee and tea," Khoury said.

Bashar al-Asad's leadership of Syria (since 2000) confronts new challenges, including mitigating the country's economic and technological isolation, keeping his father's old guard under control, and maintaining the "repressive armature of the Syrian state" while not bowing too deeply to the forces of political Islam. Bashar must accomplish all this even as he attempts to nurture trade with other countries and goodwill with the United States, Khoury said.

Several participants in the session wondered aloud about Syria's ties to Al Qaeda, its relationships with Islamic resistance groups, especially Hezbollah and Hamas, and its third place on the Bush administration's regime-change priority list.

Khoury acknowledged that Damascus, like Beirut, has served as a Paris-like haven for exiles and dissidents from across the Arab world, and often for the most radical or militant among them. He also noted that Osama Bin Laden's mother is reportedly Syrian, perhaps a member of the Alawite minority, like the Asads. But he added that "the Syrian regime is bitterly opposed to Al-Qaeda."

"Syria is a fundamentally secular state. Nothing worries the Asad regime more than the rise of Islamism and Syria's stalled economy. He wants stability in Syria, stability in Iraq," Khoury said.Khoury is author of two books on Syria, "Syria and the French Mandate: The Politics of Arab Nationalism, 1920-1945" (Princeton University Press, 1987 and 1989), which received the George Louis Beer Prize of the American Historical Association, and "Urban Notables and Arab Nationalism: The Politics of Damascus, 1860-1920" (Cambridge University Press, 1993 and 2004).

Haitian official describes political instability in storm-ravaged country

Sasha Brown
News Office

At a time when many in the MIT community are rallying to help Haiti by raising funds for disaster relief following Tropical Storm Jeanne, Myrtho Bonhomme, special advisor to the Prime Minister of Haiti, paid a visit to MIT's Wong Auditorium to reflect on the history of a country beset by upheaval.

Jeanne flooded the city of Gonaives, Haiti, on Sept. 19, killing more than 1,500 people, leaving 200,000 homeless, and others still missing. The country has a total populatoin of 7 million.

As the remants of Jeanne whistled past the windows of Wong Auditorium on Sept. 29, Bonhomme asked for a moment of silence to honor those killed by the flooding, the second crisis to hit Haiti in the span of just one year. In February, violence rocked the country when protesters demanded the resignation of President Jean-Bertrand Aristide, who was elected in 2000. Aristide also served as president from 1991 to 1996.

But Haiti's problems started long before February, Bonhomme said. "In a stable country, the government provides the proper environment for businesses to grow and prosper, creating wealth," he said. The cycle towards poverty and upheaval gains momentum when basics the government should provide—like infrastructure, electricity and water—are not provided, and citizens must pay privately for service or do without, Bonhomme said.

He pointed to several times when Haiti missed opportunities to prosper. The first came immediately following World War II as President Dumarsais Estimé brought a new era of hope.

"He turned the country into an agricultural export country providing a lot of goods people needed after the war," said Bonhomme. But just as things looked better for Haiti, a revolt led by General Paul Magloire overthrew Estimé. Gen. Magloire became the first in a 40-year succession of dictators who ruled Haiti until Jean-Bertrand Aristide—a Roman Catholic priest with backing from the international community—took office in February 1991.

Initially Aristide was enormously popular but in the end, it was yet another opportunity lost. "It has proven to be exactly the contrary of what people expected," Bonhomme said.

For Marie Senat-Andre, a financial assistant at MIT who came to the United States from Haiti more than 30 years ago, the political instability in Haiti and the lack of preparation for natural disasters like Jeanne go hand in hand.

"Because of a lack of technology and communication, half the people did not even know it was coming," said Senat-Andre of the hurricane. "But people were suffering, people were dying before the hurricane."

Over the past week, the MIT Caribbean Club and the membership committee of the MIT Working Group on Support Staff Issues have been collecting funds for families in Haiti, Jamaica and Grenada who were devastated by the hurricanes. All told, the group raised nearly $3,000.

"Overall, I am pleased," said Suzette Clinton, an administrative assistant in bioengineering and co-chair of the membership committee of the Working Group on Support Staff Issues. She was one of several people who staffed a booth in Lobby 10 for three days the week of Sept. 27.

While Senat-Andre said she applauds any effort to get aid to Haiti, she also encourages people to send basics—canned food, clothing, even toothpaste can be traded for money or utilized, she said. MIT community members can still help by contacting the Haitian Consulate at (617) 266-3660.

"Right now they need everything. They have nothing," she said.

Birds learn songs before they're able to sing them

Deborah Halber
News Office Correspondent

Birds that are genetically programmed to sing, the effect of pheromones on the mouse brain, and fear conditioning in Japanese fish were some of the topics covered by an international contingent of respected brain researchers at the fourth Picower-RIKEN Neuroscience Symposium held at MIT from Sept. 22-24.

"New Frontiers in Brain Science: From Molecules to Mind" attracted dozens of researchers and students to two and a half days of talks and posters on the latest advances in understanding "the most complex machine on the face of the planet," as Susumu Tonegawa, director of the Picower Center for Learning and Memory, described the brain.

Tonegawa dedicated this year's symposium to the late Francis Crick, co-discoverer of the DNA double helix. In addition to studying genetics, Crick sought to discover the nature of consciousness. He hypothesized that all human emotion, thought and identity is no more than the end product of a "vast assembly of nerve cells and their assorted molecules."

To shed light on how these cells and molecules work, researchers from Stanford, Cold Spring Harbor Laboratory, the National Institute of Mental Health, the Weizmann Institute of Science in Israel, the RIKEN Brain Sciences Institute in Japan and other institutions gave talks on topics ranging from how brain cells communicate to how primates acquire language acquisition. Other talks focused on the molecular mechanisms underlying addiction and memory.

One of the two keynote speakers, Mark Konishi of the California Institute of Technology, spoke about the brain mechanisms that allow some songbirds to memorize a song when still too young to sing. When the song they are being taught is an artificial, computer-generated series of notes, these birds use special areas within their brains to listen to themselves as they learn to ensure uncanny accuracy to the original. This kind of knowledge, Konishi said, may be used to uncover the molecular and cellular substrates essential for learning.

Keynote speaker Thomas Sudhof of the University of Texas Southwestern Medical Center spoke about the molecular "machinery" of how neurotransmitters are released in the brain.

Among the speakers was Matthew Wilson, MIT professor of brain and cognitive sciences and a RIKEN investigator, who spoke about how a commonly recorded electrical frequency in the brain may help different brain regions synchronize the process of remembering sequential events.

RIKEN is a major sponsor of the annual symposium series, which brings together internationally renowned researchers representing broad areas of neuroscience in a forum open to students and scientists of the Greater Boston area. This year, the symposium also received corporate sponsorship from Merck Research Laboratories and AstraZeneca.

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Potential students converge on MIT

Denise Brehm
News Office

PHOTO / **LARUTH MCAFEE**

Left to right: Gille-Arnaud Bleu-Laine from Georgia Tech, Manelle Samuels from the University of Hartford and Shani Matthews from Spelman College speak to Ayida Mthembu, associate dean of counseling and support services, during an information session during the graduate student recruiting weekend, Converge.

Undergraduates from 20 colleges in 13 states and Puerto Rico visited campus last weekend to try graduate school at MIT on for size. Many of them decided it was a good fit.

"I learned so much about MIT and the people there, but better yet, so many of my preconceived thoughts about the school were completely dismissed," said Jeff Josiah who attends the University of New Orleans.

The Oct. 1-3 campus preview weekend program, called Converge, was organized by the Graduate Student Council's Diversity Initiative and administrators from the schools of engineering and science, the Graduate Students Office, and the Provost's Office with the goal of increasing the diversity of MIT's graduate student population.

In a resolution passed at the May 19 faculty meeting, the MIT faculty committed to increasing the representation at MIT of underrepresented minority and other underserved graduate students by 2015. This goal is critical to achieve the campus diversity that is necessary for MIT to offer the best education to all students and to serve the nation by contributing to a diverse pool of highly qualified engineers, scientists and academics.

One of the difficulties in achieving this goal is creating recruitment events at a university-wide level. Converge was a firm step in that direction.

The 24 guest participants were selected from 60 applicants for their excellent academic records and serious interest in research. MIT paid for their airfare to Boston and housed them in the Kendall Hotel for the weekend.

Ten were interested in electrical engineering and computer science and seven were interested in studying physics or chemistry. The others were interested in chemical engineering, management, architecture, biological engineering, the Harvard-MIT Program in Health Sciences and Technology, and the Program in Science, Technology and Society.

They attended information sessions given by staff from admissions and financial aid, took tours of labs and departments, learned about research at a graduate student poster sesson, and had lively conversations with their hosts.

"I have been to several grad preview weekends this year, but this was more friendly and informative than the others because the graduate students told us a lot we needed to know about what it is really like," said Calvin King of Tennessee State University in his appraisal of the weekend.

About 30 MIT students participated either in the planning or as hosts to the visitors, and nearly 50 faculty members were involved by serving on the admissions committee, meeting with the students, conducting information sessions or attending the poster session and banquet. Dean of Graduate Students Isaac Colbert, Provost Robert Brown and professors Rafael Bras, Daniel Hastings and Paula Hammond were among the faculty and administrators who addressed the students.

"Rafael Reif [head of the Department of Electrical Engineering and Computer Science] came to the banquet, and most of the students interested in electrical engineering and computer science sat at the table with him. They were talking and laughing all evening. It was really nice," said Irene Miller, manager of Faculty Diversity Search for the School of Engineering, who got involved because of the need for more underrepresented minority and other underserved Ph.D. students who can be recruited as faculty after graduation. "Converge is part of a larger pipeline effort," said Miller.

"I am definitely going to apply," said Sara Ramirez of the University of Arizona. "I learned so much from this visit."

President-elect Hockfield greets alumni at leadership event

PHOTO / **DONNA COVENEY**

Susan Hockfield, MIT's 16th president, addressed the annual Alumni Leadership Conference last week. It was one of several meetings President-elect Hockfield has held with various groups within the greater MIT community since her selection on August 26th. In the coming weeks, she will continue to hold frequent meetings—what she calls her "deep learning" mode—before taking over the reins in early December.

Keynote speaker Dana Mead, chair of the MIT Corporation, told more than 200 alumni volunteers in Kirsch Auditorium Friday night that he knew they hadn't come to hear him talk.

"I am not in any way misled to believe that this crowd is here to see me," Mead said, referring good humoredly to the appearance of MIT President-elect Susan Hockfield, who greeted atttendees at the kick-off event of the annual Alumni Leadership Conference (Oct. 1-3) before returning home to New Haven, Conn.

"One of the things I've learned is that the alumni community is extremely important," Hockfield said. "These institutions have existed for years and the network of alumni has really formed the fabric of these places."

Hockfield said she loves learning about MIT through talks with students, faculty, staff and alumni, and that when she first began having conversations with the search committees about coming to MIT, she was drawn in by the Institute's "search for truth, the great meritocracy, and the intensity."

"Everyone here speaks this language," said Hockfield, who is provost at Yale University until December, when she will take office as MIT's 16th president.

Hockfield cited the academic and research collaborations between disciplines at MIT as one of the Institute's key strengths and said that interweaving engineering with life sciences "will not be done at any other Institute on earth." She said that it is up to her and the MIT community to carry into the 21st century MIT's "remarkable" diffusion into all corners of the globe.

She has not yet set her goals for her term at the helm of MIT, she said, but she knows she wants to help the Institute "be an even better MIT than it is today."

"I really do want MIT to be the dream of every child on the planet, and working with you, we can make that dream a reality," said Hockfield.

—Jack Morris, Alumni Association

Grad student is finalist in competition

Graduate student David Berry of the Harvard-MIT Program in Health Sciences and Technology was a finalist in last week's Collegiate Inventors Competition at the National Inventors Hall of Fame.

Berry, 26, was honored for his work involving a targeted cancer treatment. He and his advisor, Robert Langer, the Germeshausen Professor in Chemical and Biomedical Engineering, came up with a new way to administer heparin, a cancer drug with harsh, often debilitating side effects. The research earned Berry a spot at the Oct. 1 competition with 13 other students from around the country: nine graduate students and five undergraduates.

"The experience was definitely interesting," said Berry, who earned the S.B. from MIT in 2000 with a major in brain and cognitive sciences. "I found people who thought differently about problems that we held in common. That will help in future research."

Berry's research involves attaching a type of polymer, developed by scientists to study the addition of DNA to living cells, to the anti-clotting drug heparin. Through this, Berry discovered a way to treat cancer cells at a much higher rate than healthy cells. Traditionally, the drug would attack both, leaving the patient debilitated.

With Berry's idea, the cancer cells began to die while the healthy tissue flourished. The treatment could help in a variety of cancers, particularly melanomas, but also cancers of the prostate, bone and brain, said Berry.

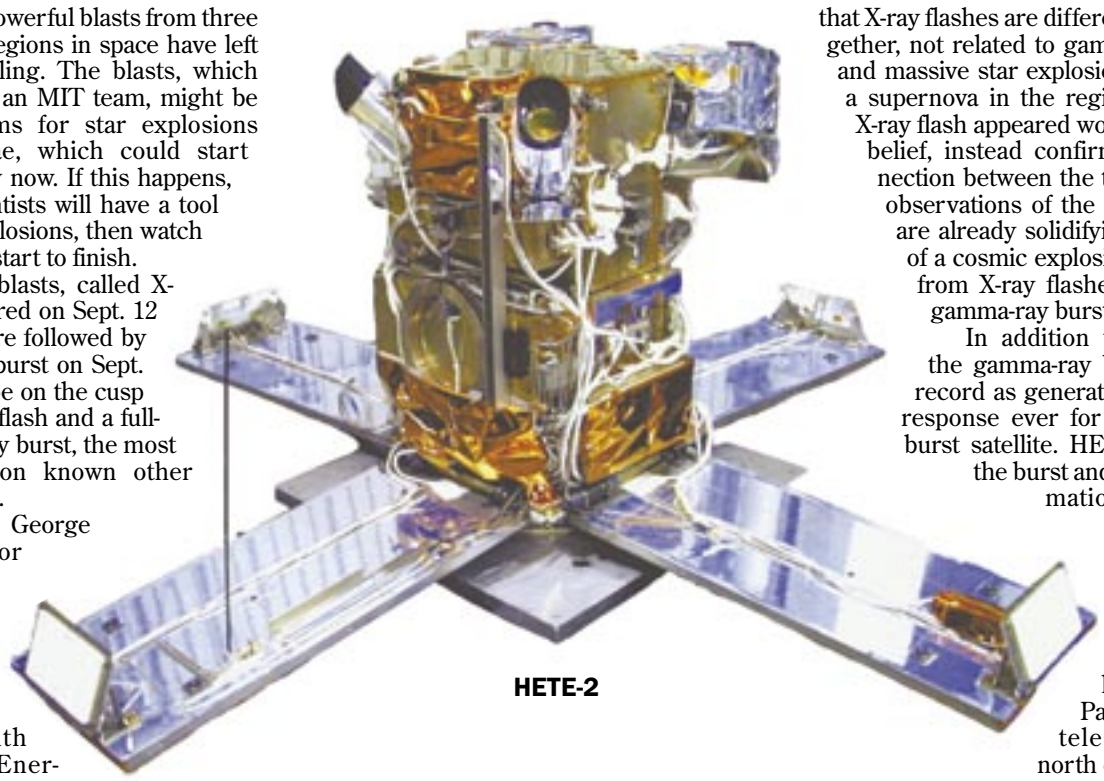
The grand prize of $50,000 went to Ozgur Sahin, 24, of Stanford University who developed a dramatically improved type of Atomic Force Microscope.

—Sasha Brown

After trio of explosions, scientists say three supernovae imminent

Three recent powerful blasts from three wholly different regions in space have left scientists scrambling. The blasts, which were detected by an MIT team, might be early-alert systems for star explosions called supernovae, which could start appearing any day now. If this happens, as expected, scientists will have a tool to predict star explosions, then watch them go off from start to finish.

The first two blasts, called X-ray flashes, occurred on Sept. 12 and 16. These were followed by a more powerful burst on Sept. 24 that seems to be on the cusp between an X-ray flash and a full-fledged gamma-ray burst, the most powerful explosion known other than the Big Bang.



HETE-2

A team led by George Ricker, a senior research scientist at MIT's Center for Space Research, detected the explosions with NASA's High-Energy Transient Explorer (HETE-2). Science teams around the world using space- and ground-based observatories have joined in, conflicted over which burst region to track most closely.

"Each burst has been beautiful," said Ricker. "Depending on how these evolve, they could support important theories about supernovae and gamma-ray bursts. These past two weeks have been like 'cock, fire, reload.' Nature keeps on delivering, and our HETE-2 satellite keeps on responding flawlessly."

Many gamma-ray bursts appear to be caused by the death of a massive star collapsing into a black hole. Others might be from merging black holes or neutron stars. In either case, the event likely produces twin, narrow jets in opposite directions, which carry off tremendous amounts of energy. If one of these jets points to Earth, we see this energy as a gamma-ray burst.

The trio of bursts from the past few weeks has the potential of settling two long-standing debates. Some scientists say that X-ray flashes are different beasts altogether, not related to gamma-ray bursts and massive star explosions. Detecting a supernova in the region where the X-ray flash appeared would refute that belief, instead confirming the connection between the two. Follow-up observations of the Sept. 24 burst are already solidifying the theory of a cosmic explosion continuum from X-ray flashes up through gamma-ray bursts.

In addition to all of this, the gamma-ray burst goes on record as generating the fastest response ever for a gamma-ray burst satellite. HETE-2 detected the burst and relayed information in under 14 seconds, which led to an optical detection about 15 minutes later with the Palomar 60-inch telescope, just north of San Diego.

The HETE spacecraft was built by MIT under the NASA Explorer Program, a collaboration among U.S. universities, Los Alamos National Laboratory, and scientists and organizations in Brazil, France, India, Italy and Japan. At MIT, the HETE team includes Ricker, Geoffrey Crew, John Doty, Roland Vanderspek, Joel Villasenor, Nat Butler, Peter Csatorday, Gregory Prigozhin, Steve Kissel, Francois Martel, and Fred Miller.

Recycling of scrapped electronics studied

Nancy Stauffer
Laboratory for Energy and the Environment

MIT researchers have developed new metrics for assessing the performance of firms that recycle scrapped electronic equipment, a major source of toxic pollutants.

The metrics focus not just on how much of a firm's incoming waste is processed but also on the quality and reusability of the materials produced from it, a consideration critical to overall resource efficiency.

To assess the performance of electronics recycling firms, people have focused mainly on the most easily measured indicator: the fraction of a firm's incoming waste stream that ends up as landfill. But minimizing landfill is not enough, according to the MIT researchers.

"Recycling companies will tell their customers, 'Virtually none of your material is going to landfill.' While we recognize that that's important, we also know that not all end uses are equal," said Randolph E. Kirchain Jr., an assistant professor in the Department of Materials Science and Engineering and the Engineering Systems Division. "For example, it's preferable to take a pound of recovered plastic and use it to make new components than to use it as roadbed filler."

The quality of the recovered material determines its potential uses. If the quality is sufficiently high, the material can be reused by manufacturers, reducing the need to extract and consume new materials.

Almost a billion obsolete computers and other electronic devices are scrapped each year, and four out of five of them end up in basements or on sidewalks rather than in recycling facilities. But the electronics recycling business is expected to grow quickly. Regulations on handling large-scale electronics waste streams are becoming more stringent, and public concern is growing about the shipping of electronics to countries not equipped to handle toxic and hazardous materials.

Kirchain worked with Frank Field III, a senior research associate in the Center for Technology, Policy and Industrial Development, and Jennifer R. Atlee, a graduate student in the Engineering Systems Division, and colleagues in the Materials Systems Laboratory to develop measures of assessing electronics recycling firms. The team drew on its 10 years' experience studying another recycling industry—automobiles.

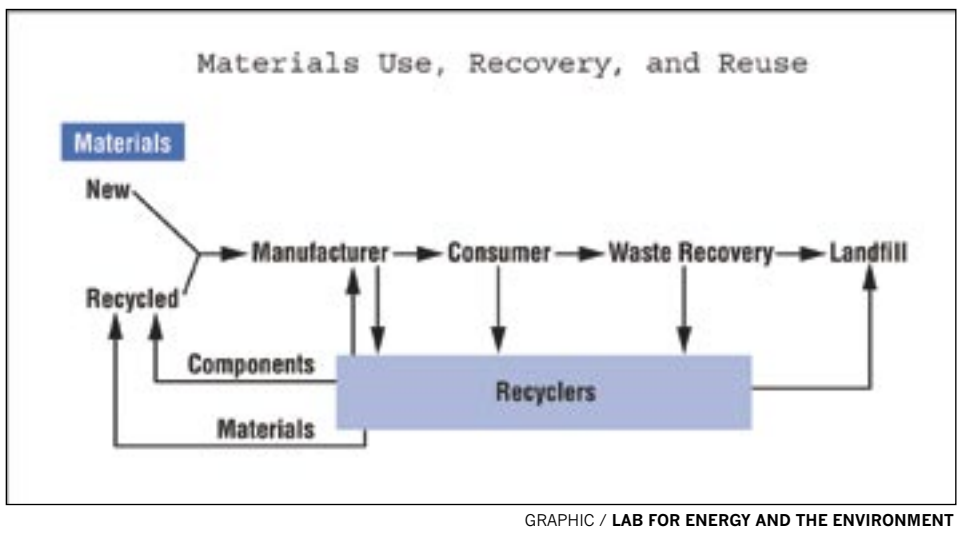
To identify recycling firms and processes that achieve good materials recovery, the researchers use price as an indicator of quality. "We hypothesize that the price that's received for those [recovered] materials is an indicator of the quality of the materials. A buyer will pay more for materials they can use in manufacturing components than for materials going into a roadbed," said Kirchain.

They also used two value-based metrics—value retention and value-added. Value retention measures how well the value of materials is maintained all the way from their first use to their recovery. Value added compares the price of the recovered material to the price the recycler paid or was paid to take it away.

In case studies of three U.S. firms, the researchers found that the value-based metrics worked well and were easy to use. The researchers stress that their materials-only analysis is just a baseline and does not incorporate the effect of device or component reuse. They also note that other criteria could be used to assess the performance of recyclers. Examples include toxicity, emissions, energy use, and operating costs. In the long run, a variety of independent metrics could lead to significant improvements in recycling efficiency.

"We're interested in measures of performance that will lead to the best electronics-recycling practices. But if we really understand the recycling process, we may also be able to help manufacturers of original equipment make design and materials choices that will make recovering, recycling, and reusing materials less expensive," said Kirchain.

This research marks the beginning of a long-term MIT effort to develop analytical methods and tools that the electronics industry can use to identify and select materials, product designs and process technologies that will improve the sustainability of materials use. It was supported by the Alliance for Global Sustainability.



GRAPHIC / **LAB FOR ENERGY AND THE ENVIRONMENT**

The diagram above shows pathways by which electronics materials can be used, recovered and reused.

NEWS YOU CAN USE

Commencement speaker suggestions sought

The Commencement Committee invites suggestions for the guest speaker at MIT's 2005 Commencement exercises scheduled for Friday, June 3 from all members of the MIT community. The speaker should be one who will be able to address topics of relevance to the Institute.

Suggestions must be received by Friday, Oct. 8. Following a review, the committee will submit a list to the president for consideration. The list will not be made public. The president has the responsibility and authority for selecting and inviting the guest speaker for the Commencement exercises.

Suggestions may be submitted to Rohit Gupta, president of the Class of 2005 (rogupta@mit.edu), Barun Singh. president of the Graduate Student Council (barun@mit.edu), Gayle Gallagher, executive officer for Commencement (gayle@mit.edu), or Eric Grimson, chairman of the Commencement Committee (welg@csail.mit.edu).

Post IAP courses online

Members of the MIT community planning to offer activities and credit subjects in the 2005 Independent Activities Period (IAP) can post descriptions online. IAP listings will appear online exclusively; a print versions of the guide is no longer produced.

Organizers are encouraged to post activity and subject descriptions by Nov. 1 so that participants can plan their IAP schedules early. To post a listing, go to http://web.mit.edu/iap. An MIT personal certificate is required. Questions about IAP should be directed to the Academic Resource Center at 253-1668.

Draper Labs holds Expo

MIT faculty, students and staff are invited to visit Draper Lab's Technology Exposition from 12:30 to 4 p.m. on Oct. 6, and 9 a.m. to 1 p.m. on Oct. 7.

Draper projects and exhibit topics will include space systems, a snake-like robot, a high-mobility tactical microrobot, microelectromechanical system-based field asymmetric ion mobility spectrometry for detecting biological and chemical agents, and commercialization projects by Navigator Technology Ventures, Draper's venture capital subsidiary. A number of featured projects have been worked on by students, particularly through the Draper Fellows Program.

Visitors should enter at One Hampshire St. and be prepared to present photo identification for admittance. For more information, contact Draper's Communications Office at (617) 258-2600.

Flowers for sale

October has been Domestic Violence Awareness Month since 1987. To raise both awareness and funds, the Alpha Chi Omega Sorority is holding a flower sale this week. Proceeds go to the Boston Area Rape Crisis Center. The students will take orders at their sales booth in the Student Center today, from 10 a.m. to 4 p.m. and in Lobby 10 tomorrow (Thursday, Oct. 7) during the same hours. Irises cost $1.50 each and carnations are $1. Flowers will be delivered to recipients in any MIT building or living group on Friday, Oct. 8.

Community invitation

Julie Norris retired Sept. 30 after 10 years as director of the Office of Sponsored Programs. All MIT community members are invited to a party celebrating her career and congratulating her for this new endeavor on Tuesday, Oct. 12 from 3:30-6 p.m. in Morss Hall (Building 50).

CONFERENCE

Continued from Page 1

supplying the system of education" that worked so well for him. "I'm a public school guy all the way," he said. Wilczek graduated from Martin Van Buren High school in Queens, N.Y.

The list also included Wilczek's wife. "It was during the time that I was meeting and courting Betsy that I did the work, and I don't think that's a coincidence," he said to laughter from the crowd of students and faculty who had gathered in the Marlar Lounge (Room 37-252).

Devine later shared an anecdote about meeting her husband. It was 1972 and they were graduate students at Princeton. (Devine earned the M.Eng.) Wilczek was among the students who watched and heckled the TV during broadcasts of Bobby Fisher vs. Boris Spassky chess games.

"I noticed that whatever moves Frank called out, the players would do what he said. They'd make the moves he predicted. This happened even when what he called out was different from what others called out," recalled Devine.

During the press conference, Wilczek stressed that the three new laureates' achievements were "not out of thin air—we stood on the shoulders of giants, a few reasonably tall people, and lots of average-height people," he said, referring to the many physicists who laid the foundation for his own work. They include Institute Professor Jerome Friedman, who won the 1990 Nobel Prize in physics with the late Professor Henry W. Kendall, also of MIT, and Richard E. Taylor of the Stanford Linear Accelerator Center.

Finally, Wilczek tipped his hat to Mother Nature "for her good taste in choice of principles, symmetry and rationality."

Wilczek was joined at the press conference by three of the nine other Nobel laureates currently on the MIT faculty: Friedman, Wolfgang Ketterle and Samuel Ting. Marc Kastner, head of the Department of Physics, and Provost Robert Brown introduced Wilczek.

"Frank Wilczek is a luminary," said Kastner. "He is one of the great minds of modern physics."

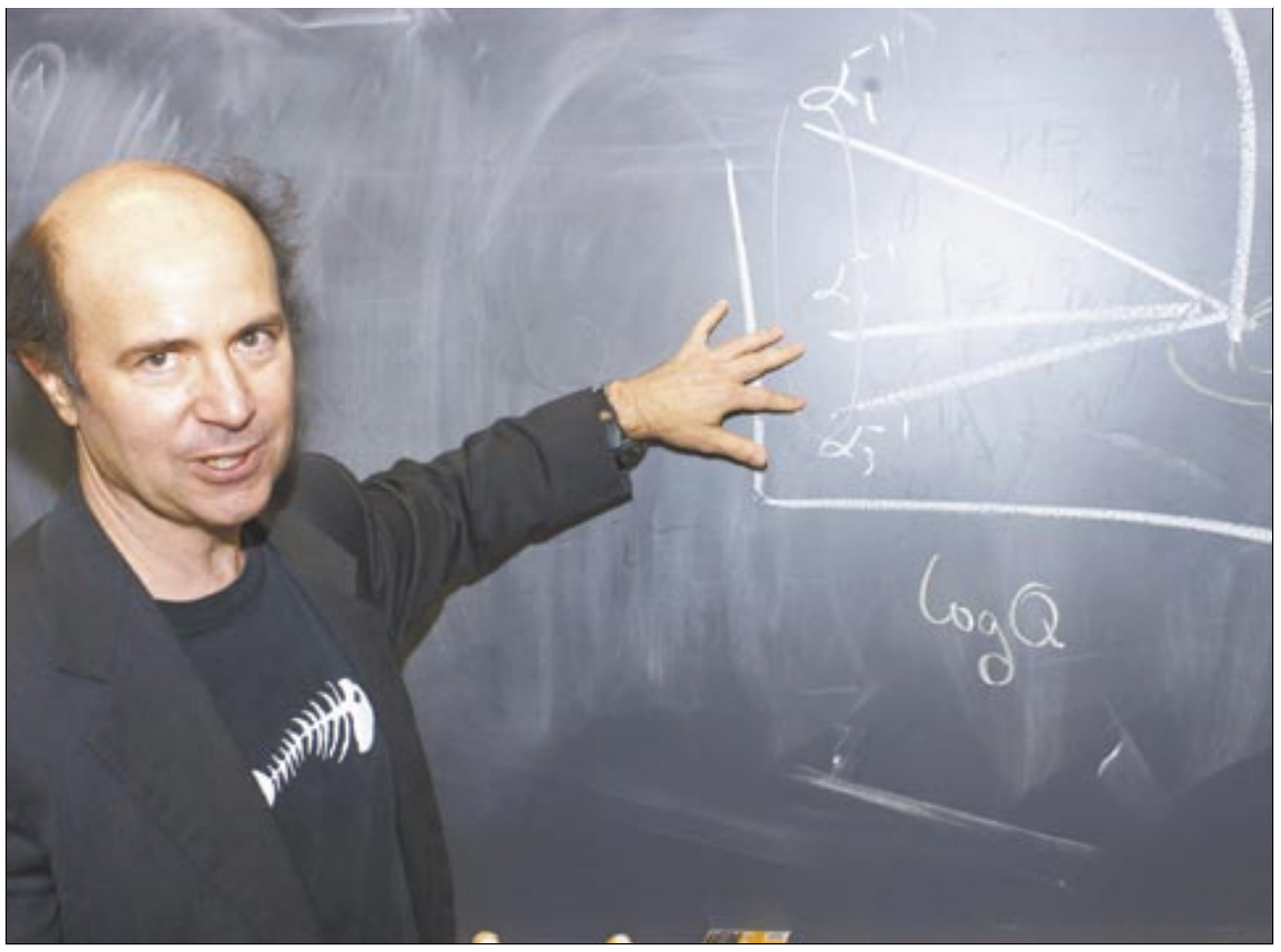


PHOTO / **DONNA COVENEY**

Professor Frank Wilczek explains the theory of strong attractions between particles at a press conference announcing his Nobel Prize in physics on Oct. 5 in the Marlar Lounge.

MIT NOBEL PRIZES

58 Nobel Prizes

- 26 physics prizes
- 10 chemistry prizes
- 12 economics prizes
- 8 physiology/medicine prizes
- 2 peace prizes

Nobel Laureates

- 24 professors
- 20 alumni
- 13 researchers
- 1 staff physician

Laureates at MIT (in reverse chronological order)

- Frank Wilczek—physics
- Robert Horvitz—physiology/medicine
- Wolfgang Ketterle—physics
- Phillip Sharpe—physiology/medicine
- Jerome Friedman—physics
- Susumu Tonegawa—medicine/physiology
- Robert Solow—economics
- Samuel Ting—physics
- Paul Samuelson—economics
- Har Gobind Khorana—physiology/medicine

NOBEL

Continued from Page 1

tum ChromoDynamics, QCD. This theory was an important contribution to the Standard Model, the theory that describes all physics connected with the electromagnetic force (which acts between charged particles), the weak force (which is important for the sun's energy production) and the strong force (which acts between quarks). With the aid of QCD physicists can at last explain why quarks only behave as free particles at extremely high energies. In the proton and the neutron they always occur in triplets," said the Academy.

Wilczek's earliest work, done with Gross at Princeton in the 1970s, concerned the change of fundamental couplings with energy. This work led to the discovery of asymptotic freedom, which makes it possible to understand the behavior of matter under extreme conditions, such as occurred in the earliest moments of the Big Bang. Also, it permits the construction of unified models of particle interactions, which have concrete predictive power.

Wilczek has been a leading participant in all these developments. One notable result of the cosmological work is a compelling explanation of the asymmetry between matter and antimatter in the present universe.

In the past few years, another concept Wilczek discovered and developed, fractional quantum statistics, has been found to characterize the behavior of recently discovered states of matter. It is the focal point of much current activity in condensed matter physics.

Wilczek's many awards include the the 2002 Lorentz Medal from the Royal Netherlands Academy of Arts and Sciences, which called him "one of the most influential theoretical physicists of his generation." He is a member of the American National Academy of Sciences, and has received the Dirac Medal (1994) and the Michelson-Morley Prize (2002).

Wilczek was born in Queens, N.Y. He received his B.S. (1970) from the University of Chicago and his M.A. (1971) and Ph.D. (1973) from Princeton University. He later became professor of physics at Princeton and at the University of California at Santa Barbara.

He joined the MIT faculty in 2000 with appointments in the Department of Physics and the Center for Theoretical Physics. This year he was named one of five Kavli Scholars through MIT's Center for Space Research, soon to be renamed the Kavli Institute for Astrophysics and Space Research. "We love MIT," Devine said in a telephone interview. "It's been wonderful for Frank and our family."

Wilczek regularly speaks and writes on theoretical physics for a wide audience.

He and his wife live in Cambridge, Mass. They have two daughters, Amity and Mira. Amity, who has a Ph.D. from Harvard, is currently a postdoctoral associate in biology there. Mira, who earned her S.B. from MIT in 2004, works for IBM in Boston.

Improving the nation's voting systems was topic of conference

Sarah H. Wright
News Office

"Voting Technology: Innovations for Today and Tomorrow," a two-day conference organized by the Caltech/MIT Voting Technology Project, opened with a discussion of lessons that could be learned from 2000 and applied to voting procedures this November.

The conference was held in the Stata Lecture Hall Oct. 1 and 2; it attracted faculty and students from MIT and other universities, election officials from around the country, vendors and local citizens.

Ted Selker, assistant professor of media arts and sciences, moderated the morning session. The three panelists, all members of the Caltech-MIT Voting Technology Project (VTP) since its inception in 2000, were MIT professors of political science Stephen Ansolabehere and Charles Stewart, and R. Michael Alvarez, professor of political science at Caltech.

Selker described the VTP team as a relationship between technologists and social scientists that had already succeeded in getting media attention for problems in voting.

Later sessions in the conference addressed ballot design, voter authentication, security, reliability and Internet voting. Vendors offered demonstrations of voting systems. Anticipating these, Selker asked, "Do we want the government to step in and be the people who build and monitor voting machines?"

Alvarez discussed the metrics of success for the Voting Technology project itself, including higher-quality post-election reporting, improvements in poll-site voting, fewer reports of voter registration problems and an overall decline in residual votes.

"We have a pressing need for high-quality data that's consistent and publicly available," Alvarez said. Noting that voting machines don't undergo any certification process and, as voting technology evolves, there are "fewer humans in the process," Alvarez advised voters and election officials to anticipate the November election by taking certain steps. He referred to seven actions voters could take to empower themselves, and he offered suggestions to election officials. These included requiring reporting of election data and developing complaint procedures.

Georgia on his mind

Stewart's presentation involved "drilling down into the details of Georgia, the one state that has retired since 2000 every type of voting technology used nationally, providing our best and only case of what can happen," as well as raising fascinating questions about poll worker training, he said.

Four years ago, Georgia was the second worst state for lost votes—worse than Florida—and it could have been a "sorrier story, not just for residual vote rate but also for variability," said Stewart. "In one county, 20 percent of the votes weren't counted."

Counties with the highest rates of lost or residual (uncounted, unmarked, spoiled or over-voted) were smaller, less affluent and more frequently populated by African-Americans than other counties. Those counties were also the ones that made the greatest gains after the Diebold company installed direct recording electronic voting machines and trained poll workers to use them, Stewart said.

"Diebold and Georgia had a joint interest in making the election work well, and we need to find better ways of partnering state election commissions and vendors," Stewart said. But Georgia's success raised a conundrum, too, about the relative effects of training and technology.

"It's hard to evaluate improvements in technology. The voting process and the ballot were logically thought through in Georgia. Also, Diebold put nearly 6,000 poll workers into the field and did lots of training. But was it the technology or the process that really drove the gains for voters?" Stewart asked.

Patrick Fitzgerald selected to succeed Norris at OSP

Janet Snover
Executive Vice President's Office

Following a nationwide search, Patrick Fitzgerald has been appointed director of the Office of Sponsored Programs, effective Oct. 1, announced Executive Vice President John R. Curry and Professor Alice Gast, vice president for research and associate provost.

Patrick Fitzgerald

"We are confident that Patrick will build upon his considerable record of accomplishment and experience to provide excellent service to the faculty and ensure MIT's leadership in the world of sponsored research administration," Curry and Gast wrote in their e-mail announcement.

Fitzgerald will succeed Julie Norris, who retired Sept. 30 after leading the Office of Sponsored Programs (OSP) for 10 years. "I am delighted with Pat's selection," Norris said. "Along with his knowledge and experience, Pat brings vitality and vision and will provide outstanding leadership to OSP and the Institute."

Fitzgerald has served as director of cost analysis in OSP since 1997. He has been the contract administrator for the Microsystems Technology Laboratories and the senior contract administrator for the Broad Institute. Fitzgerald has directed a wide range of cost analysis activities, including the preparation of the indirect cost proposal, negotiation of the employee benefit rate, compliance with federal cost principles (including cost accounting standards), and oversight of service centers. He prepares and conducts training programs for MIT personnel who work on research contracts.

In addition to his work at MIT, Fitzgerald is active in the profession of research administration. He serves as president of the National Council of University Research Administrators. He has been a member of several key committees of the Council on Governmental Relations, including co-chair of a task force of the Federal Demonstration Project on reducing administrative burdens on research.

Before coming to MIT, Fitzgerald held positions as assistant controller and director of cost analysis at Cornell University. Prior to that, he worked in industrial firms as an accounting supervisor, manager of accounting, assistant controller and controller. His undergraduate degree is in business administration from St. John Fisher College, and holds an M.B.A. in general management from Syracuse University.

The Search Advisory Committee was chaired by Associate Provost Claude Canizares. Members included Jack Crowley, vice president for federal relations; Jamie Lewis Keith, senior counsel; Colleen Leslie, chair, Administrative Advisory Council; Jim Morgan, controller; Bill Peters, executive director, Institute for Soldier Nanotechnologies; Charlene Placido, assistant dean for research; Professor Rafael Reif of electrical engineering and computer science (EECS); Professor Robert Sauer of biology; Anthony Sharon, executive officer, Lincoln Laboratory; and Professor Jacob White, EECS. Patricia Brady, senior project director for the executive vice president, staffed the search.

SPARC Council will coordinate IT planning and resources for MIT

Information technology has become one of the most important factors in the success of academic, research and administrative enterprise at MIT. A 2002 external review committee recommended that MIT appoint a strategic coordinating body to develop better Institute-wide processes for planning and resource allocation for all aspects of IT.

In response, Provost Robert Brown and Executive Vice President John Curry have established the Information Technology Strategic Planning and Resources Coordinating Council (IT-SPARCC). With members from the Academic Council, MIT Council on Education Technology, and the Administrative Systems and Policies Coordinating Council, IT-SPARCC will be chaired by Jerrold M. Grochow, vice president for Information Services and Technology. This group will advise the provost and executive vice president on policy and priorities for IT infrastructure and services. Patrick Dreher, associate director of the Laboratory for Nuclear Science, will serve as deputy chair of IT-SPARCC.

IT-SPARCC will discuss reports and proposals on issues prepared by task forces of the council, by staff or by other organizations within MIT, and will focus on setting policy and making recommendations with broad impact. Topics that the council will consider may include a general review of the provision of IT and related services at MIT; charging mechanisms for IT services; strategies for allocation of the Institute general budget across academic, administrative and research computing; space allocation for IT; and a review of priorities for computing infrastructure, academic computing and administrative IT.

Recommendations from IT-SPARCC will feed directly into the decision-making process for capital allocation, annual budgets and rate structures.

To contact the council, send e-mail to it-sparcc@mit.edu or to individual members, whose names can be found online at http://web.mit.edu/it-sparcc.

Economics faculty named to professorships

Dean Philip Khoury of the School of Humanities, Arts and Social Sciences announced the appointments of several faculty members to professorships, all effective July 1, 2004.

Victor Chernozhukov has been named Castle-Krob Career Development Professor for a three-year term. Chernozhukov, assistant professor in the Department of Economics, has been at MIT since receiving his Ph.D. from Stanford University in 2000. This professorship was established by a gift from John K. Castle (S.B. 1963), chairman and CEO of Castle Harlan Incorporated. The Castle-Krob Professorship is awarded on a rotating basis to non-tenured economics faculty with outstanding records of scholarship.

Xavier Gabaix has been selected as the inaugural holder of the Rudi Dornbusch Career Development Professorship for a three-year term. Gabaix, assistant professor in the Department of Economics, received his Ph.D. at Harvard University, and has been at MIT since his post-doctoral fellowship in 1998. Rudi Dornbusch was a distinguished member of the MIT economics faculty for many years before he passed away in 2002. This professorship was established in his memory with the generosity of alumni and friends of the Department of Economics.

Whitney K. Newey has been named Jane Berkowitz Carlton and Dennis William Carlton Professor of Microeconomics. Newey, professor in the Department of Economics, received his Ph.D. at MIT, and has been a member of the faculty since 1990. The Carlton Professorship was established by a gift from Jane and Dennis Carlton. Dennis Carlton is an alumnus of the MIT economics Ph.D. program and a professor at the University of Chicago.

AWARDS & HONORS

Professor **James M. Utterback**, the David J. McGrath Jr. Professor of Management and Innovation and Engineering Systems at the Sloan School, received two honors this past summer. In June, he was honored with a lifetime achievement award from the Technology Management Education Association. The Board of Directors cited Utterback for his "seminal contributions to the field of technology management education through his long-time leadership efforts in fundamental research, program development and fostering an effective dialogue among academic and industry technology professionals." Utterback was appointed a member of the University of Chicago's Board of Governors for Argonne National Laboratory for a threee-year term beginning early September. The laboratory has four missions: fundamental and applied science, scientific research facilities, energy and environmental science and national security.

Three MIT professors and a student were honored for their papers at the 2004 Annual International Symposium of the International Council on Systems Engineering (INCOSE) held June 21-24 in Toulouse, France. INCOSE is the professional society for systems engineering, with more than 5,000 members internationally. **Olivier de Weck**, assistant professor of aeronautics and astronautics and engineering systems, won the best paper award in the Modeling and Tools category. Co-authored with M.B Jones, de Weck's paper was entitled "Isoperformance: Analysis and Design of Complex Systems with Known or Desired Outcomes." De Weck also won, along with **Christopher Magee**, Professor of the Practice of Engineering Systems and Mechanical Engineering, a second-best paper award at the conference in the Education and Research category for a paper entitled "Complex Systems Classification." Graduate student **Nicolas Dulac**, a student of **Nancy Leveson**, professor of aeronautics and astronautics and engineering sytems, won the INCOSE Best Student Paper Award for "An Approach to Design of Complex Systems," co-authored by Leveson.

Yu Chen, a postdoctoral associate in the Research Laboratory of Electronics (RLE), was awarded a two-year fellowship from the Cancer Research and Prevention Foundation (CRPF). Chen joined RLE in June 2003 after receiving his doctoral degree from the Department of Bioengineering at the University of Pennsylvania. Under the supervision of Professor James G. Fujimoto, he is working to increase the understanding and biomedical applications of optical coherence tomography (OCT), an emerging biomedical imaging technology. With CRPF's support, Chen will further develop OCT technology for the molecular imaging of cancer, particularly in the area of early cancer detection. This project involves the collaboration of the Boston Veterans Affairs Medical Center; Harvard Medical School; and Lightlab Imaging, Inc.

CLASSIFIED ADS

Members of the MIT community may submit one classified ad each issue. Ads can be resubmitted, but not two weeks in a row. Ads should be 30 words maximum; they will be edited. TechTalk ads are posted on the Internet. Submit by e-mail to ttads@mit.edu or mail to Classifieds, Rm 11-400. Deadline is noon Wednesday the week before publication.

VEHICLES

2002 Toyota Tacoma. Automatic, 17K, 2 Wheel Drive, bed liner w/cover, exc. cond., $8,900. Sam Calomo at scalomo@ll.mit.edu or 781-981-1697.

2000 Nissan Xterra XE. 4WD, 6cyc, 5sp., silver, many extras, 82K (highway) miles, excellent in & out. $9,900/bst. 617-258-1948 or pdtaylor@draper.com.

2000 Kawasaki Nomad. 4k, leather bags, all chrome options, factory warranty thru 3/05. $8000. Send your Email address for pics. Mike at 253-3571 or mcd@space.mit.edu.

1994 Honda Accord LX. Good cond., 80K, well maintained. Lo-jack recovery system, CD/FM/AM, AC. $4099/bst. 617-921-4253 or hwtaylor@mit.edu.

1991 Toyota Camry station wagon. Automatic, 126K (mostly highway), AC, pwr, runs great, professionally maintained yearly, many new parts. $2100/bst. John at 253-8286 or feng@psfc.mit.edu.

FOR SALE

QSC RMX1450 power amp. Used 6 times in a PA, 1400 watts. Less than 1yr old, bought for $400. $280 firm. Pic available. Ian at 253-7260 or icariolo@mit.edu.

G. E. microwave oven (apartment sized). $20. Phone Mate 1200 Telephone Answering Machine. $20. 508-653-7123 evenings or magowen@mit.edu

English Style Baby Pram. Ex-large wheels for smooth ride. Collapses to fit into vehicle. Royal Blue, Made In England. Good cond. $300. 253-0400.

Cherry wood dining table, adjustable w/4 chairs plus 3 sets of padded cushion $150. Drop leaf small table $5. Blk wood entertainment center $10. 1-gallon fish tank w/acces.$5. Hampster cage w/acces$5. Task padded adj. stool $10. lmorales@mit.edu.

WANTED

Retired professor's wife looking for help with new 3170 Photo Epson Scanner and Mac computer. Payment negotiable. R.Halle at 617-547-2447.

ARTS NEWS

Coming through

"Skin" and "Control," parallel installations by Assistant Professor **Chris Csikszentmihalyi**, head of the Media Lab's Computing Culture research group, can be seen at Location One (26 Greene St., New York) through Dec. 30. The installations explore two central technologies of today's industrial society, the airplane and the control panel. "Skin" features an aluminum cylinder representing the fuselage of an airplane emerging from the gallery floor. Viewers can walk up to the windows, feel the vibrations of the plane in flight and hear the muffled conversations of passengers. "Control," a giant control panel roughly modeled on the one used in Chernobyl, emerges from a wall, wends its way through the gallery, breaks apart and disappears. The viewer interacts with the puzzling array of buttons, bulbs, indicators and dials of this complex technological system.

Film score performance

The Harvard Film Archive presents F.W. Murnau's classic silent film "Faust," with score performed and compiled by senior lecturer **Martin Marks** and sung by Professor **Ellen Harris** on Friday, Oct. 8 at 7 p.m. at the Carpenter Center for the Visual Arts (24 Quincy St, Cambridge).

Multicultural performance

Curt Newton, department liaison in MIT OpenCourseWare, usually plays drums with cellist Jeff Song, but in a special program at the Peabody Essex Museum in Salem, the duo will perform on Korean instruments—the changgo (an hourglass-shaped drum) and kayagum (a 12-string zither). The Jeff Song/Curt Newton Duo will draw upon jazz, rock, folk, avant-garde and 20th-century classical music as they move through different spaces in the museum playing the traditional Korean instruments. Performances are Saturday, Oct. 16 at 11:30 a.m. and 1:30 p.m. and Sunday, Oct. 17 at noon.

Artists examine election issues

Election Day draws near and the Center for Advanced Visual Studies (CAVS) is launching its own brand of coverage with a special series about politics.

"People across the arts have been absolutely galvanized by the attitudes and policies of the Bush administration," said Larissa Harris, newly appointed associate director of CAVS. "It seemed to make sense to bring some of this passion and energy—in the form of exhibitions, individual works and conversations—into our program."

"How should an individual make the world a better place? By doing the work they do best or by marching in the streets?" said Harris, who worked at New York's P.S.1 Contemporary Art Center and as reviews editor at Artforum International Magazine before coming to MIT. "Does an artist have to abandon art's symbolic dimension—which touches our lives in a unique way—to make a real-world impact? These are the questions that artists in the show are struggling with right now."

Titled "The Last Four Years: Artists React," this show includes video footage shot at the Republican National Convention and a daylong discussion of the issues arising from the investigation of a New York artist who was suspected of bioterrorism.

CAVS also joined forces with the Public Service Center to create voter registration awareness posters for the campus. "I want to stimulate discussion with the 'Last Four Years' programs," said Harris, "but I also want to do something concrete, and concrete in this environment means registering students."

Artists react

On Oct. 12-13, New York artist and activist Sharon Hayes will present footage from a work in progress—video she shot largely at and around the 2004 Republican National Convention—as well as a selection of her previous work. She will hold open studios from 3-6 p.m. on both days of her visit and will present the work at 6:30 p.m. on Wednesday, Oct. 13 in Room N52-390.

On Friday, Oct. 29, the 16 Beaver Group will organize a daylong discussion of the federal bioterrorism investigation of Steve Kurtz, the professor of art at SUNY Buffalo who was accused of misusing bacteria for one of his projects with the Critical Art Ensemble. The event will be held from 11 a.m.-6 p.m. in Room N52-390.

Voter registration forms and absentee ballot applications will be available at all CAVS events until the presidential election. "The one thing you can do is vote," said Harris.

PHOTO / **SCOTT SUCHMAN**

Dancer Elizabeth Streb, shown above, will be an artist in residence at MIT this month.

Streb brings her special brand of dance to campus

The unique movement vocabulary of dancer/choreograher Elizabeth Streb has been compared to sports, circus, Physics experiments, Hollywood stunt work and hard labor.

"Elizabeth Streb's choreography is off the wall. Literally," wrote Rose Eichenbaum in Dance Magazine. "She combines the spirit of Merce Cunningham and the daring of Evel Knievel in her unyielding passion for action, speed and force. Body slams, near-hit-and-miss collisions, rebounding off immobile surfaces and the defiance of gravity are all Streb signature moves."

Streb will be in residence Oct. 18-21. While at MIT, she will visit classes, give workshops, and share meals with faculty, staff and students. She will present the 2004 Abramowitz Memorial Lecture titled "Outerlimits: The Analysis and Accomplishment of Wild Action and Real Moves" Monday, Oct. 18, at 7 p.m. in Room 34-101. Streb will discuss the invention of new moves particularly contained in the act of pushing the body to the outer limits of its present capabilities. The talk will be accompanied by live footage, still images, words, music and sound.

For more than 20 years, Streb has challenged many assumptions about dance. Her investigation of movement through the study of science and the human body has led her to make choreographic choices that depart from classical norms. Aesthetics of grace, the use or camouflage of gravity, the presence or absence of transitions, treatment of gender, the nature of spatial and temporal dimensions as well as the use of sound in theatrical presentations have been among her areas of exploration.

Streb's creative process draws from the sciences and mathematics, requires the design and creation of beautifully engineered equipment, and demands athleticism, fearlessness and precision from her dancers. Working in the Streb Laboratory for Action Mechanics, Streb's company has engineered a system that allows the body to execute the choreography through the development of specific muscles and the unusual placement of body parts.

The Abramowitz Memorial Lecture, presented by the Office of the Arts, was established at MIT through the generosity and imagination of William L. Abramowitz '35 as a memorial to his father. It has been sustained since his death by the devoted interest of his wife and children. The series brings renowned performing artists and writers to campus.

Musical treats for families visiting campus planned

The MIT Wind Ensemble, MIT Festival Jazz Ensemble, (Frederick Harris, Jr., director), and the MIT Dance Theater Ensemble (Professor Thomas DeFrantz, faculty advisor) will present "Dance Winds," an evening of symphonic and jazz music and dance performances by students on Friday, Oct. 15, at 8 p.m. in Kresge Auditorium.

The MIT Wind Ensemble and the MIT Dance Theater Ensemble will present the Boston premiere of "La Jornada" by Montserrat Torras, choreographed by DeFrantz. The Wind Ensemble will perform the music of Holst, Grainger and Peter Mennin; the Festival Jazz Ensemble will perform works by Mingus (featuring a solo dance by DeFrantz), Ellington and Woody Herman.

The Student A Cappella Concert scheduled for Oct. 16, featuring the Chorallaries of MIT (co-ed), the MIT Cross Products (Christian), the MIT Logarhythms (men), the MIT Muses (women), Resonance of MIT (co-ed) and the MIT/Wellesley Toons (co-ed), is sold out.

MITHAS (MIT Heritage of the Arts of South Asia) presents two concerts over the weekend, both in Wong Auditorium. On Saturday, Oct. 16, Unnikrishnan will perform Carnatic vocals with R. K. Shriramkumar on violin and K. V. Prasad on mridangam at 5:30 p.m. Tickets are $25, $18 members, $14 students.

On Sunday, Oct. 17, sitar player Sanjoy Bandopadhay, holder of the Allauddin Khan Chair at Rabindra Bharati University, will perform with Nitin Mitta on tabla at 4 p.m. Tickets are $18, $14 members, $10 students, free for MIT students with valid IDs. Advance purchase tickets for MITHAS concerts are available online or by calling 258-7971.

PHOTO / **CARME PINÓS STUDIO**

Carme Pinós

Barcelona architect Carme Pinós will present the 12th Pietro Belluschi Lecture on Oct. 12.

MIT EVENT HIGHLIGHTS OCTOBER 6 - 10

Science/ Technology · Performance · Architecture/ Planning · Humanities

Music · Exhibit · Reading · Special Interest

Business/ Money · Film · Sports · Featured Event

From patio to desk

Today's Artists-Behind-the-Desk performance at noon in Killian Hall features Marielle Risse.

WEDNESDAY October 6

Artists Behind the Desk Writers Janni Moselsky and Marielle Risse read from their work. Noon-1pm. Killian Hall. 253-9821.

The Changing Nature of State Sponsorship of Terrorism Daniel Byman, Georgetown University. Noon-1:30pm. Room E38-615. 452-2542.

Starr Lecture "Aerosols, Clouds, and Climate: Does a Cooler Past Imply a Hotter Future?" Meinrat O. Andrea. 4-5pm. Wong Auditorium. 253-3382.

"Kandahar" 2001 Afghanistan movie. 6pm. Room 3-133. 258-8438.

"Small Infinities" Staged reading of play about Isaac Newton by Associate Provost for the Arts Alan Brody. 7:30pm. Room 10-250.

THURSDAY October 7

Black Alumni of MIT Conference 8am-6pm, Oct. 7-10. Various campus locations. 324-0379.

MIT Chapel Concert Leonora Quartet. Noon. MIT Chapel. 253-9800.

Brunel Lecture on Complex Systems Dean Thomas Magnanti speaks on "Engineering Engineering Systems." 3:30-4:30pm. Room 34-401. 253-9756.

MIT Women's Chorale New members welcome until Oct 21. 7:45-10pm. Room 10-340. 253-1614.

FRIDAY October 8

Weekly Anime Screening MIT Anime Club presents the best of Japanese animation. 7pm-midnight, Room 6-120.

"Faust" Murnau film with score performed by MIT lecturer Martin Marks and sung by Professor Ellen Harris. $15. 7pm. Harvard Univ., Carpenter Center, 24 Quincy St., Cambridge. (617) 495-4700.

"Super Size Me" LSC. $3. 7pm Friday and Sunday. Room 26-100. 253-3791.

Comedy Collage Professional comedians. $3. 7:15pm. Kresge Auditorium. 225-7427.

SATURDAY October 9

Artist's Talk: Cerith Wyn Evans Presented in conjunction with exhibition at List Visual Arts Center. Noon. 253-4680.

Spider Man 2" LSC. $3. MIT. 7 and 10pm. and Sunday at 10pm. Room 26-100. 253-3791.

Halloween Ball Costumes encouraged, but not required. Dance lesson at 7:30pm. Sponsored by MIT Ballroom Dance Team. 8pm-midnight. Lobdell. $6 students, $10 others.

Story of Sir Isaac

See a staged reading of "Small Infinities," a play about the life of Isaac Newton written by Alan Brody, tonight at 7:30 p.m. in Room 10-250.

SUNDAY October 10

Padmashri Neeraj Ji India's national poet reads from his work and signs books. Sangam. 3-7pm. $10 MIT, $15 others.

International Folk Dancing (participatory) Dance lessons 8-9pm, followed by open dancing until 11pm. Students free; $1 others. Lobdell. 253-FOLK.

Body Parts: A Self-Portrait by John Coplans A series of 26 large-scale, fragmented self-portraits. Through Dec. 31. List Visual Arts Center.

Go Online! For complete events listings, see the MIT Events Calendar at: http://events.mit.edu.
Go Online! Office of the Arts website at: http://web.mit.edu/arts/office.

EDITOR'S CHOICE

RECEPTION FOR TRIO OF ART SHOWS — *Oct. 7*

New exhibitions of work by Cerith Wyn Evans, Yael Bartana and John Coplans at the List. Through Dec. 31.

List Visual Arts Center

5:30-7:30 p.m.

NIGHT MARKET — *Oct. 15*

Aisles of fun, food and games that represent the best of Asian popular culture. $3. Sponsored by MIT Asian student organizations.

Stata Center

7 - 11 p.m.

MIT STUDENT POLITICAL DEBATE — *Oct. 17*

College Democrats, Greens and Republicans engage in a debate on election-year issues. MIT Debate Team moderates.

Room 10-250

4 p.m.

MIT EVENT HIGHLIGHTS OCTOBER 11 - 17

MONDAY October 11

Columbus Day Holiday Institute Closed

Potluck Lunch & Movie Sponsored by the Sri Lankan Students' Association. 12:30pm. Sydney-Pacific Lounge. 452-5392.

Varsity Men's Soccer vs. Wentworth Institute of Technology 3:30pm. Steinbrenner Stadium. 258-5265.

TUESDAY October 12

Heavenly Diplomacy: LBJ, Indira Ghandi and the Covert Rainmakers 1966-67 Talk by Kristine C. Harper, postdoctoral fellow, Dibner Institute. Noon. Room E56-100.

The Last Four Years: Artists React Sharon Hays' video. 3-6pm. Oct. 12-13. Artist's talk 6:30pm, Oct 13. Room N52-390. 452-2484.

Pietro Belluschi Lecture Carme Pinós, Barcelona architect. 6:30pm. Room 10-250. 253-7791.

Chicks Make Flicks Jane Grey's "Playing House" documentary film and discussion. 7pm. Room 6-120. 253-8844.

Contra Dance Live music by The Nematoads. Tickets: $5, $3, students free. 8-10:30pm. Sala de Puerto.

WEDNESDAY October 13

Smart City Cars in the 21st Century Sketches and models of MIT concept cars developed by the Smart Cities Group at MIT Media Lab. 9am-5pm. Through Oct. 15. 253-2825.

The China Threat? Russ Howard, West Point. Securities Studies Program. Noon. Room E38-615. 452-2542.

Radio Frequence ID (RFID)—Vision to Reality Jack DeAlmo, vice president, CVS. MIT Enterprise Forum. Free for students, $20 members, $25 non-members. 6pm. Kirsch Auditorium. 253-8240.

"Broken Wings" 2001 Israeli film. 6pm. Room 3-133. 258-8438.

THURSDAY October 14

MIT Chapel Concert Jean Rife, harpsichord. Noon. MIT Chapel. 253-9800.

Operations Research and Homeland Security: From Models to Implementation Professor Lawrence M. Wein, Stanford University. 4:15pm. Room E40-298. 253-7412.

New Media, Old Politics? Communications Forum with Henry Jenkins, Garret Loporto, Joe Trippi. Bartos Theater. 5pm. 253-3521.

The Art of Structural Design: A Swiss Legacy Otto Künzle speaks on "Education in Building Structures for Architects," in conjuntion with MIT Museum exhibition. 6pm. Room 10-250. 253-2825.

FRIDAY October 15

Family Weekend Receptions Campus, facility and laboratory tours and presentations. 2-4pm. Various locations. 253-8183.

Weekly Anime Screening MIT Anime Club presents the best of Japanese animation. 7pm-midnight. Room 6-120.

Family Weekend Concert — "Dance Winds" Performances by MIT Wind Ensemble, MIT Festival Jazz Ensemble, and the MIT Dance Theater Ensemble include Boston premiere of "La Jornada," choreographed by Prof. Thomas DeFrantz; and the music of Holst, Grainger, Mingus and Ellington. 8pm. Kresge Auditorium. 253-2826.

SATURDAY October 16

Varsity Women's Soccer vs. Mount Holyoke College 10:30am. Steinbrenner Stadium.

"Alice in War" A staged reading of the new play by Steven Bogart. 7:30-9:30pm. Killian Hall. 253 2877.

Family Weekend A Cappella Concert Traditional annual concert. 8pm. Kresge Auditorium. 253-8183.

Carnatic vocal concert Unnikrishnan performs. SANGAM. Tickets: $25, $18 members, $14 students. MIT students free with ID. 5:30pm. Wong Auditorium.

SUNDAY October 17

"Cerith Wyn Evans: Thoughts unsaid, now forgotten…" Welsh artist Cerith Wyn Evans' concurrent exhibitions at the MIT List Visual Arts Center and the Museum of Fine Arts Boston. Noon-5pm. List Visual Arts Center (E15).

List Visual Arts Center Gallery Talk Led by Hiroko Kikuchi, Education/ Outreach Coordinator. 2pm. List Center (E15). 253-4680.

Sitar concert Sanjoy Bandopadhay on sitar , Nitin Mitta on tabla. SANGAM. Tickets: $18, $14 members, $10 students, MIT students free. 4pm. Wong Auditorium.