Massachusetts Institute of Technology

Winter 2013-2014
Volume 8

IntegraL

NEWS FROM THE MATHEMATICS DEPARTMENT AT MIT

Dear Friends,

I know, *Integral* is later than usual. So much has been happening, we haven't had time to stop and tell till now. Read on . . .

Our extraordinary faculty are recognized with marvelous honors every year, and this year I'd like to call out two that make us especially proud: Jacob Fox received the first-ever Packard Award given to a member of our department while at MIT. Mike Artin received the Wolf Prize for his achievements in algebraic geometry, a truly monumental recognition.

In other major faculty news, three new assistant professors have joined the department: Jörn Dunkel, physical applied mathematics; Ankur Moitra, theoretical computer science; and Charles Smart, probability theory. Steve Kleiman retired in January, 2014. Following in his father's footsteps, Steve came to MIT in 1958 as an undergraduate in EE, but then switched to mathematics. He graduated with an SB in 1961, studying with Arthur Mattuck as his academic advisor. Steve got his PhD under Oscar Zariski and David Mumford at Harvard in 1965 and joined our department in 1969. He has been active in algebraic geometry and commutative algebra since then, supervising 22 PhDs. Steve produced the *MIT Undergraduate Journal of Mathematics* for eleven years.

Building 2 Renovation

The Building 2 renovation is underway! The Mathematics Department moved over the summer to temporary digs in Building E17/18. Our old home was quickly enshrouded in a cocoon of scaffolding and plastic sheets. Its interior is being deconstructed and rebuilt, eventually to emerge better than ever. Target completion date: January, 2016.

As you can see from the drawing on this page, a signature feature of the renovation is the addition of a new fourth floor over the south and east sections of the building. This addition wasn't in the original plan. Here's how it came to be.

One of the renovation goals was to alleviate our severe space shortage. During the summer of 2012, extensive planning and design suggested a solution to this problem: split the first floor horizontally into two floors and convert a few classrooms to offices—voilà, the space shortage is solved. The heavily-used classrooms would be missed, but overall this plan seemed good. Later that fall, our Facilities department wisely commissioned a mockup of the split-level space to see how two floors with ceilings 7' 6" high would compare with the current magnificent 16-foot ceiling. The mockup quickly clarified that even though this plan would generate lots of additional office space, no one would want to be in those offices. We needed a different plan.

Roll back the clock several months. John Bush and others on the faculty were pressing me to investigate building a roof deck, a concept that appealed to us, but not to those in the administration who would be responsible for that outdoor space. Our facilities people were unenthusiastic about pursuing the roof deck idea. We argued for further study: our renovation would be the template for other main group renovations, so this decision should be made only after careful consideration. Facilities Head Dick Amster agreed, and got administration approval to study how we might use the roof for a deck or other construction.

Our master designers at Ann Beha Architects then produced this drawing for a fourth-floor addition. Their design beautifully marries a contemporary "glass box" top with the classically styled lower building. It solves the space shortage by providing additional offices and meeting rooms. The additional cost was a concern, but we reached out to key department supporters who appreciated the value of this approach and contributed additional funds. For their timely help with this project we are deeply grateful to Tom Leighton, Art Samberg, and David desJardins as well as to Jim and Marilyn Simons, Bob and Lisa Reitano, Ted Kelly, Alex Morcos, and other friends for major gifts.

Other Business

Dan Spielman and Ben Green are giving this year's Simons Lectures. William Lawson from the Yale School of Public Health joined the department as our new Administrative Officer. Finally, Marc Kastner stepped down from his position as Dean of Science to become the next Director of the Office of Science at the DOE, pending Senate confirmation. I've assumed his duties as interim Dean, in addition to my responsibilities as Head of Mathematics. If I stay on as Dean next year, this will be my last letter to you as Head. Stay tuned.

Have a good year!

Michael Sipser
Department Head

New Faculty

Ankur Moitra, Assistant Professor of Applied Mathematics in theoretical computer science, received his PhD at MIT under Tom Leighton in 2011. Ankur has held joint postdoctoral appointments at Princeton and IAS. His research concentrates on algorithmic design across a wide variety of areas, including statistical inference, optimization, and learning theory.

Jörn Dunkel, Assistant Professor of Applied Mathematics, comes to MIT from postdoctoral appointments at the Universities of Cambridge and Oxford. He received his PhD in statistical physics under Peter Hänggi from the University of Augsburg in 2008. His dissertation addressed unresolved questions linking the laws of special relativity to thermodynamics. His current program involves developing models and mathematical tools for understanding biological phenomena.

Charles Smart, Assistant Professor of Mathematics, came to MIT as a CLE Moore Instructor in 2011. Smart is an analyst who works primarily on nonlinear PDEs arising in probabilistic settings, often as a scaling limit of a discrete stochastic process or game. He completed his PhD at UC Berkeley under Leo Harrington in 2010, followed by a year at Courant as an NSF fellow.

Faculty Recognitions

Victor Kac and **David Vogan** were elected members of the National Academy of Sciences. **Larry Guth** was awarded the Salem Prize for outstanding contributions in analysis. Larry also gave the 2013 Marston Morse Lectures at the IAS, titled "The codimension barrier in incidence geometry." **Michel Goemans** was selected to be a SIAM fellow, and also received the 2012 Farkas Prize of the INFORMS Optimization Society. **Gigliola Staffilani** and **Tom Leighton** were elected fellows of the Massachusetts Academy of Sciences. **David Jerison** received the 2012 Stefan Bergman Prize of the AMS with collaborator Jack Lee. The AMS named 29 of our faculty to their 2013 Class of Fellows. **Bonnie Berger** received the Alumni Achievement Award from Brandeis. **Gilbert Strang** was given the Doctor Honoris Causa from Aalborg University in Denmark. **Jonathan Kelner** received the 2012 School of Science Teaching Prize for Undergraduate Education. **Jacob Fox**, **Sug Woo Shin**, **Charles Smart**, and **Jared Speck** each received a Sloan Research Fellowship. **Jacob Fox**, **Laurent Demanet**, and **Gonçalo Tabuada** received NSF CAREER awards. **Victor Kac** gave the Hadamard Lecture Series at the IHÉS, a series of eight lectures titled, "Algebraic structures arising in physics and applications."

Lie Wang was promoted to Associate Professor.

Research Staff Award

Chelsea Walton, CLE Moore Instructor and NSF postdoctoral fellow, received the School of Science Infinite Kilometer Award for her work as Coordinator of the PRIMES Circle Program.

Staff Distinctions

Cesar Duarte received the 2013 MIT Excellence Award in the category of Innovative Solutions for creating many of the department's design projects and playing a major role in planning and coordinating our move to temporary space in E17/18. **Debbie Bower**, **Shirley Entzminger**, **Susan Ferguson**, and **Avisha Lalla** each received the School of Science Infinite Mile Award, for going "Above and Beyond" in their contributions to the Mathematics Department.

Mike Artin honored with Wolf Prize

Mike Artin received the 2013 Wolf Prize in Mathematics, presented by Israeli President Shimon Peres at the Knesset. "Michael Artin is one of the main architects of modern algebraic geometry," the citation begins. "His fundamental contributions encompass a bewildering number of areas in this field." The citation lists numerous contributions, such as the development of the theory of étale cohomology with Alexander Grothendieck and defining étale homotopy with Barry Mazur; advances to the theory of moduli and modern intersection theory, and seminal work on the theory of surface singularities and in deformation theory. According to Department Head Mike Sipser, Mike is an extraordinary mathematician, a legendary teacher, and a wonderful colleague. We're proud of him!

Toby Colding awarded Cecil and Ida Green Professorship

Toby Colding was selected by the Provost for the Cecil and Ida Green Distinguished Professorship, effective September 2013. He has also held the Norman Levinson Professorship of Mathematics. Toby is one of the world's leading differential geometers. Early in his career he studied the geometric structure of Riemannian manifolds, proving a number of long-standing conjectures, and developing with Jeff Cheeger a regularity theory for spaces with a lower bound on the Ricci curvature. Working with long-time collaborator Bill Minicozzi (who joined our faculty in 2012), Toby has produced groundbreaking work on minimal surfaces and the mean curvature flow. For their series of papers on minimal surfaces, Toby and Bill jointly received the 2010 Veblen Prize in geometry.

Jacob Fox receives the Packard

Jacob Fox received the 2013 Packard Fellowship in Science and Engineering, the first math faculty member to do so while at MIT. Jacob's program is at the interface between combinatorics and computer science, geometry, analysis, and number theory. Jacob works on fundamental problems on structure and randomness in extremal combinatorics, especially involving the Szemerédi regularity lemma and Ramsey theory. Jacob also received a Sloan Fellowship and an NSF CAREER award.

Clark Barwick and Laurent Demanet selected for Career Development Assistant Professorships

Laurent Demanet was awarded the Class of 1954 Career Development Assistant Professorship. Laurent works in scientific computing, concentrating on problems in wave-based imaging and inverse problems, with applications to seismology, medical imaging, and synthetic aperture radar. He maintains a robust research group of UROPs, graduate students, and postdocs and recently received an NSF CAREER award. His PhD is from Caltech in 2006. He was a Szegö Assistant Professor at Stanford before joining our faculty in 2009.

Clark Barwick was selected for the Cecil and Ida Green Career Development Assistant Professorship. Clark is an algebraic topologist whose program seeks to connect K-theory to homotopy theory, higher category theory, and algebraic geometry. Among his projects, he worked with Dan Kan on relative categories before Dan's passing this year (see p. 8). Clark joined our faculty in 2011. He received his PhD from U Penn in 2005, followed by postdoctoral appointments at Göttingen, Oslo, IAS, and was a Benjamin Peirce Assistant Professor at Harvard before coming to MIT in 2010.

Morgan Stanley supports mathematics education

The Mathematics Department has expanded its course offerings into financial mathematics with the new subject, "Applications of Mathematics in the Financial Industry." Offered first as a pilot in fall 2012 and then in an expanded form in fall 2013, the course was organized and taught by MIT faculty and instructors Pavel Etingof, Scott Sheffield, Lie Wang, Peter Kempthorne, Choongbum Lee, and MIT alumni Jake Xia (formerly of Morgan Stanley) and Vasily Strela of Morgan Stanley.

Graduate and undergraduate students had the opportunity to learn the deep mathematical tools that underlie modern finance theory and to see their application with lectures by practitioners.

Morgan Stanley has also contributed to the mathematics department in other ways, supporting some of our student research programs and faculty. "It is extremely important to have a solid mathematical education in order to successfully navigate modern financial markets, with their increasingly complex products and sophisticated analytical tools," Morgan Stanley's Dr. Strela observed. "I hope our class gives a good overview of what kind of mathematical machinery is needed in finance and how interesting and diverse the problems can be."

A field trip to New York allowed students to visit Morgan Stanley offices, tour the trading floors, and see how their lecturers work.

For information on making a gift to the Mathematics Department, please contact Director of Development for Mathematics, Erin McGrath, at emcgrath@mit.edu or 617-452-2807.

Charles and Holly Housman Teaching Awardees: Nan Li, Ailsa Keating, and John Lesieutre, flanked by then–Associate Head Haynes Miller and Holly and Charles Housman

2013 Student Awards

Graduate students **Nan Li**, **Ailsa Keating**, and **John Lesieutre** received the Charles and Holly Housman Award for excellence in undergraduate teaching. **Yin Tat Lee** and **Eric Marberg** received the Charles W. and Jennifer C. Johnson Prize for an outstanding paper accepted for publication. Undergraduate **Holden Lee** '13 received the Jon A. Bucsela Prize in Mathematics for distinguished scholastic achievement, professional promise, and enthusiasm for mathematics. Holden also received a Gates Cambridge Scholarship. **Yangzhou Hu** '13 received an Honorable Mention in the Alice T. Schafer Prize for excellence in mathematics by an undergraduate woman, given by the Association for Women in Mathematics. **Fan Wei** '12 received the 2013 Frank and Brennie Morgan Prize for outstanding research by an undergraduate, and **Jon Schneider** '13 received an Honorable Mention. **John Mikhael** '13 was selected for a Rhodes Scholarship. **Kirin Sinha** '14, a double math and EECS major, received a Marshall Scholarship. **Noam Angrist** '13, a double mathematics and economics major, received a Fulbright Scholarship to work in Botswana.

Putnam triumphs continue

The MIT team placed second and MIT undergraduates continued record participation and individual rankings in the 2012 William Lowell Putnam Mathematical Competition. Team members **Benjamin Gunby**, **Brian Hamrick**, and **Jonathan Schneider** were mentored by Henry Cohn and Abhinav Kumar, with 34/84 top individual scorers:

Putnam Fellows: 3/5 Benjamin Gunby, Mitchell Lee, and Zipei Nie

Next twenty: 9/20
Joshua Alman, Whan Ghang, Holden Lee, Sung Gi Park, Jeffrey Shen, Ka Yu Tam, Szu-Po Wang, Tianyou Zhou, and Alex Zhu

Honorable Mentions: 22/59
Robi Bhattacharjee, Justin Brereton, Lucas Camelo Sa, Kevin Chen, Alexander Cole, Michael Cohen, Zheng Fan, Brian Hamrick, Jiaoyang Huang, Hyun Sub Hwang, Kuan-Yu Lin, Eric Mannes, Ofir Nachum, Jonathan Schneider, Brandon Tran, Mark Velednitsky, Anderson Wang, Anthony Wang, Michael Wu, George Xing, Kerry Xing, and Dai Yang.

From Associate Head Gigliola Staffilani

This last July I became the new Associate Head, the person responsible for the academic aspects of our department. This position, created three years ago, was first filled by Haynes Miller. Haynes was named a MacVicar Faculty Fellow and received several grants in recognition of his deep involvement with teaching and course development. He is still working on several projects: the future development of courses for MITx, revision of the 18.03 curriculum (helped by David Jerison and 2010 math PhD Jennifer French), supervision of the new version of 18.05, and the micro-teaching workshop that prepares our graduate students for their future as teachers of mathematics. Haynes will be a difficult act to follow!

Responsibility for making sure that our department's academic component continues to run smoothly now falls to me. I am also embarking on a major review of our curriculum and teaching resources. Several new professors have recently joined our faculty; we feel that their expertise should be better represented in the classes we offer to both graduates and undergraduates. The new faculty members may want to introduce new topics, merge some existing courses, change the syllabus of others, or propose interdisciplinary courses.

The students have changed as well. The mathematical sophistication of freshmen arriving at MIT is much higher than in even the recent past, as seen in the surge of students going directly to multivariable calculus. We see an opportunity to revise our calculus classes to include more advanced concepts that may better prepare our students for their future studies at MIT. The number of math majors has also increased substantially, and they are quite a diverse group, often double majoring.

We believe it is time to take a good look at these forces acting on our major, and to make sensible and much-needed changes. Working with Mike Sipser, we have created a Committee on Curriculum and Resources that will work through the spring semester and write a report with recommendations to the head of the department before the summer.

Finally, the class, "Applications of Mathematics in the Financial Industry," taught for the past two years as a special class, is now ready to take its place in our Applied Mathematics degree. The MIT Committee on Curricula has recently approved this class as a standard subject to be offered on a regular basis.

Martin Luther King Visiting Faculty

Erika Camacho and **Stephen Wirkus** have come with their family as MLK Visiting Faculty for the year. Erika and Stephen are applied mathematicians from Arizona State University and have been active nationally serving on both outreach and research boards, committees, and conferences to promote student and faculty diversity in mathematics.

Erika's interest in mathematics was inspired by her teacher Jaime Escalante, subject of the film *Stand and Deliver*. She works on the nonlinear modeling of biological phenomena with a focus on retinal degeneration, as well as on mathematical sociology.

Stephen concentrates on biological systems and patch population dynamics, and is finishing the second edition of his textbook on ODEs.

They are here to build research collaborations and work with faculty to increase our underrepresented and women majors, identify potential PhD candidates, and build a network of outside scholars to explore possible partnering leads.

Our Temporary Home

Years from now we will look back on this period as a time of transition, with retirements and new hires complementing our nomadic existence. Here, for the record, are some pictures of our temporary quarters, E17/18, as we await the completion of a more spacious and beautiful Building 2. We've included some architectural drawings of the new construction to give a sense of what we have to look forward to!

Academic office

Common room

Headquarters hallway

Math enclave

Food for thought

"The helm"

Our Future Home

Graduate student tower

Hard Math Café

Department Retreat 2013





Many thanks to our graduate students of the **Retreat Committee** for planning and coordinating the 2013 retreat: Chief Organizer **John Binder**; **Hans Liu** – transportation, bus sign-up, rooming, venue search; **Alisa Knizel** – activities coordinator, BBQ planner, venue search; **Yasha Berchenko-Kogan** – activities coordinator; **Sean Simmons** – advertising, venue search; **Padma Srinivasan** – venue search; **Michael Donovan**, **Dana Mendelson**, and **Saul Glasman** – food, drinks and supplies. Activity planners: **Ben Elias** – board games, **Pavel Etingof**, **David Rolnick**, and **Susan Ruff** – hikes, **Alisa Knizel** – trivia games, **Carlos Sauer** – soccer, **Dan Thompson** – basketball.

2013 Doctorates

Elette Boyle, *"Secure Multi-Party Protocols Under a Modern Lens,"* under Shafi Goldwasser (EECS). Elette is now a postdoc at Technion.

Jiawei Chiu, *"Matrix Probing, Skeleton Decomposition, Sparse Fourier Transform,"* under Laurent Demanet. Jiawei is now at Google.

Dustin Clausen, *"Arithmetic Duality in Algebraic K-Theory,"* under Jacob Lurie (Harvard). Dustin is now a postdoc at the University of Copenhagen.

Giorgia Fortuna, *"The Beilinson-Bernstein Localization Theorem for the Affine Grassmannian,"* under Dennis Gaitsgory (Harvard). Giorgia is now a postdoc at ETH Zürich.

Höskuldur Halldorsson, *"Self-Similar Solutions to the Mean Curvature Flow in Euclidean and Minkowski Space,"* under Toby Colding. Höskuldur is now at Jane Street Financial.

Rune Haugseng, *"Weakly Enriched Higher Categories,"* under Haynes Miller. Rune is now a postdoc at the Max Planck Institute in Bonn.

Geoffroy Horel, *"Operads, Modules and Higher Hochschild Cohomology,"* under Haynes Miller. Geoffroy is now a postdoc at the University of Münster.

Tirasan Khandhawit, *"Twisted Manolescu-Floer Spectra for Seiberg-Witten Monopoles,"* under Tom Mrowka. Tirasan is now a postdoc at the Kavli Institute at the University of Tokyo.

Alexander Levin, *"Graphs, Matrices and Populations: Linear Algebraic Techniques in Theoretical Computer Science and Population Genetics,"* under Bonnie Berger. Alexander is now a data analyst at Yelp.

Nan Li, *"Combinatorial Aspects of Polytope Slices,"* under Richard Stanley. Nan is now a research scientist at Raytheon.

Xiangdong Liang, *"Modeling of Fluids and Waves with Analytics and Numerics,"* under Steve Johnson. Xiangdong is now a research scientist at the Aramco Research Center in Cambridge.

Po-Ru Loh, *"Algorithms for Genomics and Genetics: Compression-Accelerated Search and Admixture Analysis,"* under Bonnie Berger. Po-Ru is now a postdoc at the Harvard School of Public Health.

Eric Marberg, *"Coxeter Systems, Multiplicity Free Representations, and Twisted Kazhdan-Lusztig Theory,"* under David Vogan. Eric is now a postdoc at Stanford.

Gregory Minton, *"Computer-Assisted Proofs in Geometry and Physics,"* under Abhinav Kumar. Gregory is now a postdoc at Microsoft Research.

Jan Moláček, *"Bouncing and Walking Droplets: Towards a Hydrodynamic Pilot-Wave Theory,"* under John Bush. Jan is now a postdoc at the Max Planck Institute in Göttingen.

Luis Pereira, *"Goodwillie Calculus and Algebras over a Spectral Operad,"* under Mark Behrens. Luis is now a postdoc at the University of Virginia.

Bhairav Singh, *"Some Results Related to the Quantum Geometric Langlands Program,"* under Roman Bezrukavnikov. Bhairav is an instructor at East Los Angeles College.

Uhi Rinn Suh, *"Structure of Classical W-Algebras,"* under Victor Kac. Uhi Rinn is now a postdoc at the Seoul National University.

John Ullman, *"On the Regular Slice Spectral Sequence,"* under Mark Behrens. John is now a postdoc at Stanford.

Taedong Yun, *"Diagrams of Affine Permutations and their Labellings,"* under Richard Stanley. Taedong is now at Oracle.

Yan Zhang, *"The Combinatorics of Adinkras,"* under Richard Stanley. Yan is now a postdoc at U.C. Berkeley.

RSI, PRIMES, SPUR: High School and Undergraduate Research

High school students mentored by our graduate students earned multiple awards for their research projects. RSI students **Katherine Cordwell** and **Simanta Gautam** won first and second place at Intel ISEF 2013; **Joshua Brakensiek** received the Davidson Fellowship; and **Surya Bhupatiraju**, **Kevin Garbe**, and **Katherine Cordwell** won finalist awards at Intel STS 2013.

PRIMES-Math students **Kavish Gandhi** and **Noah Golowich** won 2nd place at Siemens 2013; **Rohil Prasad** and **Jonathan Tidor** received 5th place at Siemens 2012; **Sahana Vasudevan** won 10th place at Intel STS 2013; and **William Kuszmaul** received 3rd place at Intel STS 2014, the 2014 Glenn T. Seaborg award, and a Davidson Fellowship. Three research papers based on PRIMES projects were published in high-level mathematics journals. Over 50% of PRIMES alumni attended MIT.

In 2013 PRIMES-USA, our new section for out-of-state students, five juniors completed research projects, mentored by our graduate students via weekly telecon sessions, with two to three visits to MIT per year. PRIMES-USA students **Jeffrey Cai**, regional finalist at Siemens 2013, and **Ritesh Ragavender**, Bronze Award winner in the Yau HS Math Competition, demonstrated the success of distance mentoring. In 2014 PRIMES-USA expanded to thirteen students.

PRIMES Circle, another new initiative in 2013, offered a math enrichment curriculum to sophomores and juniors from local urban public high schools. **Chelsea Walton** served as Program Coordinator. Working in pairs under MIT and Harvard undergraduates, Circle students studied geometry, probability, combinatorics, and knot theory, and made excellent presentations at a mini-conference at MIT.

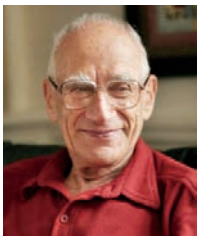
Medgine Joseph
PRIMES Circle student

Pavel Etingof continues as Chief Research Advisor, **Slava Gerovitch** as Director, and **Tanya Khovanova** as Head Mentor of both the RSI and PRIMES programs.

The Hartley Rogers Jr. Prize for the best SPUR paper was shared between undergraduate **Fan Zheng** and his mentor, graduate student **Chenjie Fan**, and undergraduates **Zipei Nie** and **Anthony Wang** and their mentor, graduate student **Ben Yang**.

In Remembrance: Chia-Chiao Lin and Daniel Kan

The Department lost two of its beloved emeritus faculty in 2013: Institute Professor Chia-Chiao Lin, at the age of 96, and Daniel Kan, who was 86. Both had served on the faculty for over 35 years.



C.C. Lin was born in Beijing in 1916. He received degrees from Tsinghua University and the University of Toronto before earning a PhD in aeronautics from Caltech in 1944. He joined the MIT faculty in 1947.

C.C. was instrumental in the development of applied mathematics at MIT and the U.S., serving as our first faculty chair of the applied math committee, 1961–66, and as President of SIAM, 1973–74. He contributed seminal work to hydrodynamics stability and turbulence, and to astrophysics. He was appointed Institute Professor in 1966 and received the Killian Faculty Award in 1981. Following retirement from MIT in 1987, he returned to China in 2002 as Distinguished Professor and Honorary Director of the newly established Zhou Pei-Yuan Center for Applied Mathematics at Tsinghua University. He was a member of the National Academy of Sciences, academician of Academia Sinica, foreign member of the Chinese Academy, and fellow of the American Academy of Arts and Sciences, among numerous distinctions.

Daniel Kan played a key role in establishing the foundations for the combinatorial reinterpretation of topology, or homotopy theory, that led to the integration of topological methods into many mathematical fields. His insights have proven so fundamental and natural that they have now become part of the universal language of mathematics. He published two highly influential books with former students and supervised fifteen PhDs, all at MIT. He reached many more through his unique seminar in algebraic topology, known to all as the Kan Seminar.

Born in Amsterdam in 1927, Dan received the BSc and MS from the University of Amsterdam and the PhD from Hebrew University in 1955. He joined our mathematics faculty in 1959 and retired in 1993. In 1982 he was elected member of the Royal Netherlands Academy of Arts and Sciences.

Dan continued working till the end of his life meeting with colleagues and contributing to abstract homotopy theory.

photo credit: Jonah Kan

Is Singer
90th Birthday Conference
May 2, 2014

Richard Stanley
70th Birthday Conference
June 23–27, 2014

UPCOMING

David Vogan
60th Birthday Conference
May 19–23, 2014

Michael Sipser
60th Birthday Conference
October 26, 2014

MIT DEPARTMENT OF MATHEMATICS

Department of Mathematics

Massachusetts Institute of Technology
Building E18, Room 369
77 Massachusetts Ave.
Cambridge, MA 02139-4307

Telephone: 617-253-4381
Fax: 617-253-4358
Web: math.mit.edu

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