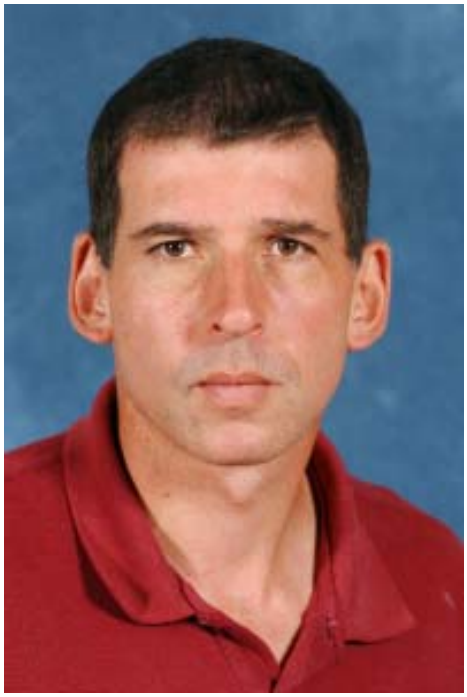
ContinuUM

Newsletter of the Department of Mathematics at the University of Michigan 2005

Anthony Bloch Named Chair

In July 2005, Trevor Wooley stepped down as Department Chair after a three-year term. Anthony Bloch assumed the Chair's role. Tony expresses his hopes for the department here, while Trevor's reflections on the past year are on page 2.

I feel honored to be succeeding **Trevor Wooley** as Chair of the Department of Mathematics. I look forward to working with my colleagues, with the staff in the Department, with **Dean Terry McDonald,** and with the University community at large.



Trevor Wooley was a strong leader who really cared about the students and faculty. He always acted in their best interests and in the best interests of the Department. Under his guidance the Department has gone from strength to strength. I would like to thank Trevor for all he accomplished and for the help he is currently providing to me. He will continue to be an extremely valued member of the faculty, and I wish him the very best for the future.

The Mathematics Department here at Michigan, one of the largest in the country, has a well-earned reputation for excellence. The quality and commitment of the faculty combine to create an extraordinarily strong Department which was recently called one of the best in the country by *The New York Times*. Our faculty are involved in active research projects supported by highly competitive external funding. They excel not only in research, but also as teachers and mentors. Our undergraduate, graduate, and post doctoral programs are exemplary. We are justly proud of the wide array of course offerings ranging from basic required courses for non-math majors to highly advanced specialized graduate courses. Also, visiting professors and exciting seminars are part of an enjoyable and stimulating academic environment. In addition, there is a pervasive spirit of cooperation and collegiality. This creates a pleasant atmosphere in the Department which aids and enhances research, teaching, and study.

There will be serious issues to contend with during my tenure as Chair. Continuing budget challenges form the main cloud on the horizon. I hope the financial problems will ease, but maintaining excellence in the face of constraints will be the greatest challenge. Our high-quality faculty members are in demand and are continually sought after by our peer departments around the country. I am sure I can speak for the College when I say that we will be doing everything in our power to retain our coveted faculty and to recruit equally accomplished academics to maintain our high standard. We will try to be competitive by creating economic conditions which complement the many other advantages of serving our academic community in such a congenial environment.

The strength of our Math Department lies not only in the caliber of the faculty, but also in our healthy undergraduate, graduate, and post doctoral programs. These outstanding programs allow our faculty much valued personal contact with students and with emerging young mathematicians who contribute to the liveliness of our research atmosphere. Our faculty members are dedicated teachers, and we are fortunate that our high-quality graduate students who are offered positions as instructors use their strong teaching skills in the service of our programs. We are involved in various new initiatives in teaching, and we are pursuing joint programs in finance, information sciences and economics.

Our graduate program has continued to thrive. We have been fortunate to attract some of the very best students, who chose the University of Michigan because of our reputation, because of the great faculty, and because of the opportunities offered on campus. The challenge will be to keep the level of funding in this area high enough to allow us to be competitive so that we can continue to act as a magnet for the most talented students.

It is my hope that the Mathematics Department will not only continue to be recognized for excellence, but that it will continue to grow and to improve. Already it is renowned for both pure and applied mathematics. It is also on course to develop in the applied area through the Applied and Interdisciplinary Mathematics (AIM) program. I hope that the pure and applied sides of the Department continue to work together in harmony and to inspire each other to even greater heights.

Our links with other departments on campus continue to strengthen. Mathematics plays an ever-increasing role in many other fields including the traditionally mathematics-based scientific fields such as physics, engineering, and computer science, as well as subjects such as biology, economics, and the social sciences. Our academic and research

Continued on page 2

View from the Chair's Office

Trevor Wooley

It is a great pleasure to be writing this column, in part as a means of welcoming our new Department Chair, **Tony Bloch**, but also because this marks my departure from the Kafkaesque realm of administration to the saner pastures of teaching and research.

One of the sad features of modern (career) administrators is the focus on establishing a legacy rather than on prudent decision-making given the circumstances at hand and those anticipated ahead. Permit me then to summarize my achievements as Chair as simply managing what, for the Department, amounted to the best of times and the worst of times. We have experienced three successive years of painful budget cuts. At the same time we have recruited 11 outstanding faculty members, we have a thriving postdoctoral program with over 50 members (no fewer than 10 of whom next year will be supported by NSF Postdoctoral Fellowships), a graduate program strong enough to compete with the best in the nation, and an undergraduate program with over 280 Mathematics majors, rebounding to a size unseen by any but our more senior colleagues.

Professional mathematicians—as we all are who employ our mathematical training in some aspect of our daily work—cannot fail to be struck by the transformation in recent decades of the fabric of our economic, scientific and social environment. The digitization of the modern world has delivered to mathematicians the opportunity and duty to contribute ideas that nowadays have an essentially immediate impact on our way of life. It has been said that the key science for the 21st Century is mathematics. At the same time, it is self-evident in the modern age that no university can consider itself first-class in the absence of premier departments in the natural sciences. It is to be hoped, therefore, that University leaders will grasp this reality and invest in mathematics so as to make the most of these opportunities and educational responsibilities.

In wishing Tony Bloch well on taking over as Chair, I offer him my hopes for good fortune in dealing with the formidable challenges to come. Despite our current strengths, our budgetary position has been worn thin to the point that our ability to retain excellent faculty, and to continue to offer a stimulating and flexible environment for undergraduate and graduate students, is acutely stressed. Tony will need all of our help to guide the Department through these difficult times. With a miracle or two, however, we may yet see the Department achieve the potential that it so richly deserves, and assume a stature of which our alums may be proud.

Professor Trevor Wooley

Faculty and graduate students enjoy afternoon tea in the Department's Common Room.

Bloch, continued from page 1

interaction with these diverse departments is stimulating, should have far-reaching results in research, and will be beneficial to all concerned.

As Chair, I will do my utmost to preserve the quality of the Department and the exciting educational opportunities provided to students and faculty alike. I will be aided by many of my esteemed colleagues, and I am grateful to all who are serving in administrative positions.

There will be four Associate Chairs. **Joe Conlon** has agreed to serve for another year as Associate Chair for Regular Faculty. **Juha Heinonen** will continue as Associate Chair for Graduate Studies. **Curtis Huntington** will serve as Associate Chair for Education and head our actuarial program. **Dick Canary** is coming on board to fill the newly created position of Associate Chair for Term Faculty. **Mel Hochster** will serve as Chair of the Personnel Committee, and **Peter Scott** and **Peter Smereka** will continue on as Doctoral Chair and AIM Director, respectively. **Ralf Spatzier** is to head our IBL (inquiry-based learning) initiative, and **Jeff Rauch** will write our strategic plan. Many other faculty members have agreed to serve on the various key committees including the Executive and Personnel committees. On behalf of our colleagues, I would like to thank them all for their service. I would also like to take this opportunity to thank our invaluable administrative staff, led most ably by **Doreen Fussman**, who work behind the scenes to keep all aspects of the Department running smoothly.

I first came to the Mathematics Department twenty-one years ago as a T. H. Hildebrandt Assistant Professor and, with the exception of a six-year period, I have been lucky enough to be here ever since. In my opinion we have a unique and inspiring Department which offers a remarkably stimulating environment to faculty and students alike. I will do my very best to maintain the first-rate quality as well as the spirit of this extraordinary Department.

Professor & Chair Anthony Bloch

See more news of the University of Michigan Department of Mathematics on our website www.math.lsa.umich.edu

Speaker Series Highlights Women Mathematicians

For the past two years the Department has hosted a special speaker series celebrating the ongoing research of women mathematicians, focusing on women in applied mathematics. The series is sponsored by the National Science Foundation's ADVANCE program at the University of Michigan, through the Elizabeth C. Crosby Award. **Professor Smadar Karni** (pictured below) received the award in 2003 and has organized and hosted the speaker series in the Department. The award is named for Elizabeth Caroline Crosby (1888-1983), who had a long and distinguished career at the University of Michigan and became the first female full professor at the Medical School.

The aim of the series is to promote the visibility of women applied mathematicians, and to highlight the breadth and excellence of their scientific contributions. Thus far the speaker series has hosted 10 speakers and has featured truly inspirational visits by leaders in the field. As part of the visit, the speakers deliver a talk, meet with various members of the department, and have lunch in an informal setting with women graduate students, postdocs and faculty.

Karni has received very positive feedback on the series. "I think we have met some spectacular women mathematicians, which I find inspiring. The luncheons give us a chance to hear words of wisdom about career related issues. I think that the series has helped to develop a sense of community for the women in the Department, and through that, I hope that it has made the Department a more welcoming place for women."

A special event in the series this year was a mini-symposium that featured three recent University of Michigan Alumnae. The special guests were **Monika Nitsche** (Ph.D. 1992), pictured above, currently with the University of New Mexico; **Tracy Payne** (Ph.D. 1995), pictured below, currently with Idaho State University; and **Suzanne Weekes** (Ph.D. 1995), pictured at right, currently with Worcester Polytechnic Institute. They each presented a seminar talk, and participated in an informal dinner and panel discussion that focused on mentoring. Through the panel discussion the recent grads were able to address life after Michigan, and discuss some challenges they faced when pursuing their academic careers.

The evening concluded with a presentation by the CRLT Players. Part of the Center for Research on Learning and Teaching, the CRLT Players use interactive sketches to explore sensitive topics such as gender and other biases that might exist in the academic work environment. The CRLT workshop focused on junior faculty mentoring. It allowed for feedback and audience participation to address gender biases and concerns in mentoring.

"I think these workshops are highly effective in exploring issues such as gender biases in the academic work environment. They put large mirrors in front of our faces and serve as real eye-openers," says Karni. "I am looking forward to continuing this speaker series through next year, and possibly beyond, until the funding runs out."

Math Problem

Show that $n! + 2004$ is not a perfect square for any postive integer n.

(Answer elsewhere in the ContinuUM)

Faculty Kudos

Jinho Baik has been awarded an Alfred P. Sloan Fellowship, an extraordinarily competitive award involving nominations of the very best young scientists from around the country.

Alexander Barvinok, **Mario Bonk, Bruce Kleiner** and **Chris Skinner** have been chosen as speakers for the 2006 International Congress of Mathematicians.

Brian Conrad was promoted from Associate Professor to Professor.

William Fulton was named the 2005 Henry Russel Lecturer, one of the most prestigious awards given to UM faculty. Recipients are chosen for their outstanding achievements in research and teaching. In March he presented the Henry Russel Lecture entitled "Do we understand geometry of the 19th century." The talk concerned the many complex math problems claimed to be solved in the 19th century, but whose proofs were lacking.

Trachette Jackson has received a James S. McDonnell Foundation 21st Century Research Award for her project "Combining continuous and discrete approaches to study sustained angiogenesis associated with vascular tumor growth." The 21st Century Research Awards are designed to support research projects with a high probability of generating new knowledge and insights. The program supports scholarship and research directed toward the development of theories and models that can be applied to the study of complex, nonlinear systems. Jackson's project will combine mathematical modeling, numerical simulation and in vivo tumor vascularization experiment to gain deeper understanding of angiogenesis, tumor growth and vascular structure. More information is available at http://www.jsmf.org/grants/cs/essays/2005/jackson.htm.

Lizhen Ji was promoted from Associate Professor to Professor.

Mattias Jonsson was promoted from Assistant Professor to Associate Professor with tenure.

David Kausch has successfully completed his Fellowship Admissions Course and has received the designation of Fellow, Society of Actuaries.

Gopal Prasad has been appointed an Associate Editor of the Annals of Mathematics for a period of three years.

Joel Smoller has been awarded a Humboldt Research Award for Senior U.S. Scientists. This award is given to researchers with internationally recognized academic qualifications and honors the academic achievements of the award winner's lifetime. Award winners are invited to carry out research projects of their own choice in Germany in cooperation with colleagues.

Kannan Soundararajan was promoted from Associate Professor to Professor.

These faculty received funding for summer 2005 through Rackham Faculty Grants and/or Fellowships for Research:

Alexey Cheskidov
Anne-Katrin Herbig
Alexei Kolesnikov
Muthukrishnan Krishnamurthy
Melvin Leok
Monica VanDieren
Dale Winter
Stephanie Yang

Another large crowd enjoys the interaction available at afternoon tea in the Department's Common Room.

New Junior Faculty

Assistant Professors who joined the department during the past academic year are listed here with their doctoral institutions and areas of specialty.

Jorge Balbas - UCLA, Numerical Analysis (VIGRE)

Erhan Bayraktar - Princeton, Financial Mathematics (Hildebrandt)

Andrew Booker - Princeton, Number Theory (NSF Fellow)

Victoria Booth - Northwestern University, Mathematical Biology

Charles Cadman - Columbia University, Algebraic Geometry (VIGRE)

Alexey Cheskidov - Indiana University, Partial Differential Equations

Jeffery DiFranco - University of North Carolina, Partial Differential Equations

Argus Dunca - University of Pittsburgh, Numerical Analysis

Kirsten Eisentraeger - University of California Berkeley, Number Theory (VIGRE)

Anne-Katrin Herbig - Ohio State, Several Complex Variables

Zheng Huang - Rice University, Differential Geometry

Christopher Hughes - University of Bristol, Number Theory

Alexei Kolesnikov - Carnegie Mellon, Logic and Foundations

Richard Kollar - University of Maryland, Partial Differential Equations

Melvin Leok - California Institute of Technology, Numerical Analysis (Hildebrandt)

Daniel Meyer - University of Washington, Complex Analysis

Nathan Ng - University of British Columbia, Number Theory

Nicholas Ramsey - Harvard, Number Theory

Loren Spice - University of Chicago, Fourier Analysis

Joel Tropp - University of Texas, Approximation Theory

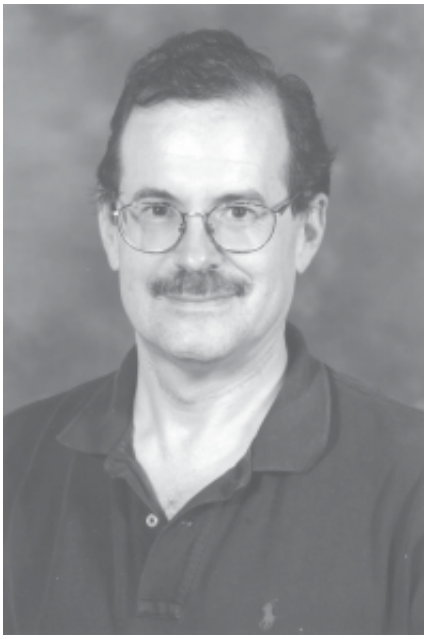
Stephanie Yang - Harvard, Algebraic Geometry

New Faculty Members

Anna Gilbert joined the Department as an Assistant Professor. She received her

Ph.D. in Mathematics from Princeton University in 1997. Her dissertation studied applications of multiresolution analysis and wavelets to numerical analysis. Gilbert comes to Michigan from AT&T Research Laboratories, where she was a member of the senior technical staff. Her research interests cover analysis, probability, computational harmonic analysis, networking and algorithms, with the emphasis on randomized algorithms and the study of network traffic.

Jeffrey Lagarias joined the Department as a Professor. He received his Ph.D. in



Mathematics from Massachusetts Institute of Technology in 1974. In 1975 he joined AT&T Bell Laboratories as a member of the technical staff. Since 1995, he has been a Technology Consultant at AT&T Research Laboratories. While his recent work has been in theoretical computer science, his original training was in analytic algebraic number theory. He has since worked in many areas, both pure and applied, and considers himself a mathematical generalist.

Mircea Mustata joined the Department as an Associate Professor. He received his Ph.D. in Mathematics from the University of California, Berkeley in 2001. His disserta-

tion concerned singularities and jet schemes. He has since held visiting positions at the Universite de Nice in France, the Isaac Newton Institute in Cambridge, UK, and Harvard University. Most recently he completed three years as a Clay Institute Fellow. Mustata is a specialist in algebraic geometry and commutative algebra. More precisely, he is interested in singularities (connections between jet schemes of algebraic varieties and properties of the singularities, via motivic integration), free resolutions (especially for general sets of points on projective curves and connections with properties of vector bundles on these curves) and toric varieties.

Martin Strauss joined the Department as an Assistant Professor. He received his Ph.D. in Mathematics from Rutgers University in 1995. His dissertation studied feasible complexity classes. From 1996 to 2004 he was employed at the AT&T Laboratories, most recently as a principal technical

staff member. His research lies in the area of theoretical and applied computer science, specifically fundamental algorithms, computer security and cryptography, and complexity theory. He has a joint appointment with the Department of Electrical Engineering and Computer Science.

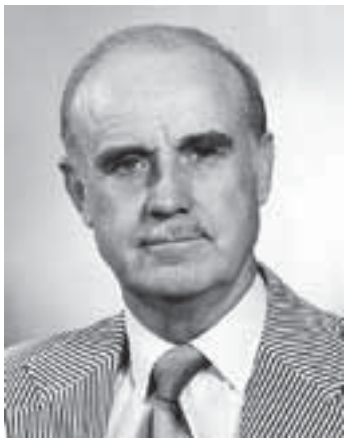
Dale Winter joined the Department as an Assistant Professor. He received his Ph.D. in Mathematics from the University

of Michigan in 1998. His dissertation involved a solution of axially symmetric, SU(2) Einstein Yang-Mills equations. He held positions at Duke, Harvard and Bowling Green State University before joining the Department. Winter will be active in the Department in mathematics education, and will participate in managing the Introductory Program in Mathematics.

Obituaries

George Hay and Frank Harary

George E. Hay, Professor Emeritus of Mathematics, died January 12, 2005. He was born in 1914 in Durham, Ontario. He received three degrees in mathematics from the University of Toronto, culminating with his doctorate in 1939.



In 1940, Hay joined the Department of Mathematics at UM as an instructor. He steadily rose through the ranks, becoming a professor in 1956. He worked for the U. S. Navy at Brown University as an associate in the Office of Scientific Research and Development from 1944-45.

Hay specialized in applied mathematics, specifically the theory of elasticity and mechanics. He published a book in 1954 entitled "*Vector and Tensor Analysis*." During his tenure, Hay directed the dissertations of four graduate students. He was Chair of the Department of Mathematics from 1957-67, and Associate Dean of the Horace H. Rackham School of Graduate Studies from 1967-76. He retired from the active faculty in 1984.

As Chair, Hay is remembered as having quiet and capable leadership. He helped guide the Department through a difficult 10 years when financial pressures and a strong demand for highly trained mathematicians seriously threatened mathematics at the University.

He was known as a straightforward, honest and kind leader. "Many of the senior or recently retired faculty in the Mathematics Department today were recruited and hired by George Hay," says Don Lewis, Professor Emeritus of Mathematics and former Department Chair. "George was very effective in creating a collegial environment within the Department, particularly through his own personal consultations with faculty and via social events he and his wife hosted."

"George's kind personality and demeanor was very influential in my decision to come to Michigan from MIT," saiys Paul Federbush, Professor Emeritus of Mathematics.

Colleagues outside the Department of Mathematics also fondly remember Hay.

"As Chair of the Psychology Department at the time of George's Chairmanship of Math, I had many opportunities to benefit from his cooperation and good sense," says Bill McKeachie, Professor Emeritus of Psychology. "We worked together on several occasions to develop policies that would help us strengthen the University and our Departments."

Hay is survived by his sisters, Ellen Cannons and Frances Tracy Hay Sawyer, and children Ted, John, and Kathryn. On December 25, 2004, he was preceded in death by his beloved wife of 61 years, Lillian.

Frank Harary, Professor Emeritus of Mathematics, died January 4, 2005. Harary was born in New York City on March 11, 1921, the oldest child of immigrant parents. He received his bachelor's and master's degrees from Brooklyn College, and his doctorate from the University of California, Berkeley.

Harary held a faculty position in the UM Department of Mathematics from 1948-86. He also was a member of the Institute for Social Research (ISR) from 1950-82. He was a Distinguished Professor (and later Distinguished Professor Emeritus) in the Computer Science Department at New Mexico State University in Las Cruces from 1987 until the time he passed away.

Harary was widely recognized as the "father" of modern graph theory, a discipline of Mathematics he helped found, popularize and revitalize. He wrote numerous books and articles, including the 1969 book, "*Graph Theory*," which has become a modern classic that helped define, develop, direct and shape the field of modern graph theory. In 1955, Harary taught UM's first graph theory and combinatorial theory courses.

He was a founder of the Journals of Combinatorial Theory and of Graph Theory and served on the editorial boards of many more.

During his long and productive career, Harary authored/co-authored more than 700 scholarly papers—in areas as diverse as anthropology, biology, chemistry, computer science, geography, linguistics, music, physics, political science, psychology, social science and mathematics— which brought forth the usefulness of graph theory in scientific thought.

Harary guided 16 doctoral students, many of whom have gone on to be distinguished scholars themselves. As a member of the Research Center for Group Dynamics at ISR, he studied the feasibility of applying mathematical models to the study of structures in groups of people.

Harary was awarded six honorary doctorate degrees, and has received numerous other awards and recognition for his work. He had a deep and abiding love for Mathematics and traveled the globe preaching the gospel of graph theory. He delivered speeches at more than 1,000 conferences and was invited to lecture in more than 87 countries. He particularly was proud of having given lectures in cities with names beginning with every letter of the alphabet. He finally got his 'X' with a lecture in the excavated Roman amphitheater in Xanten, Germany.

As a result of his contributions to the field, colleagues, peers and students fondly referred to Harary as Mr. Graph Theory. He is survived by four children: Mimi, Natalie, Tom and Joel.

Research Experiences for Undergraduates Program

The Research Experiences for Undergraduates program (REU) is designed to provide outstanding students with the opportunity to pursue research under the tutelage of experienced faculty members. Typically students work with a faculty member on a project of mutual interest for 6-8 weeks during the summer. Students receive a stipend for their research work, with funding usually provided by a faculty member's National Science Foundation grant. This summer 18 students worked with faculty on a variety of projects in pure and applied mathematics.

The projects range from math modeling in the sciences and engineering, running computer simulations or computer experiments to solving abstract and conceptual problems, depending on the background and the interests of student and faculty member. Each student is required to write a report about the project, which is due at the project's completion. .

Students have the chance to expand their knowledge, learn new material, and combine professional development with close contact between faculty and student peers. REU students meet twice a week for lunch in the summer to discuss their various projects, hear faculty lectures, get general assistance, and socialize.

Teow Lim Goh is an undergraduate working with **Professor Bob Griess**. Their research deals with lattices and group theory. She finds that "it is interesting to apply the theories that I learned in algebra class to different mathematical problems. I've also come to a greater understanding of the power of the algebraic structures; there are a number of ways to view lattices." Teow Lim's REU was supported by the Mathematics Alumni/Alumnae Scholarship fund. She participated in the REU program because "I wanted to be involved in the process of exploring and creating Mathematics. I was drawn to the subject by the ingenuity that generated so many beautiful mathematical ideas. Taking classes presented only one side of Mathematics, where the ideas are already developed, and I wanted to see the other side.

We have profiled one student's REU research in what follows. Additional information is available on our website at www.math.lsa.umich.edu/undergrad/reu.shtml.

Error-correcting codes are used in a wide variety of applications from compact discs to cell phones. In these applications, there is a digital signal which is encoded as a sequence of 0s and 1s, for example. It is important to choose the encoding so that the encoded message is protected against errors in the transmission of the message (in the case of cell phones) or in the reading of the message from a compact disc. There are a number of different types of errors, including changing a 0 to 1 or vice versa at random spots in the encoded message.

A major problem in coding theory is to design error-correcting codes that have good properties for communication. Among other properties, the codes should be resilient to a number of errors and easy to decode and encode. **Joel Tropp** (postdoc in the Mathematics Department) and **Assistant Professor Anna Gilbert** proposed a method for constructing new error-correcting codes from existing ones. The proposal is built upon algorithms they have designed for compressing or representing data sparsely. Undergraduate **Daniel Sikora** took that proposal and investigated the new codes constructed from several examples of existing codes. He proved a number of properties of the new codes and wrote MATLAB functions to compute the new codes given the existing codes as input.

Daniel's project focused on using m-dimensional sphere packings to create "extended" codebooks from a given base codebook. He studied how these extended codebooks behave, given some specific base codebooks and lattice packings, and also analyzed properties of these codebooks when constructed from arbitrary base codebooks and packings. A primary accomplishment was using MATLAB to write three programs: one to construct lattice packings, one to input a packing and base code and output the extended code, and one to measure the above-mentioned properties of a given code.

"Daniel's work allows us to investigate our proposal in more detail than we had done previously," says Gilbert. "It looks like a promising avenue for further investigation and connects algorithms for data processing to coding theory. This connection is especially interesting as a number of these algorithms are highly efficient; that is, we can decode a message over a new code by making a few samples of the message and in time which is proportional to the number of samples (and not the much longer length of the message)."

Daniel is grateful for having the research experience. "Personally, it has helped me with my Mathematics career in many ways. This was my first actual research experience as a Mathematics undergraduate, and it helped to give me a feel of what mathematical research is like (which was very reassuring to me since I had no idea what a career as a mathematician would be like). Also, before my REU experience, I had no experience with any mathematics computer programs (MATLAB, Mathematica, Maple, etc.), and this helped me to get a feel for computing and writing programs with MATLAB."

The experience has solidified Daniel's intent to go to graduate school to obtain a Ph.D. "Right now I am very interested in Coding Theory and Information Theory, and would like to focus on those fields," he says. "Currently, I'm still debating whether I would like to work as a professor at a university, or work as a National Security Agency mathematician (or work as a mathematician in private industry; the possibilities are endless). In general, I loved my REU experience. It was great to work one-on-one with a professor doing actual research; I have had 'research jobs' in the past at another university in which I really didn't do any research, so this was very exciting for me."

The experience was rewarding to Gilbert as well. "I had worked with a number of summer students (at AT&T Research Labs) before coming to the University of Michigan and it was always something I enjoyed. I enjoy watching the 'research process' in the students, how they move from solving homework problems to discovering and proving theorems on their own. Daniel was no exception! He started out computing a few examples by hand and ended up with a theorem about this code construction process and a computer program to generate the new codes."

Recent Ph.D. Recipients

Tobias Berger completed his dissertation "*An Einstein Ideal for Imaginary Quadratic Fields*" under the direction of Chris Skinner. He will spend a year at the Max Planck Institute in Germany, then move to Queen's College at Cambridge as a Research Fellow.

Erik Bird completed his dissertation "*A Proof of Existence of Particle-Like Solutions to Einstein-Dirac Equations*" under the direction of Joel Smoller. He is currently teaching at Michigan State University.

Grigoriy Blekherman completed his dissertation "*Convex Geometry of Orbits*" under the direction of Alexander Barvinok. He has a two-year position at Microsoft Theory Corporation.

Jim Brown completed his dissertation "*Saito-Kurokawa Lifts, L-Values for* GL2*, and Congruences Between Siegel Modular Forms*" under the direction of Chris Skinner. He has accepted a 3-year postdoctoral position at Ohio State University.

Calin Chindris completed his dissertation "*The Cone of Effective Weights for Quivers and Horn Type Problems*" under the direction of Harm Derksen. He has accepted a 3-year Assistant Professorship at the University of Minnesota.

Mihaela Stanca Cuipe completed her dissertation "*Development and Applications of Mathematical Tools in Models of Infectious Diseases and Biological Phenomenon*" under the direction of Patrick Nelson. She will be a postdoctoral fellow at Los Alamos National Lab in New Mexico.

Geoffrey Dietz completed his dissertation "*Closure Operations in Positive Characteristic and Big Cohen-Macaulay Algebras*" under the direction of Mel Hochster. He will be a postdoctoral fellow at the University of Oklahoma.

Thomas Fiore completed his dissertation "*Pseudo Limits, Bi-Adjoints, and Pseudo Algebras: Categorical Foundations of Conformal Field Theory*" under the direction of Igor Kriz. He will be a Dickson Instructor at the University of Chicago.

Tong Liu completed his dissertation "*Potentially Good Reduction of Barsotti-Tate Groups*" under the direction of Brian Conrad. Tong will be an instructor at the University of Pennsylvania.

Constantin Leonardo Mihalcea completed his dissertation "*Equivariant Quantum Cohomology of Homogeneous Spaces*" under the direction of William Fulton. He will be a postdoc at Florida State University.

Quang Minh Nguyen completed his dissertation "*Dualities and Classical Geometry of the Moduli Space of Vector Bundles of Rank* 3 *on a Curve of Genus* 2" under the direction of Igor Dolgachev. He will teach at a private high school in San Francisco.

Han Peters completed his dissertation "*Non-Autonomous Complex Dynamical Systems*" under the direction of John Erik Fornaess. He will be a postdoc at the University of Wisconsin.

Zachariah Teitler completed his dissertation "*Multiplier Ideals of Line Arrangements*" under the direction of Robert Lazarsfeld. He will be a postdoc at Southeastern Louisana State University.

Yan-Chun James Tung completed his dissertation "*Fock Spaces*" under the direction of Peter Duren. He is currently teaching at Michigan State University.

Alexandre Wolfe completed his dissertation "*Asymptotic Invariants of Graded Systems of Ideals and Linear Systems on Projective Bundles*" under the direction of Robert Lazarsfeld.

Graduate Recruiting

The Graduate office had another busy and successful year. The office received 479 applications for admittance to the graduate program for the 2005-06 academic year. The Department offered 61 students admission to the Ph.D. program, and 24 students have accepted. The new students include 10 U.S. citizens and 14 non-U.S. citizens; six of the students are women, and six of them are part of the Applied and Interdisciplinary Mathematics program.

In March the Department hosted a Recruiting Weekend, bringing 20 potential graduate students to campus. They were able to learn about the Department and the University, and met with faculty and current graduate students to find out about the opportunities here. The students who attended the Recruiting Weekend were quite impressed with the program, faculty, and facilities.

The new U.S. students come from Berkeley, Boston U., Caltech, Chicago, Columbia, Iowa State, Michigan State, UCLA (2), and University of Richmond. The international students are from Brazil, Canada (2), China, Colombia (2), France, Japan, Korea, Mexico, Moldova, Peru, Poland, and South Africa.

Three of the incoming students will receive funding through the Rackham Science Award for students from underrepresented groups. Among those students accepted are holders of a Fulbright fellowship, Canadian NCIRC funding, Department of Defense fellowship, plus a fellowship from the Mexican government.

Professor Juha Heinonen
Associate Chair for Graduate Studies

Join us at the Michigan Reception at the joint AMS Meetings in San Antonio, Friday, January13, 2006

Visit our website for details www.math.lsa.umich.edu

Graduate Program Fellowships & Awards

VIGRE Fellows

David Anderson
Trevor Arnold
Grigoriy Blekherman
Bryden Cais
Michael Carr
Elizabeth Dewitt
Geoffrey Dietz
Erin Emerson
Jonathan Forde
Jasun Gong
Hester Graves
Sara Heusel
Geri Izbicki
Brian Jennings
Aaron Magid
Ray Maleh
Jessica Metcalf-Burton
Ivan Middleton
Yogesh More
Charles Mueller
Hannah Robbins
Craig Spencer
Andrew Stein
Zachariah Teitler
Kevin Tucker
Ellen Veomett
Marshall Williams
Eric Zupunski

A.V. Flint Memorial Scholarship

John Mackay

Allen Shields Fellow

Mihaela Ciupe

Arthur Herbert Copeland, Sr. Memorial Scholarship

Tigran Ananyan
Russell Golman
Wansu Kim

Cameron & John Courtney Scholarship

Shin-Yao Jow

Carroll V. Newsom Scholarship

Jonathan Bober
Felipe Ramirez

Darrow Mathematics Graduate Student Scholarship

Michael Lieberman

Edwin Wilkinson Miller Fellow

Kelli Carlson

Gabrielle & Sophie Rainich Fellow

Brian Jacobson

Lucent Fellow

Ellen Eischen

Luther Claborn Mathematics Fellow

Jose Gomez-Guerra

Mathematics Alumni/Alumnae Scholarship

Sarah Crown
Mark Iwen

Mathematics Department Graduate Fellows

Leo Goldmakher
Afsaneh Mehran (Fall)

National Physical Science Consortium Fellow

Marie Snipes

National Science Foundation Fellows

Margaret Briscoe
Dennis Clark
David Constantine
Samuel Payne

Rackham Merit Fellow

Adeboye Ilesanmi (Fall)

Rackham One-Term Dissertation Fellows

Yann Bernard (Winter)
Thomas Fiore (Winter)
Robert Lonigro (Winter)

Rackham Science Award

Jonathan Bober
Oscar Fernandez
Felipe Ramirez

Regents' Fellow

Johanna Mangahas

Samsung Fellows

Yungkwon Kim
Jungwoon Park

Wirt and Mary Cornwell Prize

Calin Chindris

Departmental Scholarship Spring 2005

Arvind Baskaran
Henry Boateng
Katarina Bodova
Elizabeth Chen
Christopher Hammond
Kyle Hofmann
Johnson Jia
Rizwanur Khan
Ryan Kinser
Cagatay Kutluhan
Nam-Hoon Lee
Joel Lepak
Afsaneh Mehran
Alvaro Pelayo
Matthew Smith
Alan Stapledon
Giancarlo Urzua
Diane Vavrichek
Lei Wang
Kevin Wildrick
Hao Xing
Bo Yang
Hsu-Wen Young
Oichi Yuen

2004 Sumner B. Myers Memorial Prize

Kevin Woods

In addition to receiving the Department's recognition for producing the best thesis, Kevin (pictured above) received a Distinguished Dissertation Award from the Rackham Graduate School for his thesis entitled "*Rational Generating Functions and Lattice Point Sets.*"

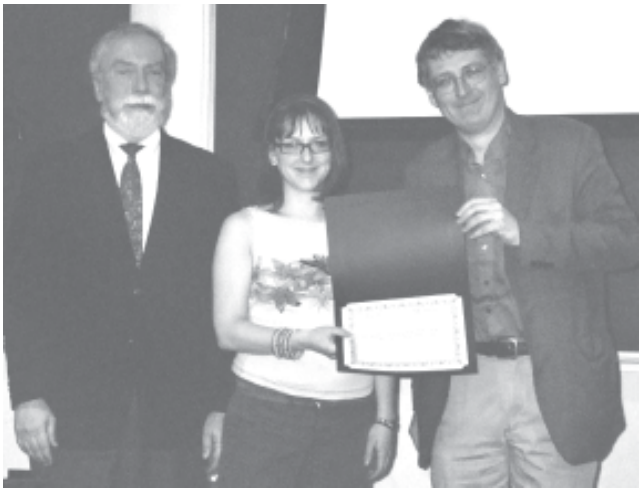
Congratulations to our 2004-05 Mathematics Undergraduate Degree Recipients

Young II Aan
Alexandra Achen
Michael Albertus
Amna Ali
Andres Arauz
David Aristoff
Chirag Badkar
Hye-Youn Baek
Joseph Baldwin
Carly Baynes
Adam Bendorf
Brian Berends
Jacob Bernstein
Shawn Blanchard
Ryan Bonneville
Jacob Bourjaily
Cayna Carnes
Haywai Chan
Carl Chang
Michael Chiu
Jaehyup Chun
Natalie Claes
Andew Colletta
Jeremy Cook
Sean Corcoran
Heather Costello
Aaron Cumbers
Amanda Elliott
Patrick Emaus
Andrew Foley
Brittany Galisdorfer
Paul Georgandellis
Jason Goldstick
Allison Haidostian
Kenneth Harris
Rorujorona Harris
Christopher Hayward
Sarah Hews
Kin-Yan Ho
Sirui Huang
Sarah Iveson
Rishabh Jhunjhunwala
Christopher Jones
Hyung Joon Kim
Alan Kleinke
Kara Knauf
Mallika Kommareddi
Crystal Kosebutzki
Alexander Krusz
Christopher Kurecka
Tristan LaChance
Wai Cheong Lai
Chiaying Lee
Lucas Lopatin
Joel Louwsma
Gregory Malivuk
Todd Marshall
James McCann
Michael McDermott
Nicolo Menez
Scott Mihalik
Kristin Newton
Hillary Nowak
Micah O'Kray
Megan Okuly
Alan Park
Rachel Parzynski
Sheree Patmon
Brian Polk
Adam Powell
Julia Power
Aishwerya Puri
Syed Raza
Joshua Reeves
Jennifer Remias
Brendon Rhoades
Amy Rice
Robert Ritter
Julie Sachs
Shalin Saini
Robert Schabinger
Shannon Schwarb
Ronit Slyper
Paul JungWan Son
Rahul Suri
Dowi Teng
Benjamin Ward
Samuel Wedes
Jeffrey Wing
Caleb Yip
Eric Zawacki
Angela Zerbonia
Anna Zlatkin

Numerous Mathematics undergraduate students received recognition at this year's Awards Ceremony.

Above, some of the recipients of the Outstanding Achievement in Mathematics Award: Professor Ralf Spatzier, Jennifer Remias, Hillary Nowak, Jacob Bourjaily, Ryan Bonneville, Professor Curtis Huntington.

At right, Professor Curtis Huntington, Cornwell Prize winner Sarah Iveson, and Professor Trevor Wooley.



2005 Undergraduate Award Recipients

The Department's team for the William Lowell Putnam Mathematics Competition placed 16th out of 411 teams in the event. This year's team was comprised of **Christopher Cunningham, Fernando Delgado Salas** and **Anna Maltseva.** The individual competition included 3733 students from across North America. **Fernando Delgado Salas** received an honorable mention, placing the highest of UM students at 38. **Christopher Cunningham** finished at 89.

The winner of the 22nd Annual University of Michigan Undergraduate Mathematics Competition was **Nathan Stiennon. Fernando Delgado Salas** came in second place and **Christopher Cunningham** was third.

The following students received **M.S. Keeler Scholarships** for the 2004-05 academic year:

Alexandra Achen
Jacob Bernstein
Haywai Chan
Jeremy Cook
Spencer Dowdall
Matthew Elsey
Ann Huang
Melinda Kleczynski
Nicole Klever
Anna Maltseva
James McCann
Jason Miller
Randy Pistor
Kathryn Roeder
Paul Siegel
Ronit Slyper
Nathan Stiennon
Cameron Thomas
Karl Weintraub
Allen Weiss
Amanda Wilke
Huanan Zhang

The following students received **Evelyn O. Bychinsky Awards,** which recognize underclass students who show exceptional promise in mathematics:

Michael Miller
Paul Siegel
Nathan Stiennon
Ethan Street

Professor Curtis Huntington with some of the Margaret S. Huntington Award recipients.

The following students received **Margaret S. Huntington Awards in Actuarial Outreach:**

Michael Drob
David C. Flood
Jennifer Macdonald
Nicholas Parsons
Ajay Patel
Lindsay Pushies
Sagar Shah
Michael Taddonio
Richard Turner
Paige Warmker
Bernard Yin Lung Yiu

Professor Dan Burns with Brian Baker

Brian Baker received the **Leon P. Zukowski Prize** for outstanding service in the Math Lab.

The **William LeVeque Award in Number Theory** was presented to **Fernando Delgado Salas**. The award recognizes a student who is at most a junior and excels in the study of number theory.

Outstanding Achievement in Mathematics Awards went to the following seniors:

David Aristoff
Ryan Bonneville
Jacob Bourjaily
James McCann
Hillary Nowak
Jennifer Remias
Robert Schabinger
Ronit Slyper

The **Otto Richter Memorial Prize in Actuarial Science** was presented to **Caleb Yip**.

The **CIGNA Award in Actuarial Science** was presented to **Keith Kwiatkowski**.

The **Irving Wolfson Award in Actuarial Science** was presented to **Jeffrey Zheng**.

The **Lois Zook Levy Memorial Award** was presented to **Brian Polk**. The award recognizes an outstanding Mathematics student who plans to pursue a career in K-12 Mathematics education.

Jacob Bernstein was named the **Outstanding Graduating Senior.**

Sarah Iveson received the **Wirt and Mary Cornwell Prize**, recognizing a student who has demonstrated the greatest intellectual curiosity, given the most promise of original study and creative work in math, and also shows an interest in music.

Financial & Actuarial Mathematics Update

Over the past few years, the number of students declaring Actuarial Mathematics for their major has been steadily increasing. For the 2005-06 academic year, for the first time in many years, we will be running two Sections of both the Theory of Interest class (Mathematics 424) and the Actuarial Mathematics class (Mathematics 520).

At the same time, there has been significant growth in the Financial Mathematics programs, including the related graduate program in Financial Engineering hosted by the Industrial & Operations Engineering Department in the School of Engineering.

Our next goal is to revitalize the Master's degree program in Actuarial Science. Next year, we will be hosting our first Fulbright Scholar in the program, who is coming from Lebanon.

To accommodate all of this growth, we are pleased to welcome two new faculty members this fall. **Masahiko Egami** and **Michael Ludkovski** will be joining the Financial Mathematics faculty, both coming to Michigan from Princeton University. They will be joining the other Financial Mathematics faculty members **Erhan Bayraktar** (also from Princeton) and **Mattias Jonsson**.

The Actuarial Mathematics faculty continues to be at full strength, with 4 full time members, all of them with professional actuarial credentials (ASA or FSA) and all of them holding doctorates. For the 2004-2006 academic years, Curtis Huntington also holds the additional position of Associate Chair for Education.

Elsewhere in this issue, you will read about the new Michigan Pension Education and Training (MPET) program that has recently been established jointly with the American Society of Pension Professionals & Actuaries (ASPPA). In addition, we are currently exploring ways to fund and establish an interdisciplinary Risk Analysis Center.

Our April 2005 Cecil J. Nesbitt Commencement Lecturer was **Fazli M. Datoo** (MA 1971), Executive Vice President of Swiss Re Life and Health America. He gave an inspiring presentation to this year's graduates (and their families) tracing his life from his start in Tanzania through his time at Michigan to the current. This was the third event in this series and is rapidly becoming a highlight of the actuarial academic year.

Once again, UM was pleased to host a meeting of the Michigan Actuarial Society where the topic explored was "Building Communication Skills Through Improvisation." This event is proving to be popular with both the UM students and the local actuaries and we plan to continue doing this annually.

The Student Organization of Actuaries maintains an active schedule of academic, sporting and social events. With almost 100 members, this group is rapidly becoming one of the more active academically-focused groups on campus. While their sporting prowess is somewhat lacking, the enthusiasm they bring to sports carries over to their other activities.

The faculty and students look forward to hearing from you with any comments, questions or suggestions you might have. And, if your travels bring you though Ann Arbor, please let us know so that we can host a visit with us in our East Hall home.

Curtis E. Huntington (BA 1964), FSA, FCA, MAAA, APM

Director, Financial & Actuarial Mathematics Programs, Director MPET Program

Undergraduate Program News

The undergraduate Mathematics program continues to thrive and grow. The 2004-05 academic year saw the number of declared Mathematics majors rise to 289, an increase of 10% over the previous year. Another 170 students declared minors in mathematics. An interesting reason for the increase in majors is the phenomenon of students taking a minor in math and then expanding it to a second major. The mathematics graduating classes for this year included 98 majors and 77 minors.

There was more course development this year, associated with the Inquiry Based Learning initiative (IBL), with the Honors program, and with Visiting Professor **Michael Artin**'s course on problem solving and student projects.

Another reason for growth is the social setting in the Department, which is very much appreciated by the students. There was a significant increase of activity for the in-house advising program, along with a friendly undergraduate office atmosphere, and stimulating social/educational events like the weekly meeting of the Math Club and daily Department tea. Opportunities like the annual career day, internships with various companies, and the Research Experience for Undergraduates program help students to prepare for utilizing their mathematics knowledge after graduation. The undergraduate program is prepared to keep growing while continually improving the quality of education and service to students.

Professor Dan Burns
Director of Undergraduate Programs

The Department's Math Lab allows students to study together and receive assistance from trained tutors to help in their math studies.

Department Partners with Pension Professionals

The American Society of Pension Professionals & Actuaries (ASPPA) recently announced that it is partnering with the University of Michigan Department of Mathematics to oversee the academic content and examination standards for ASPPA's credentialing programs. The partnership will couple the University of Michigan's academic expertise with ASPPA's industry and 401(k) plan expertise. The partnership has initially adopted the name Michigan Pension Education and Training Program (MPET).

ASPPA's Board of Directors recently set an organizational goal that "ASPPA shall be acknowledged as the primary education and credential-issuing organization for all pension professionals."

"This partnership will create definite synergies as the University of Michigan brings academic and scholarly research strengths to ASPPA's credentialing program. Given the demand for highly competent pension professionals, it is critical that our educational materials provide technical content that has real world application," said ASPPA Executive Director/CEO, **Brian Graff,** Esq., APM.

Currently the University of Michigan Department of Mathematics operates the oldest actuarial program within the U.S., founded in 1903, and boasts the largest number of credentialed actuarial science faculty within its mathematics department**.** ASPPA offers education and professional credentials for actuaries (FSPA, MSPA) and for non-actuarial professionals, such as 401(k) administrators (QKA), pension consultants (CPC), and other benefits professionals (APM). ASPPA members, over 5,400 strong, provide consulting and administrative support to more than half of the private retirement plans in the country.

"Given the huge demand on the U.S. pension system, it's vitally important to continue to foster excellence in pension education. This MPET partnership between the university and ASPPA is an excellent opportunity to continue to raise the competency of U.S. pension professionals," said **Curtis E. Huntington**, APM, FSA, FCA, MAAA, Professor of Mathematics and Director of Actuarial/Financial Mathematics Programs.

ASPPA is a national organization of retirement plan professionals dedicated to the preservation and enhancement of the private pension system in the United States. ASPPA offers educational opportunities in the form of conferences, web courses, webcasts and credentialing exams. Over 5,000 candidates take an ASPPA credentialing exam each year. For more information, visit www.asppa.org.

Recently, all ASPPA education courses were awarded college credit recommendation by the American Council on Education (ACE). Founded in 1918, ACE is the major coordinating body for all of the nation's higher education institutions representing 1,800 accredited, degree granting colleges/universities and higher education-related associations, organizations and corporations.

MPET's first full-time professional, **Bunny Wing Fernhall**, ASPPA's Chief of Pension Education, will work out of ASPPA's national headquarters in Arlington, Virginia. She will be assisted by a number of Technical Educational Consultants who will be working at various locations around the country.

New Fundraising Initiatives Successful

The Department's development and fundraising efforts this year experienced the completion of one initiative, the continuation of others, and planning for the future.

In 2002, Chair Trevor Wooley set the goal of funding the **Sumner B. Myers Memorial Prize** endowment to the level of $45,000 within five years. The Sumner Myers prize, given to a Ph.D. recipient whose thesis is judged to be the most outstanding for that calendar year, was established as a memorial upon the death of faculty member Sumner Myers in 1955 at the age of 45. The original funding for the prize had been depleted. Wooley challenged the faculty to give to the fund and agreed to match any their gifts by 50% from Departmental funds. Emeritus faculty, friends of the Department, and former Sumner Myers Prize recipients were also asked to help with the funding of the prize. At the 2005 Emeritus Faculty and Friends luncheon, Wooley announced that the goal for this funding had been met, with over $45,000 having been collected or pledged. This is a significant achievement for the development efforts of the Department. Many thanks to all who participated in this initiative.

The **Mathematics Alumni/Alumnae Scholarship** fund continues to prosper. The annual mailing to all alumni/alumnae asks them to contribute to an expendable fund to support undergraduate and graduate students. In 2004-05, the funds were used to support undergraduate **Teow Lim Goh** in her REU experience, and provided much needed funding to graduate students **Sarah Crown** and **Mark Iwen** as they continued with their studies. The 2005 funding initiative is well underway, and as funds are collected, they will be distributed to deserving students.

As the new Chair develops his priorities and seeks support, new initiatives will be put forth and funding sought. A currently available funding priority is to grow the endowments that were established to honor two emeriti professors. The **Professor Maxwell Reade** fund is intended to support the Department's student recruiting effort, and the **Professor Thomas Storer** fund will provide funding support to a deserving undergraduate mathematics major who is also in the honors program. For information on giving to these funds, please email math.mich@umich.edu, or call 734-647-4462.

Additional information on funding opportunities, as well as other information that might be of interest to alumni, is available on our website www.math.lsa.umich.edu/alumni. Many thanks to all donors who participate in supporting Mathematics at Michigan.

Many Thanks to our Generous Supporters

The following individuals and companies made contributions to the Mathematics Department between June 1, 2004 and June 1, 2005

Actuarial Mathematics Development Fund
Alan W. Finkelstein
Mr. Alan P. Huddy
Walter and Barbara MacGinnitie
John L. Marakas
Gregg A. Schwab
Stanley H. Tannenbaum

Margaret S. Huntington First Year Actuarial Scholarships
Curtis E. Huntington
Dr. Jian Yu

Professor Maxwell Reade Fund
Leon P. Zukowski

Professor Thomas Storer Fund
Leon P. Zukowski

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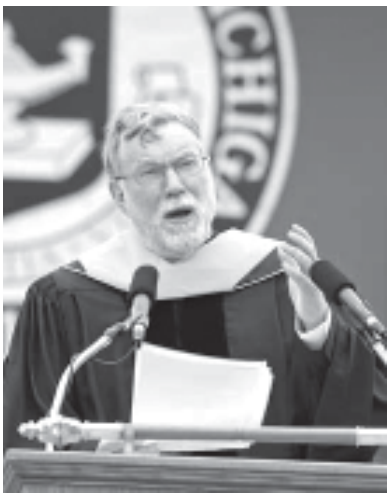
UM Honorary Degree Recipients

Two alumni of the Department of Mathematics were recognized with honorary degrees at the University of Michigan Commencement activities in April 2005. **Henry W. Bloch** (BS 1944), co-founder and honorary chairman of the board of H&R Block, Inc., received an honorary Doctor of Laws Degree. **John Seely Brown** (MS 1964, PhD Computer and Communication Science 1970) was the keynote speaker at the commencement and received an honorary Doctor of Science degree.

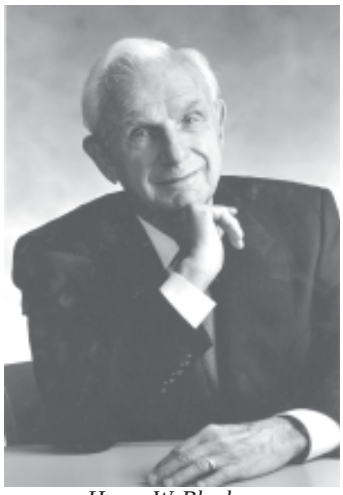


John Seely Brown speaks at the UM Spring Commencement Ceremony.

A former chief scientist of Xerox Corporation, Brown headed the Xerox Palo Alto Research Center (PARC) for ten years. He is a leading contemporary thinker on the influence of technology on modern life. His career is highlighted by groundbreaking work in applying information technology to higher education.

Brown is a member of the National Academy of Education and a fellow of the American Association for Artificial Intelligence and the American Association for the Advancement of Science. He is a co-founder of the Institute for Research and Learning, a non-profit institute for addressing the problems of lifelong learning.

In his address, Brown was cheered by students for his role in the invention of spellcheck. "You are the first class of the 'net' generation," he told them. Brown called the graduates natives of the digital age, and said that they could "do things now that most of us never dreamed of just a few years ago."



Henry W. Bloch

Bloch and his older brother, Leon, started the United Business Company in Kansas City, MO, shortly after World War II, offering bookkeeping and tax services. When Leon left to practice law, Bloch and his younger brother, Richard, continued the business. In 1955, the Internal Revenue Service in Kansas City discontinued its free tax-preparation assistance service. The company seized this opportunity to focus solely on tax preparation and was renamed H&R Block, Inc.

The Department of Mathematics hosted a reception for Bloch and his wife. Students and faculty were able to informally meet with Bloch and discuss his insights on business and education.

Emeritus Faculty Honored at Luncheon

For the past several years, the Department has been holding an annual event honoring emeritus faculty and friends of the department. Here are some images from recent events.
Left: Marjorie Reade, Professor Emeritus Fred Gehring, Lois Gehring, Professor Emeritus Wilfred Kincaid and Professor Emeritus Maxwell Reade.
Below left: Retired Mathematics staff member Lee Zukowski talks with Professors Emeritus Don Lewis, Wilfred Kaplan and Paul Federbush.
Below right: Professor Emeritus Wilfred Kincaid, Faye Kincaid, Lillian Hay and Lois Gehring.

Alumni/ae Updates

Donald Davenport (BS 1965) retired from the Almont Community Schools (50 miles north of Detroit) three years ago after 35 years of secondary mathematics teaching. He founded the Lapeer County Mathematics Competition ten years ago. Also, in 1997 he became affiliated with the Park City Mathematics Institute program for high school math teachers. Although retired, he is still active with the outreach group of this organization and its leader, Prof. Roger Verhey of UM Dearborn. But more recently Donald has become interested in Middle East issues. He just completed first year Arabic and has traveled to Egypt and Jordan. He soon plans to spend three weeks in Morocco studying second year Arabic intensively.

Constance C. Kelly (BA 1965, MA Education 1966) recently retired from a 29-year career as a middle school mathematics teacher in the Bloomfield Hills, MI, public schools. She served on the NAEP Mathematics Committee from 1998 to 2005, was a PAEMST state finalist in 2003 (applicant 2005), and received the District Distinguished Service Award in 2005.

Michael J. Sattinger (BS 1965, PhD 1973 Carnegie-Mellon) presented "Labor Queues," an application of queueing theory to labor markets, at a meeting of the Society of Labor Economists in San Francisco in June 2005.

Carl de Boor (PhD 1966) received the 2003 National Medal of Science during a White House ceremony in March, 2005. The President's appointed committee of scientists at the National Science Foundation awards the National Medal of Science each year. Carl de Boor specializes in numerical analysis and is recognized for his innovative work in spline functions, which has practical applications in aircraft and automotive construction and design. Born in East Germany, de Boor joined the University of Wisconsin, Madison faculty in 1972, where he is currently a Professor Emeritus.

Charles R. MacCluer (PhD 1966) is a Professor of Mathematics and Coordinator of the professional Masters program in industrial mathematics at Michigan State University. He has recently published the following books: *"Boundary Value Problems and Fourier Expansions"* (Dover, 2004), *"Calculus of Variations"* (Prentice Hall, 2005), *"Honors Calculus"* (Princeton Univ. Press, 2006).

Laurence R. Boxer (BS 1970, PhD 1976 Univ. Illinois) is a Professor of Computer and Information Sciences at Niagara University. He recently co-authored the book *Algorithms Sequential and Parallel: A Unified Approach, 2nd ed*. (Charles River Media, 2005).

John A. Cameron, Jr. (BA 1970, JD 1973 George Washington) is a partner in the law firm Davis, Wright, Tremaine in Portland, OR.

Dost Mohammad Khan (PhD 1970) has recently been named Rector of Northern University in Nowshera, Pakistan.

Ayse Soysal (PhD 1976) has recently been named Rector of Bogaçizi University in Istanbul, Turkey.

Bruce C. Dane, FSA (BS 1980) is Director of Human Capital at Deloitte Consulting in San Diego, CA.

Benjamin M. Schultz (BS 1980, DDS 1985 Georgetown) practices functional esthetic dentistry in Connecticut. He indicates that "scientists and engineers are the most fun for me in the dental chair, because they are actually interested in the techniques, materials and high-tech methods that we use."

David Calkins (BS 1985) has been named Associate Professor of Ophthalmology and Visual Sciences at the Vanderbilt University Medical Center in Nashville, TN. Calkins' research focuses on genetic control of protective mechanisms in neurodegenerative diseases of the visual system.

Steven Goldfarb (BS 1985, PhD Physics 1991) is currently an Assistant Research Scientist for the University of Michigan/ATLAS program in Switzerland.

Melissa C. Chiu (BS 1995) is currently a graduate student in Sociology at UCLA. Since leaving UM, she has received a MS in Statistics from the Univ. of Washington and a MA in Sociology from UCLA.

Adam Parker (BS 1999) received his Ph.D. from the University of Texas at Austin in May 2005. His thesis in algebraic geometry under the direction of Professor Sean Keel, is titled "*An Elementary Construction of* $\overline{M}_{0,0}(\mathbb{P}^{r,d})$." Adam will be joining the faculty of Wittenberg University in Springfield, Ohio as an Assistant Professor in the fall.

Mirhan Papikian (PhD 2003) has received the 2005 Emil Artin Junior Prize in Mathematics. Papikian, who is currently at Stanford University, was chosen for his paper "*On the degree of modular parametrizations over function fields*." Established in 2001, the Emil Artin Junior Prize in Mathematics is presented to a student or former student of an Armenian university who is under the age of 35, and recognizes outstanding contributions to algebra, geometry, topology, and number theory—the fields in which Emil Artin made major contributions.

Want to get involved with the UM Department of Mathematics? Here are some areas where alumni participation is vital. Let us know if you are interested in working with us on these initiatives.

- Recommend the UM mathematics program to students interested in undergraduate or graduate studies
- Participate in our annual Career Day, November 11, 2005
- Visit the department for afternoon tea (3:45 sharp) if you are in town for the weekend, including Homecoming, Parent's weekend, or the Presidential Society weekend
- Be a mentor (in person or via email) to a current student
- Set up a recruiting program with your company for graduating students
- Offer internships in your company to mathematics students
- Allow groups of mathematics students to visit your company

Email math.mich@umich.edu or call 734-647-4462

In Memorium

Walter Feit (PhD 1955) passed away in July, 2004. He was born in Vienna in 1930 and left for England in 1939. He moved to the United States in 1946 where he became an undergraduate at the University of Chicago. He received his Ph.D. from the University of Michigan, and became a professor at Cornell in 1952, and at Yale in 1964.

Feit was a mathematician who worked in finite group theory and representation theory. His most famous result is his joint proof of the Feit-Thompson theorem that all finite groups of odd order are solvable. At the time it was written, it was probably the most complicated and difficult proof ever completed. He wrote almost a hundred other papers, mostly on finite group theory and modular character theory.

He also wrote the books *"The Representation Theory of Finite Groups"* and *"Characters of Finite Groups"* which are now standard references on modular character theory.

Feit was awarded the Cole Prize by the American Mathematical Society and was elected to the National Academy of Sciences and the American Academy of Arts and Sciences; and was Vice-President of the International Mathematical Union.

Norberto Salinas (PhD 1970) passed away in March, 2005. He was born January 26, 1940 in Buenos Aires, Argentina. At the age of ten, he lost his sight in both eyes. He excelled in math and science, and he received his Licentiate in Mathematics and Physics from the Universidad de Buenos Aires. He came to the U.S. in 1968, with a fellowship to study Mathematics at UM.

Salinas was a Professor of Mathematics at University of Kansas for over 30 years. He published over 70 research articles in high-level Mathematics, developed new variations of Braille code for Mathematics, mentored many undergraduate and graduate students, and traveled to over 50 countries. He retired in 2002 and moved back to Ann Arbor to be close to his son, Daniel.

He was an avid reader and music connoisseur, enjoyed lively debates, and loved spending time with his children, Daniel and Silvia; and his caretaker, Penny. He has been and will always be an inspiration to the many people that he touched across the world.

Memorial contributions may be made to Norberto Salinas Fund at the College of Literature, Science, and the Arts, 524 S. Main, Ann Arbor, MI 48104-2921. The goal of the fund is to establish an endowed scholarship at the UM to support students who are visually impaired and have an interest in pursuing a mathematics-related course of study.

Ida Roettinger (Heidi) Kaplan (PhD 1944) passed away in January, 2005. She is survived by her beloved husband of 66 years, UM Professor Emeritus of Mathematics Wilfred Kaplan. She was born in Zurich, Switzerland on August 20, 1913. In 1938, she received a diploma in Mathematics from the Swiss Federal Institute of Technology (ETH), the only female graduate in Mathematics that year. The same year, two years after meeting at the ETH, she and Professor Kaplan married and immediately moved to the United States.

She was a resident of Ann Arbor since 1940. Her creative touch was visible everywhere in Wilfred's and her home of 61 years. She received her Ph.D. in Mathematics from the University of Michigan in 1944, and later proofread Professor Kaplan's math textbooks. She was an energetic musician and scholar throughout her life. A talented pianist from her childhood, beginning in her late thirties, she became an advanced cellist and even wrote a guide for cellists. In her sixties, she began an intensive study of Italian and later Greek, which continued until the past year.

Her friends and family have many wonderful memories of her sharing her interests through chamber music, literature and arts, language study, or poetry reading. Over the years she and her husband traveled extensively in Europe. In addition to her husband, Wilfred, she is survived by her children: Roland (Becky) Kaplan of San Jose, CA and Muriel Kaplan (Felix) Zwiebel of Minneapolis; four grandchildren and two great-granddaughters. Wilfred is in the process of writing and publishing a loving memoir of their life together.

Considering a Donation to UM?

If you are contacted by the University of Michigan for a donation, you can earmark your gift to the Department of Mathematics. Simply tell the caller to designate your gift to mathematics or write Mathematics Department on the pledge card you are sent. We greatly appreciate all of your support, and we hope we can count on you to support future fundraising projects.

Estate Gifts

You may include the Department of Mathematics in your estate plan. Please call us at 734-647-4462 for information on charitable trusts and bequests to the department, or contact:

University of Michigan
Development/Planned Giving
734-647-6000

Solution to Math Problem

The number 2004 is divisible by 3 but not by 9. For $n \geq 6$, $n!$ is divisible by 9, so $n! + 2004$ is divisible by 3 but not by 9. It follows that $n! + 2004$ cannot be a square for $n \geq 6$. One easily checks that $n! + 2004$ is not a square for $n = 1,2,3,4,5$ either.

($1! + 2004 = 2005$, $2! + 2004 = 2006$, $3! + 2004 = 2010$, $4! + 2004 = 2028$, $5! + 2004 = 2124$ and $44^2 = 1936$, $45^2 = 2025$, $46^2 = 2116$, $47^2 = 2209$.)

What Are You Doing?

We'd like to hear from you! Please complete and return this form for our alumni/ae files. You may mail it to the address below, fax it to 734-763-0937, or email the information to math.mich@umich.edu.

Name_____

University of Michigan Degree(s) with years & advisors

_____

Degrees from other Universities/Years

_____

Home Address_____

City, State Zip_____

Home Phone_____ E-mail_____

Firm/Institution_____

Position_____ Business phone_____

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