Math Times
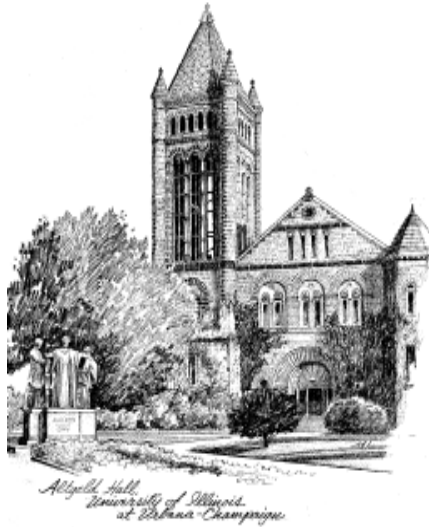
Letter from the Department Chair

I write to you as the new Chair of the Department of Mathematics of the University of Illinois at Urbana-Champaign. In January, Professor Joseph Rosenblatt announced he would step down as Chair and return to full-time teaching and research. A search process during the spring semester resulted in my appointment this summer. Let me share with you some changes in the department during the five years Professor Rosenblatt was Chair. They form an important part of the foundation for our continued excellence, and we thank Professor Rosenblatt for helping to bring them to fruition.

Our faculty has been undergoing a period of intense renewal, providing a golden opportunity to hire new faculty, which we have done with excellence in mind. During the last five years we have hired 27 outstanding mathematicians as faculty members. They are all dedicated to teaching, with exciting research projects, and it is important to support them as they strive to achieve their professional goals and to match or even exceed the achievements of the faculty who have recently retired.

We have supported more young mathematicians in the last five years than ever before. We have had 9 Doob Research Assistant Professors and as many as 9 VIGRE Research Assistant Professors on three-year appointments at a time. The latter have been funded by a large five year grant our department obtained in 2000 from the National Science Foundation under a program called "Vertical Integration in Research and Education". The grant promotes a variety of strategies for bringing undergraduate and graduate students, postdocs, and professors together in cooperative research and education projects, thereby significantly augmenting the intellectual activity in the department.

The Department of Mathematics has continued to offer students many opportunities for excellence. We instituted a new selective Honors Program in Mathematics in 2002. Its sequence of five undergraduate courses is carefully designed to be an important tool for preparing students for careers in mathematics or related fields. In conjunction with the Campus Honors Program, this program will help our university to attract the best students from the state and the nation.

One of our former graduate students, Barry Greenstein, recently won a high stakes national poker competition and this year donated a generous portion of his winnings to set up the "Mathematics Research Experience Endowment Fund." The income from the fund, which is open to additional donations, provides research experiences for undergraduate and graduate students as part of a well thought out plan for helping our students make the critical transition from the classroom to creative mathematical research.

As I look forward to my time as Chair of the department, I value your support and welcome your feedback. We all thank you for helping to sustain the excellence of the department and for helping to preserve its unique position in American and international mathematics.

Daniel R. Grayson
Chair, Department of Mathematics

Altgeld Hall,
University of Illinois
at Urbana-Champaign
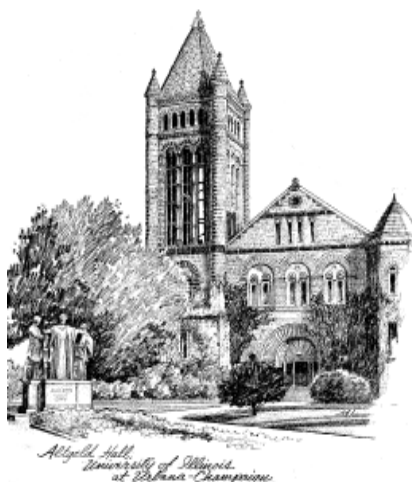
Evans honored at Route 81 Conference

The Route 81 conference convened on Saturday and Sunday, October 3 and 4 at Cornell University in Ithaca, NY. The conference hosts were Michael Stillman (UIUC BS degree) and Irena Peeva. The annual conference is held at alternate locations along (roughly) US 81. Next year's meeting will take place at Queen's University in Kingston, Ontario.

The conference this year was held in honor of Graham Evans' retirement from the UIUC Department of Mathematics and his many contributions to the mathematical community associated with the Route 81 conference. Graham has been an active participant since the conference's inception about one decade ago. The list of speakers included Winfried Bruns (Osnabrueck, Germany), David Eisenbud (Director of MSRI at Berkeley, CA), Tony Geramita (Queen's University) and Craig Huneke (University of Kansas). Graham's former Ph.D. students, Hara Charalambous (Thessaloniki, Greece) and Ben Richert (Cal Poly), gave talks, as did undergraduate protege Chris Francisco (University of Missouri). Each speaker included in their remarks specific moments in which Graham shared mathematical insights and friendship that helped mark their own career. Most of the speakers and attendees had had affiliations with the University of Illinois at some point in their careers. In particular, Graham's first Ph.D. student, Cathy Meadows (NSA) and his Master's student, Seaja Kim (U Mass, Dartmouth), were in attendance.

Department to host 2005 AMS reception

The Department of Mathematics, UIUC, will host an AMS reception at the Joint Mathematical Meetings to be held in Atlanta in January 2005. The reception will be held Thursday, January 6, 2005, from 6:00-7:30 p.m. The venue will be announced at a later date.

Emily Mann Peck Scholarship awarded

Wing Ho Ko is the recipient of the Emily Mann Peck Scholarship in Mathematics for 2004. Ko, a senior in Mathematics and Physics, received the Salma Wanna Memorial Award from the department in spring 2004, tied for first place in the 2004 UIUC Undergraduate Math Contest, and was the top-scoring student on the Illinois team that participated in the William Lowell Putnam Competition in December 2003.

The Emily Mann Peck Scholarship, established in 2003 through the generous donations of Raymond and Lori Janevicius, is named for Emily Peck who was on the Department of Mathematics faculty from 1973-2002 when she retired. This is the third scholarship the Janevicius family has established at UIUC. The other two are in Chemistry and Music. The Peck scholarships are to be given to outstanding undergraduate students at the sophomore, junior or senior level majoring in mathematics in the Department of Mathematics at the University of Illinois. While the award is given primarily for high academic achievement, special preference is reserved for students who demonstrate characteristics that have exemplified Dr. Peck's life and career: high personal standards of ethics and scholarship, passion for teaching, well-rounded eclectic interest in life, and a passion for the arts.

Distinguished Mathematical Research award recipients

Stephanie Alexander and **Paul Schupp** have been awarded 2004-2006 Distinguished Mathematical Research Awards. These awards, given by the department for the first time in Fall 2001, have a dual purpose. The first purpose is to recognize senior members of the faculty for their outstanding achievements and to provide them more time to focus on their research activities. The second purpose is to honor distinguished department faculty members of the past for their contributions to mathematics as a whole and to the Department of Mathematics at the University of Illinois in particular. Each year the awards are presented by the Executive Committee to at most two senior members of the department.

Stephanie Alexander's Distinguished Mathematical Research Award was given in memory of Kuo-Tsai Chen. She received her Ph.D. in mathematics from UIUC in 1967, taught at UIUC as a half-time instructor from 1968-1971, and has been a regular member of the Department of Mathematics faculty since 1972. She has been a frequent visiting member of Institut des Hautes Etudes Scientifiques, France, and currently leads the US team in a cooperative grant program with the Steklov Institute, St. Petersburg, Russia. Professor Alexander's research covers a broad geometric range: differential geometry and topology, metric geometry and classical geometry. She has contributed particularly to the theory of isometric immersions, Riemannian manifolds with boundary, and the metric geometry of Alexandrov spaces. Professor Alexander has supervised five Ph.D. theses, and has received teaching awards at both the college and campus levels.

Stephanie Alexander

Kuo-Tsai Chen received his B.S. in 1946 from National Southwest Associated University in China and his Ph.D. in 1950 from Columbia University under the direction of Samuel Eilenberg. Professor Chen taught at the University of Hong Kong, the Instituto Technologico de Aeronautica in Brazil, and at Rutgers before joining the Mathematics Department faculty at the University of Illinois in 1967. He died in 1987 after a long illness.

Professor Chen was an outstanding mathematician of international reputation, widely quoted for his contributions to the qualitative theory of ordinary differential equations and to algebraic topology. His results on the behavior of orbits of vector fields near singular points, obtained in the early 1960's, represented a breakthrough in the developing theory of singularities of vector fields. In the 1970's and early 1980's Chen created his method of iterated integrals which led to profound connections between analysis and topology. Five students completed their Ph.D. under his direction.

Kuo-Tsai Chen

Paul Schupp

Paul Schupp's Distinguished Research Award was given in memory of Felix Albrecht. Schupp, who was a student of Roger Lyndon at the University of Michigan, has been at the University of Illinois since 1967. For several years he was concurrently Visiting Professor at the Université Paris VII where he was a member of the Laboratoire d'Informatique Théorique et Programmation founded by M.P. Schutzenberger. His work has mainly been in the area of combinatorial/geometric group theory. He developed the use of cancellation diagrams as a general tool for studying the conjugacy problem, HNN-extensions and Artin groups. He also worked with David Muller on the connections between group theory and the theory of automata and formal languages. He is the author, together with Roger Lyndon, of *Combinatorial Group Theory*, recently reprinted in the Springer "Classics in Mathematics" series. He current works on the use of geometric and probabilistic techniques to investigate the computational complexity of algorithmic problems in group theory. He is a former Guggenheim Fellow and has directed the theses of twelve graduate students.

Felix Albrecht

Felix Albrecht's major research contributions were to the qualitative theory of dynamical systems. In particular he was recognized for his research on the Pontriagin theory of optimal control, and the associated stability problem. Throughout his research career, Albrecht kept in close contact with modern developments in topology and global analysis. Albrecht received a diploma in mathematics in 1951 from the University of Bucharest. He was an Assistant Professor from 1951-1955 at the Bucharest Institute of Technology, with a simultaneous appointment at the Institute of Mathematics of the Romanian Academy. In 1963 he emigrated from Romania and held positions at the Federal School of Technology in Zurich, Switzerland; Wesleyan University, Middletown, CT; and the Institute for Advanced Study, Princeton, before joining the mathematics faculty at Illinois as a Professor in 1968. He became an Emeritus Professor in 1992. During this period, he was a visiting professor at the Universities of Pisa, Florence, Strasbourg, to name a few. He continued to study and work on mathematics until the last few days of his life. He died in 1998.

Faculty News

♦ Professor **Robert Ghrist** received the 2002 Presidential Early Career Award for Scientists and Engineers, the nation's highest honor for professionals at the outset of their independent research careers. He receives a five-year research grant to further his research.

Ghrist's work focuses on those methods in applied mathematics which are topological in nature. Such methods have the characteristic of being very robust: topological results are tolerant of the "noise" inherent in physical systems. Such techniques are therefore surprisingly useful in engineering and science. In particular, Ghrist works on applications to robotics, computer science, fluid dynamics, and differential equations. His methods range from symplectic and contact topology to knot theory to geometric group theory.

♦ Several faculty in the department received promotions in 2004. **Steven Bradlow** and **John Sullivan** were promoted to full professor and **Scott Ahlgren**, **Iwan Duursma** and **Kevin Ford** were promoted to Associate Professor.

♦ In March, **Bruce Berndt** visited the National University of Singapore to work with his former doctoral student, Heng Huat Chan. One day they had lunch with two editors from World Scientific Press, and by the end of lunch, Berndt was assigned the task of organizing a new journal in number theory, *The International Journal of Number Theory*. The new journal has three managing editors: Berndt, Michel Waldschmidt (France), and Dipendra Prasad (India), and an editorial board of 30 additional number theorists, with representatives from many countries throughout the world. Two members of the editorial board are Scott Ahlgren and Alexandru Zaharescu of the University of Illinois. The first issue will be published in March, 2005. Submissions may be made in any area of number theory.

♦ This past summer, **Aimo Hinkkanen** gave a series of lectures on quasiconformal mappings at the University of Helsinki in Finland. In September, he gave a talk at the British Isles Function Theory meeting held at the London Mathematical Society.

♦ **Derek Robinson's** book *The Theory of Infinite Soluble Groups*, written in collaboration with J.C. Lennox (Oxford), has been published by Oxford University Press.

♦ This summer, **Peter Loeb** spent a month at the National University of Singapore, a week at Frankfurt University, a week at a meeting on nonstandard analysis in Portugal, and 3 days in Swansea, Wales. He continued with his research and gave lectures on his work during each of these visits.

♦ In August 2004, **Richard Laugesen** spoke at the Workshop on Functional and Harmonic Analyses of Wavelets at the National University of Singapore.

♦ **Julian Palmore** was invited to be the North American editor of *Defense & Security Analysis* and has accepted the invitation. He will begin his duties in January 2005. The journal is published by Taylor and Francis. Palmore has been associated with D&SA since 2000. A special edition of D&SA on terrorism which he edited will appear in December. He participated in a conference on missile defense and Europe at Wilton Park, UK, in May. He plans to participate in a Wilton Park conference in October on chemical and biological terrorism and another in December on nuclear nonproliferation and the NPT.

In July Palmore spoke at an international conference on complex analysis and applications at Nanjing University, China and visited Hong Kong twice during the trip. In August he visited Alaska and spoke with colleagues at the University of Alaska, Anchorage.

Alumni News

Steve Chiappari has been appointed Chair of the Department of Applied Mathematics in the School of Engineering at Santa Clara University. Chiappari received his Ph.D. from Illinois in 1990 under the direction of John D'Angelo.

Charles Kahane was named 2003 Employee of the Year of the National Highway Traffic Safety Administration and also received a Silver Medal from the Department of Transportation in 2003. He has been chief of the Evaluation Division (Office of Planning, Evaluation and Budget), National Highway Traffic Safety Administration (NHTSA) since 1995. Kahane started work at the Department of Transportation in August 1972 immediately following his dissertation defense. He received his Ph.D. from Illinois in 1972 under the direction of Gaisi Takeuti.

MIT Professor Emeritus **William "Ted" Martin** (Ph.D. UIUC, 1934) died this past May. His obituary can be read on-line at http://web.mit.edu/newsoffice/2004/martin.html.

McCarthy appointed director of undergraduate programs

This fall, Randy McCarthy was appointed as Undergraduate Programs Director for the Department of Mathematics. McCarthy joined the department in 1994. As a faculty member at UIUC, McCarthy began advising undergraduates in 1997 and found he enjoyed the informal meetings with students outside the classroom. This, plus his desire to expand our program to offer students more of the positive experiences that helped shape his own interests in mathematics, led McCarthy to pursue the position as director of undergraduate studies. He was a Beckman Associate in the UIUC Center for Advanced Study in 1998-1999 and received a Sloan Research Fellowship for 1996-1998. His research interests are in algebraic topology and algebraic K-theory.

McCarthy did not decide to pursue a research career in mathematics until his mid-twenties and was an undeclared major at Michigan State University until his senior year. His experiences with honors courses, Pi Mu Epsilon and teaching as an undergraduate, however, motivated him to pursue graduate school. A course by Jean-Louis Loday on cyclic homology introduced McCarthy to methods of studying algebraic problems with topological tools which has become the general theme to his research. It was while spending a semester with Loday in Strasbourg that he met Dan Grayson and began a career as a research mathematician. He received his Ph.D. from Cornell University in 1990.

CID study generates new ideas for graduate program

For the past thirty months the department has been participating in the Carnegie Initiative on the Doctorate (CID). The CID is an on-going five year study by the Carnegie Foundation for the Advancement of Teaching aimed at doctoral education at American universities. Four UI departments are represented (Educational Psychology, History, Neurosciences, and Mathematics). There are seven partner mathematics departments involved; representatives of these departments convened at the Carnegie Foundation in July 2004. Illinois was represented by Professors John D'Angelo and Robert Fossum, and graduate student Lucas Sabalka. The team shared some of the recent developments in our graduate program and returned with some good ideas as well. One idea, currently being studied by the department, is to create new minicourses. Another plan is to reconnect with our graduate alumni and to improve the department's database; we welcome up-to-date information from all alumni! Please reply to mathtimes@math.uiuc.edu.

One of the ideas developed from early CID discussions was to create an Alumni Visiting Committee (AVC). The AVC was formed and visited the department in October 2003. The four committee members, all UIUC Ph.D.s, were Dick Hain (Duke University), Jim Colliander (University of Toronto), Stuart Kurtz (University of Chicago) and Judy Walker (University of Nebraska). The committee conducted a thorough assessment of our graduate program and provided a useful report. Our new Research Experiences for Graduate Students (REGS) program also was developed in conjunction with CID discussions. This program, which was described in the Fall 2003 Math Times, continued in Summer 2004. The REGS program will be an integral part of our new VIGRE proposal to the National Science Foundation. In many ways, the CID has been useful for provoking discussion and for disseminating information about our graduate program.

Moore joins department as Assistant to the Chair

Sandee Moore joined the department in June 2004 as Assistant to the Chair. Prior to joining the department, she was in the College of Engineering for nearly 25 years, the last 10 in the Department of Aerospace Engineering as the administrative assistant to the Department Head and coordinator of the Graduate Programs. Before that she was the coordinator of the Bioengineering Program for almost 15 years.

She holds an A.A.S. from Parkland College, Champaign; a B.A. from Eastern Illinois University, Charleston; and she will receive her Master's degree in Human Resources and Industrial Relations from the University of Illinois at Urbana-Champaign this December. Sandee grew up in Paxton, IL, a town of 5,000 about 30 miles north of Champaign-Urbana on Interstate 57. Her son, Scott, is a full-time student at Parkland College and her husband, Don, is an air traffic controller supervisor at Willard Airport in Savoy.

Sandee Moore

Burak Erdogan, Assistant Professor
Ph.D. California Institute of Technology, 2001
Erdogan received his Ph.D. from Caltech in 2001. Before coming to Illinois he spent a year at the Institute for Advanced Study, Princeton, and two years at the University of California at Berkeley. His research areas are harmonic analysis on Euclidean spaces and PDEs.

Burak Erdogan

Ely Kerman, Assistant Professor
Ph.D. University of California at Santa Cruz, 2000
Kerman, a native of Canada, received his Ph.D. from the University of California at Santa Cruz under the supervision of Viktor L. Ginzburg. After graduating, he was an NSERC postdoctoral fellow at the Fields Institute and the University of Toronto, and then a Simons instructor at SUNY-Stony Brook. His research concerns various aspects of symplectic topology and Hamiltonian dynamics. He is particularly interested in problems motivated by classical mechanical systems such as a charged particle moving in a magnetic field. Kerman was married last summer.

Thomas Nevins, Assistant Professor
Ph.D. University of Chicago, 2000
Nevins received his Ph.D. from the University of Chicago under the direction of Kevin Corlette. From 2000-2004 he was an Assistant Professor and NSF Postdoctoral Fellow at the University of Michigan with Bill Fulton as his NSF supervisor. He also worked with Toby Stafford at Michigan. In spring 2002 he visited MSRI as a Postdoctoral Fellow. In summer 2003 he spent a month at the Kavli Institute for Theoretical Physics (KITP) in Santa Barbara. Nevins' recent work centers on a few areas. One of these is the use of methods from algebraic geometry (moduli spaces of vector bundles and sheaves) and noncommutative algebra (rings of differential and difference operators and their modules) in the study of special solutions of certain nonlinear PDE ("solitons") and of integrable particle systems. Another is the relation between the above structures and questions in representation theory. More recently, he has also been studying the geometry of singular algebraic varieties using methods motivated by string theory. Nevins is married to Stephanie Nevins; they have a three-month-old son, Nathaniel.

Ely Kerman

Thomas Nevins

Anton Malkin, Assistant Professor
Ph.D. Yale, 2001
Malkin received his Ph.D. from Yale in 2001. He was a postdoc at Harvard and MIT from 2001-2004 before coming to Illinois. His research interests concern interactions between geometry, representation theory, and physics.

Anton Malkin

Clifton Ealy, VIGRE Research Assistant Professor
Ph.D. University of California at Berkeley, 2004
Ealy grew up in the Upper Peninsula of Michigan, but by high school had escaped to the relative civilization of Kalamazoo, Michigan. He attended the University of Chicago as an undergrad, and completed his graduate work at the University of California, Berkeley, where his advisor was Professor Thomas Scanlon. Ealy's research interests involve model theory, both pure model theory and model theory as it relates to algebra and geometry. His dissertation was entitled "Thorn Forking in Simple Theories and a Manin-Mumford Theorem for T-modules". Away from mathematics, Ealy plays ultimate frisbee with a good deal of enthusiasm, and considerably less skill.

Clifton Ealy

Stephen Hartke, VIGRE Research Assistant Professor

Ph.D. Rutgers University 2004

Hartke received his Ph.D. from Rutgers where he worked with Fred Roberts on applying discrete methods to problems in epidemiology and ecology. He is continuing to work in his main research areas of graph theory and combinatorics. He grew up in Cincinnati and received his undergraduate degree from the University of Dayton. He is enjoying being back in the midwest.
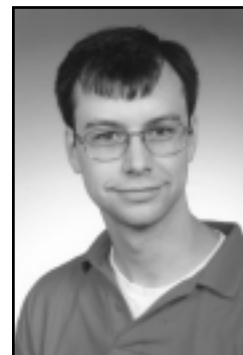
Stephen Hartke

Prabhu Janakiraman, VIGRE Research Assistant Professor

Ph.D. Purdue University 2004

Janakiraman did his undergraduate work at the University of Michigan, Ann Arbor, and completed his Ph.D. at Purdue University under the direction of Professor Rodrigo Banuelos. His thesis work involved estimation of weak-type constants for singular integral and maximal operators.

Nora Ganter

Nora Ganter, J.L. Doob Research Assistant Professor

Ph.D. MIT 2004

Ganter grew up in Darmstadt, Germany. She studied in Bonn where she received her Diplom in Mathematics with a Minor subject in Sinology. She then attended MIT where she received her Ph.D. in 2004. Ganter's research interests are in interactions of elliptic cohomology with other areas of mathematics. She has been working at a homotopy theoretic interpretation of the theory of orbifold elliptic genera and product formulas. Her hobbies include West African drumming and dancing, and playing soccer.

Prabhu Janakiraman

Mingchu Gao

Mingchu Gao, J.L. Doob Research Assistant Professor

Ph.D. University of New Hampshire 2004

Gao received his Ph.D. from New Hampshire in 2004. His research interests are in several areas of functional analysis: operator algebras, operator spaces and free probability. He held the position of full professor of mathematics at Shanxi Teachers University in China before moving to the United States in 2000. He resides in Urbana with his wife and son.

Nicolas Guay, J.L. Doob Research Assistant Professor

Ph.D. University of Chicago 2004

Guay grew up in the town of Levis near Quebec City. French is his native language, but he would prefer to know Russian instead so that he could learn the secrets of the Russian mathematicians. He received his Ph.D. from the University of Chicago in the area of representation theory in June 2004. He will be at Illinois this fall before spending the year 2005 at the University of Amsterdam. He will return to Illinois in January 2006.

Nicolas Guay

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Panki Kim, J.L. Doob Research Assistant Professor

Ph.D. University of Washington 2004

Kim is originally from Kochang, a very small town in South Korea. He came to the United States in 1998. Kim received his Ph.D. in Mathematics (Probability) from the University of Washington. His thesis was on potential theory on stable jump processes. Kim's research interests are in Stochastic process, Probabilistic potential theory and PDEs. He loves walking and jogging and plays tennis in his free time. Kim is married and has one son, 13 months old.

Panki Kim

Arnd Lauber, J.L. Doob Research Assistant Professor

Ph.D. University of Goettingen, Germany 2004

Lauber grew up in Germany, where he took his Diploma and Ph.D. exams at the University of Goettingen. His field of interest is Complex Analysis, in particular Complex Dynamics in one variable. Lauber's Ph.D. thesis was on the stability of Julia sets of transcendental function, which involves questions corresponding to the study of the Mandelbrot set for polynomials. Away from Mathematics, he enjoys playing soccer, chess, squash, flute and suffers from occasional losses of his favorite German soccer team.

Arnd Lauber

Young-Ran Lee, J.L. Doob Research Assistant Professor

Ph.D. University of Alabama at Birmingham 2004

Lee is originally from Seoul, Korea, where she was a math teacher in middle school before moving to the U.S. She received her Ph.D. at Alabama under the direction of Yulia Karpeshina. Her thesis title was "Spectral Properties of a Polyharmonic Operator with Limit-Periodic Potential in Dimension Two." Lee's research interests are in spectral theory of Schrodinger operators. She has two daughters aged 7 and 4.

Young-Ran Lee

Catherine Doléans-Dade, in memoriam

Catherine Doléans-Dade died on Sept. 19, 2004, after a long struggle with cancer. She was a long time member of the UIUC probability group, as well as the wife of mathematics professor Everett Dade. In the theory of martingales she was known for what is now called the Doléans measure.

Catherine Doléans first came to the UIUC Mathematics Department as a visiting graduate student under a Fulbright grant in 1967-68. After receiving her Doctorat d'Etat from the University of Strasbourg, France, in 1970, she returned here with her husband and first child in 1971. She was an Assistant Professor in the Mathematics Department from 1971 to 1979, when she resigned to take care of her two growing children. From 1981 until her death she was an Adjunct Associate Professor in the Mathematics Department. At various times during this period she was an editor for the *Annals of Probability*, and for the *Illinois Journal of Mathematics*. After her children were grown, she taught from time to time for the UIUC Statistics Department, for Home Hi, and for University High School, where she worked until last Spring, when she became too ill to continue.

Catherine Doléans-Dade
(photo courtesy of University High School)

Joseph L. Doob, 1910-2004

Joseph Leo Doob, a pioneer in the study of the mathematical foundations of probability theory and its remarkable interplay with other areas of mathematics, died June 7, 2004, in Urbana, Illinois, where he lived most of his life, arriving in 1935 as a new faculty member of the University of Illinois. He was mentally, physically, and socially active until two weeks before his sudden death when he was diagnosed with the liver cancer that caused it. He was 94.

Probability has been a subject of mathematical exploration for more than 300 years, but it was given a firm mathematical foundation much later, mostly by mathematicians such as Kolmogorov in Russia and Doob in America, beginning in the 1930s. Doob in his 1937 paper gave a rigorous mathematical framework for the study of continuous parameter stochastic processes, that is, families of measurable functions indexed by a parameter such that the family is pointwise continuous in the parameter (an example is the mathematical model for the Brownian motion of a particle in Euclidean space with time as the parameter).
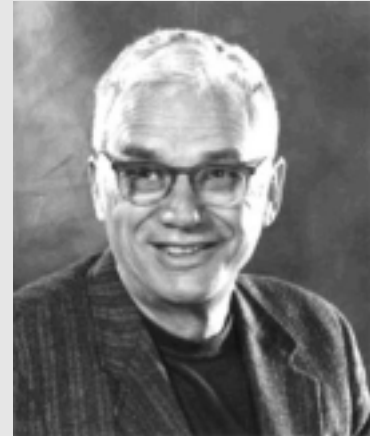
In 1940, he began a systematic development of martingale theory, the focus of one of the chapters, nearly 100 pages long, in his 1953 book "Stochastic Processes." This treatise of over 650 pages has been one of the most important and influential books on probability since Laplace's 1812 book. Martingale theory plays an essential role, as Doob demonstrated, in the study of a wide variety of stochastic processes, in mathematical statistics, information theory, and in parts of mathematical physics. Now, it is also widely used in financial mathematics and many other parts of science and technology. In 1954, he showed how various classical potential theory concepts, such as the properties of the Perron-Wiener-Brelot solution of the first boundary value problem for harmonic functions on an arbitrary open set and arbitrary assigned boundary function correspond to properties of superharmonic functions on Brownian motion paths. He obtained similar results for the heat equation in 1955. These papers inspired a vast literature on other boundary value problems, especially by the Russian school under Dynkin. Hunt extended the ideas to found what is now called probability potential theory, in which each of a large class of Markov processes corresponds to a potential theory and conversely. The basic tool is martingale theory.

He accomplished all of this and more, including important work in complex function theory and ergodic theory, by the age of 45. Up to 68, when he retired from his teaching (and he claimed that he was retiring from mathematics as well), he also accomplished much including new work in axiomatic potential theory and Choquet boundary theory. But after his "retirement" he continued to be active mathematically. This included writing a number of papers and books, one entitled "Classical Potential Theory and Its Probabilistic Counterpart" is well over 800 pages long. A glimpse of his personality and mathematical style can be found in his vivid autobiographical remarks contained in the November 1997 issue of Statistical Science.

He was born in Cincinnati, Ohio, February 27, 1910, the son of Leo Doob and Mollie Doerfler Doob. He attended Harvard where he received a BA in 1930, an MA in 1931, and a PhD in 1932. After postdoctoral research at Columbia and Princeton, he joined the Department of Mathematics of the University of Illinois in 1935 and served until his retirement in 1978. He was a member of the Urbana campus's Center for Advanced Study from its beginning in 1959. During the Second World War, he worked in Washington, D. C. and Guam as a civilian consultant to the Navy.

He was married to Dr. Elsie Field for nearly sixty years. She died on January 24, 1991. She was the Medical Director of Planned Parenthood of Champaign County and worked as a full-time volunteer after her retirement. He is survived by two sons and one daughter: Stephen Doob of Merlin, Oregon: Peter Doob of Brentwood, California: Deborah Doob of Loganville, Wisconsin; and by four grandchildren.

Doob served the mathematical profession as president of the Institute of Mathematical Statistics in 1950, as president of the American Mathematical Society during 1963-1964, and in many other capacities. He was elected a member of the National Academy of Sciences in 1957, a member of the American Academy of the Arts and Sciences in 1965, and a foreign associate of the French Academy of Sciences in 1975. He was awarded the National Medal of Science in 1979. In 1984 he was given the Steele Prize for his outstanding career and "continuing profound influence" by the American Mathematical Society. He has received many other honors.

He enjoyed, no matter what the season or the weather, hiking and the camaraderie with other members of the Saturday Hikers, an informal group with nearly 100 years of existence. He also liked to canoe on the nearby Salt Fork, the Vermillion, and the Sangamon rivers, rivers immortalized in the poem "Memory of a Scholar" by Richmond Lattimore, the highly praised translator of the Iliad and Odyssey.

W.A. Ferguson in memoriam

by Professor Paul T. Bateman, Professor Emeritus, Department of Mathematics, University of Illinois

William Allen (Bill) Ferguson, Associate Professor Emeritus in the Mathematics Department, died at home on August 15, 2004. The cause of death was prostatic cancer. He was involved in the administration of the department from 1947 until his retirement in 1987. He began his administrative duties during the acting headship of Roy Brahana (1947-1948) and continued to serve with distinction under the headship of Steward Cairns (1948-1958), Mahlon Day (1958-1965), Paul Bateman (1965-1980), and Heini Halberstam (1980-1987). He was appointed to the regular staff in 1946 by Arthur Coble, who was department head from 1933 to 1947. Coble undoubtedly selected Ferguson for administrative duties because of Bill's extensive administrative experience under enemy fire in World War II.

Bill Ferguson was born March 6, 1917 in Roanoke, Missouri. He attended public schools in Roanoke and graduated from Roanoke High School in 1933. He went on to Missouri Valley College, Marshall, Missouri from 1933 to 1937 and received the degree of Bachelor of Arts there in 1937. He then became a graduate student in mathematics at the University of Illinois and received the degree of Master of Arts in 1938. From 1938 to 1941 he continued his graduate studies at the University of Illinois and served as a graduate assistant. From June 1941 to December 1945 he served with the US Army. He returned to graduate work in December 1945 and got his Ph.D. in June 1946. His doctoral thesis was entitled "On the classification of finite metabelian graphs with six generators" and was supervised by Roy Brahana. (It was reviewed by Robert Thrall, a 1937 Ph.D. student of Brahana, in Mathematical Reviews vol. 11(1950), p. 320.) Bill was an instructor at the U of I from 1946 to 1948, an assistant professor from 1948 to 1955, and an associate professor from 1955 until his retirement in 1987.

In 1947 Ferguson was placed in charge of freshman and sophomore courses, a responsibility which he was to hold for the next 40 years. In that capacity he not only supervised the graduate assistants but also maintained regular office hours to handle student complaints and requests for section changes. His skill in dealing with students was legendary; he could be tough as nails when necessary, but he treated each student with respect and was very adept in providing a solution that was acceptable to the student and appropriate to the academic situation. For example, Bill was very adroit in dealing with complaints about instructors who did not speak English with an Illinois accent; he would gently point out that there are many different ways of speaking English correctly. He was particularly amused that one of the most vigorous complaints ever received by the department about a "foreign" accent stemmed from the Oxford accent of the British mathematician Nick Bingham.

Beginning in the 1960's the College of Engineering instituted a program of Summer Advance Enrollment for entering freshmen. As a part of their program Ferguson formally counseled thousands of new engineering freshmen regarding their math placement. In a letter of 1986 to Ferguson, Assistant Dean R.W. Bokenkamp of the Engineering College wrote, "While this may have been one of your minor responsibilities, our follow-up studies reveal that your judgment was incredibly accurate and consistent." Ferguson's teaching duties were mostly involved with the actuarial science program. He frequently taught the course on interest and regularly taught the course based on Hall and Knight's Algebra, which for many rears was the basis of the first examination given by the Society of Actuaries; he was very popular with the students.

In addition to his work in the mathematics department Ferguson served on numerous college and campus committees, including the Senate Committee on Athletics and Recreation and the Athletic Association Board of Directors (1967-1981) and was involved in the hiring of several directors and coaches. He was also the Faculty Representative to the Big Ten Conference from 1976-1981.

Bill Ferguson married Evalyn L. Anderson on August 25, 1942; she died July 3, 1999. Survivors include: two daughters, Laura B. Brinkley of Champaign and Sarah F. Fitzgibbons of Bloomington; three sons, William I. Ferguson of Wheaton, IL, James H. Ferguson of Memphis, TN, and Roy M. Adams of New York City; two sisters, Ruth Newcomer of Springfield, MO and Sue Niedermeyer of Tarkior, MO.; five grandchildren; and two great grandchildren. Bill's recreational interests included the St. Louis Cardinals baseball team, the Illini athletic teams, contract bridge, crossword puzzles, Dixieland jazz, and limericks.

Read more about Professor Ferguson on-line at www.math.uiuc.edu/People/ferguson_memoriam.html

Department of Mathematics Contribution Form

There are many different ways that you can support the Department of Mathematics in its educational and research missions. One way to do this is by contributing to funds at the University of Illinois Foundation that are meant specifically for the Department of Mathematics. Below is a list that shows the variety of individual funds available. Some of these funds are unrestricted in use, while others provide support for the library, funds for maintaining Altgeld Hall, or funding for scholarships or fellowships for undergraduate or graduate students. If you would like more information about a particular fund, please contact Robin Fossum, at the University of Illinois Foundation (217-333-7344, fossum@uiuc.edu). We enthusiastically welcome your interest in the Department of Mathematics.

I want to support the Department of Mathematics with a gift of \$_____ to the fund(s) checked:

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†*support for fellowships*   §*support for scholarships/student aid*   **support for prizes/awards*

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5M 5TJ April 2004

Hilda K. Britt looks back at 25 years with the department

In February 1979, I became the eighth person in the secretarial typing pool of seven women in the Department of Mathematics. Professor Paul T. Bateman was the Head of the department, Mrs. Betty Turner was the supervisor of the secretarial staff, and Melody Armstrong was the supervisor and trainer of the math typing pool in the main office. At that time I was very shy and had come from a factory job, which I considered to be brain-numbing, monotonous, tediously repetitive work. During the course of the interview, Melody showed me a paper with a tremendous amount of mathematics. That manuscript sparked my interest. I decided that this office job would be challenging work and it would also free up my nights so I could take night classes. Over the years I have taken many classes at Parkland and at the University of Illinois. Isn't it ironic that I only need to complete the mathematics requirements to get my Associates Degree?

The first method I used to type mathematical manuscripts was the typewriter and many font-ball changes. At times I would literally become motion sick from changing the fonts and typing math. The first paper I typed was for Professor Esther Portnoy. While typing the manuscript I was so nervous and tense that I made the carbon unreadable and the original looked as tense as I was, because I had the paper setting too taut, so each page came out a bit rumpled. The second manuscript I typed was for Professor Jerry Janusz.

The first time I sat at a computer was in 1985. The experience was very different from typewriting and especially tedious. For example, to type an alpha you pressed the control key, typed the word "bang", pressed the control key, typed the word "alpha", pressed the control key, typed the word "bang" to close out the special font. I can't remember the name of the software language and I could not find anyone that could shed light on this subject.

The first manuscript I typed on this computer system was for Professor Irving Reiner and Charles W. Curtis entitled *Methods of Representation Theory with Application to Finite Groups and Orders, Volume II*, Wiley-Interscience Series of Texts, 1987. Professor Reiner died before the book was in production.

After that initial experience with computers, the department started using a program called T^3 or T cubed. I was chosen to learn the program and then to train the typing staff, which had decreased to four people by this time. Shortly after that, TeX/AMSTeX arrived on the scene. I took one look at the AMSTeX manual and decided to learn it. There were very enthusiastic responses from the professors, especially Harold Diamond and Heini Halberstam. Theirs and several others were the first manuscripts I typed using AMSTeX. These manuscripts were published in *Analytic Number Theory*, Proceedings of the conference in honor of Paul T. Bateman held at the University of Illinois April 25-27, 1989.

I must say that my stint here in the Department of Mathematics has been stimulating and exciting. I overcame my shyness. I have worked with some very famous mathematical geniuses. Sadly most are not with us anymore. But my memories of them are still fresh in my mind. I have fond memories of working with Irving Reiner, Harold Benzinger, Steven Banks, Lee A. Rubel and Paul Erdös. Each of these men impressed me in their own way.

Hilda Britt

When I look back over the 25 years I have spent here in the math department, I don't feel as though my time spent was wasted. I was happy here and enjoyed working here. I will miss walking the ivory halls of learning at Altgeld Hall.

Hilda K. Britt, Staff Secretary, retired August 31, 2004, after 25 years with the Department of Mathematics.

2005 wall calendars

Once again, the department has created 11x17" wall calendars that are available for members, alumni, and friends of the department. This year's theme is mathematics in art and nature. If you would like a calendar please send your complete mailing address to mathtimes@math.uiuc.edu or to the main department office at the address on page 2 of this newsletter.