Math Times

Department of Mathematics, Spring/Summer 2011

Altgeld, Illini Hall renovation study nears completion

The Chicago-based De Stefano Partners (DSP) architectural firm is nearing completion of the Feasibility Study exploring renovation and restoration of Altgeld and Illini Halls.

The study envisions simultaneously restoring and updating Altgeld Hall. The grand spaces, intricate mosaics, and paintings that faculty, students, alumni and visitors cherish and remember will be restored to their historic beauty. Departmental offices and classrooms will be reconfigured to make the best use of these impressive and beautiful spaces. Infrastructure will be updated to improve usability and access in Altgeld Hall, including its vital mathematics library, and support twenty-first century teaching, all while scrupulously maintaining the building's historic and architectural integrity.

The study also envisions a complete transformation of Illini Hall. A new western addition to the building, and a complete reconfiguring of existing offices, will enable all faculty, instructors, postdocs, and upper-level graduate students to have office space in the same building. The first floor of Illini Hall will be restored to its original 1920s grandeur, in the style of a classic hotel lobby. This beautiful new common room, together with new tutoring and seminar rooms and informal conversation spaces on every floor, will foster the kind of collaborative environment in which cutting-edge mathematical teaching and research thrive.

Common Room in Altgeld Hall used by the Board of Trustees (circa 1897-1920). Photo courtesy of the University of Illinois Archives.

Interior of Illini Hall (previously the YMCA) in 1935. Photo courtesy of the University of Illinois Archives.

Final details of DSP's vision for Altgeld and Illini Halls are coming this summer. Watch the next issue of the *Math Times* for more about this exciting development in the department's future!

In this issue:

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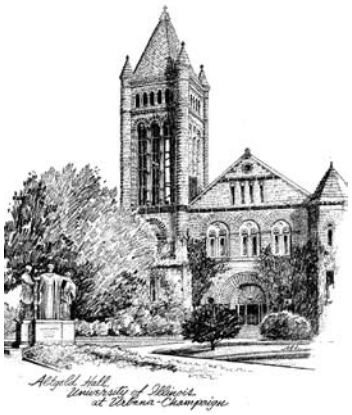


Lois M. Lackner's gift creates department's first endowed professorship


Dr. Lois M. Lackner

The Department of Mathematics is thrilled and proud to announce the creation of the Lois M. Lackner Professorship in Mathematics through a generous gift from University of Illinois alumna Dr. Lois M. Lackner. An endowed professorship is a first for the department, and is a significant event in its history.

The department plans to fill the professorship with a faculty member of the highest qualifications. The endowment created by Dr. Lackner will provide funding to support the activities of this outstanding individual. The professorship will have a strong positive impact on departmental activities for faculty and students, and will greatly enhance the reputation of the department.

The gift that funds the Lois M. Lackner Professorship in Mathematics can also be used to support a Lois M. Lackner Faculty Scholar award for outstanding members of the current faculty.

In 2007, Dr. Lackner made another significant gift to the department by creating the Lois M. Lackner Fund for Female Students in Mathematics. This fund has provided scholarships and fellowships to deserving students, giving preference to female students of Czechoslovakian descent.

Dr. Lackner holds three degrees from the University of Illinois: B.S. in the Teaching of Mathematics (1957), M.S. in the Teaching of Mathematics (1958), and Ph.D. in Education (1968).

From the department chair

Greetings to the alumni and friends of the Department of Mathematics! In this issue you can read about departmental happenings, and there is a lot going on. As you can see on this page, we have our first endowed professorship thanks to a generous gift from University of Illinois alumna Dr. Lois M. Lackner. Our cover story updates you on the exciting plans for the renovation and restoration of Altgeld and Illini Halls, including an addition to Illini Hall which will transform it into a collaborative environment for faculty and students. We are also expanding our alumni activities, and you can help us by completing the Alumni Job Survey in this issue (see page 9). We also keep you connected with news about faculty and alumni, and updates on some of our academic programs and offerings. We are also proud to announce awards to students, faculty, and staff, funded by the generosity of our alumni and friends. You can give online to the Department of Mathematics at www.math.illinois.edu/gifts/.

I am very proud of our faculty, students, staff, alumni, and friends, who together make our math department a vital place. We have accomplished much individually and together. Thank you for your support of the Department of Mathematics!

Sheldon Katz, Chair, Department of Mathematics
University of Illinois at Urbana-Champaign

Alumna Profile: Nancy Sullivan

by Jim Dey

Nancy Sullivan enrolled at the University of Illinois in 1966 with the intention of becoming a math teacher.

But after a stint as a student teacher, Sullivan discovered she liked the subject of mathematics better than teaching it.

"Teaching was OK. But it didn't turn me on," she recalled. Instead, Sullivan combined what she called the "problem solving (skills) that you learn in mathematics" with a masters degree in computer science and went on to a 30-year career in the business world. Sullivan said although she happened to end up in the computer field, a math education is a door-opener.

"I think there are many fields (a math major) can go into," she said.

Sullivan retired with her husband in 2004 to a new home on a golf course in Las Vegas, Nev. She said she enjoyed a "great career," but compares the new life she shares with her husband, John "Bruce" Sullivan, a retired pharmaceutical salesman, and their beloved dog, Tex, to being "on vacation every day."

Nancy Sullivan with her husband, Bruce, and their dog, Tex.

It's a long way from a childhood in Chicago to a comfortable retirement in sunny Nevada. But Sullivan (then Nancy Koerner) said her road to success was paved by caring parents who emphasized the importance of education to their three daughters. Sullivan's father was a butcher and her mother a homemaker, and they were intent on giving their children what they had not had themselves.

"Neither of my parents went to college. They did not even finish high school," Sullivan said. "But they wanted their three daughters to go to college. It was expected of us."

Sullivan described herself as "studious" while growing up. But it was not until she enrolled in a sophomore geometry class at Maine East High School in Park Ridge that she discovered her love of math. The romance was sparked by a particularly enthusiastic teacher and a subject matter that appealed to her sensibilities. "He was just inspirational. I really enjoyed the way he presented it," Sullivan said.

Then there was "the logic of it." The idea of proving a theorem appealed to my sense of order," she said. "I thought, 'This is nice. There are rules, and you can follow the rules.'"

Sullivan took more math classes in high school and enjoyed them. So when she applied to the UI, it was with the intent of majoring in math education.

Her older sister was a UI senior in English education when Sullivan arrived. Her younger sister would attend the UI when Sullivan was approaching graduation herself. Although her family connections and the friendships she developed made her UI experience a positive one, Sullivan said she faced a dilemma about what to do after deciding teaching was not for her.

But a whole new world opened up when Sullivan got a job in computer programming at Allstate Insurance in 1970 and found herself on the ground floor of an exploding field. "This was when computers were as big as the room," she said. A year at Allstate convinced Sullivan that she wanted to learn more about this rapidly expanding discipline, so she decided to get a master's degree in computer science at the University of Tennessee in Knoxville.

Sullivan recalled that the transition from studying math to computer science was not difficult. "To me, mathematics and computer science are very complementary," she said.

It was a great career decision, made even better when Sullivan met her future husband during her first week on the Knoxville campus. He was studying for an MBA, and, after graduation, would accept a job with Colgate-Palmolive in Houston, Tex. After graduation, Sullivan worked briefly for Illinois Bell before moving to Houston to join him.

She quickly landed a job with Dow Chemical, working in the company's engineering and construction services office. "Our primary purpose was designing chemical plants. We were doing the programs the engineers needed for their designs," Sullivan said.

Over the years, Sullivan held a variety of positions with Dow, finishing as a senior systems analyst. In 1996, Dow outsourced her job to Anderson Consulting, a move that left Sullivan doing the same job in the same office but with a different employer. That provided another education for Sullivan, who said she and her co-workers were shaken by the transition. "Back then you thought your employer was your family, at least I did," she said.

Sullivan spent the next seven years working on various computer projects for Anderson, which later renamed itself Accenture. Both ardent planners, Sullivan said she and her husband had decided to retire to Las Vegas at age 55 when their companies' pensions could begin. She said when Accenture outsourced her job to India a year ahead of that schedule, she decided to retire at 54 and devote her energy to the forthcoming move to Nevada.

Sullivan said she considers herself a "very, very lucky person" and that she and her husband want to help future students enjoy the same success they had. So the Sullivans have decided to leave their entire estate to the University of Illinois and the University of Tennessee. Sullivan said 50 percent will go to Tennessee's university library and the other 50 percent will go to the UI's math department. "We made some good investments," she said. "We don't have to worry about money, and it was all because we had a good education."

Jim Dey is a columnist and editorial writer for The News-Gazette in Champaign, Il.

Department Awards

Each spring, the department presents awards for outstanding achievement to faculty, instructional and non-instructional staff, graduate students and undergraduate students. Funding for these awards comes from generous donations from alumni and friends of the department. For more information about these funds and how you can contribute, please visit www.math.illinois.edu/gifts/.

Faculty and Staff Awards

N. Tenney Peck Teaching Award in Mathematics

Paul H. Johnson, Jr. is the 2011 recipient of the N. Tenney Peck Teaching Award in Mathematics. This award is named for N. Tenney Peck, who joined the U of I Department of Mathematics in 1968 and remained on the faculty until his death in 1996. Peck was a pioneer in the field of functional analysis, specializing in non-locally convex spaces. Peck was also a dedicated teacher with an open door for students, and was active in curriculum development. The award is given to tenure-track faculty in the Department of Mathematics for exemplary teaching.

Paul joined the department in the fall of 2008 after receiving his Ph. D. from the University of Wisconsin. One of Paul's primary research interests is racial disparities in healthcare, using multi-level regression models to detect and quantify the impact of potential disparities. Paul has been warmly received by students in his actuarial science classes, who appreciate his well-prepared and stimulating lectures. He has appeared on the *List of Teachers Ranked as Excellent* seven times.

Distinguished Teaching Award in Mathematics for Tenured Faculty

Jeremy Tyson is the 2011 recipient of the Distinguished Teaching Award in Mathematics for Tenured Faculty that was established by the department. It is given to tenured faculty in the Department of Mathematics for exemplary teaching.

A 1999 Michigan Ph.D., Jeremy joined our department in 2002, and was promoted to Associate Professor in 2008. He was named Helen Corley Petit Scholar for the academic year 2008–2009. Jeremy's principal areas of research are analysis on metric spaces, geometric function theory, and sub-Riemannian geometry. He gave an invited address at an AMS sectional meeting in 2011. He has made exemplary contributions to our students' development both inside and outside the classroom, having served several summers as a Faculty Mentor in the department's REU and REG programs, and having made ten appearances on the *List of Teachers Ranked as Excellent* since 2006.

Hildebrand receives Campus and LAS Teaching Awards

A.J. Hildebrand has received both the 2011 Campus Award for Excellence in Undergraduate Teaching and the 2011 College of LAS Dean's Award for Excellence in Undergraduate Teaching.

Photo by L. Brian Stauffer

Since his arrival in our department in 1986, A.J. has been a superb classroom teacher, with three of his *List of Teachers Ranked as Excellent* appearances arising from lecture sections of Calculus III, a notoriously tough environment for high ICES (Instructor and Course Evaluation System) scores.

A.J. has also made outstanding contributions to the education of our students outside the classroom in his role as coach of our Putnam team. Participation and success in the Putnam competition has flourished under his leadership, with record highs of 26 and 25 participants in the two most recent Putnams. In the 2009 Putnam, Illinois tied with Michigan among all public universities for the most students placing in the top 500. His contest initiatives have contributed significantly to the development of many of our very strongest mathematics undergraduate students.

Exceptional Merit Award in Mathematics for Non-Instructional Staff

Wendy Harris, Director of Budget and Resource Planning, has been awarded the 2011 Exceptional Merit Award in Mathematics for Non-Instructional Staff. This award was established by the Department of Mathematics in 2009 and first awarded in 2010. It is given to recognize a non-instructional staff member who exhibits excellence in his or her work.

Wendy joined the Department of Mathematics Business Office in 2006. She expertly manages the broad sweep of budgetary and business operations in the department. In addition, the department is particularly honoring her attentive, reliable, and energetic stewardship of the Feasibility Study for renovating Altgeld and Illini Halls. For the last four years, Wendy has provided the crucial administrative and programmatic support for the study; has coordinated communication between the department, DSP Architects, and other stakeholders; has organized presentations by DSP; and has helped facilitate and synthesize departmental feedback. Wendy has provided extraordinary service in a matter of vital importance to the department's future.

Graduate Awards

Bateman Prize in Number Theory

Atul Dixit is the recipient of the Bateman Prize in Number Theory for 2011. The award is given annually to an outstanding graduate student working in number theory, and is generously funded by former Department Head Paul Bateman and his wife, Felice.

During the 2010–2011 academic year Atul held the Bateman Fellowship in Number Theory. A native of Dombivli, India (near Mumbai), Atul is currently a fifth-year graduate student in number theory at the University of Illinois, and will defend his thesis during the summer of 2011. His thesis research, under the direction of Professor Bruce Berndt, is on series and integral identities and transformations inspired by theorems in Ramanujan's lost notebook. So far, Atul has published five papers, has three additional papers accepted, and one further paper has been submitted. Atul is a singer of semi-classical Indian music. He sings and plays the tabla for the Anubhooti Band, a group of six graduate students from various U of I departments.

Irving Reiner Memorial Award

This award is named after Professor Irving Reiner (1924–1986), a long-time member of the University of Illinois Department of Mathematics and a leader in the field of integral representation theory. The award is given in recognition of outstanding scholastic achievement in the field of algebra. Recipients of the 2011 Reiner Award are Gregory Kelsey and Alexandra Seceleanu.

Gregory Kelsey works in the area of geometric group theory under the direction of Professor Ilya Kapovich. Greg defended his Ph.D. thesis in March 2011 and has accepted a tenure-track Assistant Professor position at Immaculata University in Pennsylvania. In his thesis Greg uses algebraic machinery of self-similar groups to tackle problems arising in complex dynamics, specifically about the existence of Thurston obstructions for a large class of topological polynomials. His work on self-similar groups is described as "ingenious and impressive" and Greg is described as "talented and highly independent" with "a great ability to creatively process...difficult and diverse mathematics."

Alexandra Seceleanu works in the area of commutative algebra and defended her Ph.D. thesis this spring under the joint supervision of Phillip Griffith and Hal Schenck. She has been working with Professor Griffith on homological conjectures in commutative algebra and with Professor Schenck on algebraic geometry problems. Her work is broad and includes theorems in combinatorial commutative algebra, and in the study of homological conjectures. Her nomination describes her as the "best" commutative algebra Ph.D graduate this year "from all universities." This fall she will be a postdoctoral fellow at the University of Nebraska-Lincoln.

Kuo-Tsai Chen Prize

Dusty Grundmeier has been selected as the 2011 winner of the Kuo-Tsai Chen Prize. The Chen Prize is named after Professor Kuo-Tsai Chen, a member of the Illinois faculty from 1967–1987 and an outstanding mathematician of international reputation for his contributions to the qualitative theory of ordinary differential equations and to algebraic topology. It is awarded in recognition of outstanding scholastic achievement by a graduate student whose research connects geometry and analysis or algebra and analysis.

Dusty's research concerns the interplay between Cauchy-Riemann (CR) geometry and representation theory. He defended his Ph.D. thesis in March 2011 in his fifth year of graduate study, and he has accepted a postdoctoral position at Michigan. He has published part of his thesis in the *International Journal of Mathematics*. That work considers group-invariant CR mappings from spheres to hyperquadrics. Given a finite subgroup Γ of the unitary group $U(n)$, there is a canonical Γ-invariant CR mapping from the unit sphere to some hyperquadric. Dusty determined the target hyperquadric for each subgroup of $SU(2)$, each cyclic subgroup of $U(2)$, and in many other cases. For example, when Γ is the binary icosahedral group, the target hyperquadric has 40 positive and 22 negative eigenvalues. For families of cyclic groups, Dusty found asymptotic information as the order of the group rises. His work provides interesting connections between several complex variables and other fields of mathematics, including algebraic combinatorics, number theory, and of course representation theory for finite groups. Dusty held an NSF-funded Dissertation Fellowship this academic year. His thesis advisor is John D'Angelo.

Brahana TA Instructional Award

The Brahana TA Instructional Award was established in 2005 with funding from the H. Roy Brahana Fund. It is presented to graduate teaching assistants for exemplary teaching. **Johann Thiel** is this year's recipient. Johann is a 6th year graduate student in number theory working under the guidance of Professor A.J. Hildebrand. His main research is in integer sequences generated by certain iterative processes. He is a graduate of the University of Florida. When teaching, Johann enjoys using illustrative examples and applications to encourage student interest in his math courses.

Department TA Instructional Award

This award was established by the department in 1979 and is awarded to graduate teaching assistants for exemplary teaching. **Geremias Polanco Encarnacion** is the 2011 recipient. Geremias is a graduate student working with Professor Kenneth B. Stolarsky, in a blend of analytic number theory and algebraic combinatorics. Always passionate about teaching, Geremias has also taught math courses in his home university in the Dominican Republic. A thought that has shaped his teaching is one that is adapted from the medical profession: "Students don't care how much you know, until they know how much you care." He is looking forward to continue learning through teaching!

AWARDS

Bateman Fellowship in Number Theory

This award is given annually to an outstanding graduate student working in number theory, and is generously funded by former Department Head Paul Bateman and his wife Felice. **Khang Tran** is the 2011 recipient of the Bateman Fellowship. Khang did his undergraduate work at Truman State University in Missouri and is now in his fifth year of graduate studies at Illinois. Tran's work involves the study of polynomial sequences including those generated by rational functions, their discriminants, the distribution of their zeros, and certain associated hypergeometric series. He has three publications so far. Also, he has proved that each discriminant of a certain polynomial sequence factors into a product of two polynomials that have both great similarities and great dissimilarities. His advisor, Kenneth B. Stolarsky, considers this result to be quite remarkable!

Dr. Lois M. Lackner Mathematics Fellowship

Aleksandra Kwiatkowska is the 2011 recipient of the Dr. Lois M. Lackner Mathematics Fellowship, established by the department through a generous gift by U of I mathematics alumna Dr. Lois Lackner. Aleksandra is currently a fourth year graduate student working under the direction of Professor Slawomir Solecki. Her mathematical interests concentrate on descriptive set theory and its connections with ergodic theory and with topological dynamics. In her first paper, written jointly with her advisor, Aleksandra studied measure preserving actions of isometry groups. Her recent work deals with the generic behavior of finite tuples of homeomorphisms of the Cantor set. Here, using methods inspired by mathematical logic, she answered an important question asked by Kechris and Rosendal. She is planning to graduate in Spring 2012.

University Dissertation Completion Fellowship

Artan Sheshmani received a 2010–2011 University of Illinois Dissertation Completion Fellowship. His advisors are Sheldon Katz and Tom Nevins. While at Illinois, Artan has also been awarded the James D. Hogan Fellowship, the David G. Bourgin Fellowship, and two REGS Fellowships. His research is on algebraic geometry, especially the interaction between enumerative geometry, Donaldson-Thomas theory, Gromov-Witten theory and the mathematical physics such as String theory. In the first part of his thesis, for the first time, he has developed the algebro-geometric deformation theoretic higher rank theory of Pandharipande-Thomas stable pairs. He has computed the higher rank enumerative invariants in this theory over toric Calabi-Yau threefolds using the Graber-Pandharipande virtual localization techniques. In the second part of his thesis he computed similar higher rank stable pair invariants using the Kontsevich-Soibelman, Joyce-Song wallcrossing techniques. Artan will complete his Ph.D. this summer. He was an affiliate member for three months in Isaac Newton Institute for Mathematical Sciences in Cambridge, UK, and he has accepted a postdoctoral position at UBC, Canada, as well as an appointment at the Max Planck Institute for Mathematical Sciences in Bonn, Germany.

Undergraduate Awards

H. Roy Brahana Prize

Established in 1961, the Brahana Prize is the department's longest running and most prestigious undergraduate award. It is named after H. Roy Brahana, a distinguished member of the mathematics faculty at Illinois from 1920 to 1963. The prize recognizes the student with "the most exceptional undergraduate mathematics career." Many former Brahana Prize winners have moved on to illustrious careers, both within and outside of mathematics. Meng Guo and Yi Zeng are this year's recipients.

Meng Guo is a Junior in Mathematics and the winner of the 2010 Salma Wanna Memorial Award. Since arriving at the University of Illinois in Fall 2008, she has turned in a most impressive academic performance. By the end of her second year, she had completed all undergraduate requirements in mathematics while taking some of the most challenging math courses in the undergraduate curriculum and earning A+ or A grades in all. She started her third year by taking five graduate level math courses, again earning top grades, and she is currently enrolled in several further graduate courses. In addition to her exceptional academic performance, Meng also distinguished herself as one of the top performers on the local math contest scene, earning the third-highest score among local participants in the 2009 and 2010 Putnam Competitions. Last summer, Meng worked on a research project with Professor Matthew Ando in algebraic topology. This current academic year she is working on a research project in dynamical systems directed by Professor Eugene Lerman and Professor Ando. In May 2010 she participated in a program for Women in Mathematics at the Institute for Advanced Study in Princeton.

Yi Zeng is a Senior in Mathematics and a recipient of the Elizabeth R. Bennett Scholarship in 2010. Yi took on a phenomenal course load, completed his undergraduate mathematics requirements in near record time, and began to take graduate level courses early in his undergraduate career. He has completed an astonishing eleven graduate math courses, all with grades of A or A+. Yi participated in summer REU programs at Stanford University in 2008, at the Mathematical Biosciences Institute at The Ohio State University in 2009, and at the Institute for Mathematics and its Applications at the University of Minnesota in 2010. For the past two years, Yi has been doing research in stochastic neural networks under the direction of Professor Lee DeVille. He gave a presentation on his work at the 2010 Joint Mathematics Meetings in San Francisco. In August 2010 he attended an MSRI workshop on inverse problems. Following graduation in May 2011, Yi will enter graduate school at MIT.

Most Outstanding Major Awards

Established in 1996, these departmental awards recognize outstanding undergraduate students in each of the four majors offered by the department. A student may be selected only once in his/her career for one of these awards.

Most Outstanding Major Award in Actuarial Science

Lauren Onderisin is a Senior in Actuarial Science, and a recipient of an Elizabeth R. Bennett Scholarship in 2010. Lauren distinguished herself by completing all the requirements for her major in only three years while maintaining a near perfect GPA, passing three professional actuarial exams, and working as an undergraduate research associate under Professor Rick Gorvett. Following graduation in May 2011, she will take a position as a Human Capital Analyst with Deloitte Consulting.

Adam Sturt is a Senior with a double major in Actuarial Science and Mathematics. He has a near perfect GPA and has passed four professional actuarial exams. He has had internships with Allstate and State Farm, and is currently doing research regarding insurance solvency with Professor Rick Gorvett. After graduating in May 2011, he will take a full-time position with Allstate.

Most Outstanding Major Award in Mathematics

Zhi Yuan Lu is a Junior in Mathematics, who entered the University of Illinois in Fall 2009 as a transfer student. Zhi has accomplished the remarkable feat of earning a grade of A+ in every single math class he has taken at the University of Illinois, despite a large and challenging course load consisting mostly of honors level courses.

Robert Walker is a Senior in Mathematics with a minor in Philosophy. He is the winner of last year's Greenwood-Trjitzinsky Prize, and a recipient of a Ronald E. McNair Scholarship in 2009 and a Summer Research Opportunities Grant in 2010. In addition to an outstanding academic record, he has done research under the direction of Professors Matthew Ando and Bruce Reznick, and last summer worked with Andrew Schultz on a research project on q-analogues of binomial coefficients. After graduating this May, he will enter graduate school at the University of Michigan.

Most Outstanding Major Award in Mathematics and Computer Science

Paul Nichols is the recipient of this year's award for most outstanding major in Mathematics and Computer Science. A Senior in Math and Computer Science, Paul distinguished himself by his outstanding performance on both the mathematics and computer science side.

Most Outstanding Major Award in the Teaching of Mathematics

Thomas Schlund, a Senior in Mathematics, is the recipient of this year's award for most outstanding major in the Teaching of Mathematics. Thomas stood out for his strong academic record and broad range of coursework. Following graduation in May 2011 he plans to take a job as high school math teacher in the area.

Justin Kopinsky wins prestigious Goldwater Scholarship

Justin Kopinsky, a Junior in Mathematics and Computer Science, has won a Barry M. Goldwater Scholarship for the 2011–2012 academic year, the premier undergraduate award in the fields of mathematics, natural sciences, and engineering. The scholarship provides up to $7,500 per year to cover the costs of tuition, fees, books, and room and board.

Justin was one of 170 Goldwater Scholars selected from 1,095 nominations nationwide, and one of 24 mathematics majors to receive a Goldwater Scholarship in 2011. He is the winner of several departmental awards and prizes, including the Most Outstanding Major award in Mathematics and Computer Science in 2010, and an Elizabeth R. Bennett Scholarship in 2009.

In addition to his superb academic credentials, Justin has excelled in math and programming contests. He is a two-time winner of the U of I Undergraduate Math Contest and a two-time U of I Mock Putnam Champion, and he had the highest score among U of I participants in the 2008 and 2010 Putnam Contests. He was a member of a student team that qualified for, and competed at, the 2010 International Collegiate Programming Contest held in Harbin, China.

Emily Mann Peck Scholarship

Established in 2002 in honor of Emily Mann Peck, a former mathematics faculty member and LAS Associate Dean, the Emily Mann Peck Scholarship recognizes a student in mathematics who, in addition to academic excellence, displays a well-rounded personality with eclectic interests and a passion for the arts.

This year's award went to **Brian Freidin**, a Sophomore in mathematics. As a high school senior, Brian participated in the first national "Who Wants to Be a Mathematician" contest, held in January 2010 at the AMS/MAA Joint Mathematics Meetings in San Francisco. He entered the University of Illinois in Fall 2010, and in the short time he has been here built an impressive academic record, taking upper level honors courses in his first semester and earning a grade of A+ in each. Brian also made a big splash on the local math contest scene, placing fourth in the 2010 U of I Mock Putnam Exam and earning a First Prize in the 2011 U of I Undergraduate Math Contest. Outside mathematics, Brian's main interest is music. He has taken several music classes at the University, played in the University orchestra, and is a member of the Krannert Center Student Association. He is a member of the James Scholar Spirit Association and participated in collecting donations for the Eastern Illinois Foodbank.

AWARDS

Salma Wanna Memorial Award

The Salma Wanna Award honors the memory of Salma Wanna, who received her Ph.D. from the University of Illinois in 1976. It was established by her family after her untimely death in 1980 and is given for "exceptional performance in mathematics to the most outstanding continuing student."

Sakulbuth Ekvittayaniphon was chosen as this year's recipient of the Salma Wanna Award. Sakulbuth is a Junior in Mathematics, who has obtained an A or A+ in nearly all of his math classes while taking on a demanding course load. In addition to his impressive academic credentials, Sakulbuth has also proven himself to be a formidable and remarkably consistent math problem solver, placing in the top three or four in nearly every local contest he has participated in, and he was a 2010 recipient of the Elizabeth R. Bennett Scholarship in Mathematics.

Elizabeth R. Bennett Scholarship

The Elizabeth R. Bennett Scholarship, established in 1972, is the Department's "junior" award. It is usually given to students at the Sophomore or Junior level and serves as a gateway to "senior" awards such as the Most Outstanding Major Award or the Brahana Prize. Many recipients of those latter awards started out by earning the Bennett Scholarship.

Lingkun Lu, Guangyan Shi, Jessica Yeh, and **Ruoshui Zhang** were chosen as this year's recipients of the Elizabeth R. Bennett Scholarship. Lingkun Lu and Guangyan Shi are Sophomores in Mathematics with Junior standing; Jessica Yeh and Ruoshui Zhang are Sophomores in Actuarial Science. All four recipients distinguished themselves through their outstanding academic record.

The Department of Mathematics is now also offering the Elizabeth R. Bennett Scholarship to incoming undergraduate math majors. This fall the department awarded the first such scholarship to freshman **Jonathon Graven**. Jonathon is off to an outstanding start, with a spotless first semester behind him and all arrows pointing straight up this semester. In the fall he will be enrolled in two courses in our elite honors sequence. He is also a recipient of the Robert W. Rogers Merit Scholarship. This prestigious scholarship is awarded to approximately eight first-year students in the College of Liberal Arts and Sciences each year. Rogers Scholars exhibit exceptional scholastic achievement, high performance on the ACT or SAT examination, and leadership in the school and community.

Dr. Lois M. Lackner Mathematics Scholarship

The Dr. Lois M. Lackner Scholarship was established in 2007 through a generous gift by Dr. Lois Lackner, a University of Illinois alumna with degrees in the teaching of mathematics and in education.

Xianchen Wu was chosen as this year's recipient of this scholarship. Xianchen entered the University in Fall 2009, as a major in Mathematics. She has an outstanding academic record and maintained a near perfect GPA despite a demanding course load. Outside the classroom, Xianchen serves as Math and English tutor and is involved in several volunteer organizations.

2011 U of I Undergraduate Math Contest

Brian Freidin and **Danyang Zhuo** were the co-winners of the 2011 U of I Undergraduate Math Contest. Twenty-five students participated in this year's U of I Undergraduate Math Contest, which was held March 5, 2011. Brian Freidin, a Sophomore in Mathematics, and Danyang Zhuo, a Sophomore in Electrical Engineering, who had tied for fourth place at last year's U of I Mock Putnam Exam and just missed out on the money ranks, were tied again, but this time as the co-winners of the contest and recipients of the $300 top prize. Rounding out the top five were Ran Bi, Sakulbuth Ekvittayaniphon, and Yixiao Nie.

The U of I Undergraduate Math Contest is a locally organized contest, offered in the spring of each year. It is modeled after the Putnam Exam, a nationwide math contest for undergraduates that has been called the "world's toughest math test" and which takes place in December of each year. The U of I Undergraduate Math Contest, along with a similar contest in the fall, the U of I Mock Putnam Exam, is part of an extensive Putnam training program at the U of I, organized by Professors Jozsef Balog and A.J. Hildebrand. Math contest problems and solutions are available at http://www.math.illinois.edu/contests.html.

Actuarial Science Club helping students plan careers

The Actuarial Science Club (ASC) at the University of Illinois held its 5th annual Spring Banquet in April 2011 at the Alice Campbell Alumni Center. The spring banquet was first held to recognize outgoing graduates in Actuarial Science. Today it has become a get-together for students, faculty, alumni and corporate representatives in actuarial science to highlight the events of the past year and to plan for the future.

Speakers at this year's ASC banquet were Rick Gorvett, Director of the Actuarial Science Program at the University of Illinois at Urbana-Champaign, and Steve Armstrong, who graduated from the University of Illinois and is now working as a senior actuary at Allstate Insurance Company. Armstrong shared his experiences and advice on skills that are valued in the job market. Lauren Onderisin, ASC Vice President of Company Relations, gave a brief overview of professional events held this past year including "Meet the Firms" career fair in September, and the Recruitment Conference in October. These events provide students in Actuarial Science with a broad perspective of the job market as well as numerous chances of talking with recruiters. Matt Wall, President of ASC, hosted the banquet. Along with other ASC officers, he recognized corporate representatives, faculties, recent graduates, teaching assistants, and graders, as well as the ASC board for the year 2011-2012.

With students' participation and the board's coordination, the Actuarial Science Club continues to benefit students in Actuarial Science. Visit http://www.ascillinois.com/ for more information about club activities.

Strong showing for Illinois at 2010 Putnam competition

For the second year in a row, Illinois had a near record-breaking showing at the William Lowell Putnam Mathematical Competition, which was held December 4, 2010. A total of 25 local students participated, just one shy of last year's record turnout. The U of I Putnam Team placed 17th out of 546 participating colleges, one spot better than last year's 18th place and its highest rank since 2002.

The top local scorers were Justin Kopinsky, who earned 68 points out of 120 and placed 56th among the 4296 participants nationwide, and Yi-Wei Chan, who scored 67 points and placed 63rd. Justin and Yi-Wei both received an Honorable Mention for their performance. This is the first time in over two decades that two Illinois students made the Honorable Mention ranks.

The depth of the performance turned in by local participants was equally impressive. In addition to Justin and Yi-Wei, five Illinois students made the "Top 500" list, a standard benchmark for performance on the Putnam that represents approximately the top 10 percent of all participants: David Goldstein and Meng Guo, who earned 40 points each and placed 294th; Yaonan Huang and Yongzuan Wu (38 points, 383rd); and Sakulbuth Ekvittayaniphon (31 points, 470th).

Altogether, 14 of the 25 local participants placed in the top 25 percent, and 23 placed in the top 40 percent. The median score for local participants was 19 points, compared to 2 points nationwide.

Also of local interest is the performance of Alex Zhai, a former University High School student and winner of the 2008 U of I Undergraduate Math Contest, who is now an undergraduate at Harvard. Alex was one of the five highest ranking individuals in the 2010 Putnam Competition and earned the top prize of $2,500 and the designation of Putnam Fellow.

The Putnam Competition consists of 12 challenging problems, to be solved over 6 hours. Each problem is graded on a 0–10 point scale, for a maximum total score of 120 points.

Illinois has an extensive Putnam training program, including a *U of I Putnam Newsletter,* weekly training sessions and informal practice contests held in the fall, and two local contests with a prize purse: the *U of I Mock Putnam Exam*, held in the fall of each year, and the *U of I Undergraduate Math Contest*, held in the spring. These activities are organized by Professors Jozsef Balog and A.J. Hildebrand.

Alumni job survey to help department better prepare students

We invite your participation in the Alumni Job Survey, which you can complete online at:

www.math.illinois.edu/alumni-job-survey.html

This survey is important to the Department of Mathematics for many reasons. We would like to know what our alumni are doing so that we can become more familiar with the various career paths taken by our graduates. This information will help us better prepare our students for their careers and could help us develop mutually beneficial relationships with the companies that employ our graduates. The survey will also help us become more familiar with our alumni as a group so we can build on our existing alumni events and activities.

We would like to thank the members of the Commercial Track Committee of the Mathematics Development Advisory Board, who helped develop this survey. Thank you for your participation!

Mathematics Development Advisory Board

The Mathematics Development Advisory Board has been working since its inception last fall primarily through three committees: Endowed Chairs, Scholarships, and Commercial Track.

The Endowed Chairs Committee is focusing on helping create Endowed Chairs. These prestigious faculty positions will enable the department to recruit faculty of the highest caliber, boosting the department's programs and stature. The Scholarships Committee is working to create new scholarships for students in the Department of Mathematics. The Commercial Track Committee is working to help the department better prepare students for careers and connect employers with students. You can help us in that work by participating in the Alumni Job Survey described above.

Estate planning

Make a lasting contribution to mathematics

Please consider the Department of Mathematics in your estate planning. These deferred gifts can provide an easy way to make a truly significant and lasting contribution to the department. If you would like to discuss giving opportunities, please contact Sheldon Katz, Department Chair, at (217) 265-6258, or Patrick Hayes, Senior Director of Development, at (217) 244-5381.

RETIREMENTS

Joseph Miles

Joe Miles is retiring in August 2011 after 42 years in the math department. His recollections of Altgeld Hall date back to the late 1940s, when he would make occasional visits to the office of his father, then a member of the department. His direct association with the University of Illinois began shortly thereafter, when he enrolled in Uni High after the sixth grade. He graduated from the University of Illinois with a degree in chemistry in 1963, had the good judgment to switch fields, and received a Ph.D. in mathematics under the supervision of Simon Hellerstein at the University of Wisconsin. Except for brief stays at Cornell, the University of Maryland, and the University of Hawaii, he has been at Illinois ever since.

His research has largely been in the area of value distribution of entire and meromorphic functions. Perhaps his best-known result is that the lower limit of the ratio of the Nevanlinna characteristic of a meromorphic function f to the characteristic of its derivative is bounded above for all meromorphic f by an absolute constant (joint work with Walter Hayman). He has supervised five Ph.D. theses.

His teaching philosophy is to "show up on time and erase the board before the bell rings". He has been well received by many, but not all, of his students. He has appeared on the "Incomplete List" between 35 and 40 times, and has received both the LAS and campus Award for Excellence in Undergraduate Teaching. He also received a campus-wide teaching award from Alpha Lambda Delta, a freshman honorary fraternity.

In 2007–2011 he served as the Director of Undergraduate Studies in mathematics. He is deeply in debt to all members of the staff of the Undergraduate Office for their patience in explaining, usually more than once, many of the intricacies of LAS and campus rules concerning undergraduate education.

Joe and his wife Carol plan to continue to reside in Champaign. Their two daughters and three grandchildren live in the Chicago area, and their son is a student in the College of Engineering at Illinois.

Douglas B. West

Douglas West earned his A.B. in Mathematics at Princeton in 1974 and his Ph.D. at MIT under Daniel Kleitman in 1978, mostly on a class of solutions to the gossip problem. He then spent one year teaching at Stanford and three years at Princeton before coming to the University of Illinois in 1982. He later spent a sabbatical year teaching at Berkeley and has lectured on his research in 26 states and 13 countries.

West has published 165 papers with 160 coauthors, mostly about extremal and structural problems for graphs and partially ordered sets. In graph theory this includes problems about coloring, interval and other representations, domination, decomposition of various sorts, cycle lengths, game versions of graph parameters, and degree lists. He is also known for a joint solution of the "jewel thieves" necklace problem.

West has received research grants from the National Science Foundation, Office of Naval Research, National Research Council, and National Security Agency. He has helped organize a number of conferences and special sessions, most notably as the program chair of the 13th SIAM Meeting on Discrete Mathematics in 2006. He served as the Vice Chair of the SIAM Activity Group on Discrete Mathematics from 1997 to 1999 and on the SIAM Coordinating Committee for the Joint Meetings from 2009 to 2012.

Since 2007, West has been the Editor-in-Chief of *Discrete Mathematics*, an international journal that publishes more than 3000 pages each year. He has edited the solutions to the discrete mathematics problems in the *American Mathematical Monthly* continuously since 1986. He also serves on the editorial board of *Order*.

West has contributed to the development of at least eight courses. He won the Provost's Campus Award for Excellence in Undergraduate Teaching in 2002 and has been named to the List of Teachers Rated Excellent more than 40 times. Of his six present students, four will defend this year and two next year, at which point he will have advised 31 Ph.D. theses. Since 2004, each summer he has led a research group of 20–30 graduate students from the U of I and other institutions who collaborate in small groups to attack open problems in graph theory and combinatorics.

Well known as a textbook author, West co-wrote *Mathematical Thinking: Problem-Solving and Proofs* with John D'Angelo. His *Introduction to Graph Theory* is the dominant text for graph theory courses in India and Asia. Both books have sold over 10,000 copies.

Outside mathematics, West sang in the Oratorio Society from 1982 to 1992 and in the Illinois Opera Theatre Chorus from 1992 to 2000. He was an avid squash player for 30 years and plans to resume playing shortly. He and his wife Ching Muyot (an alumna of our department) also hope to resume salsa dancing.

West maintains that he is only pretending to retire, as he plans to continue teaching graduate courses and advising Ph.D. students. His first tasks will be to prepare the third edition of *Introduction to Graph Theory* and to complete *Combinatorial Mathematics*, a two-semester graduate-level text. Then there is the four-volume advanced series *The Art of Combinatorics*, which he has been writing for 27 years. Maybe someday he will find time to clean up his office.

Katherine Wahl

Katherine Wahl earned her B.S. in the Teaching of Mathematics at the University of Illinois in 1978. After teaching at Central High School in Champaign, IL, for one year, she returned to the U of I and earned her M.S. in Mathematics. Kathy joined the Department of Mathematics at Illinois in the fall of 1981.

From 1981 to 1993 Kathy taught large sections of various precalculus courses; she also taught large sections of linear algebra for a few years. In 1986 Kathy began teaching for the Summer Bridge Program, an intensive 6-week academic program for incoming freshmen involved in the Transition Program, in LAS. In addition to being an instructor for the program Kathy served as the coordinator of the mathematics portion from the summer of 1987 to the conclusion of the program in 2009.

In 1993 Kathy began teaching for the Transition Program—now the Access and Achievement Program—during the fall and spring semesters in addition to the summer. In 2008 Kathy earned the Distinguished Teaching Award in Mathematics for Non-Tenure-Track Faculty. In 2009 she earned the LAS and campus teaching awards for Excellence in Undergraduate Teaching. Kathy states that while the content of the courses she teaches may be very simple, finding the optimal way to teach the material is a life-long mission.

After retirement Kathy will continue to teach part-time at both the U of I and Parkland College. In addition, she plans to spend as much time as possible with her grandchildren.

Illinois Number Theory Conference held in Urbana

One of the longest running conference series in the region, the Illinois Number Theory Conference has been held nearly every year since the 1970s. Past editions of the conference have been hosted by Illinois State University, Northern Illinois University, and Southern Illinois University. Since the 1990s, the U of I has served as the primary host of this conference.

The Illinois Number Theory Conference has a long-standing reputation of offering a friendly, informal, and nonthreatening environment in which participants from small colleges in the region and graduate students are just as welcome as the big names in the field. The conference prides itself in its "no registration fee" policy for all participants. Because of this, and the availability of inexpensive lodging options during the conference period, the cost of attendance is quite modest compared with society-sponsored conferences.

This year's edition of the Illinois Number Theory Conference was held on the Urbana campus on May 27–28, 2011, and featured more than a dozen talks. The conference received funding from the Number Theory Foundation to support participation of graduate students and junior faculty without access to other sources of support. It attracted a broad audience, from old-timers and regulars that have been attending for decades, to junior faculty and postdocs starting out their academic careers and graduate students. Continuing a trend in recent years, graduate students made up about one third of all participants, and nearly half of the talks at the conference were given by graduate students or recently minted Ph.D.s.

ALUMNI NEWS

Zachary Herrmann (B.S. 2006) is a high school teacher at Evanston Township High School. Zachary teaches multiple levels of geometry and focuses on using groupwork to help students solve complex and non-routine problems. Zachary was recently announced as the Illinois Council of Teachers of Mathematics Promising Young Teacher for the state of Illinois. Additionally, Zachary earned an award from the Illinois State Board of Education for Excellence as an Early Career Educator. In addition to teaching mathematics, Zachary coaches cross country, helps direct plays, and choreographs dance shows at the high school.

Kevin W. Hopkins (Ph.D. 1989), chair and professor of Mathematics at Southwest Baptist University since 1989, received the 2011 Parkway Distinguished Professor Award from Parkway Baptist Church. In 2010 he was honored by the Missouri Council of Teachers of Mathematics with the Outstanding Post-Secondary Teacher of the Year Award. For the past 5 years, Hopkins has run the Math Contest Camp at Southwest Baptist University and his department has hosted 44 math contests over the past 10 years.

Kevin O'Bryant (Ph.D. 2002) is now tenured and promoted to Associate Professor at the College of Staten Island. He is also on the Doctoral Faculty of the Graduate Center. Both the Graduate Center and the College of Staten Island are parts of the City University of New York.

Natella O'Bryant (Ph.D. 2002) is now at Barclays Capital as a Vice President in their Liquidity, Risk and Capital Markets Department. This is her second non-academic position. After receiving her Ph.D. she held a postdoctoral position at the University of California at Irvine, a Visiting Assistant Professorship at CUNY, and in 2006 became an Assistant Vice President in the Credit Analytics and Risk Strategy Department at HSBC.

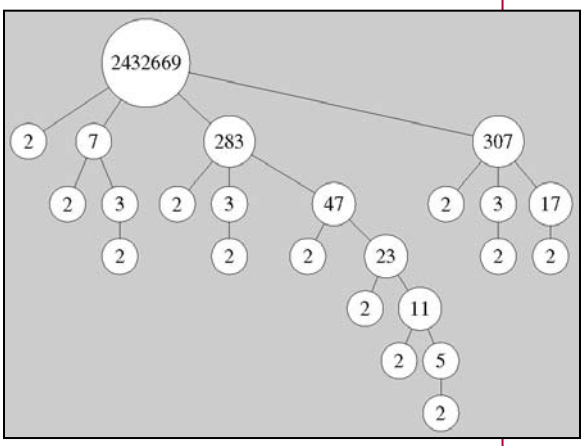
In 2010, **Lawrence Somer** (Ph.D. 1985), along with his co-authors Michal Krizek and Alena Solcova, received the Josef Hlavka Prize for the best scientific book published in the Czech Republic in 2009 in the category of the science of inanimate nature for their book, *Kouzlo Cisel (Magic of Numbers)*, published in Czech by Academia Publishers.

RESEARCH HIGHLIGHT

Prime numbers and randomness

Prime numbers have fascinated mathematicians since antiquity and many of the most famous unsolved problems in mathematics concern the primes. Although number theory deals with properties of whole numbers, the subject has benefited greatly from an infusion of ideas and techniques from many other areas of mathematics such as analysis, combinatorics, algebraic geometry, probability and ergodic theory.

Kevin Ford, a professor in the Department of Mathematics at Illinois, delivered an Invited Address at the Central Section meeting of the American Mathematical Society, which was held at the University of Iowa in March. The title of his talk was "Prime chains, arithmetic functions and branching random walks." A "prime chain" is a sequence $p_1, ..., p_k$ of prime numbers with p_{j-1} divides p_j-1 for each j. For example: 2, 5, 11, 67, 269. In his lecture, Kevin described recent work with Sergei Konyagin and Florian Luca on counting prime chains with various properties, e.g. how many prime chains end at a given prime p, or how many start with a given prime p and end at a prime less than x. Such problems have arisen in a number of contexts, including the distribution of arithmetic functions and in methods for proving that very large numbers (with hundreds of digits) are prime.



Together with Luca and Carl Pomerance, Ford used the new results about prime chains to prove a 50-year old conjecture of Paul Erdös concerning the two arithmetic functions $\phi(n)$ and $\sigma(n)$. Here $\sigma(n)$ is the sum of the positive divisors of n, a function studied by the ancient Greeks, who were particularly interested in "perfect" numbers (numbers with $\sigma(n)=2n$ such as 6 and 28). The other function $\phi(n)$ is Euler's "totient" function, the number of positive integers between 1 and n that are relatively prime to n. Although having very different definitions, these two functions behave similarly, stemming from the formulas $\sigma(p)=p+1$ and $\phi(p)=p-1$ for primes p. Erdös conjectured that the ranges of the two functions ϕ and σ have infinite intersection. One of the appeals of the conjecture is that it is easy to state. Also, it follows easily if either the twin prime conjecture is true (there are infinitely many pairs of primes differing by 2 such as 11, 13) or if there are infinitely many even perfect numbers. Both of these hypotheses are widely believed but seem beyond reach at present. In the opposite direction, Ford teamed up with Paul Pollack, a NSF Postdoctoral Fellow at Illinois, to prove that "almost all" of the integers in the range of ϕ are *not* in the range of σ and vice-versa.

When confronted with a problem that is intractable using existing methods, it is common in number theory to make a "random model" of the phenomenon under investigation. Of course prime numbers are not actually random, nor are the prime factors of integers, but both have statistical properties that can be described in probabilistic language. For example, one can easily make rigorous the statement "a random integer is even with probability 1/2". Ford, Konyagin and Luca created a model to analyze the distribution of the height of the "Pratt tree" for a prime p. This is a tree structure built up from the collection of all prime chains ending at p, and named after V. Pratt, who used it to prove that every prime has a short "certificate" for verifying its primality. The main assumption in the model is that the distribution of large prime factors of a "random" shifted prime p-1 is the same as the distribution of large prime factors of a "random" integer, the latter being well understood and the former only partly understood. The model was then analyzed using cutting-edge results in the theory of "branching random walks". In a branching random walk, an individual wanders randomly along the real line, has offspring which themselves wander randomly (and independently of each other), the offspring have their own offspring, and so on. Based on the random model, the authors conjectured that the height of the Pratt tree for p is very close to e log log p for "almost all" p, where e=2.71828... is a familiar mathematical constant, and also that the distribution has a pronounced asymmetry.

Branching random walks form part of a more general theory of "branching processes", a very active area with applications to diverse subjects such as population dynamics, the spread of epidemics, planet formation, nuclear fission and queueing theory in computer science. It is fascinating that some of the same laws that govern physical and biological processes also govern structures built from prime numbers.

Kevin Ford

Kevin Ford is a professor in the Department of Mathematics at the University of Illinois at Urbana-Champaign. He received his Ph.D. in 1994 at Illinois under the direction of Heini Halberstam, and returned as a faculty member in 2001. Since that time, four graduate students have earned Ph.D.s under his direction and he has been active in developing graduate courses in number theory. Part of his research emphasizes the use of ideas from probability theory to study phenomena in number theory. Recent projects included the distribution of divisors of integers, the distribution of integer-valued arithmetic functions, configurations of prime numbers, and construction of matrices (using number theoretic ideas) useful for sparse signal recovery. He recently spent the academic year 2009–2010 on sabbatical at the Institute For Advanced Study in Princeton. For more information and links to papers, see www.math.illinois.edu/~ford/.

Faculty News

Professor Emeritus **Donald Burkholder** has been named a 2011 Fellow in the American Association for the Advancement of Science (AAAS) for his distinguished contributions to probability theory, particularly the theory of martingales, and his work in stochastic processes, functional analysis, and Fourier analysis. Burkholder retired from the Department of Mathematics in 1998. He joined the faculty in 1955, the same year he received his Ph.D. in mathematical statistics from the University of North Carolina, Chapel Hill. Burkholder became a professor in the department in 1964, and in 1978 was named a Professor in the Center for Advanced Study at the University of Illinois. He is a member of the National Academy of Science, and in 2009 he was named a Fellow in the Society for Industrial and Applied Mathematics (SIAM).

Assistant Professor **Alexander Yong** has been named a 2011–2012 Beckman Fellow in the Center for Advanced Study (CAS) at the University of Illinois. Yong works in algebraic combinatorics. His CAS appointment project is to study combinatorial problems through the lens of the Grassmannian. This will include investigations of matroids, total positivity, cluster algebras, resolutions of singularities and Schubert calculus. Together with his graduate students, he hopes to discover and further deepen connections between these seemingly variegated topics. This research, and materials from his Spring 2011 graduate topics course, will form the basis of a monograph on the subject.

Professor **Bruce Reznick** has been appointed as a 2011–2012 Associate in CAS. Reznick will focus on the construction of new polynomial identities, especially those involving sums of higher powers. These have widespread application in number theory, combinatorics, functional analysis, numerical analysis, computational real algebraic geometry, and theoretical engineering, where they can provide "certificates" that certain inequalities are true. He will be traveling extensively during the time of his appointment, with at least four conferences and three colloquia planned already.

Professor **Slawomir Solecki** has been awarded the 2010 Scientific Prize by the Mathematical Institute of the Polish Academy of Sciences (IMPAN). The Scientific Prize, established in 2009, is awarded once a year for outstanding scientific achievements in mathematics to a person who is a Polish citizen or is a legal resident of Poland, and who is not yet 45 years old. Solecki joined the department in 2001 and was promoted to Professor in 2006. His research specialty is descriptive set theory and its connections to topology, analysis, and combinatorics.

Jeremy Tyson gave an invited address "Sobolev mappings into metric spaces" at the AMS Spring Southeastern Sectional Meeting at Georgia Southern University, Statesboro, GA. Tyson, an associate professor in the department, is also a member of the Governing Board for the research training project CG-DICE: Dimension Phenomena and Curvature Equations in Carnot groups funded by the European Commission for Research, 7th Framework Programme, Marie Curie Actions International Research Staff Exchange Scheme. This is a joint research training venture between faculty in geometric analysis at three European math departments (Bern, Seville, Bologna) and four U.S. departments (Arkansas, Temple, Illinois, Pittsburgh).

Matthew Ando has been elected to a three year term on the American Mathematical Society (AMS) Council for 2011–2014. The Council is the body that formulates the scientific policies of the Society and acts in an advisory capacity to the AMS Board of Trustees. Ando (Ph.D. 1992, MIT) is an associate professor who joined the mathematics faculty at Illinois in 1999. His research interests are in algebraic topology.

Department establishes Named Scholar Program

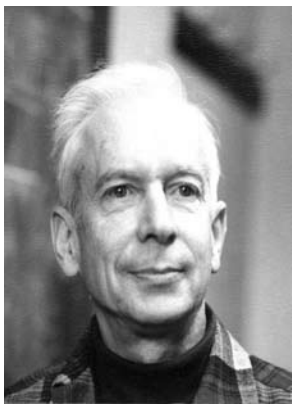
The Department of Mathematics announces the Named Scholar Program, a new program funded by the department's endowment to recognize outstanding accomplishments of individual mathematics faculty. The first two Named Scholars are Alexandr Kostochka appointed as the Wolfgang Haken Scholar, and Marius Junge appointed as the J.L. Doob Scholar. Each received partial release time in Spring 2011 to provide more time for their research projects, as well as a $5,000 research fund during the 2011-2012 academic year.

Professor Junge has been doing groundbreaking work in recent years in operator spaces, operator algebras, noncommutative probability, noncommutative harmonic analysis, and most recently in quantum information theory. In the last year, his papers have been very influential and have appeared in strong journals such as Inventiones Mathematicae, the American Journal of Mathematics, Mathematische Annalen, Transactions of the AMS, Advances in Mathematics, and Physical Review Letters. He has also mentored four postdocs.

Professor Kostochka has proved an impressive number of blockbuster theorems on extremal and structural problems about graphs, hypergraphs, and finite posets. Among his celebrated recent results are a simplification and extension of the Hajnal-Szemeredi Theorem on equitable coloring, existence of large bipartite minors in dense graphs, a lower bound on the list chromatic number of uniform linear hypergraphs, strengthening of Galvin's Theorem on edge-choosability, and improvements of known results on packing, coloring, decomposition, and domination of graphs. He has published more than 200 papers and has had six Ph.D. students, including two finishing this year.

IN MEMORIAM

Ray G. Langebartel



Ray Langebartel of Champaign, Professor Emeritus of the Department of Mathematics, passed away February 25, 2011. Ray was born in Quincy, IL, on April 27, 1921, and graduated from Quincy High School in 1939. He then attended the University of Illinois where he received his Bachelor's degree in 1942, Master's degree in 1943, and, after serving in the Navy from 1944 to 1946, returned to the U of I and received his Ph.D. in 1948. While Ray was a graduate student, he served as a Teaching Assistant from 1946 to 1948 and was then hired as an instructor by the Department of Mathematics.

Ray served as an Assistant Professor from 1953–1960, an Associate Professor from 1960–1964, and a Full Professor from 1964 until his retirement in May 1991. He supervised sixteen Ph.D. students during his career and received the William F. Prokasy Award for Excellence in Undergraduate Teaching in June 1989.

Ray was a very popular instructor and his courses were in great demand even though they were challenging and his grading standards were rigorous. He was particularly interested in developing and teaching advanced graduate courses for engineering and physical science students. His teaching style was straightforward, but he enjoyed inserting anecdotes and asides to keep the material interesting. He felt that it helped keep the students engaged by outlining the history behind the development of the material, by explaining the motivation behind the logic, and by detailing the lives of the more interesting individuals connected with the development.

Ray also taught at the U of I Graduate Engineering Program in Rockford, IL, and took sabbaticals to Sweden, England and Greece. During the summers in the 1960s, Ray worked for NASA on the Apollo Space Program in Greenbelt, MD, contributing to America's effort to successfully put a man on the moon.

Ray was preceded in death by his wife, Theodora (Engstrom), whom he married in April 1945 in San Francisco, CA. He and Theo enjoyed music, traveling and attending concerts at Krannert Center for the Performing Arts. They were also actively involved in the local music scene, being founding members of the Vaudeville musical group The Recalls. Ray sang and played various musical instruments and Theo played the piano. The Recalls toured local retirement and nursing homes, entertaining the residents, and also played at other venues.

Ray is survived by brothers Bill Langebartel and David Langebartel, daughters Jill Faunce and Linnea Langebartel, sons Edwin Langebartel and Eric Langebartel, and three grandchildren.

Eva Gray

Eva Gray with granddaughter, Addie Gray.

Eva Wirth Gray died on March 5, 2011, at the age of 81, after a slow parting of ways with her long and rich life. Eva was an Assistant Professor in the Department of Mathematics from 1965 to 1995. Although she retired from her faculty position in 1995, she continued to work advising Master degree mathematics students for several years after her retirement.

Though Swiss by nationality, she was born in Ebbingen, Germany, in 1929. She received a Ph.D. at the University of Zürich under the direction of the great Finnish mathematician Rolf Nevanlinna, then taught for a time at a local school, but soon went to America to take a postdoctoral position at Stanford University in 1955. There, thanks to a squeaky office chair, she met her husband of 55 years, John Walker Gray.

By 1957 she was teaching mathematics at Douglas College while John was at the Institute for Advanced Study in Princeton. They married in order to be able to live in married student housing without raising eyebrows: It was, after all, the 1950s. The couple moved to New York in 1959, Eva teaching at Barnard College and John at Columbia University. Barnard offered to make her a dean, but the University of Illinois offered something more: The chance for both of them to work together in the same department.

John and Eva arrived in 1962, intending like many new academic residents of Urbana to stay for a few years before moving on to bigger and better things. But this town has a way of growing on people, and they quickly began putting down roots in the form of Stephen, born 1962 near Hessel Park, Theodore, born 1964 on Ells Avenue, and Elizabeth, born 1966 on Michigan Avenue, where John and Eva stayed for the next 45 years.

The family traveled often to Switzerland, staying always in her father's great stone house on Sonnenberg Strasse, a place of many memories old and new. Elizabeth died there in the Children's Hospital of Zürich at the age of 15, after a short lifetime of wondering if she would make it another year.

Eva's grandchildren Addie, Emma, and Connor were a great joy to her as they grew from infants to the vibrant creatures they are today, no doubt bringing back memories of her own children.

Eva lived through, and lived in, a world alive with danger and hope, love and fear, tragedy and rebirth. Through it all she remained kind to all around her, gentle to a fault, and as solid as the mother earth she now returns to.

Department of Mathematics Giving Form

Today, more than ever, the Department of Mathematics relies on the generosity of its alumni and friends. Join us in ensuring a brilliant future by supporting the department in its educational and research missions.

☐ **Yes! I believe in the importance of excellence in mathematics and wish to show my support!**

$_____ **Mathematics Partnership Fund** (#332346)
Your gift to the partnership fund will have the widest impact as it supports a range of activities including student awards and travel, distinguished lecturers, the recruitment of excellent faculty, and alumni events.

$_____ **Actuarial Science Fund** (#330225)
Support Actuarial Science through scholarships, fellowships, graderships, and faculty support.

$_____ **Mathematics Excellence Fund** (#775705)
Create named scholars and other endowed positions.

$_____ **Mathematics Research Experience Endowment Fund** (#772913)
Support research experiences for undergraduate students (REUs).

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You're invited to Homecoming 2011!

The 4th annual Department of Mathematics homecoming party will be held Saturday, October 1, 2011, from 2 to 4 p.m. immediately following the Illinois vs Northwestern football game. Look for our tent in front of Altgeld Hall. Enjoy food, games and seeing old friends.

Go to www.math.illinois.edu/homecoming/, or find us on Facebook at "U of I Math Homecoming 2011" for more information.

Math Times

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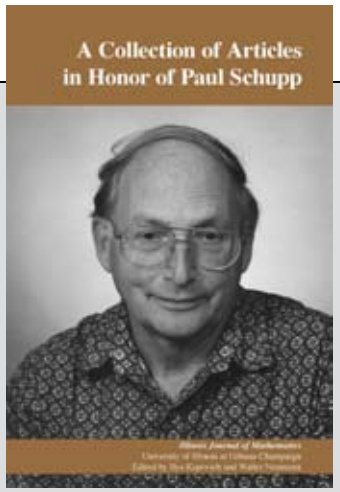

Special IJM volume honors Paul Schupp

by Phillip Griffith, Editor-in-Chief

The *Illinois Journal of Mathematics* is pleased to announce the publication of a special volume consisting of a collection of articles that honor the mathematical contributions of Paul Schupp.

Paul E. Schupp is an iconic figure in Geometric Group Theory. His contributions to the subject, from his early work on small cancellation groups in the 1960s to his results on interaction between Group Theory and Computer Science in the 1980s to his recent work on generic-case complexity and genericity in Group Theory, helped shape the birth and development of Geometric Group Theory and his name is deservedly among the most recognizable ones in the subject.

IJM owes a special debt of gratitude to guest editor Ilya Kapovich and editor Walter Neumann for their efforts in bringing the volume to life. The Schupp volume is the fourth in a stand-alone series published by the *Illinois Journal of Mathematics*. In addition to the Schupp volume, *IJM* has published *The Mathematical Legacy of Reinhold Baer*, edited by Phillip Griffith and Derek Robinson; *Joseph Doob: A Collection of Mathematical Articles in His Memory*, edited by Donald Burkholder; and *A Collection of Articles in Honor of Phillip Griffith*, edited by Luchezar Avramov, Sankar Dutta, and Hans-Bjorn Foxby.

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