Math Times

Department of Mathematics, Spring/Summer 2012

New scholarships support undergraduate mathematics majors

An Illinois mathematics education is a great preparation for many careers and vocations, but we recognize that the cost of higher education is a challenge for our students. We are very pleased to announce the launch of several new scholarships which will help promising students to pursue a major in the Department of Mathematics. In recent months, alumni and friends have already generously invested more than $500,000 in scholarships, either as current or deferred gifts. Thanks to them, we have already offered some 20 scholarships to students for enrollment at the University of Illinois in Fall 2012! We are confident that, as it grows, this effort will contribute to the vibrant community of student scholars which is vital to an excellent undergraduate education.

The Vincent O. Greene Scholarship in Mathematics was created by a generous gift from Vincent Greene, a University of Illinois retiree. These scholarships will be preferentially awarded to students pursuing a career in the teaching of mathematics. The first Greene Scholarships were awarded this spring and details about these four scholarship recipients can be found on page 9 of this issue.

Cecilia and Ronald Kuzma are also supporting students in the teaching of mathematics with the Cecilia M. and Ronald J. Kuzma Math Education Scholarship. Cecilia Kuzma received her B.S. in Mathematics from the University of Illinois in 1970 and is a current member of the Mathematics Development Advisory Board (MDAB).

The Elsie Thomas Fraser Award was established by Elsie Thomas Fraser (B.A. in Science and Letters, 1939) and her husband, Edward (B.S. in Civil Engineering, 1939). Elsie Fraser is an undergraduate alumna and long-time supporter of the University of Illinois. She established the Elsie Thomas Fraser Award because she wanted to be able to "encourage a student to work a little harder." More about this award and the 2012 recipient can be found on page 8.

Bradley and Karen Smith are supporting the Actuarial Science Program with the Bradley M. and Karen A. Smith Scholarship Fund. Brad Smith received a B.S. in Actuarial Science from the University of Illinois in 1977 and is also a current member of MDAB.

David and Pamela Hays are the initial donors to the Illinois Mathematics Scholarship Fund that was conceptualized by the Mathematics Development Advisory Board (MDAB) to support students enrolled in all majors in the Department of Mathematics. David Hays received his B.S. in the Teaching of Mathematics from the University of Illinois in 1978 and is also a current member of the MDAB. Fifteen two-year scholarships have already been offered this year.

The "Mananaan" sculpture, south of Grainger Engineering Library on the Bardeen Quad, framing Altgeld Hall in the background. Mananaan is the god of the sea in Irish mythology and occurs in the thoughts of Stephen Dedalus (in James Joyce's *Ulysses*), as a symbol of change.

To be eligible for an Illinois Mathematics Scholarship, a student must have a perfect ACT Mathematics score of 36 and an ACT Composite score of at least 34. The department's long-term goal is to be able to award two-year $2,000 per year Illinois Mathematics Scholarships to all eligible students. We also hope to offer larger scholarship awards in case of outstanding merit or financial need.

Enabling promising students to study mathematics at Illinois is a great investment in our students, in our department, and in our future. You can help us reach our goals by donating to the Illinois Mathematics Scholarship Fund. You can return the form at the end of this issue, or donate online at http://www.math.illinois.edu/gifts/.

The department thanks everyone who invests in our students by contributing to a scholarship fund.

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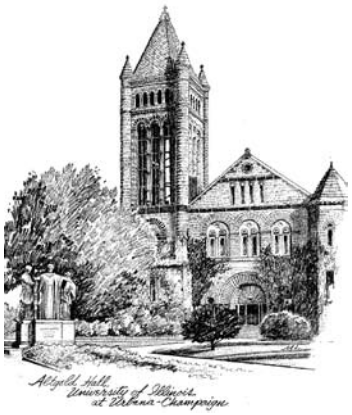


Department establishes networking group on LinkedIn

We are pleased to announce the creation of the Illinois Department of Mathematics Networking Group on LinkedIn, the world's largest professional network.

The purpose of this new group is to connect our alumni, students, faculty, and friends with the department and with each other. We encourage you to initiate and actively participate in the group's discussions. In addition, we will periodically broadcast news from the department. We hope to renew old Illinois mathematics connections as we also create new ones.

If you are already a member of LinkedIn, simply select "Illinois Department of Mathematics Networking" from the list of groups on the LinkedIn groups tab and then click on the "join group" button. If you are not a member of LinkedIn, you will need to join LinkedIn before you can join the group. You can sign up for LinkedIn at https://www.linkedin.com/reg/join.

We look forward to your participation in the Illinois Department of Mathematics Networking Group!

From the department chair

Dear Friends,

A great math department brings together the best faculty and the most promising students, and provides them with world-class facilities to address the mathematical challenges of the 21st century. Roughly that's three things: great faculty, promising students, and world-class facilities. In the last year, we've made progress on all three fronts. In all cases, the support of our alumni and friends has made a huge difference in what we have been able to accomplish.

We have just filled our first endowed professorship. Dr. Rui Fernandes, currently Professor and Head of the Department of Mathematics at the Instituto Superior Técnico in Lisbon, will join our faculty as the Lois M. Lackner Professor in Mathematics in Fall 2012. We are currently recruiting for our second endowed professorship, the Morris and Gertrude Fine Distinguished Professorship of Mathematics. These endowed positions represent an extraordinary opportunity to advance the department, and we are very grateful to Dr. Lois Lackner and to Dr. Ken and Mrs. Rebecca Fine for making them possible. We have also hired two new assistant professors and a number of postdocs. Look for the Fall 2012 issue of *Math Times*, which will report on all of our new hires.

To help promising students choose mathematics at Illinois, we have embarked on an ambitious program of undergraduate scholarships. This effort is off to a wonderful start: already our alumni and friends have invested more than $500,000, and this year we offered a record number of scholarships to incoming first-year students. Much of the impetus for this program came from our Mathematics Development Advisory Board.

The Fall 2011 issue of *Math Times* described the results of the feasibility study for the renovation of Altgeld and Illini Halls. We continue to work with the University to develop plans for implementing the study's proposal. On a more modest scale, I'm very excited about the new Illinois Geometry Lab, which provides a platform for undergraduates to do research involving the visualization of mathematics. Undergraduate research is an increasingly important part of our mission, and gift funds have helped the Geometry Lab get underway. In this issue, Prof. Zoi Rapti reports on an NSF-funded program of undergraduate research courses in biology and mathematics. This interdisciplinary effort is stewarded in our department by Prof. Lee Deville, Prof. Zoi Rapti, and Dr. Ruth Kantorovitz.

Matthew Ando
Chair, Department of Mathematics

Alumnus Profile: Jerrold M. Levy

by Jim Dey

When Jerry Levy reflects on his educational experience at the University of Illinois, it's not about football games or playing Frisbee on the Quad.

"My education helped me get a job, and for that I will be eternally grateful." Work, not play, was on Jerry's mind when he graduated from Maine East High School in 1969 and, as a James Scholar, accepted a UI scholarship to pursue a mathematics degree. One of three kids born to parents who ran a "mom and pop" grocery store in a then-dilapidated-but-now-gentrified Chicago neighborhood, Jerry said he was more focused on the "end result of an education"—a good job offering a bright future—than the notion of an education in its own right.

From left to right: Carlyn Levy, Jerry Levy and Karen Levy (Carlyn, who graduated in May 2012 from the University of Vermont, is Jerry and Karen's daughter).

"It was the way I was brought up. From the time I was five, my father told me I had to save for college. So from a young age it was ingrained that I would attend a university and find a vocation," he recalls.

Looking back now, the 60-year-old Levy, an actuarial consultant with Chicago-based Mercer, a subsidiary of Marsh & McClennan Companies, believes his mathematics education, combined with liberal arts courses, fueled both his business success and future intellectual interests.

"I'm lucky. Things worked out about the way I planned," said Jerry, who is married to Karen, a nurse, and has a daughter, Carlyn, a senior at the University of Vermont. "The university trained me extremely well to use my math skills in a business setting. Plus, it gave me the opportunity to study things I really liked."

Jerry, who lives in the Chicago suburb of Deerfield, still recalls his first semester at the UI when, along with calculus, he also had classes in Shakespeare, psychology and philosophy.

"Being exposed to those things opened up new areas of my life," he said, noting the contrast between those subjects and more practical math classes that included the "Theory of Interest" and a course called "Life Contingencies" that is the mathematics behind life insurance and annuities.

Although Levy was certain he wanted to study math, he said he had "never heard of an actuary" until a roommate mentioned the option to him. After taking an aptitude test, Levy decided to major in actuarial science with the goal of becoming a business consultant. He said the idea of working with clients in a consultative role was more appealing than crunching numbers all day for an insurance company.

Levy was so intent on a business career that, after graduating from the UI in 1973, he passed up an opportunity to attend the UI's College of Law, a decision that made for interesting dinner conversation that night when his father learned of his decision.

"My father was concerned, but left the decision to me. 'You'd have to pay for it, so do what you think is best,' he said to me. Years later my father agreed that I made the right decision."

Levy got a job at Alexander & Alexander in Chicago and stayed there for 15 years, first as an actuarial analyst and then as a consultant. In 1988, Levy joined Mercer, where he's a consulting actuary who assists big-name corporate clients determine the strategic direction of their pension plans, a practice that not only involves confronting changes in the work force but a shifting business environment.

Levy said that "being an actuarial consultant is more than a full-time job, one that carries dual responsibilities." He said he not only has to use his professional skills when advising clients but interact with many different kinds of people at various levels in the organization.

"Business is about building relationships. Having the practical background is just the price of admission," he said. "You have to be able to relate to them and speak to them on a variety of subjects." Levy said that's where his liberal arts education supplements his math education.

"It's made me a better consultant," Levy said. "I don't have to be an expert. I just have to be able to talk to people about their interests."

Levy also makes it a point to talk to young people, particularly UI math students. As a current member of the UI LAS Alumni Association Board of Directors, he said he visits campus a couple of times a year and enjoys the opportunity to advise students on LAS Career Exploration Night.

"It doesn't have to be about actuarial science. It could be about how to interview for a job," he said. "I had some great mentors in my life. So I like to help other people."

In his down time, Levy pursues a variety of interests. He likes to work out in the morning and bike or take long walks with his wife on the weekends. He does a crossword puzzle on each train ride to and from his office in Chicago and reads books on a variety of subjects. And in an unexpected pursuit for an actuary, he writes short stories.

Although he's been active in the business world for nearly 40 years, Jerry said he still enjoys his work and, despite its many challenges, has no plans to retire.

"I'm going to do what I'm doing now for as long as I can be of value to my clients," Levy said.

Jim Dey is a columnist and editorial writer for the Champaign–Urbana News-Gazette.

AWARDS

Campus and College of LAS Awards

Campus Award for Excellence in Graduate Student Mentoring

Bruce Berndt

Bruce Berndt is the 2012 recipient of the Campus Award for Excellence in Graduate Student Mentoring. Berndt has been on the faculty of the department since 1967, and since 2009 holds the title of Center for Advanced Study Professor, one of the highest distinctions bestowed on faculty members on this campus. He is the author of twelve books and over two hundred papers in analytic number theory and related areas. Since the mid 1970s the focus of his research has been on proving the thousands of claims in the notebooks left by the Indian mathematician Srinivasa Ramanujan, a monumental task for which he received the 1996 AMS Steele Prize.

Berndt's record of advising graduate students is nothing short of phenomenal: thirty students have received their Ph.D. degree under his direction, and four more students are currently working on a thesis under his direction. In the one hundred year history of our department, only two faculty members have had more Ph.D. students than Berndt.

As astonishing as these numbers are, they only begin to tell the story. Berndt's dedication to his students, his willingness to make time for each of his students, and his open door policy are as legendary as the homemade ice cream at Berndt's house where he and his wife frequently host his students. Perhaps the greatest testament to Berndt's mentoring skills is the successful careers of his former students. His former students and postdocs hold academic positions at institutions ranging from small liberal arts colleges to large state universities in the U.S. and leading universities in Singapore, Taiwan, Korea, India, and Turkey, as well as nonacademic positions at prestigious industry research labs.

LAS Dean's Award for Excellence in Undergraduate Teaching

Jeremy Tyson

The LAS Dean's Award for Excellence in Undergraduate Teaching is the flagship teaching award of the College of LAS. This marks the eighth consecutive year that a mathematics faculty member has received this award, the longest such streak of any LAS department.

Jeremy Tyson is this year's recipient. He joined the department in 2002, was promoted to Associate Professor in 2008, and was designated a 2008–2009 Helen Corley Petit Scholar by the College of LAS. The author of more than forty articles and two monographs, he is internationally known for his research at the interface of geometry and analysis.

Tyson has an exemplary record of classroom teaching that earned him eleven appearances on the List of Teachers Ranked Excellent since 2006 and the Department's Distinguished Teaching Award for Tenured Faculty in 2011. He has taught at a broad range of instructional levels, from large lecture calculus courses to honors calculus courses, service courses in differential equations, upper level honors courses, and graduate courses. He excels in all of these settings, with an average instructor rating of 4.6 across all courses. His students describe his classes as both challenging and rewarding and rave about the exceptional quality of his lectures.

Tyson is particularly interested in facilitating the transition from undergraduate courses to the graduate curriculum. He regularly teaches courses in the Math Honors sequence, he has developed new courses for this sequence, and he has advised and mentored undergraduate students and helped prepare them for graduate studies.

In addition to his own extensive instructional activities, Tyson left an indelible mark on the teaching mission of the department through his service as Chair of the Department's Teaching Awards Committee during the four year period 2004–2008, the longest and most productive such service in recent history. Thanks to his leadership and initiative, the department instituted departmental teaching awards in 2007 that complement the college and campus level awards and provide an added incentive for all instructors to excel in their teaching.

Wendy Harris

LAS AP Award and Chancellor's Academic Professional Excellence Award

The Department of Mathematics is proud to announce **Wendy Harris** as the winner of both the LAS Academic Professional Award and the Chancellor's Academic Professional Excellence (CAPE) Award for 2011–2012.

Harris is the Director of Budget and Resource Planning in the Department of Mathematics and does a truly exceptional job. She plays many roles to perfection, touching on most aspects of the department's finances and facilities. In particular, her nomination materials prominently cited her leadership on the department's Feasibility Study Oversight Committee, which worked on the feasibility study for the renovation and restoration of Altgeld and Illini Halls. She was the 2011 recipient of the department's Exceptional Merit Award in Mathematics for Non-Instructional Staff.

The College of Liberal Arts and Sciences extends the LAS AP awards annually. The CAPE awards are campus-wide awards presented annually by the Chancellor. Both of these awards are based on work contributions, personal contributions, and professional contributions. Harris excelled in each of these categories.

Department of Mathematics 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

Jayadev Athreya is the 2012 recipient of the N. Tenney Peck Teaching Award in Mathematics. Athreya received his Ph.D. in 2006 from the University of Chicago and joined the department in 2010. His research is at the interface of geometry, dynamical systems, and number theory. Athreya is a highly skilled and effective classroom teacher whose lectures are exceptionally well-crafted and superbly delivered. Outside the classroom, Athreya has been involved in a broad range of outreach activities, including a Math and Art workshop at the Krannert Art Museum; a course at University High School on Billiards and Geometry; and a curriculum project with students and teachers at Chirag School in the Indian state of Uttarakhand. Athreya cofounded the Illinois Geometry Lab (IGL), an umbrella organization to provide opportunities for research and outreach activities in geometry and related areas, and he serves as its director.

The N. Tenney Peck Teaching Award in Mathematics 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.

Distinguished Teaching Award in Mathematics for Tenured Faculty

Nathan Dunfield has been awarded the 2012 Distinguished Teaching Award in Mathematics for Tenured Faculty. Dunfield received his Ph.D. in 1999 from the University of Chicago. Following faculty positions at Harvard and Caltech, he joined the Department in 2007 as Associate Professor. His research area is the topology and geometry of 3-manifolds and related topics. He has graduated two Ph.D. students, is Ph.D. advisor of three further graduate students, and is also supervising four undergraduates on a research project for the Illinois Geometry Lab.

Dunfield brings with him a broad range of teaching experience and has taught more than twenty distinct classes at all levels over the course of his career. His classes are consistently well received by his students and noted for his clear and thorough lectures. At Caltech, his exemplary teaching has been recognized with the 2006 Faculty Teaching Award. At Illinois, his classes have earned him consistently high marks in student evaluations and five appearances on the List of Teachers Ranked as Excellent. Dunfield has been particularly effective in teaching our large lecture third-semester calculus class, Math 241, which he has taught three times during the past two years, with excellent student evaluations. Course materials he developed for Math 241 are now being used by several other instructors.

The Distinguished Teaching Award in Mathematics for Tenured Faculty was established by the Department of Mathematics in 2007. It is given to tenured faculty in the Department of Mathematics for exemplary teaching.

Distinguished Teaching Award in Mathematics for Non-Tenure-Track Faculty

Aldo Manfroi has received the 2012 Distinguished Teaching Award in Mathematics for Non-Tenure-Track Faculty. Manfroi earned a Ph.D. in Oceanography in 2001 from the Scripps Institution of Oceanography at UCSD, with a thesis on the formation and evolution of zonal jets. He joined the Department as a Lecturer in 2003, teaching mainly undergraduate courses in Differential Equations and Linear Algebra. Manfroi is a popular instructor who has appeared on the List of Teachers Ranked as Excellent thirteen times in the last ten semesters. Students appreciate his friendly personality, the welcoming atmosphere he creates in his classroom, his well-prepared lectures, and the detailed web pages he maintains for his courses. In addition to his classroom instruction, Manfroi has been involved in developing Math 410, a new linear algebra course with a focus on financial applications.

The Distinguished Teaching Award in Mathematics for Non-Tenure-Track Faculty was established by the Department of Mathematics in 2007. It recognizes exemplary teaching by instructors, postdocs, and other non-tenure-track faculty in the department.

Exceptional Merit Award in Mathematics for Non-Instructional Staff

Established in 2010, the Exceptional Merit Award in Mathematics for Non-Instructional Staff is given to recognize a non-instructional staff member who exhibits excellence in his or her work. **Sara Nelson** is this year's recipient. Sara began her career in the math department in September 1997.

Sara is the first person someone meets when they come to the Main Office. She greets visitors, handles inquiries and problems, maintains the department directory, distributes office keys, and edits the Promotion and Tenure dossiers. Sara also stands out because she is the only office support staff who is trained in TeX; department publications don't leave without first being proofed by Sara, including the department newsletter, and students know her as the "go to lady." The prize committee selected Sara for this award because of her demonstrated work excellence and because she goes the extra mile to help everyone with any request.

AWARDS

Graduate Awards

Bateman Prize in Number Theory

Kit Ho Mak is the recipient of the Bateman Prize in Number Theory for 2012. 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.

Mak works in number theory, and is completing his Ph.D. under the direction of Iwan Duursma. His research is on curves over finite fields with many rational points. In one published result he shows that generalized Giulietti-Korchmaros curves are not Galois covered by a Hermitian curve using properties of the Artin representation of the automorphism group of the Hermitian curve. Another result, submitted for publication, uses Kuhnt's extension of the Serre class field tower method to obtain new lower bounds for the Ihara constants over the fields of two or three elements. Another interest of Mak is the distribution of points on varieties on which he has obtained a number of results jointly with Alexandru Zaharescu. Mak enjoys teaching and has been on the Campus List of Teachers Ranked as Excellent multiple times.

Irving Reiner Memorial Award

Jesse Beder is the 2012 recipient of the 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.

Jesse works in commutative algebra, and is completing his Ph.D. under the direction of Sankar Dutta. Beder's thesis research revolves around conjectures of Serre on intersection multiplicity and related conjectures of Peskine-Szpiro, generalizations of the famous Auslander-Buchsbaum formula. By combining results of Peskine-Szpiro with several lemmas involving Auslander-Buchsbaum formula and localization, Beder is able to prove the conjecture in arbitrary characteristic. Beder's proof is short and elegant, and indeed yields a stronger result than was previously known. Beder is also a very good teacher—he has been on the Campus List of Teachers Ranked as Excellent five times. In addition, he is a very active departmental citizen currently serving as the sole organizer of the Commutative Algebra Seminar.

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. This year's recipients are **Victoria Reuter** and **Elyse Yeager**.

Victoria Reuter is a graduate student working with Professor Bruce Berndt in number theory. She has taught classes in a variety of styles at the University of Illinois, including large lecture blended format in mathematics and programming laboratories in computer science. She has especially enjoyed teaching in the Merit Program, as it allows for a closer interaction with the various learning styles of students.

Elyse Yeager is a second-year math student studying combinatorics under the direction of Alexandr Kostochka. She was born and raised in Alaska, and earned her bachelor's degree in mathematics from the University of Alaska, Fairbanks. Elyse spent her junior year studying abroad at the Eberhard Karls University of Tübingen, Germany. After graduating from Fairbanks with minors in German and music, Elyse served two years in the US Peace Corps. She moved to The Gambia, on the west coast of Africa, learned the Fula language, and taught math and science in a rural village middle school. Teaching middle school full-time gave her insight into the learning process that has proved invaluable to her development as a teacher. When she returned to the US, Elyse earned her master's degree in math from West Virginia University under Dr. John Goldwasser before being accepted to Illinois.

Department TA Instructional Award

The Department TA Instructional Award was established by the department in 1979 and is awarded to graduate teaching assistants for exemplary teaching. This year's recipients are **Kelly Funk** and **Andrew Hunte**.

Kelly Funk is a fourth-year Ph.D. student under the supervision of Joseph Rosenblatt. She is working in the areas of ergodic theory and topological dynamics. She is the Vice-President of the local chapter of the Associate for Women in Mathematics, co-organizer of the Graduate Analysis Seminar, elected member of the Graduate Affairs Committee, and NSF Graduate Research Fellow. She enjoys being involved in the department, doing research, and teaching. Her passion for teaching began when she was in early elementary school where she would "teach" her dad all of the arithmetic that she knew. She also enjoys passing on teaching techniques to others. Currently she is a mentor for three TA's in the Merit Program.

Andrew Hunte entered our graduate program in Fall 2008 under a Fulbright scholarship from his native country Trinidad and Tobago, and is working toward a Ph.D. in Mathematics Education. His current advisor is Dr. Gloriana Gonzalez. His research interests are in the teaching and learning of proof in mathematics. Hunte has been teaching a wide range of courses, from Introductory Algebra (Math 002) to Business Calculus (Math 234), both as standalone classes and as discussion sections attached to large lectures. He has done an outstanding job in all of these instructional settings and formats, appeared on the List of Teachers Ranked as Excellent for all but one of his courses, and for his most recent Business Calculus course received a perfect 5.0 instructor rating in a class of thirty students—an almost unheard-of score for a course of this type and size.

Bateman Fellowship in Number Theory

The Bateman Fellowship in Number Theory 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.

Joseph Vandehey is the 2012 recipient of the Bateman Fellowship. Joseph completed his undergraduate work at the University of Oregon. He is currently a fourth-year graduate student working under the joint supervision of Florin Boca and Kevin Ford. Joseph is an inventive mathematician, reads a lot on his own, and is unafraid to tackle hard problems. His work to date, as single or joint author, produced a number of excellent results on problems arising from various branches of Number Theory, including the distribution of values of integer polynomials, multiplicative functions with bounded partial sums, probabilistic aspects of continued fractions, estimates for the number of disjoint arithmetic progressions, and error term improvements in van der Corput's method of exponential sums.

Dr. Lois M. Lackner Mathematics Fellowship

Anja Bankovic is the 2012 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. Anja works in low dimensional geometry and topology under the direction of Chris Leininger. Her thesis research involves studying length functions on a variety of spaces of metrics on a surface, and in particular examining a phenomenon first observed for hyperbolic metrics by Horowitz and Randol. She has shown that this phenomenon persists in a large family of metrics (specifically those coming from holomorphic q-differentials) but that in the limit it disappears. The fact that the phenomena is present in such generality is surprising, and Bankovic's proof is beautifully geometric. Bankovic is also a dedicated TA and has twice appeared on the Campus List of Teachers Ranked as Excellent.

Conference for graduate students and recent Ph.D.s to be held October 12–14, 2012

The ninth annual Midwest Number Theory Conference for Graduate Students and Recent Ph.D.s will be hosted by the University of Illinois Department of Mathematics on October 13–14, 2012. Current and recent graduate students in number theory are encouraged to attend this meeting during which many of the participants will give short talks on their current or recent research.

The conference will be preceded by a one-day conference, Number Theory Day, on October 12. At this meeting, six well-known number theorists will present hour lectures. They are: William Banks (Missouri), Jordan Ellenberg (Wisconsin), Amanda Folsom (Yale), Jayce Getz (Duke), Paul Pollack (Georgia), and Ae Ja Yee (Penn State). Visit the conference website http://www.math.illinois.edu/mntcg9/ for more information.

Butterfield and Hunte receive LAS and Campus Teaching Awards

Jane Butterfield and **Andrew Hunte** received both the 2012 LAS Award for Excellence in Undergraduate Teaching for Graduate Teaching Assistants and Campus Award for Excellence in Undergraduate Teaching by Graduate Teaching Assistants. At the campus level, only five such awards are given out each year; that two of these awards went to the same department is unprecedented.

Jane Butterfield

Jane Butterfield entered our graduate program in 2006 and will complete her Ph.D. in August 2012 under the direction of Professor József Balogh. The college and campus level teaching awards she earned this year cap an impressive list of honors and accomplishments that include the 2010 Brahana TA Instructional Award, multiple fellowships, and a Masters degree in Mathematics Education.

Her teaching philosophy is rooted in the principle that "a good teacher is not a solution manual." Describing her approach to teaching she says: "Rather than being a solution manual, I am a solution catalyst: I encourage solutions to occur in the students around me." Butterfield employed this philosophy to great success teaching courses in the Department's Merit Workshop program—a long-running, highly successful program which offers active learning discussions within the calculus sequence. She taught Merit sections in both recitation and standalone format, developed course materials for Merit sections, and served as mentor to other Merit TAs; she has become one of the most successful instructors in the history of this program. Her exemplary teaching earned her consistently high student evaluations, five appearances on the List of Teachers Ranked as Excellent, and effusive praise by students.

Andrew Hunte

Andrew Hunte also received the department's TA Instructional Award this year (see page 6). Andrew is working toward a Ph.D. in Mathematics Education. Student testimonials describe Hunte as "game changer", as someone who can turn around students who are failing in mathematics and restore confidence in the math abilities of students who had lost faith in their math. Andrew has a unique ability to instill a passion for mathematics in his students, turn math haters into math lovers, and math failures into success stories.

AWARDS

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.

This year's Brahana Prize was awarded jointly to **Sakulbuth Ekvittayaniphon** and **Jinjie He**.

Sakulbuth is a Senior in Mathematics. He was the recipient of the 2011 Salma Wanna Memorial Award and the 2010 Elizabeth R. Bennett Scholarship in Mathematics. He 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 math contest he has participated in. Sakulbuth will be staying at Illinois for graduate studies.

Jinjie is also a Senior in Mathematics with a concentration in Applied Mathematics. He entered the University of Illinois in Fall 2009. Since then Jinjie has maintained a very high GPA in the math classes while taking several advanced classes including 500-level courses. Jinjie plans to attend graduate school this fall.

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

David Dosher is the recipient of this year's award for the Most Outstanding Major in Actuarial Science. David is a graduating senior in Actuarial Science and he distinguished himself by maintaining a near perfect GPA. He is teaching one of the Math 370 sections during this semester and he has already passed four professional actuarial exams. After graduation David will take a position at State Farm as an Actuarial Statistician in the Research Department. He will be pursuing a Fellowship designation in the Casualty Actuarial Society and eventually also a Master's degree in Statistics.

Most Outstanding Major Award in Mathematics

The award for the most outstanding major in Mathematics is given to **Zheyuan Fan** and **Guangyuan Shi**.

Zheyuan Fan is a senior in Mathematics, who entered the University of Illinois in Fall 2010 as a transfer student. Zheyuan has earned A+ and A in almost every single math class while taking an impressive course load. He is going to attend graduate school at ICME (Institute for Computational & Mathematical Engineering) at Stanford University this fall.

Guangyuan Shi is also a senior in Mathematics. Guangyuan has maintained a high GPA while taking many challenging courses including two 500 level courses. Guangyuan was one of the recipients of the Bennett Scholarship in 2011. He will begin graduate school this fall.

Most Outstanding Major Award in Mathematics and Computer Science

Jie Ming is the recipient of this year's award for Most Outstanding Major in Mathematics and Computer Science. Jie is a Senior in Actuarial Science with a second degree in Math and Computer Science. He distinguished himself by his outstanding performance in both mathematics and computer science. Jie has served as 2011–2012 President of the Actuarial Science Club here at Illinois. After graduation he will take a position as an Actuarial Assistant at the Allianz Life Insurance Company in Minneapolis.

Most Outstanding Major Award in the Teaching of Mathematics

Douglas Bengtson, a Senior in Mathematics, is the recipient of this year's award for most outstanding major in the Teaching of Mathematics. He has also been awarded a Vincent O. Greene Scholarship this year. Douglas stood out for his strong academic record and broad range of coursework. David plans to teach math at the secondary level next year, and plans to attend graduate school in the future.

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."

Lingkun Lu was chosen as this year's recipient of the Salma Wanna Award. Lingkun 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. Lingkun was also a 2011 recipient of the Elizabeth R. Bennett Scholarship in Mathematics.

Elsie Thomas Fraser Award

The Elsie Thomas Fraser Award was established by Elsie Thomas Fraser (BA in Science and Letters, 1939) and her husband, Edward (BS in Civil Engineering, 1939). Given for the first time this year, it is awarded to deserving undergraduate students in the Department of Mathematics with preference given to a freshman demonstrating academic excellence who is a United States citizen and an Illinois resident.

This year's recipient is **James D. Quigley.** JD is a freshman in mathematics. He has taken some advanced courses while maintaining a high GPA.

Emily Mann Peck Scholarship

Established in 2003 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 **Matthew Novack**, a junior in mathematics. Matt entered the University of Illinois in Fall 2009. He has taken many honor courses while maintaining a nearly perfect GPA. Outside of mathematics, Matt's main interest is in music. He has a minor in Jazz Studies and has participated in several musical events at U of I. He played in jazz combos every semester and in the pit orchestra for the opera department's production of Man of La Mancha.

Dr. Lois M. Lackner Mathematics Scholarship

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

Kailin Yu is this year's recipient of the Lackner Scholarship. Kailin is a junior with a major in mathematics and a minor in computer science. She has an outstanding academic record and maintained a near perfect GPA. Outside the classroom, Kailin is involved in the New Volunteer Life Society.

Vincent O. Greene Scholarship in Mathematics

The Vincent O. Greene Scholarship in Mathematics, being awarded for the first time in 2012, is given to deserving undergraduate students based on academic merit, with a preference to candidates interested in teaching. Mr. Greene spent his career at the University, and provided this scholarship because of his lifelong interest in education and because he "wanted to give young people a boost".

The first four recipients of the Vincent O. Greene Scholarship are **Douglas Bengtson, Brian Freidin, Andrew Schmitz,** and **Sarah Stef**.

Douglas is a senior majoring in mathematics with teaching option. He also received this year's Most Outstanding Major Award in the Teaching of Mathematics.

Brian is a junior and was also awarded the Elizabeth R. Bennett Scholarship this year.

Andy Schmitz is a senior majoring in mathematics with teaching option. He is currently student teaching in the Chicago suburbs.

Sarah is also a senior majoring in mathematics with teaching option and she was the recipient of the Lois M. Lackner Scholarship in 2010. Sarah is currently student teaching in Chicago.

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.

Brian Freidin, Hengzhi Shao, Matthew Waechter, Yang Song, Abby Popejoy, Weixi Liu, and **Daniel Hirsbrunner** were chosen as this year's recipients of the Elizabeth R. Bennett Scholarship. Brian, Hengzhi, Matthew and Yang are juniors in mathematics. Abby and Weixi are majoring in actuarial science. All six recipients distinguished themselves through their outstanding academic record. Daniel Hirsbrunner was awarded the freshman Bennett Scholarship this past fall. Daniel's first year was very strong and demonstrated a clear movement into the department's sequence of demanding honors courses.

2012 U of I Undergraduate Math Contest

A record number of thirty-two students participated in the 2012 U of I Undergraduate Math Contest held in March.

Brian Freidin, a Junior in Mathematics and co-winner of last year's U of I Undergraduate Math Contest, won this year's competition outright, earning 43 out 60 possible points and receiving the $300 top prize. **Kevin Li**, a Freshman in Computer Science, and **Ding Zhang**, a Freshman in Computer Science and Statistics and the winner of the 2011 U of I Freshman Math Contest, tied for second place with 38 points, and will receive the $200 runner-up prize.

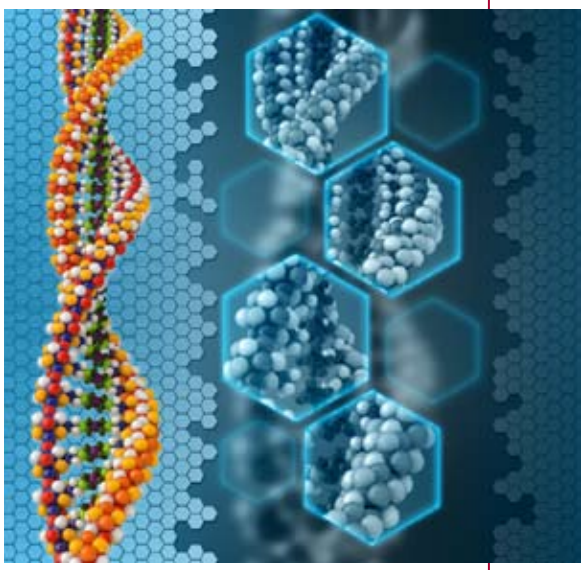
The U of I Undergraduate Math Contest was organized by Professor A.J. Hildebrand, with the assistance of graduate student M. Tip Phaovibul.

Mathematical biology

by Zoi Rapti

Mathematical Biology is a relatively new and exciting area of mathematics and as a term it has a very wide meaning: mathematical neuroscience, disease and population dynamics, reaction-diffusion equations governing insect and animal dispersal, are all part of it. Here, I will try to describe some of the mathematical biology projects that I have worked on.

I first became aware of mathematical problems motivated by biology in the summer of 2004 while I was affiliated with Los Alamos National Laboratory. Together with several permanent Lab members we were trying to find an accurate and time efficient method for the prediction of regions in DNA that are likely to form short-lived openings that are localized. These temporary stretchings of the hydrogen bonds occur naturally at temperatures below the melting temperature and are conjectured to play a functional role. Namely, they are believed to be associated with binding sites and transcription start sites. Using ideas from statistical mechanics we ended up with an algorithm that evaluates average displacements of the hydrogen bonds and the probabilities that several (1 to 10) hydrogen bonds are stretched beyond a threshold (within the range of a few angstroms). To do so, we analyzed a phenomenological model that takes into account only the two major interactions between the nucleobases: hydrogen bonds between complementary bases and the stacking interactions of adjacent bases belonging to the same strand. Also, the model only considers interactions with nearest neighbors. In this model, the bases are modeled as masses in the influence of an external potential and are coupled to each other with springs. Hence, they look like a chain of coupled oscillators. To simplify things even more, the only degree of freedom that is being considered is the transversal one, namely the stretching of the hydrogen bonds from the equilibrium position.



More recently, we used similar methods to evaluate unzipping forces in DNA. We are also looking at the role of the model parameters on the life-spans of these DNA openings using methods from stochastic differential equations.

In a slightly different direction, we also consider the dynamics of chains of coupled oscillators from the point of view of differential equations. Specifically, we study the linear stability of solutions that are spatially localized and time-periodic. Using the fact that the solutions of interest are time-periodic, one can calculate the stability properties of solutions using Floquet theory which is appropriate whenever the differential operators are time periodic. Furthermore, using the Hamiltonian structure of the system one can calculate the Krein signatures that yield information about whether linear stability can be lost when eigenvalues collide as the parameters vary.

Besides these DNA motivated projects, I have worked with entomologists to try to quantify and analyze bumble-bee color patterns. By doing so, one hopes to also identify the underlying genes that are responsible for these patterns. A reaction-diffusion model that we simulated seems capable of reproducing several of the color patterns. Others still elude us.

Since Fall 2011 I have been working with colleagues from Integrative Biology on an NSF-funded initiative for interdisciplinary training of undergraduates in mathematical biology. There are several groups of faculty and students working on original research projects. In our group we are studying fungal epidemics in water flea populations. These epidemics occur in many lakes of the Midwest, and one of our goals is to identify parameter values where bifurcations occur, namely qualitative changes in the system, which indicate the onset of epidemics. One of the most common bifurcations that we have identified in our system is the Andronov-Hopf bifurcation that gives rise to limit cycles (oscillating behavior) from an equilibrium. Others can be more exotic, such as period-doubling bifurcations and parameter regions of chaotic coexistence.

Zoi Rapti

Zoi Rapti is an Assistant Professor in the Department of Mathematics at the University of Illinois at Urbana-Champaign. She received her Ph.D. in 2004 from the University of Massachusetts at Amherst, and joined the faculty at Illinois in 2005 as a J. L. Doob Research Assistant Professor after spending a year visiting the Institute of Advanced Study in Princeton. Rapti was an LAS Dean's Teaching Fellow in the academic year 2011–2012. In addition, she has appeared on the List of Teachers Ranked as Excellent 3 times and is one of the Principal Investigators on a biomathematics training project funded by the National Science Foundation. The project provides undergraduate students with genuine research experiences at the interface of biology and mathematics.

Read more about Rapti on her website at www.math.illinois.edu/~zrapti/.

Hur awarded Sloan Research Fellowship

Vera Mikyoung Hur has been awarded a Sloan Research Fellowship. Awarded annually since 1955, the Sloan Fellowships are given to early-career scientists and scholars whose achievements and potential identify them as rising stars, the next generation of scientific leaders.

Hur received her Ph.D. in 2006 from Brown University and joined the Department of Mathematics in 2009. Before coming to Illinois she was a CLE Moore Instructor at MIT. Her research focuses on the analysis of nonlinear partial differential equations which arises in physical contexts. In particular, she is interested in mathematical aspects of surface water waves and related moving boundary problems.

Athreya and Kapovich receive CAS appointments

Jayadev Athreya has been appointed as a 2012–2013 Fellow in the Center for Advanced Study (CAS). Athreya will visit Yale University to collaborate with Professors Gregory Margulis and Yair Minsky in a project studying Random Hyperbolic Lattices. In previous joint work with Professor Margulis, Professor Athreya studied the properties of a model of a random Euclidean lattice, proving that the probability that a random lattice does not intersect a large subset of Euclidean space is inversely proportional to the size of the set. A natural and important generalization of this question is to develop and understand a model of a random hyperbolic lattice, that is, the set of symmetries of a grid in hyperbolic geometry.

Ilya Kapovich received an appointment as a CAS Associate for the 2012–2013 academic year and will use this appointment in Fall 2012. During that time Kapovich will participate in a special semester in Geometric Group Theory at the Universitat Autònoma de Barcelona. Most of Kapovich's current research concerns the study of the Culler-Vogtmann Outer space and the geometry and dynamics of the outer automorphism group of a free group. This area has seen substantial advances in the last several years, and the Barcelona special semester aims to take stock of these developments and explore future directions of the subject.

Athreya and Rapti awarded LAS Dean's Teaching Fellowship

Jayadev Athreya and Zoi Rapti were both awarded an LAS Dean's Teaching Fellowship, which included their participation in the LAS Teaching Academy Reflective Teaching Seminar. The Reflective Teaching Seminar for junior faculty focuses on practical teaching topics such as developing effective lesson plans, engaging students in critical thinking, leading discussions, and developing discipline-based writing skills. The program is directed to eligible faculty interested in pedagogical issues and in improving their own teaching.

Jayadev is in his second year as an assistant professor. His project focused on curricular development for a capstone honors course with an interdisciplinary emphasis. He included technology in his course and invited guest lecturers from other disciplines and universities. He was an ideal participant in the Reflective Teaching Seminar due to his interest in teaching pedagogy, his engaging interpersonal skills, and his strong interest in interdisciplinary teaching and research.

Zoi Rapti, an assistant professor in the department, proposed to develop a mathematics course with an emphasis on applications to Mathematical Biology. Zoi is currently organizing an undergraduate seminar course team-taught with faculty in the biological sciences. In this course, students learn how to integrate mathematics into biological analyses. She is already an effective teacher at both the undergraduate and graduate levels. In the future, Zoi will be teaching in a variety of styles and formats, from small classes to large lectures with discussions, sometimes using educational technologies.

Math and engineering collaborate in research and education

The Department of Mathematics has entered into an exciting new partnership with the College of Engineering to create the Initiative for Mathematical Sciences and Engineering (IMSE), with seed funding from the Vice Chancellor for Research, the College of Liberal Arts and Sciences, and the College of Engineering.

The initiative creates and supports collaboration of mathematicians and engineers in research and education. IMSE's vision is to accelerate advances and innovations in mathematics and engineering, fostering cutting-edge mathematics as indispensable in significant engineering applications and of advancing the next generation of mathematics through the infusion of new classes of problems. The long term ambition of IMSE is to become a national center for the interaction of mathematics and engineering. External funding is being pursued, and partnerships with companies and government labs are being forged.

IMSE has had many activities since its creation in March 2012, including seminars and a research retreat. IMSE has recently awarded small grants to stimulate collaborations of mathematics and engineering faculty and to jointly train students.

IMSE's leadership team consists of both mathematics and engineering faculty. The Director is Sheldon Katz of the Department of Mathematics with Jong-Shi Pang of Industrial Systems Engineering as Co-Director. The IMSE Steering Committee is rounded out by Richard Sowers (Mathematics), Yuliy Baryshnikov (Mathematics and Electrical and Computer Engineering), Tamer Başar (Electrical and Computer Engineering), and Matthew Ando (Chair of Department of Mathematics, Ex-Officio).

NEWS

NetMath program under new leadership

The Department of Mathematics has long been a national leader in distance education through its NetMath program. Following the retirement of NetMath's founding director, Debra Woods, in March 2012, this 23-year-old program is under new leadership. Professor George Francis is serving as Interim Director of NetMath, Ms. Anu Murphy (M.S. 1999, Univ. of Illinois) is Associate Director, and Dr. Bruce Carpenter (Ph.D. 1995, Univ. of Illinois) holds the position of NetMath Lecturer.

Murphy has assumed the overall responsibility for managing the day-to-day operation of NetMath. Her experience with NetMath since 2008 has been invaluable in maintaining its momentum. Carpenter, who joined the department in 1997, supervises the instruction of NetMath's core courses. He is particularly well-suited to the job, since he contributed to the development of their innovative curriculum. Together with Francis, who has been teaching math for 55 years (44 at Illinois), this troika heads the team that provides NetMath to the state, country and world.

When Woods and the late Professor Jerry Uhl started NetMath 23 years ago, it had only a few dozen students. Today the NetMath program makes U of I math courses available to thousands of students per year from all over the world. The professional staff of NetMath also includes eLearning specialist Pat Szuta, high school liaison Pete Glaze, and long-time dean of mentors Michael Raschke.

Summer school is always a very busy time, with 30 courses ranging from pre-calculus to non-Euclidean geometry. NetMath provides summer TA employment for 8 of our graduate students, and two dozen undergraduates who mentor the individual students.

In addition there are several projects underway this summer designed to continue NetMath's record of innovation and leadership. By the end of the summer we hope to be ready to recruit a new permanent director who will take NetMath into a promising future.

Tondeur lecture series to begin in Spring 2013

The math department is pleased to announce the creation of a new named lecture series, the Tondeur Lectures in Mathematics. Named lecture series enable us to invite eminent scholars to spend a week visiting the department and to deliver a series of lectures on exciting new developments. They contribute a great deal to the intellectual vitality of the department. The Tondeur Lectures, together with the Coble Lectures and the Trjitzinsky lectures, will enable us to host one named lecture series each semester. The first speaker for the Tondeur Lectures will be Prof. Jeff Cheeger of the Courant Institute, who will visit us in April 2013.

The new lecture series is named in honor of Professor Emeritus Philippe Tondeur. Tondeur's research is in differential geometry, topology, and partial differential equations. He is an influential advocate for mathematics and science policy at the national and international levels.

He earned an engineering degree in Zurich, and a Ph.D. in mathematics from the University of Zurich. He subsequently was a Research Fellow and Lecturer at the University of Paris, Harvard University, the University of California at Berkeley, and an Associate Professor at Wesleyan University, before joining our department in 1968. He served as Chair of the department from 1996–1999, and then as Director of the Division of Mathematical Sciences at the National Science Foundation (NSF) from 1999–2002.

Tondeur was an Invited Hour Speaker of the AMS in 1976. He has received a 1985 Award for Study in a Second Discipline (Physics) at Illinois, the 1994 William F. Prokasy Award for Excellence in Undergraduate Teaching at Illinois, a 2002 Frederick A. Howes Commendation for Public Service from SIAM, and the 2008 SIAM Prize for Distinguished Service to the Profession. In 2009 he was selected in the first class of Fellows of SIAM, and in 2010 he was selected a Fellow of AAAS.

It is a privilege and an honor to offer this new lecture series in recognition of Professor Tondeur's contributions to the department, to mathematics, and to the profession.

Merit Fellows Scholarship Program

The Department of Mathematics, Department of Chemistry, and the School of Integrative Biology are thrilled to announce the start of the Merit Fellows Scholarship Program this upcoming academic year!

The program, funded by the National Science Foundation, will provide substantial financial support for academically talented but financially needy Merit students majoring in mathematics, chemistry, or integrative biology. Along with providing a total of $525,000 in scholarship funds over 5 years, the project will also provide a wide variety of enhanced student support services.

Each Merit Fellow will be paired with both a peer mentor and a faculty mentor for at least their first two years at the university. These mentors will provide guidance to help the Merit Fellows successfully navigate through these rigorous STEM (Science, Technology, Engineering, and Mathematics) majors. The Merit Fellows will also have the opportunity to participate in a wide variety of cohort-building activities such as seminars about effective study strategies in STEM courses, group study sessions, professional development presentations from a variety of speakers, and informal social functions. Finally, the Merit Fellows, with help from their mentors, will be encouraged to participate in undergraduate research opportunities whenever possible.

We are greatly looking forward to this new project and we are excited about the opportunity to support and interact with our students in new ways.

Visit their website http://merit.illinois.edu/ to learn more about the Merit Workshop Program.

RETIREMENTS

A.J. Hildebrand

A.J. Hildebrand retired in May 2012. Hildebrand earned a Ph.D. in 1983 from the University of Freiburg, Germany, and a Doctorat d'Etat in 1984 from the University of Paris-Sud, France. He spent a year at the Institute for Advanced Study in Princeton before joining the Department in 1986. He received an Alfred P. Sloan Fellowship in 1988 and was named a University Scholar in 1990. In 2011 he was awarded the LAS Dean's and Campus Awards for Excellence in Undergraduate Teaching.

He has served as Associate Editor for the *Journal of Number Theory* and the *Ramanujan Journal*, and from 1998–2007 was Managing Editor for the *Illinois Journal of Mathematics*. He has served on numerous departmental committees and currently holds eight departmental committee appointments, the most of any faculty member.

His research interests are at the interface of number theory, probability theory, and analysis. He is the author of over fifty research publications and co-editor of six volumes of conference proceedings. Eight students have completed their Ph.D. under his direction.

At the undergraduate level, Hildebrand has a long-standing interest in and involvement with the local mathematical contest scene. Shortly after his arrival in 1986, he joined Harold Diamond as co-organizer of practice contests and training sessions for the William Lowell Putnam Competition, and he became the main organizer of these activities following Diamond's retirement in 2002. He helped turn the U of I Math Contest program into one of the most visible such programs in the country, with record numbers of students participating in local contest activities, and U of I students routinely outperforming those from peer institutions on the Putnam Competition.

In recent years, a particular focus of his has been on attracting, retaining, and nurturing top undergraduate students. He has been teaching honors classes on a regular basis, he helped shape and grow a program of math prizes and awards, he helped develop the nascent Math scholarship program, and he spearheaded several successful nominations of undergraduates for prestigious national awards and scholarships.

Hildebrand plans to continue most of his current activities, not burdened down by committee obligations and administrative work, and he hopes that his students will not notice a difference.

Debra Woods

Debra Woods retired in March 2012. Woods served as Director of the NetMath Program and MathTeacher Link. Over the last 16 years, Woods has helped expand the off-campus instructional outreach of the Department of Mathematics. She received the Wolfram Innovator Award for innovations in using *Mathematica* in online teaching in 2011. In 2010 she was awarded the Campus Award for Excellence in Off-Campus Teaching. Woods served as a member of the Office of the Provost's Distance Learning Advisory Committee, the LAS Online Advisory Committee, the eLearning Committee appointed by the Chancellor, and the Department of Mathematics Online Education Committee.

Alma Mater undergoes restoration

The 82-year-old Alma Mater sculpture will be moved off-campus this summer by the Conservation of Sculpture and Objects Studio Inc., of Forest Park, IL, to begin a year-long restoration to repair the effects of years of weathering and use. Sculptor Lorado Taft intended for students to climb on the sculpture and celebrate it. Over the years, however, this has produced cracks in the arms, backs and necks of the three figures. Large areas of the sculpture are exhibiting uneven surface corrosion caused by natural environmental action, air pollution (exhaust fumes from vehicles) and defacement by pedestrians.

Read the full article in the February 16, 2012 edition of *Inside Illinois* at http://news.illinois.edu/ii/12/0216/alma_conservation.html. Photo by Kalev Leetaru.

IN MEMORIAM

Hiram Paley

Hiram Paley, 78, of Urbana died on Monday, January 9, 2012. Born in Rochester, NY, on September 9, 1933, he was the son of the late Lesser and Zelda Paley. After attending Monroe High School in Rochester, he graduated summa cum laude from the University of Rochester with a bachelor's degree in mathematics (1955). He followed with M.A. (1956) and Ph.D. (1959) degrees in mathematics from the University of Wisconsin-Madison. His doctoral thesis, "On Galois Subrings of a Full Ring of Linear Transformations", was directed by Professor Charles Curtis.

Paley came to the University of Illinois in 1959 as an assistant professor of mathematics and was promoted to associate professor in 1966, a position he held until his retirement in 1998. He spent a sabbatical year at the University of Chicago in 1965–1966. He served as the Director of Undergraduate Programs and as the principal Undergraduate Advisor in mathematics for a number of years.

Soon after he arrived at the U of I, he began a collaboration with Professor Paul Weichsel to write a text on Abstract Algebra. "A First Course in Abstract Algebra" by Paley and Weichsel, appeared in 1966, published by Holt, Rinehart and Winston. A revised and expanded version appeared in 1972 under the title "Elements of Abstract and Linear Algebra".

In 1989–1991, he taught college math courses in Kuala Lumpur, Malaysia, for the Midwest Universities Consortium for International Activities (MUCIA). This experience instilled in him a newfound love of travel.

Paley served two terms as alderman on the Urbana City Council (1967–1973) and one term as mayor of Urbana (1973–1977). He was an active member of the local Democratic Party from 1962 until his death, and was proud to serve as chair of Senator Dick Durbin's Champaign County campaign in 1996, 2002 and 2008.

His activism also led to terms on the boards of the Urban League of Champaign County and the CCDC Foundation in the 1980s; and on the board of the Funeral Consumers Alliance of Champaign County (known formerly as the Champaign County Memorial Society) from 1986–2002, with a term as president from 2000–2002.

Paley was particularly proud of his work for the ACLU. A member since 1960, he served multiple times as the Champaign Chapter representative to the Illinois ACLU, as well as on the ACLU's state board. In 2005, he received the Roger Baldwin Award of the Illinois ACLU for a lifetime of service to civil rights and civil liberties.

In 1981, following a course in darkroom photography at Parkland College, Paley joined the Champaign County Camera Club and was an active member until his death, serving multiple terms as president. In 2004–2006, Paley served as president of the Central Illinois Camera Clubs Association. Paley was instrumental in organizing an annual community Best in Show photo competition.

Paley was a dedicated Illinois athletics fan, and he and his wife rarely missed a home men's basketball game, even during the course of his illness. He also enjoyed attending events with his wife at the Krannert Center for the Performing Arts, a short walk from their near-campus home.

Hiram is survived by his wife of 50 years, Jean Passovoy Paley; son Joshua (Suzanne) of Redwood City, CA; daughters Elizabeth (Stefan) of Durham, NC, and Nina of New York, NY; grandchildren Allison, Karen, Trevor and Elias; sister Marcia (Morton) Camac of Lexington, MA.; and numerous cousins, nieces, nephews and friends.

He instilled in his family the importance of staying true to one's values and fighting for what's right, and that love can be expressed in all sorts of ways, including baking bread and doing triple integrals.

Memorial gifts may be made to the Roger Baldwin Foundation of the Illinois Affiliate of the ACLU, 180 N. Michigan Ave., Suite 2300, Chicago, IL 60601-9919; the Roy Brahana Fund in the Department of Mathematics at the University of Illinois; and the Carcinoid Cancer Foundation, 333 Mamaroneck Avenue, No. 492, White Plains, NY 10605.

A memorial service was held on March 10, 2012. Among the many speakers who presented tributes to the life of Hiram Paley was Senator Dick Durbin, who was an old friend and political colleague of many years' standing.

Radhika Ramamurthi

Radhika Ramamurthi passed away on January 27, 2012 after a long and brave struggle with bone cancer. She received her B.A. in mathematics from the University of Delhi, India in 1993, her Master's in Operations Research in 1995, and her Ph.D. from the University of Illinois in 2001 under the direction of Douglas B. West. She then held a postdoctoral position at the University of California at San Diego.

In 2002, Ramamurthi joined the mathematics faculty at California State University San Marcos (CSUSM) where she was the model of a true teacher-scholar. She brought to the classroom a dedication to the success of her students and the beauty of mathematics. She believed deeply in the transformational power of education, and she spent many hours encouraging students to pursue mathematical study as the faculty advisor of the Hypatians, a Mentoring Program for Women in Mathematics at CSUSM. She also organized the Mathematics Colloquium, which promotes collegiality and intellectual engagement for various disciplines. Ramamurthi's commitment to scholarship was evident in her own work and throughout her years as Faculty Center Director, where she made it her mission to increase research opportunities for faculty. Her infectious laugh and smile are legendary across the CSUSM campus and will be greatly missed by all who experienced the joy of knowing and working with her, as will her kindness and care for individuals.

She is survived by her husband, Andre Kundgen, and her daughter Mira. Her husband, who is also on the CSUSM faculty, received his Ph.D. in mathematics from Illinois in 1999 under the direction of Zoltán Füredi and also worked with Douglas West.

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!**

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Support Actuarial Science through scholarships, fellowships, graderships, and faculty support.

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Scholarships enable the most promising admitted undergraduate mathematics students to pursue their education at Illinois.

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Homecoming 2012

Mark your calendars for Homecoming 2012 to be held Saturday, October 27, 2012, from 2 to 4 p.m. Our tent will be out in front of Altgeld Hall again this year. Details are posted at www.math.illinois.edu/homecoming/ or visit us on Facebook. We invite all mathematics alumni to join us for this event.

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, Mathematics Development Committee Chair, at (217) 265-6258, or Patrick Hayes, Senior Director of Development, at (217) 333-7108.

Math Times

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New members appointed to *IJM* editorial board

by Phillip Griffith, Editor-in-Chief

The *Illinois Journal of Mathematics* is pleased to announce two new additions to its editorial board. Marius Dadarlat is a professor of mathematics at Purdue University whose field of expertise is functional analysis. Gigliola Staffilani is the Abby Rockefeller Mauzé Professor of Mathematics at the Massachusetts Institute of Technology. Professor Staffilani's research work is in applied mathematics and, in particular, includes the theory of partial differential equations.

More information about *IJM* is available at the *IJM* website at http://ijm.math.illinois.edu/.