Math Times

Altgeld Hall
University of Illinois
at Urbana-Champaign

Department of Mathematics, Spring 2008

Classrooms in Altgeld Hall undergo renovation

by Wendy G. Harris and Richard Laugesen

"The rooms are so bright!" said one student. "The new hallway floors are so classy!" remarked another. Students and faculty members alike were surprised and delighted by improvements made to Altgeld Hall over the winter break. Campus used the Academic Facilities Maintenance Fee Assessment to upgrade ten classrooms on the east side of Altgeld, in a stealth project that began when exams wrapped up in the Fall, and finished just the day before classes started in the Spring.

What are the improvements?

- Classroom lighting is now brighter and more energy efficient.
- Light fixtures in the hallways next to classrooms have been replaced with historically appropriate models.
- Exit signs have been upgraded to new LED models.
- Light switches are now linked to energy-saving motion sensors.
- Classroom doors have been refinished, along with the woodwork around the windows.
- Wooden chair rails in the classrooms will prevent damage to the walls.
- Handicapped-accessible doorknobs are now on all classroom doors.
- Classrooms and adjacent hallways have been freshly repainted.
- New linoleum flooring has been laid in the classrooms, along with an attractive contrasting border in the hall.
- Original hardwood flooring was uncovered outside the Calculus and Mathematica lab in room 239 and has been beautifully refinished.

New lights brighten hallway outside rooms 241-245 in Altgeld Hall.

In addition to the ten classrooms completed this past fall, the remaining four rooms were completed during Spring Break. It makes for a wonderful change in the learning environment—lighter, brighter, and more energy efficient, yet in harmony with the historic nature of our beloved Altgeld Hall. Do stop by and admire it with us!

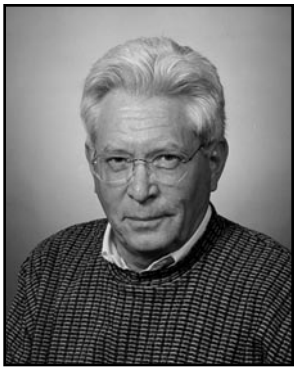
What else is on the horizon for Altgeld Hall? Mathematics is in the early stages of a feasibility study on the future of the building. What architectural and engineering work would be needed to stabilize and rejuvenate the gorgeous rotunda, entrance, and mathematics library? How can the current spaces be altered to fit the needs of 21st century instruction and research, while respecting the historic nature of the building? Can the usable space be expanded to address our current and future needs?

Our program is evolving and improving. To support the endeavors of our mathematics students and faculty, the physical facilities in Altgeld and Illini Halls must similarly improve. So watch here for updates on the feasibility study and on the fund-raising that will make these goals achievable!

Retirements

Robert Fossum

by Robin Fossum



Robert Merle Fossum is retiring from the University of Illinois after 44 years of research and teaching. Fossum joined the Illinois faculty as a lecturer in 1964, from the University of Michigan where he earned his Ph.D. under Professor Jack McLaughlin. Prior to Michigan, he received his undergraduate degree in Mathematics and Physics from St. Olaf College, Northfield, MN.

Fossum grew up in Northfield where his father managed the bookstore at St. Olaf College and his mother taught Mathematics in Farmington, MN Junior High School. Another relative, Uncle Peter Fossum, was chair of the Physics Department at St. Olaf. At age 16, he took first place in the Minnesota State Science Fair, rewriting his high school geometry text in Euclidian geometry into non-Euclidian geometry. Though he enjoyed all the sciences, he felt mathematics was 'less messy' than laboratory sciences.

Fossum has always been proud of his Norwegian roots. All of his grandparents emigrated to the U.S. from Norway. In 1967, he accepted a Fulbright Scholarship to study and teach at the University of Oslo and ended up staying for two years. The 1970s and 1980s included other faculty positions at the University of Copenhagen, University of Aarhus and University of Paris VI.

In 1988, Fossum was elected Secretary of the American Mathematical Society where he served for 10 years. He was instrumental in creating annual international meetings in mathematics, helping the Society's recognition as a truly international organization.

His mathematical interests are in algebraic groups, classical invariant theory, and applications of geometry and algebra to computer vision. One of his favorite papers is "Vector bundles over spheres are algebraic," and he is most proud of his book *The Divisor Class Group of a Krull Domain*. Graduate students that have studied under Fossum are: Idun Reiten, Joseph Brennan, David Murphy, and Allen Yang.

In 2003, Fossum became a member of the Image Formation and Processing group at the Beckman Institute, working with researchers Tom Huang and Yi Ma. Fossum contributes mathematics to projects in facial recognition and other research projects.

Fossum has been elected a member of the science section of the Royal Norwegian Society of Sciences and Letters (Det Kongelige Norske Videnskabers Selskab) and a Fellow in the American Association for the Advancement of Science (AAAS).

Fossum is the proud father of: Karen Fossum Price, Seattle, WA; Kristin Fletcher, Issaquah, WA; Jonathan Fossum, Santa Fe, NM; Erik Fossum, Washington, DC; stepfather to Jacqueline Lord, Los Angeles, CA; and Dan Vidakovich, Houston, TX.; grandfather to Kylie Ann, Derek, Tarkel and Vassar. Fossum and his wife Robin plan on spending more time in their Norwegian chalet in Chetek, WI. Besides mathematics, his hobbies will include woodworking, motorcycling, and visiting all his relatives in Wisconsin.

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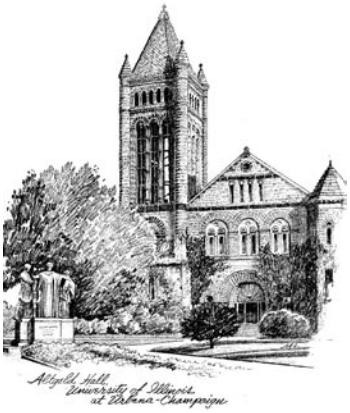
Tori Corkery is the editor of *The Math Times* assisted by Sara Nelson. Address corrections and changes should be sent to:

The Math Times c/o Tori Corkery
Department of Mathematics
University of Illinois
263 Altgeld Hall
1409 W. Green Street
Urbana, IL 61801

Sheldon Katz, Chair
Department of Mathematics
273 Altgeld Hall (MC-382)
1409 W. Green Street
Urbana, IL 61801

Telephone: 217-333-3350
Fax: 217-333-9576
Email: office@math.uiuc.edu
Website: www.math.uiuc.edu



From the department chair

Greetings from the Department of Mathematics of the University of Illinois as another exciting and productive semester draws to a close! Our classroom renovation project looks great, and I hope you will be able stop by to admire it if you haven't already done so.

In this issue, we inform you about awards and honors received by the members of our department, keep you updated on club activities, and more. Happy reading!

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

Sheldon Katz

Peter Loeb

Professor Peter Loeb received his Ph.D. degree under H. L. Royden at Stanford University in 1964. His membership in the University of Illinois mathematics faculty dates from 1968 to the present, spanning a period of more than one percent of recorded western history. His more than 75 publications deal with real analysis, and center on problems of representing measures and ideal boundaries in potential theory along with applications of model theory in the form of Abraham Robinson's nonstandard analysis.

An important contribution (the subject of his 1983 International Congress of Mathematicians talk) was the formation of standard measure spaces on nonstandard models now called "Loeb measure spaces" in the literature. These spaces allow infinite stochastic processes to be treated with the combinatorial tools available for finite processes. Loeb's former student, Yeneng Sun, has used these measure spaces to show that some ideas informally employed for decades without rigorous foundation are only valid when using the rich structure of Loeb measure spaces. Examples include uncountable families of independent random variables in probability theory and infinite families of equally weighted independent traders in an economy. Loeb has recently joined with Sun in using these measure spaces to obtain further applications to mathematical economics. Other applications appear in Loeb's joint work with Juergen Bliedtner. Much of that work employs a new technique for establishing limit theorems in analysis and probability theory.

Believing that research should inform instruction, Bliedtner and Loeb have used an aspect of their technique to formulate an implification that is now employed by Loeb and others for the material presented in graduate real-analysis courses. Loeb has also taught numerous introductory calculus courses from both the nonstandard and the standard viewpoint, endeavoring in the latter setting to retain the ease of the former. His other interests in high-end audio, photography, and computers are a natural outgrowth of his belief that he who dies with the most toys wins.

J. Jerry Uhl

J. Jerry Uhl was born in Pittsburgh, Pennsylvania on June 27, 1940. He did his undergraduate work at William & Mary (B.S. 1962) and graduate work at Carnegie Tech (M.S. 1964, Ph.D. 1966). While in the U.S. Army (1966–1968), he was Chief of the Scientific Programming Section of the Defense Intelligence Agency Computer Center. He came to the University of Illinois at Urbana-Champaign in 1968 where he is now Professor of Mathematics. Before getting involved in revitalizing undergraduate mathematics, he supervised ten Ph.D. theses, was managing editor of the *Proceedings of the American Mathematical Society* and was a member of the Council of the American Mathematical Society. He was coauthor of the research monograph, *Vector Measures* (with J. Diestel, American Mathematical Society, 1977), and he was coauthor of an advanced undergraduate textbook, *The Mathematics of Nonlinear Programming* (with A.L. Peressini and Francis Sullivan, Springer-Verlag, 1987). He is also the author of a collection of about fifty research papers.

Uhl, along with Bill Davis of Ohio State and Horacio Porta of Illinois, has been heavily involved with the computer-based Calculus&*Mathematica* project for about twenty years. This includes the published courseware: Calculus&*Mathematica* (Davis, Porta and Uhl), Vector Calculus&*Mathematica* (Davis, Porta and Uhl), Differential Equations&*Mathematica* (Davis and Uhl), Matrices, Geometry&*Mathematica* (Davis and Uhl), all published by MathEverywhere Inc. in 1999, and Probability, Statistics&*Mathematica* (Carpenter, Davis and Uhl) (under development).

For his role in writing Calculus&*Mathematica*, Uhl was given the AMOCO Award for Innovation in Undergraduate Education in 1996. In 1998, he was given a Mathematical Association of America award for distinguished teaching. Also in 1998, Uhl began a three-year term as member of the Mathematical Sciences Education Board of the National Research Council.

Uhl has demonstrated Calculus&*Mathematica*, Differential Equations&*Mathematica* and Matrices, Geometry&*Mathematica* in nearly every state in the United States and in Australia, China, Greece, United Kingdom, Switzerland, Singapore, Sweden, Egypt, South Africa, Turkey and Puerto Rico. He gave a plenary address on math teaching at the Toronto meeting of the Society for Industrial and Applied Mathematics.

Doctoral Students of J. J. Uhl and their current positions are: Barry Turett (Professor of Mathematics, Oakland University), Elias Saab (Professor of Mathematics, University of Missouri), Paulette Saab (Professor of Mathematics, University of Missouri), Kevin Andrews (Professor of Mathematics, Oakland University), Robert Geitz (Professor of Computer Science, Oberlin College), Frank Page (Professor of Business Administration, University of Alabama), Larry Riddle (Associate Professor of Mathematics, Agnes Scott College), Russell Gordon (Professor of Mathematics, Whitman College), Minos Petrakis (Lecturer in Mathematics, University of Crete), Maria Girardi (Professor of Mathematics, University of South Carolina).

Honors and Awards

Each spring, the department presents awards for outstanding achievement to graduate and undergraduate students. This year the department established three new teaching awards for faculty and instructional staff. 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.uiuc.edu/gifts/.

Undergraduate Awards

H. Roy Brahana Prize

Established in 1961, the H. Roy Brahana Prize is the department's longest running and most prestigious award. Usually given to a graduating senior, it 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 to Jack Scheff, a senior majoring in mathematics with a minor in atmospheric sciences. A recipient of the Bennett Scholarship in 2006 and the department's Major Award in Mathematics in 2007, Jack has maintained a 4.0 GPA in mathematics while taking on a most challenging course load that includes all courses in the math honors sequence as well as some graduate level courses. One of the nominators, who had Jack as a student in a graduate course, described him as "really exceptional" and "clearly the strongest student in the class." Jack's interests extend well beyond mathematics; in addition to the course work required for his mathematics major and his minor in atmospheric sciences, he has taken courses in Chinese and music. Jack plans to attend graduate school this fall majoring in atmosphere and ocean physics.

Most Outstanding Major Awards

In 1996, the department established the Major Awards to recognize the most outstanding undergraduate students in each of the four majors offered by the department.

Most Outstanding Major Award in Actuarial Science

Brian Alvin was the recipient of this year's Most Outstanding Major Award in Actuarial Science. In addition to graduating with highest distinction this May, Brian has already passed five professional actuarial exams—a significant achievement. For the past two years he has been the Recruitment Coordinator for the actuarial science program, spending significant time organizing and enhancing recruitment activities and even assisting with fundraising efforts. Brian will be starting an actuarial position with CNA Insurance, a large Chicago firm, after graduation.

Most Outstanding Major Award in Mathematics

This year's Most Outstanding Major Award in Mathematics was given jointly to Richard Moy and Ruoshi Sun. Both Richard and Ruoshi have impressed their instructors by turning in top-notch performances in some of the most challenging undergraduate courses offered by the department. One instructor in an honors level class called Richard's work "exceptionally advanced compared to the rest of the class." Richard is a sophomore majoring in mathematics. Ruoshi, a senior this year, will attend graduate school in material science at MIT this fall.

Most Outstanding Major Award in Mathematics and Computer Science

Daniel Schreiber, a senior, was the recipient of the Most Outstanding Major Award in Mathematics and Computer Science. Faculty members in computer science described him as simply "excellent" and a "top-notch student." Daniel ventured well beyond the requirements for his degree, taking extra 400- and 500-level (graduate-only) computer science and mathematics courses, yet maintaining the same level of excellence he achieved in his required courses.

Most Outstanding Major Award in the Teaching of Mathematics

The Most Outstanding Major Award in the Teaching of Mathematics was given to Mary Kaitlin Colburn. Mary is a junior with senior standing. She has received an A or A+ in all of her classes taken at Illinois so far. She is a member of Pi Mu Epsilon and will be student teaching in the Chicago suburbs next year. She plans to be a high school math teacher after graduation.

Emily Mann Peck Scholarship

This year's Emily Mann Peck Scholarship went to Andrea Hunsinger, a junior with senior standing who is majoring in math education with a minor in business. In addition to the courses required for her major and minor (and receiving almost all A's in these courses), Andrea has taken seven music courses and was a member of the University of Illinois Concert Band. She will be student teaching next year.

Established by Ray and Lori Janevicius in 2002 in honor of Emily Mann Peck, a former mathematics faculty member and associate dean of the College of LAS, 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.

Elizabeth R. Bennett Scholarship

The Elizabeth R. Bennett Scholarship, established in 1972, recognizes the most outstanding sophomores or juniors in mathematics. This year's award was given jointly to Ridhima Handa, Michael Nasti, and Brent Nelson.

Ridhima Handa is an actuarial science major. In addition to having a perfect GPA, Ridhima is currently doing research under the direction of Professor Rick Gorvett in agent-based modeling and its applications to actuarial science and risk management.

Michael Nasti is a freshman in mathematics with junior standing. In addition to excelling in all of his classes, Michael has proven to be a formidable problem solver. He is a regular submitter of solutions to the department's "Problem of the Month." He also placed third in this year's U of I Undergraduate Math Contest and was the third highest local scorer in the 2007 Putnam Contest—a remarkable achievement considering that these were his first attempts at these contests.

Brent Nelson is a junior in mathematics. Brent has earned an A or A+ in all of his math classes. He also has explored some open-ended problems in number theory with Professor Ken Stolarsky.

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, a University of Illinois alumna with degrees in the teaching of mathematics and in education. Jacqueline Jachymiak was chosen as the second recipient of this scholarship. Jacqueline is a sophomore with junior standing in mathematics with a 4.0 GPA. Outside the classroom she is a counselor for the "G.A.M.E.S" ("Girls Adventures in Mathematics, Engineering, and Science") program, a summer camp for middle and high school girls interested in science that is organized by the U of I College of Engineering. She is a member of MATRIX (the math club on campus) and plans to be a high school math teacher when she graduates from the U of I.

Melissa Schwerha, the first undergraduate scholarship recipient, was selected this past fall. Melissa is a junior math major and an outstanding member of the secondary education program in mathematics.

2008 U of I Undergraduate Math Contest

Alex Zhai, a senior at University High School, won this year's U of I Undergraduate Math Contest in spectacular fashion, scoring a perfect 60/60 and finishing in less than half the allotted time. Alex has extensive contest experience; he ranks among the nation's top problem-solvers at pre-college math contests and has represented the U.S. at the 2006 and 2007 International Mathematical Olympiads.

Wanrong Zhang, a junior in mathematics and computer science, took second place with 40/60 points. Michael Nasti, a freshman with junior standing in mathematics, and Tiance Wang, a junior in electrical and computer engineering, tied for third place with 37 points each.

Graduate Awards

Bateman Prize in Number Theory

Sun Kim is the winner of the 2008 Bateman Prize for an outstanding Ph.D. thesis in number theory. A native of Korea, Sun is completing a thesis on covering systems under the direction of Professor Kevin Ford and is expected to graduate in May 2009. A covering system is a set of congruence classes, possibly to different moduli, whose union is all the integers. Sun's work concerns analogues in the number field setting, particularly questions about the existence/non-existence of covering systems with given properties. She has one 25-page paper submitted on the subject with another in preparation. Recently Sun also had a paper accepted in the *Journal of Combinatorial Theory* (A), arguably the leading journal in combinatorics. In this paper, Sun solved a problem posed by Hershel M. Farkas and Irwin Kra in 2000 and mentioned by several prominent mathematicians, both in print and in lectures, since then. Sun was also the winner of the 2007 Bateman Fellowship in Number Theory. The Prize is named after Professor Emeritus Paul Bateman who served the Department of Mathematics as Head from 1965–1980.

Irving Reiner Memorial Award

Isaac Goldbring, a fourth-year graduate student, is the recipient of the Irving Reiner Memorial Award for his solving of the local form of Hilbert's fifth problem. The global form was solved positively in 1951 by the combined efforts of Gleason and of Montgomery and Zippin. The local version of the problem asks whether a locally Euclidean local topological group is locally isomorphic to a Lie group. A paper by Jacoby in the *Annals of Mathematics* (1957) claims to give an affirmative answer to this question, and others have since used this in their work. But around 1990 Jacoby's proof was found to be seriously wrong, and explicit counterexamples to some of his claims were constructed. Isaac uses an ingenious combination of algebraic, analytic, and nonstandard methods to once again give a positive answer, and his paper on this is being refereed. Isaac's advisor is Professor Lou van den Dries.

The Irving Reiner Memorial Award is named for Professor Irving Reiner, who joined the department in 1948. He was a leading figure for more than 30 years in the study of integral representations of finite groups. His books, written with co-author Charles W. Curtis, created a whole new generation of researchers; in addition, these books remain as classics and standard references to this day.

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. A committee of faculty and students determines the winners. Awards are based on classroom observation, comments from students, and a written report by the nominees describing their teaching goals. This year's recipients are Valerie Peterson and Daniel Zaharopol.

Valerie Peterson is a graduate student working with Professor Robert Ghrist in geometry and geometric group theory; her thesis research is motivated by questions in topological robotics. She has enjoyed all of her semesters teaching in the department, but in particular loves teaching in the Merit Program where she really gets to interact closely with students in a small-group work-oriented setting.

Daniel Zaharopol is a fifth-year student studying algebraic topology under Professor Matthew Ando. Dan teaches at every opportunity, from calculus and his favorite class "A Mathematical World" at the U of I, to the summer program Canada/USA Mathcamp and other enrichment opportunities for high school students. He received a Masters degree in the Teaching of Mathematics just a few months ago.

—continued

In most sciences, one generation tears down what another has built and what one has established another undoes. In mathematics alone each generation builds a new story to the old structure.

—Hermann Handel

Honors and Awards

Department TA Instructional Award

The Department TA Instructional Award was established in 1979. It is presented to graduate teaching assistants for exemplary teaching. Awards are based on classroom observation, comments from students, and a written report by the nominees describing their teaching goals. There were a record number of candidates this year. This year's recipients are Michael Barrus and Naeem Sheikh. Honorable mention was given to Michael Dewar and Sylvia Carlisle.

Michael Barrus is a fourth-year graduate student working with Professor Douglas West in graph theory. He particularly enjoys working in the Merit Workshop program, both for the interaction with students that it affords him and for the new calculus-related material he learns in his never-ending attempts to create exotic worksheet questions.

Naeem Sheikh is a graduate student working in graph theory and combinatorics under Professor Alexandr Kostochka. He has appreciated the opportunity to teach a wide variety of courses (Calculus I, Calculus III, linear algebra, and discrete mathematics) in the department. He is defending his thesis this summer. He can often be seen digging out papers from the paper recycling bins to be used as scratch paper for himself and fellow graduate students.

Michael Dewar is a fourth-year graduate student studying modular forms under the direction of Professor Scott Ahlgren. He is a graduate of Carleton University in Ottawa, Canada. Michael enjoys teaching because he likes interacting with his students. Sylvia Carlisle is a sixth-year graduate student working on Continuous Logic. Her advisor is Professor C. Ward Henson.

Bateman Fellowship in Number Theory

Byungchan Kim, a third-year graduate student, is the recipient of the Bateman Fellowship in Number Theory. Byungchan, a graduate of Seoul National University, is working on his doctorate under Professor Bruce Berndt and Professor Scott Ahlgren. In his three years at Illinois, Byungchan has submitted three papers for publication. In one of them he gave combinatorial proofs of important identities for partial theta functions due to George Andrews and S. Ole Warnaar, which they derived to prove difficult entries from *Ramanujan's Lost Notebook*. In March, he spoke on this work at an international conference on partitions, q-series, and modular forms that was held at the University of Florida. The Bateman Fellowship in Number Theory is named for Professor Emeritus Paul Bateman who served the Department of Mathematics as Head from 1965–1980.

Dr. Lois M. Lackner Mathematics Fellowship

Ida Svejdarova has been awarded the 2007-2008 Dr. Lois M. Lackner Mathematics Fellowship, established by the department through a generous gift by U of I mathematics alumna Dr. Lois Lackner. Ida's current research is in the area of graph representations, especially variants of product dimension. Her advisor is Professor Zoltán Füredi. She has published a paper (joint with J. Nesetril) in the *SIAM Journal on Discrete Mathematics* that explores properties of certain structures that arise when studying graph homomorphisms. A manuscript, improving known bounds on product dimension of trees, is ready for submission. Ida has given talks at several conferences. She was an invited speaker at DIMACS/DIMATIA/Renyi Working Group on Algebraic and Geometric Methods in Combinatorics. She is a graduate of Charles University, Prague, Czech Republic and was a recipient of a University of Illinois Fellowship in 2004.

Department Teaching Awards for Faculty and Instructional Staff

Three new teaching awards were established by the Department of Mathematics in 2007 and given for the first time this spring. A committee of faculty and students determined the winners. Awards are given for exemplary teaching and are based on classroom observation, comments from students, and a written report by the nominees describing their teaching goals. The awards will be given annually.

N. Tenney Peck Teaching Award in Mathematics

Christopher Leininger has been awarded the 2007–2008 N. Tenney Peck Teaching Award in Mathematics. Leininger (Ph.D. 2002 Univ. of Texas at Austin) has been an assistant professor in the U of I mathematics department since 2005. While at Illinois he has taught Calculus II and III courses, including honors sections, and linear algebra as well as graduate courses in geometry and topology, his area of research. Leininger is a dynamic and popular instructor who has already appeared twice on the List of Teachers Ranked as Excellent. Student comments from ICES forms attest to his devotion to student understanding. Recently, Leininger has been involved in a project to revise the curriculum for the introductory graduate course in differential geometry.

The N. Tenney Peck Teaching Award in Mathematics is awarded to tenure-track faculty. It 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. He was also a dedicated teacher with an open door for students and active in curriculum development. He had a wry sense of humor and worked at mathematics with joy until the time of his death.

Distinguished Teaching Award in Mathematics for Tenured Faculty

Alexandru Zaharescu has been awarded the 2007–2008 Distinguished Teaching Award in Mathematics for Tenured Faculty. Zaharescu (Ph.D. 1995, Princeton University) is a professor who joined the mathematics faculty at Illinois in 2000. His research interests are in many subareas of number theory, with a special emphasis on the analytic side of number theory. Zaharescu's teaching is driven by his passion for explaining difficult conceptual ideas in clear and simple terms. He values student engagement with the subject matter both in and out of the classroom. Students characterize his classes as tough but interesting and ultimately rewarding. He has appeared on the List of Teachers Ranked as Excellent 10 times.

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

Katherine Wahl has been awarded the 2007–2008 Distinguished Teaching Award in Mathematics for Non-Tenure-Track Faculty. Wahl has been teaching for the Department of Mathematics at the University of Illinois since 1981. She has appeared on the List of Teachers Ranked as Excellent an astonishing 30 times since 1994. Wahl's philosophy of mathematics teaching promotes collaborative learning and student-centered instruction.

College of Liberal Arts and Sciences Awards

LAS Dean's Award for Excellence in Undergraduate Teaching

Richard Gorvett has been awarded the 2007–2008 LAS Dean's Award for Excellence in Undergraduate Teaching. Gorvett (Ph.D. 1998 UIUC, MBA 1990 Chicago) is the Director of the Actuarial Science Program and State Farm Foundation Scholar in Actuarial Science. He administers the department's highly successful Actuarial Science Program and regularly teaches a wide range of undergraduate and graduate courses in actuarial theory. Gorvett uses his extensive prior business experience to craft innovative and engaging courses which blend academic theory with real-world applications and modelling. He draws on his contacts in the professional world to bring executives from highly regarded financial and insurance companies into the classroom. Under his leadership the program has become one of the leading producers of future actuaries in the country.

LAS Award for Excellence in Undergraduate Teaching for Graduate Teaching Assistants

Melissa Dennison has been awarded the 2007–2008 LAS Dean's Award for Excellence in Undergraduate Teaching for Graduate Teaching Assistants. Dennison is a sixth-year graduate student doing research in number theory. She has a distinguished record of teaching excellence at Illinois, supported by consistently high ICES averages and multiple appearances on the List of Teachers Ranked as Excellent. She has made important contributions to course and curriculum development, especially connected with Math 119 (Ideas in Geometry). Her devotion to teaching goes far beyond the classroom. She has received a Graduate Teaching Certificate and is actively working towards two further professional teaching certificates.

LAS Academic Professional Award

Jonathan Manton is the recipient of a 2007–2008 LAS Academic Professional Award. Manton joined the Department of Mathematics in 2003 where he is a system administrator. He not only keeps the mail, web and file servers in the department running smoothly, but is also highly appreciated for his expert advice to departmental, college and campus-wide committees to maintain and improve the computing infrastructure at the University of Illinois.

The LAS Academic Professional Award was established in 1993 to honor selected academic professionals for their outstanding contributions to the college. The program is sponsored by alumni and friends of the college.

Campus Awards

Illinois Student Senate Faculty Award for Excellence in Dedication

Supawadee Prugsapitak has been awarded the Illinois Student Senate Faculty Award for Excellence in Dedication. Prugsapitak is from Yala, Thailand. After earning her B.Sc. at Prince of Songkla University, she became an instructor there, and received a Scholarship in the Development and Promotion of Science and Technology Project (DPST) under the Royal Thai Government. She is currently working on a dissertation on the diophantine Tarry-Escott problem over quadratic number fields, under the direction of Professor Bruce Reznick.

This award is given by the Illinois Student Senate for the professor or TA who goes above and beyond the call. Nominations by students are held campus-wide and the Dedication Award is given to those who make that extra effort for their students, whether it be their willingness to work with a student outside of class or offering extensive resources for students online.

Pi Mu Epsilon welcomes new members

On Monday, March 31, 2008, 39 math students were welcomed as the newest class of members to Pi Mu Epsilon's Illinois Alpha Chapter. Faculty advisor Professor George Francis presided over the induction ceremony and lead new initiates in reciting the Pi Mu Epsilon oath. Professor Jeremy Tyson gave the keynote speech on "The Unreasonable Efficacy of Mathematics." Tyson's words showcased the usefulness of mathematics in scientific applications, in the process citing MRI technology and Escher artwork.

Karthik Balaji (Actuarial Science, Class of '08) hands the membership certificate to Asif Hazrat (Actuarial Science, Class of '09). Photo courtesy of Hatim Jafferji (Architecture, Class of '08).

Host to over 300 chapters at universities across the United States, Pi Mu Epsilon, the national mathematics honor society for post-secondary educational institutions, was founded in 1914 at Syracuse University with the goal of promoting scholarly achievement and advancement in mathematics. Pi Mu Epsilon publishes a journal each semester and organizes an annual conference, both of which feature exemplary papers and research projects created by members across the nation.

The University of Illinois chapter of Pi Mu Epsilon, chartered in 1924, was Illinois' first and, for this reason, carries the "Alpha" designation. After a period of dormancy, which ended in 2005, Pi Mu Epsilon has inducted over 100 high-achieving U of I students. The Alpha Chapter's current officers are: Karthik Balaji (President, Class of 2008), Adam Hughes (Vice President, Class of 2010), Katie Shasteen (Secretary, Class of 2008), and Wenrong Huang (Treasurer, Class of 2009).

With the support of faculty members Alison Champion and Prof. Francis, the group seeks to extend Pi Mu Epsilon's mission to promote excellence in mathematics across campus and the Champaign-Urbana community. Major aims include the establishment of an on-campus math tutoring program, forging new relationships with high school math clubs, and promoting and recognizing undergraduate research.

For more information on Pi Mu Epsilon and the Illinois Alpha Chapter visit their website at http://www.math.uiuc.edu/PME/.

Calc or Trig? ALEKS knows best

By Alison Ahlgren, Coordinatorof the U of I Math Placement through ALEKS

Can you graph a polynomial equation? Can you factor a quadratic? Can you find the domain of a function? The University of Illinois and the Department of Mathematics recently undertook a broad and massive implementation of ALEKS to test students for course placement readiness.

ALEKS is used for advising and placement purposes, assessment, remediation, and as a core course component. The ALEKS implementation allows for better student placement, remediation, and retention, and has increased passing rates in mathematics courses through Calculus I. We are able to better place students, better educate students, and to save students, instructors, and advisors time —for students' time is crucial.

ALEKS is a powerful artificial-intelligence based assessment tool that zeros in on the strengths and weaknesses of a student's mathematical knowledge, reports its findings to the student, and then if necessary provides the student with a learning environment for bringing this knowledge up to an appropriate level for course placement.

ALEKS is non-multiple choice and when a student first enters ALEKS a brief tutorial shows the student how to use the ALEKS input tools. The student then takes the ALEKS assessment. In approximately 45 minutes, ALEKS assesses the student's current mathematical knowledge by asking roughly 30 questions. ALEKS chooses each question on the basis of the student's answers to all the previous questions. Each set of assessment questions is unique. When the student has completed the assessment, ALEKS produces a precise report of the student's mathematical knowledge.
Read more about the U of I Math Placement Exam through ALEKS at www.math.uiuc.edu/ALEKS/.

MATRIX

MATRIX, short for Mathematical Advancement Through Research and Idea eXchange, is a math club on the University of Illinois campus. Anyone who enjoys math is invited to join MATRIX. Members partake in many activities throughout the year. They range from math lectures to PI Day to fun social events.

Last semester a couple of mathematics professors were invited to come to a MATRIX meeting to lecture on a math topic of their choice. Professor Bruce Reznick lectured on the Stern sequence. Professor Ken Stolarsky gave a lecture entitled, "The Harmonic Series: Insights from Bernoulli, Euler, Rube Goldberg and Alexander Yee." Both lectures entertained many students.

Another exciting activity is PI Day. This year MATRIX sold slices of Bakers Square pies on the Quad to generate funds for the organization.

MATRIX club members tour Altgeld Hall bell tower.

The club also held an event called Activity Night where they entertained high school students the night before the ICTM contest held on the U of I campus in April. MATRIX club members provided dinner and a math activity. Last year students were split into groups and asked to build a boat out of drinking straws and tape. Each boat was tested by adding pennies to it. The boat that floated with the most pennies was announced the winner.

MATRIX also has fun social events. This year club members went bowling at the Illini Union. It is a great way to get to know each other and to enjoy some competition. Club members also took a tour of the Altgeld Hall bell tower. They learned about the history of the building, and the chimesmaster played a few songs for the students before she let them play the chimes themselves. Then they climbed to the top of the tower and looked out over the campus.

Actuarial Science Club

The Actuarial Science Club (ASC) at the University of Illinois, an organization serving our more than 300 actuarial science students, plans events to help students enrich their academic experience, prepare for and search for jobs, and develop networking skills. Professor Rick Gorvett of the Department of Mathematics, who serves as the faculty advisor for the club, believes that "the Actuarial Science Club is one of the most active and indispensable student clubs on campus. They are incredibly active and are an effective and critical component of our actuarial program and of our students' collegiate, pre-professional, and social experiences."

Most of the ASC activities focus on planning and organizing recruitment events. During a typical semester, the ASC helps coordinate information sessions for about 12 companies. At these sessions students have the opportunity to talk face-to-face with company representatives about their organizations and professions. The ASC also organizes resumé critiques and interview workshops to better prepare students for their job searches. During each fall semester, the ASC hosts Meet the Firms, the annual career fair specifically for actuarial science students. In recent years, more than 30 companies have attended this event. Also in the fall semester, the Club conducts the most important recruitment event of the year: the Recruitment Conference, a two-day event during which about 30 companies hold campus interviews for internships and full-time positions. This event provides students with the opportunity to interview with multiple companies on campus.

Actuarial Science Club Officers: Back Row (left to right): Minda Liu (Webmaster), Tyson Hawkins (External Vice President), Katelyn Swartz (Alumni Co-Chair), Brian Alvin (Recruitment Coordinator), Peter Huang (Treasurer). Front Row (left to right): Kathy Gu (Company Presentations Chair), Breanna O'day (Secretary), Laura Zahn (Alumni Co-Chair), Jen Hocking (Internal Vice President), Jen Yeh (President).

Apart from recruitment events, the Club also organizes many social events to promote internal networking and community-building opportunities. Recent and new events have included a semester kick-off barbeque, and "A Night with Your Professors" at which students shared dinner with Professors Gorvett and D'Arcy, asking them questions and discussing their past experiences.

These are just some examples of ASC activities–the full list of Club events seems virtually endless. Nonetheless, the Club officers will continue to try their best to plan even more events that benefit our actuarial science students.

An expert problem solver must be endowed with two incompatible qualities; a restless imagination and a patient pertinacity.

— Howard W. Eves

In *Mathematical Circles*, Boston: Prindle, Weber and Schmidt, 1969

Alumna Profile

Gail Kellogg: math degree opens doors

By Jim Dey

Gail Kellogg has good news for University of Illinois students who are majoring or thinking of majoring in math.

"Your math degree will open doors," she said. "Math majors get respect."

Kellogg knows what she's talking about. A 1965 UI graduate, she had a long, successful career in business that she credits, in part, to her UI math degree and the confidence it gave her to dream big and aim high.

"I loved it," Kellogg said of her 38 years in business. "People were able to do their best and be rewarded for it."

Kellogg, who grew up in the Chicago suburb of Oak Forest, initially planned to teach. After graduating as salutatorian of her high school class, she enrolled at the UI largely because her father had studied engineering here.

Kellogg enjoyed her experience as a sorority member and a participant in student government. But one of the best choices she made was studying math education because it combined teaching with a field she considered to be of tremendous practical value.

"I believed that if you majored in math people thought you were smart, and you could get a job," Kellogg said.

Her supposition proved correct. After two years of teaching, Kellogg was looking to do something else. Much to the amazement of her fellow teachers, Kellogg said she "picked up the phone" to seek a job interview with International Business Machines and was hired.

Trained as a systems engineer ("helping clients make computers work"), Kellogg embarked on a long career during which she worked for three companies, traveled widely, and lived for two years in Shanghai, China.

"Shanghai is the coolest city on earth," said Kellogg, who was fascinated by its entrepreneurial energy and work ethic.

Although Kellogg started out with computers, she eventually found herself working on human resource issues, particularly as they related to the popular 401(k) retirement savings vehicles most companies offer. She notes that not much in her career field was directly related to math, but she said that indirectly her work had a lot to do with math.

"While I am not a math genius, my education was a huge benefit because it gave me the confidence to solve problems," she said. "Plus, I do believe a knowledge of numbers is a huge advantage."

After six years at IBM and two more with Rand McNally, Kellogg made her final move to Hewitt Associates, a human relations consulting firm and services company, in 1976. She stayed there until 1998, when she retired briefly before returning to work for Hewitt until 2005 on a contractual basis.

Kellogg was glad she returned because her final assignment was in Shanghai, and that proved to be one of the most exciting of her career.

Now officially retired, Kellogg said she and Brooks, her husband of 41 years, divide their time between homes in Chicago and Steamboat Springs, Colorado.

An avid skier, Gail Kellogg and her husband built a house in Colorado and they spend the winter and summer there.

"We came here because of the skiing. But we live here because of the summers," she said.

In addition to her various civic endeavors, Kellogg remains devoted to the UI. A former member of the board of both the UI Alumni Association and a current member of the UI Foundation, Kellogg remains close to the College of Liberal Arts and Science and looks back fondly at her UI experience.

"I loved my time there," Kellogg said.

After Math

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Faculty News

Professor Robert Ghrist has been named one of Scientific American magazine's Top Fifty Innovators of the Year. The SciAm 50 awardees are chosen on the basis of their contributions to technology and human health. Ghrist is a leading expert in using tools from topology and geometry to study abstract spaces and solve real-world problems. Read more at http://www.las.uiuc.edu/news/2008spring/08jan_sciam50.html.

Ghrist has also been named a Richard and Margaret Romano Professorial Scholar by Sarah Mangelsdorf, Dean of the College of Liberal Arts and Sciences at the University of Illinois. This honor was bestowed on Ghrist in recognition of his outstanding research achievements and leadership. His appointment as a named scholar began on October 16, 2007.

Ilya Kapovich, Associate Professor, gave an Invited Address at the American Mathematical Society 2008 Spring Eastern Sectional meeting at the Courant Institute in New York, March 15–16, 2008. The title of his talk was "Algebraic rigidity and randomness in geometric group theory."

Jeremy Tyson, Assistant Professor, has been named a 2008–2009 Helen Corley Petit Scholar by Dean Mangelsdorf, effective July 1, 2008. The endowment that funds this position was created to develop scholarship and teaching of young faculty members in the College. Dean Mangelsdorf cites Tyson's extraordinary record in bestowing this honor upon him.

Richard Sowers and Dirk Hundertmark have both been named as an LAS Fellow in a 2nd Discipline. Sowers will study in the Department of Finance in the area of mathematical finance. Sowers is an applied mathematician with a focus on stochastic processes. Sowers is a professor in the department of mathematics. Hundertmark, an associate professor in the department, will do his research in the Department of Chemistry expanding his repertoire in theoretical quantum chemistry working with Professor Todd Martinez's group. Hundertmark's background is in mathematical physics, analysis, and probability.

Susan Tolman, Associate Professor, has been named a Lynn M. Martin Professorial Scholar by Dean Mangelsdorf in the College of Liberal Arts and Sciences. This three-year appointment, beginning August 2008, is given in recognition of Tolman's outstanding research achievements in symplectic geometry. Dean Mangelsdorf cites Tolman's accomplishments, standing in the field, and contributions to the University of Illinois in bestowing this honor upon her. Tolman joined the department in 1997. Her research interests are in Hamiltonian group actions and symplectic geometry.

Professor Douglas B. West was named Editor-in-Chief of *Discrete Mathematics* last summer. He gave an invited lecture in the Erdös Lecture Series in Memphis, TN, in March 2008.

The Math Times

Department of Mathematics
College of Liberal Arts and Sciences
University of Illinois at Urbana-Champaign
273 Altgeld Hall
1409 W. Green Street
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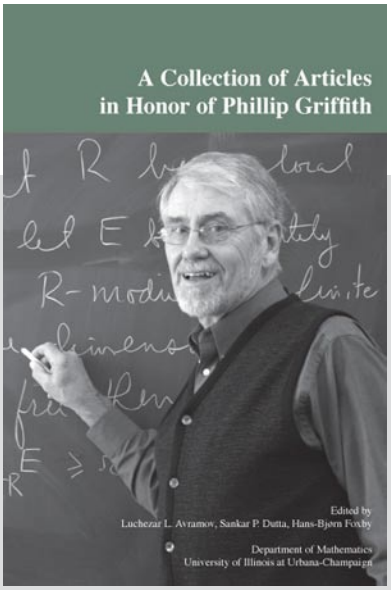

IJM sponsors annual Doob Lecture, publishes special volume in honor of Phillip Griffith

To mark the 50th anniversary of the founding of the Illinois Journal of Mathematics, a special volume of articles was published last year in honor of Joseph L. Doob (1910–2004), a founding editor who was instrumental in getting the journal started. The book is titled, "Joseph Doob: A Collection of Mathematical Articles in His Memory," edited by Donald Burkholder.

To further honor Doob, the IJM has agreed to sponsor a Doob lecture to be given at the annual Stochastic Processes and Applications (SPA) meetings. In return, the Doob lecturer is invited to contribute a paper based on the lecture to the IJM. The inaugural Doob lecture was given during the 2007 SPA meeting which was hosted by the University of Illinois. The arrangement is ongoing, with the next Doob lecture scheduled to be given at the 2009 SPA meeting in Berlin. The Doob lecture is a joint Institute of Mathematical Statistics-Bernoulli Society lecture.

In addition to the Doob volume and an earlier publication of the first in the standalone series, "The Mathematical Legacy of Reinhold Baer," the IJM has just published the third volume in the series, "A Collection of Articles in Honor of Phillip Griffith," edited by Luchezar Avramov, Sankar Dutta, and Hans-Bjorn Foxby. The Griffith volume contains 5 invited articles, several by former students, covering many aspects of commutative algebra on which Griffith's work has exerted a significant influence. The book is based on lectures given at the Commutative Algebra Conference Honoring the Contributions of Phillip Griffith, which marked the occasion of Professor Griffith's retirement from the University of Illinois.