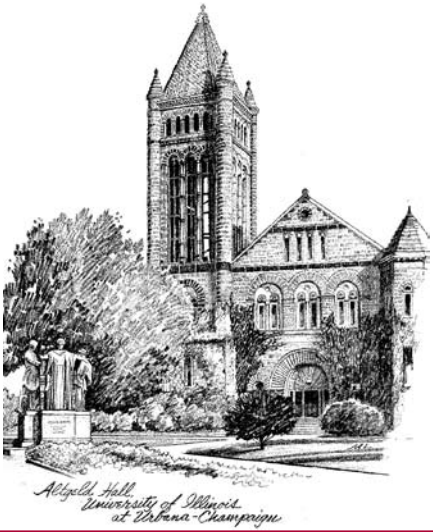
Math Times



Department of Mathematics, Fall 2010

New advisory board to help strengthen funding and programs in mathematics at Illinois

The Department of Mathematics is thrilled to announce the formation of the Mathematics Development Advisory Board (MDAB). The MDAB was established to advise and assist the department in our advancement efforts.

The inaugural meeting of the board was held on campus on October 22, 2010. Eight distinguished University of Illinois mathematics alumni and two retired mathematics faculty members comprise the board.

The members of the MDAB have created three working committees: a Scholarships Committee, an Endowed Chairs Committee, and a Corporate Track Committee to help students become better prepared for non-academic employment. Great things will come from their work, and we'll tell you about it in future issues of *Math Times*!

Mathematics Development Advisory Board members, from left: Ceil Kuzma, David Hays, Ken Fine, Kelly Belford, Sheldon Katz, Robert Fossum, Susan Morisato, Kevin Davis, Gail Kellogg, Brad Smith, and Philippe Tondeur.

The inaugural members of the board will serve terms of two years until plans for succession and rotation of board members are developed. The MDAB members are:

- Kelly A. Belford (B.S., Mathematics, 1986), Consultant, Resources Global Professionals
- Kevin T. Davis (B.S., Mathematics, 1992), President, Professor K Enterprises
- Kenneth B. Fine (B.S., LAS, 1963; M.S., Mathematics, 1965; Ph.D., Mathematics, 1967), Former President & CEO, Vivid Semiconductor
- Robert Fossum, Professor Emeritus, Department of Mathematics, University of Illinois at Urbana-Champaign
- David H. Hays (B.S., Mathematics, 1978), Vice President, P & C Actuarial, State Farm Insurance Company, Bloomington, IL
- Gail Veasman Kellogg (B.S., Mathematics, 1965), Consultant, Hewitt Associates (Retired)
- Cecilia ("Ceil") McCane Kuzma (B.S., Mathematics, 1970), Vice President, Research and Development, The Procter & Gamble Company (Retired)
- Susan C. Morisato (B.S., General Curriculum, 1975; M.S., Mathematics, 1977), President, UnitedHealth Group
- Bradley M. Smith (B.S., Actuarial Science, 1977), Chairman, Milliman
- Philippe Tondeur, Professor Emeritus, Department of Mathematics, University of Illinois at Urbana-Champaign

Sheldon Katz, Chair of the Department of Mathematics, was elected Chairman of the Board.

In this issue:

Math Times is published twice a year by the Department of Mathematics at the University of Illinois at Urbana-Champaign. *Math Times* is available on the web in pdf format at www.math.illinois.edu/mathtimes/. Tori Corkery is the editor of *Math Times* assisted by Sara Nelson.

Faculty photos on page 4 were taken by Hiram Paley.

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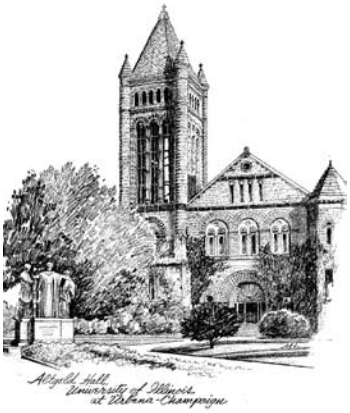

Department scholarships available to incoming students

The Department of Mathematics is pleased to announce that it is now offering scholarships to incoming undergraduate math majors. This fall the department awarded the first such scholarship to a freshman majoring in mathematics. These scholarships complement the numerous departmental awards for our most outstanding ongoing students. We will announce our freshman scholarship student along with all departmental award recipients in the spring issue of the Math Times and at the annual departmental awards ceremony in April.

The Mathematics Development Advisory Board is encouraging the department to ramp up efforts already underway to provide more scholarships. Increased scholarship funding is an important tool in recruiting high school students gifted in the mathematical sciences. You can contribute to our largest endowed scholarship fund, the Elizabeth R. Bennett Scholarship in Mathematics, using the giving form at the back of this issue or online at www.math.illinois.edu/gifts/.

2011 Illinois math reception to be held in New Orleans

The 2011 Joint Mathematics Meetings will be held January 6–9, 2011, at the New Orleans Marriott & Sheraton New Orleans.

The Department of Mathematics will host a reception from 5:30 to 7:30 p.m. on Friday, January 7, 2011, in the Bonaparte Room, located on the Fourth Floor of the New Orleans Marriott.

Everyone ever connected with the department is encouraged to get together for conversation and to hear about mathematics at the University of Illinois.

From the department chair

Greetings to the alumni and friends of the Department of Mathematics! In this issue you can read about departmental activities and special events, together with news about the accomplishments of our faculty, students, and alumni. With this issue of *Math Times*, we have reached a milestone, as our circulation has now topped 8,500!

The Feasibility Study for the renovation and restoration of Altgeld and Illini Halls has been continuing through the fall semester. The architects have been working with the department and multiple other entities on campus, assessing our needs, our dreams, the current state of our infrastructure, and more. I am confident that we will achieve our goal of renovating our facilities to a level consistent with the world-class academic enterprise that we are. Watch for future issues of *Math Times* and learn more.

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

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

Alumna Profile: Susan Morisato

By Jim Dey

When Susan Morisato was growing up in Chicago, it wasn't a question of whether she would go to college or even where she would go to college.

It was assumed she would go, and chances were pretty good that Morisato would follow the family tradition of attending the University of Illinois.

"I had so many family members who went to the University of Illinois. My mom went to Illinois," said Morisato. "I have five cousins and an aunt who went to the University of Illinois."

Although her plans changed slightly over the years, Morisato also knew what she planned to study—mathematics. All things considered, everything worked out great.

After spending 25 years at Bankers Life & Casualty in Chicago, the 55-year-old Morisato is now president of Ovations Insurance Solutions, UnitedHealthcare Medicare & Retirement, where she oversees the company's "Medi-gap" insurance program.

"I manage the development and profitability of the Medicare supplement insurance business," said Morisato. "I love the challenge of it."

It's a long way from growing up in Chicago as the only child in a Japanese-American family to the upper reaches of the corporate world. Morisato's mother was a teacher in the Chicago public schools while her father worked as a watchmaker.

Morisato showed at an early age that she had an aptitude for rigorous academic work, entering high school at age 12 and excelling in math and science.

By age 16, Morisato was a UI freshman who planned to get her doctorate in mathematics and become a college professor. But after a couple of years, Morisato decided she liked math just fine but wasn't so sure about academics as a career.

"I didn't know if I was cut out to be a research mathematician," she said.

So she stuck with math but started looking for other options. After receiving her bachelor's degree, Morisato decided to stick around to get her master's because "there were a lot of math classes I thought would be fun to take." One day, just by chance, Morisato was discussing career options with a fellow student when he mentioned the possibility of becoming an actuary.

Morisato recalls that she had "never heard the word before." But after finding out more about the mathematical field in which people compile and analyze statistics and use them to calculate insurance risks and premiums, she was intrigued.

After finishing her master's degree in 1977, Morisato took a job with Aetna Life and Casualty in Hartford, CN, in which she both worked for the company and studied for the various actuarial exams. While it qualified as job experience in the real world, Morisato said it was comparable to another graduate program.

After two years at Aetna, Morisato returned to Chicago to take a job with Banker's Life & Casualty, eventually working her way up to senior vice president for product management. In 2005, Morisato moved again, this time to UnitedHealthcare.

While most of Morisato's work these days involves managing hundreds of employees and lots of work-related travel, Morisato still maintains her interest in math and marvels at what studying it has allowed her to do.

"I like the problem-solving aspect of it," she said. "And it appealed to me because there were job opportunities, and it allows me to use my math skills in a business environment."

Morisato didn't spend all her time at the UI working out math problems. She also was a four-year member of the UI's men's and women's bowling team, a 10-member group selected from the cream of the crop of intramural bowlers.

"We were in tournaments in the Big 10 and with a lot of schools in the Midwest," Morisato said.

Over the years, Morisato has lost touch with bowling. But she said she bowled a couple of months ago and "I did a credible job."

Because of work, Morisato also had lost touch with the UI. But she and her husband, a UI graduate in chemistry, visited campus during the 2010 Homecoming weekend after she joined the UI math department's Development Advisory Board, a group that will offer advice on fundraising and academic issues.

Morisato's work schedule is incredibly demanding, and the logistics sound even worse. Although she lives in suburban Chicago, Morisato divides her work time between corporate headquarters in Minnetonka, MN, Philadelphia, PA, and Washington, D.C. but she doesn't let it get her down.

"If I didn't like the work so much, it would get really tiring," Morisato said. "I'm really in a phenomenal spot."

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

SOA names ActSci program a Center of Actuarial Excellence

The University of Illinois Actuarial Science Program has been named a Center of Actuarial Excellence (CAE) by the Society of Actuaries (SOA), one of a small number of such programs in North America to be so recognized. The U of I Actuarial Science Program, part of the Department of Mathematics, is the largest in the U.S., with approximately 300 undergraduate students and 20 graduate students. The program is directed by Professor Rick Gorvett.

"This CAE achievement is a testament to the quality and dedication of everyone involved: our Math Department, the College of LAS, our actuarial science faculty—but perhaps most of all, to our students, our alums, and the generous companies and individuals who support our actuarial science program in so many ways," Professor Gorvett said.

Earning the CAE designation involved meeting numerous stringent requirements and qualifications in eight areas, including quality of degree program and curriculum at the undergraduate and graduate levels, faculty composition, connections to industry, and research/scholarship.

"The application and review process was very rigorous—our initial written application was over 370 pages!" Gorvett noted. "This was followed by an on-site examination of the program, department, college, faculty, and students, by a team of experts from the Society of Actuaries."

The CAE designation is conferred for five years. Achievement of the designation also makes the program eligible to compete for some substantial multi-year grants in actuarial education and research.

"The universities that have been named Centers of Actuarial Excellence exemplify the highest standards in actuarial education, research and scholarship," noted S. Michael McLaughlin, president of the Society of Actuaries.

According to Gorvett, this achievement is as much a springboard for the future, as it is an acknowledgement of the program's past and current accomplishments and potential. "We intend to build upon this recognition by enhancing our program in the areas of both education and scholarship. In education, we'd like to increase opportunities for our students to develop further their written and verbal business communication skills, and to gain exposure to additional types of statistical and analytical software. In scholarship, we intend to improve our research and seminar presence, and offer our students—including undergraduates—more opportunities to participate in research projects."

Additional information about the Centers of Actuarial Excellence program can be found at www.soa.org/education/resources/cae/. Learn more about the Actuarial Science Program at Illinois at www.math.illinois.edu/~gorvett/.

New faces in the department

Jayadev Athreya
Assistant Professor

Ph.D. 2006, University of Chicago

Jayadev Athreya received his Ph.D. in mathematics from the University of Chicago in 2006. He spent the next four years at Princeton University and Yale University as a National Science Foundation Postdoctoral Fellow, before joining the mathematics faculty at Illinois this fall. Athreya works on problems at the interface of geometry and dynamics. In his research, he studies the long-term behavior of geometric objects such as surfaces or lattices which evolve dynamically. These problems relate to a diverse collection of areas of mathematics and their applications. He has been playing and coaching ultimate frisbee at the college and club levels for 10 years.

Philipp Hieronymi
J.L. Doob Research Assistant Professor

D.Phil. 2008, University of Oxford

After spending nearly all his life in his hometown of Bonn in Germany, Philipp Hieronymi went to the University of Oxford and received his D.Phil. in 2008 under the supervision of Alex Wilkie. Before coming to Illinois, he was a DAAD fellow at the Fields Institute in Toronto and at McMaster University in Hamilton. His research in logic focuses mainly on ordered structures and their potential applications in analysis and geometry. While his wife Kadriye is still in Germany, he uses most of his free time to watch either baseball or football.

Youness Lamzouri
J.L. Doob Research Assistant Professor

Ph.D. 2009, University of Montreal

Youness Lamzouri is originally from Morocco. He completed his Ph.D. in 2009 at the University of Montreal under the supervision of Andrew Granville. Before coming to Illinois he spent the academic year 2009–2010 as a postdoctoral member at the Institute for Advanced Study in Princeton. Lamzouri's research interests are in analytic, combinatorial and probabilistic number theory. He recently studied the distribution of extreme values of the Riemann zeta function and L-functions in the critical strip. Lamzouri is married and has a one-year-old daughter.

REGS Day 2010 showcases students' research

The Department of Mathematics NSF-funded Mentoring through Critical Transition Points (MCTP) grant continues to help our graduate program. This five-year grant engages students in early research experiences and provides fellowships and travel funds.

For the academic year 2010–2011, this grant provided $25,000 dissertation completion fellowships to two graduate students: Dusty Grundmeier (advisor John D'Angelo) and Patrick Reynolds (advisor Ilya Kapovich). These fellowships are intended to launch the research careers of strong students.

During summer 2010, 62 students were supported for summer REGS (Research Experiences for Graduate Students), 54 of them via the MCTP grant and 8 others via department funds. For the first time, summer 2010 participants included students who didn't begin their coursework until fall 2010—now that's early research experience!

The summer 2010 program included individually supervised projects as well as group research experiences in Hamiltonian Dynamics and Morse Theory (led by Ely Kerman), Combinatorics (led by Douglas West), and Applied Analysis (led by Jared Bronski, Richard Laugesen and Dirk Hundertmark).

Visit the website www.math.illinois.edu/REGS/ for more information about the REGS program, including reports from the participants on their research.

REGS Day was held October 13, 2010. Four students presented the work from their summer research projects. A pizza party and awards presentation followed. The speakers were:

- Jennifer Wise (work joint with Hannah Kolb and Oliver Pechenik): Edge-Antipodal Colorings of Hypergraphs
- Dan Schultz: Cubic Theta Functions
- June Huh: Coloring Graphs, Counting Solutions, and Attaching Cells
- Joseph Vandehey: Information, Probability, and Randomness in Even and Odd Continued Fractions

June Huh received first prize of $200. The others tied for second place prizes.

For summer 2011, the department expects to run three large scale research experiences, one in the Theory of Partitions (led by Bruce Berndt), one in Combinatorics (led by Douglas West) and another in Applied Analysis (led by Vadim Zharnitsky). Details of the summer 2011 program will be announced soon on the REGS website www.math.illinois.edu/REGS/.

Clockwise from top left: Jennifer Wise, June Huh, Joseph Vandehey, and Dan Schultz.

Yi-Wei Chan repeats as Mock Putnam Champion

This year's U of I Mock Putnam Exam, which took place September 28, 2010, attracted 39 participants, the second-highest turnout in recent history.

Yi-Wei Chan, the co-winner with Justin Kopinsky of last year's Mock Putnam Exam, won this year's contest outright with a score of 48 out of 60 possible points. For his performance Chan will receive the $300 top prize and be recognized as the 2010 U of I Mock Putnam Champion at the annual departmental awards ceremony, to be held in April 2011.

In second and third place, and winners of the $200 runner-up prize, were Justin Kopinsky and Sakulbuth Ekvittayaniphon, who earned 40 and 37 points, respectively.

Rounding out the top seven were Brian Freidin (32), Danyang Zhuo (32), David Goldstein (30), and Meng Guo (30).

The median score on this year's Mock Putnam was 15 points out of 60; 70 percent of all participants received 10 or more points, the equivalent of solving one of the six problems correctly. For comparison, the median score on the Putnam Exam is usually 1 or 2 points out of 120, and solving a single one of the 12 problems on a Putnam Exam is typically enough to place in the top third of all contestants nationwide.

The U of I Mock Putnam Exam is a local version of the infamous Putnam Exam, known as the "world's toughest math test." It serves as a practice test for the Putnam Exam, and a key tool in the selection of the U of I Putnam Team. The exam consists of six challenging math problems, similar in nature to problems on Putnam contests, but a bit easier. This year's U of I Mock Putnam Exam was organized by Professors Joszef Balogh and A.J. Hildebrand.

Research highlight

Modern mathematics solving problems in neuroscience

The human brain is an extraordinarily complex organ. It generates intricate and complex rhythms, can process very high-dimensional and complex inputs very quickly, and is robust to all sorts of errors. There are certain classes of problems (e.g., visual processing) which are far beyond the capabilities of the strongest computers. How the brain does all of this still largely remains a mystery. Most of the questions about the biochemical and electrochemical workings of the brain and its subcomponents fall into various fields of neuroscience. However, to understand the principles which can describe—in an abstract sense—how the brain can perform all of these functions is a question which lies at least partially in the domain of mathematics.

Lee DeVille, an assistant professor in the Department of Mathematics, has recently been made an affiliate of the University of Illinois' interdisciplinary Neuroscience Program, a Ph.D. program which exists to foster innovation and encourage interactions between multiple departments at Illinois with connections to neuroscience. This affiliation will continue his collaborations with scientists in several departments on campus and help to strengthen scientific connections between the mathematics department and other units on campus, and will also bring more scientific questions to the notice of mathematicians.

Many modules of the brain can be modeled as dynamical systems under the influence of random perturbations, i.e. fit into the burgeoning field of "stochastics and dynamics." This is a branch of mathematics which deals with systems which evolve in time but in a random way. The objects of study in this field include Markov chains, stochastic differential equations (SDE), and stochastic partial differential equations (SPDE).

There are two extremes of such systems. In the first, the randomness is so small that the dynamics are driven by an almost deterministic (or rule-based) system; one famous example of such a case is that of celestial mechanics. If we want to understand the motion of the Earth around the Sun, it suffices to consider only the Solar System; although every star in the galaxy does affect the motion of the Earth a little bit, they can effectively be ignored for all practical purposes. At the other extreme, some systems are almost entirely random: the most famous example is that of a "random walk": a system where a walker flips a coin, walks left whenever the coin comes up heads, right whenever it comes up tails. These two extremes have been studied classically and much is known about problems of this type.

The interesting case (recall that to a mathematician "interesting" almost always means "difficult") is the one in the middle: one has a complicated deterministic system and a complicated random system, each roughly about the same importance, which interact. Less is known about the general structure of such systems than one would like, and understanding this structure is a clear challenge for mathematics in the future. However, most real systems fall into this category: e.g., questions about weather and climate; ecology and evolution; robustness of computer networks to attacks or failures; and almost all biological systems.

The human brain certainly falls into this middle range. What could be particularly compelling to all mathematicians is the knowledge that many neuroscientific questions can be abstracted into pure mathematical questions, some of which are open. For example, understanding neuronal networks involves random dynamics on complicated networks, using elements of Markov chains and graph theory, whereas understanding individual neurons leads to problems involving coupled SDEs or SPDEs. Modern mathematics is currently solving problems in neuroscience and is thus improving our understanding of basic questions about how we think, how we perceive, and who we are.

Lee DeVille

Lee DeVille is an Assistant Professor in the Department of Mathematics at the University of Illinois at Urbana-Champaign. He received his Ph.D. in 2001 from Boston University and joined the faculty at Illinois in 2007. He has twice appeared on the U of I List of Teachers Ranked as Excellent, and he was the 2010 recipient of the N. Tenney Peck Teaching Award in Mathematics awarded annually by the Department of Mathematics. Recently, Prof. DeVille created a new graduate mathematics course entitled "Methods of Applied Mathematics." In that course and others, he shows the connections between modern mathematics and applications to problems from science and engineering. For more information and preprints, please see www.math.illinois.edu/~rdeville/.

Retirements

C. Ward Henson

C. Ward Henson earned his B.A. in mathematics at Harvard and his Ph.D. at MIT; he wrote his thesis in an obscure corner of set theory under the supervision of philosopher-logician Hilary Putnam. After holding junior positions at Duke and NMSU, Henson joined the Illinois Department of Mathematics in 1975. At that time the Urbana logic group was already large and well recognized and Henson was doing joint research with members of the group as well as with analyst Lee Rubel. This unusual collaboration between a logician and an analyst continued productively until Rubel's death in 1995.

From an early time in his career, Henson's research has focused on interactions between model theory and analysis, and he is largely responsible for the fact that "model theoretic analysis" is a currently successful and active field. In particular, he is one of the developers, over the last five years, of a continuous, real-valued version of first-order logic, which provides an effective foundation for the model theory of metric structures of all kinds. His research was funded continuously by the NSF from 1975 to 2010 and he was also PI on several other NSF grants, including an FRG that he shared with Lou van den Dries and Anand Pillay.

From 1982 to 2000 he served the Association for Symbolic Logic as Secretary and Treasurer, making its business operations self-standing and bringing its financial condition to a healthy state. From 1999 to 2004 he administered the journal and book publishing activities of the Association.

He was a founding member of several groups that initiated curriculum changes in the department, especially including the active learning calculus courses and the honors sequence, and has been a seriously committed teacher in every class. He received teaching awards at Duke and at Illinois. Ten Urbana Ph.D. graduates wrote their theses under Henson's supervision, and his eleventh student intends to finish in 2011.

Henson was the first chair of the Illinois mathematics department, from early 1988 to August 1992, and presided over the department's change of governance from "Head" to "Chair." He served on the Research Board, on the promotion and tenure committees of the department, the college, and the campus, and on ad hoc budget and priorities advisory committees of the college and the campus, among many others.

Henson and his wife Faith own a house in San Francisco and, after a transition year during 2010–2011, this will be their permanent home.

Kenneth B. Stolarsky

Kenneth Stolarsky retired this past August after 42 years in the department. After surviving Caltech, advisor Marvin Knopp at Wisconsin, and the Institute for Advanced Study, Stolarsky was recruited by Paul Bateman to join the University of Illinois math faculty in 1968. He soon became active both as chair of the Honors Committee and as a Putnam Competition coach. His time as the latter included the exciting Gerber-Hayek-Moy-Sleator years.

In research he worked at Illinois with J. Ralph Alexander on geometric extremal problems ("Alexander-Stolarsky formula") and later with Horacio Porta on Beatty sequences. A further frequent collaborator was Karl Dilcher (Dalhousie University) with whom he studied polynomial sequences and shared a 2006 Lester R. Ford Award.

Among those whose graduate studies he supervised was Barry Greenstein, author of "Ace on the River – An Advanced Poker Guide" and who later became an Illinois math department benefactor. Stolarsky believes he has taught the various incarnations of Math 285 more often than any other faculty member at Illinois, and also was its longest serving course captain. He intends to remain mathematically active, and is currently supervising three thesis students.

Retiree's luncheon brings emeritus faculty together

The Department of Mathematics held its 13th annual retirees' luncheon October 21, 2010 at Kennedy's Restaurant in Urbana. The department sponsors this event as a pleasant social gathering for retired members of the faculty and staff and their spouses and friends. Professors Sheldon Katz, Joseph Miles, Randy McCarthy, and Bob Muncaster brought attendees up-to-date on current departmental activities and issues.

There were 71 participants at this year's luncheon. The most senior in attendance was Paul T. Bateman, who is 91. The people who came the greatest distance to attend were Ken and Carole Appel from New Hampshire. The chief organizers of the event were Harold Diamond and Sara Nelson.

In memoriam

J. Jerry Uhl

J. Jerry Uhl of Homer and professor emeritus of the Department of Mathematics, passed away in his sleep at home Sunday, October 24, 2010. Jerry was born in Pittsburgh, PA, on June 27, 1940. He spent his pre-college years in Hampton Township, Allison Park, PA. He is survived by his sister, Laurie Swanson and brother-in-law, Fred Swanson, of Key Colony Beach, Florida; nephews Eric and Peter Swanson; nieces Lela and Gala Chapman; six great nephews and nieces. Jerry was preceded in death by his sister Leslie Uhl and his infant nephew John Chapman.

Jerry was a Phi Beta Kappa graduate of the College of William and Mary. He completed a Ph.D. in mathematics under the direction of M.M. Rao at Carnegie-Mellon. Jerry spent two years in the Army as chief of the Scientific Analysis Section of the Defense Intelligence Agency Computer Center, where he was introduced to spit and polish and hierarchical authority.

Jerry came to University of Illinois in 1968. He quickly became one of the world's leading Banach spacers, writing two books: *Vector Measures* with Joe Diestel and *The Mathematics of Non-linear Programming* with Tony Peressini and Francis Sullivan. In addition to writing, he supervised the Ph.D. studies of Barry Turett, Elias Saab, Paulette Saab, Kevin Andrews, Frank Page, Bob Geist, Larry Riddle, Russell Gordon, Minos Petrakis, and Maria Girardi.

Jerry spent the last twenty years of his career developing groundbreaking, *Mathematica*-based pedagogy for teaching mathematics. Often he was invited to speak at international as well as national conferences regarding his ideas on reforming the math curriculum. His students describe him as a teacher/mentor/friend who helped shape the way they thought. He had a childlike spirit that was hard to match.

He was a person of strong likes, strong dislikes, strong principles and sharp focus. According to one of Jerry's colleagues, Jerry had a more diverse group of friends outside of the math Department than anybody that he knew. Part of this was his singular ability to make new people feel like they belonged in his universe. Whether working with students, the man in the street, waitresses or local Homerians, Jerry truly cared to be of assistance to them. His compassion for those with challenges was woven through his entire life. True to form when Jerry contracted cancer, he devoted himself to helping others beat it as he had. Jerry may have been the originator of "buying local." He certainly supported local businesses in Homer and Ogden and he will be missed in many ways.

In addition to mathematics, trains and Bernese Mountain Dogs were two of Jerry's greatest passions not to mention his love of grilling, eating and parties at his log home in Homer to entertain his many friends. He is cited four times in The Beautiful Bernese Mountain Dogs: A Complete American Handbook. He tried his hand at breeding Bernese Mountain Dogs and became pretty much of an expert on the breed. But as with his math students he mostly loved the enumerable dogs and puppies that he had over the years. From an early age Jerry loved trains. He traveled by train whenever he could, collected memorabilia and yes, was extremely knowledgeable on the subject.

A memorial celebration of Jerry's life was held in Altgeld Hall on Saturday, November 6, 2010. In lieu of flowers, donations may be made to Jerry Uhl NetMath Fund (#343558) which provides a partial scholarship for high school students attending the NetMath Program at the University of Illinois.

Martin Gardner

'Gathering for Gardner' held on U of I campus

Martin Gardner Day was celebrated October 21, 2010 at the Siebel Center on the University of Illinois at Urbana-Champaign campus.

Martin Gardner, who passed away in May 2010, was a well-known mathematical writer with a passion for "recreational mathematics." In 1987 he received the Leroy P. Steele Prize awarded by the American Mathematical Society for his many books and articles on mathematics, particularly his column "Mathematical Games" in *Scientific American*. His writings influenced many of our faculty.

This local event, sponsored by Wolfram Research, was one of many "Gathering for Gardner" events held around the world on October 21st in honor of Gardner's 96th birthday. The local celebration included 17 short talks and demos, many of which had connections with our department including Professors Jared Bronski, Susan Tolman, Bruce Reznick and John D'Angelo; Professors Emeritus Harold Diamond and Kenneth Stolarsky; Instructor Kathleen Smith; Teaching Associate Bruce Carpenter; Frank Bernhart, a friend of the department; and Daniel Lichtblau (UIUC Ph.D. 1991, Wolfram Research).

Gerhard Paul Hochschild

Gerhard Paul Hochschild, a former member of the Department of Mathematics at the University of Illinois, died July 8, 2010 in El Cerrito, CA. Hochschild was born April 29, 1915, in Berlin, Germany, and he was on the Illinois mathematics faculty from 1948–1958.

Hochschild was an algebraist of the highest caliber whose fields of interest included cohomology theory for algebra, algebraic groups, and Lie algebras. He completed his Ph.D. in 1941 at Princeton University under the supervision of Claude Chevalley. While at Illinois, he supervised three Ph.D. students (George F. Leger, Kung-Sing Shih, and Ronald A. Macauley). He held visiting professor positions at Yale from 1951–1952 and at University of California at Berkeley from 1955–1956. He was a member of the Institute for Advanced Study at Princeton from 1956–1957 while partially supported by a Guggenheim Fellowship. In 1958, he joined the faculty at UC–Berkeley, a position he held until his retirement.

In 1979 he was elected to the National Academy of Sciences, and in 1980 he was awarded the Leroy P. Steele Prize of the American Mathematical Society.

David Blackwell

David Harold Blackwell passed away in Berkeley, CA, on July 8, 2010. Blackwell was born in Centralia, IL, on April 24, 1919. He received all of his degrees from the University of Illinois (B.A. 1938, M.A. 1939, Ph.D. 1941). His dissertation on Markov chains was completed under the direction of Joseph L. Doob.

Throughout his academic career he was a most distinguished teacher and researcher. He was on the faculty at Howard University from 1944–1954, serving as Head of the Mathematics Department at Howard from 1947–1954. Blackwell was then hired as a visiting professor by the University of California at Berkeley in 1954 where he became a full professor in the statistics department when it split off from the mathematics department in 1955. He was chairman of the UC Berkeley Statistics Department from 1957–1961 and assistant dean of the College of Letters and Science from 1964–1968. He retired in 1988.

Blackwell served as President of the Institute of Mathematical Statistics in 1955, and was Vice President of the American Statistical Association, the International Statistical Institute, and the American Mathematical Society. He was an Honorary Fellow of the Royal Statistical Society and was a member of the American Academy of Arts and Sciences. In 1965 he became the first African American named to the National Academy of Sciences. In 1979 Blackwell won the John von Neumann Theory Prize awarded by the Operations Research Society of America and the Institute of Management Sciences.

Blackwell was known for his independent invention of dynamic programming, which is used today in finance and in various areas of science, including genome analysis. He also is known for the renewal theorem, used today in areas of engineering, and for developing the Rao-Blackwell Theorem, a fundamental concept in modern statistics. He wrote two books, published more than 80 papers and held 12 honorary degrees from Harvard, Yale, Carnegie Mellon, Howard and other universities.

John Selfridge

John Lewis Selfridge, a former member of the Department of Mathematics at the University of Illinois and a major figure in Illinois mathematics, died on October 31, 2010, in DeKalb, IL, at the age of 83. Born in Ketchikan, Alaska, John received his Ph.D. from UCLA in 1958 with a thesis written under Theodore Motzkin. John was a visitor here in 1966 and was a regular faculty member from 1967–1971. Claire Krukenberg, John's doctoral student at Illinois, went on to a long-time career at Eastern Illinois University.

John was a character of the first magnitude. Gifted with a bullhorn voice and a personality to match, any social gathering he attended became a lively and song-filled event. Among his passions was train travel, and his trips (several made with Jerry Uhl) provided fodder for many remarkable stories. Selfridge described himself as a problem solver with interests in computational number theory and combinatorics. One of his first research accomplishments was to determine the first factor of the 16th Fermat number. Later, with John Brillhart and D.H. Lehmer, John made important discoveries in primality testing which provided the basis for current methods in this area.

John came to Illinois to work with Paul Erdös, and they went on to do much work together. One of their results is the beautiful theorem (published in the *Illinois Journal of Mathematics* in 1975) that the product of two or more consecutive positive integers is never a power, a problem that had been considered for 250 years. They also studied questions about factorization of binomial coefficients; today a binomial-related function in *Mathematica* bears their names.

After leaving the University of Illinois, John went to Northern Illinois University, where he twice served as chair of the Mathematical Sciences Department. From 1978 to 1986, he was the executive editor of *Mathematical Reviews*, where he introduced their first effective computer system.

In his later years, John created the Number Theory Foundation (NTF) to promote research in his favorite subject. The NTF is a non-profit organization, associated with the University of Illinois Foundation, which makes grants worldwide, particularly to assist young number theorists to attend conferences. The NTF awards a semi-annual prize named in his honor.

John has been a frequent visitor to our campus over the years. He continued to participate in mathematical activities up to his last year. The department honored him, along with Heini Halberstam, with a conference in 2007 to mark their 80th birthdays.

He is survived by two daughters, who live in California. A memorial service was held in DeKalb on November 13.

Editor's Note: I would like to thank NetMath Director Debra Woods for contributing the article on Jerry Uhl, Professor Emeritus Paul Bateman for contributing the article on Gerhard Hochschild, and Professor Emeritus Harold Diamond for contributing the article on John Selfridge.

Honor Roll of Donors

July 1, 2009 – June 30, 2010

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A surface of revolution is created by revolving a planar curve around an axis of rotation that lies in the same plane. The surface pictured here is known as Gabriel's horn or Torricelli's trumpet. In cylindrical coordinates (r, θ, z) the surface is defined by the equation $r = 1/z$ and by the inequalities $1 \le z \le H$. Letting H tend to infinity leads to a remarkable situation. The resulting surface has infinite surface area, yet it encloses a finite volume of π cubic units.

Evangelista Torricelli, a student of Galileo, is perhaps best known for his contributions to physics, such as Torricelli's Law in fluid dynamics and the Torricellian barometer. The name Gabriel's horn refers to the archangel Gabriel.

This model is part of the math model collection housed in Altgeld Hall. Photograph by Kalev Leetaru.

Math Times

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Homecoming 2010

The 2010 "A Century of Spirit" homecoming celebration marked 100 years of homecoming tradition for the University of Illinois. It is the longest continually running such collegiate event at Illinois, beginning in 1910. The inaugural event was a success, drawing more than 10,000 participants.

The Department of Mathematics held their third annual Homecoming party on the lawn out front of Altgeld Hall on October 23, 2010. There was a good turnout of alumni along with current faculty and students who enjoyed the catered buffet. Adding to the festivities this year were games and prizes! This year's event was planned by a committee of alumni: Zachary Herrmann, Paula DeAnda-Shah, Maryjoy Heineman, and Alicia Wojcik.

Homecoming 2011 will be held October 1, 2011. More information will be posted on the department's website at www.math.illinois.edu/homecoming/. We hope to see even more of our alumni at next year's event!