

Summer 2006

MATH BRADLEY UNIVERSITY Alumni Newsletter

Note from the department chair ...

Greetings from the Mathematics Department. A few years ago the Department designed a senior project course for our majors. The motivation for the course was to have our majors work on a piece of mathematics of their choosing, with a bit of guidance from a faculty member. Many students have taken independent study courses with faculty over the years, but the senior project expands this to more students and focuses the type of work to have more specific goals. Another motivation is that such a course would be part of the university's efforts to provide an opportunity for student-faculty collaboration. This is part of the university's promise to the North Central Association, our accrediting agency.

The senior project is a two-semester commitment that is now required of all MTH majors. (We would like to have a similar program for MTH T and ASM majors but we will wait for a few years to see how the current program works before expanding it to our other majors.) The first semester is for zero credit hours and is spent finding a project advisor and a topic, question, or problem. The only formal constraint is that the project must be mathematical or statistical in nature, though an informal constraint requires that the project not be something that is already contained in one of our courses. It is desirable that the project be original, but this is not a requirement. There may also be some background reading done in the first semester so that the student is ready to start working on the heart of the problem immediately at the start of the second semester.

The second semester is a three-credit-hour course in which the work on the project is done. This is when the problem posed in the first semester—or perhaps a modified problem—is solved. In addition, the student writes a paper on the work and gives a public presentation to the students, faculty, and, sometimes, even guests of the department.

The first senior project was completed by Megan (Goers) Bomer in 2004 while the official requirement was still being phased in. Her topic was an audio application of wavelets. Megan's violin experience meant that she could generate her own samples as well as analyze them. The next year, Rachel Price's project on the Cantor set enabled her to explore this interesting topic. This past year, there were six students who completed senior projects. They include: Ryan Ephgrave, Colorability of Ratio-

nal Knots; Lena Folwaczny, Algebraic Numbers and Algebraic Number Fields; Andrew Greene, Symmetry Methods for Differential Equations; Ryan Koralik, The Sample Median and a Test for Symmetry; Marko Marevic, A Collapse Conjecture for Contractible 2-Complexes; and Jason Wood, Amphicheirality of Knotted Ribbons.

In addition to their mathematics and enthusiasm for their topic, I was also impressed with the professionalism of the students' presentations. They have tamed the vagaries of PowerPoint and several have learned how to use the mathematical aspects of TeX and its presentation capabilities so the talks were not only well organized and interesting, but looked polished as well.

We are pleased the students have made this new requirement a splendid part of their mathematical education.

-Mike McAsey



An active year for Math Club

Bradley's Student Math Club had one of its most active years during the 2005-06 academic year. Senior mathematics majors Lena Folwaczny and Andrew Greene served as presidents. Both attended the MathFest in New Mexico in August of 2005.

Three club members attended the Rose-Hulman Undergraduate Math Conference. Ryan Ephgrave was a speaker at St. Norbert's Math Conference. Robert Andry, Ryan Ephgrave, Jason Wood, and Andrew Greene gave oral presentations at the Illinois Section of the MAA at North Central College this spring.

Five students participated in the Putnam Contest. Lena Folwaczny was recognized for the score she achieved in the contest.

Club members gave Professor Michael Lang the credit for energizing the student group during the past two years while he has been their sponsor. Dr. Lang came to Bradley in the fall of 2003 and is a graduate of the University of Wisconsin-Madison. In addition to Math Club activities, he holds weekly problem solving sessions for interested students.

The Math Club holds weekly meetings, consisting of a variety of activities. Each week a student prepares a biography of a mathematician or tells of some significant mathematical work. Students bring entertaining math problems or logic puzzles.

Popular films or documentaries that contain mathematics in the plot are also shown. Past films include *Sneakers*, *Good Will Hunting*, *A Beautiful Mind*, *Surviving Christmas*, and *Pi*.

Time is taken to help students with presentations they are to give at math conferences. Pizza and soda pop are included at meetings to "keep hungry brains well-nourished."

This spring, five Bradley math professors gave talks on their own research or topics of special interest at Math Club meetings. The club "passionately encourages" students to continue to study various topics in mathematics.

Club members sponsored a math picnic at the end of the spring semester. Other social activities included bowling for primes, a mathematical scavenger hunt at the Peoria Zoo, and going to the movie *Proof*.

The Student Chapter of the Mathematical Association of America was organized in 1989. It was one of five charter chapters in the state of Illinois. Its first president was Kelley Stevens '90.

Those who have served as leaders of the student Math Club laid the groundwork for a very successful organization. Through these kinds of efforts the Math Club is assured to continue as an active voice at Bradley for years to come.

Outstanding Senior In Mathematics awards

The Mathematics Department began to annually recognize an outstanding graduating senior in mathematics in 1971. In 1973 the award was renamed the Marvin G. Moore Excellence in Mathematics Award. Dr. Moore taught in the Mathematics Department from 1943 to 1970, when he retired after being head of the department for 12 years. He is now 98 years old and lives in Springdale, Arkansas.

In 1998, new criteria were established for the Outstanding Senior in Mathematics Award. To be eligible, students must qualify for University honors, which means they must have at least a GPA of 3.4 and earn at least 60 semester hours from Bradley when they graduate. Each faculty member of the Math Department reviews the records of the students who are eligible and then votes for a student. Decisions are usually based on student grades in upper division math courses, especially our core upper-division courses. Other factors may be the interest the student has shown in mathematics as demonstrated by giving mathematical presentations, level of participation on a senior project, and interest in graduate studies. Usually there are two or three graduating seniors who are considered for the award. Listed below are the past recipients of the awards:

1971	Janice (Colen) Bergschneider	1983	E. Michael Hansen	1995	Mary Lipic
1972	Dennis Hermann	1984	Paul Barron	1996	James Ellis
1973	Mark Lemenager	1985	Brenda Wolfersberger	1997	Daniel Reeves
1974	Paul Rusin	1986	Daniel Scanlan	1998	Aimée Loar
1975	G. Richard Miller	1987	Timothy Simpson	2000	Chris Stawarz
1976	Jerry Verbout	1988	Deborah Stricklin	2001	Richard Heller
1977	Daniel Smith	1989	Barbara Dombroski	2002	Jillian Martens
1978	Beth Huhn	1990	Kelley Stevens	2003	Matthew Occhipinti
1979	James Davies	1991	Mark Guzman	2004	Whitney Bush
1980	Kernon Gibes	1992	Cynthia DeCapp	2005	Kristine Radlein
1981	Carol Beckman	1993	Alison (Huser) Voudrie	2006	Andrew Greene
1982	Michael Merwin	1994	Julia Meyer		

Where are they now?

We caught up with a few of the recipients of the Marvin G. Moore Excellence in Mathematics Award winners to find out where life beyond Bradley has taken them. Here is what they have been up to.

Carol Beckman And James Davies

James (Jim) Davies '79 and Carol Beckman '81 have more than the Marvin G. Moore Excellence in Mathematics Award in common. They have also been married for 25 years.

Jim was born in upstate New York. Because his father was a civil engineer who worked on dam construction projects, the family moved to California, and then Canton, Illinois, where Jim attended high school. He recalls that his first fascination with math was when his mother taught him how to divide fractions. Another spark of interest occurred when a high school student teacher gave him the formulas to calculate pi.

Jim was attracted to Bradley because it was near his home and he was given a half-tuition Block Scholarship. Bradley also offered the math, science, and engineering classes he wanted. Jim started out as an industrial engineering major then became a physics major for two years. During his senior year he switched again, graduating with majors in both computer science and mathematics.

Jim played chess actively throughout his years at Bradley and was the 1977 Peoria City co-champion. He also played intramural sports and enjoyed the basketball games in the Field House. Going to Avanti's is a favorite campus memory.

Carol became acquainted with Bradley when she attended a debate institute on campus between her junior and senior years in high school. She graduated from Dowling High School in Des Moines and lived in suburban Windsor Heights.

At Bradley, Carol earned majors in mathematics and computer science with a minor in economics. Both her first math class and her last math class at Bradley were taught by Dr. Jungck, her favorite professor. She also remembers Dr. Quigg who was friendly and helpful, Dr. Szeto who was always enthusiastic, Dr. Hahn who cared for the students, and Walt McCurdy. Carol said the mathematics professors were "knowledgeable and eager to transmit that knowledge to the students." Carol was active in speech and debate and was a member of the Newman Center Choir while at Bradley.

After leaving Bradley, both Jim and Carol attended graduate school at the University of Illinois in Champaign. Jim earned a master's in computer science in 1981. Carol earned a master's in computer science in 1983 and a Ph.D. in computer science in 1989. Her dissertation was on algorithms to compare parse trees.

Carol held research and teaching assistantships at the University of Illinois while earning her degrees. After earning her master's, Jim spent seven years working for KAI, a software company in Champaign that was started by his thesis advisor and two other graduate students. The company developed



Carol Beckman and James Davies, along with their children Greg and Teresa, hiking in Zion National Park.

compiler optimization technology for parallel and vector supercomputers. During Jim's time there, KAI grew from four to forty employees. During his last year in Champaign, Jim was a programmer for the University of Illinois Center for Supercomputing Research and Development.

Jim and Carol moved to Colorado Springs in 1990. He worked for Cray Computer Corporation until 1995. He then went to work for FedEx where he was a programmer for five years. Since then he has worked for XPriori, a software startup which produces an XML database management system. His specialty as a computer programmer in compilers has more of a mathematical foundation than most programming. "My math background has served me well in my career path," he said.

Carol has taught computer science classes for three universities in Colorado Springs: Colorado Technical University, Chapman University, and the University of Colorado. She has also filled various positions for Quibus Enterprises, a small company that developed and sells Fortran programming tools.

Carol and Jim have two children, Teresa, who is majoring in electrical engineering at Colorado School of Mines, and Greg, who will be a senior in high school. Due to the influence of her parents, Teresa at age 12 was able to prove there are infinitely many primes. "When Teresa learned to drive, we joked that she navigated like a mathematician. If she had two places to go to, she'd drive to the first, then drive home, then drive to the second. She didn't know the route between the two places, but she could reduce it to a solved problem," Carol said. Greg has also shown an interest in mathematics. He is an Eagle Scout and Carol and Jim remain involved with the troop.

Carol serves on the local Catholic Committee on Scouting. In addition, she is involved with several organizations that build and maintain hiking trails. "I'm very much into hiking, mountain climbing, and skiing," said Jim. "As a family, we

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spend almost every weekend year round in the mountains doing something outdoors. We all ski, everybody but me snowboards, and we've all climbed at least half of the 55 peaks over 14,000 feet in Colorado."

Whenever Carol and Jim return to campus, they "make the trek up to the fourth floor of Bradley Hall to see who might be in that we know."

Beth Huhn Hoffman

Beth Huhn was named as the recipient of the Marvin G. Moore Excellence in Mathematics Award at the time she graduated in 1978. She was a Mathematics/Computer Science major.

Beth did well in math from an early age and was placed in accelerated math classes. She related, "My math classes were among my favorites. I liked the logic and analytical aspects of math as well as the practical problem-solving aspects." She graduated from Taft High School in Chicago as valedictorian in a class of about 800 students.

An older cousin had transferred to Bradley as an EE major and found Bradley to his liking. This influenced Beth to enroll at Bradley. She said, "I liked the size of the student body and that Bradley was located away from home, but not too far away." Another factor in choosing Bradley was the Block Scholarship she received.

Beth particularly remembers Dr. Hahn and Dr. Jungck as professors of math classes she took. Dr. Jungck taught the Advanced Calculus class. "I remember the passion he had, coming in and writing proofs across the blackboards all around the classroom with a flourish, while the handful of students stared with amazement and scabbled to copy them down before he got all the way around and started erasing the first board!" Dr. Jungck told the class that the course was "indicative of higher mathematics."

Being an only child, Beth enjoyed the "wonderful experience to be part of a close group of friends" while at Bradley. She enjoyed cheering on the Bradley Braves in the Field House and social gatherings at Phi Kappa Tau. A favorite excursion off-campus was going to The Poison Apple with friends to boogie. She and her friends liked to go to Jumer's on Fridays to get away from dorm food. She still remembers their "fabulous mini cinnamon rolls."

After graduation Beth became a software developer at AT&T's Western Electric R&D product development facility in Lisle. Her first project was a custom application to process telephone call billing for the new airport in Riddayh, Saudi Arabia. AT&T sponsored her graduate work at Kansas State University where she earned a master's degree in computer science in 1985.

Beth is currently a senior program manager at the "new AT&T" (formerly SBC). She previously held various positions for Lucent Technologies and an internet mail-order business.

Among Beth's interests are quilting, photography, and travel. She is active in two quilting guilds. Beth has traveled to Aus-

tralia, New Zealand, Japan, China, Morocco, and a number of European countries. She said, "I especially enjoy foreign travel for learning 'to see with new eyes', looking closely at details through my photography." Beth currently resides in North Aurora with her golden retriever Jake.

Kernon Gibes



Kernon Gibes

Kernon Gibes is a 1980 graduate of Bradley University. As a double major in mathematics and computer science and economics, he received the Marvin G. Moore Excellence Award in Mathematics his senior year.

At Lockport Township High School, a teacher suggested he might consider a career in actuarial science. Kernon read a pamphlet he was given on the field and realized that there were careers available in applied mathematics.

His decision to enroll at Bradley was influenced in part by his older brother who studied chemistry at Bradley as well as the size of the campus community.

After graduating from the university, Kernon obtained a master's degree in applied statistics from the University of Iowa in 1982. He was a biostatistician in the pre-clinical department of G.D. Searle & Co. in Skokie, IL, from 1982 to 1985, performing statistical analyses of in vitro drug efficacy studies. He then moved to the company's clinical statistics department where he stayed until 1987. When Searle became part of Monsanto, Kernon became a senior research statistician for The NutraSweet Company where he primarily supported consumer taste tests. Since 2000, he has been senior project scientist/statistician at Unilever, supporting R&D for hair care and deodorants.

Kernon married Valerie Hyndman in 1994. They live in Mt. Prospect with their 11-year-old son and nine-year-old daughter. Their son Nathan recently received 30 "commendables" in a National Piano Playing Audition.

For many years, Kernon has been an avid reader of both fiction and non-fiction. He has nearly completed writing his first novel. In 1999, he founded the first forum and Web site, www.sensory.org, devoted to sensory evaluation science.

One of his favorite memories from his years at Bradley was the summer he worked as a research assistant for Dr. Robert Scott in the Economics Department. The work involved a challenging programming project. "I liked being able to work at my own pace and in an air-conditioned office," Kernon said. He remembers Dr. Quigg because he "was very approachable and took an interest in what students were doing."

Kernon remembers Dr. Hahn as a professor who "would interject amusing stories insofar as they related to the subject matter." He also recalls Dr. Sastry's unique teaching style. "When looking at a particular indefinite integral, Sastry would say, 'We don't know what the answer is, but we can guess.'"

A college friend of Kernon related the following story: "I can distinctly remember the second hourly exam in second semester calculus, MTH 122 Methods of Integration, which Kernon and I both took from Dr. Sastry. He was convinced that Kernon's performance on the first hourly exam that semester was impossible. Instead of proctoring the second exam in the typical fashion, he spent the entire time

standing up, looking over Kernon's right shoulder, smoking his pipe. Kernon finished a few minutes early (typical) and was going back to check his work when Dr. Sastry said to him, 'Don't bother. That's easy to grade.' Whereupon he took a pen from his pocket, reached down over Kernon's shoulder and wrote '100' at the top of the page. Then he walked away."

News from recent graduates

December 2004 graduates

Scott Baker was a retirement consultant with Mercer Consulting in Norwalk, Connecticut. He now has an actuarial position at Ameriprise Financial in Minneapolis.

Christine Bachmann is at Caterpillar's office in Toronto.

May 2005 graduates

Rebecca Bontz is a mathematics teacher at Limestone Community High School in Bartonville.

Jacqueline Cimarolli is teaching mathematics at Thornton High School in Harvey.

Bryan Doyle is working in logistics at DeKroyft-Metz & Co. in Peoria.

Rachel Price Draper married in the summer of 2005. She lives near Nashville, Tennessee, and does private tutoring in math.

Joshua Durham is a sales representative of medical equipment in the Peoria area for Orbit Medical. He also is a private tutor in math.

Kevin Kill is a professional associate in environmental underwriting for AIG Insurance in Chicago.

Stephanie Powell Prokop was married on September 3, 2005. She is a catastrophe manager for RLI in Peoria.

Scott Small is a graduate student in applied mathematics at the University of Iowa where he has a teaching assistantship in math.

Todd Stoller is teaching mathematics at Pekin High School.

Emily Wabnitz is a computer consultant engineer at Epic Systems Corporation in Madison, Wisconsin.

December 2005 graduates

Jennifer Bridgett has an actuarial position at State Farm Insurance in Bloomington. She recently passed her third Society of Actuaries Exam.

Other graduates

Deirdre Purcell Collins '86 is an associate professor of mathematics at Glendale Community College in California. She served a three-year term on the Board of Governors of the Faculty Association of California Community Colleges.

Aaron Saxton '04 is a graduate student in mathematics at the University of Toledo.

Trent Durlinger '04 had been an actuarial technician at Auto-Owners in Lansing, Michigan. He is now a database analyst at State Farm Insurance in Bloomington.

Seniors attend REUs



Erica Purdy '07 was one of only 15 students selected to participate in a Research Experience for Undergraduates (REU) at Central Michigan University in Mt. Pleasant during the summer of 2005. The purpose of the REU is to introduce students to mathematical research. In addition to presenting the results of their own research, guest speakers presented lectures on a

number of "million dollar math problems."

Erica was encouraged to apply for the REU by Bradley professor Dr. Alberto Delgado, who taught her calculus, linear algebra, and graph theory. Erica's research focused on zero divisors in finite commutative semigroups. The summary of the paper stated, "Results are given on semigroups whose zero divisor graph is a triangulation of a compact surface."

The REU is sponsored by the National Science Foundation, which covers the costs of each of the student participants and provides them with a stipend to cover any additional expenses.

As a result of attending the REU, Erica is considering attending graduate school in mathematics after gaining some teaching experience. Erica will graduate in 2007 with a degree in mathematics/secondary education.

Andrea Schoch '07 attended an REU this summer at Williams College in Massachusetts from June 12 to August 13. Andrea, a senior at Bradley majoring in mathematics, was part of the research group working on Bayesian Statistics.

Also called the SMALL Undergraduate Research Project, this nine-week program gives undergraduate students an opportunity to work in small groups investigating open research problems in mathematics under the guidance of a faculty advisor. SMALL is the largest program of its kind in the country and is supported by a National Science Foundation grant and the Science Center of Williams College. More than 300 students have participated in the program since 1988.

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