

Indiana University Department of Mathematics Alumni Newsletter

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College of Arts & Sciences Alumni Association

Fall 2002

Professor Elizabeth Housworth joins faculty



Professor Elizabeth Housworth will help build new ties between the biology and mathematics departments at IUB.

Professor Elizabeth Housworth recently was named a tenured member of the Department of Mathematics at Indiana University.

After receiving a PhD in mathematics in 1992 from the University of Virginia under the direction of Loren Pitt, Housworth was a research assistant professor at Purdue University from 1992 to 1994. She came to IU from the University of Oregon, where she had been an assistant professor since 1994.

Housworth's research interests shifted recently from analysis and probability to mathematical biology and genetics.

Using a \$100,000 NSF fellowship, she learned a substantial amount of biology and became a biostatistician with a strong record of collaborations with biologists. She

worked on problems in phylogenetic comparative methods, such as developing mathematical methods for randomly sampling ordered trees given constraints on the tree topology; exploring the use of the mixed model as a PCM; describing the impact of the tree topology on parameter estimation; and incorporating discrete characters into PCMs.

She also is interested in problems in the area of genetics/genomics, such as measures of syntenic conservation, models of interference, the statistical detection of gene conversions, models of duplicate gene preservation, and models of gene networks and gene regulation.

The field of biology has become much more mathematical, and, especially in genetic sequence analysis, there are many interesting applied mathematics problems. As a new member of our faculty, Housworth will help build ties between the biology and mathematics departments at IUB.

From the chair

New programs support department's mission

Fall 2002 has been a busy and, in many ways, exciting semester for the Department of Mathematics. We welcomed a new tenured faculty member in bio-statistics, four postdoctoral fellows, and 31 graduate students. We have been busy teaching more than 9,500 students, while, at the same time, our faculty have been carrying out active research in programs in many areas.

We also have initiated several new programs related to our mission of preparing undergraduate and graduate students for careers creating and using mathematics. One of these initiatives includes a \$6.2 million NSF grant to IU that will advance mathematics instruction in Indiana schools. The NSF grant will allow professional development options for elementary and secondary school teachers in Indiana. Bill Frascella, director of the IU Center for Mathematics Education, located in Swain East, will direct the project. Also, we were pleased to learn that the Commission of Higher Education has approved our new BS offering in statistics. We look forward to launching this program in spring 2003. Finally, in an exciting development, we received a large donation to be used for endowed graduate fellowships.

We welcome comments from our alumni. Please stop by the department when you are in town, or contact me by e-mail at maki@indiana.edu.

— Daniel Maki

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Students, faculty recognized for outstanding efforts

Thanks to the generosity of alumni and benefactors, many outstanding graduate and undergraduate math majors received awards at the Mathematics Awards Presentation on April 12, 2002. The awards provide recognition of superior work in mathematics, as well as financial rewards to our best undergraduate students. Student award winners were chosen by faculty recommendation for recognition.

Undergraduate awards

The undergraduate awards include the Thelma Abell Prize, the Ciprian Foias Prize, the Ruth E. Gilliatt Memorial Scholarship, the Cora B. Hennel Memorial Scholarship, the Trula Sidwell Hardy Scholarship, and the Robbins Prize. Our outstanding seniors were **Craig Louis Citro**, **Devon Haris**, **John Meth**, **Lori Parcel**, **Jessica Rothe**, and **Kris Wilson**; most of them have plans to pursue a PhD after graduation. Our outstanding juniors were **Suzanne Doering**, **Michael Ellerbrook**, **Brett Helfner**, and **Elizabeth Morris**. The outstanding freshmen and sophomores

were **Benjamin Barone**, **Eric Bitzegaio**, **Danial Budreau**, **Daniel Khokar**, **Jerry Neal**, and **Katherine Szypyrka**.

The Undergraduate Intern Award was established in 1997 by professors Maki, Thompson, and Wheeler to recognize and reward outstanding department service by undergraduates assisting with the Finite Mathematics course. This year's recipient was **Kelly Hennen**.

Graduate awards

Our graduate students lead busy and varied lives. Yet while undergoing rigorous academic training in advanced mathematics,



they also teach some of the toughest courses — relatively low-level math classes for the not-so-enthusiastic student.

This year, 28 of our 88 graduate students received awards in recognition of their academic and teaching excellence. The awards, ranging from \$200 to \$900,

were representative of the following categories: Robert E. Weber Memorial Award (best performance on Tier 1 exams), James P. Williams Memorial Awards (outstanding first-year graduate students), William B. Wilcox Mathematics Awards (outstanding graduate students), and the Glenn Schober Memorial Travel Awards (given to advanced graduate students for travel).

Completing the student award presentation was the Rothrock Teaching Awards for Associate Instructors. Everett Antrim established this scholarship in 1956 through a gift to the IU Foundation. The awards are given in memory of Dean David A. Rothrock in recognition of excellence in the teaching of mathematics. This year's recipients are **Abdulla Aljouiee**, **Bernardo Andrade**, **Stefano Borgo**, **Min Chung**, **Andrew Ellett**, **Brad Emmons**, **Stephanie Isaac**, **Allison Toney**, **Eugene Tsyganov**, and **Jesenko Vukadinovic**.

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Large endowment benefits graduate students

Graduate students in the department have a new source of financial support, thanks to a scholarship fund created in memory of former high school mathematics teacher and IU alumna **Hazel King Thompson**.

Thompson completed a BA in mathematics at IU in 1909. She taught high school mathematics in Bloomington and the surrounding area and championed many students to a higher understanding of math. In later years, she completed her master's degree at IU and did some work for the IU Department of Mathematics before retiring in the early 1950s. She died in April 1966.

Thompson's daughter, Ruth Elizabeth Thompson, was also an IU alumna, graduating in 1938 with a BA in home economics. Following a career as a dietician, Ruth retired to her childhood home in Bloomington in 1985, at the age of 70. She died on Jan. 20, 2001. In memory of her mother, Ruth had made a provision for \$870,000 of her estate to go to the IU Department of Mathematics to create the new Hazel King Thompson Scholarship Fund.

This generous gift will be used to support a full graduate fellowship for an outstanding PhD student. The first recipient of the Hazel King Thompson Scholarship, for fall 2002, is **Serdar Altok**. He was recommended by Professor Alp Eden, a former student of Ciprian Foias. Altok is from the University of Bogazici in Turkey; his area of interest is probability. Congratulations, Serdar!

Hazel King Thompson, BA'09, MS Ed'49, was an early graduate of the IU Department of Mathematics. She taught math locally for many years. Her daughter, Ruth Thompson, BA'38, right, established a scholarship fund in memory of Hazel.



Welcome, new postdoctoral fellows

Four new postdoctoral fellows joined the department, three of whom are partially funded by the National Science Foundation VIGRE grant. The postdoctoral fellows, and their areas of research, are

- **Karen Ball**, PhD from the University of Maryland, analysis;
- **Chris Willett**, PhD from the University of Illinois, geometry;
- **Joe Miller**, PhD from Cornell University, logic; and
- **Reza Chamanara**, PhD from the City College of New York, geometry.

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Rothrock Faculty Teaching Awards

Lawrence Moss was the recipient of the Rothrock Faculty Teaching Award. This award was created and endowed in 1990 by Mary Estelle Rothrock and David A.



Lawrence Moss

Rothrock Jr. in memory of **Dean David A. Rothrock**, a distinguished member of the faculty from 1892 to 1937. The award was established to encourage excellence in the teaching of mathematics and is

given for outstanding teaching at all levels, from service courses through thesis mentoring. Moss earned a PhD at UCLA. He joined the IU faculty in 1990 and has been a valued member of the department, teaching large classes in innovative ways and developing new courses that link mathematics to such subjects as language, informatics, and cognitive science. He has directed the graduate work of an extraordinary number of students.

2002 IU Trustees' Teaching Awards

The department presented Trustees' Teaching Awards to professors **Hari Bercovici** and **Bill Wheeler**.

Bercovici was recognized for his excellent teaching of graduate students, direction of thesis work, and work with postdoctoral fellows.



Hari Bercovici

He has given a large number of seminar presentations, has taught large sections of M118, and has served as course coordinator several times.

Wheeler has done an outstanding job of teaching large sections, often doing two at a time. He was recognized for his efforts to bring homework back to large classes such as M118 and M119 through the development of Webworks, a system that gives each



Bill Wheeler

student a different set of problems (and grades them instantly) via the Web.

Best wishes to our retiring faculty

Rabi N. Bhattacharya



Rabi Bhattacharya joined the Department of Mathematics in 1982 and retired in 2002. During his 20 years at IU, he has played a key role in all aspects of department life and, in many ways, has been a role model for other faculty.

Rabi received a PhD in statistics from the University of Chicago in 1967. He then served as an assistant professor of statistics for five years at the University of California Berkeley. From 1972 to 1982, he was a member of the mathematics department at the University of Arizona, first as an associate, then as a full professor. In 1982, he accepted a position at Indiana University, and he has been a full professor in our department ever since.

Among his accomplishments, Rabi has published more than 70 papers in journals and conference proceedings and has coauthored three books. He published two special invited papers, one in the *Annals of Probability* in 1977 and another in the *Annals of Applied Probability* in 1999. He was elected a fellow of the Institute of Mathematical Statistics in 1978. In addition, he was awarded an Alexander von Humboldt Prize in 1994-95 and a Guggenheim fellowship in 2000.

Rabi guided eight students to the PhD in mathematics, and two more students are expected to earn mathematics PhDs under his guidance shortly. He also played a key role in the development of the statistics and probability curriculum, including the development of M560, a graduate course in applied stochastic processes. Both in dealing with people and in his perspective on university academic life and the world at large, Rabi consistently has shown a deep humanity. His colleagues and the department give him their best wishes for his retirement.

— Richard Bradley

John E. Brothers



In his first and only academic appointment, Professor John E. Brothers has been a loyal and effective member of IU faculty.

He first entered the University of Utah, where he earned a BA in 1959 and an MA in 1960. John then studied at Brown University for a PhD under the direction of Professor Herbert Federer, a mathematician of the highest repute. In 1964, after he finished his doctorate, John departed with his family for two years of service in the U.S. Army at Vint Hill Farms, Va.

Upon completion of his military service obligation, he became a faculty member of the mathematics department at IU in fall 1966. John is known for his love of teaching. His contributions to teaching were duly recognized when he received the 1988 Blue Key-Golden Key-Mortar Board Outstanding Faculty Member Award. In 1992 he was a recipient of both the Rothrock Faculty Teaching Award from our department and the Student Alumni Association's Student Choice Award for Outstanding Faculty.

John was one of the first in the department to embrace computer technology to enhance courses at the undergraduate level. John also was among the first to help the department develop a program that delivers homework problems to students over the Web and provides them with instant feedback as to whether or not their answers are correct.

During virtually every year of his career here at IU, John has performed some essential administrative task. At the departmental level, this includes serving as assistant chair for graduate affairs for three years, as director of undergraduate studies for five years, and as managing editor of the *Indiana University Mathematics Journal* from 1981 to 1990. In addition, he has served on the University Faculty Council, and for many years he was a member of the Bloomington Faculty Council and frequently served on its associated committees. John has been a member of the board of directors for the Monroe County chapter of Habitat for Humanity since 1993, serving as president in 1998.

John's formal retirement will not keep him out of the classroom, though. He already has agreed to teach a course each semester this year.

— William P. Ziemer

If it's summer in Bloomington, it must be REU time!

Once again Bloomington became a center for undergraduate research in mathematics in the summer.

During the Research Experiences for Undergraduates, students from Chicago, MIT, Brandeis, Scranton, North Carolina State, Rochester, and Queens joined two IU undergraduates for eight weeks of intense mathematical research.

Projects were directed by professors **Zhengan Wang**, **Billy Rhoades**, **Russ Lyons**, **Victor Goodman**, **Allan Edmonds**, **Carolyn Yackel** (now a professor at Mercer College), and **Darrell Haile** (with assistance from graduate student **Kevin Foster**). Edmonds and Haile directed the overall program, with assistance from **Beth Terrell**, assistant undergraduate adviser.

The projects' titles included "Topological Quantum Computation," "Frobenius Graphs for the Dihedral Group, Weak Cocycles, Algebras, and Rooted Lower Subtractive Graphs," "Enforceable Deriva-



REU — Students from Chicago, MIT, Brandeis, Scranton, North Carolina State, Rochester, and Queens joined two IU undergraduates for a summer of intense mathematical research.

tive Prices over Discrete Time," "Stability of Fixed Point Iterative Procedures," "Entropy and Uniform Spanning Trees, Triangle Centers, and Their Higher Dimensional Analogs," "The Fermat Point in Higher Dimensions," "Tilings of the Torus by the Unit Square," and "Affine Diffeomorphisms of the Punctured Torus."

During the summer we hosted a one-day conference for all students in the state who were involved in mathematics research for the summer. Groups of students attended from the Rose Hulman Institute of Technology, Purdue, Notre Dame, Wabash College, and, of course, IU. Professor **Kevin Pilgrim** gave the opening talk, and the rest of the day was filled with students talking about their own research projects. Goodman gave a mini-course on the topic of mathematical simulation, accompanied

by the computer algebra system Maple. Along the way we learned how to TeX — thanks go to **Elena Fraboschi** for sharing her TeX-pertise! We had discussions on writing and speaking mathematics and on applying to graduate school. At the end of the program, each student made an oral presentation and prepared a written report on his or her work.

Thanks go to all who helped make REU a success. **Donna Fink** provided behind-the-scenes guidance, and **Cheryl Miller** and **Mandie Frye** helped process applications and administrative paperwork and also helped prepare student reports for publication. The students especially appreciated all the support and encouragement that Beth Terrell provided.

— Allan Edmonds

Mathematics Alumni Newsletter

This newsletter is published by the Indiana University Alumni Association, in cooperation with the Department of Mathematics and the College of Arts and Sciences Alumni Association, to encourage alumni interest in and support for Indiana University. For activities and membership information, call (800) 824-3044 or e-mail ualumni@indiana.edu.

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THE
COLLEGE

The adventures of the IU Math Club

The IU Math Club is mainly a social vehicle, where students share experiences tied to mathematics. Our activities include field trips, lectures, discussions, and, invariably, free food. We still are getting mileage out of the mother of all field trips, which was to New York City in April 2001 to see the Broadway play *Proof*.

A bunch of us piled in a van on a Friday, drove to accommodations in New Jersey, spent Saturday touring all over Manhattan, ate, enjoyed the play, and topped it off with the view from the Empire State Building. We drove back Sunday after a quick tour of

Princeton. We also have ventured up to Indianapolis to see a play about Galileo, as well as across town to see the movie *A Beautiful Mind*. Next in our sights is the play *Copenhagen*. If something is remotely connected to mathematics, we will consider going to it. Sadly, we have had to turn down a request to travel to Las Vegas to see probability in action.

On the conventional side, we have enjoyed some entertaining talks by IU faculty. We had a meeting where representatives from analysis, geometry, number

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Alumni notebook

Before 1960

Lorene H. Lemmon, BA'32, is retired and lives in Shelbyville, Ind.

Eleanor A. Engle, BA'33, writes, "I am living in a retirement center. (I am) almost 92 years old, but I am in good health and get around quite well." She lives in Fort Wayne, Ind.

Robert C. Wrede Jr., PhD'56, is a professor emeritus at San Jose State University. He lives with his wife in Aptos, Calif.

1960s

Donald A. Buckeye, MAT'61, EdD'68, writes, "I am now retired after 50 years of teaching mathematics, the last 34 years in the mathematics department of Eastern Michigan University. In the spring of 1998, I received the Distinguished Teaching Award of the Michigan Section of the MAA, and in the fall of that year, I received the Teaching Excellence Award from Eastern

Michigan Alumni Association." He lives in Ypsilanti, Mich.

Kenkichi Sato, PhD'63, retired in March 2000, after 37 years of teaching math at three different colleges in Japan. He lives in Mino, Osaka, Japan.

Donald D. Dyck, BA'65, MAT'66, has joined Planning Advocates Inc. as senior associate and director of development. He lives in Delaware, Ohio.

1970s

Abbass Foroughi, BA'70, MBA'76, PhD'90, professor of computer information systems at the University of Southern Indiana, received the Sydney L. and Sadelle Berger Faculty Community Service Award. He is chair of the Rotary Club's Education Committee, a former member of the board of directors of the Raintree Girl Scout Council and the school improvement team for Plaza Park Middle School, and he is active with the Metropolitan

Evansville Chamber of Commerce's Tri-State Workforce Initiative.

Bette L. Warren, PhD'76, writes, "I received the Distinguished Service Award from the Mathematical Association of America, and I became the head of the Department of Mathematics at Eastern Michigan University." She lives in Plymouth, Mich.

1980s

Ramlan Bin Ahmad, BA'82, lives in Malaysia and is head of human resources management and administration for Carigali-Triton Operations. He writes to say that he would like to establish business networks with U.S. automotive industries and automotive distribution companies.

Kenneth E. Kudrak, BS'85, teaches math and computer science at Maine Maritime Academy in Castine, Maine.

Kerry L. Lockhart, C Bus'85, BA'86, JD'95, is a major in the California Army National Guard and is a senior instructor for the California OCS Program. He is also a business litigation attorney for

Bakersfield Law Firm. He lives in Bakersfield, Calif.

Panagiotis Papadopoulos, MA'89, is an instructor at the Technological Educational Institution of Thessaloniki, Greece. He also teaches math at City Liberal Studies. He lives in Thessaloniki, Greece.

1990s

Joy L. Jordan, BA'92, assistant professor of statistics at Lawrence University, was honored with the Outstanding Young Teacher Award for her teaching contributions. The award recognizes excellence in the classroom and the promise of continued growth. She teaches classes on probability and statistics, probability theory, and mathematical statistics. She lives in Appleton, Wis.

2000s

U.S. Air Force 2nd Lt. **Alexander Sayre**, BS'00, recently was designated a naval flight officer. He received his "Wings of Gold" after completing the Advanced Jet Navigation Course with Training Squadron 86 at the Naval Air Station in Pensacola, Fla.

Math Club

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theory, and topology gave 15-minute tours of their corners of the mathematical globe. **Steen Andersson** has spoken on his statistical work on dating manuscripts by Galileo. For this semester, we have lined up an outside speaker from Bryn Mawr College and IU's own **Doug Hofstadter**.

The Math Club is a good contact point for recruiters. Several actuaries have spoken to the club, and at least one internship has resulted. In the spirit of the VIGRE grant, we held a meeting of the club during which a panel of graduate students answered questions on how to prepare for graduate school.

The club also serves as an organizing body for contests. In March 2002, a team from IU essentially tied for second place in a statewide math competition in Indianapolis. Teams formed through the club have earned honorable mention in an international modeling competition in each of the last two years.

The club can be an ambassador for mathematics in general, and the department in particular. Club members have assisted in a Brownie workshop, during which 8-year-old girls were given hands-on experiences in mathematics. I, for one, would like to see the club create and maintain a mathematics exhibit at Wonderlab to spark interest in future math majors. Ideas, anyone?

While most in the club are math majors, any student interested in mathematics is welcome. Visit the Web site at php.indiana.edu/~msjolly/club.html.

— Michael Jolly



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