

# Indiana University Department of Mathematics Alumni Newsletter

College of Arts & Sciences Alumni Association

## Chair's Corner

ELIZABETH  
HOUSWORTH



I am entering my third year as Chair of the Department of Mathematics. I want to thank everyone again, my colleagues, students, staff, and our alumni and donors for being incredibly supportive. It makes being chair enjoyable.

David Fisher has helped the department make connections to the IU Cinema. This past year, he helped us bring *Counting from Infinity: Yitang Zhang and the Twin Prime Conjecture* to the Cinema. We had a large audience and a robust discussion after the film. We are aiming to repeat this success in the coming year with *The Man who Knew Infinity*. Stay tuned for the date and time.

A number of faculty, as well as a former graduate student, have been awarded prizes and honors this past academic year. Here are some of them:

- Kevin Zumbrun and co-authors Mat Johnson, Pascal Nobel, and Miguel Rodrigues were awarded the SIAM Activity Group on Analysis of PDEs (SIAG-APDE) prize for

their paper "Behavior of periodic solutions of viscous conservation laws under localized and nonlocalized perturbations," *Inventiones Mathematicae* **197** (2014).

- Emeritus Professor Eric Bedford (along with J.-P. Demailly) received the 2015 Stefan Bergman Prize. Bedford is honored for his many fundamental contributions to Several Complex Variables, Pluripotential Theory and Complex Dynamics.
- Vladimir Touraev and Valery Lunts were elected Fellows of the American Mathematical Society.
- Emeritus Professor William Ziemer was awarded the 2016 Journal of the Mathematical Society of Japan Outstanding Paper Prize for his article "Aspects of area formulas by way of Luzin, Rado and Reichelderfer on metric measure spaces," co-authored with Niko Marola. The award goes to outstanding papers published in the Journal of the Mathematical Society of Japan during the year 2015.
- Boucher Professor Vladimir Touraev and Alexis Virelizier have won the 2016 Ferran Sunyer i Balaguer Prize for their monograph

*Monoidal Categories and Topological Field Theory*. This prize is for a monograph of expository nature presenting the latest developments in an active area of research in mathematics.

- Former graduate student Blake Barker won the Richard C. DiPrima prize from the Society for Industrial and Applied Mathematics for his PhD thesis written here under the direction of Professor Kevin Zumbrun.

The department is hosting a Sectional Meeting of the American Mathematical Society on campus April 1-2, 2017. The mathematics conference will be a good place to showcase the work of our mathematics faculty, postdocs, and students and to interact with faculty from other mathematics departments in the region. We are honored to be hosting the 2017 Einstein Public Lecture to be delivered by Richard Evan Schwartz, Chancellor's Professor of Mathematics at Brown University, at this meeting.

There are many other important accomplishments that will fill the pages of this Newsletter, but also many that cannot be included. I thank you all for making the department such a special place.



## Student News

From DUGS Kevin Pilgrim:



Wow—what an eventful year for math majors here at IUB!

A new Directed Reading Program, led by Zorn Postdoctoral fellows Dr. Corrin Clarkson and Dr. Jeffrey Meier, began this past Fall 2015. You can read more about it in an article in this newsletter.

Alumni continue to have a profound influence on our department. Our students benefit from their wisdom, networking and professional insights, and financial support. We'd love to hear from you!! Sharing your brief thoughts is so easy...

🌐 <https://www.iub.edu/~mathdept/math-alum-form/math-alum-form.php>

Last fall, two alums generously endowed new undergraduate scholarships.

Anne B. Koehler received her BA ('62), MA ('63), and PhD ('68) degrees in mathematics from IU. The new scholarship she endowed recognizes students with both mathematical and musical talents. She had a distinguished career as a Professor of Business Administration at Miami University and was named a Fellow by both the Decision Sciences Institute and the International Institute of Forecasting.

Jeffrey King earned his B.A. in Mathematics from Indiana University in 1970. The Jeffrey and Debo-

rah King Fellowship was established this past Fall to express his appreciation for the education and support he received from the Mathematics Department. Jeffrey graduated in 1970 with a BA in Mathematics and Deborah graduated with a BS in Nursing (IUPUI) in 1976.

Last Spring featured visits by two recent alums. Elizabeth Oates '07 earned BA degrees in economics and math and is Director of Corporate Strategy at Royal Caribbean Cruises; she spent two full days on campus addressing many groups of students. A recent visit by IU alums and Deloitte representatives John Brown ('12, Wells and Gates Scholar, BS Math and English), Jun Yan ('91 PhD Statistics), and Jim Allega ('14 Finance) drew a standing-room-only crowd of 56 participants including undergraduate and graduate students from Math, Statistics, Economics, Computer Science, Physics, and LAMP. Their presentation focused on the breadth of consulting projects they've been involved in, which was astonishing. Projects ranged from optimization of child support collection, to modeling placement of kids in foster care, to auto insurance and financial modeling.

### Accolades and Awards

The team of senior Thomas Dauer, freshman Baptiste Dejean, and junior Andrew Vander Werf placed 33rd in the 2015 national Putnam Competition. Locally, IUB was once again victorious in the Indiana College math competition. We fielded two teams: earning 1st place was the team of Thomas Dauer, Baptiste Dejean, and Max Zhou. Earning 5th place among 39 teams was the team of Benjamin Briggs, Manasse Kwete, and Michael Peters.

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## New Reading Program is Launched

As two of the Math Department's fifteen or so post-doctoral researchers, Corrin Clarkson and Jeff Meier could have easily just spent all their three years here proving theorems as they sought to establish themselves for a permanent job after they leave IU. Instead these two young mathematicians, now entering their third year in Bloomington decided to launch an innovative Directed Reading Program that pairs off motivated undergraduate math majors with graduate students in the PhD program.



*Corrin Clarkson*

Based on a model program first attempted by the University of Chicago Math Department over a decade ago, the Directed Reading Program immerses an undergraduate in a semester's long reading course on a topic in mathematics determined by the student's interests and background. Topics this past year were drawn from music, surreal numbers, logic, mathematical finance, differential forms, Markov chains, hyperbolic geometry, the Axiom of Choice, and hyperreal numbers.

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# Math Circles

Outreach to the community is an important part of the IU Math Department's mission and a major component of this effort is the now two-year old Math Circles Program. It provides a rich mathematical experience for students in elementary through high school by offering the opportunity for students to come to the Math Department once a week to explore exciting mathematical activities with IU Math faculty in a small group setting.



*Graduate student Ash Lightfoot working with Zeke Fleissner-Kates*

Originally started in Bloomington by IU Math's Michael Larsen and run out of his home, in the past two years the program has shifted to the Math Department through the initiation of Chair Elizabeth Housworth. In its present form, we have offered four sessions of Math Circles, two during the fall semesters of 2014 and 2015 and two in the spring semesters. During the academic year 2014-15 we offered two circles for elementary and secondary kids. However, by the second year the demand had increased and we offered three separate circles in each session. Faculty members giving their time to run sessions include lecturers Andrew Dabrowski, Erica

Isaacson, Shabnam Kavousian, Will Orrick and Tracy Whelan,

Typically the faculty member in charge of a given session chooses the activities for that day, but he or she may invite another faculty member to come serve as a guest to lead the activities. Some graduate students also help out with the Circles. Over the past two years, we have designed a variety of different activities for kids. For example, in the elementary circle we have explored a few mathematical games such as *Hanabi*, and many mathematical topics such as modular arithmetic, geometry, and probability. In the secondary circle the topics also vary, including exploration of different mathematical puzzles, spiral graphs, non-Euclidean geometry, and many more topics. Session leaders generally find that students are really open to new ideas and always eager to explore and learn more.



*Avery Weintraub and Andrew Yu enjoying their Math Circle*

Supporting the session leaders are IU undergraduates who can sign up to help with the Math Circles and thereby get service learning credit. These undergraduates also play an important role by writing up a description of the activities engaged in so that future Math Circle leaders have a catalog to choose from.

Math Circles such as IU's have sprung up around the country in recent years and in the past two years, four of our mathematics faculty have

attended the Math Circle Institute at Notre Dame. The institute provides extensive training for starting and running a Math Circle. The training consists of lectures by faculty who have a lot of experience with running various types of Math Circles, as well as observing the Notre Dame Math Circle and having the trainees run their own sessions with the group of young students at Notre Dame. The experience has been very valuable to prepare us for our experience as program leaders at IU.



*Cyrus Urheim and Ethan Brodnax match wits over a chessboard*

Dr. Tracy Whelan, one of the elementary leaders, says of her experience with IU's Math Circle program: "I think students really enjoyed the Pascal's triangle investigations we did in the spring, particularly since it kept on coming up in unexpected ways as we looked at different things during different circle days. They also liked the activities where they were constructing or drawing something themselves. The most enjoyable part [for me] is seeing that thrill of comprehension, when a student suddenly sees a connection or pattern. Sometimes it happens so fast!"

Plans are underway for this program to continue this fall.

*By Shabnam Kavousian  
Photos by Andrew Dabrowski*





## Directed Reading (continued from page 2)

"It gives the undergraduate a chance to broaden their exposure to higher level mathematics," says Clarkson, a 2014 PhD from Columbia University whose own research interests lie in topology. Meeting one-on-one roughly once a week with a carefully selected graduate student, the undergrad has the opportunity to discuss what he or she has read, ask questions and delve deeply into an area of mathematics not generally covered in the IU curriculum. At the end of the semester, each of the participating undergraduates gives a 20 minute talk on their reading topic in a gathering that is open to the public. "I've been very impressed with the quality of the presentations," says Clarkson.



Jeff Meier

Clarkson and Meier started the program off during the fall semester of 2015 and continued it this past spring. Though undergrads participating in the program do not receive any official IU credit for the course, so far interest has been high. Over fifteen students applied each semester. Out of this pool, Clarkson and Meier, also a 2014 PhD and a topologist who graduated from the University of Texas, selected five each term. Then they paired them off with graduate students who had expressed an interest in directing the

reading.

In this pilot year funding came from the Math Department's discretionary account and allowed for \$100 for each undergraduate to cover the cost of the book to be read and a \$300 stipend for each participating graduate student. Clarkson expressed the hope that the program might expand in the future though this will probably require finding new sources of funding.

Beyond the issue of funding, continuation of the program will require that the torch be passed from Clarkson and Meier to a new director, since both post-doc's are entering their final year at IU. Plans are already underway to keep this popular and successful program operating after their departure with graduate student Wai Kit Lam slated to help organize things for 2016-17.



## Student News (continued from page 2)

For the second year in a row, two of IUB's three Goldwater Scholars are mathematics majors. Taylor Ball is earning dual Bachelor of Science degrees in Computer Science and Mathematics. He plans to do research in algebraic logic and topology and teach at the university level. Michael Peters is earning triple Bachelor of Science degrees in astronomy, mathematics, and physics. He plans to do research in nuclear physics at a national or international laboratory, or at a university.

Student Thomas Dauer and faculty mentor Marlies Gerber were honored with a Provost's Undergraduate Research Award. This work grew out of their REU project culminating in the paper "Generic Absence of Finite Blocking for Interior Points of Birkhoff Billiards." Thomas

is both a Goldwater and a College Direct Admit Koehler Scholar. He will attend the University of California at Berkeley this fall to pursue his PhD in physics.

Last Fall, Senior Jiawei Han studied mathematics in Moscow, supported by one of six scholarships funded by the American Math Society. He will enter the mathematics PhD program at Vanderbilt next year. Also headed to mathematics PhD programs are Luke Andrejek (Ohio State) and Max Zhou (UCLA).

Our majors earned awards from the College of Arts and Sciences too. Math and physics major Grant Schumacher earned the 2016 Marshal H. Wrubel award, administered by the Department of Astronomy. Seventeen majors were elected to Phi Beta Kappa.

### 50th anniversary of our REU

Our Research Experience for Undergraduates (REU) program is celebrating its 50th anniversary! It has been regularly funded by grants from the National Science Foundation for the last few decades. Chris Connell (REU director), Elizabeth Housworth (chair), Chris Judge, Jeffrey Meier, Dylan Thurston, and Matthias Weber will serve as faculty mentors to eight students. Our cohort this summer includes seven students from across the nation from both large and small, public and private colleges, and rising IUB sophomore Baptiste Dejean.

### Actuary Club

Our active Actuary Club had a busy year.

The IU Actuary Club provides support for IU students of all majors interested in Actuarial Studies. Activities are mostly student-led; faculty member Russell Lyons provides occasional consultations. Regular activities include study sessions for  
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## Student News (continued from page 4)

Actuarial Exams P (Probability) and FM (Financial Mathematics), technical training sessions in software such as Excel and MS Access, recruiting events, and participation in regional networking events, most recently at OneAmerica in Indianapolis. Firms regularly recruiting Club students include AllState, CNO Financial, Humana, and StateFarm; new this year were Mercer and Travellers. Past presidents Brad Hipsher (now at AllState) and Neelan Scheumann (now at OneAmerica) visited this past Fall to recruit from the club. This past Spring, Club members Alexander Dewhirst, Chuwen Li, Samuel Pfeiffer, and Cheng Shi participated in the Society of Actuaries (SOA) annual Case Competition. Their efforts analyzing disruptors stemming from the lead contamination crisis in Flint, Michigan earned their inaugural IUB Math team an honorable mention.

### Field Trips

In continued collaboration between myself and Department of Economics chair Professor Gerhard Glomm, IUB economics and mathematics students joined together for two field trips this past year.

Our September trip began with an alumni mixer event about two blocks from the Willis (formerly Sears) tower, at a conference office suite rented by IUB. After a half hour of chitchat (translation: intense networking), Prof. Glomm gave a hard-hitting lecture on the economics of the decline of the middle class and the emergence of major challenges facing our nation. This was followed by more conversation, and we met many interesting alums of diverse

backgrounds.

The following day began with a site visit to Trading Technologies, a firm that makes software for trading futures on the Chicago Mercantile Exchange (CME). He gave us a live (simulation) demonstration of how their product works that was very interesting. At one point, a guy in a t-shirt walked by; "That's our CEO," said our host.

This was followed by two alumni panel discussions featuring Adam McElhinney (Uptake.com), Janet Hamilton (GE Antares), Emily Andruska (Federal Reserve Bank of Chicago), Frederick Sturm (CME group), and Brian Ritz (84.51, formerly dunnhumby) in the early afternoon, and Brittany Wheeler (AllState), Judson Brooks (Humana), Robert Johnson (retired), and Daniel Craig (UHC) later on. Their fascinating insights were well-received by our students, and resulted in several applications (and interviews) for internships.

We thank Ms. Anne Koehler for again supporting this trip for several mathematics majors.

Over Spring Break, Professor Glomm led a group of students on a similar field trip—this time, to Miami. Upcoming trips planned include Cincinnati (September '16) and New York (Spring Break '17).

### Reflection

Next year, Jee Koh will assume the duties of DUS. Looking back, I'm so grateful to all who help support our students: alums, friends, faculty, staff, and students themselves. Thanks for all you've done!

*Kevin Pilgrim, BS '89.*



## Graduate Program

From DGS Michael Mandell:



Hello! On July 1, 2016 I started as the new Director of Graduate Studies (DGS) for the Math Department, taking over from the previous DGS, Matthias Weber. The DGS is responsible for the smooth operation of our graduate program. Specifics include overseeing graduate student admissions and coordinating the teaching and assistant teaching jobs for the graduate students, among other things. I think I need to thank in advance Kate Forrest, our amazing Graduate Services Assistant, who (rumor has it) does all the hard work.

The IU Math Department is one of the top departments in the country and our graduate program is likewise outstanding. For example, PhDs.org rates us 10th out of all US math departments based on the 2005 NRC survey data. In the past two years, several of our PhDs have

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## Graduate Program (continued from page 5)

gone on to postdoctoral academic jobs at other top departments, including Brown University, CalTech, Hebrew University of Jerusalem, Notre Dame, Penn State, UCLA, University of California-San Diego, University of Illinois-Chicago, and University of Minnesota, among others. We also have a widely admired Master of Arts in Teaching (MAT) program, one of the few in the US that offers full support to its students; these students graduate to become some of the best teachers in Indiana.

I am very proud to become the new director of our graduate program and will work hard to continue its tradition of excellence.

Michael Mandell



## Retirement

### Alberto Torchinsky



Alberto Torchinsky retires this year after 41 years of service in the Indiana University Department of Mathematics. Alberto joined the department in 1975 as an Assistant

Professor, after spending four years at Cornell University. He earned his PhD from the University of Chicago in 1971, under the supervision of the illustrious mathematician Alberto Calderón. His undergraduate degree came from Universidad de Buenos Aires in 1966, followed a year later by a Master of Science degree at University of Wisconsin, Milwaukee. After moving to Indiana University, he quickly rose through the ranks to the level of Full Professor.

Soon after his doctoral thesis, Alberto established himself as one of the leading researchers in the study of Calderón-Zygmund operators. This line of work traces its origins to a paper from 1952 written by Calderón and Calderón's advisor, Antoni Zygmund. According to Elias Stein, there is no paper written since then that has had such a widespread influence on analysis. The emerging theory was concerned with the study of singular integrals, which were established as the natural generalizations of the Hilbert transform to higher dimensions. Technically speaking, the fundamental tool of the theory consists of decomposing an integrable function into its "good" and "bad" parts, the latter being a sum of "atoms."

One of the early signs of Alberto's vision and technical strength was his work on the parabolic maximal function and on spaces with mixed homogeneity. A series of highly influential papers emerged out of the collaboration with Calderón that exhibited both aspects of mathematical creativity: theory building and problem solving. Alberto also played a pivotal role in shaping our current understanding of Hardy spaces. Most notably, together with Jan-Olov Strömberg, he promoted and developed the weighted ver-

sion of these spaces, seeding the ground for a flurry of later developments. Alberto's thirty year-old work with Björn Jawerth on the local sharp maximal function proved to be a key inspiration in recent breakthroughs in weighted harmonic analysis. Quite recently, Alberto made a beautiful contribution to the study of the Cauchy problem for the wave equation. In a very elegant paper he rather surprisingly managed to derive the formula for the solution involving spherical means by using Fourier transform methods.

Alberto has also excelled in his role as a teacher. His students often talk about the humor and enthusiasm he infuses into his lectures. Alberto's writing skills are widely recognized through his well crafted textbooks. The monograph *Real variable methods in harmonic analysis* has served for many years as a standard reference work for singular integrals. It set high standards of exposition for later works in the field, and it is still in print in a paperback edition. Another textbook on real analysis by Alberto is due to be published soon.

Alberto was a successful doctoral adviser: nine students completed theses under his direction. Alberto always maintained a reputation as a patient and supportive advisor who put in generous amounts of time to ensure the success of his students.

Not least among Alberto's activities is his service to the university in a variety of administrative positions, most notably Dean of Latino Affairs, Director of the Minority Faculty Fellowship Program, and Executive Director of Strategic Hiring and Support. His understanding of  
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## Retirement

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administrative matters was often useful to the Mathematics Department as well.

Outside of mathematics, Alberto has maintained a keen interest in literature and is an avid basketball fan and a dedicated Cubs fan. He and his wife Massi are the proud parents of two sons, Cyrus, a physician in San Diego and Darius, a physicist at Temple University. He has been a caring friend to colleagues in the Department, always willing to listen and to offer thoughtful advice. We hope that in retirement he will continue to be a presence in Rawles Hall.

*Hari Bercovici, Ciprian Demeter and Peter Sternberg*



## Departmental Awards

At the end of the 2015-16 academic year the Math Department once again took time out to honor some of our undergraduates, graduate students and faculty for their outstanding scholarship and contributions. We are grateful to our donors for sponsoring so many of these awards.

### Undergraduate Awards

#### First-year students:

Baptiste Dejean (Ciprian Foias Prize and Jeffrey and Deborah King Scholarship); Alexandra Embry, Ashley Nguyen and Hannah Sakaluk (Marie S. Wilcox Scholarship); Manasse Kwete (Juma Shabani Book Fellowship); Oluwatobi Adebayo (2015

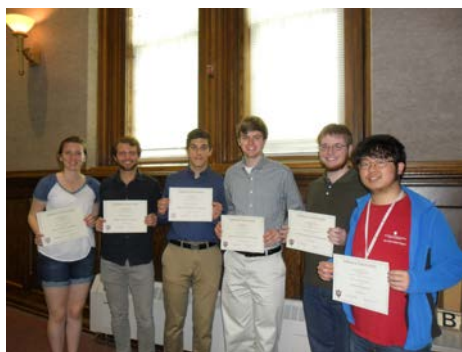
Juma Shabani Book Fellowship).



*From left to right: Manasse Kwete, Hannah Sakaluk, Ashley Nguyen, Alexandra Embry, and Baptiste Dejean*

#### Second-year students:

Jonathan Hu (Thelma Abell Prize); Steven Caraher (Cora B. Hennel Memorial Scholarship); Andrew Henderson and Jordan Lenchitz (Jeffrey and Deborah King Scholarship); Derek Wenning and Madilynn Werbianskyj (Marie S. Wilcox Scholarship).



*From left to right: Madilynn Werbianskyj, Derek Wenning, Jordan Lenchitz, Andrew Henderson, Steven Caraher and Jonathan Hu*

#### Third-year students:

Shelby Kruse and Mary Anne Smart (Ruth E. Gilliatt Memorial Scholarship); Taylor Ball, Ben Briggs, Michael Peters, Grant Schumacher, and Andrew Vander Werf (Cora B. Hennel Memorial Scholarship); Samuel Pilgrim (Jeffrey and Deborah King Scholarship); Jennifer Huang (Marie S. Wilcox Scholarship).



*From left to right: Sam Pilgrim, Jennifer Huang, Andrew Vander Werf, Shelby Kruse, Mary Anne Smart and Taylor Ball*

#### Fourth-year students:

Lauren Egert, Seth Lehman, Daniel Myers, Elaina Schneider, and Natalie Templin (Thelma Abell Prize); Thomas Dauer, Jiawei Han, and Johnathon Lowery (Trula Sidwell Hardy Scholarship); Max Zhou (Rainard Benton Robbins Prize); Elizabeth Heath (Marie S. Wilcox Scholarship).



*From left to right: Johnathon Lowery, Max Zhou, Jiawei Han, Thomas Dauer, Daniel Myers, Seth Lehman and Natalie Templin*

Justine Galambus and Brian Reinbold won the M118 Undergraduate Intern Award.

### Graduate Awards

The following graduate students won awards and scholarships:

Jennie Lipson and Kathryn Marsh (Hazel King Thompson Fellowship); Vinicius Ambrosi, Marco  
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## Departmental Awards

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Castronovo, Ji Hoon Chun, Daniel Condon, Jason Crothers, Koushik Ghosh, Cemile Kurkoglu, Ahram Lim, Jennie Lipson, Kathryn Marsh, InSung Park, Leandra Saliu, Hyunsik Shin, and Sailun Zhan (College of Arts and Sciences Fellowship); Joel Coppadge, Dominique Kemp and Camilo Montoya (UGS Fellowship); InSung Park (Robert E. Weber Memorial Award); Ji Hoon Chun, Daniel Condon, Koushik Ghosh, Dominique Kemp, Hyunsik Shin, and Sailun Zhan (James P. Williams Memorial Award); Dami Lee (Muriel Adams Stahl Graduate Fellowship); William Tune (Robert K. Meyer Graduate Fellowship in Mathematics); Raghavendra Venkattraman (Joseph and Frances Morgan Swain Fellowship); Justin Cyr, Eunhee Park and Brady Thompson (William B. Wilcox Mathematics Award) Thang Nguyen (Outstanding Thesis Award); Joshua Edge, Hannah Graber, Henry Horton, Phuong Nguyen, Chelsie Parker, Maxime Scott, Sisi Tang, and Andres Zuniga (David A. Rothrock Award).

## Faculty Teaching Awards

Ciprian Demeter received the Rothrock Mathematics Faculty Teaching Award. Erica Isaacson, Noah Snyder and Dylan Thurston won the IU Trustees' Teaching Award.



## In Memoriam

### Maria Wonenburger



Maria Wonenburger died June 14, 2014, in A Coruña, Spain, at the age of 86. She was a member of the Mathematics Department here at Indiana University from 1967 to 1983.

Maria was born in A Coruña in 1927. She obtained her undergraduate degree from the Universidad Central de Madrid in 1950. She did graduate work at the Universidad de Madrid and in 1953 was awarded a Fulbright scholarship, the first to be offered in Spain. She was accepted to Yale University and worked under the direction of Nathan Jacobson, obtaining her doctorate in 1957. Because her U.S. degree was not recognized in Spain, she returned home to complete another doctorate under the direction of German Ancochea. In 1960 she again came to North America and held positions at Queen's University in Ontario, the University of Toronto and SUNY at Buffalo before she came to Indiana as a full professor in 1967.

After joining the department here at IU, Maria quickly became an important part of the graduate mathematics program. In the first five years she directed the thesis work

for five Ph.D. students who completed their degrees in this period. She played an especially important role in organizing the graduate program in algebra, an area of strong interest and demand by graduate students at that time.

Maria's work was in group theory, particularly classical groups, and in Lie theory. She is considered one of the founders of the theory of Kac-Moody algebras, a class of infinite dimensional Lie algebras with many applications. Robert Moody introduced these algebras in his doctoral thesis, written under her direction at the University of Toronto. At Indiana she continued this work and one of her students, Stephen Berman, has made important contributions, including joint work with Maria and Robert Moody.

In 1983 Maria left academia and returned to Spain to be with her mother. There late in her life, following publication of her biography in *La Gaceta de la Real Sociedad Matemática Española* (RSME), she was rediscovered by the Spanish mathematical community and received many honors. In 2007 she was named a Social de Honor by the RSME and the Xunta de Galicia established a prestigious research award bearing her name. In 2010 she received an appointment as Doctor Honoris Causa by the Universidad de A Coruña. In 2012 her hometown opened a new park named in her honor.

Maria was a beloved colleague, who contributed to the department for many years and in many ways. She was an excellent teacher, researcher, and advisor. She was also a kind, vibrant person with a ready laugh and smile.

*Darrell Haile and Daniel Maki*



## In Memoriam

### Joe Stampfli



Joseph Gail ("Joe") Stampfli, professor emeritus of mathematics at Indiana University and former chairman of the mathematics department, died on December 28th, 2015 at the Calvary Hospital in New York from complications related to heart failure. He was 83.

Joe Stampfli was born in Rochester, NY, on August 9th, 1932, the son of Joseph Gail Stampfli and Anne Pfeffer, and was the eldest of four children. He attended the University of Rochester, graduating in 1954 with a Bachelor of Arts degree in Mathematics. In both high school and college, he played football at a high level and was a key player on undefeated teams in high school and college. He was invited to play on semi-pro football teams, but instead he decided to continue his studies in mathematics at the University of Michigan, receiving a Master's of Arts in 1955 and a Doctor of Philosophy in 1959. His doctoral dissertation was titled *On Operators related to Normal Operators* and his advisor was Robert King Ritt.

After receiving his Ph. D. degree from the Michigan, he began his professional career with positions at Yale University, New York University, and the University of Michigan. He

joined the faculty of Indiana University in 1967 as a tenured associate professor and he was promoted to professor in 1969. He held his faculty position at Indiana University until his retirement in December, 1997, serving as Chair of the Mathematics Department from 1980 through 1983.

Early in his career at Indiana he was especially active in the Mathematics Department graduate program, teaching a variety of graduate level courses, supervising the dissertations of 11 PhD students in mathematics, and serving on PhD committees of students majoring in computer science and psychology. He also served for several years on the Graduate Policy Committee of the Mathematics Department and the Graduate Policy Committee and the Graduate Council of the College of Arts and Sciences.

Joe was an extremely versatile teacher, teaching at every level from elementary 100 level courses (Topics in Calculus and Finite Mathematics) taught in large sections to advanced research seminars at the 700-level. He was a member of a small group that pioneered the use of computer assisted instruction in Finite Mathematics in the 1980's, long before the idea had wide acceptance in research universities. He participated regularly in the extracurricular aspects of the department, including teaching and advising in the Honors Division, Individualized Major program, Science Fairs, and the Mini-University. For several years he assisted the Indiana Council of Teachers of Mathematics with mathematics contests conducted for high school students.

In addition to his term as Chair of the department, he also contributed as a member of the Recruitment and Personnel Committees, very im-

portant committees charged with providing advice and recommendations to the Chair on faculty hiring, the Undergraduate Policy Committee, and the Committee on Distinguished Visitors. He carried major administrative responsibilities for the department for several decades, providing leadership with wisdom and good humor.

Joe was an active researcher and was interested in many areas of mathematics and science. Most of Joe's mathematical research was in operator theory, where he made important contributions to numerous areas central to the subject. Together with two colleagues at Indiana University, Peter Fillmore and James Williams, he provided one of the basic ingredients in the theory built later by Brown-Douglas-Fillmore. He was also involved in the study of functional models, hyponormality, commutators, and invariant subspaces. His last contribution to operator theory is a subtle analysis of spectral sets which is, to this day, the best result in that area.

Joe was invited to give colloquia and seminar talks, lectures in major conferences, and make extended visits at many major universities. He was the Sherman Fairchild Distinguished Scholar at the California Institute of Technology in 1974-75. With colleagues Ciprian Foias and Hari Bercovici, he arranged the International Workshop in Operator Theory in Bloomington in June, 1996, an international workshop which attracted over 60 participants from 13 countries. In the last part of his mathematical career, he became very interested in the applications of stochastic processes to the study of finance, and he wrote and lectured widely on topics in this area.

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## New Faculty

### Vladimir Eiderman



This fall the IU Math Department welcomes a new colleague, Dr. Vladimir Eiderman. After having spent the past couple of years as a visiting lecturer, Eiderman has accepted a position as the Department's first Rothrock Lecturer.

Having held previous positions at Moscow State University, the University of Kentucky and the University of Wisconsin, Eiderman brings with him considerable expertise in the teaching of mathematics as well as a distinguished record as a researcher in complex and harmonic analysis.

In this role as Rothrock Lecturer, Eiderman is expected to teach a wide variety of undergraduate courses from first year calculus to senior level analysis. Based on the highly enthusiastic feedback we have gotten so far from his students these past two years at IU, we anticipate that IU undergraduates are in for a great classroom experience.



### In Memory: Joe Stampfli (continued from page 9)

In 2002 Joe taught at Yeshiva University in New York as a visiting professor. He later joined their faculty on a regular basis, teaching a variety of mathematics courses. In par-

ticular, at Yeshiva he introduced a series of new and unique course offerings, including classes in Quantum Computing, Robotics, and Mathematical Finance. He is the author of two widely used textbooks, *Topics in Calculus*, written together with Morton Lowengrub, and *The Mathematics of Finance*, with Victor Goodman. After publishing *Mathematics of Finance*, Stampfli was invited to speak on his work in a variety of international symposiums, including lectures in London, Denmark, and Thailand.

Joseph Stampfli's academic interests were extremely diverse, and encompassed a wide array of topics, not only in the natural sciences, where most of his professional contributions were made, but also in the social sciences, arts and humanities, and recently in economics and business. More specifically, in addition to his work in Mathematics, Physics, Computing and Finance, Stampfli published work in computational biology, mathematical brain teasers and game theory. His private interests included music (especially early and classical music and musicians), astronomy, robotics, high energy physics, mathematical finance, and ancient Greek literature. He was very knowledgeable, both in the basic ideas and the details, in many of these areas. He was also interested in the applications of his academic knowledge to problems in business and society. For instance, for many years he was deeply involved in the details of managing the family farm, and he played a key role in the public debate which resulted in the decision to turn down a proposal to treat PCB waste in Bloomington through incineration.

During his almost 50 years at Indiana University, Joe was a member of a group of faculty who exer-

cised regularly at noon at the Wildermuth Center on campus at Indiana University-Bloomington or on the roads and trails in the vicinity. He exercised 7 days a week and would even plan his trips so that he could find time to work out each day. Exercise for him was both a fitness activity and a social activity, and he took the noon period as an excellent time to discuss a broad range of topics with colleagues from a variety of fields.

Joe Stampfli was preceded in death by his parents and his brother George of Boulder, Colorado. He is survived by his sister Shelia, his brother John of San Diego, CA, three children, Eric of Greenwood, IN, Joshua of Scarsdale, NY and Tracy of San Francisco, CA, and four grandchildren.

Dan Maki and Maynard Thompson



## Problem Corner




**Problem:** Mr. Jones has two children. If the older one is a girl, what is the probability the other child is also a girl?

**Problem:** Mr. Smith has two children. You see him walking down the street with his daughter. What is the probability the other child is also a girl?

## About the Newsletter

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Peter Sternberg, Associate Chair



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- Mathematics Alumni Lecture Fund (I380012139): Gifts to this fund are used to cover the direct costs of presenting guest lectures each year on the Bloomington campus for the benefit of our undergraduate students, for example, by bringing Alumni back to speak to students in our new Careers in Math course. This fund was recently established with the generosity of faculty support.
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