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Chair's Corner



This has been an extremely eventful year for the Math Department, with some very happy, but also some sad results to relate.

Professor Hui Hu retired in June. She came to NIU in the Fall of 1990 after completing her Ph.D. at Stanford University in the Department of Operations Research. Hui was an enthusiastic and dedicated teacher with a particular interest in the courses of the Calculus sequence and I will remember many long conversations about the teaching of Math 229. Sien Deng has written an appreciation of Hui's work which appears later in the newsletter.

Another retirement in June was that of Professor Frederick Bloom. Fred came to the Department in August of 1983 from the University of South Carolina, having obtained his Ph.D. in 1971 from Cornell University as the first student of Dr. Constantine Dafermos. He was AIC Director from 1987 to 1993 and was awarded a Presidential Research Professorship in 2002. An appreciation of Fred's research appears below, but it is fitting here to mention his collaboration with Hamid Bellout, the present AIC Director, and with our late colleague Jindrich Necas.

Sadly, I have to report two deaths among my colleagues. In May of this year the Department lost a good friend and colleague when Professor Karabi Datta passed away after a long and courageous battle with cancer. Karabi and her husband, Professor Biswa Nath Datta, came to the Department in the Fall of 1981. Karabi obtained her doctoral degree from Universidade Estadual de Campinas in Brazil in Numerical Linear Algebra and despite ill health was an active scholar and committed teacher for

thirty years. An account of Karabi's work written by Professor Yoopyo Hong appears below.

I also have to report the death of David Parker, who passed away in December of last year. Dave obtained a Master's degree in Statistics in 1991 and joined the Department as an instructor in 1992. Dave was an extremely conscientious teacher and will be remembered by the very many CHANCE students that he helped in his role as ESP-CHANCE Coordinator, a position that he held from 1996 until his death.

Professor Tom O'Gorman has retired from the Division of Statistics. Professor Rama Lingham has written a piece on Tom's career at NIU which appears below.

We will be joined in the Fall by Alastair Fletcher, who comes to us from the University of Warwick in the UK. He obtained his Ph.D. from there and has held visiting positions at the universities of Glasgow and Nottingham in addition to his present position at Warwick. Alastair works in Complex Analysis and has a particular interest in Teichmüller theory.

Another new hire is Nathan Krislock, who will take up his position in the Fall of 2013. Nathan works in the area of Numerical Optimization and obtained his Ph.D. from the University of Waterloo in Canada. He is presently a post-doctoral fellow at INRIA Grenoble Rhône-Alpes in France. He will spend the 2012-13 academic year as a post doctoral fellow at the University at British Columbia.

We were joined in the Fall of last year by Renee Olsen as a part time coordinator of teacher certification to work with our other coordinator, Bonnie Kersten. Renee is a graduate of the Department, having received her Masters in 1997. She has also taught at DeKalb High School.

Stemfest was its usual great success. The puzzles from the Math Ed Lab are always a big hit. This includes the puzzle that I took out of its box last year and no one has ever been able to get back together. Thanks are due to all of the volunteers

who worked hard to make the event, and our part in it, the triumph that it was.

We want to stay in touch with all of our graduates, so please write to me or to Kitty Holland, the newsletter's editor, and let us know how you are doing. The Department also has a Facebook page, <http://www.facebook.com/pages/Northern-Illinois-University-Mathematical-Sciences/165834626819079>. Please check often and post information about your doings.

--- B. Harris

Tom O'Gorman Retires



Professor Thomas O'Gorman retired from NIU in May, 2012. He was a faculty member of the Department and the Division of Statistics during 1990-2012. He earned BS, M.Ed and MS degrees respectively from St. Louis University, University of Missouri at St. Louis and Southern Illinois University at Edwardsville. He received a Ph.D. from the University of Iowa for his work in biostatistics. He published over thirty papers in professional journals, and wrote two books on applied adaptive statistical methods, a field in statistics that he pioneered, and for which he gained international recognition during his career at NIU.

Professor O'Gorman was consistently held in high esteem by both undergraduate and graduate students for his outstanding teaching. He served with professionalism on several committees of the Division of Statistics. The Department and the Division of Statistics wish him well in all his future endeavors.

--- R. Lingham

Fred Bloom Retires



True story: It's the fall of 1991. Frederick Bloom is lying on an operating table, awaiting surgery on a herniated disk in his back. Just before they put him out, the surgeon recalls that Bloom is a math professor. "Do you know I had a horrible time passing calculus?" the surgeon complains to Bloom, only half jokingly. "Why do pre-med students have to take calculus?"

Such is the life of a mathematician. While some wonder how complex mathematics relates to real life, Bloom wonders how the physical world could be understood without the sublime language of mathematics. His research has real-world applications. For example, Bloom developed a system of non-linear partial differential equations to describe how moisture buckles a sheet of paper, a problem that results in the yearly waste of millions of tons of product worldwide. His model of thermal cycling of elastic-plastic materials helped the U.S. military understand how intense thermal energies destabilize antennae on satellites intended for use in the Star Wars defense initiative. And his mathematical shock-wave models helped the U.S. Navy determine the optimal way to detonate offshore mines.

Bloom's interest and aptitude in math began at an early age. He attended the Bronx High School of Science, one of the country's premier high schools. Years later, he earned his Ph.D. in applied mathematics from Cornell University, where he was the first Ph.D. student of Constantine Dafermos. He eventually arrived at NIU in 1983.

Today the author of more than 80 journal articles and four research monographs, Bloom is internationally recognized for his research related to applications of mathematics in physics and

engineering. "Professor Bloom is interested in solving problems that have direct applications in the world today," said NIU Professor Hamid Bellout, a friend and frequent collaborator. "Throughout his career, he has shown himself to be a very dedicated and productive scientist." Those qualities have attracted substantial financial support for Bloom's research from the likes of the National Science Foundation, U.S. Department of Energy, Office of Naval Research and Air Force Office of Scientific Research. "I've always enjoyed mathematics," Bloom said. "But I also believe that if you're going to do scientific research at a certain level, you do it because it's a compulsion. You're meant to do it and you do it all the time." Bloom teaches applied mathematics, differential equations and calculus. He was the first director of the Ph.D. Program's AIC. He has directed three Ph.D. dissertations at NIU (Wenge Hao, Drew Woods and Olga Terlyga) and is currently directing a fourth.

Karabi Datta



Professor Karabi Datta was very well known for her work on Numerical Linear Algebra. She presented her work at many national and international conferences and was particularly well known for her many papers which gave algorithms for the computation of eigenpairs. Karabi also worked on the Sylvester Matrix Equation and her work is frequently cited in engineering research. During her time at NIU Karabi had two Ph.D. students: Ran Lee and Mohan Thapa and acted as thesis advisor to several M.S. students. She will be missed by all who knew her.

--- Y. Hong

Hui Hu Retires

Professor Hui Hu's research interests lie in the area of mathematical optimization. She received her Ph.D. in Operations Research from Stanford University in 1989 under the supervision of George B. Dantzig, the father of linear programming. Professor Hu has published almost twenty papers in top optimization journals. Here are some highlights of her research:

Semi-infinite linear programming is an extension of linear programming which allows either infinitely many constraints or infinitely many variables. In a series of papers, Professor Hu proposed and analyzed numerical methods for solving a large class of semi-infinite linear programming problems and infinite systems of linear inequalities. In a joint paper, Professor Hu and her collaborator presented a numerical procedure for finding the positive definite matrix closest to a patterned matrix. In another paper, she provided a projective method for rescaling a diagonally stable matrix to be positive definite. Another major research interest of Professor Hu is in the mathematical foundation of optimization. Over the years, Professor Hu has made a number of interesting contributions to the understanding of inner-connections of convergence properties of optimization algorithms and the geometry of convex functions and convex sets.

We wish her the best in retirement!

--- S. Deng

Moving On

Professor Gerard Awanou has left us to take a position at the University of Illinois at Chicago.

Patrick Sugrue has taken a position at Rock Valley College.

Chris Bailey has taken a position at the College of DuPage.

Kristen Campbell has left her position at Aurora University to take a position at Elgin Community College.

Kudos Due to...

James Benson



Professor James Benson was elected in January 2102 to the Board of Governors of the Society for Cryobiology, an organization whose mission it is to bring together those from the biological, medical and physical sciences who have a common interest in the effect of low temperatures on biological systems. This is cool stuff!

Alan Zollman



Professor Alan Zollman received the *Outstanding Leadership Award* from the School Science and Mathematics Association (SSMA) at its 110th Annual Convention. Begun in 1901, the SSMA is devoted to the promotion of research, scholarship and practice for the improvement of mathematics and science education.

Professor Zollman says that this award should really be viewed as a team award. "Many individuals supported me in my SSMA activities: the SSMA Board Members, Past Presidents and Presidents Elect; the *Journal's* Editorial Board and Editor; my fellow NIU Mathematics Education faculty; my Mathematical Science Department; the NIU College of Liberal Arts and Sciences; and even our NIU graduate students actively participated in presenting at the SSMA conventions the past several years. I received the plaque, but many people share the credit."

Our Newest Ph.D.s

New Hires

Alastair Fletcher earned his Ph.D. in 2006 from the University of Warwick, UK. Professor Fletcher's research interests lie in complex analysis and Teichmuller theory. He joins us as an assistant professor.

Nathan Krislock earned his Ph.D. in 2010 from the University of Waterloo, Canada. Professor Krislock's research interests lie in numerical optimization. He joins us as an assistant professor.

Renee Olsen earned her masters degree from the Department in 1997. She joins us as part-time Coordinator of Teacher Certification.

Abigail Pearson wrote her dissertation, *Noncommutative Piecewise Noetherian Rings*, under the direction of Professor John Beachy. Dr. Pearson has obtained a position at Harper College in Palatine, IL.

Min Wang wrote his dissertation, *Positive Solutions of Nonlinear Boundary Value Problems*, under the direction of Professor QingKai Kong. Dr. Wang has obtained a position at the University of Tennessee at Chattanooga.

David Kettlestrings wrote his dissertation, *Some results on heights and extensions of function fields over a finite field*, under the direction of Professor Jeffrey Thunder.

Happy Events

Chris Bailey and Abby Pearson (Ph.D. '11) announce the birth of their daughter, Amelia Sudah Bailey, on April 10, 2012.

Professors James and Corinna Benson announce the birth of their third son, Wren James Benson, on April 24, 2012.

Local Events

On Saturday, February 25, the Department hosted the **ICTM Regional High School Mathematics Contest**. This year's contest brought students and coaches from thirteen Illinois high schools to the NIU campus.

On October 22, the Department of Mathematical Sciences was one of 13 academic departments which partnered with **STEM Outreach** to fill the arena and the multipurpose room of the Convocation Center with children of all ages and their parents. Bernie Harris, very ably assisted by shifts of graduate and undergraduate students, manned the Department's booth and demonstrated the delights of the Mathematics Education Lab.

Field Experiences for the AIC

Five students in our Ph.D. program are working this summer in their field experiences for the Applications Involvement Component (AIC).

Thomas St. George is interning at the Electric Systems Division of Hamilton-Sunstrand in Rockford. His project involves modeling electric power generators.

Tyler Mitchell and **Carlo Ordoñez** are interning at Intelligent Medical Objects (IMO). Their goal is to use analytics to help IMO improve its products. As a culminating experience, they hope to prepare a paper and presentation for the American Medical Informatics Association Conference in November.

Lingping Liu will work on a project titled *Shape Analysis of the Pelvis in Extant Felids and Fossil Felids*. Ms. Liu will use shape analysis of fossil pelvises to attempt to discover if the prehistoric animals to whom they belonged were arboreal or terrestrial.

Herman Schaumburg is working on simulation of motion of particles in a future collider. His work is geared towards helping understand and use the technique of particle cooling to control particle motion.

The 27th Annual NIU Math Contest

Three seniors took the honors at this year's Northern Illinois University Mathematics Contest. The 27th running of the annual event was held on March 27. The winners were recognized at the Department of Mathematical Sciences Awards Ceremony and Reception on April 22.

Scott Rexford, a senior Mathematical Sciences major from DeKalb, won first place, and was awarded the first prize of \$100.

Nathanael Kozinski, a senior Mathematical Sciences major from DeKalb, and **Doug Fry**, a senior Mathematical Sciences major from St. Charles, finished in a tie for second. Each received an award of \$75.

The annual Northern Illinois University Mathematics Contest has a format where freshmen and sophomores have a fair chance to compete with juniors and seniors. The underclassmen have fewer restrictions on their choice of problems to attempt. The contest is open to all full-time undergraduates at NIU. Each contestant turns in solutions to a choice of six out of eleven problems. Topics this year ranged from high school level algebra, geometry, and elementary probability, through calculus, linear algebra, and differential equations. Professors Harvey Blau, Mike Geline, and Gleb Sirotkin supervised the competition.

Here is the easy, but tricky, probability problem from the contest:

Three cards are put in a box. One is red on both sides, one is black on both sides, and the third is red on one side and black on the other. One card is drawn from the box and placed flat on a table. The side that is up is red. What are the odds that the other side is red? Prove your answer.

For more information, contact

Harvey Blau (815-753-6772) blau@math.niu.edu

ICTM Annual Meeting Replaced by NCTM Regional Conference

The 2012 ICTM Annual Meeting and PreConference will not be held. In its place, Illinois is hosting the Chicago NCTM 2012 Regional Conference & Exposition, November 28-30.

www.ictm.org/annualmeeting.html.

2012 Abel Prize

The Norwegian Academy of Science and Letters has awarded the Abel Prize for 2012 to Endre Szemerédi, of the Alfréd Rényi Institute of Mathematics, Hungarian Academy of Sciences, Budapest, and Department of Computer Science, Rutgers, The State University of New Jersey, USA, “for his fundamental contributions to discrete mathematics and theoretical computer science, and in recognition of the profound and lasting impact of these contributions on additive number theory and ergodic theory.” For a full press release describing Szemerédi's work, go to

<http://www.abelprize.no/>

News From You

Alumni of 25 Years



Congratulations on the 25th anniversary of the class of 1987. Here is a listing of the class and their current hometowns. If you can update any information, we would appreciate your help.

Richard McLaughlin (BS Ed, '67, MS Ed '71) retired from his mathematics teaching position at DeKalb High School in 2000. He tells us that his grandson, **Sean Turska**, is a third generation NIU student studying bio-medical engineering and his daughter, **Tracy Paszotta (BS '91, MS '08)** is teaching in the DeKalb School District.

James Robert Martin (BS Math '75) reports that he earned his MBA in Accounting from DePaul University in 1979. He worked as an I.T. consultant from 1975 to 2002, and as a financial adviser from 2002 to his retirement in 2010.

John S. Smith (BS Math Ed, '61) earned a Master of Art in Teaching Mathematics from the University of New Mexico in 1972. He is now enjoying his retirement.

Donald Johnson (BS '63, MS Ed '70, CAS '74, EdD '76) reports that he has retired from his position as Superintendent of the Ridgeland Public Schools.

Jennifer Bogert (nee Schmitt, MS Applied Probability and Statistics '97) married in 2011. She has been employed as a biostatistician at Johnson & Johnson Pharmaceutical Research & Development since 2002.

Terry R. Todd (BS Math, '69) went on to earn an MS ('72) and a Ph.D. ('76) in Physics from The Pennsylvania State University. He is now a Corporate Fellow at Guided Wave, Incorporated in California.

Peter L. Wenk (BS Math, '01) is Bulletin Revision Manager at Hansen Technologies Corp. in Bolingbrook, IL.

Mrs. Denise Anderson, Pecatonica, IL
Mrs. Marjorie Bell, Bloomington, IL
Ms. Jennifer Bramschreiber, Lisle, IL
Mr. Scott Burmahl, Le Claire, IA
Mr. Scott Byrne, Crystal Lake, IL
Mr. Michael Cervenka, Geneva, IL
Mrs. Laurie DeHerrera, Colorado Springs, CO
Mrs. Marilyn Einspanier, Iron River, WI
Mr. Billy Eng, Streamwood, IL
Mr. Michael Eraas, Sycamore, IL
Mrs. Lea Ann Frank, Hales Corners, WI
Mr. Richard Garcia, McHenry, IL
Ms. Susan Garrett, Dyer, IN
Ms. Victoria Good, Fort Lauderdale, FL
Mr. Ronald Guidice, Lake Zurich, IL
Mrs. Joanne Highland, Milwaukee, WI
Ms. Jill Horn, Dixon, IL
Mrs. Raeann Jurgens, Rockford, IL
Mr. David Kees, Encinitas, CA
Ms. Virginia Kim, Sycamore, IL
Ms. Sandra Kowalczyk, Chicago, IL
Mr. Ko-hin Lau, Cobleskill, NY
Ms. Nancy Leifheit, Sycamore, IL
Mr. Douglas Macclure, Crystal Lake, IL
Mr. James Malek, Westmont, IL
Mr. Greg Manning, DeKalb, IL
Mr. Timothy McAuliffe, Mosinee, WI
Mrs. Catherine McGann, Mokena, IL
Mr. William Mendralla, Libertyville, IL
Dr. Douglas Mupasiri, Cedar Falls, IA
Mr. Thomas Muszynski, Park Ridge, IL
Mr. Tetsuro Nakagomi, Federal Way, WA
Ms. Pamela Payton, Island Lake, IL
Mrs. Kimberly Phelps, Louisville, KY
Mr. Thomas Poklen, Roselle, IL
Mrs. Katherine Schmitt, Elgin, IL
Mr. David Schorsch, Bolingbrook, IL
Mr. Henry Spoo, Boynton Beach, FL
Mr. Ravikumar Srinivasan, Beaverton, OR
Ms. Molly Walsh, Wilmette, IL
Mr. Jason Warren, Harvard, IL
Mr. Larry Wells, Hurst, TX
Mr. Daniel Wharton, Mc Farland, WI

2012 *Departmental Awards*

The 33rd annual Awards Ceremony was held on April 22, 2012, in the Holmes Student Center Skyroom. At the reception, Department Chair Bernard Harris and Director of Statistics Rama Lingham presented the following awards and scholarships.

Dean's Award:

Nathanael Kozinski Ryan Zea

Chair's Award:

Brian English Kristina Keyes

Director's Award:

Joel Gimbel

Carol Feltz Scholarship:

Ryan Ferguson

Norma K. Stelford Memorial Scholarship:

Ticia Burgie Erik Pelttari
Nathanael Kozinski Ryan Zea

M. M. Wheeler Scholarship:

Natalie J. Brown Konrad Dalecki
Jessica Chester Emily Petrus

M. M. Wheeler Teaching Award:

Benjamin Epperson Kristen Robinson
Kristina Keyes Nicholas Straka
Kyle Ligon Christopher Thunder
Erik Pelttari

Mathematical Sciences Incoming Freshman Scholarship:

James Waterman

Donald R. Ostberg Award:

Carlo Ordoñez

Clarence Ethel Hardgrove Scholarship:

Haley Dutmer Audrey Pearson
Dana Ann Lebrecht

Allstate Actuarial Scholarship:

Douglas Fry Tyler Scott Hendry

Michael J. Krowka Scholarship:

Elaine Dhamer

Dale G. Jungst Memorial Scholarship:

Chelsea Wajchert

Mathematical Sciences Scholarship Award:

Grant Heurlin

Outstanding Graduate Student Award:

Samantha Canfield Caroline Kettlestrings

Gail Masters Gallagher Memorial Scholarship:

Rachael Bardell Michael Mascitti
Andrew Kelliher Nelson Wu
Zhicheng Lin

Certificate of Teaching Excellence:

Angela Antonou

Undergraduate Certificate of Merit:

Brian English Bethany Miller
Kathleen Guzy Erik Pelttari
Kristina Keyes Christopher Thunder
Nathanael Kozinski Ryan Zea

Graduate Certificate of Merit:

Arpita Chatterjee Lingping Liu
Daniel Creamer Kristin McCullough
Ujjwal Das Aaron Moskowitz
Michael Decaro Marissa Rakes
Jonathan Egen Michael Strumberger
Kristopher Huffman Charles Witschorik
Christee Joesten Yuchuan Zhang
Christine Leroux

Undergraduate Honorable Mention:

James Allen Brett Myers
Ann Brady Nathaniel Nelles
Kurtis Dankert Kyle Plate
Anthony Gilkerson Nicholas Straka
Michael Kilchenman Alicia Ropeter
Michael McCabe Ryan Weingart

Graduate Honorable Mention:

Christopher Bailey Allen Montz
Dominica Blalock Todd Scarlett
Mark Covalt Hao Shen
Keith Martin

NIU Math Contest:

Scott Rexford (1st place)
Douglas Fry (2nd place)
Nathanael Kozinski (2nd place)