Mathematics Alumni Newsletter

UNIVERSITY OF DENVER

Summer 2008

Notes From The Chair

I came to DU in 2001, the year the department split from Computer Science. Thanks to the hard work of our previous chairs and faculty and support from deans and university administrators, the department has experienced remarkable growth. We are very pleased with the current state of the department.

Our tenure and tenure-track faculty has increased from six in 2001 to twelve now and the research environment is thriving. We run five weekly seminars and have organized and hosted three national and international conferences since 2004.

In 2001 we had only two lecturers and now we have six. Lecturers play an integral part in the department. In addition to teaching, they design courses, participate in academic initiatives, and advise students.

Our undergraduate population has grown, too, both in number and in strength. In the academic year 2007-2008 nine seniors graduated, two of them Magna Cum Laude and one Cum Laude. Given projected enrollments, we expect to graduate a similar number of students in the coming years. This is much higher than previous years, when, on average, four students graduated per year.

The graduate program has experienced the most dramatic growth, exceeding our most optimistic projections. In 2001 the combined Mathematics and Computer Science Department offered a joint PhD in Math and Computer Science, a Masters in Mathematics, and a Masters in Computer Science. In that year only one of the graduate students in the combined department was enrolled in a mathematics degree. In 2003, the university discontinued the joint PhD degree and we created a PhD in Mathematics. Currently we have 16 graduate students! Seven of them are PhD students, all with great potential. Our first PhD student graduated last spring and three more are expected to successfully complete their degrees in the following two years.

Complementing this growth has been an increase in financial support for our students. The Mike Martin Scholarship and the Mary Kay Hammond Scholarship endowments continue to provide support for promising new and continuing students. Contributions to these scholarships are always welcome and greatly appreciated by the department. In addition, we received a donation this spring to establish the Eleanor Campbell Memorial Award. This award recognizes the top graduating female senior in mathematics every year.

Alvaro Arias

Faculty Promotions

We're pleased to announce that Nic Ormes and Petr Vojtěchovský have been promoted to associate professors with tenure effective September 1. Both joined the department in the Fall of 2002 and since that time have made significant contributions to the department and the university through their scholarship, research, and service.

Inside this issue:

This newsletter is published semiannually and your submissions are welcome.

If you have an article, a picture, or information that might be of interest to other alumni and you would like to have it published in the newsletter, please send it to:
Don Oppliger, DU Math Dept, 2360 S. Gaylord, Denver, CO 80208

The newsletter may be read on-line at www.math.du.edu

If you would prefer to receive an email notification when each edition is published rather than a printed copy, please let us know by sending an email to dopplige@du.edu.

Meet The Lecturers

In our Winter Newsletter, we introduced new math faculty members. We're pleased to introduce you in this issue to four lecturers in the department who have graciously provided us with self-profiles.

Ray Curran received his PhD in mathematics from UMASS/ Amherst in 2005. Since then he has held teaching positions at Metropolitan State College of Denver. He came to DU in January 2008 where he has enjoyed a warm welcome to a very active and thoughtful department.

His mathematical interests are in Algebraic Geometry and Combinatorics. Non-mathematical interests include hiking, tennis, and baseball. When he can start taking classes at DU, he plans to (finally) learn another language. He doesn't know which one yet.

Annette Locke has been a lecturer at DU since Fall Quarter 2004. These halls are very familiar to her as she completed both her Bachelor's degree and Master's degree in Mathematics here. She also received a Master's degree in Computer Science back in the day when the Math and Computer Science Departments were one. After completing her Master's degrees, she moved back to her hometown in California. She worked as a GIS programmer for six years but it was not fully satisfying.

You know that conversation you have with a friend where each of you says what you would do if you won the lottery? In 2003, she had that conversation and said that if she won the lottery, she would move back to Colorado and finish her PhD with Jim Hagler. Her friend said, "Why do you need to win the lottery to do that?" Great point. She packed her bags and headed back to Denver. She is now studying Banach space theory with Jim, teaching various Calculus classes and loving every minute of it.

Annette has a 26 year old son, Kyle, who is married to his high school sweetheart, Heather. They have two sons, Troy, who is 5 years old and about to start kindergarten, and Collin who is 4 months old. Kyle and his family live in California so Annette racks up plenty of frequent flier miles to visit the grandkids. During her free time she likes to go camping with Ryan and her four-legged child, Brutus.

David Morgan was born in Los Angeles CA and as a service brat he grew up in California, Japan, and the State of Washington. He graduated from Washington State University with a BA in Mathematics (1961) and an MA in Mathematics (1963). David then attended the University of Wisconsin in Madison where he attained a PhD in Mathematics (1968). (While at Wisconsin he had the pleasure of having a course in Functional Analysis under Prof. Stan Gudder.)

While a senior at Washington State he was selected by Prof. Ted Ostrom as a research assistant doing both undergraduate and graduate work in finite geometry under NSF grants. After receiving his masters from WSU he went on to Madison where he worked under Prof. J. Marshall Osborn for his PhD thesis in the area of Jordan Algebras.

He taught mathematics at Georgia Tech, Georgia State University, and Kennesaw State University. At KSU he also taught courses in computer science.

His mathematical interests are in algebra, formal methods in computer science, and using "equational or calculational" logic in the presentation of undergraduate mathematics. Other interests include running and music (jazz piano). He is looking forward to teaching students of all ages and abilities.

Allegra Reiber joined the department in September 2007 after several years of being a DU math department "wannabe." A few of you may remember when a wide-eyed, fast-talking Notre Dame graduate student hijacked the department's attention and gave a little talk on Oriented Matroids.

Her research is in geometric topology, which to anyone outside the field would be more recognizable as "algebraic topology of manifolds."

Currently she is finishing up her dissertation on "Transfers in Algebraic K-theory" at Notre Dame while enjoying teaching business calculus here in Denver. She feels so lucky to be a part of a department with such a talented group of mathematicians who are also wonderful people.

Allegra is originally from Columbus, Ohio, where she met her husband Robert at the age of 15 and all these years later, they are celebrating a year of marriage. This leads her to sing for joy quite frequently, so if you hear a soprano down the hall, you know it's coming from 202A. Her hobbies include trying to teach graduate students topology and how to write a teaching statement, playing SET as a break from grading quizzes, eating at non-chain restaurants, visiting with her families in Denver and Ohio, knitting, watching the Cubs and Rockies on TV, the afore-mentioned singing, and spending time with kids of all ages.

Eleanor Campbell Endowment

The Mathematics Department is extremely grateful for a very generous gift given this spring by the estate of Mrs. Eleanor L. Campbell to recognize an outstanding female student graduating with a degree in mathematics. Ms. Campbell graduated from East High School in Denver in 1935 and always knew she wanted to be a teacher. In an interview with Gary Massaro in the December 24, 2007, issue of the Rocky Mountain News, she said that even as a little girl, she played school. "My big thing was helping others," she stated. After high school, she earned her teaching degree from DU in 1939 and taught for many years at a Denver elementary school. She passed away in January 2008 at the age of 90. Ms. Campbell's endowed gift allows us to perpetuate her love of learning and her desire to help others by providing recognition and encouragement to an outstanding female student every year.

This Year's Award Recipients

We are proud to announce **Teresa Alvarado** as the first recipient of the **Eleanor Campbell Memorial Award**. Teresa excelled in her studies from the very beginning of her undergraduate experience. Her dedication and her hard work led her to the Boettcher Teachers Program at Morgridge College of Education here at DU where she will work toward a Master's Degree in Curriculum and Instruction. She studies on a full scholarship, and after attaining her teaching licensure, will commit her first five years to teaching in urban schools. Ms. Campbell would be proud to know Teresa, as she is the kind of person who will continue to learn and provide leadership to society throughout her life.

Skyler Braden was named the **Herbert J. Greenberg Award** recipient for 2007-2008. This award has been around for many years and is supported by the Mathematics Department in honor of Dr. Greenberg, who created the joint Department of Mathematics and Computer Science in the 1978-1979 academic year. In addition to Skyler's mathematics achievements, he participated in many of the department's activities. After graduation, he headed off to the International House of Prayer (IHOP) in Kansas City, Missouri, for a 6-month internship called One Thing. IHOP is a Christian missions base centered around 24/7 prayer and worship. He sees this experience as a strong foundation for his next step in life, whether it be teaching or something else.

Other students recognized for their mathematics achievements include:
Jocelyn Nguyen – Outstanding Third Year Student
Nathan McNew – Outstanding Second Year Student
Jianyu Wang and James Powell – Outstanding First Year Students

---

Department Hosts BLAST Conference

On August 6 though 10, the Mathematics Department and the university hosted the first BLAST Conference. This new conference focused on **B**oolean Algebras, **L**attices, Algebraic **L**ogic, Quantum **L**ogic, Universal **A**lgebra, **S**et Theory, Set-theoretic **T**opology and Point-free **T**opology (BLAST), centering on logic and the areas of mathematics which intersect with logic. The concept for this conference began from discussions initiated by Prof. Judy Roitman of the University of Kansas and grew a great deal in scope since those initial discussions. This first conference drew around 65 attendees and had a truly international flavor. Plenary speakers and tutorial presenters included individuals from The Netherlands, Austria, South Africa, Japan, and Canada as well as a number of US universities.

The Local Organizing and Program Committee consisted of department faculty members Rick Ball, Natasha Dobrinen, and Nikolaos Galatos. Organizers hope to make this an annual event rotating between DU, University of Colorado – Boulder, University of Kansas, University of Missouri – Kansas City, University of Nebraska – Omaha, and New Mexico State University – Las Cruces. The desire is that it will provide a means for as much cross-over between the various disciplines as possible, serve as a stimulus for applying ideas from one area to another, and will ultimately generate new lines of research. More information is available at the Web site www.math.du.edu/blast.

Dr. Aditya Nagrath

As a schoolboy in Pueblo, Aditya Nagrath was so keen on math that each summer his doting parents taught him all the mathematics he would encounter the next year. Upon arriving at DU in the fall of 1998, he asked around to find out who was the toughest calculus instructor. There was general agreement on the answer: Prof. Ball. Thus began a relationship, both mathematical and eventually personal, that culminated with the awarding of the PhD to Aditya this June. His thesis develops, among other things, a novel Priestley-type duality for meet semilattices. His is the first PhD granted by the Department since its reorganization (see the article in this newsletter by Prof. Arias.) The entire Department takes pride in Aditya's (better: Dr. Nagrath's) accomplishments, and extends to him its heartiest congratulations.

Rick Ball

Professor Pariz Azimi

Professor Parviz Azimi, who visited our department for sabbaticals on several different occasions (most recently during the 2005-6 academic year) passed away in January, 2008. He was Professor of Mathematics at the University of Suchestan and Baluchestan in Zahedan, Iran.

A central focus of Professor Azimi's research was providing constructions of Banach sequence spaces which exhibited unexpected properties. His most recent papers on this topic appeared in 2006 and 2007. Professor Azimi completed his PhD under my direction in 1973 and we were lucky enough to be able to continue personal and professional contact for more than 30 years. We had one joint paper, *Examples of hereditarily ℓ^1 Banach spaces failing the Schur property,* which appeared in the Pacific Journal of Mathematics in 1986.

Parviz was a devoted family man, a good friend, an always welcome visitor, and a solid mathematician with interesting ideas and insights. We will miss him.

Jim Hagler

Math Puzzler

The previous puzzler was an example of a problem that a student might solve at a MATHCOUNTS® competition and asked "What is the greatest whole number that must be a factor of the sum of any four consecutive positive odd numbers?" We asked that solvers of this puzzler provide a proof with their solution.

Solution: The greatest whole number that must be a factor of the sum of any four consecutive positive odd numbers is 8.

Proof: A general expression for the sum (S) of any four consecutive positive odd numbers may be written as,

$S=(2n+1) + (2n+3) + (2n+5) + (2n+7) = 8n + 16 = 8(n+2)$

where n is an integer greater than or equal to 0. Thus, 8 is a factor of the sum of any four consecutive positive odd numbers.

It remains to be proven that 8 is the greatest whole number that is a factor. To show this, consider the case when S takes on the smallest possible value. That occurs when n=0 and S=1+3+5+7 =16. The only factors of 16 are 1, 2, 4, 8, and 16. The factors 1, 2, and 4 may be disregarded because they are less than 8. This leaves only 16 as a possibility for the greatest whole number factor. Now consider the case when n=1 and S =3+5+7+9=24. The number 16 is not a factor of 24. Thus, 8 is the greatest whole number that must be a factor of the sum of any four consecutive positive odd numbers.

We received solutions to this puzzler from Glenn Ballard (MA, 1967), Clark C. Bond (BA, 1960), and Mary Krimmel (MA, 1970).

For the next puzzler consider the following... A deck of playing cards is shuffled and cards are turned over, from the top, one at a time until the first ace is dealt. Is it more likely that the next unturned card is an ace or a two?

Some discussion is appropriate: Since an ace has appeared, it seems more likely that the next card is a two rather than an ace. Also, it is unusual for two aces to appear consecutively so again it seems more likely the next card is a two. But wait; only one of the turned cards is an ace and it's possible that two, three or four of the turned cards are twos. Now it seems more likely the next card is an ace. On the other hand, . . . , oh well, you do the math.

Send your solutions to Sharon Bütz - sbutz@math.du.edu