

Mathematics Alumni Newsletter



Summer 2010

Notes From The Chair

In this issue, we are recognizing changes and achievement. We recognize the retirement of Stan Gudder who has been with the department since 1969. We are sad to see him retire, but we're certain he will continue his very active research program.



Albert Amias

We recognize Dr. Ronnie Pavlov who is joining the department. We are also pleased to recognize two recent PhD graduates, Brett Werner and Jonathan Von Stroh, as well as undergraduates who received awards at the Pioneer Ceremony in May. Finally, I am happy to announce that, in June, Michael Kinyon was promoted to full Professor and Nick Galatos was promoted to Associate Professor with tenure.

Stan Gudder Retires

Stan Gudder, a member of the DU Mathematics Department since 1969, retired this past spring. Stan joined the department as an Associate Professor of Mathematics in the 1969-70 academic year. He was promoted to full Professor in 1974 and served as chairman of the department from 1979 to 1984.



Stan received his PhD from the University of Illinois, Champaign-Urbana. Prior to coming to DU, he was with the Mathematics Department at the University of Wisconsin from 1965 to 1969. Stan has been a prolific researcher and has been widely sought as a visiting professor and lecturer. His visiting professorships have included stints at the University of Genova, Italy, the University of Bern, Switzerland, the University of Massachusetts, and Stanford University. Stan has delivered over 90 invited lectures at international conferences on physics and mathematics. Throughout his career, he has had over 200 articles accepted for publication and has made contributions to numerous books. He himself has authored three books: *A Mathematical Journey*, *Stochastic Methods in Quantum Mechanics*, and *Quantum Probability*.



Stan was named the University Lecturer at DU in 1990 and, in 2003, was honored by being awarded the John Evans Professorship. The John Evans Professorship is one of the highest honors awarded to a DU faculty member. It is based on the attainment of national and international distinction for outstanding research or other creative and scholarly achievement that has significantly affected his/her field.

In April, a retirement reception was held for Stan in the Mary Reed Building. Attending was a large and varied group of Stan's friends and colleagues. Several individuals told interesting stories involving Stan and he then had his turn to talk about his memories and his love of mathematics. A photo of Stan speaking at the reception is at the right.

Stan was named Professor Emeritus and we are pleased that he will continue to teach an occasional course here in the department.

Dr. Werner and Dr. Von Stroh

This spring and early summer two PhDs in Mathematics were awarded. In May, Brett Werner successfully defended his PhD thesis, "Strong Orbit Equivalence and Residuality." In July, Jonathan Von Stroh successfully defended his thesis, "Lifting Module Maps Between Different Noncommutative Domain Algebras." Congratulation to Dr. Werner and Dr. Von Stroh.

Brett has accepted a teaching position at the University of Northern Iowa and Jonathan will be working with the Department of Defense.

Ronnie Pavlov Joins The Department



Dr. Ronnie Pavlov joined our department in the Fall Quarter of 2010. Ronnie received his PhD from The Ohio State University in 2007 under the supervision of Vitaly Bergelson and then had a 3-year postdoctoral position at the University of British Columbia in Vancouver, Canada, working with Brian Marcus.

Ronnie's primary research interests are in dynamical systems, specifically symbolic dynamics, which is the study of infinite patterns made of letters from a finite alphabet. This field has connections to interesting topics such as Penrose tilings, Turing machines and information theory. For example, the act of encoding information into zeros and ones (as on a computer) can be viewed via symbolic dynamics. Most of Ronnie's work involves symbolic dynamics in multiple dimensions, where many questions which were easily answered in one dimension become extremely confusing and interesting.

Ronnie's interests outside of mathematics include Scrabble, poker, tennis, hiking, and most importantly, spending time with his wife, Jasmine.

Ronnie has been heavily involved with the William Lowell Putnam exam (a math contest exam for undergraduate students) over his career. He participated in the exam as an undergraduate student and worked with student teams as a grad student and postdoc. He is looking forward to talking about this to interested students at DU as well.

Math Center

This fall we will be opening a new Math Center located on the main floor of Penrose Library. In the center, students will be assisted by undergraduate and graduate staff who will provide help in a variety of math courses. These will include College Algebra and Trigonometry, Business Calculus and Calculus I, II, and III.

We very much appreciate the support of the Penrose Library staff in making this happen.



Conferences

In June, the department hosted the Great Plains Operator Theory Symposium 2010 (GPOTS 2010). For this week-long conference, we welcomed over 100 participants including speakers from Israel, Australia, Norway, Canada, India, Japan and Singapore. The local committee consisted of Frédéric Latrémolière, Alvaro Arias, and Nic Ormes.

In July, Nic Ormes, along with colleagues Todd Fisher (BYU) and Mike Hochman (Princeton), organized the 2010 Pingree Park Dynamical Systems Workshop. This marked the third consecutive year the workshop has taken place, with all three meetings being sponsored by both the NSF and Colorado State University. These meetings have all been held at the Pingree Park campus of Colorado State University, a small and somewhat remote campus in the mountains west of Fort Collins. This particular meeting focused on orbit equivalence, descriptive set theory and smooth dynamics and attracted 35 participants from many countries including Canada, Norway, Israel, Ukraine, France, Poland, Korea and Japan.

Math Students Honored



Nathan McNew was the recipient of the 2010 Herbert Greenberg award for Excellence in Mathematics. He graduated summa cum laude, earning Distinction in the Major in both Mathematics and Physics, having written separate senior theses in both subjects.

In his senior thesis in mathematics, "Efficient Realization of Nonzero Spectra by Polynomial Matrices," Nathan studied a constructive method for producing matrices with nonnegative entries and with a given nonzero spectrum. In this area, general existence results are known, but constructive methods are still difficult to come by. Nathan wrote computer programs that checked conditions and carried out the construction in certain cases, and was able to prove mathematically that the proposed construction works for the cases he studied. The results also give new bounds for the size of the matrix in the construction.

During his time at DU, Nathan quickly advanced through the undergraduate curriculum and was able to take several graduate-level courses including advanced courses in Set Theory, Metric Spaces and in Theory of Algorithms. He also took Abstract Algebra while studying abroad at the Universität Tübingen in Germany. All of this coursework was done while maintaining a double major in physics and minors in German and Computer Science. Nathan is continuing his studies this fall at Dartmouth College, working toward a PhD in mathematics.



Jocelyn Nguyen was the recipient of the Eleanor Campbell Award for 2010. Jocelyn came to DU as a Martin Luther King Scholar and graduated this spring. She was one of the first students to earn the dual degree we recently formed with the Morgridge College of Education. (Mackenzie Frank preceded Jocelyn with a dual degree in Education last year.) Jocelyn earned the MA in Education: Curriculum and Instruction and the BS in both Molecular Biology and Mathematics.

During previous summers, Jocelyn worked as a counselor with our Making of a Scientist (MOS) program. MOS offered college credit to advanced high school students with an interest in computers, science and math. Denver's East High School also benefited from her abilities and love of learning and teaching through her tutoring in the AVID program. AVID (Advancement Via Individual Determination) is a college readiness program that focuses on students in the academic middle who might otherwise fall between the cracks. While doing all this, she still found time to work with the Math Department as an Undergraduate Teaching Assistant teaching Business Calculus labs.

Jocelyn is now a Math and Computer Science teacher at Cherry Creek High School in suburban Denver, teaching Algebra 1, Intro to Computer Science and AP Computer Science this fall.

Other math students receiving Outstanding Students Awards were: **Erik Partridge, Kathryn Palma and Sion Ledbetter.**



PhD student **Kyle Pula** was awarded two prestigious academic honors that allowed him to study mathematics in Australia.

Kyle was awarded a Fulbright U.S. Student Scholarship and, a short time later, found out he had also been accepted into the National Science Foundation's East Asia and Pacific Summer Institutes program.

The past academic year, Kyle studied the mathematical concept of Latin squares and worked with professors at Monash University, the University of Queensland, and Australian National University. "Australia has a rich heritage of expertise in mathematics," said Kyle before traveling to there. "This experience will direct my course for long-term success as a teacher-scholar as I learn from world class researchers." Kyle is a Graduate Teaching Assistant in the math department, has taught mathematics and served as the MathCounts coach at DU's Ricks Center for Gifted Children.

Kyle started the shorter NSF program in June 2009 and then began an academic year of study in August under the Fulbright scholarship. This scholarship is awarded to people based

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on academic or professional achievement and potential for leadership. Kyle was one of more than 1,450 U.S. students who traveled abroad under the program last year.

Kyle was accompanied by his wife Melissa, who is a PhD student in Religious Studies at DU and the Iliff School of Theology. He reported that he had a delightful and productive time away, but is happy to be back in the department for the final year of his doctoral studies. With his return to DU in the Fall of 2010, Pula will complete his dissertation and begin applying for academic positions. Pula is the 25th Fulbright Scholar from DU since 1993.

Your Gifts At Work

As the number of our graduate students approaching the completion of their PhD degrees increases, we find it more challenging to provide support for them to travel to confer-

ences that positively impact their educational experiences. Your gifts help our students and we thank you.

Jenya Kirshtein, who is currently working toward her PhD, writes below:

"The Ohio State University in Columbus hosted the 30th Denison Mathematics Conference in May 2010. Talks at the conference spanned a wide range of topics in group, loop, ring theory and combinatorics with speakers from all around the world including the United States, Czech Republic, France, Slovenia, Israel, Malaysia, Spain and Macedonia. The University of Denver Math faculty was represented by Petr Vojtěchovský who gave a talk about problems in loops theory where group theory plays a crucial role. I was also fortunate to attend the conference, present my PhD thesis work on Cayley-Dickson loops and communicate with well-known mathematicians in the friendly and informal atmosphere of the beautiful Ohio State campus in spring. I would like to thank sponsors of the department who make conference traveling possible for graduate students."



Math Puzzler

The previous puzzler posed the following problem: What 5-digit number has the following features: If we put the numeral 1 at the beginning, we get a number three times smaller than if we put the numeral 1 at the end of the number. [i. e., (_____1)=(1_____)*3]

Solution: Using an easy equation: $10x + 1 = 3(100000 + x)$

(Why? Well, adding 100000 puts a 1 at the front of a five-digit number and multiplying by 10 and adding 1 puts a 1 at the end of a number)

Solving this gives:

$$10x + 1 = 3(100000 + x)$$

$$10x + 1 = 300000 + 3x$$

$$10x = 299999 + 3x$$

$$7x = 299999$$

$$x = 299999 / 7 = 42857$$

The answer is 42857.



There is a new Facebook website for the department: www.facebook.com/DUMath. Facebook users can "Like" the new page, and get updates on the happenings at the DU Math Department. We hope you will enjoy the newest way we stay in touch with faculty, staff, students and alumni.

Solutions to this puzzler were provided by Bill Clayton (BS, 1969), Bob Beights (MS, 1997), M. Dean Briggs (BA, 1952), Tory Toupin (BS, 1994), Clark Bond (BA, 1960), Lee DeRaud (MS, 1974), Orason L. Brinker (MA, 1945), Floyd Johnston (MA, 1951), Dan Daly (PdD, 2009), Jan Ratcliff Riggs (BA, 1972), Tena (Listopad) Murphy (BA, 1983), Paul E. Williams (BA, 1952), Marci Potter Jasek (BA, 1973), Forrest Blassingame (MA, 1956), Ken Wasmundt (MS, 1982) and Mary Krimmel (MA, 1970).

For the next puzzler consider the following...

Which two whole numbers, neither containing any zeros, when multiplied together equal exactly 1,000,000,000?

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