
A f t e r m a t h

Message from the Chair

by Aaron Bertram



These are the best of times and the worst of times. There are some ironies inherent in tough economic times. In part thanks to federal stimulus money (but I'd like to think mostly because of the research prowess of our faculty)

the Mathematics Department received funding for twenty grant proposals totalling in excess of 6 million dollars between July 1, 2008 and October 1, 2009. This is simply extraordinary! Enrollments in undergraduate mathematics courses are also way up, reflecting a general rise in enrollment throughout the University as more students return to finish their degrees.

So in this time of record research funding and heavy enrollments, what can we expect from the state legislature and the Park Building? More budget cuts, unfortunately. The magnitude of the cut this year is unclear, but following on the heels of a large cut last year, it is certain that some sacrifices will need to be made. I will keep you informed as more information becomes available.

On the bright side, funding for the last two years of our VIGRE grant was approved. Thank you to all of the faculty, staff and students (and Kathleen!) for impressing the evaluators from the NSF. They came away with a very favorable impression of our graduate program and enthusiastically recommended us for the additional funding, which has been denied to other programs in the past. We also received some appreciation from within the University. Congratulations to Blerta Shtylla (Graduate Research Fellow) and Sarah Kitchen (University Teaching Assistant) on their awards from the University of Utah Graduate School.

On the undergraduate teaching front, it appears that at long last we may have an Applied

Mathematics Major. There are many people to thank for this, notably Ken Golden for his vision and leadership, the curriculum committee(s) for their work and Nick Korevaar and Kathleen Moore (again) for getting our written proposal off to the University's Undergraduate Council, where it will begin its slow journey up through various committees, to final approval by the Board of Regents.

Also regarding undergraduate teaching, all instructors will have no doubt had the pleasure of interacting with Henryk Hecht, the new Associate Chair. In addition to learning the job from Nat Smale, we burdened Henryk by absorbing the off-campus instruction (formerly managed by AOCE) into the Mathematics Department. This has the advantage of uniformizing our course offerings, and Henryk (and Paula) worked tirelessly to make the transition as smooth as possible for the off-campus students and instructors.

It promises to be an interesting year. Hang on to your hats.

Welcome!

We'd like to extend an enthusiastic welcome to those who are new in the department this year, and we hope that they are beginning to feel at home here.

Our new postdocs and research associates are Roi Docampo Alvarez (Algebraic Geometry), Mathew Joseph (Probability Theory and Stochastic Processes), Joyce Lin (Fluid Mechanics), Sarthok Sircar (Numerical Analysis), and Jing Tao (Geometry).

We have several visitors this year. Maritza Sirvent is working with Peter Alfeld, Martin Dereaux is collaborating with Domingo Toledo, Gabriel Amos from UC Davis is working with Mladen Bestvina, and Pejman Maboubi is working with Davar Khoshnevisan. Maritza, Martin, and Pejman are all former members of the department, and we are happy to have them back for a while.

The off-campus instructors are now part of the mathematics department. They are Tom Brennan, Paul Christensen, Greg Gillis, Sarah Jean Hoggan, Kimberly Volk, Elizabeth Malloy, Rodney Millar, John Nordstrom, Christopher Stone, and Jan Thompson.

Our new graduate students are Andrew Basinski, Amanda Cangelosi, Sarah Cobb, Erin Colberg, Charles Cox, Omprokash Das, Veronika Ertl, Sonya Leibman, Cristian Martinez, Jason Underdown, Yohsuke Watanabe, Bryan Wilson, Yuchen Zhang, Sahinde Dogruer, Miles Fore, Savas Gul, Kristen Jensen, Wei Jiang, Jetjaroen Klangwang, Charles Knadler, Kelly MacArthur, David Walck, Xiaozhen Wen, and Adam Wilson.

Susan Retiring

by Stephanie Nuttall

Susan Hendry will be retiring from the University on November 1, 2009. Susan is a remarkable person and will be missed by everyone around campus that has had the pleasure of knowing her.

Susan received her BA in Education from the U of U, then received a second BA in Mathematics from Metropolitan State College. Susan made a difference in many young lives teaching at Morgan High School. She also coached basketball and led the team to a state championship! Susan graciously volunteered in the US Peace Corps for 2 years as an Education Officer in Africa. While there she supervised secondary school teachers, developed a nationwide curriculum, and enjoyed some near-death experiences. Susan worked as an Admissions Coordinator and the Interim Director of Registration at the University of Denver. She began working at the University of Utah in July of 1991 and has been an Administrative Assistant in the OEO office, the Medicinal Chemistry Department and the University Writing Program. From there she went to the Dean's Office for the College of Humanities as an Administrative Officer. The rest, of course, is history – she came to the Mathematics Department where she works as an Accountant, primarily managing the grants. Her vast job experiences have made her an invaluable resource. Susan pays close attention to detail and is very meticulous about her work. She has been very successful in grant submission and administration.

Susan is trustworthy and has remarkable dedication. She is a caring and genuine person

who will make time for anyone. She has a great sense of humor and can find the positive in every situation. She has a black belt in Aikido and is one tough cookie! She is also very calm, collected and patient. Susan loves to read and enjoys a good variety of subjects. She often attends ballets, the symphony and the theatre. Her favorite movie is “Fanny and Alexandra.” She loves to travel and has had many adventures. She recently visited England with her nephew and took an African Safari with her niece. (I have already asked to be adopted into the family!) Susan is very supportive and giving to all of her family. Susan is a devoted mother to her cats. Somehow her name is out on the street and all the strays know it. She is notorious for taking cats in and giving them not only food, but warm beds, doctor visits and a loving home.

Susan has enjoyed working in the Math Department and just thinks that everyone is great. She is looking forward to traveling the world and already has a list of places to go. We thank her for making a difference here and wish her the best in all of her future endeavors. In the words of Dr. Seuss, “Congratulations! Today is your day. You’re off to Great Places! You’re off and away!”

Staff Service Awards

by Mary Levine



Paula Tooman is the heart and soul of our department. From the moment you walk in the main office, she is very happy to assist you. Despite the fact that she is extremely busy and always doing several tasks at once, she has a smile on her face and is ready to assist not only the department members and math students, but the entire university community.

She goes above and beyond the call of duty. She never complains and greets everyone with a smile and gives everyone individual attention at all times, no matter how busy she is. Her personal touch is felt across campus in everything she does and she has quite a remarkable reputation across campus. Whenever I talk to people outside the math department, if they’ve had any contact with us they always mention Paula and how wonderful she is to work with.

Her quality of work is excellent and she is always ready to step up to help the other staff as needed to meet deadlines and department commitments. She is an amazing woman and she doesn’t stop

until the job is done and it is always done with a smile.

Congratulations, Paula, for 10 years of service to the University of Utah and the Mathematics Department!! We are lucky to have you as a part of our staff. Words can't express how much we appreciate everything you do for the department!



In June **Vic Gabrenas** reached 10 years of service at the University of Utah, all within the Mathematics Department. For the past 10 years Vic has been taking care of computer hardware, wired and wireless network hardware, computer filesystem backup monitoring, equipment maintenance, classroom projection equipment problem solving, and user support, especially for the department's Microsoft Windows and Apple Mac OS X systems. He also provides backup for Pieter Bowman and Nelson Beebe and provides special support for the workstations and databases for the College of Science Dean's Office.

Vic loves the outdoors and does a lot of hiking when he can. His daughter Bridget is the light of his life. He married Chris in August and they recently bought a new home. Vic loves to work with all types of electronics in his spare time and is always doing something new with his love of music. He also collects vinyl records and tapes and actually has the equipment that plays the music. He can do magic with this music forum. Congratulations, Vic, we appreciate everything you do to keep our computers running and are glad you're part of our computing staff!

Staff Excellence Awards

by Mary Levine

Angie Gardiner and Susan Hendry were selected from a number of exemplary staff who were nominated for the 2009 University of Utah Academic Affairs District Staff Excellence Awards. There were six awards in the Academic Affairs District. A total of twenty-four District Staff Excellence Awards were given throughout the University among six Districts: Academic Affairs, Administrative Services, General Administration, Hospitals/Clinics, Other Health Sciences, and Student Affairs. This prestigious awards program was established to recognize superior service and ongoing contributions by the University's full-time staff. Nominees must have given at least three years of continuous

service to the University of Utah. These awards only confirm what we already know, that they both give outstanding service to the department and university on a daily basis. Angie and Susan were awarded a \$300 cash prize for making it as finalists in the Academic Affairs District.

Angie is devoted to her work with the Math Center (Tutoring Center and Computer Lab) and all of the students it services each semester. She is dependable and remarkably persistent to see that the students on this campus get every opportunity to succeed in their math courses. I know many students have become math majors due solely to Angie's influence and commitment for their success. Many of you probably don't realize that she is responsible for not only the T. Benny Rushing Mathematics Student Center (tutoring and computer lab), but also chairs the departmental Awards, Scholarship, and Pi Mu Epsilon Committee, she participates in exit interviews with students graduating in mathematics, oversees the alumni survey, the summer High School Program, the undergraduate colloquium for math majors, the web pages for undergraduate students, various math contests, and the department newsletter. Simply put, the undergraduate students would not be as successful as they have been over the past 10 years of Angie's tenure in our department without her.

Without question Susan is attentive to the faculty and department members' requests and is professional at all times. She is quiet and unpretentious and makes it seem that managing the NSF grants is effortless and easy. She doesn't complain and always has a smile or word of comfort whenever it is needed. Her skill is evident in everything she does and she has quite a remarkable reputation across campus. Other co-workers in the department and across campus know with confidence that if Susan has done the job it has been done according to university guidelines and policies without question. Her quality of work is excellent and she always steps up to help the other staff as needed to meet deadlines and department commitments. She is a remarkable woman and she doesn't quit until the job is done and it is always done with distinction.

Congratulations Angie and Susan! We are proud to have you as members of our staff.

Summer Reports

Keeping it Real

by Peter Trapa

This July, the math department hosted a week-long workshop, followed by a week-long conference, devoted to the representation theory of real Lie groups. The workshop, which was funded in part by our VIGRE grant, was primarily directed at graduate students, and was designed to prepare them for the more advanced talks given at the conference. All in all, over one hundred people (from five continents!) participated.

At first glance, simple Lie groups appear to be governed by a complicated mix of algebra, analysis, and topology. But in the end they are controlled by a fantastically rigid structure called a root datum. This fact makes seemingly intractable problems amenable to computational approaches. Many of the lectures at the workshop and conference emphasized this point of view.

The two weeks were, for me at least, remarkably successful. For the mathematics, I have the lecturers (and students!) to thank. For everything else, I thank Kathleen Moore. Without her incredible efficiency, none of it would have been possible.

RTG Workshop

by Damon Toth

"Math Biology Workshop on Building an Interdisciplinary Career" took place in the LeRoy Cowles Building on May 15-16, 2009. The event was sponsored by RTG: Research Training Group in Mathematical Biology. Twenty graduate students, post-docs, and young assistant professors from around the country traveled to Utah to participate in the workshop. Attendees were inspired by plenary talks by Cornell University Professor Stephen Ellner (modeling coral disease) and University of Maryland Professor Doron Levy (mathematics and leukemia). RTG post-docs Mark Zajac, Damon Toth, and Peter Kim organized and ran the workshop, which consisted of four talks, two poster sessions on the third floor of LCB, and two discussion sessions on jobs and grants in mathematical biology and challenges of interdisciplinary research. It was an enjoyable, educational, and professionally rewarding event for visitors and hosts alike.

Workshop for Teachers

by Emina Alibegovic

Once again a group of teachers assembled in the loft of LCB for a week of working on problems, learning new mathematics, and collaborating on writing unit plans for various classes they are teaching. This year's group was pretty small, we only had 8 participants. In the future, greater attention needs to be paid to advertising and attracting teachers to the program. The feedback from both presenters and participants has been very positive and they enjoyed working in the small, comfortable environment. Our goal is, however, to involve more teachers from rural areas as well as teachers who are part of our regular group during school year. The latter we achieved pretty easily, which we think testifies to the quality of both programs, but the former is in need of improvement, and this is our goal for next year's workshop.

The format of the workshop was very similar to the last year's. The mornings were devoted to problem solving and sharing of the solutions. We focused on combinatorics, but also connected problems to the topic Ellen Veomett (CSU East Bay) chose to present: Tilings and lattices. Brynja Kohler (USU) led several sessions during which teachers composed groups in order to make unit plans based on common mathematical interests. Once again we had a teacher presenter as well, Troy Jones of Westlake High School, who spoke about points of concurrency in triangles and tetrahedra.

If you are interested in seeing work done during the workshops, please visit <http://uteacherscircles.wikispaces.com/>. We always welcome new presenters, participants and ideas. Please contact Emina Alibegovic if you would like to take part in this program.

Summer High School Program

by Matt Housley

Aaron Bertram directed the Summer Mathematics Program for High School Students this year. He was assisted by graduate students Becky Clover and Matt Housley. Della Rae Riker kept everything running by providing the logistical support that a program like this requires. Fifteen students came from Florida, Nevada and Utah to participate.

Topics included areas of number theory, algebra and their applications including primality testing, RSA cryptography, quadratic reciprocity,

group theory and elliptic curves. Students applied their mathematical knowledge through Python programming in afternoon computer labs where they worked on LIMPS (the Lesser Internet Mersenne Prime Search). Students were exposed to other areas of mathematics through daily colloquia given by professors and graduate students in the department: Dennis Allison, Davar Khoshnevisan, Dylan Zwick, Peter Alfeld, Aaron Wood, Fred Adler, Ken Golden, Peter Trapa and Jeff Blanchard generously donated their time and gave great talks. On the last day, there was an informal exam in the form of a game of Jeopardy.

The real stars of the program were the participants. They rapidly picked up abstract ideas that more advanced students often struggle with. Their enthusiasm and hard work were infectious. We hope that some of them will return to our department as students in the years to come.

MathFest

by **Yasmeen Hussain and Mike Parker**

Yasmeen: So Mike, what is Mathfest?

Mike: Well, imagine you took like 500 mathematicians and got them together in a conference in Portland, Oregon. It was EXACTLY like that. So what did you do instead of going to my presentation?

Yasmeen: Well, I went to presentations in subjects that I actually found interesting. For example, I saw student lectures in applied mathematics, and I even got to see Steven Strogatz speak! What was your favorite moment of the conference?

Mike: One of the lecturers, talking about dissection puzzles, passed out tangrams to everyone before his talk. Then, during the middle of his talk, he said something like "Tangrams are a very popular puzzle. How many of you own a tangram set?" Everyone raised their hands, and he commented "Wow, 100%! What did I tell you!?"

Yasmeen: Cool story, Mike.

Mike: So I hear you acquired more stuff than me. What was that about?

Yasmeen: There was an exhibition area in the conference, filled with tables of companies and organizations just dying to give us free stuff! Also, I won a prize for my presentation, which was generously donated by the SIGMAA group, because my presentation was clearly better than yours.

Mike: Well, I won a prize, too! I came in third in the problem solving contest and got a shirt, a plaque, and a medal.

Yasmeen: Sweet! Go us! Mathfest was the best!

Mike: Nice rhyme.

Aftermath is published monthly during the academic year. If you have an idea or article to submit contact one of the editors:

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