Alumni Spotlight
by Natasha Carlton

Melissa Butler spent the first 13 years of her childhood in Pleasant Grove, Utah and her teenage years in Sandy, Utah where Melissa attended Alta High School. After graduating high school, Melissa enrolled at the University of Utah in 1993 for fall quarter. While attending the University of Utah Melissa was involved in the Marching Band, Symphonic Band, Society of Women Engineers, and Institute of Electrical and Electronic Engineers (IEEE).

One of Melissa's favorite memories from her time spent at the University of Utah occurred during a senior differential equations course that she took from Professor Klaus Schmitt. Melissa recounts, "The course ran the entire school year from fall through spring quarter. In the fall quarter, we had ~30 students in the class and by spring quarter there were only 6 of us left. Each quarter he would require us to write a 10-page essay on a topic that we had learned during the quarter and present it to the class. At first I couldn't figure out why we would need to be composing essays for a math course, as this wasn't an English class, but looking back now I am grateful for his ways of teaching. I have had to write technical documentations during my career that have been 50 pages or more in length, so 10 pages is nothing."

Melissa graduated from the University of Utah in December 1998 with a degree in Mathematics. She always wanted to work in Silicon Valley, so within 3 weeks of graduating from the University of Utah she moved to the San Francisco Bay Area. She also had big dreams of working as an engineer at a large technology firm, so in January 1999 she started at San Jose State University to pursue a second degree in Computer Science.

While working on her Computer Science degree Melissa stayed involved in Society of Women Engineers and Institute of Electrical and Electronic Engineers (IEEE) organizations. After graduating from San Jose State University in 2001 she accepted a job with Microsoft as a Systems Engineer in Redmond, Washington. While still working for Microsoft, she attended University of Washington to receive a Professional Certification in Cloud Computing.

Melissa is proud to say that she is achieving her dream as a Senior IT Systems Engineer with Microsoft in Redmond, Washington. She has now been with Microsoft for 8 years and during her time there has been employed on a team with in the Azure organization that provides data protection services for several of the company's largest product teams, including Azure, Bing, OneDrive, Office365, and Xbox.

Melissa states, "My math degree has helped me immensely with my current position and I am grateful for the knowledge and skills that I acquired at the U. My education has provided me with the logical and analytical skills that are necessary in analyzing and finding solutions to difficult engineering tasks and projects that I encounter every day in my current position."

Melissa is currently living in the beautiful Seattle area and enjoys volunteering, traveling and spending time outdoors, hiking, mountain biking, and being with her friends and family. She also likes to get back to her roots and visits her home state of Utah several times per year.

Her advice for current/future students perusing a degree in mathematics is, "A degree in Mathematics from the University of Utah is highly regarded and I would recommend studying hard, involving yourself in extracurricular activities, seeking out opportunities to serve others, establishing relationships with your fellow classmates and instructors that can last throughout your university and post-university careers, and participating in internships and networking opportunities as they arise. All of these items were crucial as I was working to establish my career and enter the working world. Most of all – enjoy your time at the University of Utah and make it one that you will never forget!"

Endowments
by Nat Smale

Stefan Patrikis was named Warnock Chair (co-holder with Jon Chaika). Stefan is a new faculty member (Assistant Professor) who works in number theory, among other things. Stefan received his Ph.D. from Princeton University in 2012, and was a Moore Instructor at M.I.T. before coming here. The Warnock Chair was established by John E. Warnock, and his wife Marva M. Warnock from a $1.5 million endowment, to support scholarship and creativity in the early stages of the career of an outstanding young faculty member.

Mark Shoemaker was selected as the inaugural Tucker Assistant Professor Lecturer. Mark got his Ph.D. from the University of Michigan in 2013, and has been here at Utah since the fall of 2013. He works in Algebraic Geometry. As described in the last issue of the newsletter, the Tucker Endowment was created with funds from an anonymous donor in honor of Don Tucker who has been a member of the department since 1958.

Faculty Distinctions
by Nat Smale

Davar Khoshnevisan was named Fellow of the Institute of Mathematical Statistics. The institute names fellows "for those with demonstrated distinction in research in statistics or probability".

Doming Toledo was selected to be a Fellow of the American Math Society, he joins 8 other faculty members who are already Fellows of the AMS. According to the AMS website "The Fellows of the American Math Society program recognizes members who have made outstanding contributions to the creation, exposition, advancement, communication and utilization of mathematics".

Staff Awards
by Tiffany Mendenhall

Rebecca Burns - Grants and Contract Accountant
Rebecca has 30 years of service with the University of Utah. She has been a part of the Mathematics Department for over 6 years. During the time she has worked with us, she has significantly contributed to our department's success. She is our Grants and Contract Accountant and is great to work with. We appreciate her hard work and commitment throughout the years. Congrats Rebecca on your 30 years of service!

Della Rae Riker - Executive Secretary
Della Rae has 5 years of service with the University of Utah. Throughout the years we have enjoyed her dedication for her job. She is the Math Department's Executive Secretary and keeps our office organized. We want to say thanks for all your hard work. Congrats Della Rae on your 5 years of service!

Summer Programs

AMS Summer Research Institute in Algebraic Geometry
by Tommaso de Fernex

This summer we had the great opportunity to host the 2015 AMS Summer Research Institute in Algebraic Geometry at the University of Utah. This event continues a long tradition of decennial conferences in the field which, following a meeting organized by Zariski in 1954 at which Serre's work on coherent sheaves was introduced to American algebraic geometry, took place in Woods Hole (1964), Arcata (1974), Bowdoin (1985), Santa Cruz (1995), and Seattle (2005). These meetings have been the most influential conferences algebraic geometry has seen.

The conference run for three weeks, with 16 outstanding plenary speakers (among which our own Christopher Hacon), 144 invited speakers, 72 contributed speakers, and almost 750 registered participants. Plenary lectures were given in the morning, and five parallel sessions ran in the afternoons. Poster presentations were also given during the first two weeks. The conference covered a variety of topics in algebraic geometry and its interaction with neighboring fields.

We expect the next generation of algebraic geometers to have been hugely influenced by the meeting, by what they learned, and the collaborations they developed. They – and the wider mathematics community – now have a first class library of 175 videotaped talks to use describing the state of the art of a huge variety of topics. The proceedings of the Summer Institute will be published jointly by the American Mathematical Society and the Clay Mathematics Institute and are expected to serve as a central reference source for algebraic geometers, just like the proceedings from the previous meetings did for us.

MathFest 2015
by Scott Neville

Thanks entirely to the generosity of the math department (and some particularly tricky combinatorics), as the winner of last year's Undergraduate Problem Solving Contest I had the opportunity to go to MathFest this year in Washington, D.C. and participate in the National Problem Solving Competition. The conference ran several days, with dozens of fascinating talks, a brief musical (cast entirely by mathematicians), and plenty of new ideas. I particularly enjoyed the sessions on recreational mathematics, which included puzzles, non-binary logic, math without subtraction, and a paper on circle packings, which included some really cool pictures and a neat congruence relation (rotation of a cut through a sphere packing).

The competition itself was quite relaxing. Of the approximately 20 participants, Curtis Miller and I received 6-7th places (who got which place is difficult to say, there was a bookkeeping error). Instead of the proofs given in the U's competition, each problem was some fairly simple combinatorics or algebra, and took ~20 seconds to complete if you saw the trick. Unfortunately, the trick for problem 5 involved some trigonometry that I hadn't reviewed in years, and so I did not actually finish all 7 problems (only 2 contestants did). Still the competition was fun, the questions were all satisfying to solve, and I'm glad I could go.

As a bonus, I've now seen the ocean (spoiler: it's blue-ish), Washington Monument, White House, and Lincoln Memorial. Definitely a highlight of my year.

High School Summer Math Program
by Evelyn Lamb

It's hard to grow if you never do things you aren't ready for, at least that's what I told myself when I decided to teach the Summer Mathematics Program for High School Students this past June. I'm not a number theorist, and I've never worked with teenagers for any length of time, so teaching number theory and cryptography to twenty high schoolers for three weeks definitely felt like jumping into the deep end of the pool.

Luckily, with the help of my TAs Leonard Carapezza, Mike Bolton, and Tyler Haslam and the organizational expertise of Aryn DeJulis, the summer went remarkably smoothly. Over the course of the program, the students, many of whom had just finished precalculus, got to see a side of math they hadn't seen before. We started with modular arithmetic and simple shift ciphers, and by the end of the program students were making conjectures about the Euler phi function and implementing RSA cryptography in the computer lab.

As if going zero to sixty in number theory in three weeks weren't enough, students also worked on warm-up activities that ranged from disentangling human knots to building a Menger sponge and enjoyed a steady stream of colloquium lectures from graduate students and faculty members from the U and BYU. These activities supplemented their deep study of number theory with an overview of the breadth of math: sea ice, hyperbolic knot complements, Hilbert's hotel, and modular origami were just a few of the topics they saw during the engaging colloquium talks.

I got a flat tire on my bike on the way to class the first day and barely made it in time. With my jitters about jumping into number theory and high school on the same day, I was worried it was an omen. But my students and colleagues proved me wrong, and the program was a success. I am grateful that I had the opportunity to teach and learn so much this summer.

Association for Women in Mathematics
by Vira Babenko and Anna Miller

The Association for Women in Mathematics (AWM) is a national organization that was founded in 1971 to support and inspire women to pursue active careers in the mathematical sciences. The University of Utah's AWM student chapter was recently re-established in Fall 2011 and since then we have had more than 25 workshops and meetings! One goal of these workshops is to discuss current problems of women in science, technology, engineering, and mathematics (STEM) fields and allow members to share their experiences. To support this goal, last March we held a panel discussion on gender in academia. This year we will also begin to hold meetings on the second Monday of each month to continue to promote discussion on gender differences in research and academia. Another goal is to encourage both males and females in our local community to study mathematics and pursue careers in the mathematical sciences. Each spring we hold "What is Math?" Day at the University of Utah, which is an opportunity for advanced high school and early undergraduates to explore topics in advanced mathematics. We have also held several hands-on workshops based on various mathematical topics to broaden our appreciation for mathematics, which have included activities such as folding the Schwartz Lantern and creating Temari balls. We even participated in the global MegaMenger fractal build last fall together with more than 50 other sites worldwide!

This year will be full of exciting events as well! We kicked off the semester with a workshop with the College of Science career coaches to learn about job-finding strategies in the mathematical sciences. At the end of October we will have a workshop on communication and negotiation skills, which will be in collaboration with the Women in Physics and Astronomy (WomPA) student chapter and run by Dr. Pearl Sandick. In November, we will have a hands-on workshop to illustrate mathematical concepts using string art, and in December we will have a social with other STEM groups on campus. Next semester we are already planning to have a hands-on workshop that connects knitting with mathematics, and we will again host the annual "What is Math?" Day.

We are always looking for new great ideas for our workshops or meetings, so please contact us if you have any! The AWM student chapter hopes to recruit several new active participants this year and to continue to promote the beauty of mathematics among all interested in this field!

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Message from the Chair
by Peter Trapa

The bustle of the fall semester in full swing serves as a reminder of the "new normal" levels of student enrollments.   This fall we are teaching roughly 26,000 student credit hours at the undergraduate level.   By comparison, enrollments in Mathematics represent about 45% of College of Science undergraduate enrollments, and exceed the total number in the College of Engineering. These figures have surged over the last decade, and now appear to be leveling off. Over the same period, the quality of instruction across the board -- from Math 1010 to our Research Experience for Undergraduate courses -- has continued to be outstanding. In the next few months, we will be conducting a large-scale alumni survey charting the progress of our recent graduates and providing valuable feedback for tuning up our undergraduate offerings. Keep an eye out for the survey – and contribute!

People Who Joined the Department
2015 - 2016

Stefan Patrikis - Assistant Professor
Warnock Chair
Ph.D. Princeton University
Number Theory

Research Assistant Professor

Adam Boocher
Ph.D. University of California, Berkeley
Commutative Algebra, Algebraic Geometry

Katrina Honigs
Ph.D. University of California, Berkeley
Algebraic Geometry

Noa Kraitzman
Ph.D. Michigan State University
Partial Differential Equations

Linquan Ma
Ph.D. University of Michigan
Commutative Rings and Algebras

Travis Mandel
Ph.D. University of Texas at Austin
Algebraic Geometry

Donald Robertson
Ph.D. Ohio State University
Dynamical Systems & Ergodic Theory

Ian Shipman
Ph.D. University of Chicago
Algebraic Geometry

NSF Postdoctoral Fellow

Brooke Ullery
Ph.D. University of Michigan
Algebraic Geometry

Assistant Professor (Lecturer)

Jingyu Huang (starting January 2016)
Ph.D. University of Kansas
Proability Theory & Stochastic Processes

Vinoth Nandakumar
Ph.D. Massachusetts Institute of Technology
Representation Theory

Visiting Faculty
Allen Moy (Hong Kong University of Science and Technology)

Visiting Scholars
Xiabin Li (Southwest Jiaotong University)
Nils Henry Williams Rasumssen (Telemark University College)
Shengtian Zhou (Telemark University College)

Visiting Postdoctoral Scholars
Camille Horbez (Centre national de la recherche scientifique)
Maral Mostafazadehfard (Conselho Nacional de Desenvolvimento Científico e Tecnológico)
Seyed Hamid Hassanzadeh (Conselho Nacional de Desenvolvimento Científico e Tecnológico)

Visiting Graduate Student
Ehsan Tavanfar (Ph.D. Candidate at Shahid Beheshti University)

Graduate Students

We would like to welcome the new graduate students for the 2015-2016 Academic Year. This year we welcomed 22 new graduate students into our department Ph.D. program:

Matteo Altavilla (Sapienza U. of Rome)
Huachen Chen (The Ohio State U.)
Zhen Chen (U. of Wisconsin)
Kevin Childers (Brigham Young U.)
Gaoyang Fan (Montana State U.)
Elizabeth Fedak (Claremont Graduate U.)
Hannah Hoganson (Miami U.)
Shelby Kilmer (Bucknell U.)
Christian Klevdal (U. of Colorado-Boulder)
Sabine Lang (EPFL)
Daniel Lee (New York U.)
Janina Letz (Johannes-Gutenberg U. of Mainz)
Jihao Liu (Peking U.)
Joaquin Moraga (U. of Concepción)
Patrick Murphy (Montana State U.)
Marin Petkovic (U. of Zagreb)
Taylor Petty (Brigham Young U.)
Allechar Serrano Lopez (U. of Costa Rica)
Cheehan Tan (U. of Warwick)
Patrick Webb (U. of California - Irvine)
Elizabeth Winkelman (U. of Rochester)
Hanlei Zhu (U. of Utah)

In addition, we would like to extend a welcome to the new MStat and MS Teaching students:

Mathew Arndt
Stephen Durtschi
Curtis Miller
Angela Price
Saradha Rajamani
Nicholas Stephenson

Staff

Natasha Carlton
Program Assistant
by Tiffany Mendenhall

Natasha started working in the Math department in June 2015 as our program assistant. Her work as our program assistant is with Math for America (MfA), and Master Teacher Program (MSSST). She is also responsible for scholarships, development & alumni relations, and gift donations along with other administrative staff duties.

Natasha is originally from Alpine, UT but her parents moved to Mona, UT to raise their family in a small community. She went to Utah Valley University for her undergraduate education in Behavorial Science with an emphasis in Sociology. After graduation Natasha joined the AmeriCorps VISTA (Volunteer in Service to America) program. After her year of service in AmeriCorps, she went on to earn her Masters of Educational Leadership & Policy degree from University of Utah. She was a Graduate Assistant for the Union Administration Office during her Masters program. She worked with Union Programing Council students, served on Student Affair committees, and worked on development aspects of fundraising events.

In her spare time Natasha enjoys spending time with family, watching movies, getting caught up on all the TV shows that keep popping up on Netflix, and reading.

Natasha has done a great job on getting the Math department on Instagram, Facebook, and LinkedIn. She enjoys her work and has been great to work with. Welcome, Natasha!