Mathematics welcomes a new department chair

Dr. Kenneth McLaughlin joined the mathematics department this summer as department chair. McLaughlin studied mathematics at New York University and went on to earn his Ph.D. from that school's Courant Institute in 1994. After graduation, he was a National Science Foundation Postdoctoral Fellow and has also been on the faculty at the University of North Carolina at Chapel Hill. His work has taken him around the world, including positions at the Université de Bourgogne in Dijon, France, the Mathematical Sciences Research Institute in Berkeley, California, the Pontificial Universidade Católica de Rio de Janeiro in Brazil, the Katholieke Unversiteit in Leuven, Belgium, the Ecole Normale Superieur in Paris, France, and the Université de Paris VII.

Dr. Ken McLaughlin

He is passionate about teaching as well as about his research, which includes investigations into the analysis of partial differential equations, the theory of approximation, and the theory of random matrices.

Wherever he is, he said, he can clearly number his priorities: "1. family, 2. teaching, 3. research, and 4. play. But I've never made it past item three on this list!"

Mathematics Department welcomes new hires

Dr. Wolfgang Bangerth joined the Department of Mathematics as a full Professor with tenure in August of 2016. During the precious 11 years, Bangerth was a tenure-track faculty member at Texas A&M University, moving up through the faculty ranks during that time. Before coming to the United States, he received his Ph.D. from the University of Heidelberg, Germany, in 2002. This was followed by a research scientist position at the ETH Zurich in Switzerland, and a postdoc position at the Institute for Computational Engineering and Sciences at the University of Texas at Austin.

Dr. Wolfgang Bangerth

Dr. Bangerth's research and teaching is broadly in the area of computational science -- the interdisciplinary art and science of modeling the real world on computers using mathematical tools. In particular, he has worked with biomedical engineers on finding better ways to image tumors, and with geoscientists on simulating the deep interior of the Earth and its interactions with continents, the oceans, and the atmosphere. He has also worked with nuclear engineers, physicists, petroleum engineers, and colleagues from other disciplines to simulate various aspects of the world around us on computers.

Supporting this broad range of activities is open source software developed by Dr. Bangerth, his research group, and collaborators around the world and used by hundreds of scientists and engineers worldwide. His work has been funded by the National Science Foundation, the National Institutes of Health, the Department of Energy, the Department of Homeland Security, and the Sloan Foundation.

Outside work, Dr. Bangerth is an avid cyclist, logging more than 5000 miles per year. He also enjoys traveling the world and eating whatever local food is available -- even (maybe in particular) things generally not considered edible in western countries.

Dr. Cameron Byerley

Dr. Cameron Byerley joined the mathematics department this fall semester as a Special Assistant Professor. The focus of her research, teaching, and service is supporting students' experiences in calculus at Colorado State University. Her primary responsibilities also include a key role in assisting Dr. Mary Pilgrim and Dr. Anton Betten in launching the department of mathematics Calculus Center that opened fall 2016.

Byerley began her career as a secondary mathematics educator, eventually pursuing a Ph.D. in mathematics education at Arizona State University. At ASU, she worked with internationally recognized mathematics educator Patrick Thompson to redesign calculus curriculum and instruction to make the Fundamental Theorem of Calculus more central to the course. Participation in this project led to her major research interests with calculus students' mathematical thinking. Her research data found that many calculus students have a poor understanding of important middle school mathematical concepts related to graphs, measurement, and constant rate of change. These conceptual difficulties limited their understanding of calculus, and their rate of success in calculus courses.

Byerley is motivated to help graduate students in the department learn more about student thinking, to become better teachers. She is also very excited to call beautiful Colorado home and to get to know her colleagues in the department. You can find her in Weber 17B inside the calculus center.

Janet Oien

Janet Oien joined the Department of Mathematics as the Associate Director of the Calculus Center. She is excited about working with calculus undergraduate and graduate students at Colorado State. Oien is an alumni of CSU, earning both her BS and MS degrees. During that time, Oien was a research fellow for the NSF Grant for the Center on Learning and Teaching in the West (CLTWest). Following graduation, Oien enjoyed a 10 year career teaching in Poudre School District, most recently at Fort Collins High School. In addition to teaching, Oien served eight years as the representative for Colorado on the National Council of Teachers of Mathematics and also on the NCTM's Curriculum Resource Development team.

In her spare time, Oien enjoys traveling and experiencing new places and cultures, but her love for Colorado remains steadfast and strong. A native of Colorado, Oien was raised on the Western Slope and can suggest some great places to visit if you want to venture west of the Rockies. Oien's hobbies include hiking and Scandinavian food and their culture. Her favorite meal of the day is breakfast, there is nothing better than eggs and bacon! Stop by Weber 17A, and check out Oien's beautiful office space in the new calculus center and welcome her to the department.

Dr. Amit Patel

Dr. Amit Patel joins CSU as an Assistant Professor in the Department of Mathematics working in the area of Applied Topology. Patel received his Ph.D. in Computer Science from Duke University in 2010 under the supervision of Herbert Edelsbrunner. Since then, Patel has worked at INRIA-Saclay (2010-2011) under the supervision of Frédéric Chazal, Rutgers University (2011-2013) under the supervision of Konstantin Mischaikow, the Institute for Mathematics and its Applications (2013-2014) during the thematic year on applied topology, and the Institute for Advanced Study (2014-2016) under the supervision of Robert MacPherson. Patel is interested in topological information in data. He has been working on a theory of persistent homology for stratified maps.

Outside of mathematics, Patel enjoys running, yoga, weight lifting, and cooking. He looks forward to exploring the natural wonders of Colorado and nearby states. Please stop by his office Weber 219 and welcome him to the department.
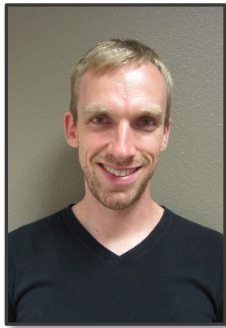
Dr. Mark Shoemaker

Dr. Mark Shoemaker joins the CSU Department of Mathematics as an Assistant Professor in Mathematics. Shoemaker received his Ph.D, from the University of Michigan in 2013. His thesis, *A mirror theorem for the mirror quintic*, was written under the advisement of Professor Yongbin Ruan. Before joining the department, Shoemaker was the Don H. Tucker Postdoctoral Fellow at the University of Utah. Shoemaker's research applies predictions and conjectures from mathematical physics to the field of algebraic geometry.

Shoemaker grew up in Fort Collins and, after 12 years away, is very glad to be returning to this area. He is looking forward to the outdoor activities in Colorado, particularly, rock climbing, skiing, hiking and camping. Please stop by his office Weber 112 and welcome him to the department.

Department promotion announced

Congratulations to Dr. Jiangguo (James) Liu on his promotion to full professor!

Jiangguo (James) Liu grew up in China, where he received his college education. He came to United States in 1997 to pursue graduate studies. He obtained a M.S. degree in 1999 and a Ph.D. degree in Mathematics in 2001, both from University of South Carolina. From January 2002 to August 2005, he was a Visiting Assistant Professor at Texas A&M University. He joined the CSU Department of Mathematics as an Assistant Professor in fall 2005.

Dr. Liu's research focuses on numerical methods for partial differential equations, in particular, flow and transport in porous media. He is also keen on efficient implementation of these methods and their applications to biological problems. He has published 40 research papers. His research is currently being supported by the National Science Foundation. Since 2011, he has been serving as an associate editor for the Journal of Computational and Applied Mathematics.

Since joining CSU, Dr. Liu has advised two Ph.D. students (Roberto Munoz-Alicea graduated in 2013, Farrah Sadre-Marandi in 2015) and additionally four master students. He is currently advising two Ph.D. students (Graham Harper and Zhuoran Wang).

During his stay in the Department of Mathematics, Dr. Liu has served as an organizer for Applied Math Seminar, a course coordinator for Math 340, a member of Undergraduate Committee, a member of Graduate Committee, and additionally a member of CSU ISTeC Research Advisory Committee. In fall 2010, Dr. Liu helped establish SIAM CSU Student Chapter. He is now a co-adviser for the Chapter. For Year 2017 and 2018, he will also serve as SIAM Central States Section President.

Colorado State University hosts the 38th annual Math Day Event

On November 3rd, 2016, the Colorado State University Lory Student Center was all abuzz with equations and furious calculating. But not from Rams. The factorial furor was from 314 high school students – from near and far – on campus for Math Day, an annual competitive mathematics event hosted by the College of Natural Sciences' Department of Mathematics.

This 38th annual math day event was fast-paced and frenetic, with students competing in an individual test in the morning, followed by a team-based, double-elimination tournament.

Students came from as far away as Rocky Ford, CO, Steamboat Springs, CO, and Gering, NE.

The goal of Math Day is not only to recognize excellence in mathematics achievement among regional high school students, but also to reinforce the department's relationships with high school math teachers

The event was funded by department funds, registration fees and generous donations by Hewlett Packard.

The Calculus Center grand opening

The Calculus Center grand opening was held on Friday, September 30. It was an all-day event full of activities and food. Things kicked off with guest colloquium speaker, Dr. Noah Finkelstein from the University of Colorado at Boulder. Dr. Finkelstein is a Professor in the Department of Physics and the Director of the Center for STEM Learning. The title of his talk, *Preserving the Promise of Higher Education: Our Critical Roles in Excellence and Access*, was opportune for the grand opening and was well attended.

Following the colloquium, folks adjourned to the Calculus Center for coffee and cookies and an opportunity to talk with Dr. Finkelstein. Conversations continued through the catered lunch and into the afternoon events. The grand opening events attracted people from all across campus. Faculty and staff from various departments stopped by as well as individuals from both the Provost's office and College of Natural Sciences Dean's office.

Afternoon events included booths and posters that highlighted prominent components of the Calculus Center, including student resources, data collection and research, and evidence-based teaching practices. Calculus Center staff facilitated and presented these pieces of the afternoon events. Special thanks to Janet Oien & Cameron Byerley and the Calculus Center GTAs (Codie Lewis, Alex McCleary, Catherine Read, Ben Sencindiver, Dustin Story, Tanner Strunk, and Scott Ziegler) for helping make the Calculus Center Grand Opening a truly successful event!

Mathematics welcomes a new graduate class

The Department of Mathematics welcomes sixteen new graduate students fall 2016.
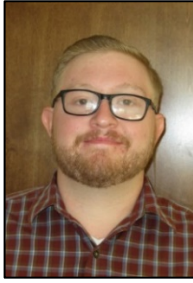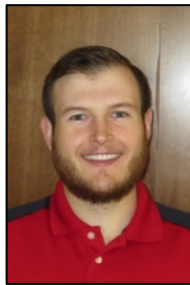
Zachary Adams
BA – University of Denver

Johnathan Bush
BA – University of Montana Missoula

Peter Christman
BS – Brigham Young University, Provo

Justin Eastman
BS - Millersville University of Pennsylvania

Levi Heath
BS – Northern Arizona University, Flagstaff

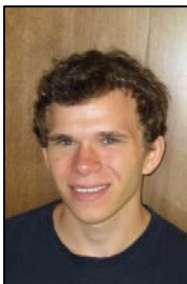**Daniel Jonas**
MS – University of Michigan Ann Arbor

Elliot Krause
BS –University of Wisconsin, Madison

Codie Lewis
BS – James Madison University Harrisonburg, VA

Connor Loken
BS – Virginia Military Institute Lexington, VA

Alexander McCleary
MS – Virginia Commonwealth University, Richmond VA

Jacob Mescher
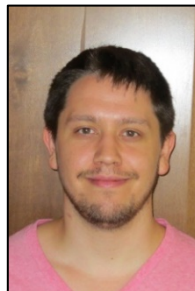BS – Texas State University San Marcos

Catherine Read
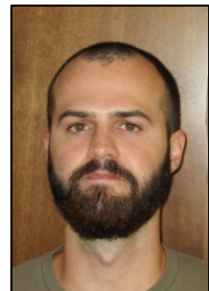BA - University of North Carolina, Asheville

Richard Sampera
BA – University of Washington Seattle

Dustin Story
BS – Northern Arizona University, Flagstaff

Tanner Strunk
BS – Oklahoma City University Oklahoma City

Scott Ziegler
BS - University of Kansas Lawrence

ALUMNI NEWS

Joseph Robertson

Joseph Robertson is an enrolled member of the Sisseton Wahpeton Oyate on the Lake Traverse Reservation in South Dakota and is a graduate of Colorado State University's Department of Mathematics (B.S., 2006).

Robertson received his Master's degree in Statistics (2014) and is currently a doctoral student at South Dakota State University.

Currently, he is pursuing a Ph.D. in Computational Science and Statistics and hopes to serve Indian Country with 21st century data solutions using data science.

His broader goal is the development of data science as a means to advance self-determination in regaining eroded sovereignty through the concept of *Indian Data Sovereignty* using computational statistics and spatial statistics.

Robertson currently runs an independent statistical consulting service designed at helping Tribal Governments better understand how to manage, collect, and store data for community comprehensive planning and economic development.

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