FALL 2017
NEWS from the Department of Mathematical Sciences
MONTANA STATE UNIVERSITY | College of LETTERS & SCIENCE
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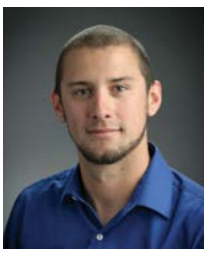
NEW MSU FOUNDATION FUND

Kenneth J. Tiahrt Fund

A special thank you to all who were involved in recognizing the contributions and talents of Kenneth Jerome Tiahrt (1935–2014) through the creation of the Kenneth J. Tiahrt Fund, established through the MSU Alumni Foundation. Professor Tiahrt joined the Department of Mathematics (now the Department of Mathematical Sciences) in 1967. For the next 27 years until he retired in 1994, Ken was a dedicated mentor and leader in the department as it expanded from its tradition of exceptional undergraduate and service teaching into graduate training through the PhD level, fundamental and applied research, innovative education and professional service. By the time Ken retired, the department was widely recognized in all those areas. Especially during his 16 years as the head of the department (1977–1993), Ken's energetic and imaginative guidance was well-suited to MSU as it successfully transitioned from an undergraduate college to a dynamic research institution.

Read more about Ken's contributions to our department at www.math.montana.edu/documents/misc/Tiahrt-Fund.pdf. More about the Tiahrt Fund is on the reverse of this newsletter.

KOPRIVA OUTSTANDING GRADUATE STUDENT FELLOWSHIP



Congratulations to Chris Barbour, a doctoral student in our Statistics program, for winning a Kopriva Outstanding Graduate Student Fellowship for 2017–2018. Each year, through MSU's College of Letters and Science, the Kopriva fund makes a fellowship award of up to $5000 to two outstanding graduate students. The award is intended to enhance the student's research, including funding for travel to meetings or for instruction, books, supplies and special research services. Chris's research consists of understanding current methodology used in the study of proteins in biological systems, with an emphasis on accounting for various forms of measurement error in measured proteins. Chris is working with his advisors, Dr. Mark Greenwood and Dr. Bibiana Bielekova of the National Institutes of Health, on problems related to biological processes present in Multiple Sclerosis patients.

MATH THE FOCUS OF PROVOST'S DISTINGUISHED LECTURE

The head of the Department of Mathematical Sciences, Beth Burroughs, PhD, delivered an address as part of MSU's Provost's Distinguished Lecturer Series this past January. Her talk, "Transcendence and Wisdom: Perspectives on Mathematics and the Preparation of Teachers," put research in mathematics teacher preparation and collaborations between the university and public school teachers in the spotlight.

PROMOTIONS

Mark Greenwood and Jennifer Luebeck were recently promoted to the rank of Professor. They were recognized at the University Promotion and Tenure Ceremony in May. Congratulations!

RETIRING FACULTY

We have recently extended well-wishes to our retiring professors, Steve Cherry, PhD, who retired this spring, and Jim Robison-Cox, PhD, who retired in 2016. Both Steve and Jim influenced and encouraged so many of our students with their statistical wisdom.

NCTM'S RESEARCH TO PRACTICE AWARDS

In April, mathematics education faculty members Jennifer Luebeck and Megan Wickstrom each won NCTM's Linking Research and Practice Outstanding Publication Award. Only three awards are given each year, one each for work at the elementary, middle and high school levels. The award recognizes publications that integrate research and practice in a way that highlights how teachers can use the results of that research in their classrooms. Jennie's award is for work with a graduate of our M.S. program, Lynette Grypp, for their paper in *The Mathematics Teacher*, "Rotating Solids and Flipping Instruction." Megan's award is for her collaborative work in a first grade classroom examining students' understanding of measurement.

Elizabeth (Beth) Burroughs, Jennifer Luebeck and Mark Greenwood at the University Tenure & Promotion Ceremony.

Luebeck (top) and Megan Wickstrom with NCTM president Matt Larson.

New faculty in the department

Ryan Grady, with a PhD from the University of Notre Dame, joins the mathematics research group after stints at Boston University and the Perimeter Institute for Theoretical Physics. His research program is (broadly) to study the geometry and topology of manifolds through techniques of quantum field theory (QFT) in a mathematically rigorous setting. In addition, Grady studies some fundamental connections between QFT, derived geometry and higher Lie theory.

Stacey Hancock has returned to her native Montana; she earned her Master's from MSU followed by her PhD in Statistics from Colorado State University in 2008. Hancock's research interests include statistics education, time series analysis and environmental statistics. Her primary research interests lie in statistics education. Currently, Stacey is exploring how students use metaphors and metonymies when learning statistical concepts related to sampling distributions and informal statistical inference. Additional research topics include time series analysis, specifically, change-point detection and statistical applications in ecology.

Andrew Hoegh also joins the statistics research group. He completed his PhD at Virginia Tech. Hoegh's research includes Bayesian Statistics, Statistical Ecology, Spatiotemporal Modeling, Computational Statistics, Sports Analytics and Applied Environmental and Ecological Studies.

Jing Qin received her PhD in Applied Mathematics from Case Western Reserve University in 2013. She comes to MSU after a visiting professorship at UCLA. Her research interests include variational image processing and analysis and its applications, compressive sensing-based image reconstruction, and numerical optimization and applied partial differential equations.

Dominique Zosso earned his doctorate from EPFL, Lausanne, Switzerland. His research interests are variational and PDE methods, and efficient algorithms to solve inverse problems in imaging, computer vision, and related machine learning applications. Zosso's research explores the commonalities between problems and methods in imaging on the one side, and data science and machine learning on the other side.

Department of Mathematical Sciences News

TEACHING AWARDS

Jennifer Green, PhD, won the College of Letters and Science Outstanding Teaching Award, in recognition of her teaching of graduate and undergraduate statistics, her curriculum development, and her leadership of the department's GTA training program.

Through the generosity of donors Bill and Donna Stannard, we are able to recognize excellent teaching in our department. This year's Dr. William A. Stannard Awards for Excellence:

Katherine McWalters Graduate Student Award for Teaching

Jerry Markman Undergraduate Mathematical Sciences Instruction

Laura Hildreth Graduate Mathematical Sciences Instruction

STUDENT AWARDS

We are so proud of our undergraduate and graduate students. Here are some of the awards that they received over the past academic year:

Pi Mu Epsilon Inductees
Peter Crawford-Kahrl, Tristan Anacker, Mitchell Black, Joseph Watkins, Kelsey Philipsek, Kylie Otis, Kelvin White, Casey Teska, Brittany Barnes, Wilson Britten, Barbara Selyem, Zachariah Popp, Katherine Chamberlain, Huafeng Zhang, Mark Poston, Morgan Comey, Kinsey Vavruska, Scott Tilton, Chelsea Strasheim, Will Dumm, Jolina Waldner, Megan Lewis and Amanda Johnson

Outstanding Graduating Seniors
Zachariah Popp, Zachary Owens, Barbara Selyem, Huafeng Zhang, Kelvin White, Casey Teska, Travis Kimm, Wilson Britten, Charlie Carpenter, Joseph Watkins, Morgan Comey, Jolina Waldner, Zachary Owens, Drew Gottman, Dakota Arthun, Casey Jacobson, Tristan Anacker, Julia Platt, Nicholas Rhines, Megan Lewis, Erin Sturman and Christian Stratton

Outstanding Graduating Seniors with Distinction
Zane Huttinga and Adam Holeman

Outstanding Scholars
Tarl Briggs, Megan Fink, Olivia Firth, Inge Perkins, Molly Baird, Katharine Sanderson, Samantha Ely, Katherine Chamberlain, Michael Zenz, Chloe Silvernagel, Will Dumm, Andrew Kaine, Mark Poston, Mik'haela Digan, Shengnan Zhou, Morgan Lynn, Mitchell Black, Victoria Easton, Margaret Cleaver, Mark Sargent, Angus Tomlinson, Tanna Cole, Brittany Barnes, Chelsea Strasheim, Scott Tilton, Sarah McKnight and Kelsey Philipsek

Lloyd and Virginia Walker Scholarship
Peter Crawford-Kahrl

Schmitt Family Mathematics Education Scholarship
Kinsey Vavruska, Amanda Johnson and Kylie Otis

Outstanding Graduate Teaching Assistants
Michaela Powell, Nnamdi Ezike, Justin Gomez, Elijah Meyer and Eric Fink

Outstanding Graduate Students
Michael Gengler, Christian Stratton, Dan Perry, Holt Bodish and Tan Tran

COMAP's Mathematical Contest in Modeling
- Sarah McKnight and Jerad Hoy, Meritorious Winners
- Caleb Christofferson and Adam Copeland, Meritorious Winners
- Adam Holeman, Mark Poston and Scotty Tilton, Honorable Mentions
- Ryan Hansen and Mikayla Cardin, Honorable Mentions

Award for Excellence: College of Letters & Science
Peter Crawford-Kahrl, Mentor Bree Cummins

Award for Excellence: Honors College
Zane Huttinga, Mentor Bree Cummins

TOPOLOGICAL AND GEOMETRIC METHODS CONFERENCE AT MSU

July 31 to August 4, 2017

David Ayala, PhD, and Ryan Grady, PhD, hosted the NSF-CBMS regional conference, Topological and Geometric Methods in Quantum Field Theory, from July 31 to August 4, 2017. The conference centered around lectures by Dan Freed (UT Austin) on the interaction of topology and geometry with physics. Particular topics included computations in stable homotopy and the classification of topological insulators, higher symmetries/gauge theories, and extended topological quantum field theories.

The conference was well-attended and accomplished the goal of providing an opportunity for in-depth examination of ideas.

DEPARTMENT OFFICE NEWS

We are happy to welcome our new business operations manager to the department, Stacie Rath. Our former office manager, Becky Van Zee, has moved across campus to Animal and Range Sciences (if you're on campus near the Animal Biosciences building, stop in and say hi!).

The Department of Mathematical Sciences at Montana State University uses gifts from its alumni, friends, faculty and retirees like you. **Thank you** for everything you do to keep the department running.

There are three opportunities we recommend for you to meet our greatest needs:

The Kenneth J. Tiahrt Fund
Dr. Ken Tiahrt taught at Montana State from 1967 to 1994, including 16 years as the Department Head. Ken had a great respect for the contributions of graduate teaching assistants (GTAs), non tenure-track faculty and staff and witnessed the increasingly critical role these individuals filled to meet instruction, research and outreach demands within the Department.

Your gift will honor Ken's vision to support GTAs, non-tenure track faculty and non-faculty staff in the Department to fulfill their aspirations via scholarships; emergency support for graduate students; and support for professional development costs such as travel, conference attendance and publication resources.

Mathematical Sciences General Scholarship
The current cost of in-state tuition and fees at Montana State is estimated to be $6,890 per year, not including the cost of room and board, books and supplies, which total more than $17,000 per year.

Your gift can help a student offset these costs. By supporting the Department's scholarship pool, you will directly impact an undergraduate student majoring in the Department with their tuition for the 2017–2018 academic year.

John W. Hurst Faculty Excellence Fund
Great instruction requires additional resources for our faculty to continue to grow and develop as teachers and scholars. Your gift will help us recruit and retain great faculty through release time, summer compensation, and financial support for those seeking professional travel and visiting lecturers.

www.msuaf.org/give-mathematics

MSU PHOTOS BY KELLY GORHAM AND SEPP JANNOTTA, EXCEPT PROMOTION AND AWARD CEREMONY PICTURES.