



Distinguished Teaching Scholar Retires



Professor Paul Kennedy, University Distinguished Teaching Scholar, will officially retire from Colorado State University after 15 years of service. Upon completion of his transitional appointment in the 2018 spring semester, Kennedy will relocate with his family to Chattanooga, Tennessee.

His 43-year career began with 10 years as a secondary mathematics teacher in Texas public schools where he largely taught in high-need schools. Thereafter, Kennedy spent 17 years as a tenured, full professor in the Department of Mathematics at Southwest Texas State University (now Texas State University). In addition, he simultaneously taught for 17 summers at the University of Notre Dame.

Professor Kennedy's focus upon being hired at CSU, in part, was to redesign the pre-calculus program with entirely new curricula. Upon securing a \$300,000 internal grant, he was instrumental in designing the remodel of the education area in the historic Weber building to what is now the PACE Program (Paced Algebra to Calculus electronically), serving more than 5,000 mathematics students annually.

His education and advising chiefly focused on pre-service secondary mathematics teachers. As co-principal investigator of the Robert Noyce Teacher Scholarship Program, a National Science Foundation-funded program designed to recruit and prepare talented STEM (science, technology, engineering, and mathematics) students for a career in middle and high school teaching, he has been most active recruiting Noyce Scholars from the mathematics department.

Professor Kennedy has received numerous teaching awards: the College of Natural Science award, the award for excellence at Notre Dame's graduate teaching program, and in 2008, Kennedy was named a CSU University Distinguished Teaching Scholar, a title held by no more than 12 CSU faculty at any given time, recognizing the most outstanding teachers and educators at CSU.

Since moving to Fort Collins in 2000, Kennedy has advised hundreds of students in our Mathematics Education concentration. Most of these students have continued into the teaching profession in the state of Colorado, and when you think of the number of students that each teacher affects yearly, you quickly get a sense of the hundreds of thousands of Colorado pupils Kennedy has impacted.



MESSAGE FROM THE CHAIR



2017 was no zephyr. It came barreling through here like the winds blasting out of the Poudre Canyon.

Our faculty continue to win accolades - read about Rachel Pries' selection as a Fellow of the American Mathematical Society, and Mary Pilgrim's 2017 Rocky

Mountain Section Early Career Teaching award.

MacArthur Genius Grant recipient, Maria Chudnovsky, gave three invigorating Magnus lectures on combinatorics and graph theory in October; her public lecture was standing room only!

Chris Peterson led the charge in running Math Day, which had its largest participation ever. Check out the full article to see the changes to the program.

James Wilson was promoted to associate professor.

Along the way, our postdoctoral research program took flight with three new departmental postdocs as well as a host of research funded postdocs, bringing our total to 11! (The symbol "!" is here intended for emphasis, not to suggest an astronomical number of post-docs!)

Much of what we do could not be accomplished without the fantastic support of the friends of the Department of Mathematics, and with our gratitude, we wish you all the best for 2018!

Ken McLaughlin
Professor and Chair

DEPARTMENT HIGHLIGHTS



2017 Arne Magnus Lecture Series

World-renowned mathematician Maria Chudnovsky, a MacArthur Fellow and professor at Princeton University, gave a technical public lecture about her work on graph theory at Colorado State University in October.

The lecture, titled "Parties, Doughnuts, and Coloring," was hosted by CSU's Department of Mathematics as part of its 2017 Arne Magnus Lecture Series.

Chudnovsky is famous for her work in the mathematics of connections and relations. The field has a variety of applications, including web traffic routing and linguistic studies. In her 2003 thesis, Chudnovsky contributed to proving the strong perfect graph theorem, a well-known mathematics problem. She went on to win a number of prestigious awards, including a Clay Research Fellowship from the Clay Mathematics Institute and the 2009 Delbert Ray Fulker-son Prize presented by the American Mathematical Society. In 2012, she was named a MacArthur "Genius" Fellow by the MacArthur Foundation.

Chudnovsky's public lecture introduced graph theory to a general audience, from its classical problems to current research. She also gave two advanced lectures for faculty and graduate students.

The Magnus Lectures are delivered annually at the Department of Mathematics in honor of Arne Magnus, our colleague and friend for 25 years. The department invites outstanding researchers and expositors to campus to deliver a series of lectures at a range of levels for the campus, the college, and our department.

The Arne Magnus Lecture Fund was established in 1992 as a memorial to Professor Emeritus Arne Magnus. Contributions to the Magnus Fund are greatly appreciated and may be made through the CSU Foundation.

To learn more or to make a gift, click [here](#).

Associate Professor and CSU alum, Mary Pilgrim receives Early Career Teaching Award



In April of 2017, the 100th anniversary meeting of the Mathematical Association of America's (MAA) Rocky Mountain Section was held in Pueblo, Colorado. The Rocky Mountain Section of MAA annually offers two teaching awards, including the Early Career Teaching Award and the Burton W. Jones Distinguished Teaching Award. Colorado State University has close ties to both individuals receiving these prestigious awards at this year's conference.

The Rocky Mountain Section of MAA's first Early Career Teaching Award for Excellence in Teaching Mathematics was awarded to Assistant Professor Mary Pilgrim. Pilgrim is a 2010 Colorado State University graduate with a Ph.D. in education and human resource studies with interdisciplinary specialization in mathematics education, as well as a M.S. in mathematics.

Pilgrim's teaching mission is ambitious: to improve the performance and learning outcomes in mathematics of all Colorado State University students. Her research objectives expand on this: to increase retention in science, technology, engineering and mathematics (STEM) majors, nationwide. The Calculus Center, of which she was a founding co-director, has improved the experience of thousands of CSU calculus students since

opening in 2016. Currently, Pilgrim is co-principal investigator on a National Science Foundation grant with the University of Colorado. The grant focuses on improving undergraduate STEM education through the departmental action team model. She is also a faculty mentor for a post-doctoral fellow. In addition, each summer, Pilgrim works at the Institute for Advanced Studies' Park City Mathematics Institute in Utah, as a Professional Development Facilitator, helping to run the Teacher Leadership Program for K-12 educators.

The Rocky Mountain Section of the MAA Early Career Teaching Award is given to instructors at the college level with a doctorate degree, who have held a full-time faculty appointment in a department of mathematical sciences for two to seven years. Nominees must demonstrate excellence in the classroom and have an influence outside of the classroom as well. This award is an excellent opportunity to not only recognize excellent teachers in mathematics, but also to recognize the important contributions they can make early in their careers.

Diane Davis, a CSU alum, received the Burton W. Jones Distinguished Teaching Award at the conference. Davis was a 2007 Ph.D. graduate of Colorado State University in the Department of Mathematics. Her Ph.D. advisor was Holger Kley. Currently, Davis is an associate professor of mathematics at Metro State University in Denver.

Rachel Pries receives national honor



Asking Rachel Pries to choose her favorite prime number would be like asking someone to choose between their pets or their children — she loves them all so. It's this deep-seated passion for the fundamental theory of numbers that has propelled Pries, professor in the Department of Mathematics at Colorado State University, to the title of Fellow of the American Mathematical Society. The society named Pries among its 63 newest fellows in 2017.

"I love my work, and I can do the work that I love — that's such an amazing thing to be able to say about your life," said Pries, who joined the CSU faculty in 2003.

As an American Mathematical Society inductee, Pries was honored "for contributions to arithmetic geometry, and for service to the mathematical community."

Pries's research is a hybrid of number theory and algebraic geometry. Broadly, she studies shapes and symmetries, and the algebraic equations that describe those shapes. In particular, she studies sets of curves, or what's called moduli spaces of curves. "You can think about the geometry of an equation, but you can also think about the geometry of the moduli space," Pries said. "It's like a whole universe that's keeping track of these different equations."

She sees numbers not as complex or real — as most people do — but more like numbers on a clock, where after 12, you're back at 0 again. This is known as modular arithmetic.

Modular arithmetic falls under number theory, which includes the study of prime numbers and their properties. A prime number is an integer greater than 1 with no positive divisors other than 1 and itself. So that's 2, 3, 5, 7, 11, 13, 17, etc. (According to Euclid, there are infinitely many prime numbers.)

The AMS citation also honors Pries' work in bringing women in mathematics into closer partnership across the world. In 2008, she was instrumental in launching a community called Women in Number Theory that organizes scholars into research collaborations through conferences and other events. The group has evolved into 200 to 300 women working together to make breakthroughs in the field of number theory.

"For me the investment was huge, but I also feel that I've benefitted enormously both from making friends, and by being able to develop new research directions I would not have been able to do individually," Pries said of the effort.

Pries' formal induction ceremony was this winter at the Joint Mathematics Meetings in San Diego.

In Memory: Howard Frisinger II



Long-time Colorado State University Professor Emeritus H. Howard Frisinger II passed away in Fort Collins on January 5, 2018. Professor Frisinger was a respected faculty member of the Department of Mathematics for 35 years. He began his career in the fall of 1964 and retired in 1999. While in the department, Professor Frisinger's expertise included the history of mathematics and meteorology, math education, and geometry. As the director of the undergraduate program, he mentored many mathematics majors and minors and was actively involved on a number of graduate student committees for mathematics and atmospheric science. To read his complete obituary click [here](#).

Math Day 2017 saw exciting changes

In November, CSU's Math Day participants experienced exciting changes! The primary focus of the Math Day competition was modified to include a broader exploration and representation of what mathematics has to offer. The PROBE (Problems Requiring Original and Brilliant Effort) exam was retired and replaced with the math day public lecture series and a mathematics fair.

Professor Matt Kahle, from The Ohio State University, was the keynote speaker for the inaugural math day public lecture. Professor Kahle earned his B.S. (1999) and M.S. (2001) from Colorado State University, and his Ph.D. from the University of Washington in 2007. Kahle regaled the audience with a dynamic explanation of why we might want to consider Archimedes the "Batman" of ancient Greece.

The 2017 mathematics fair received strong participation and interest. Components of the fair included mathematically themed puzzles and games, a section on constructions, devices, models, and art, as well as a mathematically themed poster session. The poster session was a huge success among students from the 42 participating high schools. Cash prizes, donated by an anonymous donor, were awarded to post-

ers in three categories: mathematical models and art, original mathematics research, and mathematical ideas, history, and education innovations.

This year's college-bowl tournament saw Fairview High School team A beat Fairview High School team B (both from Boulder) for the championship trophy in the large school division. Ridgeview Classical Schools (Fort Collins) took home the championship trophy in the small school division after defeating Compass Montessori (Golden).

All 12 students in the final tournament round were also entered into a drawing for one of two ZBook Studio Mobile Workstations, donated by HP, Inc. Students from Fairview High School and Compass Montessori School were this year's winners. We thank HP Inc. for their continued support for this annual event; it is greatly appreciated.

The goal of Math Day is not only to recognize excellence in mathematics achievement among regional high school students, but also to foster additional connections in the exciting science field of mathematics and its related areas within the College of Natural Sciences.

The Department of Mathematics receives a generous gift

A recent gift from Todd Wikelski and Professor Ellen Fisher, in memory of Todd's parents, Sue and Karl Wikelski, was made to the Department of Mathematics in support of the Math Circles program. This generous gift will enable our department to expand the Math Circles program.

Math Circles is a week-long summer day camp for students entering grades 8-9. Math Circles' focus is to ignite an interest in mathematics that continues throughout high school and college. We also strive to inspire female youth, who are often underrepresented in mathematics and science at all levels of education, to pursue careers in these fields of study.

SUPPORT THE DEPARTMENT

Your support of the department is incredibly valuable. Please consider making a difference to today's students, faculty, facilities, and programs—at whatever level is right for you. Thank you!

For more information on giving, contact Simone Clasen, Executive Director of Development and Operations
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