COLORADO STATE UNIVERSITY

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DEPARTMENT OF MATHEMATICS NEWSLETTER

PROFESSOR JIM THOMAS RETIRES AFTER 38 YEARS OF SERVICE

Professor Thomas

Professor James Thomas retired from the CSU Department of Mathematics on December 31, 2009. Professor Thomas joined CSU in the fall of 1972 as an Associate Professor after spending 5 years at the University of Wyoming. He was promoted to Full Professor in 1976.

During his career at CSU, Professor Thomas published over 45 papers. His research interest was in hydrodynamics with an emphasis on computational problems, bifurcation problems, and general applied mathematics. Over the years, he received research funding from NSF, NASA, NIH, AFOSR, DOE, the Associated Western Universities, and the Institute for Computational Studies. These projects included computational aerodynamics, simulation of in situ oil shale retort, simulation of chronic wasting disease, and mesh refinement schemes for the numerical solution of partial differential equations. In 1994, Professor Thomas received a NSF grant that led to the creation of a computer laboratory for calculus instruction. In addition, Professor Thomas published three books in his career: in 1973, co-authored with Ann M. Thomas, *Finite Mathematics*; in 1995, *Numerical Partial Differential Equations: Finite Difference Methods*; in 1999, *Numerical Partial Differential Equations: Conservation Laws and Elliptic Equations*. Professor Thomas recently wrote and posted an online textbook entitled *Advanced Calculus of One Variable*.

Professor Thomas taught a wide range of undergraduate and graduate courses over the years, including partial differential equations, analysis, functional analysis, and numerical analysis. Additionally, he developed and taught courses in continuum mechanics, vector algorithms for supercomputing, numerical partial differential equations, theoretical finite differences, numerical solutions of transonic flow problems, computational fluid dynamics, and finite elements. Professor Thomas has been a course coordinator for a number of courses, most recently in MATH 141 (2000-03), MATH 160 (2000-02), and MATH 161 (1999-2006). Professor Thomas served as the department Associate Chair from 2000-07, heading the undergraduate and curriculum committees. In 2002, he served as interim chair for the department.

Professor Thomas mentored an exceptional number of graduate students, including numerous MS candidates and a total of 13 PhD graduates. As Associate Chair, Professor Thomas influenced a number of students to declare mathematics as their primary and secondary majors, significantly increasing the department's mathematics majors. Between 2000-07, Professor Thomas advised approximately 50-60 undergraduate students each year. In 2005, he was awarded the College of Natural Sciences Advising Award. In 2006, he was honored with a nomination for the Jack E. Cermak Advising Award for Undergraduates at Colorado State. Between 2000-07, Professor Thomas was the Key Advisor for the Teacher Education Council. He developed, together with his successor as undergraduate director, the Mathematics Honors Scholar program, approved in 2009 for our most talented undergraduate majors.

Professor Thomas has been a major contributing factor to the Department of Mathematics over the past 38 years. His dedication as a student mentor, an active researcher, and an instructor is worthy of praise by his peers, colleagues, and former students.

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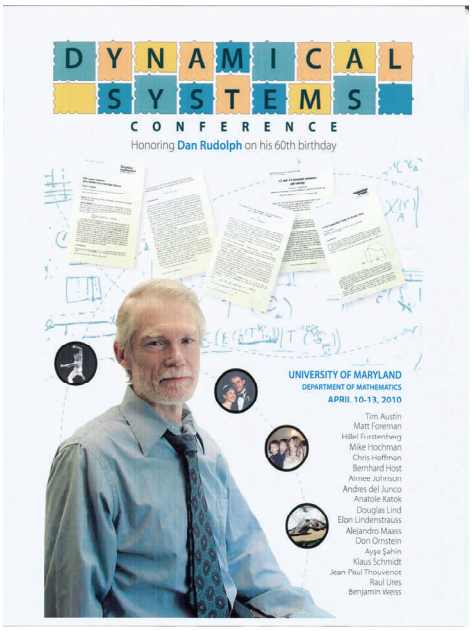
SPECIAL RECOGNITION

Congratulations to Professor Jennifer Mueller for her recent appointment as Program Director of the SIAM Activity Group on Imaging Science. This SIAG/IS 2010 term runs from Jan. 1—Dec. 31.

Congratulations to Professor Simon Tavener for his election to a three-year term of the AMS Editorial Boards Committee. This group is responsible for staffing the editorial boards of the Society and make recommendations for almost all the editorial boards of the Society.

UNIVERSITY OF MARYLAND DYNAMICAL SYSTEMS CONFERENCE Honoring the 60th Birthday of Dan Rudolph



The Department of Mathematics at the University of Maryland, College Park, is proud to be honoring Professor Daniel Rudolph on this 60th birthday with a Dynamical Systems and Related Topics workshop scheduled for April 10 -13, 2010. This workshop has been hosted each fall since 1991 by Penn State University and each spring since 1992 by the University of Maryland, and is jointly sponsored by the two institutes. The University of Maryland meeting is also supported by the National Science Foundation.

The speakers will include: Tim Austin, Hillel Furstenberg, Mike Hockman, Chris Hoffman, Bernard Host, Aimee Johnson, Andres del Junco, Anatole Katok, Douglas Lind, Elon Linder Strauss, Alejandro Maass, Don Ornstein, Ayse Sahin, Klaus Schmidt, Jean Paul Thouvenot, Raul Ures and Benjamin Weiss. There is also a growing list of participants.

For poster: http://www.math.umd.edu/research/dynamics/conferences/md10/DanPosterFinalLoRes.pdf

For conference details :http://www.math.umd.edu/research/dynamics/conferences/md10/

DR. PENTTILA EMPOWERMENT SERIES SPEAKER NATIVE AMERICAN CULTURAL EVENT

Professor Penttila

Dr. Timothy Penttila, Mathematics Department faculty member, was Acción's fall semester Empowerment Series speaker. In collaboration with the Native American Cultural Center, and in recognition of contributions of American Indigenous peoples, Acción presented Dr. Penttila, who spoke on the topic of contributions made by Native Americans entitled, *Ancient Mesoamerican Mathematics—Undervalued in the Light of Hispanic Transmission of Arab Knowledge to Europe.* Dr. Penttila discussed the influence of the indigenous American peoples on modern day world civilizations. In discussing the three great ancient civilizations (Aztecs, Maya and Inca), Dr. Penttila shared that the positional notation system for numbers was first invented in the Americas (although, with a different base from that used today, 20 rather than 10), but is usually attributed as first discovered by the Hindus of India, who in fact independently invented place value notation with base 10 a number of centuries after the invention in Central America. Under Spanish colonial rule of the Mayan area (especially the Yucatan), there was a mass destruction of Mayan codices (with only 4 surviving from many hundreds), which led to loss of knowledge of the past, only recovered in the last century. The knowledge of Hindu decimal arithmetic was transmitted to the rest of Europe before the discovery of the Americas, also by the Spanish, through translations from the Arabic in Toledo in the 12th century, after the reconquest of Toledo in 1085 by Alfonso VI of Castile, who ended over 300 years of Arab rule.

FALL 2009
NEW MATHEMATICS GRANT AWARDS

Primary PI	Co-PI	Sponsor	Title	Amount
Cavalieri, Renzo		National Science Foundation	*WAGS* *Western Algebraic Geometry Symposium*	$26,470
Putkaradze, Vakhtang		National Science Foundation	*Geometric Mechanics of Charged Ribbons*	$244,114

MEET DR. EUN-JU CHEON, VISTING SCHOLAR

Arriving in the Fall 2009, Dr. Eun-Ju Cheon is visiting the department for a period of two years as a visiting scholar working with Dr. Anton Betten. Dr. Cheon completed her Ph.D. at Geongsang National University in Korea, followed by a Post Doctoral Fellowship in Osaka, Japan. Dr. Choen is being supported by her grant from Korea. Her research work is in optimal linear codes and related areas in finite geometry. She is fluent in Korean and Japanese, and her English is improving as well. During her stay at Colorado State, she plans to collaborate with peers and hopes to teach a course. The latter would be a great experience for her, since Korea is now making a big step towards emphasizing English in the classroom. Dr. Choen and Dr. Betten are putting together a workshop on algebraic geometry and coding theory in the first week of August 2010. The goal of this workshop is to bring people from different fields together and encourage them to learn about other disciplines. People working in discrete mathematics need to learn more geometry, and people in geometry might benefit from hearing more about algorithms. It is expected to see a number of Japanese and Korean mathematicians working in either of the two fields (or in both).

Apart from her professional activities, Dr. Cheon seems to enjoy being in Colorado. The attached picture shows her first experience with `real' snow during a trip to Rocky Mountain National Park.

DEPARTMENT ALUMNI NEWS – DR. CURTIS D. BENNETT

The Department of Mathematics is pleased to announce that Dr. Curtis D. Bennett has received The Mathematical Association of America's Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. Dr. Bennett received his undergraduate degree from Colorado State. Interim Provost Rick Miranda was considered a close mentor and admired instructor of Dr. Bennett's while at CSU. Dr. Bennett is currently chair of the Department of Mathematics at Loyola Marymount University in Los Angeles. Dr. Bennett's interests are in group theory, especially its application to algebraic geometry and combinatorics, and in mathematics education. Dr. Bennett received his Ph.D. and M.S. from the University of Chicago in 1990 and 1986, respectively, and his B.S. from Colorado State University in 1985.

In 1991, the MAA instituted awards for Distinguished College or University Teaching of Mathematics in order to honor college or university teachers who have been widely recognized as extraordinarily successful and whose teaching effectiveness has been shown to have had influence beyond their own institutions. In 1993, the MAA Board of Governors renamed the award to honor Deborah and Franklin Tepper Haimo. Each year at most, three college or university teachers are honored with this national award and receive $1000 and a certificate of recognition from the MAA. Typically all are selected from the recipients of MAA section teaching awards but there is a provision that one of the winners may be selected from another source.

2009 PhD & MS MATHEMATICS GRADUATES AT COLORADO STATE UNIVERSITY

Fall 2009	ADVISOR	DEGREE/THESIS TITLE	PRESENT EMPLOYER
Natalia Cordova	Michael Kirby	(MS) Classification of EEG data	Research Scientist at Princeton's Neuroscience Institute
Christian Hampson	Jeff Achter	(PhD) Characteristics of Certain Families of Random Graphs	Federal Government
Bethany Springer	Dan Rudolph	(MS) Horocycles are Loosely Bernoulli	PhD, Mathematics at CSU
Lori Ziegelmeier	Michael Kirby Chris Peterson	(MS) A colorful world: techniques for quantizing color space in natural imagery	PhD, Mathematics at CSU

Summer 2009	ADVISOR	DEGREE/THESIS TITLE	PRESENT EMPLOYER
Bradley Baker	Paul Kennedy	(MS) Analyzing the Effectiveness of the Gateway Exam and Other Variables to Predict Success in Math Courses at Colorado State University	MA, English at CSU
Troy Butler	Don Estep	(PhD) Computational Measure Theoretic Approach to Inverse Sensitivity Analysis: Methods and Analysis	PostDoc, Institute for Computational Engineering and Sciences at the University of Texas, Austin
Megan Buzby	Don Estep	(PhD) Short time analysis of deterministic ODE solutions and the expected value of a corresponding birth-death process	Assistant Professor, University of Alaska, Southeast
Sarah Hamilton	Jennifer Mueller	(MS) Simulation of Voltages on Electrodes for the 2-D EIT forward admittivity problem by the Continuum and Complete Electrode Models	PhD, Mathematics at CSU
Eric Holt	Dan Rudolph	(PhD) A Ratio Ergodic Theorem on Borel actions of Z^d and R^d	Assistant Professor, Sul Ross State University
Timothy McCoy	Chris Peterson Dan Bates	(MS) Deducing Exactness From Inexactness: Recovering Ideal Generators From Approximations of Generic Points	PhD, Notre Dame
Alan von Herrmann	Jennifer Mueller	(PhD) Properties of the Reconstruction Algorithm and Associated Scattering Transform for Admittivities in the Plane	Assistant Professor, Adrian College
Brian Wilson	Don Estep Simon Tavener	(MS) Adaptivity and Error Estimation Studies in ARIA and ENCORE	PhD, Mathematics at CSU

Spring 2009	ADVISOR	DEGREE/THESIS TITLE	PRESENT EMPLOYER
Jutta Bikowski	Jennifer Mueller	(PhD) Electrical Impedance Tomography Reconstructions in Two and Three Dimensions; Form Calderon to Direct Methods	N/A
Daniel Brake	Vakhtang Putkaradze	(MS) Simulation and Irreversibility in fluid suspended particle interactions	PhD, Mathematics at CSU
Andrew Hudson	Tim Penttila	(MS) Translation planes of order q4	N/A
Lucas Krakow	Edwin Chong	(MS) Sensor Resource Management via Partially Observable Markov Decision Processes	PhD, ECE at CSU
Justin Marks	Chris Peterson Michael Kirby	(MS) Discriminative Canonical Correlations: An Offspring of Linear Discriminant Analysis	PhD, Mathematics at CSU
Daniel Reinholz	Ken Klopfenstein	(MS) An Analysis of Factors Affecting Student Success in MATH 160 Calculus for Physical Scientists I	PhD, U.C. Berkeley
Dustin Ross	Jeanne Duflot	(MS) The Main Theorem of P.A. Smith	PhD, Mathematics at CSU
Yang Zou	Iuliana Oprea Colleen Webb	(MS) Evolution of Quantitative Traits with Immigration	PhD, Mathematics at CSU

COLLEGE OF NATURAL SCIENCES
Attends National SACNAS Conference

The CNS had 15 student participants along with two advisors from CSU-SACNAS attend the annual conference held in Dallas, Texas on October 15-18, 2009. The CSU-SACNAS chapter was awarded the Role Model Chapter of the Year at this national conference. Each year, the SACNAS Chapter Committee honors a number of chapters for their outstanding level of achievement in public service, mentoring, leadership, and/or community outreach. This is the third year in a row that the CSU-SACNAS chapter has won this coveted award.

Two CSU-SACNAS members also won the poster presentation awards in their disciplines. Andreea Erciulescu, a junior mathematics major in Math Information, received an award for her undergraduate research in mathematics. Erciulescu and her advisor, Alexander Hulpke, worked on an algorithm which solves a kind of puzzle known as Kakuro on the computer. Kakuro puzzles are NP-complete (Nondeterministic Polynomial time), that means solving them is "as difficult as possible" within a large class of problems. Such puzzles therefore are much harder than the similarly looking Sudoku puzzles. Andreea's approach considers the problem first as a linear problem over the integers and then uses techniques from combinatorial optimization to obtain small coefficients. A final combinatorial search eliminates duplicate entries. Upon graduation, Erciulescu plans to pursue a MS in mathematics.

Juan Martinez, a junior chemistry major, also won in his discipline.

SACNAS CSU CHAPTER

THE CAMPAIGN FOR Colorado State University

Colorado State University students and faculty embody a spirit of service and a passion for innovation. Our alumni and friends exemplify the value of relationships and tradition. As the state's land-grant University, we honor our history and responsibility to provide access to excellent public higher education. The Campaign for Colorado State University represents a vote of confidence in everything we do, everything our University stands for. This $500 million campaign increases financial support for students and faculty. It strengthens learning and research experiences. It improves and expands facilities for our growing campus community. The campaign challenges all those who believe in CSU and its mission to help secure its future. *Your gifts allow us to open doors, change lives, and transform our world.*

Support Colorado State today...
GIVE A GIFT
Help CSU today for a better tomorrow.

To complete a gift form, go to:
http://www.campaign.colostate.edu/

CSU CELEBRATES 140 YEARS WITH FOUNDERS DAY

FOUNDERS DAY 1870

On February 11, 1870, Colorado Territorial Gov. Edward McCook signed the Colorado Morrill Act establishing the State Agricultural College in Fort Collins. On February 11, 2010 Colorado State will honor the creation of the institution, the values that have sustained it, and its mission of service through teaching, research and engagement with a Founders Day celebration, with events at the State Capitol and on campus in Fort Collins. Beginning at 8 a.m., there will be a legislative reception, with the CSU 30-member choir performing on the third floor rotunda of the Capitol for both the House and Senate prior to roll call. Several lawmakers will present a bill in honor of CSU Founders Day, which will be read on both the House and Senate floors. The Founders Day ceremony and reception on campus begins at 1:15 p.m. at the University Club and Cherokee Park Ballroom at the LSC followed by a 140th Birthday Celebration on the Plaza. This event will feature Cam the Ram, the CSU Pep Band, giveaways and treats and is open to the public.

CSU has played an essential role in the development of Colorado. The first graduating class in 1884 had just three students. Today, Colorado State's Fort Collins campus today has an enrollment of over 25,000 undergraduate, graduate, and doctoral students. Over 220,000 degrees have been awarded by Colorado State University System.