

DEPARTMENT OF MATHEMATICS NEWSLETTER

THIS ISSUE IS DEDICATED TO  
EMERITUS PROFESSOR ROBERT A. LIEBLER

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SPECIAL RECOGNITION

Faculty, emeriti faculty, staff, and graduate students are invited to the inaugurations of Joseph B. Blake as first sole Chancellor of the CSU system and Anthony A. Frank as 14th President of Colorado State University on Thursday, September 17, 2009 beginning at 11:30am on the CSU Oval.

Please join the University community for a picnic lunch on the Oval following the ceremony.



Robert A. Liebler

Professor Robert A. Liebler, age 64, died while hiking on Saturday, July 18, 2009 in Palm Springs, CA, ending a 37 year career at Colorado State University. Dr. Liebler started his career at CSU in 1972 and was a long-term, dedicated professor in the Mathematics Department who achieved considerable national and international recognition.

Robert A. Liebler received his BS, MA, and PhD degrees from the University of Michigan. Professor Liebler joined the Department of Mathematics at Colorado State University in the fall of 1972 and was eventually promoted to Full Professor in 1980. Professor Liebler has held interim visiting positions at University of Oregon, The Ohio State University, University of Wyoming and UC-Berkley as well as in The University of Western Australia, Perth, University of Oxford, England, Braunschweig University of Technical University, Germany and the National Technical University, Singapore.

Professor Liebler's research interests centered on the application of representation theory to finite geometry, combinatorics, and coding theory. He was a pioneer of the theory of difference sets in non-abelian groups (particular

ly in the 1990's with his student, Ken Smith). His 1982 *Transactions of the American Mathematical Society* paper with Kantor formed a major part of the monumental classification of rank three permutation groups. More recently, he made the first-ever contributions to the theoretical analysis of the performance of low-density parity-check codes in communications theory and, in a paper to appear posthumously in the Proceedings of the American Mathematical Society, a fundamental advance in the structural classification of projective planes.

Professor Liebler was the main organizer of the Rocky Mountain Algebraic Combinatorics Seminar which was a joint venture which includes CSU, UC at Denver and University of Wyoming. This collaboration began in 1985, building on a CSU-UWYO seminar that dates back to the mid-70's and it has been meeting discretely since then.

In 2003, Professor Liebler published a textbook for MATH 229 entitled *Basic Matrix Algebra with Algorithms and Applications*. He has also published over 30 research publications and was a national and international

speaker throughout his career. While at CSU, he mentored 11 MS graduate students and 11 PhD graduate students. Professor Liebler taught a wide range of undergraduate and graduate courses and played a vital role in the department's instructional program, including serving as Course Coordinator for MATH 229 and teaching Honors sections of MATH 261. He also played an active role in the coordination of the annual Math Day event. Professor Liebler also participated on a number of departmental committees including the curriculum, executive, graduate and undergraduate committees as well as the department review committee and from 1977-1983, sponsored the William Lowell Putnam competition. He also served on the University's Faculty Council, Committees on Libraries, and Benefits Committee. Professor Liebler served a term on the Colorado Commission on Higher Education in 1987-1988 and was a long-time member of the American Mathematical Society.

Visit the Robert Liebler's memorial website at: <http://www.math.colostate.edu/~betten/BOB/bob.html>

# 2009 NEW DEPARTMENT GRANT AWARDS

Primary PI	Co-PI	Sponsor	Title	Amount
JEFFREY ACHTER	NONE	DOD-NSA-National Security Agency	2009 Western Number Theory Conference	\$9,850
DANIEL BATES	NONE	NSF-Nat'l Science Foundation MPS-Mathematical & Physical Sciences	Reality, Exactness, and Computation in Numerical Algebraic Geometry	\$159,601
RANDALL BOONE	SIMON TAVENER JENNIFER HOETING MICHAEL ANTOLIN	NSF-Nat'l Science Foundation	Hierachical Bayesian Modeling of Disease Dynamics: A Case Example Using Chronic Wasting Disease	\$2,401,881
DONALD ESTEP	NONE	DOD-DRTA Defense Threat Reduction Agency	A Posteriori Error Analysis and Uncertainty Quantification for Adaptive Multi-scale Operator Decomposition Methods for Multiphysics Problems; 2009-2012	\$432,000
DONALD ESTEP	NONE	University of California Lawrence Livermore National Laboratory	A Priori and A Posteriori Analysis of Smoothed Particle Hydrodynamics- Finite Element Methods for Pore-Scale; 2009	\$30,894
DONALD ESTEP	NONE	Department of Energy	Collaborative Proposal: Transforming How Climate Systems Models are Used: A Global, Multi-Resolution Approach to Regional Ocean Modeling; 2009-2011	\$660,500 \$226,000 (CSU portion)
MICHAEL KIRBY	CHRISTOPHER GITTENS	NSF-Nat'l Science Foundation	Mathematical Algorithms for Characterizing Spectral Signatures of Chemical and Biological Agents	NA
JAMES LIU	NONE	NSF-Nat'l Science Foundation	New Techniques in Characteristic Finite Element Methods	\$128,366
IULIANA OPREA	QIANG WANG SIMON TAVENER JAMES LIU	NSF-Nat'l Science Foundation	Workshop on "Mathematical Modeling and Computer Simulations for Soft Materials"	\$24, 281
CHRIS PETERSON	NONE	NSF-Nat'l Science Foundation	Collaboration Research: Algebraic Geometry of Tensor	NA
DANIEL RUDOLPH	NONE	NSF-Nat'l Science Foundation MPS-Mathematical & Physical Sciences	Pingree Park Dynamics Workshop	\$14,600
YONGCHENG ZHOU	MICHAEL ELLIOTT	Alliance for Sustainable Energy-NREL-CRS	CRSP registration and local travel or organizing mini-symposium on eletrodifusion SIAM 2009 Conference	\$3,000

# 2009 MATH DAY COMPETITION



Dr. Dan Bates

The Department of Mathematics is making plans for the 33rd Annual Math Day competition scheduled for Thursday, November 5, 2009 at the Lory Student Center. Dr. Dan Bates is in charge of the organization and details of this year's competition and has incorporated some minor changes to the schedule agenda. Dr. Bates is also writing the exam questions for both the PROBE and team competitions. Christie Franklin and Bryan Elder will again provide their much-appreciated expertise on the logistical side of the planning.

This year's agenda will include a few changes to the PROBE written examination, which will cut both the examination time and the grading time needed in half. This exam will include fewer of the challenging proofs while still providing enough material to determine Colorado State student scholarship awards.

During the PROBE exam, teachers are invited to attend a lecture suited to the 7-12 grade levels. This is followed by discussion as needed. Morning coffee and a light snack are also provided.

The PROBE exam will be followed by a new lecture item added to the agenda. This will include a short mathematical presentation aimed at sparking students' interests in mathematics and based on one of the PROBE proofs. It will also provide material for one or more team competition questions, so student participants are encouraged to attend and listen for details.

The last event of the day is the team competition for both small and large schools. This popular college bowl-type double elimination tournament is the highlight of the day, bringing out the competitive nature of all participants. This part of the agenda will not be changed from previous years, other than being lengthened a bit to provide a little extra time between matches in the early rounds.

Before the start of the finals competition, this year's department alumni recipient will be announced by Department chair Simon Tavener. This year's recipient will address students and teachers prior to the start of the small and large school finals. Information and registration forms are on our website at: <http://www.math.colostate.edu/mathday/index2009.shtml>

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/>

## 2009 FOCUSED WORKSHOP: DYNAMICAL SYSTEMS CSU PINGREE PARK MOUNTAIN CAMPUS HOSTED BY DAN RUDOLPH, YATES ENDOWED CHAIR



Summer 2009 . . . A second annual workshop on dynamical systems was hosted by Dan Rudolph at the CSU Pingree Park Mountain Campus this past August 3-8. Last year's workshop was so successful that this year Rudolph teamed with Prof. Nic Ormes of DU to both increase the size and length of the workshop. This year some 37 researchers participated from the broad areas of topological and measurable dynamics. In recent years, a number of deep problems have been solved by a new generation of young dynamicists. Most of them came to the workshop, as well as some of the most distinguished senior researchers. The goal was to bring these two groups together in the peace and quiet of Pingree Park to get to know each other and discuss broadly further developments in the field. The thirty-seven participants came from as far away as Norway, Poland, France, Israel, and Korea with three from Canada. The U.S. participants came from Princeton, Stanford, UC-Berkeley, UC-Irvine, Swarthmore, University of North Carolina, The Ohio State, UCLA, Wesleyan, Northwestern, and the University of Maryland. Six graduate students, three post-docs and five emeritus professors participated. Dr. Rudolph was extremely pleased that his advisor, D.S. Ornstein, professor emeritus at Stanford and member of the National Academy of Sciences, was able to attend. The five days provided time for a series of fourteen formal lectures and a lively problem session with ample breaks for hiking in the mountains and chatting. The workshop was jointly funded by the Yates Endowment to the Mathematics Department and the National Science Foundation. You can see more details at <http://www.math.du.edu/~normes/PingreePark09/>

## DEPARTMENT WELCOMES NEW GRADUATE CLASS

The Department of Mathematics Graduate Committee has selected this year's new graduate class. These nine students were selected from a pool of 110 applicants:



**Sofya Chepushtanova**  
MS, Michigan Technological Univ.  
Houghton, MI



**Cooper Cunliffe**  
BA, University of North Carolina  
Asheville, NC



**Eric Hanson**  
BS, Minnesota State University  
Mankato, MN



**Steven Ihde**  
BS, Colorado State University  
Fort Collins, CO



**Francis Motta**  
BS, University of Arizona  
Tucson, AZ



**Corrine Previte**  
BS, University of the Redlands  
Redlands, CA



**Anthony Schwickerath**  
MS, Colorado State University  
Fort Collins, CO



**Jaime Shinn**  
BS, Allegheny College  
Meadville, PA



**Hilary Smallwood**  
BS, Fort Lewis College  
Fort Lewis, CO