

DR. ALEXANDER HULPKE NAMED DEPARTMENT UNDERGRADUATE DIRECTOR & ASSOCIATE CHAIR

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SPECIAL RECOGNITION

2011 DEGREE CANDIDATES

SPRING 2011

PhD—3

MS—0

Undergrad Majors — 23

Undergrad Minors — 14

SUMMER 2011

PhD—2

MS—1

Undergrad Majors — 5

Undergrad Minors — 5



Dr. Alexander Hulpke grew up in Germany and attended RWTH Aachen University, graduating with a PhD in 1996. From 1997 to 1999 he was a research fellow in the Department of Mathematics and Computer Science of the University of St Andrews (Scotland) and from 1999-2001 Zassenhaus Professor at The Ohio State University in Columbus. In the fall of 2001, Dr. Hulpke came to Colorado State joining the Department of Mathematics as assistant professor and later promoted to Associate Professor with tenure in 2006.

Dr. Hulpke's research is in Computational Group theory and related areas of Algebra and Combinatorics. He is one of the principal authors of the Computer Algebra system GAP. This system has several thousand users world-wide, has been cited in over 1000 articles, and has been awarded the 2008 Richard Dimick Jenks Memorial Prize. He is the (co-)author of 21 refereed articles, and a volume of conference proceedings. To date, two of his students have completed a PhD, while being the advisor on multiple undergraduate research projects.

In the Department of Mathematics, Dr. Hulpke served on the Executive Committee July 2006 through June 2008 and July 2009 through May 2010. He also served on the Graduate Committee 2001-2004 and 2008-2009 and on the Undergraduate Committee since 2010. Dr. Hulpke coached the department's team for the Putnam Competition from 2001-2006, reaching national rank 12 in 2002. From 2006-2010 he has been course coordinator for calculus II in which role he introduced several instructional innovations.

Dr. Hulpke is married and has two daughters, who are just learning counting and multiplication respectively.

2011 - 12 DEPARTMENT EXECUTIVE COMMITTEE ANNOUNCED

At the conclusion of the spring semester in May, Department chair Simon Tavener held his annual faculty retreat. Results of the faculty elections were announced for the 2011-12 Executive Committee during the retreat. The EC will be led by incoming Department chair, Gerhard Dangelmayr, with faculty members Anton Betten, Paul Kennedy, Jennifer Mueller, and Chris Peterson. The EC will begin working on the department faculty search and Yates Chair search for the fall 2011 semester.

DEPARTMENT OF MATHEMATICS FACULTY RECENTLY RECOGNIZED WITH AWARDS



CONGRATULATIONS to Don Estep on being awarded the 2011 Scholarship Impact Award, the University's highest award for accomplishment in research. This award recognizes faculty whose scholarship has had a major impact nationally and/or internationally. Estep's research involves the development of new computational techniques, mathematical & statistical analysis, investigation of complex systems, and software development. Much of his research is focused on quantification of errors in predications made from mathematical models and computer simulations.

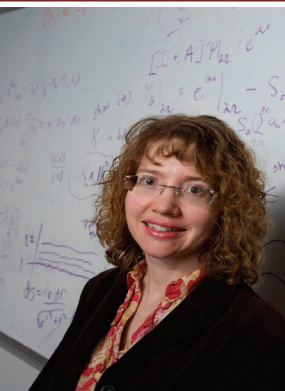


CONGRATULATIONS to Simon Tavener for receiving this year's 2011 CNS Faculty Excellence in Undergraduate Research Mentoring Award. With this award the college recognizes Dr. Tavener's efforts and success in developing and supervising the FEScUE program and providing students with long-lasting interdisciplinary research experience. Dr. Tavener was nominated by the Executive Committee and a group of FEScUE students.



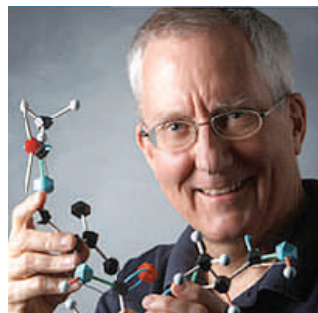
CONGRATULATIONS to Anton Betten on his recent nomination for the 2011 Honors Prof Award. Established in 1973, this award is a student-nominated, student-selected award given to an Honors professor who demonstrates commitment to undergraduate education, excellent service to our students, and exceptional teaching ability. To be nominated for this award is an honor unto itself. Nominations are reviewed and carefully selected by the Honors Student Association. The 2011 finalists consisted of 14 outstanding nominees recognized at the Honors Graduation Reception in May.

DR. JENNIFER MUELLER PROMOTION TO FULL PROFESSOR



Dr. Jennifer Mueller was promoted to Full Professor, effective July 1, 2011. Dr. Mueller received her Ph.D. in 1997 in Mathematics and Statistics at the University of Nebraska-Lincoln. From 1997-2000 she was an NSF Postdoctoral Fellow at Rensselaer Polytechnic Institute. Dr. Mueller joined the Mathematics Department at Colorado State in 2000, receiving tenure in 2005. She has been a core faculty member of the School of Biomedical Engineering since its inception in 2007. Dr. Mueller's research interests include inverse problems, electrical impedance tomography, integrable systems and PDE's. Recently, Dr. Mueller founded the EIT lab at CSU. She has mentored and advised numerous graduate students, 6 graduating with an MS degree and 3 completing their Ph.D. She currently advises 6 Ph.D. students and one masters' student and serves on a number of graduate committees. Dr. Mueller is currently the Graduate Director in the Department of Mathematics. Congratulations, Dr. Mueller!

2011 ARNE MAGNUS LECTURE SERIES



Professor Ridgway Scott

Louis Block Professor

University of Chicago

Computational Science and Mathematics

The Department of Mathematics held their Annual Arne Magnus Lecture Series from April 5-7, 2011. Professor Scott's public lecture was entitled *Mathematics in drug design*. This lecture focused on how mathematics can help in the complex process of drug discovery. An example of modification of a common cancer drug that reduces unwanted side effects used a mathematical model that relates to the hydrophobic effect, something not yet fully understood. The hydrophobic effect modulates the dielectric behavior of water, and this has dramatic effects on how we process drugs. Future mathematical advances in this area hold the process of making drug discovery more rational, and thus more rapid and predictable, and less costly.

An additional colloquium for faculty and graduate students entitled *Two tales about Newton's method* focused on Newton's method for solving nonlinear (systems of) equations, a common topic in calculus.

Dr. Scott's final guest lecture entitled *Optimal algorithms using optimal meshes* discussed two problems involving adaptive meshes. The first relates to non-nested multi-grid in two and three dimensions, while the second involves meshes in arbitrary dimensions.

The *Arne Magnus Lectures* are given annually in the *Department of Mathematics* at *Colorado State University* in honor of Dr. Arne Magnus, our friend and colleague for 25 years. The 2009 lectures were supported by the Arne Magnus Lecture Fund and the Albert C. Yates Endowment in Mathematics. Contributions to the Magnus Fund are greatly appreciated and may be made through the Department of Mathematics.

Please contact Sheri Hofeling (hofeling@math.colostate.edu) at (970)491-7047 for specific information.

DEPARTMENT TO HOST 2011 GRADUATE STUDENT CONFERENCE JUNE 1-10, 2011



Dr. Rachel Pries

Dr. Rachel Pries, assisted by Visiting Professor Dr. Amy Ksir from the United States Naval Academy, is hosting a 2011 summer research workshop from June 1 to June 10 for a small group of graduate students studying number theory. The title of the workshop is "Suzuki and Ree curves: automorphisms, Jacobians, and codes." Participating students are from a variety of universities, including Clemson University, Colorado State University, University of Calgary, University of Illinois at Urbana-Champaign, University of Massachusetts, University of Pennsylvania, and University of Wisconsin. The conference will benefit from the local expertise of Drs. Jeff Achter, Renzo Cavalieri, Alexander Hulpke, Beth Malmskog, and Tim Penttila, who are all giving guest lectures.

The workshop is sponsored by the National Science Foundation.

NEWLY AWARDED DEPARTMENTAL GRANTS (JANUARY 1–MAY 31, 2011)

Primary PI	Co-PI	Sponsor	Title	Amount
Renzo Cavaliere		NSF—National Science Foundation	Western Algebraic Geometry Seminar Five Year Plan	\$55,058 (Addl funds)
Bruce Draper	C. Peterson M. Kirby R. Beveridge	DOD-ARPA Advanced Research Proj. Agency	Visual Intelligence through Latent Geometry & Selective Guidance	\$67,989 (Addl funds)
Simon Tavener	C. Webb J. C. Moore D. Estep M. Antolin	NSF—National Science Foundation	Towards a Flexible & Extendable Scientific Undergraduate Experience (FEScUE): Blending Mathematics and the Life Sciences	\$2,000 (Addl funds)
Mario C. Marconi	V. Putkaradze	DOD-DTRA Defense Threat Reduction Agency	Single Molecule Detection for Countering WMD using Nano-Mechanical Resonator Arrays	\$499,684 (Addl funds)
Bruce Draper	C. Peterson M. Kirby R. Beveridge	DOD-ARPA Advanced Research Proj. Agency	Visual Intelligence through Latent Geometry and Selective Guidance	\$184,059 (Addl funds)
Jennifer Mueller		HHS-NIH Biomedical Imaging and Bioengineer	Exploratory Innovations in Electrical Impedance Tomography	\$150,665 (Addl funds)
Rachel Pries		NSF—National Science Foundation	Moduli of Curves in Positive Characteristic: Stratifications and Filtrations	\$28,09 (New award)
Rachel Pries		NSF—National Science Foundation	Moduli of Curves in Positive Characteristic: Stratifications and Filtrations	\$70,519 (New award)

FACULTY AND STAFF CELEBRATE MILESTONES

Congratulations to the dedicated faculty and staff who celebrated a milestone in their service to Colorado State this year! A reception was held in May to honor the following individuals:

DEPARTMENT OF MATHEMATICS

Gerhard Dangelmayr—15 years of service
Hilary Freeman—10 years of service
Donald Estep—10 years of service
Alexander Hulpke—10 years of service
Jennifer Mueller—10 years of service
Simon Tavener—10 years of service

COLLEGE OF NATURAL SCIENCES

Jim Cox—10 years of service
Don Mykles—25 years of service
Arlene Nededog—25 years of service
Cheryl Peregoy—40 years of service

PhD/MS GRADUATE NEWS

Spring 2011	Degree	Advisor	Thesis Title	After Graduation
Steve Benoit	PhD	Vakhtang Putkaradze	Analysis and modeling of cells, cell behavior and helical biological molecules	Postdoc at CSU
Byungsoo Kim	PhD	Vakhtang Putkaradze	Constrained Dynamics of rolling balls and moving atoms	
Elisabeth Malmskog	PhD	Rachel Pries	Automorphisms of a Family of Maximal Curves	

Fall 2010	Degree	Advisor	Thesis Title	After Graduation
Justin Armstrong-Hughes	MS	Alexander Hulpke	O'Nan-Scott Theorem	PhD, CSU
Shawn Farnell	PhD	Rachel Pries	Artin-Schreier Curves	Visiting assistant professor, Kenyon College
Eric Miles	MS	Renzo Cavalieri	(An Introduction to) Derived Categories and Stability Conditions	PhD, CSU
Elin Smith	PhD	Chris Peterson	Algorithms and Geometric Analysis of Data Sets that are Invariant Under a Group Action	Assistant professor, Kenyon College
Shelby Stanhope	MS	Jennifer Mueller	Inverse Problems and Optimal Control for Laser Ablation of Tumors	PhD, University of Pittsburgh
JaDon Whitfield	PhD	Jeanne Dufлот	A Simplicial Homotopy Group Model for K_2 of a Ring	N/A

Summer 2010	Degree	Advisor	Thesis Title	After Graduation
Melissa Goss	MS	Paul Kennedy	Implementing Cooperative Learning Problem Sessions into the Precalculus Program at Colorado State University	PhD, University of Northern Colorado
Cayla McBee	PhD	Tim Penttila	Some topics in combinatorial phylogenetics	Assistant Professor, Providence College
Travis Olson	PhD	Gerhard Dangelmayr	Hopf Bifurcation in Anisotropic Reaction Diffusion Systems Posed in Large Rectangles	Assistant Professor, Shenandoah University
Eric Schmidt	MS	Alexander Hulpke	Some Aspects of Modular Forms	PhD, CSU
Ellen Ziliak	PhD	Alexander Hulpke	Arithmetic in Group Extensions using a Partial Automaton	Assistant Professor, Benedictine University

Spring 2010	Degree	Advisor	Thesis Title	After Graduation
Olivia Dumitrescu	PhD	Rick Miranda	Techniques in Interpolation Problems	PostDoc, U.C. Davis, Krener Assistant Professor
Rodney James	PhD	Rick Miranda	Linear Systems and Riemann-Roch Theory on Graphs	Assistant Research Professor, UC at Denver
Rebecca Lynn	PhD	Jeanne Dufлот	Multiplicities and Equivariant Cohomology	N/A
Blake Rutherford	PhD	Gerhard Dangelmayr	Lagrangian mixing and transport in hurricanes	PostDoc, Naval Postgraduate School, Monterey, CA

SIAM STUDENT CHAPTER NEWS



In its first semester as an official student organization, the Society for Industrial and Applied Mathematics (SIAM) CSU Student Chapter had a successful and busy semester. Chapter membership grew to 25 students, a

majority of which are mathematics students, however, there are also members from Computer Science and Engineering. Chapter membership is open to students in all departments at both the graduate and undergraduate levels. Chapter activities this spring included attending the Front Range Applied Mathematics Student Conference (FRAM) at the University of Colorado at Denver and a field trip to the National Center for Atmospheric Research (NCAR). The chapter also partnered with Dr. Jennifer Mueller and Dr. Don Estep to bring Dr. Leonid Kunyansky (University of Arizona) and Dr. Tim Wildey (Sandia National Labs) to speak on campus. Dr. Kunyansky spoke about Acousto-electric tomography and Dr. Wildey, a former PhD graduate student of Dr. Estep and Dr. Simon Tavener, spoke about Multiscale Mortar Methods for Flow and Mechanics in Porous Media. Dr. Wildey also spent time discussing his experience searching for a job as a CSU Mathematics graduate with current Mathematics graduate students.

The SIAM student chapter would like to thank the Mathematics Department, SIAM, and the Associated Students of Colorado State University for the funding that made these events possible. If you would like to become a member, recommend someone as a member, or offer support or partnership in a future event please contact the chapter secretary Eric Hanson at: hanson@math.colostate.edu

THE **CAMPAIGN** FOR
Colorado State University

Support Colorado State today...
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Help CSU today for a better tomorrow.

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.