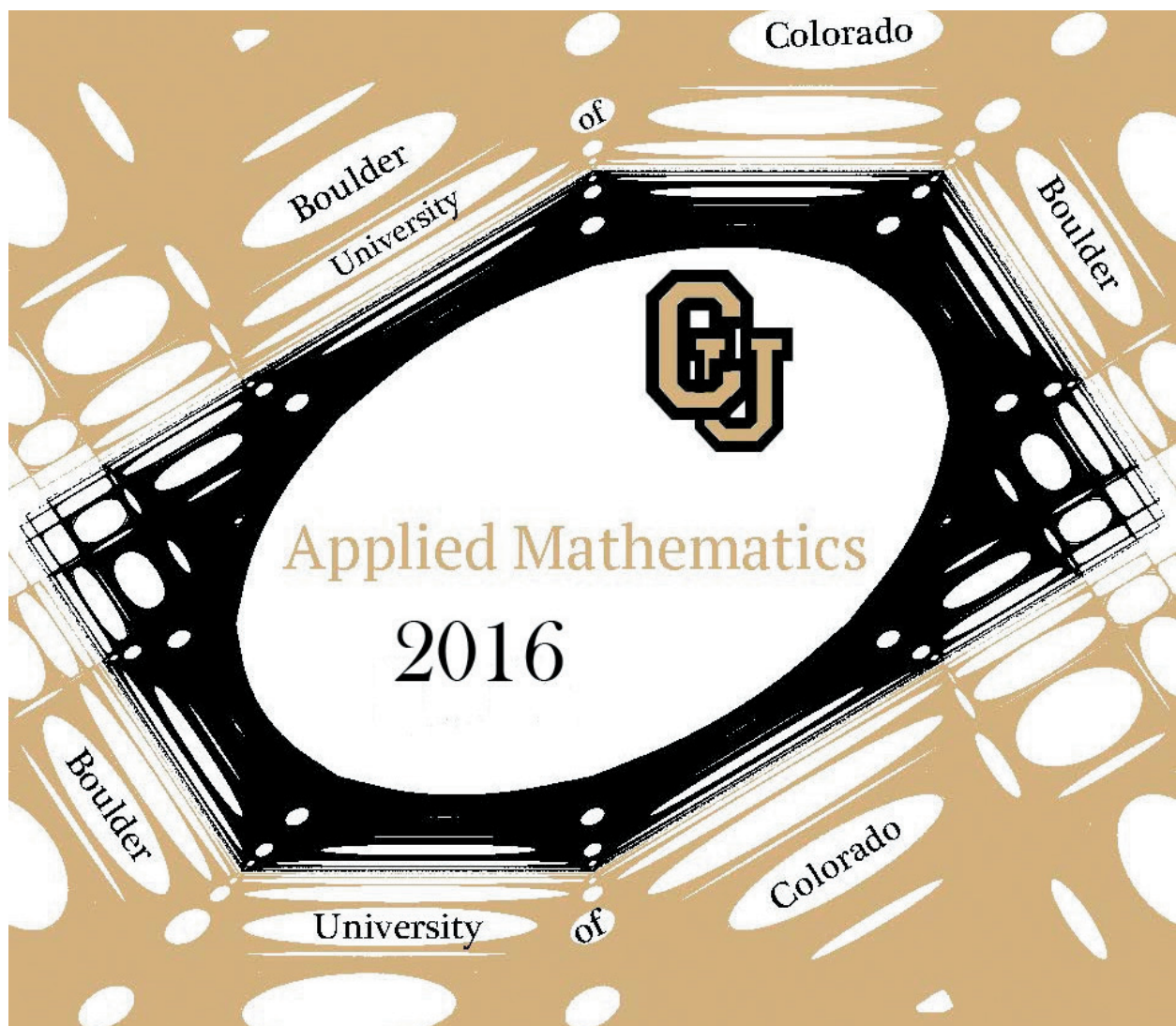


Department of Applied Mathematics

Annual Report 2016



Department of Applied Mathematics

University of Colorado at Boulder

Vision

The vision of the Department of Applied Mathematics at the University of Colorado is to be an internationally leading department in Applied Mathematics in research and education.

Mission

The Department of Applied Mathematics at the University of Colorado strives to provide excellent teaching, research, and service to the university community and to the world in the application of mathematics to other disciplines.

Objectives

The Department of Applied Mathematics has four primary objectives:

- *To teach our students well;*
- *To seek out and develop new, interesting applications of mathematics in other disciplines;*
- *To provide each student with a rich educational experience;*
- *To create new mathematics.*

We interpret this to mean:

- *Provide undergraduate and graduate students with a high quality education and training in applied mathematics and prepare them for careers in government, industry, laboratories, and the academic professions;*
- *Offer and monitor degree programs leading to BS, MS and PhD degrees in Applied Mathematics;*
- *Nourish and maintain a professional environment in which excellence in teaching, learning, scholarship, and creativity are of central importance;*
- *Assure teaching and research expertise in a number of key areas of applied mathematics including the methodology of applied mathematics, computational mathematics and algorithms, industrial applications, applied probability, and statistics.*

Cover Art

Department of Applied Mathematics 2016 Annual Report

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Department of Applied Mathematics

2016 Overview



Dr. Keith Julien **Dr. Anne Dougherty**
Department Chair Associate Chair



Department of Applied Mathematics 2016 Annual Report

Departmental Activities

Undergraduate Education

The Department of Applied Mathematics in the College of Arts and Sciences offers courses and degree programs for undergraduates and graduate students. The Department of Applied Mathematics currently has 21 tenure-track full-time faculty, fifteen instructors and post-doctoral associates, and maintains an active Visitor Program with researchers from around the world. Courses range from calculus to seminars in computation, discrete mathematics, probability and statistics, nonlinear phenomena, mathematical biology, and physical applied mathematics.

The undergraduate program in AMEN prepares graduates to practice effectively in the field of mathematics, or to further their careers through advanced study. The principle focus of a major in applied math is to improve a student's mathematical, computational, and communication skills. The focus is on modeling problems from a variety of areas including business, engineering and science.

In the Fall 2016 semester, Applied Mathematics submitted a proposal for a Bachelor of Arts degree in Statistics. If all goes well, this degree program will roll out for the Fall 2017 semester.

Applied Mathematics continues to offer additional sections in our lower division courses for Engineering Honors, Goldshirt, and Sustainable by Design Residential Academic Program (RAP) students for our Calculus courses in 2016. These sections, made possible by funds from their respective RAPs, are smaller, allowing these students to have more individualized interaction with their professor, and are located in or near their respective home dormitories.

The art of creating and testing mathematical models of real-world problems is an important part of our undergraduate training. Undergraduate students are given an opportunity to showcase their mathematical, computational and communication skills in the annual Mathematical Contest in Modeling, (MCM) an international contest sponsored by COMAP (The Consortium for Mathematics and its Applications). Students from all science, math and engineering majors are encouraged to enter. Held in February, the contest saw three teams from Applied Mathematics participating. One team was awarded a "Meritorious" ranking.

Undergraduate students were encouraged to participate in the 12th annual Front Range Applied Mathematics student conference. The event allows students from universities across the Colorado Front Range to share research with their peers and promote interest in the field. For the 2016 conference, held on March 5th, CU Applied Mathematics saw 10 students present research on topics as diverse as genetics to hydrodynamics. The Plenary Speaker for this year's conference was Dr. Chun Liu, of Pennsylvanis State University.

Graduate Education

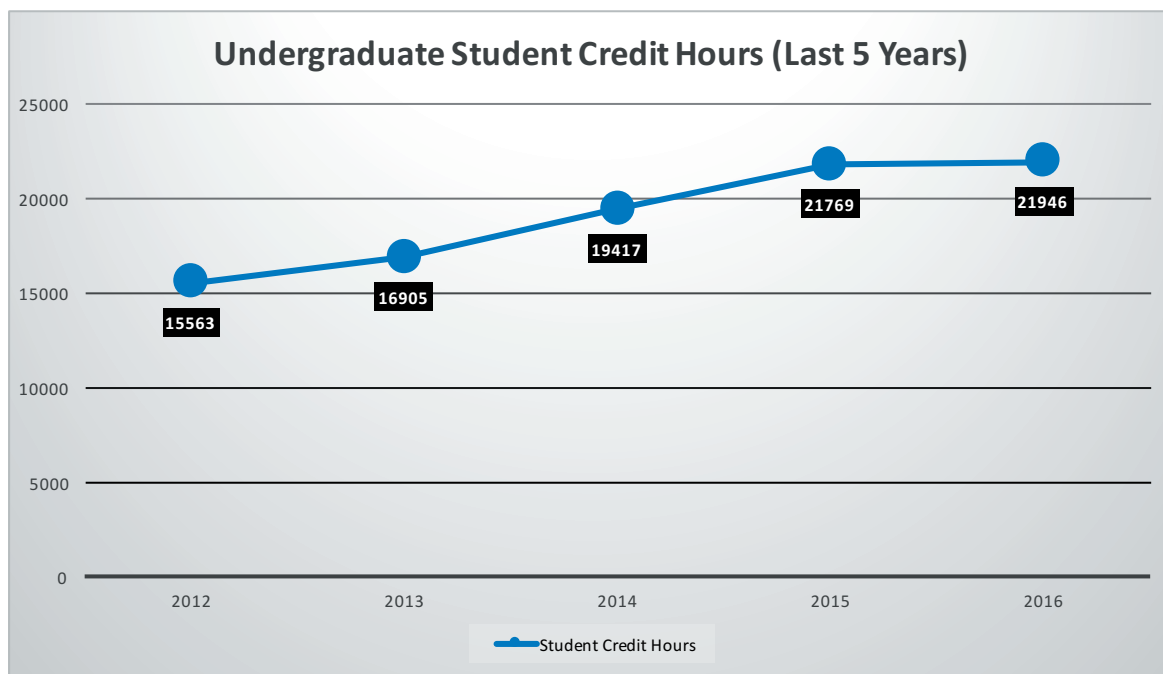
The department offers four formal interdisciplinary programs, three at the MS level.

- **A Combined MA/MS with the Molecular, Cellular, and Developmental Biology Department (MCDB).** The combined MA/MS is a three-year interdisciplinary program designed to produce students trained both in applied mathematics and in molecular biology. A student who completes this program can begin a career in the biological sciences with a very desirable combination of skills, or can continue on to a PhD either in APPM or in MCDB.
- **An MS with a Computational Science and Engineering Track.** This track is designed for a student in a participating department in science or engineering, with a strong interest in scientific computation and mathematical analysis. Under this plan, the student obtains an MS in APPM on the way to a PhD in the other department. Six other departments now participate in this program.
- **Teacher-Licensure Option.** An APPM graduate student can fulfill the outside-sequence requirement in the School of Education. By also meeting the requirements of that School, a student can obtain both an MS in applied mathematics and a license to teach mathematics in a secondary school (i.e., in middle through high school). More information about the graduate program is available at <http://amath.colorado.edu/programs/grad.html>
- **The University's IQ Biology** interdisciplinary program. The IQ Biology program offers a mix of core classes, research projects and professional development experiences. These are all designed to help you work collaboratively across disciplines to solve problems. Other departments participating in IQ Biology include Chemistry & Biochemistry; Ecology and Evolutionary Biology; Molecular, Cellular and Developmental Biology; Computer Science; and Mechanical Engineering.

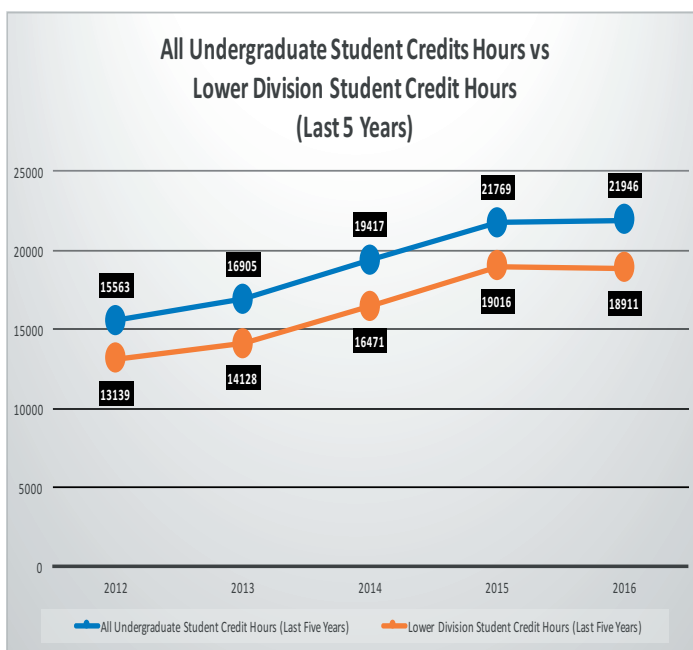
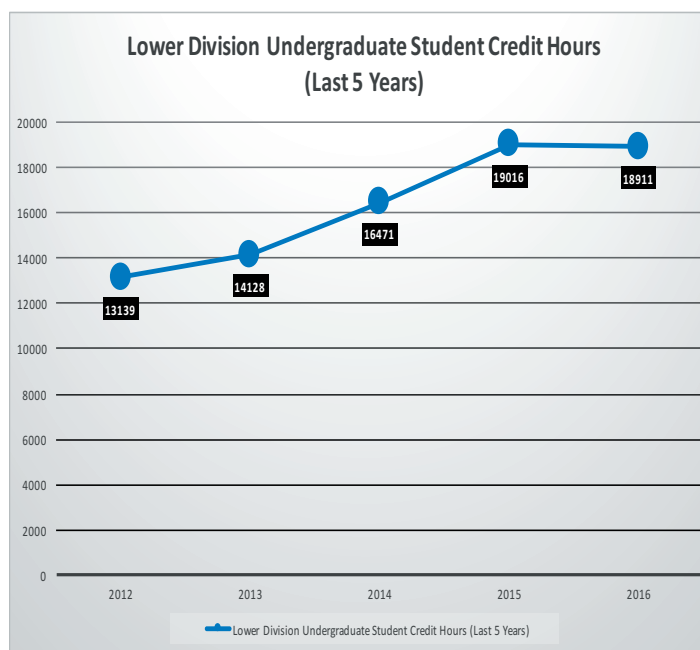
In the Fall 2016, Applied Mathematics submitted a proposal for a Professional Master's program, aimed at working professionals seeking to continue their education while working. The program will largely be online and self-paced.

Enrollment Statistics*

The Department of Applied Mathematics had 10,391 undergraduate enrollments in our courses in 2016, for a grand total of 21,946 credit hours. This number accurately reflects the number of credit hours taught, but does not provide a true count of unique student enrollments, as students may take multiple APPM courses in a semester. Student credit hours has increased from 21,769 in 2015, and has grown from 14,767 in 2011. Enrollments have gone up an average of 8% per year for the past five years. The chart below summarizes this growth trend.



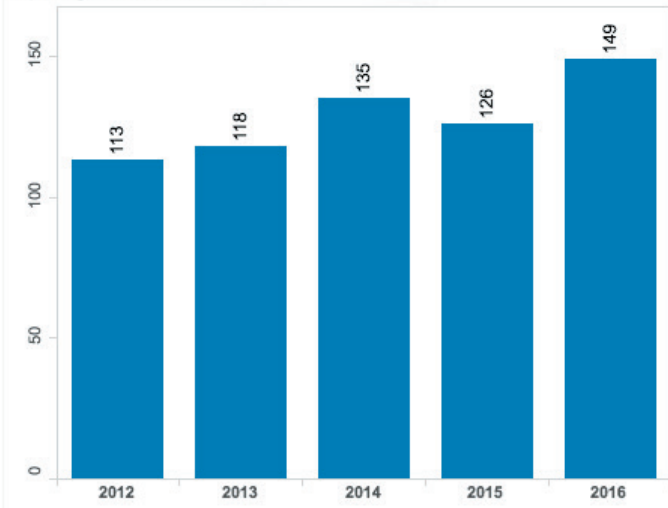
Of the 21,769 undergraduate student credits hours taught in 2016, 18,911 of these were lower division courses (APPM 1235, APPM 1350, APPM 1360, APPM 2350, APPM 2360, and APPM 2720). This is 86% of our undergraduate student credit hours. The Department of Applied Mathematics serves the entire College of Engineering, with all students being required to take APPM 1350 and APPM 1360, and a large number being required to take APPM 2350 or APPM 2360. In addition, almost all of the sciences require some level of calculus. Lower division courses have therefore always constituted an average of 85% of Applied Mathematics' student credit hours. Our lower division courses are vital to the University!



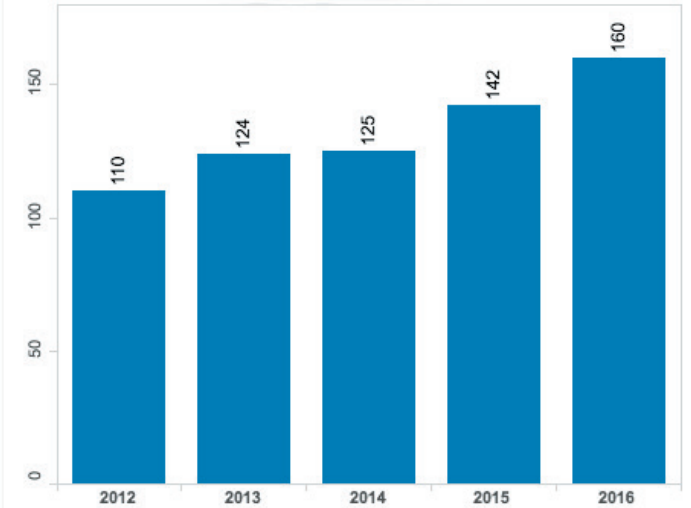
* Enrollment Statistics are gathered based on Fiscal Year, rather than Calendar Year

Another useful department metric is the number of enrolled majors the department has. In 2016, the Department of Applied Mathematics had 149 active majors in the Spring 2016 semester, and grew to 160 active majors in Fall 2016. Most of our students come to the major later in their academic careers, adding AMEN as an additional major, or transferring into the major as their academic interests solidify. For example, in the Fall 2015, there were 15 Freshman AMEN majors - however, by Fall 2016, there were 27 Sophomore AMEN majors.

Spring Headcount 2016



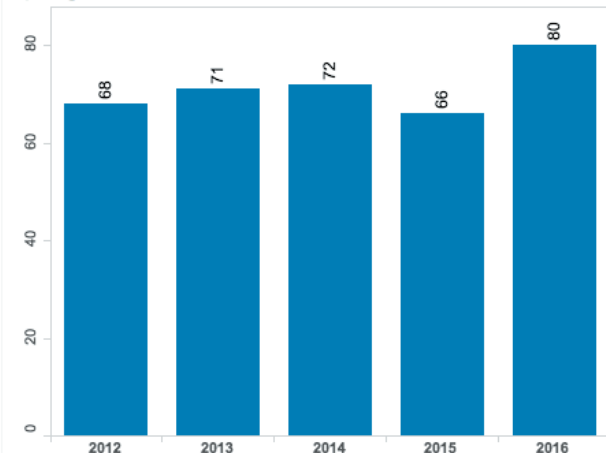
Fall Headcount 2016



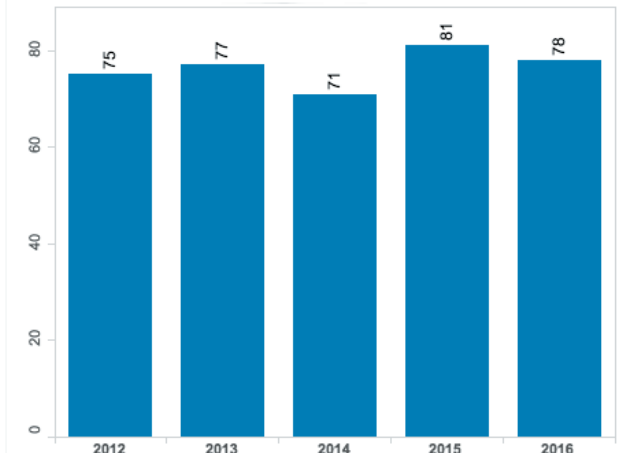
Graduate Enrolled Credit Hours

Graduate Enrollments have also increased in 2016. Graduate student credit hours were 1,254 in 2016, a 9% increase from 2015. There were 14 students pursuing a master's degree in Applied Mathematics, and 66 pursuing a doctoral degree. These were 40% and 18% increases from 2015, respectively.

Spring Headcount 2016



Fall Headcount 2016



Department Awards and Honors

Four CU undergraduate students, majoring in science, math or engineering, are selected each year for the national Goldwater Scholarship competition. Three of our four nominees received the Goldwater Scholarship for the 2016-2017 academic year, Spring 2016. These students are Derek T. Driggs, Richard D. Paucek, and Matthew N. Winchester. The Goldwater Foundation awarded 252 scholarships nationwide.

PhD student Jacqueline Wentz was an NSF Graduate Research Fellow Awardee. In addition, Taisa Kushner was an NSF Graduate Research Fellow Honorable Mention. The NSF Graduate Research Fellowship Program recognizes and supports outstanding graduate student researchers in NSF-supported science, technology, engineering, and mathematics disciplines.

Mark Ablowitz was named to *Who's Who in America* and *Who's Who in the World*. *Who's Who in America* endeavors to profile the leaders of American society; those men and women who are influencing their nation's development.

David Bortz became a SAMSI Fellow (see Grants section for additional information). The Statistical and Applied Mathematical Sciences Institute (SAMSI), established in 2002, is a partnership of Duke University, North Carolina State University (NCSU), and the University of North Carolina at Chapel Hill (UNC). SAMSI is part of the Mathematical Sciences Institutes program of the Division of Mathematical Sciences at the National Science Foundation. SAMSI's mission is to forge a synthesis of the statistical sciences and the applied mathematical sciences with disciplinary science to confront the very hardest and most important data- and model-driven scientific challenges.

Anne Dougherty's appointment as the J. R. Woodhull/Logicon Teaching Professor in Applied Mathematics was extended into 2019. Anne was initially appointed to this position in 2012. In addition, this year Anne received the Marinus Smith Award from the CU Parents Association. This award is to identify and recognize CU-Boulder faculty, staff, coaches, and administrators who have made a significant impact on the lives of CU undergraduate students. Lastly, Anne was a runner up for the Mathematical Association of America 2016 Haimo Award for distinguished teaching. This award was instituted 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. Each year at most three college or university teachers are honored with this award.

Vanja Dukic also became a SAMSI Fellow in 2016. In addition, she was named to Brown University's ICERM (Institute for Computational and Experimental Research in Mathematics) Scientific Advisory Board. This board membership lasts for a term of three years. The Scientific Advisory Board is responsible for approving the programs and scientific activities of the Institute. In addition, through direct communication with the Director, Science Board members are involved in shaping the direction of the scientific enterprise through specific suggestions of thematic programs and of program organizers.

Bengt Fornberg received a 2016 Colorado Mathematics Award citation for outstanding service to students as coach for an outstanding team in that year's MCM (Mathematical Contest in Modeling).

Will Kleiber was awarded the Young Investigator Award from the Section on Statistics and the Environment of the American Statistical Association. This award is meant to encourage and recognize younger members of the environmental statistics community and is given to a member in recognition of outstanding contributions to the development of methods, issues, concepts, applications, and initiatives of environmental statistics. Will was also elected as a Junior Lebesgue Chair at Centre Henri Lebesgue, France. This is an invited, temporary international professorship position that aims at hosting scientific leaders in the forefront of mathematical research in the laboratories of the Lebesgue Center. The Chair activities are focused on research and training.

Jim Meiss received the Outstanding Referee for 2016 award from the Institute of Physics. The Institute of Physics is a leading scientific membership society working to advance physics for the benefit of all. Their purpose is to gather, inspire, guide, represent and celebrate all who share a passion for physics. Additionally, Jim received the Dresden Senior Fellowship at Technische Universität Dresden for the summer of 2016. The focus of the Fellowship programme is on boosting cooperation and setting up long-term cooperation strategies for institutions and working groups at TU Dresden and its DRESDEN-concept partners.

Department of Applied Mathematics 2016

Graduating Students

May

Bachelor's Degrees

Raymond Auyeung
Zachary Cole Britt
Phu Dang
Dominic Emanuel Dobis
Theodore John Eberts
Scott David Fiedler
Jordan Harris Firstenberg
Mario A Gjurokovec
Anna Hoffee
Pawel Wiktor Janas
Zachary Thomas Lane

Shu Lee
Ryan Edward Leonard
Christopher LeSueur
Louie Joseph Long
Nikola Maksimovic
Rami Meharzi
Michael James Moy
Adam Mraz
Brian Lee Newsom
Branden John Olson
Kyle Steven Ostrom

Kaitlyn Ann Parsons
Harrison Francis Pielke-Lombardo
Jordan Prosky
Evan Roncevich
Alex Peter Rose
Noah Seidenfeld
Joseph Dylan Stewart
Emily Rhianna Stohl
Irakli Zhuzhunashvili

Master's Degrees

Allison Marie Betley
Theodore John Eberts
Scott David Fiedler
James Michael Folberth

Pawel Wiktor Janas
Hristina Dimitrova Kalcheva
Wayne Mitchell
Branden John Olson

Richard A Schweizer
Rachel Suzanne Tutmaher
Benjamin Wiley
Edward Yoshiteru Yasutake

Doctoral Degrees

Ashar Fawad Ali
Lei Bao

Ze Cheng
David J Nieves

Anthony E Wong

August

Bachelor's Degrees

Brett Thomas Brady
Samuel Austin Ivester

Master's Degrees

Jingwei Li

Doctoral Degrees

Bradley Martin

December

Bachelor's Degrees

Courtney Ranae Anderson
Emma Lynne Griffey
Caitlin Kayen
Gavin Christopher Medley
Sydney Hope Sloan
Jeffrey Tennant
Andi Samara Vicksman
Alexis Rae Wylie

Master's Degrees

Nathan Christopher Guillery
Eric Paul Kightley
Victoria Li
Gavin Christopher Medley
John Thomas Nardini
Junlong Sun

Doctoral Degrees

Dale Kurtis Jennings
Benjamin J Sturdevant

Department of Applied Mathematics 2016 Annual Report

Faculty, Instructors, Research Associates, Visitors, and Staff

Core Faculty and Instructors

Mark J. Ablowitz – Professor; College of Arts and Sciences Professor of Distinction; PhD, Massachusetts Institute of Technology.

Jerrold Bebernes – Professor Emeritus; PhD, University of Nebraska.

Stephen Becker – Assistant Professor; California Institute of Technology.

Gregory Beylkin – Professor; PhD, New York University.

Sujeet Bhat – Instructor; PhD, University of Florida.

David Bortz – Associate Professor; PhD, North Carolina State University.

Justin Cole - Research Associate and Instructor; PhD,

Jem Corcoran – Associate Professor; PhD, Colorado State University.

Murray Cox – Instructor; PhD, Texas A&M University.

James H. Curry – Professor; PhD, University of California at Berkeley.

Chao Deng - Research Associate and Instructor; PhD,

Anne Dougherty – Associate Department Chair; Chair of Undergraduate Studies; Senior Instructor; PhD, University of Wisconsin, Madison.

Vanja Dukic – Professor; PhD, Brown University.

Robert Easton – Professor Emeritus; PhD, University of Wisconsin. .

Bengt Fornberg – Professor; PhD, Uppsala University, Sweden.

Ian Grooms - Assistant Professor; PhD, University of Colorado Boulder.

Yolanda Hagar-Slichter –Research Associate and Instructor; PhD, University of California Davis

Mark Hoefer – Chair of Graduate Studies, Associate Professor; PhD, University of Colorado Boulder.

Yu-Jui Huang - Assistant Professor; PhD, University of Michigan, Ann Arbor,

Keith Julien – Department Chair; Associate Professor; PhD, Cambridge University, United Kingdom.

Christian Ketelsen – Instructor; PhD, University of Colorado Boulder.

Zachary Kilpatrick - Assistant Professor; PhD, University of Utah

William Kleiber – Assistant Professor; PhD, University of Washington Seattle.

Congming Li – Professor; PhD, New York University.

Manuel Lladser – Associate Professor; PhD, Ohio State University.

Danielle Lyles - Instructor; PhD, Cornell University

Yiping Ma – Research Associate and Instructor; PhD, University of California Berkeley.

Thomas Manteuffel – Professor; PhD, University of Illinois, Urbana.

Per-Gunnar Martinsson – Professor; PhD, University of Texas at Austin.

Stephen McCormick – Professor Emeritus; PhD, University of Southern California.

James D. Meiss – Professor; PhD, University of California at Berkeley.

J. Adam Norris – Instructor; PhD, University of Colorado at Boulder.

Juan Restrepo – Associate Professor; PhD, Northeastern University.

Harvey Segur – Professor; PhD, University of California at Berkeley.

Eric Thaler - Instructor; PhD,

Eric Vance - Associate Professor; PhD, Duke University

Brian Zaharatos - Instructor; PhD, Colorado School of Mines

Post-Doctoral Research Associates

Justin Cole - PhD, Florida State University

Chao Deng - PhD, Sun Yat-Sen University

Bruno Deremble - PhD, Université Pierre et Marie Curie

Nick Featherstone - PhD, University of Colorado Boulder

Ezio Iacocca - PhD, University of Gothenburg

Christian Ketelsen - PhD, University of Colorado Boulder

Chris Liebs - PhD, University of Colorado Boulder

Xudan Luo - PhD, Hong Kong University of Science and Technology

Yiping Ma - PhD, University of California, Berkeley

Philippe Marti – PhD, Eidgenössische Technische Hochschule Zürich

Benjamin Miquel – PhD, Laboratoire de Physique Statistique (Ecole Normale Supérieure and UPMC, Paris)

Lucas Monzon - PhD, Yale University

Steffen Münzenmaier - PhD, Gottfried Wilhelm Leibniz Universität Hannover

Igor Rumanov – PhD; University of California, Davis

Yolanda Slichter - PhD; University of California, Davis

Sergey Voronin – PhD, Princeton University

Affiliated Faculty

Meredith Betterton – Physics

Elizabeth Bradley – Computer Science

Xiao-Chuan Cai – Computer Science

Michael Calkins – Physics

John Cary – Physics

Aaron Clauset – Computer Science

John Crimaldi – Civil, Environmental, and Architectural Engineering

Thomas DeGrand – Physics

Alireza Doostan – Aerospace Engineering Sciences

Scot Elkington – Laboratory for Atmospheric and Space Physics (LASP)

John Evans - Aerospace Engineering Sciences

Samuel Flaxman – Ecology & Evolutionary Biology

Natasha Flyer – Institute for Mathematics Applied to Geosciences (IMAGe)

Aimé Fournier – Massachusetts Institute of Technology Earth Research Laboratory

Baylor Fox-Kemper - Atmospheric and Oceanic Sciences; Cooperative Institute for Research in Environmental Sciences (CIRES)

Rafael Frongillo – Computer Science

Fred Glover – Leeds School of Business

Thomas Hauser – Research Computing

Ute Herzfeld – Electrical, Computer & Energy Engineering; CIRES

Mihály Horányi – Physics; LASP

Christine Hrenya – Chemical & Biological Engineering

Mahmoud I. Hussein – Aerospace Engineering Sciences

Elizabeth Jessup – Computer Science

Lakshmi Kantha – Aerospace Engineering Sciences

Rodger Kram – Integrated Physiology

Dhinaker Kompala – Chemical & Biological Engineering

Manuel Laguna – Leeds School of Business

Hector Lomeli – Mathematics, University of Texas at Austin

Francois Meyer – Electrical, Computer & Energy Engineering

Nathalie Moyen – Leeds School of Business

Douglas Nychka – IMAGe

Lev A. Ostrovsky – National Oceanic and Atmospheric Administration (NOAA)

Scott Parker – Physics

Annick Pouquet – National Center for Atmospheric Research (NCAR)

Harihar Rajaram – Civil, Environmental & Architectural Engineering

Sriram Sankaranarayanan – Computer Science

Daniel Scheeres – Aerospace Engineering Sciences

J. Michael Shull – Astrophysical & Planetary Sciences

James Syvitski – Geological Sciences; Institute of Arctic and Alpine Research (INSTAAR)

Juri Toomre – JILA

Henry Tufo – Computer Science

Mahesh Varanasi – Electrical & Computer Engineering

Franck Vernerey – Mechanical Engineering

Patrick Weidman – Mechanical Engineering

Jeffrey B. Weiss – Astrophysical & Planetary Sciences

Joseph Werne – Colorado Research Associates

Department Staff

Mary Fentress – Director of Operations

Emily O'Connor – Graduate Program Assistant.

Desiree Holtz - Accounting Technician

Ian Cunningham - Office Coordinator and Undergraduate Program Assistant

Jacob Tafoya - IT Support

Silva Chang - Assessment and Math Placement Advisor

Rachel Tutmaher - Help Room Coordinator

Changes in Personnel

Applied Mathematics hired three new tenure track faculty in 2016. Yu-Jui Huang is a probabilist focusing on mathematical finance, coming to the department from Dublin City University in Ireland. Zachary Kilpatrick researches mathematical neuroscience and other stochastic processes, and comes to CU out of an appointment with the University of Houston. Finally, Eric Vance works in interdisciplinary statistical collaboration and comes to the department from Virginia Tech. We're excited to have all three of them, and look forward to their accomplishments in years to come.

Tom Manteuffel retired in December. He will continue to advise his students who have not yet graduated.

Cristian Mendoza left as the department Help Room Coordinator, and Rachel Tutmaher joined the department as his replacement.

Visitors in 2016

Xudan Luo (Ablowitz Visitor)
9/1/15-2/29/16

Ben Herbst (Fornberg Visitor)
10/3/16-10/28/16

Bret Elder (Dukic/Bortz Visitor)
1/1/16-4/5/16

Or Alus (Meiss Visitor)
10/17/16-11/2/16

Hector Lomeli (Meiss Visitor)
4/7/16-4/10/16

G. Chandhini (Fornberg Visitor)
6/16/16-7/8/16

Timothy Michaels and Oleksander Vlasiuk
6/20/16-6/24/16

Department of Applied Mathematics 2016 Annual Report

Departmental Seminars and Colloquia

Tuesdays - Computational Math Seminar

The Computational Mathematics seminar series was held on Tuesday mornings during the Spring at 10:00 am, in the Grandview Conference Room. Tom Manteuffel chaired and organized the seminars for that semester.

1/26/16	Joe Benzaken , Department of Applied Mathematics, University of Colorado Boulder	<i>A Rapid and Efficient Design Space Exploration Framework for Isogeometric Analysis</i>
2/23/16	Greg Forest , Departments of Mathematics & Biomedical Engineering, University of North Carolina	
3/8/16	Aly Fox , Department of Applied Mathematics, University of Colorado Boulder	<i>Numerical Methods for Gremban's Expansion of Signed Graphs</i>
	Wayne Mitchell , Department of Applied Mathematics, University of Colorado Boulder	<i>Discretization-Accuracy Convergence for Full Algebraic Multigrid</i>
3/15/16	Ben O'Neill , Department of Applied Mathematics, University of Colorado Boulder	<i>Multigrid Reduction in Time for Nonlinear Parabolic Equations</i>
3/29/16	Lei Bao , Department of Applied Mathematics, University of Colorado Boulder	<i>Efficient time-integration schemes for the discontinuous Galerkin non-hydrostatic atmospheric models</i>

Tuesdays - Nonlinear Waves Seminar

The Nonlinear Waves seminar series was held on Tuesday afternoons in the Spring at 4:00 pm, in ECOT 226. Mark Hoefer chaired and organized this seminar series in 2016.

1/26/16	Patrick Shipman , Department of Mathematics, Colorado State University	<i>Topological measures of order for templated pattern-forming systems</i>
2/9/16	Xudan Luo , Hong Kong University of Science and Technology	<i>The inverse scattering transform for the nonlocal nonlinear Schrödinger equation with nonzero boundary conditions.</i>
2/23/16	Willy Hereman , Department of Applied Mathematics and Statistics, Colorado School of Mines	<i>Symbolic Computation of Scaling Invariant Lax Pairs in Operator Form for Completely Integrable Systems</i>
3/1/16	Baowen Li , Department of Mechanical Engineering, University of Colorado Boulder	<i>Phononics: manipulating phonons with electronic analog</i>

3/15/16	Richard Moore , Department of Mathematics, New Jersey Institute of Technology	<i>Accounting for radiation in rare events produced by stochastic soliton dynamics</i>
3/29/16	Angelo Mascarenhas , National Renewable Energy Laboratory (NREL) Golden, Colorado	<i>Consequences of Spatial Antisymmetry on Light</i>
4/5/16	Gregory Beylkin , Department of Applied Mathemat- ics, University of Colorado Boulder	<i>Accurate Evaluation of Oscillatory Integrals</i>
4/12/16	Matthew Turner , Department of Mathematics, University of Surrey	<i>Time-dependent conformal mappings with applications to nonlinear sloshing problems</i>
4/19/16	Igor Rumanov , Department of Applied Mathematics, University of Colorado Boulder	<i>A universal asymptotic regime in (2+1)-D hyperbolic nonlinear Schroedinger equation.</i>
5/18/16	Alexei Cheviakov , Department of Mathematics and Statistics, University of Saskatchewan	<i>Exact Solutions of a Fully Nonlinear Two-Fluid Model</i>

Tuesdays - Statistics, Optimization, and Machine Learning Seminar

The Stats, Optimization, and Machine Learning seminar series was held for the first time this year. The seminar met on Tuesday afternoons in the Fall at 3:30 pm, in DUAN G2B21. Stephen Becker chaired and organized this seminar series in 2016.

8/23/16	Jessica Gronski , Department of Applied Mathematics, University of Colorado Boulder	<i>Nuclear Norms for Collaborative Filtering</i>
8/30/16	Paul Constantine , Department of Applied Mathematics and Statistics, Colorado School of Mines	<i>Accelerating heuristics for nonconvex optimization with active subspaces</i>
9/6/16	Derek Driggs , Department of Applied Mathematics, University of Colorado Boulder	<i>Faster Low-Rank Recovery</i>
9/20/16	Jake Abernethy , Department of Electrical Engineering and Computer Science; University of Michigan, Ann Arbor	<i>On the equivalence of simulated annealing and interior point path following for optimization</i>
9/27/16	Bo Waggoner , Department of Computer Science, University of Pennsylvania	<i>What Dice Are These?</i>
10/4/16	Kamalika Chaudhuri , Department of Computer Science and Engineering; University of California, San Diego	<i>Challenges in Privacy-Preserving Data Analysis</i>
10/18/16	Anastasios Kyrillidis , The Wireless Networking and Communications Group (WNCG), University of Texas at Austin	<i>Finding low-rank solutions via the Burer-Monteiro approach, efficiently and provably</i>

10/25/16	Adam Bloniarz , Department of Statistics; University of California, Berkeley	<i>Lasso adjustments of treatment effects in randomized experiments</i>
11/8/16	Dan Milroy , Research Computing, University of Colorado Boulder	<i>Quantum Machine Learning</i>
11/15/16	Osman Malik and Zhishen Huang , Department of Applied Mathematics, University of Colorado Boulder Andreas Wachter , Department of Electrical, Computer, and Energy Engineering, University of Colorado Boulder	<i>Stats, Optimization, & Machine Learning Seminar</i>
11/29/16	Hunaid Contractor and Peter Shaffery , Department of Applied Mathematics, University of Colorado Boulder	<i>Stats, Optimization, & Machine Learning Seminar</i>
12/6/16	Lijun Chen , Departments of Computer Science and Telecommunications, University of Colorado Boulder	<i>The Weighted Sum Rate Maximization in MIMO Interference Networks: Minimax Lagrangian Duality and Algorithm</i>

Thursdays - Complex Systems/Dynamics Seminar

The Complex Systems/Dynamics seminar series was held on Thursday afternoons during the academic year at 2:00 PM, in the Applied Mathematics Conference Room. Jim Meiss and Juan Restrepo co-chaired this series.

1/28/16	Sebastián Ferrer Martínez , Departamento de Matematica Aplicada, University of Murcia, Spain	<i>On the N-Extended Euler System. Generalized Jacobi Elliptic Functions</i>
2/4/16	Paul Krause , Climate and Global Dynamics Laboratory, University Corporation for Atmospheric Research (UCAR)	<i>Influence sampling, strong predictability and analysis of non-observable trailing variables</i>
2/11/16	Meredith Plumley , Department of Applied Mathematics, University of Colorado Boulder	<i>The effects of Ekman pumping on rotating Rayleigh-Bénard convection</i>
2/28/16	Shane Keating , School of Mathematics and Statistics, University of New South Wales	<i>The Oceanic Charney Problem: the role of surface buoyancy gradients on mesoscale eddies and waves</i>
2/25/16	Glen Stewart , Laboratory for Atmospheric and Space Physics (LASP), University of Colorado Boulder	<i>Orbital Averaging using Lie Transforms in Planetary Rings</i>
3/3/16	Aaron Hagerstrom , National Institute of Standards and Technology, Boulder, CO	<i>Random number generation with optical entropy sources</i>
3/17/16	Juan Restrepo , Department of Applied Mathematics, University of Colorado Boulder	<i>Synchronization of interacting quantum dipoles</i>
3/21/16	Andrew Jackson , Department of Earth Sciences, ETH Zürich	<i>Numerical models of the Earth's magnetic field: From conventional to magnetostrophic</i>

4/7/16	Hector Lomelí , Department of Mathematics, University of Texas at Austin	<i>On Hamiltonian Flows Whose Orbits Are Straight Lines</i>
4/14/16	Carrie Morril , National Oceanic and Atmospheric Association (NOAA), Boulder, CO	<i>Climate surprises in the paleoclimate record</i>
4/21/16	Behrouz Touri , Department of Electrical, Computer, and Energy Engineering, University of Colorado Boulder	<i>Distributed Convex and Nonconvex Optimization Over Time-varying Networks</i>
4/28/16	Hui-Shun Kuan , Department of Physics, University of Colorado Boulder	<i>Nonlinear dynamics and phase space flows to understand molecular motor motion on antiparallel lanes</i>
9/1/16	Daniel J Scheeres , Department of Aerospace Engineering Sciences, University of Colorado Boulder	<i>New relative equilibria and their implications in the Full 3-Body Problem</i>
9/8/16	Aaron Clauset , Department of Computer Science, University of Colorado Boulder	<i>Safe Leads and Lead Changes in Competitive Team Sports</i>
9/15/16	Nicholas Featherstone , Department of Applied Mathematics, University of Colorado Boulder	<i>Rise to the Sun: A Modeler's Perspective on the Solar Dynamo Problem</i>
9/22/16	Bruno Deremble , Department of Oceanography, Florida State University	<i>Vorticity generation in the ocean via the interaction of an eddy and a topographic Kelvin wave.</i>
9/29/16	Joel Zylberberg , Department of Physiology and Biophysics, University of Colorado School of Medicine	<i>Maintenance and dynamics of working memory networks</i>
10/6/16	Zach Kilpatrick , Department of Applied Mathematics, University of Colorado Boulder	<i>Dynamics of multilayered neural networks</i>
10/13/16	Vanessa Robins , Department of Physics, Australian National University	<i>Persistent homology analysis of x-ray micro-CT images of porous and granular materials</i>
10/27/16	Or Alus , Technion - Israel Institute of Technology, Haifa, Israel	<i>Diffusion, sticking, "universal exponents" and statistical description of mixed Hamiltonian systems</i>
11/3/16	John Nardini , Department of Applied Mathematics, University of Colorado Boulder	<i>Investigation of a Structured Version of Fisher's Equation</i>
12/1/16	Nathan Guillery , Department of Applied Mathematics, University of Colorado Boulder	<i>Diffusion and Drift in Volume-Preserving Maps</i>
12/8/16	Daniel Poll , Department of Mathematics, University of Houston	<i>Persistent search in single and multiple confined domains: a velocity-jump process model</i>

Fridays - Applied Mathematics Colloquium

The Applied Mathematics Colloquium series was held on select Friday afternoons during the academic year at 3:00 pm, with refreshments preceding at 2:30 pm in the Applied Mathematics Newton Lab. Stephen Becker chaired and organized the Colloquium Series in Spring 2016, with Manuel Lladser taking the reins in the Fall.

1/22/16	Joel Zylberberg , Department of Physiology and Biophysics, University of Colorado School of Medicine	<i>Mathematical and Computational Principles Underlying Robust Perception and Memory</i>
2/5/16	Michael Wakin , Department of Electrical Engineering and Computer Science, Colorado School of Mines	<i>Slepian Sequences and Subspace Models for Signal Processing</i>
2/12/16	Laura Grigori , INRIA Paris - Rocquencourt Alpines group, joint with Laboratoire J.L. Lions, UPMC	<i>An overview of fast and robust communication-avoiding algorithms</i>
2/19/16	Natasha Flyer , Institute for Mathematics Applied to Geosciences (IMaGe), National Center for Atmospheric Research (NCAR)	<i>Radial Basis Function-Generated Finite Differences (RBF-FD): New Computational Opportunities in the Geosciences</i>
2/26/16	Rafael Frongillo , Department of Computer Science, University of Colorado Boulder	<i>Minimizing the Risk of Risk: Computing Risk Measures via Empirical Risk Minimization</i>
3/4/16	Michael Mahoney , Department of Statistics; University of California, Berkeley	<i>Column Subset Selection on Terabyte-sized Scientific Data</i>
3/11/16	Mark Ablowitz , Department of Applied Mathematics, University of Colorado Boulder	<i>Nonlinear waves: solitons at age 50 and more...</i>
4/1/16	John K. Hunter , Department of Mathematics; University of California, Davis	<i>Nonlinear surface plasmons</i>
4/8/16	R. Tyrell Rockafellar , Department of Mathematics, University of Washington	<i>Risk, Optimization and Statistics</i>
4/15/16	Radu Craiu , Department of Statistical Sciences, University of Toronto	<i>Adaptive Strategies for Component-Wise Metropolis-Hastings</i>
4/22/16	Tor Wager , Department of Psychology & Neuroscience, University of Colorado Boulder	<i>Applied Mathematics Department Colloquium</i>
8/26/16	Francois Meyer , Department of Electrical, Computer, and Energy Engineers; University of Colorado Boulder	<i>A Graph Distance for the Structural Analysis of Dynamic Networks</i>
9/2/16	Matt McQueen , Department of Integrated Physiology, University of Colorado Boulder	<i>What is Big Data and Why Should I Care? Lessons from Human Genomics</i>

9/9/16	Yu-Jui Huang , Department of Applied Mathematics, University of Colorado Boulder	<i>Healthcare and Consumption with Aging</i>
9/16/16	Zachary Kilpatrick , Department of Applied Mathematics, University of Colorado Boulder	<i>Evidence accumulation in dynamic environments</i>
9/23/16	Brad Reisfeld , Department of Chemical and Biological Engineering, Colorado State University	<i>The use of mathematical modeling to characterize the disposition and effects of xenobiotics in humans</i>
9/30/16	Cheryl Harrison , National Center for Atmospheric Research (NCAR), Boulder CO	<i>Coherent structures in the ocean: identification and applications</i>
10/7/16	Ziad Musslimani , Department of Mathematics, Florida State University	<i>PT symmetric optics: Mathematical and experimental challenges</i>
	Gino Biondini , Department of Mathematics; University of Buffalo, New York	<i>How many solitons are there in the Zabusky-Kruskal experiment, and why?</i>
10/14/16	Soutir Bandyopadhyay , Department of Mathematics, Lehigh University	<i>A spectral domain test for stationarity of spatial and spatio-temporal processes.</i>
10/21/16	Ben Herbst , Division of Mathematical Sciences, Stellenbosch University	<i>Models in Applied Mathematics</i>
10/28/16	Sean O'Rourke , Department of Mathematics, University of Colorado Boulder	<i>Singular values and vectors under random perturbation</i>
11/4/16	Alireza Doostan , Department of Aerospace Engineering Sciences, University of Colorado Boulder	<i>Uncertainty Quantification Using Low-fidelity Data</i>
11/11/16	Yi Qiang , Department of Geological Sciences, University of Colorado Boulder	<i>From Time to Time: Novel Representations of Time for Visual Analytics</i>
12/2/16	Will Kleiber , Department of Applied Mathematics, University of Colorado Boulder	<i>Multivariate Random Fields</i>

Fridays - Mathematical Biology Seminar

The Math Bio seminar was offered for the first time in Fall 2016. This seminar was offered on Fridays at 4:00 PM, following the Department Colloquium.

9/2/16	Jay Stotsky , Department of Applied Mathematics, University of Colorado Boulder	<i>Numerical methods for accurately computing forces due to drag-coupled particles</i>
9/9/16	Peter Shaffery , Department of Applied Mathematics, University of Colorado Boulder	<i>Understanding Epidemic Variability us- ing Bayesian Hierarchical Models</i>
9/16/16	Amber Smith , Infectious Diseases Department, St. Jude Children's Research Hospital	<i>Integrative Analysis of Host-Pathogen Interactions During Influenza-Pneumococcal Coinfection</i>
9/23/16	John Nardini , Department of Applied Mathematics, University of Colorado Boulder	<i>Biochemical activity-structured population models</i>
9/23/16	Taisa Kushner , Department of Applied Mathematics, University of Colorado Boulder	<i>Mathematical Biology Seminar</i>
9/30/16	Jacqui Wentz , Department of Applied Mathematics, University of Colorado Boulder	<i>Mathematical Biology Seminar</i>
10/7/16	Lewis Baker , Department of Applied Mathematics, University of Colorado Boulder	<i>Mathematical Biology Seminar</i>
10/14/16	Sabina Altus , Department of Applied Mathematics, University of Colorado Boulder	<i>Mathematical Biology Seminar</i>
10/21/16	Abigail Person , Department of Physiology and Biophysics, University of Colorado School of Medicine	<i>Mechanisms of cerebellar control of movement</i>
10/28/16	Harry Dudley , Department of Applied Mathematics, University of Colorado Boulder	<i>Mathematical Biology Seminar</i>
11/4/16	Inom Mirzaev , Department of Applied Mathematics, University of Colorado Boulder	<i>Mathematical Biology Seminar</i>
11/11/16	Sama Shrestha , Department of Applied Mathemat- ics, University of Colorado Boulder	<i>Mathematical Biology Seminar</i>
11/18/16	Eric Kightley , Department of Applied Mathematics, University of Colorado Boulder	<i>Mathematical Biology Seminar</i>
12/2/16	Danielle Lyles , Department of Applied Mathematics, University of Colorado Boulder	<i>The role of large environmental noise in masting: General model and example from pistachio trees</i>
12/9/16	Daniel Poll , Department of Mathematics, University of Houston	<i>Mathematical Biology Seminar</i>

Other Applied Math Talks

Applied Mathematics often offers special talks that do not fall within the normal seminar schedule. There are many reasons for this, but all are as important as any of our regularly scheduled seminars.

Applied Mathematics Instructor Search

4/14/16	Christian Lucero , Department of Statistics, Indiana University	<i>The Role of Optimal Experimental Design In the Solution of Inverse Problems</i>
4/21/16	Eric Vance , Director of the Laboratory for Interdisciplinary Statistical Analysis (LISA)	<i>The Extraordinary Potential of Statistical Collaboration Laboratories</i>
4/26/16	Danielle Lyles , Department of Mathematics, University of Texas at San Antonio	<i>The role of large environmental noise in masting: General model and example from pistachio trees</i>
4/28/16	Eric Thaler , Department of Mathematics, Colorado School of Mines	<i>Quasigeostrophic Theory – Applying Mathematics to Applied Meteorology</i>

Applied Mathematics Special Seminar

3/2/16	Alex Gittens ; International Computer Science Institute; University of California, Berkeley	<i>Why (some) nonlinear embeddings capture compositionality linearly</i>
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2016 SIAM Conference Keynote Speaker

3/5/16	Chun Liu , Department of Mathematics, Penn State University	<i>An energetic variational approach for Ionic Fluids and Ion Channels</i>
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Department of Applied Mathematics 2016 Annual Report

Student Organizations

Society for Industrial and Applied Mathematics (SIAM)

The University of Colorado at Boulder undergraduate chapter of the Society for Industrial and Applied Mathematics (SIAM) was founded to promote interactions between Applied Mathematics students and faculty. Society functions include technical presentations by students, faculty, and industry speakers, field trips and student/faculty social events –all designed to introduce undergraduates to the widespread use of applied mathematics in engineering and the sciences. All interested students, from any major, are encouraged to participate in SIAM-sponsored events.

The graduate student chapter of SIAM at the University of Colorado at Boulder is a low-pressure, informal setting for discussing and learning about applied mathematics. The graduate student chapter holds regular meetings every other Thursday throughout the academic year. Faculty are not allowed at these meetings and the atmosphere is very low-key. Typical meetings involve a member of the organization giving a short, informal talk about their research.

2016 Undergraduate Chapter Leadership

2016-2017 SIAM Officers, CU Boulder

Jeffrey Maierhofer
Grant Baker
Suyog Soti
Lucas Laird
Xiao Xiao
Derek Driggs
Adam Binswanger
Ksenia Lepikhina
Jingyi Liang
Emily Webb
Edward Decrescenzo

Faculty Advisor: Danielle Lyles
Faculty Advisor: Brian Zaharatos

2016 Graduate Chapter Leadership

President: Harry Dudley
Vice-President: Jessica Gronski
Faculty Advisor: Stephen Becker

2016 Undergraduate Chapter Events

September 6, 2016

Introductions and panel discussion involving panel of students who have had internships and/or undergraduate research experience

October 5, 2016

FAST Enterprises: Recruiter and CU Boulder alumni give information session regarding working and interning at FAST Enterprises and tips for successful resumes

October 26, 2016

CU Boulder Information Security Lab DLC 1B20

Students picked locks and learned about attacks on the Internet of Things. Special focus was given to the Mirai bot net) that was responsible for knocking Etsy, Twitter, Github and others offline on Friday, October 21st, 2016.

November 30, 2016

Dispersive Hydrodynamics lab DUANE C226

The CU Boulder Applied Mathematics Department's Dispersive Hydrodynamics Laboratory investigates nonlinear wave phenomena in fluid-like systems. Freshman undergraduate students up to postdocs are trained to use the methods of applied mathematics (asymptotics, analysis, numerical methods, modeling) in order to understand experiments designed and built in-house.

2016 Graduate Chapter Talks

9/29/16	Jessica Gronski , Department of Applied Mathematics, University of Colorado Boulder	<i>Nuclear Norms for Collaborative Filtering</i>
10/25/16	Harry Dudley , Department of Applied Mathematics, University of Colorado Boulder	<i>Analyzing a Differential Algebraic Equation Model for a Microbial Electrolysis Cell</i>
	Nathan Guillery , Department of Applied Mathematics, University of Colorado Boulder	<i>Mathematics of the Sun</i>

2016 Graduate Chapter Eventss

November 30, 2016

Dispersive Hydrodynamics lab DUANE C226

The CU Boulder Applied Mathematics Department's Dispersive Hydrodynamics Laboratory investigates nonlinear wave phenomena in fluid-like systems. Freshman undergraduate students up to postdocs are trained to use the methods of applied mathematics (asymptotics, analysis, numerical methods, modeling) in order to understand experiments designed and built in-house.

12th Annual Front Range Applied Mathematics Student Conference

Saturday, March 5, 2016

Location: The University of Colorado at Denver

This conference allowed student representatives, both undergraduate and graduate, from universities across the Front Range to meet and share research in the field of applied mathematics. Participating universities in 2016 were the Colorado School of Mines, Colorado State University, the University of Colorado Boulder, the University of Colorado Colorado Springs, the University of Colorado Denver, the University of Denver, and the University of Wyoming. Organization was assisted in large part by APPM's graduate chapter of SIAM.

Participants from the CU Boulder Department of Applied Mathematics were Dalton Anderson, Joseph Arehart, Darek Driggs, Will Farmer, James Folberth, Ian Laga, Louie Long, Farhad Pourkamali-Anaraki, Nicolas Pinkowski, and Scott Wurst

2016's Plenary Speaker was Chun Liu, of the Department of Mathematics at Penn State University.

Department of Applied Mathematics 2016 Annual Report

Faculty Research

Undergraduate Focused Grants

EXTREEMS - QED: Directions in Data Discovery (Data Cubed) in Undergraduate Education. Awarded August 1, 2014 through July 31, 2017. The PI is Anne Dougherty (Applied Math), with Ken Anderson (CS), Per-Gunnar Martinsson (Applied Math), Francois Meyer (Electrical Engineering), and Doug Nychka (NCAR) serving as Co-PIs. The purpose of the grant is to enhance undergraduate education in data-enabled science. This is accomplished through (1) the creation of a statistics minor (approved Dec 2014) and creation of data science tracks in Applied Math and CS, (2) creation and revision of several courses which focus on large data, and (3) research projects for undergraduates which involve large data.

Individual Research Grants

Several new grants were received by APPM faculty in 2016, totaling \$1,197,974 in total funds received. Department faculty were Principal Investigator, or Co-Principal Investigator, on over \$12,000,000 in grant funding in 2016. APPM faculty remain strong researchers and work closely with both government and private industry.

Mark J. Ablowitz

Principal Investigator on Grants Received

Granting Institution: Air Force Office of Scientific Research

Grant Code: FA9550-16-1-0041

Duration of Grant: Nov. 15, 2015-Nov 14, 2018

Title of Grant: “Studies of High Power Edge-localized Wave Propagation in Novel Materials; Opportunities to Provide Advanced Antenna and Circuit Capabilities”

Amount of Grant: \$520,965

Granting Institution: NSF-DMS

(National Science Foundation - Division of Mathematical Sciences)

Grant Code: DMS-1310200

Duration of Grant: Sept 1, 2013-Aug 31, 2017

Title of Grant: “Nonlinear wave motion”

Amount of Grant: \$266,371

Co-Principal Investigator on Grants Received

PI: Wounjhang Park (CU-Boulder)

Granting Institution: NSF-CHE

(National Science Foundation - Division of Chemistry)

Grant Code (if any): CHE-1125935

Duration of Grant: Sept 1, 2011- Aug 31, 2016

Title of Grant: “SOLAR Collaborative: Photonic Enhancement of Organic Photovoltaics to Enable Higher Efficiencies and Exotic Mechanisms”

Amount of Grant: \$373,897

Co-PIs: Mark Ablowitz (CU-Boulder), David Walba (CU-Boulder), Garry Rumbles (CU-Boulder), Jao van de Lagemaat (NREL)

Stephen Becker

Co-Principal Investigator on Grants Received:

PI: Sriram Sankaranarayanan (CU-Boulder)

Granting Institution: NSF-SHF

(National Science Foundation - Software and Hardware Foundations)

Grant Code: CCF-1527075

Duration of Grant: Sept 1, 2015 - Aug 31 2018

Title of Grant: “Bilinear Constraint Solving and Optimization for Program Verification and Synthesis Problems”

Amount of Grant: \$350,000

Co-PIs: Stephen Becker (CU-Boulder), Yuen Lam Voronin (CU-Boulder)

Other Funding Received:

Title of Grant: Bloomberg Research Gift Grant

Amount of Grant: \$52,000

Gregory Beylkin

Principal Investigator on Grants Received:

Granting Institution: NSF-DMS

Grant Code: DMS-1320919

Duration of Grant: Sept 15, 2013 - Aug 31, 2016

Title of Grant: “Novel Algorithms for Separated

Representations in Functional Form for the Adaptive Solution of Quantum Chemistry Problems and Other Applications”

Amount of Grant: \$330,000

Co-PIs: Lucas Monzon (CU-Boulder)

David M. Bortz

Co-Principal Investigator on Grants Received

PI: Sriram Sankaranarayanan (CU-Boulder)

Granting Institution: NSF-CPS

(National Science Foundation - CyberPhysical Systems)

Grant Code: CPS-1446900

Duration of Grant: Oct 1, 2014 – Sept 30, 2017

Title of Grant: In-Silico Functional Verification of Artificial Pancreas Control Algorithms

Amount of Grant: \$615,404

Co-PIs: David Bortz (CU-Boulder), David Maahs (CU-Denver), Shalom Ruben (CU-Boulder),

Other Funding Received:

Granting Institution: SAMSI Fellows

(Statistical and Applied Mathematical Sciences Institute)

Grant Code: 5105687

Duration of Fellowship: August 1, 2016 - July 31, 2017

Title of Grant: Optimization Program

Amount of Grant: \$62,681

Co-Recipient: Vanja Dukic (CU-Boulder)

Anne Dougherty

Principal Investigator on Grants Received:

Granting Institution: NSF-DMS

Grant Code: DMS-1407340

Duration of Grant: August 1, 2014 through July 31, 2017

Title of Grant: EXTREEMS-QED: Directions in Data Discovery (Data Cubed) in Undergraduate Education

Amount of Grant: \$591,000

Co-PIs: Ken Anderson (CU-Boulder), Per-Gunnar Martinsson (CU-Boulder), Francois Meyer (CU-Boulder), and Doug Nychka (NCAR).

Vanja Dukic

Principal Investigator on Grants Received:

Granting Institution: Louisiana State University

Grant Code: 84384/PO0000001491

Duration of Grant: Sept. 1, 2013 - Aug 31, 2016

Title of Grant: Collaborative Research: Scaling up epizootic dynamics: Linking individual infection to spatial spread of a disease using Bayesian hierarchical approaches.

Amount of Grant: \$400,870

Co-Principal Investigator on Grants Received:

PI: Michael Hannigan (CU-Boulder)

Granting Institution: EPA (Environmental Protection Agency)

Grant Code: R835424

Duration of Grant: June 1, 2014 - Aug 31, 2018

Title of Grant: "How will cleaner cooking and lighting practices impact regional air quality and climate in the Sahel of Africa?"

Amount of Grant: \$1,500,000

Co-PIs: Katie Dickinson (CU-Boulder), Vanja Dukic (CU-Boulder), Mary Hayden (NCAR), Andrew Monaghan (NCAR), Abraham Oduro (Navrongo Health Research Centre), Christine Wiedinmyer (NCAR)

Nick Featherstone

Principal Investigator on Grants Received

Granting Institution: University of California, Davis

Grant Code: 200911281-05

Duration of Grant: Apr 1, 2013 - June 3, 2016

Title of Grant: Geoinformatics: Faculty Support

Amount of Grant: \$92,934

Granting Institution: University of California, Davis

Grant Code: 201504240-03

Duration of Grant: Aug 15, 2016 - July 31, 2017

Title of Grant: Computational Infrastructure Faculty Support

Amount of Grant: \$96,247

Ian Grooms

Other Funding Received:

Granting Institution: CU-Boulder

Title of Grant: Bloomberg SEED Grant

Duration of Grant: July 1, 2016 - Dec 31, 2017

Award Amount: \$48,000

Mark Hofer

Principal Investigator on Grants Received

Granting Institution: NSF DMS

Grant Code: DMS-1255422 (CAREER Award)

Duration of Grant: Aug 31, 2014 - May 31, 2018

Title of Grant: Solitary Waves and Wavetrains in Dispersive Media

Amount of Grant: \$420,000

Keith Julien

Principal Investigator on Grants Received

Granting Institution: NSF-DMS

Grant Code: DMS-1317666

Duration of Grant: Aug 15, 2013 - July 31, 2017

Title of Grant: Formation, properties and evolution of protoplanetary

vortices: Multiscale investigations of baroclinic instability **Amount of Grant:** \$370,000

Co-PI: Edgar Knobloch (UC Berkeley)

Granting Institution: NSF EAR

Grant Code: EAR-1320991

Duration of Grant: Aug 1, 2013 - July 31, 2016

Title of Grant: Next Generation Modeling of the Geodynamo: Development of the First Multi-Scale Dynamo Model.

Amount of Grant: \$540,000

Co-PIs: Jonathan Aurnou (UCLA), Michael Calkins (CU-Boulder)

Co-Principal Investigator on Grants Received:

PI: Michael Calkins (CU-Boulder)

Granting Institution: NSF EAR

(National Science Foundation - Division of Earth Sciences)

Grant Code: EAR-1620649

Duration of Grant: Aug 01, 2016 - July 31, 2020

Title of Grant: Synergistic Explorations of Hydromagnetic Core Turbulence via Simulations and Asymptotics

Amount of Grant: \$475,046

Co-PIs: Keith Julien (CU-Boulder)

Zachary Kilpatrick

Principal Investigator on Grants Received

Granting Institution: Burroughs Welcome Fund, Ad-Hoc Award

Grant Code: 1016529

Duration of Grant: 2016-2017

Title of Grant: “International Conference on Mathematical Neuroscience”

Amount of Grant: \$5,000

Granting Institution: NSF-DMS

Grant Code (if any): DMS-1642544

Duration of Grant: 2016-2017

Title of Grant: “International Conference on Mathematical Neuroscience”

Amount of Grant: \$20,000

Granting Institution: NSF-DMS

Grant Code (if any): DMS-1615737

Duration of Grant: Sept 1, 2016 - Aug 31, 2019

Title of Grant: “Robust spatiotemporal dynamics
in multilayer neuronal networks”

Amount of Grant: \$234,000

Other Funding Received:

Granting Institution: University of Colorado Boulder,
Research and Innovation Office

Grant Code (if any):

Duration of Grant: 2016-2017

Title of Grant: “International Conference on Mathematical Neuroscience”

Amount of Grant: \$3,000

Co-PIs (if any):

Granting Institution: SIAM

(Society of Industrial and Applied Mathematicians)

Grant Code (if any):

Duration of Grant: 2016-2017

Title of Grant: “International Conference on Mathematical Neuroscience”

Amount of Grant: \$5,000

Co-PIs (if any):

Congming Li

Principal Investigator on Grants Received:

Granting Institution: NSF DMS

Grant Code: DMS-1405175

Duration of Grant: August 1, 2014 - July 31, 2017

Title of Grant: Qualitative analysis focused on some nonlinear systems

Amount of Grant: \$117,801

Manuel B. Lladser

Co-Principal Investigator on Grants Received

PI: T. Cech (CU-Boulder)

Granting Institution: NSF-DGE

(National Science Foundation - Division of Graduate Education)

Grant Code (if any): DGE-1144807

Duration of Grant: July 1, 2012 - June 30, 2017

Title of Grant: "IGERT: Interdisciplinary Quantitative Biology Program"

Amount of Grant: \$3,000,000

Co-PIs: Kristi Anseth, Meredith Betterton, Robin Dowell, Manuel Lladser (all CU-Boulder)

Tom Manteuffel

Principal Investigator on Grants Received:

Granting Institution: DOE (Department of Energy)

Grant Code: DE-F02-03CR25574

Duration of Grant: Sept 15, 2003 - Aug 31, 2018

Title of Grant: First Order Least Squares Methods

Amount of Grant: \$750,180

Granting Institution: Texas A&M

Grant Code: 02-S140240

Duration of Grant: Mar 1, 2014 - Feb 28, 2017

Title of Grant: Center for Exscale Radiation Sponsored Project

Amount of Grant: \$600,000

Per-Gunnar Martinsson

Principal Investigator on Grants Received:

Granting Institution: NSF-DMS

Grant Code: DMS-1320652

Duration of Grant: Aug 1, 2013 - July 31, 2016

Title of Grant: "Scalable and accurate direct solvers for integral equations on surfaces"

Amount of Grant: \$219,187

Co-PIs: Denis Zorin (NYU)

Granting Institution: NSF-DMS

Grant Code: DMS-1620472

Duration of Grant: Sept 01, 2016 - Aug 31, 2019

Title of Grant: "Randomized Algorithms for Matrix Computations"

Amount of Grant: \$249,000

Co-PIs: Denis Zorin (NYU)

Co-Principal Investigator on Grants Received:

PI: Anne Dougherty (CU-Boulder)

Granting Institution: NSF-DMS

Grant Code: DMS-1407340

Duration of Grant: August 1, 2014 - July 31, 2017

Title of Grant: EXTREEMS-QED: Directions in Data Discovery (Data Cubed) in Undergraduate Education

Amount of Grant: \$591,000

Co-PIs: Ken Anderson (CU-Boulder), Per-Gunnar Martinsson (CU-Boulder), Francois Meyer (CU-Boulder), and Doug Nychka (NCAR).

James Meiss

Principal Investigator on Grants Received:

Granting Institution: NSF-DMS

Grant Code: DMS-1211350

Duration of Grant: 2012-2017

Title of Grant: “Structure, Transport, and Chaos in Volume-Preserving Dynamics”

Amount of Grant: \$537,000

Co-Principal Investigator on Grants Received:

PI: Elizabeth Bradley (CU-Boulder)

Granting Institution: NSF-CMMI

(National Science Foundation - Division of Civil, Mechanical,
and Manufacturing Innovation)

Grant Code: CMMI-1537460

Duration of Grant: 2015-2018

Title of Grant: “The Shape of Data: A New Way to Detect Critical Shifts in System Performance”

Amount of Grant: \$430,000

Co-PIs: James Meiss (CU-Boulder)

Eric Vance

Co-Principal Investigator on Grants Received:

PI: Henry Lovejoy (CU-Boulder)

Granting Institution: CAARTS

(Center to Advance Research and Teaching in the Social Sciences)

Grant Code (if any):

Duration of Grant:

Title of Grant: “Probability of Origins for Peoples Involved in the Collapse of the Oyo Empire, 1816-1836”

Amount of Grant: \$4,000

Co-PIs: Eric Vance (CU-Boulder)

Brian Zaharatos

Other Funding Received

Granting Institution: University of Colorado

Fellowship Title: Arts and Science Support of Education through Technology Faculty Fellows Program award

Award Amount: \$3000

Publications

An active research community is vital to any science and engineering department. In 2016, the Department of Applied Mathematics published 67 papers in 48 peer-reviewed journals. This was up slightly from 2015's total of 68 papers in 51 peer reviewed journals.

Mark J. Ablowitz

Chong C, Kevrekidis PG, Ablowitz MJ, Ma YP. "Conical Wave Propagation and Diffraction in Two-Dimensional Hexagonally Packed Granular Lattices." **PHYSICAL REVIEW E. 93 (1) (January 25, 2016).**

Ablowitz MJ, Musslimani ZH. "Inverse Scattering Transform for the Integrable Nonlocal Nonlinear Schrodinger Equation." **NONLINEARITY. 29 (3) (March 01, 2016): 915-946.**

Ablowitz MJ, Demirci A, Ma YP. "Dispersive Shock Waves in the Kadomtsev-Petviashvili and Two Dimensional Benjamin-Ono Equations." **PHYSICA D NONLINEAR PHENOMENA. 333 (October 15, 2016): 84-98.**

Stephen Becker

Becker, S. R. B., Aravkin, A. A. (2016). "Dual Smoothing Techniques for Variational Matrix Decomposition." **ROBUST LOW-RANK AND SPARSE MATRIX DECOMPOSITION (pp. 536 pages). TBD: Chapman and Hall/CRC.**
Retrieved from <https://www.crcpress.com/>

Folberth J, Becker S. "Efficient Adjoint Computation for Wavelet and Convolution Operators." **IEEE SIGNAL PROCESSING MAGAZINE. 33 (6) (November 01, 2016): 135+.**

Gregory Beylkin

Beylkin G, Monzon L. "Efficient Representation and Accurate Evaluation of Oscillatory Integrals and Functions." **DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS. 36 (8) (August 01, 2016): 4077-4100.**

Reynolds MJ, Doostan A, Beylkin G. "Randomized Alternating Least Squares for Canonical Tensor Decompositions: Application to a PDE With Random Data." **SIAM JOURNAL ON SCIENTIFIC COMPUTING. 38 (5) (January 01, 2016): A2634-A2664.**

Harrison RJ, Beylkin G, Bischoff FA, Calvin JA, Fann GI, FossoTande J, Galindo D, Hammond JR, Hartman-Baker R, Hill JC. "Madness: A Multiresolution, Adaptive Numerical Environment for Scientific Simulation." **SIAM JOURNAL ON SCIENTIFIC COMPUTING. 38 (5) (January 01, 2016): S123-S142.**

David M. Bortz

Nardini JT, Chapnick DA, Liu X, Bortz DM. "Modeling Keratinocyte Wound Healing Dynamics: Cell-Cell Adhesion Promotes Sustained Collective Migration." **JOURNAL OF THEORETICAL BIOLOGY. 400 (July 07, 2016): 103-117.**

Stotsky JA, Hammond JF, Pavlovsky L, Stewart EJ, Younger JG, Solomon MJ, Bortz DM. "Variable Viscosity and Density Biofilm Simulations Using an Immersed Boundary Method, Part II: Experimental Validation and the Heterogeneous Rheology-IBM." **JOURNAL OF COMPUTATIONAL PHYSICS. 317 (July 15, 2016): 204-222.**

Keck DD, Bortz DM. "Generalized Sensitivity Functions for Size-Structured Population Models." **JOURNAL OF INVERSE AND ILL-POSED PROBLEMS. 24 (3) (June 01, 2016): 309-321.**

Mirzaev I, Byrne EC, Bortz DM. "An Inverse Problem for a Class of Conditional Probability Measure-Dependent Evolution Equations." **INVERSE PROBLEMS. 32 (9) (September 01, 2016).**

Bortz DM. "Characteristic Roots for Two-lag Linear Delay Differential Equations." **DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS-SERIES B. 21 (8) (October 01, 2016): 2409-2422.**

Jem Corcoran

Corcoran J, Jennings D, Vaughan Miller P. “Perfect and ε -perfect Simulation Methods for the One-Dimensional Kac Equation.” **MONTE CARLO METHODS AND APPLICATIONS.** **22 (4) (2016): 291-305.**

Vanja Dukic

Piedrahita R, Dickinson KL, Kanyomse E, Coffey E, Alirigia R, Hagar Y, Rivera I, Oduro A, Dukic V, Wiedinmyer C. “Assessment of Cookstove Stacking in Northern Ghana Using Surveys and Stove Use Monitors.” **ENERGY FOR SUSTAINABLE DEVELOPMENT.** **34 (October 01, 2016): 67-76.**

Hagar Y, Hayden M, Wiedinmyer C, Dukic V. “Comparison of Models Analyzing a Small Number of Observed Meningitis Cases in Navrongo, Ghana.” **JOURNAL OF AGRICULTURAL, BIOLOGICAL AND ENVIRONMENTAL STATISTICS.** **(2016).**

Ian Grooms

Rocha CB, Young WR, Grooms I. “On Galerkin Approximations of the Surface Active Quasigeostrophic Equations.” **JOURNAL OF PHYSICAL OCEANOGRAPHY.** **46 (1) (January 01, 2016): 125-139.**

Nieves D, Grooms I, Julien K, Weiss JB. “Investigations of Nonhydrostatic, Stably Stratified and Rapidly Rotating Flows.” **JOURNAL OF FLUID MECHANICS.** **801 (August 01, 2016): 430-458.**

Grooms I. “A Gaussian-Product Stochastic Gent-McWilliams Parameterization.” **OCEAN MODELLING.** **106 (October 01, 2016): 27-43.**

Grooms I, Nadeau LP. “The Effects of Mesoscale Ocean–Atmosphere Coupling on the Quasigeostrophic Double Gyre.” **FLUIDS.** **1 (4) (December 2016): 34-34.**

Mark Hoefer

Chung S, Eklund A, Iacocca E, Mohseni SM, Sani SR, Bookman L, Hoefer MA, Dumas RK, Akerman J. “Magnetic Droplet Nucleation Boundary in Orthogonal Spin-Torque Nano-Oscillators.” **NATURE COMMUNICATIONS.** **7 (April 01, 2016).**

Wills P, Iacocca E, Hoefer MA. “Deterministic Drift Instability and Stochastic Thermal Perturbations of Magnetic Dissipative Droplet Solitons.” **PHYSICAL REVIEW B.** **93 (14) (April 07, 2016).**

Maiden MD, Lowman NK, Anderson DV, Schubert ME, Hoefer MA. “Observation of Dispersive Shock Waves, Solitons, and Their Interactions in Viscous Fluid Conduits.” **PHYSICAL REVIEW LETTERS.** **116 (17) (April 28, 2016).**

El GA, Hoefer MA, Shearer M. “Expansion Shock Waves in Regularized Shallow-Water Theory.” **PROCEEDINGS OF THE ROYAL SOCIETY A MATHEMATICAL PHYSICAL AND ENGINEERING SCIENCES.** **472 (2189) (May 01, 2016).**

Hoefer MA, Ilan B. “Onset of Transverse Instabilities of Confined Dark Solitons.” **PHYSICAL REVIEW A.** **94 (1) (July 15, 2016).**

El GA, Hoefer MA. “Dispersive Shock Waves and Modulation Theory.” **PHYSICA D - NONLINEAR PHENOMENA.** **333 (October 15, 2016): 11-65.**

Biondini G, El GA, Hoefer MA, Miller PD. “Dispersive Hydrodynamics: Preface.” **PHYSICA D - NONLINEAR PHENOMENA.** **333 (October 15, 2016): 1-5.**

Maiden MD, Hoefer MA. “Modulations of Viscous Fluid Conduit Periodic Waves.” **PROCEEDINGS OF THE ROYAL SOCIETY A: MATHEMATICAL, PHYSICAL AND ENGINEERING SCIENCE.** **472 (2196) (December 2016): 20160533-20160533.**

Yu-Jui Huang

Fahim A, Huang YJ. “Model-Independent Superhedging Under Portfolio Constraints.” **FINANCE AND STOCHASTICS.** 20 (1) (January 2016): 51-81.

Keith Julien

Beaume C, Knobloch E, Chini GP, Julien K. “Modulated Patterns in a Reduced Model of a Transitional Shear Flow.” **PHYSICA SCRIPTA.** 91 (2) (February 01, 2016).

Calkins MA, Julien K, Tobias SM, Aurnou JM, Marti P. “Convection-Driven Kinematic Dynamos at Low Rossby and Magnetic Prandtl Numbers: Single Mode Solutions.” **PHYSICAL REVIEW E.** 93 (2) (February 24, 2016).

Julien K, Aurnou JM, Calkins MA, Knobloch E, Marti P, Stellmach S, Vasil GM. “A Nonlinear Model for Rotationally Constrained Convection with Ekman Pumping.” **JOURNAL OF FLUID MECHANICS.** 798 (July 01, 2016): 50-87.

Nieves D, Grooms I, Julien K, Weiss JB. “Investigations of Nonhydrostatic, Stably Stratified and Rapidly Rotating Flows.” **JOURNAL OF FLUID MECHANICS.** 801 (August 01, 2016): 430-458.

Plumley M, Julien K, Marti P, Stellmach S. “The Effects of Ekman Pumping on Quasi-Geostrophic Rayleigh-Benard Convection.” **JOURNAL OF FLUID MECHANICS.** 803 (September 25, 2016): 51-71.

Marti P, Calkins MA, Julien K. “A Computationally Efficient Spectral Method for Modeling Core Dynamics.” **GEOCHEMISTRY GEOPHYSICS GEOSYSTEMS.** 17 (8) (August 01, 2016): 3031-3053.

Calkins MA, Long L, Nieves D, Julien K, Tobias SM. “Convection-driven Kinematic Dynamos at Low Rossby and Magnetic Prandtl Numbers.” **PHYSICAL REVIEW FLUIDS.** 1 (8) (December 08, 2016).

Zachary Kilpatrick

Veliz-Cuba A, Kilpatrick ZP, Josic K. “Stochastic Models of Evidence Accumulation in Changing Environments.” **SIAM REVIEW.** 58 (2) (January 01, 2016): 264-289.

Poll DB, Khanh N, Kilpatrick ZP. “Sensory Feedback in a Bump Attractor Model of Path Integration.” **JOURNAL OF COMPUTATIONAL NEUROSCIENCE.** 40 (2) (April 01, 2016): 137-155.

Poll DB, Kilpatrick ZP. “Persistent Search in Single and Multiple Confined Domains: A Velocity-Jump Process Model.” **JOURNAL OF STATISTICAL MECHANICS-THEORY AND EXPERIMENT** (May 01, 2016).

Kilpatrick ZP. “Ghosts of Bump Attractors in Stochastic Neural Fields: Bottlenecks and Extinction.” **DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS SERIES B.** 21 (7) (August 2016): 2211-2231.

McCleney ZT, Kilpatrick ZP. “Entrainment in Up and Down States of Neural Populations: Non-Smooth and Stochastic Models.” **JOURNAL OF MATHEMATICAL BIOLOGY.** 73 (5) (November 01, 2016): 1131-1160.

William Kleiber

Kleiber W, Hendershott B, Sain SR, Wiltberger M. “Feature-Based Validation of the Lyon-Fedder-Mobarry Magnetohydrodynamical Model.” **JOURNAL OF GEOPHYSICAL RESEARCH-SPACE PHYSICS.** **121** (2) (February 01, 2016): 1192-1200.

Verdin A, Funk C, Rajagopalan B, Kleiber W. “Kriging and Local Polynomial Methods for Blending Satellite-Derived and Gauge Precipitation Estimates to Support Hydrologic Early Warning Systems.” **IEEE TRANSACTIONS ON GEOSCIENCE AND REMOTE SENSING.** **54** (5) (May 01, 2016): 2552-2562.

Kleiber W. “High Resolution Simulation of Nonstationary Gaussian Random Fields.” **COMPUTATIONAL STATISTICS & DATA ANALYSIS.** **101** (September 01, 2016): 277-288.

Bracken C, Rajagopalan B, Cheng L, Kleiber W, Gangopadhyay S. “Spatial Bayesian Hierarchical Modeling of Precipitation Extremes Over a Large Domain.” **WATER RESOURCES RESEARCH.** **52** (8) (August 01, 2016): 6643-6655

Congming Li

Chen W, Li C, Li Y. “A Direct Blowing-Up and Rescaling Argument on Nonlocal Elliptic Equations.” **INTERNATIONAL JOURNAL OF MATHEMATICS.** **27** (8) (July 01, 2016).

Cheng Z, Huang G, Li C. “On the Hardy-Littlewood-Sobolev Type Systems.” **COMMUNICATIONS ON PURE AND APPLIED ANALYSIS.** **15** (6) (September 2016): 2059-2074.

Li C, Villavert J. “Existence of Positive Solutions to Semilinear Elliptic Systems with Supercritical Growth.” **COMMUNICATIONS IN PARTIAL DIFFERENTIAL EQUATIONS.** **41** (7) (July 02, 2016): 1029-1039.

Zhang L, Li C, Chen W, Cheng T. “A Liouville Theorem for α -harmonic Functions in \mathbb{R}^n_+ .” **DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS.** **36** (3) (2016): 1721-1736.

Li C, Villavert J. “A Degree Theory Framework for Semilinear Elliptic Systems.” **PROCEEDINGS OF THE AMERICAN MATHEMATICAL SOCIETY.** **144** (9) (April 28, 2016): 3731-3740.

Lei Y, Li C. “Sharp Criteria of Liouville Type for Some Nonlinear Systems.” **DISCRETE AND CONTINUOUS DYNAMICAL SYSTEMS.** **36** (6) (June 30, 2016): 3277-3315.

Cheng T, Huang G, Li C. “The Maximum Principles for Fractional Laplacian Equations and Their Applications.” **COMMUNICATIONS IN CONTEMPORARY MATHEMATICS.** (December 21, 2016).

Manuel B. Lladser

Azofeifa J, Allen M, Lladser M, Dowell R. “An Annotation Agnostic Algorithm for Detecting Nascent RNA Transcripts in GRO-seq.” **IEEE/ACM TRANSACTIONS ON COMPUTATIONAL BIOLOGY AND BIOINFORMATICS.** (2016): 1-1.

Lladser ME, Azofeifa JG, Allen MA, Dowell RD. “RNA Pol II Transcription Model and Interpretation of GRO-seq Data.” **JOURNAL OF MATHEMATICAL BIOLOGY.** **74** (12) (May 03, 2016): 77-97.

Per-Gunnar Martinsson

Haut TS, Babb T, Martinsson P-G, Wingate BA. “A High-Order Time-Parallel Scheme for Solving Wave Propagation Problems Via the Direct Construction of an Approximate Time-Evolution Operator.” **IMA JOURNAL OF NUMERICAL ANALYSIS.** **36 (2) (April 01, 2016): 688-716.**

Hao S, Martinsson P-G. “A Direct Solver for Elliptic PDEs in Three Dimensions Based on Hierarchical Merging of Poincaré-Steklov Operators.” **JOURNAL OF COMPUTATIONAL AND APPLIED MATHEMATICS.** **308 (December 15, 2016): 419-434.**

Martinsson P-G. “Compressing Rank-Structured Matrices Via Random Sampling.” **SIAM JOURNAL ON SCIENTIFIC COMPUTING.** **38 (4) (January 01, 2016): A1959-A1986.**

Martinsson P-G, Voronin S. “A Randomized Blocked Algorithm for Efficiently Computing Rank-revealing Factorizations of Matrices.” **SIAM JOURNAL ON SCIENTIFIC COMPUTING.** **38 (5) (January 01, 2016): S485-S507.**

Bautista MAE, Francavilla MA, Martinsson PG, Vipiana F. “(N) Nested Skeletonization Scheme for the Analysis of Multiscale Structures Using the Method of Moments.” **IEEE JOURNAL ON MULTISCALE AND MULTIPHYSICS COMPUTATIONAL TECHNIQUES.** **1 (2016): 139-150.**

James D. Meiss

Lerman LM, Meiss JD. “Mixed Dynamics in a Parabolic Standard Map.” **PHYSICA D-NONLINEAR PHENOMENA.** **315 (February 01, 2016): 58-71.**

Fox AM, Meiss JD. “Computing the Conjugacy of Invariant Tori for Volume-Preserving Maps.” **SIAM JOURNAL ON APPLIED DYNAMICAL SYSTEMS.** **15 (1) (January 01, 2016): 557-579.**

Alus O, Fishman S, Meiss JD. “Probing the Statistics of Transport in the H_{non} Map.” **EUROPEAN PHYSICAL JOURNAL - SPECIAL TOPICS.** **225 (67) (September 01, 2016): 1181-1186.**

Garland J, Bradley E, Meiss JD. “Exploring the Topology of Dynamical Reconstructions.” **PHYSICA D-NONLINEAR PHENOMENA.** **334 (November 01, 2016): 49-59.**

Juan G. Restrepo

Madhusudhanan P, Restrepo JG, Liu Y, Brown TX. “Analysis of Downlink Connectivity Models in a Heterogeneous Cellular Network Via Stochastic Geometry.” **IEEE TRANSACTIONS ON WIRELESS COMMUNICATIONS.** **15 (6) (June 01, 2016): 3895-3907.**

Virkar YS, Shew WL, Restrepo JG, Ott E. “Feedback Control Stabilization of Critical Dynamics Via Resource Transport on Multilayer Networks: How Glia Enable Learning Dynamics in the Brain.” **PHYSICAL REVIEW E.** **94 (4) (October 18, 2016).**

Harvey Segur

Martin RA, Segur H. “Toward a General Solution of the Three-Wave Partial Differential Equations.” **STUDIES IN APPLIED MATHEMATICS.** **137 (1) (July 01, 2016): 70-92.**

Eric Vance

Van Houweling E, Hall R, Carzolio M, Vance E. “‘My Neighbour Drinks Clean Water, While I Continue to Suffer’: An Analysis of the Intra-Community Impacts of a Rural Water Supply Project in Mozambique.” **THE JOURNAL OF DEVELOPMENT STUDIES.** **(October 24, 2016): 1-16.**

Invited Lectures and Meetings Attended

The department of Applied Mathematics is filled with dynamic instructors and active researchers. Presenting their results at other universities and at meetings of their peers demonstrates both of these traits. Sharing knowledge is vital to the scientific process - below we list the locations around the globe that our faculty have given and received shared knowledge.

Mark Ablowitz

- “Solitons at age 50 and more...” APPM, U. Colo. Boulder, March 11, 2016
- “Nonlinear Waves: Solitons After 50 Years, and More...”, Math Dept. University Science and Technology, Hefei, China, June 26, 2016
- “Photonic Graphene and Dynamics”, International Meeting Nonlinear waves, Tsinghua University, Beijing, China, June 25, 2016 (Meeting June 25-28, 2016)
- “Nonlinear Waves: Solitons After 50 Years, and More...”, Math Dept, Tsinghua University, Beijing, China, June 28, 2016
- “Photonic Graphene and Wave Propagation”, SIAM National Meeting, Boston Mass, July 11, 2016
- “Short course: On the Inverse Scattering Transform: History, Background Methods, London Math Society Meeting on Integrability”, Durham, UK, July 26, 2015 (Meeting July 24-31, 2016)
- “Wave Propagation Across Edges and Corners in Bounded Photonic Graphene,” AF Workshop Nonlinear Optics, Sept 27, 2016
- “Wave Propagation in Photonic Graphene and Rogue Waves”, Inst. for Math and Applications (IMA), U. Minnesota
- “Nonlinear Waves: Solitons at age 50 and ...”, Physics Dept Colloquium, U. Mich., Nov. 8, 2016
- “Solitons and (Many) Nonlocal Integrable Nonlinear Equations”, Applied Math Seminar, U. Mich., Nov. 10, 2016
- “Solitons and (Many) Nonlocal Integrable Nonlinear Equations”, Canadian Math. Society, Dec. 4, 2016
- “Solitons At Age 50 and More...”, Plenary Lecture, Canadian Math. Society, Dec. 5, 2016

Stephen Becker

- Pourkamali-Anaraki F, Becker S. "A Randomized Approach to Efficient Kernel Clustering." IEEE Global Conference on Signal and Information Processing (GlobalSIP) December 06, 2016-December 09, 2016), presented December 06, 2016
- Becker Sr, Yu JY, Chen S, Xing J, Zahreddine R, Cormack R, Wallin B, Herzfeld U, Cogswell C. "EPIC microscopy generates 3D images of continuous structures without changing focus." SPIE Photonics West, February 16, 2016
- Applied Math and Statistics Department Colloquium, Colorado School of Mines, September 02, 2016
- Statistics and Operations Research Department Colloquium, UNC Chapel Hill, November 21, 2016

Vanja Dukic

- Invited presentation: SIAM, 2016
- SAMSI summer school

Bengt Fornberg

- Colloquium, Air Force Institute of Technology, Dayton, OH
- Colloquium, University of Colorado, Colorado Springs, CO

Mark Hoefer

- “Frictionless Dispersive Hydrodynamics of Fluids and Ferromagnets”, Colloquium, Department of Physics, Colorado State University, Fort Collins, CO, April 2016.
- “How Corn Syrup Can Display Effectively Frictionless Flow”, Colloquium, Department of Physics and Astronomy, Washington State University, Pullman, WA, April 2016.
- “Optical Hydrodynamic Soliton Tunneling”, Mathematical and Physical Models of Nonlinear Optics, Institute for Mathematics and Applications, Minneapolis, MN, October 2016.
- “Non-convex/Non-classical Dispersive Hydrodynamics”, American Mathematical Society Fall Western Sectional Meeting, Denver, CO, October 2016.
- “Nonlinear Wavetrains in Viscous Conduits” (with Michelle Maiden), Colorado Nonlinear Day, Colorado Springs, CO, April 2016.
- “Analytical Theory of Propagating Magnetic Droplet Solitons”, Joint Intermag and Magnetism and Magnetic Materials Conference, San Diego, CA, January 2016.
- “The Kawahara Equation in Nonlinear Optics” (poster with Patrick Sprenger), Mathematical and Physical Models of Nonlinear Optics, Institute for Mathematics and its Applications, Minneapolis, MN, November 2016.

Yu-Jui Huang

- “Time-Inconsistent Stopping Problems under Decreasing Impatience”, Statistics Seminar, Department of Statistics, University of Toronto, January 28, 2016.
- “Time-Inconsistent Stopping Problems under Decreasing Impatience”, Mathematical Finance Seminar, Questrom School of Business, Boston University, February 1, 2016.
- “Time-Inconsistent Stopping Problems”, Probability Seminar Academia Sinica, Taiwan, May 30, 2016.
- “Healthcare and Consumption with Aging”, Stochastics Seminar, National Central University, Taiwan, June 3, 2016.
- “Time-Inconsistent Stopping Problems”, Mathematical Finance Colloquium, Department of Mathematics, University of Southern California, September 26, 2016.
- “Healthcare and Consumption with Aging”, Stochastic Control Problems in Finance session, SIAM Conference on Financial Mathematics and Engineering, November 19, 2016.
- “Time-Inconsistent Stopping Problems under Decreasing Impatience”, Mathematics Departmental Seminar, Department of Mathematics, Rutgers University, January 26, 2016.

Keith Julien

- “The Effects of Ekman Pumping on Quasigeostrophic Rayleigh-Benard Convection”, NCAR Workshop on Geophysical Fluid Dynamics, (In honor of Jim McWilliams 70th Birthday), August 2016.
- Michael Calkins, Louie Long, David Nieves, Keith Julien, and Steven Tobias, “Convection-Driven Dynamos in the Limit of Rapid Rotation”, APS 61st Annual Division of Fluid Dynamics meeting,
- Keith Julien, David Nieves, Ian Grooms, Jeffrey Weiss, “Quasigeostrophic Investigations of Nonhydrostatic, Stably-Stratified and Rapidly Rotating Flows”, APS 61st Annual Division of Fluid Dynamics meeting
- Benjamin Miquel, Keith Julien, and Edgar Knobloch, “Equatorially Trapped Convection in a Rapidly Rotating Spherical Shell”, APS 61st Annual Division of Fluid Dynamics meeting
- Greg Chini, Cesar Rocha, Keith Julien, ColmCille Caulfield, “Multiscale Equations for Strongly Stratified Turbulent Flows”, APS 61st Annual Division of Fluid Dynamics meeting
- Meredith Plumley, Keith Julien, Philippe Marti, Stephan Stellmach, Jonathan Aurnou, and Emily Hawkins, “The Sensitivity of Rotating Rayleigh-Benard Convection to the Ekman Number”, APS 61st Annual Division of Fluid Dynamics meeting,
- JinHan Xie, Benjamin Miquel, Edgar Knobloch, and Keith Julien, “Salt-Fingering Convection in the Small Diffusivity Ratio Limit”, VIIIth International Symposium on Stratified Flows
- Keith Julien, David Nieves, Ian Grooms, and Jeffrey Weiss, “Quasigeostrophic Investigations of Non-Hydrostatic, Stably-Stratified and Rapidly Rotating Flows”, AGU Annual Fall Meeting, San Francisco, 2016
- Keith Julien, “The Effects of Ekman Pumping on Quasigeostrophic Rayleigh-Benard Convection,” Workshop on Multiscale Interactions in Geophysical Fluid Dynamics, MFO Germany.

Zachary Kilpatrick

- “Attractor Models of Working Memory”, Physics Colloquium, University of Arkansas, March 2016.
- “Evidence Accumulation in Dynamic Environments”, Bernstein Sparks Workshop, Gottingen, Germany, May 2016.
- “Phase Models of Bump Dynamics in Spatial Working Memory”, SIAM Life Sciences, Boston MA, July 2016.
- “Stochastic Models of Working Memory”, Applied Math Seminar, Colorado State University, September 2016
- “Learning the Rate of Change of Dynamic Environments”, Biophysics/Physiology Colloquium, University of Colorado, School of Medicine, November 2016.
- “Learning About Volatility in Changing Environments”, Applied Math Colloquium, University of Colorado, Boulder, September 2016.

William Kleiber

- Invited presentation: “Equivalent Kernels and Some Theory for Kriging Asymptotics”, Universite de Bretagne Occidentale, Brest, France
- Invited presentation: “Stochastic Weather Generators: From WGEN to BayGEN”, Workshop on Stochastic Weather Generators, Vannes, France
- Invited presentation: “Spatial Statistics for Climate and Weather. Uncertainty Modeling in the Analysis of Weather, Climate and Hydrological Extremes, Banff, Canada
- “Some Problems in Spatial Modeling: Simulation and Multivariate Random Fields”, Colloquium, Boulder Fluid and Thermal Sciences Seminar, Boulder, CO
- Invited presentation: “The Challenge of Creating Historical Climate Products for the United States”, The International Environmetrics Society, Edinburgh, Scotland
- Topic contributed talk: “Simulation of Nonstationary Random Fields”, Joint Statistical Meetings, Chicago, IL
- “Some Problems in Spatial Modeling: Multivariate Random Fields and Simulation”, Colloquium, Michigan State University, East Lansing, MI
- “Multivariate Random Fields”, Applied Mathematics Colloquium, University of Colorado, Boulder
- Invited presentation: “Models for Large Multivariate Data”, International Chinese Statistical Association, Shanghai, China

Congming Li

- “Plenary Lecture”, International Conference on Nonlinear Analysis and Nineteenth National Conference on Nonlinear Functional Analysis, Wuhan, China, May 20-22, 2016
- “Plenary Lecture”, Workshop on the analysis of partial differential equations IV, Shanghai (Organizer), SJTU, Shanghai, China, June 3-6, 2016
- PDE seminar, Fudan University, May 2016
- Colloquium, JiangSu Normal University, June 2016

Manuel Lladser

- 7th Association for Computing Machinery (ACM) Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB), Seattle, Poster with graduate student R.C. Tillquist, October 2016
- Frontier Probability Days 2016, Mathematics Department, University of Utah, Salt Lake City, May 2016
- Science Short, BioFrontiers Institute, University of Colorado, Boulder, May 2016

Per-Gunnar Martinsson

- “Fast Direct Solvers for Elliptic PDEs”, ICES, University of Texas, Austin, March 2016.
- “Plenary Keynote Address”, SHAXC conference, King Abdullah University of Science and Technology (KAUST), Saudi Arabia, May 2016.
- “The mathematics behind analysis of complex data”, Department of Mathematics, Royal Institute of Technology, Stockholm, Sweden, May 2016.
- “Randomized matrix algorithms, high order discretization of PDEs, direct solvers, and more”, Mathematics Institute, University of Oxford, UK, June 2016
- “Randomized algorithms for matrix computations and analysis of high dimensional data”, Park City Mathematical Institute summer school, Advanced Study at Princeton, Utah, July 2016.
- “Randomized methods for accelerating matrix factorization algorithms”, University of Texas, Austin, September 2016.
- “Fast Direct Solvers”, Center for Computational & Applied Mathematics, Purdue University, November 2016.

Juan Restrepo

- Applied Dynamics Seminar, University of Maryland, April 2016

Harvey Segur

- “Tsunami”, Math Colloquium, University of New Mexico, Albuquerque, NM, February 21, 2016.
- “The three-wave equations” University of New Mexico, Albuquerque, NM, February 22, 2016.

Eric Vance

- Kazuzuru, B. and Vance, E. “Performance, Challenges, and Benefits of Statistical Collaboration for Universities in Developing Countries: The Case of Sokoine University of Agriculture (SUA)”, African Statistics Day Conference, University of Dodoma, Tanzania, 2016.
- “The Extraordinary Potential of Statistical Collaboration Laboratories”, Joint Statistical Meetings (JSM), Chicago, IL, 2016.
- Vance, E. and Shapiro, G. “How Statisticians Can Lead Global Engagement in Science”, AAAS Annual Meeting, Washington, D.C., 2016.
- Goshu, A.T. and Vance, E. “Statistical Collaboration Center and Its Services at Hawassa University, Ethiopia.” AAAS Annual Meeting, Washington, D.C., 2016.
- Vance, E. and Hall, R. “Data Anonymization: Lessons Learned from a Millennium Challenge Corporation Impact Evaluation”, Transparency + Reproducibility Workshop, Berkeley Initiative for Transparency in the Social Sciences, University of California, Berkeley, 2016.
- Ngaya, R. and Vance, E. “LISA 2020: Improving Agricultural Research in Tanzania Through Statistical Collaboration”, Joint Statistical Meetings, Chicago, IL, 2016.
- Vance, E. and Smith, H. “Using Video to Improve Your Practice of Statistics”, ASA Conference on Statistical Practice, San Diego, CA, 2016.
- Smith, H. and Vance, E. “Explaining Statistics to Non-statisticians”, ASA Conference on Statistical Practice, San Diego, CA, 2016.
- Vance, E., Metzger, T., Pruitt, T. and Goshu, A.T. “The Educational Impact of Working in a Statistical Collaboration Laboratory”, 8th Annual Conference on Higher Education Pedagogy, Blacksburg, VA, 2016.
- Tritter, B. (moderator), Hall, R., Homann, J., Sturdy, J. and Vance, E. “(Some of) the Data’s Out There, Now What?”, Open Data: Big Impact, Millennium Challenge Corporation, Washington, D.C., 2016.
- Vance, E. “Introduction to LISA”, talk to representatives from Northrup Grumman and CU Boulder, September 14, 2016.
- Vance, E. “Creating a Network of Statistical Collaboration Laboratories”, Department of Statistics Seminar, Kansas State University, Manhattan, KS, 2016.
- Vance, E. “The Extraordinary Potential of Statistical Collaboration Laboratories”, Language and Culture Institute Humphrey Fellows Seminar, Virginia Tech, Blacksburg, VA, 2016.
- Vance, E. “The Potential of Statistical Collaboration Laboratories”, Department of Biostatistics, Virginia Commonwealth University, Richmond, VA, 2016.
- Vance, E. “The Extraordinary Potential of Statistical Collaboration Laboratories”, Department of Applied Mathematics Seminar, University of Colorado, Boulder, 2016.
- Hall, R. and Vance, E. “Data Anonymization: Lessons Learned from a Millennium Challenge Corporation Impact Evaluation”, Virginia Tech Library Open Data Week, Blacksburg, VA, 2016.
- Vance, E. “Introduction to LISA”, talk to representatives from MedImmune and CU Boulder, December 14, 2016.

Brian Zaharatos

- “Beyond Algorithms: Philosophy of Statistics in the Standard Curriculum”, Committee on the History and Philosophy of Science “Coffee Talk” series, February 23, 3:30pm-5pm.

Department of Applied Mathematics 2016 Faculty Service

Service is the third pillar of faculty support for the University, alongside Teaching and Research. Activity in all three areas is required for tenure at the University of Colorado, and is expected of faculty even after achieving tenure. Service takes many forms, from membership on important governing committees, to educational outreach, to editing and reviewing scientific papers. Applied Mathematics faculty are active in all these areas and more.

Mark J. Ablowitz

Editor, Co-editor or Editorial Board Member of Journal

- Senior Associate Editor, NIST, Digital Library of Mathematical Functions
- Member, Editorial Board: Cambridge Texts in Applied Mathematics
- Member, Editorial Board: Studies in Applied Mathematics
- Member, Editorial Board: Dynamics of Partial Differential Equations

Peer Review of Manuscripts, Grants or Creative Work

- Multiple NSF DMS grants--FRG, regular grants
- Air Force Office of Scientific Research
- Multiple manuscripts: Studies in Applied Math
- Applied Physics Letters

Stephen Becker

Department, Unit, or Institute Service

- Colloquium chair, Spring 2016
- Graduate prelim committee, August 2016 (Applied Analysis)
- Graduate prelim committee, January 2017 (and worked Dec 2016). Numerics Applied Math faculty-search committee, Fall 2016

Campus Service

- External member (different department and college), Electrical engineering faculty-search committee, Fall 2016/Spring 2017; one of 6 members, hiring for three positions and several hundred applicants.

Peer Review of Manuscripts, Grants or Creative Work

- Reviewed approximately seven to nine journals articles (journals: ACHA, IEEE TSP, IEEE TIT, SIAM SIIMS, SIAM).

Gregory Beylkin

Department, Unit, or Institute Service

- Executive Committee, Graduate Committee

Editor, Co-editor or Editorial Board Member of Journal

- Editorial Board member for Applied and Computational Harmonic Analysis

Peer Review of Manuscripts, Grants or Creative Work

- Reviewed papers for several journals and AFOSR proposals

Sujeet Bhat

Department, Unit, or Institute Service

- Prepared a departmental Inclusivity Statement on behalf of the instructors of the Department of Applied Mathematics at the behest of the Chair of the Applied Mathematics Department, Dr. Keith Julien, Spring 2016.

University of Colorado Service

- Performed outreach in service of the university by developing and teaching a summer bridge course in Statistics for incoming freshman for the Program for Excellence in Academics and Community (PEAC) through the Miramontes Arts and Sciences Program (MASP formerly Minority Arts and Sciences Program), Summer 2016. The course focused on basic Probability Theory and Statistics. This program serves underrepresented freshman populations and first generation college students. This service diversity and inclusivity of the university as well as contributing to the STEM efforts currently underway at this university.

Other Professional Service

- Achieved TIPS (Training for Intervention Procedures) certification to better and more responsibly serve the university community as well as the general community at large.

David M. Bortz

Paid Consulting Activities

- Consultant to Leidos

Department, Unit, or Institute Service

- Created APPM Professional Masters Degree
- Preliminary Exam Committee for Partial Differential Equations

School or College Service

- CUBioFrontiers
- Task Force Member
- IQ Bio faculty member
- IQBio working group
- RASEI affiliate

Campus Service

- Boulder Campus Cyberinfrastructure Board Member

Editor, Co-editor or Editorial Board Member of Journal

- Member, Editorial Board for Mathematical Biosciences and Engineering
- Member, Editorial Board for SIAM Undergraduate Research Online

Peer Review of Manuscripts, Grants or Creative Work

- Reviewer, PLoS: Computational Biology
- Reviewer, J. Math. Biology
- Reviewer, Mathematical Biosciences
- Reviewer, Neural Computing and Applications
- Reviewer, J. Inverse & Ill-Posed Problems
- Reviewer, 2nd article from PLoS: Computational Biology
- Reviewer, Inverse Problems in Science and Engineering

Other Professional Service

- Co-organized a minisymposium “Microscale Cellular Modeling and Emergent Macroscale Growth Dynamics” at the 2016 SIAM Life Sciences Conference

Jem Corcoran

Department, Unit, or Institute Service

- Chair, PUEC committee for Professor Mark Ablowitz
- Member, faculty search committee
- Member, APPM graduate committee
- Member, Probability and Statistics preliminary examination committee

Editor, Co-editor or Editorial Board Member of Journal

- Editorial Board Member, “Involve”, a journal dedicated to mathematical research involving students.

Peer Review of Manuscripts, Grants or Creative Work

- Reviewer, Measurement Science and Technology journal

Murray Cox

Student Recruitment (including guest lectures, clinics, workshops and performances with emphasis on recruitment)

- I spoke for a TA panel discussion. The discussion was with concern to career directions and teaching possibilities.
- I taught with the BOLD center for their ASPIRE program. This program attempts to give students a head start before they jump into CU engineering, Summer 2016.
- I taught with the BOLD center for their summer GOLD SHIRT program. The program targets students that are in need of extra math skills and attempts to build a familiarity with the campus and department faces.

Community Service within Boulder County

- I have been working with “at-risk” youth at Corner Boxing Gym in Boulder.

Other Professional Service

- I was the acting liaison for APPM during the hiring meeting to recruit new LA’s into our department.
- I observed a couple TA’s during their recitation, took notes, and provided them with feedback in order to help improve their abilities.

James H. Curry

Service to Scholarly or Professional Organizations

- Panelist, Ford Foundation Annual Fellowship meeting. Panelist for the Ford Seniors Fellowship conference. Reviewed more than 20 applications for Ford Foundation review panel. Reviewed more than 20 applications for an NSF review panel.
- Member, SIAM Membership Committee, Appointed Fall 2014, service 2015-2017, Chair 2017-2019.
- Member, various Ford Fellowship Committees, 2012-present.
- Session Chair/Moderator, Ford Foundation Annual Program, 2014 (two sessions). This is an ongoing contribution and commitment to diversity.

Campus Service

- Grand Challenge Earth Lab Committee-Focus on Educational Program.
- Search/Interview committee for Dean of the College of Engineering and Applied Sciences.

Other Professional Service

- Reviewer, National Science Foundation--approximately 25 folders. Panelist in January 2016.
- Trustee of the University of Colorado Foundation

Anne M. Dougherty

Department, Unit, or Institute Service

- Associate Chair, Department of Applied Mathematics, July 1, 2000-present.
- Undergraduate committee chair, Department of Applied Mathematics.
- Member, Applied Math's ad hoc statistics committee which prepared and submitted to A&S a proposal for a BA degree in Statistics and Data Science. This proposal is currently pending.

School or College Service

- Applied Math's representative, several College of Engineering and University programs: Admitted Students Day, April 9, 2016; Engineering Orientation activities throughout summer 2016 and on August 18-19, 2016 ; and Engineering Sampler, October 8, 2016.
- Applied Math's representative to the College of Engineering's Scholarship Committee.
- Applied Math's representative to the Undergraduate Education Council in the College of Engineering. This committee supervises the undergraduate degree programs in engineering.

Campus Service

- CU campus representative, Goldwater Scholarship. Four CU undergraduate students, majoring in science, math or engineering, are selected each year for the national competition. Three of our four nominees received the Goldwater Scholarship for the 2016-2017 academic year, Spring 2016. These students are Derek T. Driggs, Richard D. Paucek, and Matthew N. Winchester. The Goldwater Foundation awarded 252 scholarships nationwide.
- Actuarial Studies and Quantitative Finance Certificate Program committee member. Co-director of the program with David Grant.
- Transfer credit evaluator, Department of Applied Mathematics.
- Member, A&S Core Revision Committee, Spring 2016, co-chaired by Cora Randall and Ann Schmiesing.
- Worked with David Reed, the director of the Interdisciplinary Telecommunications Program, to submit a proposal for a concurrent degree: BS in Applied Math and MS in ITP with an emphasis in network security. This proposal was approved in December 2016. We will now work to advertise this new program.
- Member, an ad hoc campus committee which seeks to improve math placement advice for incoming CU students. This committee is chaired by Mary Kraus, Vice Provost and Associate Vice Chancellor for Undergraduate Education.

Other Professional Service

- Organizer, together with faculty from CU-Denver and CU-Colorado Springs, of the annual Front Range Applied Mathematics Student Conference (FRAMSC). This conference is for undergraduate and graduate students from the Front Range to improve their presentation skills by discussing their research in a friendly environment. The twelfth FRAMSC conference was held on Saturday, March 5, 2016.

Vanja Dukic

Service to Scholarly or Professional Organizations

- Elected member, Board of Directors, International Society for Bayesian Analysis (ISBA)
- Board of Directors member, ICERM (“Institute for Computational and Experimental Research in Mathematics”), Providence RI

School or College Service

- A&S Budget Committee
- A&S Council (departmental representative)
- Statistics Initiative committee chair

Campus Service

- Boulder Campus Cyberinfrastructure Board (BCCB) (member)

Editor, Co-editor or Editorial Board Member of Journal (does not include advisory boards)

- Editorial Board, “Bayesian Analysis”
- Editorial board/ Statistical Advisor to BMC

Peer Review of Manuscripts, Grants or Creative Work

- Manuscript reviewer, Radiology, Bayesian Analysis, Journal of the American Statistical Association

Bengt Fornberg

Department, Unit, or Institute Service

- Chair’s Advisory Committee
- Faculty Evaluation (Personnel) Committee
- Numerics prelim committee, August 2016
- Department Awards Committee (Chair, spring semester)
- Member of search committee for associate professor, computational mathematics.

School or College Service

- Boulder Faculty Assembly (BFA) Administrative Services and Technology Committee.
- Boulder Faculty Assembly (BFA) Excellence Awards Committee

Peer Review of Manuscripts, Grants or Creative Work

- Refereed about 20 articles during the year, for various journals and a book publisher (Wiley).

Other Professional Service

- Co-organizer, 1-week Workshop, to be held August 7-11, 2017, at ICREM (Institute for Computational and Experimental Research in Mathematics), Brown University. Successful proposal to ICERM and NSF.

Ian Grooms

Department, Unit, or Institute Service

- Served on Undergraduate committee as co-chair of the colloquium I invited speakers for the spring 2017 colloquium series in Applied Mathematics.

Peer Review of Manuscripts, Grants or Creative Work

- Reviewer, one manuscript for J. Physical Oceanography
- Reviewer, one manuscript for Nonlinearity
- Reviewer, two manuscripts in Ocean Modelling
- Reviewer, one manuscript for Geophysical Research Letters
- Reviewer, one manuscript for Geophysical Model Development
- Reviewer, one manuscript for SIAM J. Numerical Analysis
- Reviewer, one manuscript for J. Difference Equations and Applications

Mark Hofer

Public Lectures, Speeches

- CU Wizards Show titled “Surfing with a Mathematician, Nonlinear Waves in Fluids”, November.

Department, Unit, or Institute Service

- Preliminary Exam writer/grader (PDE), Winter 2016.
- Member of the Graduate Committee, August-December.
- Member of the Instructor Hiring Committee, March-April.

Campus Service

- Member, Faculty Leadership Institute August-present.

Editor, Co-editor or Editorial Board Member of Journal

- Co-editor, special issue in the journal Physica D on Dispersive Hydrodynamics, October 2014-April 2016.

Peer Review of Manuscripts, Grants or Creative Work

- Refereed a number of articles.

Student Recruitment (including guest lectures, clinics, workshops and performances with emphasis on recruitment)

- Gave tours of the Dispersive Hydrodynamics Laboratory during graduate student recruitment in March and undergraduate student recruitment during the summer.

Yu-Jui Huang

Service to Scholarly or Professional Organizations

- Society for Industrial and Applied Mathematics, Activity Group on Financial Mathematics and Engineering (organized and chaired a symposium in the biannual SIAM Conference on Financial Mathematics and Engineering in November 2016).

Department, Unit, or Institute Service

- Department of Applied Mathematics, Undergraduate Committee (participated in the management of the undergraduate program and curriculum, and advised undergraduate students).

Peer Review of Manuscripts, Grants or Creative Work

- Reviewed 1 manuscript for the Annals of Applied Probability.
- Reviewed 2 manuscripts for the SIAM Journal on Control and Optimization.
- Reviewed 1 manuscript for SIAM Journal on Financial Mathematics.

Keith Julien

Department, Unit, or Institute Service

- APPM Ad Hoc Committee on Space (member and Chair)
- APPM Chairs Advisory Committee (Member)
- APPM Merit Review Committee;
- Chair, Department of Applied Mathematics, July 2016. Service included Assistant professor faculty search (Successful, Dr. Yu-Jui Huang) Associate professor (opportunity hire in conjunction with Mechanical Engineering, Successful, Dr. Eric Vance). Hiring of an Graduate Coordinator (Successful, Ms. Emily O'Connor) Chair of APPM committee on Space. Chair of 2016/2017 ARPAC review Co-Leader of APPM's initiative for a BA in Statistics and Data Sciences.
- Committee Member, BA degree proposal on Statistics and Data Science, 2016.

School or College Service

- Chancellors Postdoctoral Fellows Review Panel for AY 2017-2018
- AeroSpace Ventures Committee

Editor, Co-editor or Editorial Board Member of Journal (does not include advisory boards)

- Editorial Board Nonlinearity

Peer Review of Manuscripts, Grants or Creative Work

- Journal of Fluid Mechanics; Physics Review Fluids; Journal of Physical Oceanography.

Zachary Kilpatrick

Service to Scholarly or Professional Organizations

- Co-chair, 2016 International Conference on Mathematical Neuroscience, May 29-June 1, Antibes, France. Chair for 2017 International Conference on Mathematical Neuroscience, May 30-June 2, Boulder, CO. Chose and invited plenary speakers, selected the program committee, set up abstract submission system, setup the program, developed a tutorial day for the conference, and managed the conference budget.
- Alumni mentor, Association for Women in Math, University of Utah
- Mentor, National Alliance for Doctoral Studies in the Mathematical Sciences

Department, Unit, or Institute Service

- Awards Committee, Applied Mathematics Department, University of Colorado Boulder from August 2016-July 2017. Identified award and honors opportunities for members of the faculty, and initiated the nomination procedure for these awards.
- University of Houston, Department of Mathematics, Colloquium Committee, January-May 2016. Invited and hosted speakers for departmental colloquium.

School or College Service

- University of Houston, NETWORKS Seminar Committee, January-May 2016. Invited and hosted speakers for a seminar that featured researchers in biology, computer science, engineering, physics, and math that study cutting edge problems in network science.

Peer Review of Manuscripts, Grants or Creative Work

- Reviewer, Scientific Reports, Physical Review E, Cosyne Conference, Biological Cybernetics, PLoS Computational Biology, Applied Mathematical Modeling, and Journal of Mathematical Biology.

Community Service Other

- Cougar and Houston Area Mathematics Program (CHAMP), University of Houston, facilitating high school mathematics outreach program, January-May 2016.

Will Kleiber

Service to Scholarly or Professional Organizations

- Organizer, international conference Big Data in Environmental Science (Pacific Institute for the Mathematical Sciences), University of British Columbia, Vancouver, Canada.
- Organizer, Workshop on Stochastic Weather Generators, Vannes, France

Department, Unit, or Institute Service

- Department Awards Committee member, Spring/Fall 2016
- Probability and Statistics prelim committee member, Spring 2016
- Probability and Statistics prelim committee member, Fall 2016

Editor, Co-editor or Editorial Board Member of Journal (does not include advisory boards)

- Associate Editor, Annals of Applied Statistics
- Associate editor, Advances in Statistical Climatology, Meteorology and Oceanography
- Associate editor for Stat.

Peer Review of Manuscripts, Grants or Creative Work

- Reviewer, Biometrika (x2)
- Reviewer, Annals of Applied Statistics
- Reviewer, Journal of the American Statistical Association
- Reviewer, Stochastic Environmental Research and Risk Assessment
- Reviewer, Linear and Multilinear Algebra

Service to PreK-12 Schools, Programs, and Organizations

- Taught in summer school: Data Analysis Bootcamp

Congming Li

Department, Unit, or Institute Service

- Chair, Comprehensive Review Committee for tenured faculty

School or College Service

- Preliminary exam committee on Partial Differential Equations.

Editor, Co-editor or Editorial Board Member of Journal (does not include advisory boards)

- Board of Editors: Discrete and Continuous Dynamics Systems A
- Board of Editors: Acta Mathematica Scientia, 2013-present

Peer Review of Manuscripts, Grants or Creative Work

- Reviewed too many to list: articles, grants, and promotions.

Manuel Lladser

Department, Unit, or Institute Service

- Member, APPM Awards Committee, Spring/Fall 2016
- Member, Probability and Statistics Prelim Committee, January 2016
- Liaison for APPM faculty candidate in BioFrontiers/CS cluster search in Computational Biology, December 2016
- Chair, PUEC for midterm review of Assistant Professor, W. Kleiber, Summer/Fall 2016
- Chair, APPM Department Colloquium, Fall 2016

Campus Service

- Member, IQ Biology Academic Advising Committee, Spring/Fall 2016
- Member, BioFrontiers/CS cluster search in Computational Biology Committee

University of Colorado Service

- Member, BioFrontiers Task Force, Spring/Fall 2016

Peer Review of Manuscripts, Grants or Creative Work

- Reviewer, proceedings of 28th International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC), Vancouver, British Columbia, Canada
- Reviewer, Association for Computing Machinery (ACM) Transactions on Algorithms (TALG)
- Reviewer, SpringerPlus

Other Professional Service

- Reference letters for 2 APPM/CS undergraduate students
- Reference letters for 2 APPM graduate students
- Assisted interviewing prospective CS faculty candidate: Sushant Sachdeva, March 2016
- Assisted interviewing prospective APPM graduate student: Allan Gardner, February 2016
- Assisted interviewing prospective APPM instructor candidate: Danielle Lyles, April 2016
- Assisted interviewing prospective APPM faculty candidate: Eric Vance, April 2016

Danielle Lyles

Department, Unit, or Institute Service

- CU Boulder Department of Applied Mathematics: Co-coordinated APPM 3310 Matrix Methods
- CU Boulder Department of Applied Mathematics: Peer-reviewed teaching of fellow instructor

School or College Service

- College of Arts & Sciences: Began to co-advise a chapter of the Association for Women in Mathematics, which will include women (and those for women) in both the applied mathematics and mathematics departments including undergraduate and graduate students.

Peer Review of Manuscripts, Grants or Creative Work

- Reviewer, International Journal of Biomathematics.

Member of Local or Statewide Organization

- Society for Industrial and Applied Mathematics: Faculty co-adviser of the SIAM Undergraduate Chapter

Per-Gunnar Martinsson

Department, Unit, or Institute Service

- Chair, graduate committee for the Department of Applied Mathematics, 2016.
- Member, chair's advisory committee for the Department of Applied Mathematics.
- Chair, faculty search committee for a position as an associate professor with tenure, Fall 2016.

Editor, Co-editor or Editorial Board Member of Journal (does not include advisory boards)

- Associate editor, "Advances in Computational Mathematics".
- Associate editor, "SIAM Journal of Scientific Computation".

Peer Review of Manuscripts, Grants or Creative Work

- Reviewer, multiple manuscripts for various research journals, including Nature, SIAM Journal on Scientific Computation, Communications in Pure and Applied Mathematics, and Linear Algebra and its Applications.

Other Professional Service

- Member, organizing committee for a workshop at the Oberwolfach Research Institute in Germany entitled "Fast Solvers for Highly Oscillatory Problems", November 2016

James Meiss

Department, Unit, or Institute Service

- Chair's Advisory Committee for APPM

Campus Service

- Member, BFA Libraries Committee
- Member, Boulder Faculty Assembly
- Member, ad hoc BFA committee on Pedestrian Safety
- Member, ad hoc BFA committee on Climate Action

Editor, Co-editor or Editorial Board Member of Journal (does not include advisory boards)

- Editor, Applied Mathematics Encyclopedia, Scholarpedia

Peer Review of Manuscripts, Grants or Creative Work

- Reviewer, Chaos (AIP Journal)
- Reviewer, Nonlinearity
- Reviewer, Physica D
- Reviewer, Physical Review E
- Reviewer, Physical Review Letters
- Reviewer, Communications in Nonlinear Science and Numerical Simulation
- Reviewer, Reviews of Modern Physics
- Reviewer, Nonlinear Processes in Geophysics
- Reviewer, SIAM J. of Dynamical Systems
- Reviewer, Journal of Computational Physics
- Reviewer, Springer Series Trends in Mathematics
- Reviewer, The IMA Journal of Applied Mathematics
- Reviewer, NSF Grant applications
- Reviewer, Grant Applications for Chilean Foundation CONICYT
- External Reviewer, PhD Thesis from Sydney University

Adam Norris

Department, Unit, or Institute Service

- Course coordinator, APPM 3050 lecture and lab sections, Spring 2016
- Course coordinator, Calculus III lectures, Spring/Fall 2016
- Member, hiring committee for new Instructor Danielle Lyles, Spring 2016
- Arrange for collection and distribution of special needs exams for all scheduled exams for APPM 1340, 1345, 1350, 1360, 2350 and 2360, Spring/Fall 2016
- Arrange for proctoring of the special needs exam room and course conflict rooms for APPM 1340, 1345, 1350, 1360, 2350 and 2360, Spring/Fall 2016
- Member, APPM Undergraduate Committee, Spring/Fall 2016
- Recruit and organize hired exam graders for APPM 1340, 1345, 1350, 1360, 2350 and 2360, Spring/Fall 2016
- Chair, reappointment committee for Instructor Murray Cox, Fall 2016
- Member, hiring committee for new Instructor Eric Thaler, Spring 2016

School or College Service

- College of Engineering Sampler, represented APPM through presentations and activities illustrating the use of Applied Mathematics in real-world problems, Fall 2016
- College of Engineering Admitted Student Day, served as APPM representative for the departmental information sessions, Spring 2016
- College of Engineering New Student Day, served as APPM representative for the departmental information sessions, Summer 2016
- Panel member and moderator, Academic Expectations Panel for the College of Engineering New Student Orientation, Summer 2016

Campus Service

- Boulder Faculty Assembly At-large A&S representative, Spring/Summer/Fall 2016.
- Chair, Elections and Nominations Committee, Boulder Faculty Assembly, Spring/Summer 2016
- Member, Boulder Faculty Assembly Instructor-Track Faculty Affairs committee, Spring/Summer/Fall 2016.
- Secretary, Boulder Faculty Assembly, Spring/Summer 2016.
- Member, Boulder Faculty Assembly Executive Committee, Spring/Summer/Fall 2016.
- Member, Boulder Faculty Assembly Bylaws committee, Spring/Summer 2016.
- Chair, Boulder Faculty Assembly Bylaws Committee, Fall 2016.
- Vice-Chair, Boulder Faculty Assembly, Fall 2016.
- Member, First-Year Seminar steering committee, office of the Associate Vice-Provost for Student Success, Spring/Summer/Fall 2016.
- Member, First-year Seminar course review panel, office of the Associate Vice-Provost for Student Success, Spring/Summer 2016.

Juan Restrepo

Service to Scholarly or Professional Organizations

- Member, Journal Chaos' Advisory Board

Department, Unit, or Institute Service

- Co-organized the Dynamics/Complex Systems Seminar
- Served on the Graduate Committee
- Served on the PDE Preliminary Exam Committee

Campus Service

- Served on the Admissions Committee for IQ Biology

Peer Review of Manuscripts, Grants or Creative Work

- Reviewer, one manuscript for Physical Review X
- Reviewer, one manuscripts for Transactions on Network Science and Engineering
- Reviewer, three manuscripts for "Physical Review E"
- Reviewer, five manuscripts for Chaos
- Reviewer, one grant proposal for the German Research Foundation.

Harvey Segur

Department, Unit, or Institute Service

- Member, undergraduate committee for APPM

Campus Service

- Chairman, selection committee for Hazel Barnes Prize

Peer Review of Manuscripts, Grants or Creative Work

- Reviewer, Journal of Fluid Mechanics-3 articles

Eric Thaler

Department, Unit, or Institute Service

- Served on APPM Information Technology committee.

Community Service within Boulder County

- Collaborated with local National Weather Service office on software implementation.

Other Professional Service

- Submitted five student recommendations for various jobs, internships, scholarships, etc. One student for which a recommendation was done was accepted as one of (perhaps the) youngest into the MATHS TRIPOS at The University of Cambridge (UK).

Eric Vance

Service to Scholarly or Professional Organizations

- Member, American Statistical Association's Committee on Applied Statisticians
- Member, American Statistical Association's Conference on Statistical Practice (CSP) Steering Committee
- Past-chair, American Statistical Association's Section on Statistical Consulting

Department, Unit, or Institute Service

- Member, Graduate Committee
- Member, Statistics and Data Science Committee

Editor, Co-editor or Editorial Board Member of Journal

- Co-editor, special issue of The American Statistician on mentoring

Peer Review of Manuscripts, Grants or Creative Work

- Review panelist, NSF
- Reviewer, International Journal of Environmental Research and Public Health

Professional Development Activities (including programs such as LEAP, FTEP and ELP)

- FTEP NAPP "Time Management" workshop, September 2016.
- "Open the World of Data with Web APIs" workshop, Phil White and Andrew Johnson, Open Access Week at CU Libraries, October 26, 2016.
- "Mapping Conquest" Digital Humanities seminar, Norlin Library November 1, 2016.
- "Creating an On-camera presence" NAPP workshop, November 17, 2016.

Brian Zaharatos

Service to Scholarly or Professional Organizations

- Judge, Intercollegiate Ethics Bowl, sponsored by the Association for Practical and Professional Ethics, November 12, 2016, 8:00am-5:30pm; preparation for this event--which included reading and thinking critically about real-world scenarios that involve ethical content--took a few hours a week for roughly three weeks.

Public Lectures, Speeches

Department, Unit, or Institute Service

- Faculty Advisor, Undergraduate Chapter of the Society for Industrial and Applied Mathematics (SIAM); as advisor, I have worked with students on developing an undergraduate research journal, and have scheduled several special events (e.g., tours of campus research labs; job recruitments).
- Course Co-Coordinator, two sections of APPM 3310, Matrix Methods, Fall 2016
- Development of proposed First Year Seminar Course; working title: "Choices Choices: An Interdisciplinary Look at Decision-Making." The proposal was accepted; course to be taught Fall 2017.
- Member, APPM Statistics Committee; as a member of this committee, I helped draft the proposal for the proposed B.A. in Statistics.
- Coordinator, five sections of APPM 1360 Calculus 2 for Engineers, Fall 2016
- Member, APPM Information Technology Committee
- I have written three letters of recommendation for students/peers this year.

Campus Service

- Served on the Committee for the History and Philosophy of Science

Peer Review of Manuscripts, Grants or Creative Work

- Peer reviewer, Problems, Resources, and Issues in Mathematics Undergraduate Studies (PRIMUS)

Professional Development Activities (including programs such as LEAP, FTEP and ELP)

- Application for the Arts and Science Support of Education through Technology (ASSET) Faculty Fellows Program (application accepted; includes \$3000 professional development award)

Community Service within Colorado, outside Boulder County

- Mentor for a student at Sheridan High School; program sponsored by iMentor 2.0 and Big Brothers and Big Sisters of Colorado

Department of Applied Mathematics 2016 Annual Report

Faculty Outreach

Sujeet Bhat developed and taught a summer bridge course in Statistics for incoming freshman for the Program for Excellence in Academics and Community (PEAC) through the Miramontes Arts and Sciences Program (MASP formerly Minority Arts and Sciences Program), Summer 2016. The course focused on basic Probability Theory and Statistics. This program serves underrepresented freshman populations and first generation college students. This service diversity and inclusivity of the university as well as contributing to the STEM efforts currently underway at this university.

Will Kleiber taught at Data Analysis Bootcamp, a summer school for Boulder area high school students, at the National Center for Atmospheric Research.

Department of Applied Mathematics 2016 Teaching Activities

Undergraduate Courses Taught by Department Personnel

Spring Semester 2016

APPM 1235	Murray Cox Ann DeFranco	Pre-Calculus for Engineers
APPM 1345	Murray Cox	Calculus 1B with Algebra
APPM 1350	Sujeet Bhat Murray Cox Ann DeFranco Brendan Fry Sandy Williams	Calculus I for Engineers
APPM 1360	Silva Chang James Curry Anne Dougherty Jonathan Kish Dale Jennings Eric Thaler Brian Zaharatos	Calculus II for Engineers
APPM 2350	Christian Ketelsen Yiping Ma Adam Norris Tony Wong	Calculus III for Engineers
APPM 2360	Stephen Becker Nick Featherstone Keith Julien Jonathan Kish Juan Restrepo Sergey Voronin	Introduction to Ordinary Differential Equations with Linear Algebra
APPM 2450	James Folberth Patrick Sprenger	Calculus III Lab
APPM 2460	Peter Shaffery Peter Wills	Differential Equations Lab
APPM 2720	Doug Nychka	Open Topics in Lower Division Applied Mathematics (Intro Data Analysis with R)
APPM 3050	Adam Norris	Scientific Computing in Matlab
APPM 3310	Greg Beylkin James Curry Ian Grooms	Matrix Methods
APPM 3570	Sujeet Bhat Manuel Llsader	Applied Probability
APPM 4360	Mark Ablowitz	Complex Variables
APPM 4390	Brendan Fry	Modeling in Mathematical Biology
APPM 4450	Anne Dougherty	Undergraduate Applied Analysis

APPM 4540	Will Kleiber	Introduction to Time Series
APPM 4570	Yolanda Hagar-Slichter	Statistical Methods
APPM 4580	Will Kleiber	Statistical Applications and Software Methods
APPM 4590	Brian Zaharatos	Statistical Modeling
APPM 4660	Bengt Fornberg	Intermediate Numerical Analysis 2
APPM 4720	Per-Gunnar Martinsson Lauren Aronson Manuel Lladser Christian Ketelsen	Open Topics in Applied Mathematics - Fast Methods in Computing Open Topics in Applied Mathematics - Theory of Mathematical Interest Open Topics in Applied Mathematics - Random Graphs Open Topics in Applied Mathematics - Numerical Linear Algebra

Summer 2014 - Term C

APPM 1350	Seneca Lindsey	Calculus I for Engineers
APPM 1360	Greg Barnett Silva Chang Dale Jennings	Calculus II for Engineers
APPM 2350	Eric Thaler	Calculus III for Engineers
APPM 2360	Jonathan Kish	Introduction to Ordinary Differential Equations with Linear Algebra
APPM 3310	Sujeet Bhat	Matrix Methods
APPM 4650	Adam Norris	Intermediate Numerical Analysis 1

Fall Semester 2016

APPM 1235	Ann DeFranco Susan Hallowell Dale Jennings Sandy Williams	Pre-Calculus for Engineers
APPM 1340	Murray Cox	Calculus 1A with Algebra
APPM 1350	Silva Chang Murray Cox Anne Dougherty Jonathan Kish Seneca Lindsey Danielle Lyles Eric Thaler Sandy Williams	Calculus I for Engineers
APPM 1360	Yu-Jui Huang Jonathan Kish Rachel Tutmaher Brian Zaharatos	Calculus II for Engineers
APPM 2350	Sujeet Bhat Justin Cole Adam Norris Igor Rumanov Eric Thaler	Calculus III for Engineers
APPM 2360	Stephen Becker Nick Featherstone Congming Li Jim Meiss	Introduction to Ordinary Differential Equations with Linear Algebra

APPM 2450	James Folberth Peter Shaffery	Calculus III Lab
APPM 2460	Nate Mathews Peter Wills	Differential Equations Lab
APPM 3010	Jim Meiss	Introduction to Nonlinear Systems: Chaos
APPM 3170	Sujeet Bhat	Discrete Applied Mathematics
APPM 3310	Danielle Lyles Brian Zaharatos	Matrix Methods
APPM 3350	Adam Norris	Advanced Engineering Calculus
APPM 3570	Will Kleiber	Applied Probability
APPM 4350	Harvey Segur Zack Kilpatrick	Methods in Applied Math I (Fourier Series)
APPM 4380	Bengt Fornberg	Modeling in APPM
APPM 4440	Anne Dougherty	Undergraduate Applied Analysis
APPM 4520	Jem Corcoran	Introduction to Mathematical Statistics
APPM 4560	Manuel Lladser	Markov Processes
APPM 4570	Yolanda Hagar-Slichter	Statistical Methods
APPM 4650	Adam Norris	Intermediate Numerical Analysis 1
APPM 4720	Ian Grooms	Open Topics in Applied Mathematics - High Dimensional Data and Dynamical Systems
	Eric Vance	Open Topics in Applied Mathematics - Statistical Collaboration

Graduate Courses Taught by Department Personnel

Spring Semester 2016

APPM 5360	Mark Ablowitz	Complex Variables
APPM 5390	Brendan Fry	Modeling in Mathematical Biology
APPM 5450	Stephen Becker	Applied Analysis 2
APPM 5460	Jim Meiss	Dynamical Systems/Differential Equations/Chaos
APPM 5540	Will Kleiber	Introduction to Time Series
APPM 5570	Yolanda Hagar-Slichter	Statistical Methods
APPM 5580	Will Kleiber	Statistical Applications and Software Methods
APPM 5590	Brian Zaharatos	Statistical Modeling
APPM 5610	Gregory Beylkin	Numerical Analysis 2
APPM 5720	Per-Gunnar Martinsson Lauren Aronson Manuel Lladser Christian Ketelsen	Open Topics in Applied Mathematics - Fast Methods in Computing Open Topics in Applied Mathematics - Theory of Mathematical Interest Open Topics in Applied Mathematics - Random Graphs Open Topics in Applied Mathematics - Numerical Linear Algebra

APPM 6470	Congming Li	Advanced Partial Differential Equations
APPM 7400-001	Per-Gunnar Martinsson	Topics in Applied Mathematics - Introduction to Research
APPM 8000	Stephen Becker	Department Colloquium
APPM 8100	Jim Meiss and Juan Restrepo	Complex/Dynamical Systems Seminar
APPM 8300	Mark Ablowitz	Nonlinear Waves Seminar
APPM 8600	Tom Manteuffel	Computational Mathematics Seminar

Fall Semester 2016

APPM 5350	Harvey Segur Zack Kilpatrick	Methods in Applied Math I (Fourier Series)
APPM 5380	Bengt Fornberg	Modeling in Applied Mathematics
APPM 5440	Per-Gunnar Martinsson	Applied Analysis I
APPM 5470	Congming Li	Methods of Applied Mathematics 3: PDEs
APPM 5520	Jem Corcoran	Introduction to Mathematical Statistics
APPM 5560	Manuel Lladser	Markov Processes
APPM 5570	Yolanda Hagar-Slichter	Statistical Methods
APPM 5600	Bengt Fornberg	Numerical Analysis I
APPM 5720	Ian Grooms	Open Topics in Applied Mathematics - High Dimensional Data and Dynamical Systems
	Eric Vance	Open Topics in Applied Mathematics - Statistical Collaboration
APPM 6520	Jem Corcoran	Mathematical Statistics
APPM 6610	Greg Beylkin	Introduction to Numerical PDEs
APPM 7400	Bengt Fornberg	Topics in Applied Mathematics - Radial Basis Functions
	Sujeet Bhat	Topics in Applied Mathematics - Teaching Excellence
APPM 8000	Manuel Lladser	Department Colloquium
APPM 8100	Jim Meiss and Juan Restrepo	Complex/Dynamical Systems Seminar
APPM 8300	Mark Hoefer	Nonlinear Waves Seminar
APPM 8400	David Bortz	Mathematical Biology Seminar
APPM 8500	Stephen Becker	Statistics, Optimization, and Machine Learning Seminar

Courses Offered by the Department, Taught by Non-Departmental Personnel

APPM 4120/5120	Spring 2016	Alejandro Spina, Mathematics	Operations Research
APPM 4520	Spring 2016	Alejandro Spina, Mathematics Sean O'Rourke, Mathematics	Introduction to Mathematical Statistics
	Summer 2016	Alejandro Spina, Mathematics	
APPM 4650	Spring 2016	Divya Vernerey, Mathematics	Intermediate Numerical Analysis 1
APPM 4720	Spring 2016	Michael J. Stutzer, Finance	Math Finance 1
APPM 6550	Spring 2016	Sergei Kuznetsov, Mathematics	Introduction to Stochastic Processes

Courses Offered by Other Departments, Taught by APPM Personnel

COEN 1236	Spring 2016	Cristian Mendoza	Pre-Calculus Workgroup
	Fall 2016	Jacob Mink John Nardini	
COEN 1350	Spring 2016	Dylan Abrahamsen Alyson Fox Pawel Janas	Calculus 1 Workgroup
	Fall 2016	Gavin Medley Zach Mullen Ashton Wiens	
COEN 1360	Spring 2016	Lewis Baker Silva Chang Jessica Gronski	Calculus 2 Workgroup
	Fall 2016	Dylan Abrahamsen Lewis Baker	
COEN 2350	Spring and Fall 2016	Jeffery Allen	Calculus 3 Workgroup
MCEN 3012	Summer 2014	Adam Norris	Thermodynamics





Department of Applied Mathematics
526 UCB
1111 Engineering Drive
ECOT 225
Boulder, CO 80309-1

<http://amath.colorado.edu>