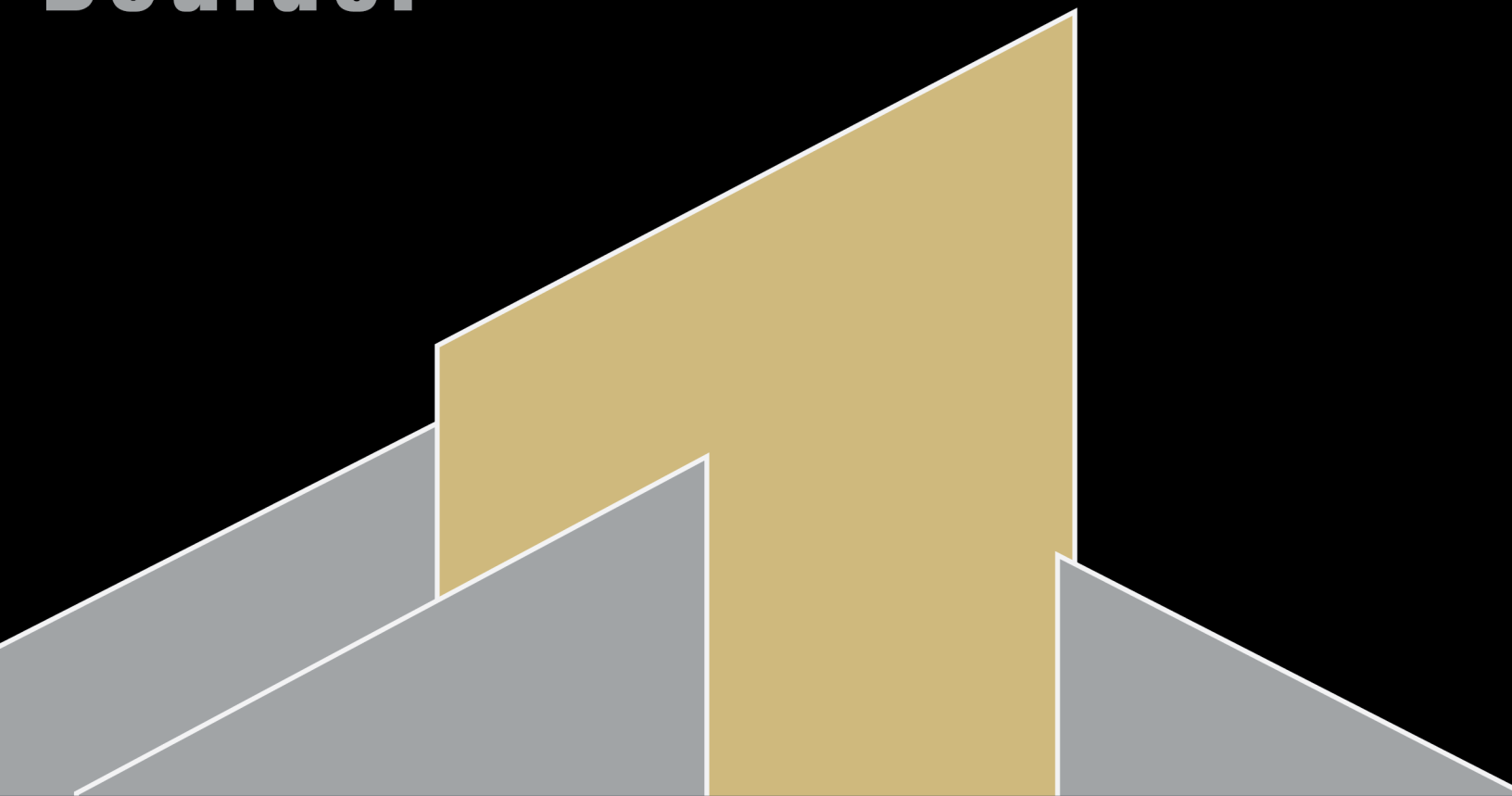


Applied Mathematics Newsletter

**University of Colorado at
Boulder**



Summer 2022

Table of Contents

Letter From the Department Chair 2

Department Faculty and Staff 4

Doctor of Philosophy Graduates 6

Master’s Degree Graduates..... 7

Graduating Class of 2022..... 8

Introductions and Promotions 9

Rudy Horne Fellowship Recipient: April Tran 11

APPM in the News: Department Chair Keith Julien 12

Graduate Spotlight: Dr. Zofia Stanley 13

Dr. Eric Vance - Johnson Space Center/NASA Grant 14

John T. and Jill D. Bellows Endowed Applied Mathematics Scholarship 15

Distinguished Professor Mark Ablowitz Receives Hazel Barnes Prize..... 18

Dr. Anne Dougherty: 2022 Marinus Smith Award Winner..... 19

Dan Larremore 20

Annual Fund Drive 21

Letter from the Department Chair

From Keith Julien

Dear APPM community,

Academic year 2021-2022 has offered us a new glimpse of returning to some of our departmental norms and experiences. We all are learning how to best manage the social and institutional impact of COVID-19, it is clear that our resilience lights the way to a resourceful future.

We ended the year in May 2022 by holding an in-person graduation ceremony in the Mary Rippon outdoor Amphitheater, our first since 2020. It was a joyful spring day. For me, it was an absolute pleasure to meet with proud parents and relatives celebrating the accomplishments of their graduating students.

[The graduating class](#) displayed a customary depth and breadth in their educational portfolios and without a doubt highlighted how they are successfully transitioning into new phases of their professional careers.

Students: APPM's student body is vibrant with continued growth. This year APPM welcomed eleven (11) new Doctor's of Philosophy to its alumni. Their dissertations and expertise spanned all the pillars of the applied, computational, data and statistical sciences. To name but a few, topical areas included understanding the dynamics of high-energy ocean waves, through to, how the dynamics of information exchanges between individuals shape collective behavior and decision making in animal groups, and onto incorporating uncertainty into model with new mathematical formulations.

APPM also graduated ten (10) Professional Master's of Science graduates. This is a relatively new program offering students the broad opportunities for career re-direction and enhancements. Our graduates enjoy a 97% employment success rate within six months of graduation.

With the inclusion of a new degree program in the College of Arts and Sciences, APPM's undergraduate has grown. This year thirty-seven (37) students earned a Bachelor of Science degree in Applied Mathematics and eighteen (18) a Bachelor of Arts degree in Statistics and Data Science. Ten (10) undergraduate students continued their education into the 5-year Bachelor Accelerated Master's program to also earn a Bachelor of Science and Master's of Science degrees.

Staff: I would like to offer my sincerest gratitude and appreciation to Program Manager Mary Fentress and our staff who continually ensure that the department operates smoothly despite the many pressures that have existed over the past year. Last academic year saw a few changes. Ms. Laura Gooch transitioned her extensive expertise as Graduate Student Coordinator to the newly created position of Professional Master's Graduate Student Coordinator. Ms. Gabriella Kirkley joined APPM team as its new Graduate Student Coordinator.



Faculty: APPM celebrated the retirement of three senior faculty, Professor's Bengt Fornberg and Harvey Segur, and Associate Professor Jem Corcoran. Dr. Fornberg joined APPM in 1995, he is a renowned scholar in the field of computational Mathematics, has highly influenced the field by his seminal contributions to the numerical development and application of Radial Basis Functions and Pseudo-Spectral methods. He has been honored as a Guggenheim and SIAM Fellow. Professor Harvey Segur joined the department as a founding member in 1989. He is highly cited scholar in the theory of nonlinear waves particularly water waves. Dr. Segur has also devoted much of his career dedicated to teaching excellence. He holds university distinctions as a Presidential Teaching Scholar and the winner of the Hazel Barnes Prize in recognition teaching and research excellence. Dr. Jem Corcoran area of expertise is in the probabilistic and statistical sciences, specifically the application of Markov Chain Monte Carlo methods. She joined he department in 2000 and holds the distinction of being persistent reviewed as the units most highly rated teacher by students. The looks forward to it continuing interactions with our new emeritus faculty, it also looks forward to new hiring opportunities based on these changes.

The faculty welcomed one new member this year, Assistant Professor Eduardo Corona. Dr. Corona is an expert in the area of computational mathematics focusing particularly on the application of boundary-integral methods and fast algorithms to fluid, active matter and wave scattering problems.

Promotions. It is always a pleasure to announce promotions. Dr.'s Ian Grooms and Nancy Rodrigues-Bunn achieved tenure this year. Ian was promoted to Associate Professor with tenure based on his contributions to the mathematical geosciences with particular emphasis on the sub-field of ocean dynamics. Nancy was promoted to Associate Professor with tenure for her contributions to nonlinear partial differential equations particularly its applications to urban crime, segregation, biological aggregation and ecology. Congratulations to Ian and Nancy.

I part by expressing my gratitude to our wider community who continue to support the department. Most significantly, the Applied Mathematics Department is excited to announce the establishment of the John T. and Jill D. Bellows Endowed Applied Mathematics Scholarship. Through the generosity of CU alumni Dr. John Bellows and his wife Jill Bellows (deceased), APPM will support upper-division undergraduate students in Applied Mathematics who require financial assistance. Dr. John T. Bellows explained that "in this day and age, many students attend college by taking loans when they can't obtain scholarships. I hope that this scholarship will allow these specific students to finish at a time when the academic demands of college may require more time and concentration."

- Professor Keith Julien, APPM Department Chair



Department Faculty

Department Chair: Keith Julien

Associate Department Chair: Anne Dougherty

Graduate Committee Chair: William Kleiber

PROFESSORS:

Mark Ablowitz (Distinguished Professor)
 Gregory Beylkin
 David Bortz
 James Curry
 Vanja Dukic
 Mark Hofer
 Keith Julien
 James Meiss
 François Meyer
 Harvey Segur

ASSOCIATE PROFESSORS:

Stephen Becker
 Jem Corcoran
 Adrianna Gillman
 Zachary Kilpatrick
 William Kleiber
 Manuel Lladser
 Juan Restrepo
 Eric Vance

ASSISTANT PROFESSORS:

Eduardo Corona
 Ian Grooms
 Yu-Jui Huang
 Maziar Raissi
 Nancy Rodriguez

ADJUNCT PROFESSORS:

Lev Ostrovsky

PROFESSOR EMERITUS:

Jerrold Bebernes
 Bob Easton
 Bengt Fornberg
 Congming Li
 Tom Manteuffel
 Steve McCormick

SENIOR INSTRUCTORS:

Silva Chang
 Anne Dougherty
 Adam Norris
 Brian Zaharatos

INSTRUCTORS:

Sujeet Bhat
 Nathan Duignan
 Jonathan Kish
 Judith Law
 Pablo Lorca
 Sean Nixon

Osita Onyejekwe
 Maribeth Ocamou
 Manjul Sharma
 Eric Thaler

LECTURERS:

Robert Benim
 Daniel (Seneca) Lindsey
 Richard McNamara
 Igor Rumanov

RESEARCH ASSOCIATES:

Niraj Agarwal
 Maria Camisassa
 Nathan Duignan
 Tahra Eissa
 Nick Featherstone
 Brad Hindman
 Jessica Kenigson
 Nora Loose
 Pablo Lorca
 Lucas Monzon
 Sean Nixon
 Igor Rumanov
 Manjul Sharma

Affiliated Faculty

Alireza Doostan - Aerospace Engineering
 John Evans - Aerospace Engineering
 Tomoko Matsuo - Aerospace Engineering
 Daniel Scheeres - Aerospace Engineering

Juri Toomre - Astrophysical & Planetary Sciences

Julie Lundquist - Atmospheric and Oceanic Sciences
 Jeffrey B Weiss - Atmospheric and Oceanic Sciences

Fatemah Pourahmadian - Civil Engineering

Elizabeth Bradley - Computer Science
 Jed Brown - Computer Science
 Xiao-Chuan Cai - Computer Science
 Aaron Clauset - Computer Science
 Rafael Frongillo - Computer Science
 Daniel Larremore - Computer Science
 Orit Peleg - Computer Science
 Sriram Sankaranarayanan - Computer Science
 Henry Tufo - Computer Science

Carlos Martins-Filho - Economics

Ute Herzfeld - Electrical and Computer Engineering
 Emiliano Dall'Anese - Electrical, Computer and
 Energy Engineering

John Crimaldi - Environment & Architecture
 Engineering

Dave Frits - GATS Inc

Ana Maria Rey - JILA

Stephan Sain - Jupiter Intelligence

Scot Elkington - Lab for Atmospheric and Space
 Physics

Manuel Laguna - Leeds School of Business
 Nathalie Moyon - Leeds School of Business

Sean O'Rourke - Mathematics

Franck Vernerey - Mechanical Engineering
 Patrick Weidman - Mechanical Engineering

Aimé Fournier - Massachusetts Institute
 of Technology

Annick Pouquet - National Center for Atmospheric
 Research

Meredith Betterton - Physics
 Michael Calkins - Physics
 John Cary - Physics
 Mihály Horányi - Physics
 Scott Parker - Physics

Thomas Hauser - Research Computing

Department Staff

Ian Cunningham - Office Coordinator,
 Undergraduate Program Assistant

Mary Fentress - Program Manager

Laura Gooch - Masters Student Coordinator

Gabriella Kirkley - Graduate Student Coordinator

Desiree Holtz - Accounting Technician

Dave Long - IT Manager

Kyle Zhou - IT Assistant

Josh Jeng - IT Assistant

Maedee Trank-Green - Student Assistant

Patrick McCreery - Department Writer/Assistant,
 Newsletter Editor

Doctor of Philosophy Graduates

Allen Alvarez Loya

Thesis Title: *High-Order Methods for Wave Phenomena*

Advisors: *Dr. Daniel Appelö & Dr. Stephen Becker*

Subekshya Bidari

Thesis Title: *Models of Foraging Decisions in Social Animal Groups*

Advisor: *Dr. Zachary Kilpatrick*

Richard Clancy

Thesis Title: *Mathematical Formulations with Uncertain Data in Optimization and Inverse Problems*

Advisor: *Dr. Stephen Becker*

Erin Ellefsen

Thesis Title: *Nonlocal Models with Applications in Ecology*

Advisor: *Dr. Nancy Rodriguez*

Daniel Ferguson

Thesis Title: *Machine Learning on Network-valued Data: The Spectral Way*

Advisor: *Dr. François Meyer*

Mingyu Hu

Thesis Title: *Micromagnetic Modeling and Waves in Magnetic Materials*

Advisor: *Dr. Mark Hoefer*

Nicholas Landry

Thesis Title: *Contagion on Complex Systems: Structure and Dynamics*

Advisors: *Dr. Juan Restrepo*

Liam Madden

Thesis Title: *First-order Methods for Online and Stochastic Optimization, and Approximate Compiling*

Advisors: *Dr. Stephen Becker & Dr. Emiliano Dall'Anese*

Daniel Messenger

Thesis Title: *Weak-form Sparse Identification of Differential Equations from Noisy Measurements*

Advisor: *Dr. David Bortz*

Samuel Ryskamp

Thesis Title: *Line Soliton Interactions and Dispersive Magnetoelastic Waves*

Advisor: *Dr. Mark Hoefer*

Lyndsey Wong

Thesis Title: *Mathematical Models of Wealth Distribution Through An Amenities-Based Theory*

Advisor: *Dr. Nancy Rodriguez*

Master's Degree Graduates

Master of Science

Stephanie Abegg

Lilac Intrater

Sabina Adhikari

Simon Julien

Kate Bubar

Grant Kellogg

Jackson Skeen Curry

John (Mike) McCabe

Constance Delannoy

Rachel Robey

Brandon Finley

Cooper Simpson

Kyle Fitzgerald

Jacob Wharey Sitison

Shay Gilpin

Killian Wood

Professional Master of Science

Ryan Thomas Bilkie

Adam Sanchez

Parker Boyce

Jacob Watts

Kayvon Coffey

Michael Woodworth

Lucas Alan Laughlin

Eric Young

Caden Ryals-Luneburg

Graduating Class of 2022

Bachelor of Science in Applied Mathematics

Zachary David Berriman-Rozen	David Kopala	Francesca Sinclair Sica
Nicole Song Dong [‡]	Theodore James Lincke [‡]	Jaskrit Singh [†]
Charles Doremieux	Allison Liu [◇] •	Ryan Christopher Stewart
Sydney Evans	Lauren Marsh	Emma Marie Sweeden
Samuel Everett	John Douglas Montagu	Zhuochen Wang [†] •
Ahyo Chang Falick	Barak Simon Morris [•]	Gal Weitz [‡]
Matthew Thomas Gilster	Jacob Moxley	Samuel Thomas Wiske
Ethan James Glenn [†]	Samuel James Packard	Wenqian Xu
Arnon Robert Goldberg	Alexander Joseph Paradise [◇]	Ze Yu
Reese Charles Green	Manasiba Yogendrasinh Raol	Sarah Anne Zendle
Zikra Hashmi	Hannan Shahba [◇]	David Zhao [◇]
Adam Fred Hoerger [†]	Boris A Shapoval [‡]	Kyle Matthew Zhou [◇]
Andrew King		

Bachelor of Arts in Statistics and Data Science

Tristan John Setterdahl	Christopher Joseph Caston
Breanna M Stanley	Ziwei Cheng
Katie Louise Stewart	Madeline Elizabeth Garrett
Joshua Weiqi Sun	Chan Kim
Erik Anders Svenneby	Kevin Luth
John Edward Tamanaha Jr	Eugene Joseph Miller
Gregor Rumenov Tzinov	Thomas Neal
Wenhao Wang	Erin M Omyer
David Fernandez Washburn	Ethan William Schacht

[†] Summa Cum Laude
[‡] Magna Cum Laude
[◇] Cum Laude
 • Engineering Honors

Introductions and Promotions

Welcoming Assistant Professor Eduardo Corona

In the fall of 2021, the Applied Mathematics Department welcomed Assistant Professor Eduardo Corona to the faculty! Before joining APPM, Dr. Corona was an Assistant Professor at New York Institute of Technology's Mathematics Department. The APPM faculty was influential to Dr. Corona's move to CU Boulder, saying: "Ever since my PhD work at Courant on fast direct solvers for integral equations, I have followed with great interest the research of esteemed colleagues currently at APPM Boulder, like Profs Adriana Gillman and Greg Beylkin as well as former members like Prof. Gunnar Martinsson." Continuing on, Dr. Corona explained the opportunities at CU Boulder as a whole are enticing: "I believe CU Boulder to be exceptionally fertile soil for the kind of interdisciplinary and impactful research I aim to develop with our fast algorithms research group."

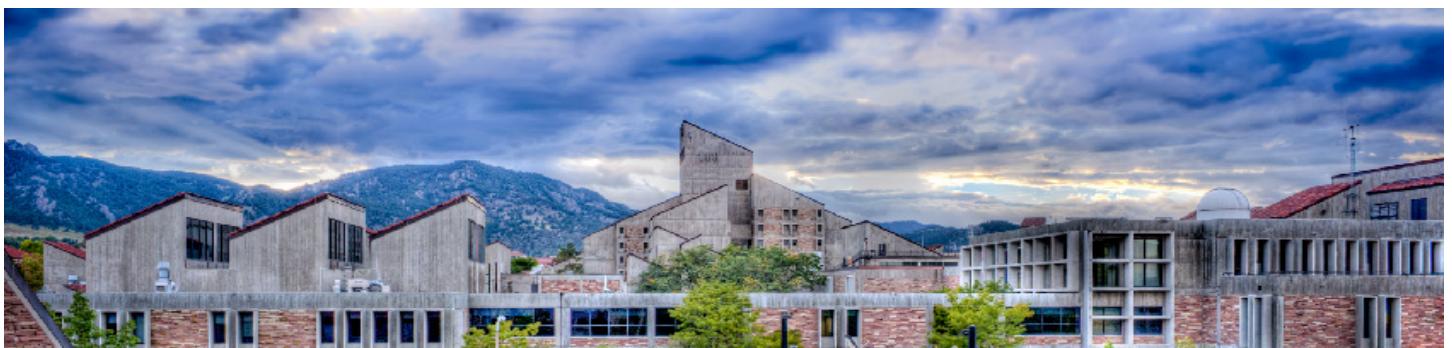


The Department congratulates Dr. Corona on completing a successful first year at APPM!

Promotions

This academic year, the Department announced 3 promotions:

- Dr. David Bortz was promoted to Full Professor
- Dr. Adrianna Gillman was promoted to Associate Professor
- Dr. Stephen Becker was promoted to Associate Professor



**A Year in
Review:
News and
Events**

2021 Rudy Horne Memorial Fellowship

Recipient: April Tran

In the 2021 academic year, the Department of Applied Mathematics announced the recipient of the Rudy Horne Memorial Fellowship: graduate student Chi “April” Tran -- a first year student in the Applied Mathematics graduate program who previously graduated with a Bachelor’s degree in Mathematics along with Computer Science from Augustana College in Illinois. Now joining the Applied Math Department here at CU Boulder, April explained her desire to continue her education and work: “I knew I wanted to get an applied math Ph.D. not too long after I started my undergraduate degree and I was overjoyed to continue my education and become a part of Applied math at CU this fall.”



The Rudy Horne Memorial Fellowship, was founded with the hope that fellowship recipients contribute to the diversity of Applied Mathematics. April recognized this, saying:

Now starting a graduate program at a new university with a prestigious fellowship, April has new opportunities in the Department, and has outlined the work she plans to complete with her passion for math and newly awarded fellowship:

“I come to CU Boulder with a wide range of interests ranging from mathematical physics and computational math to analysis ... Ultimately I want my research and contributions to the world to be meaningful and I want to be in a position to give back to all the people who sacrificed for me and inspired me to pursue my dreams.”

“I am very honored to have been awarded the Rudy Horne fellowship ... This fellowship not only motivates me to work harder but also makes me realize how lucky I am to have received everything I have now. With the Rudy Horne fellowship, I wish I could help motivate and inspire other people, just like how my professors and colleagues have motivated and inspired me.”

- April Tran

APPM in the News: Department Chair Keith Julien

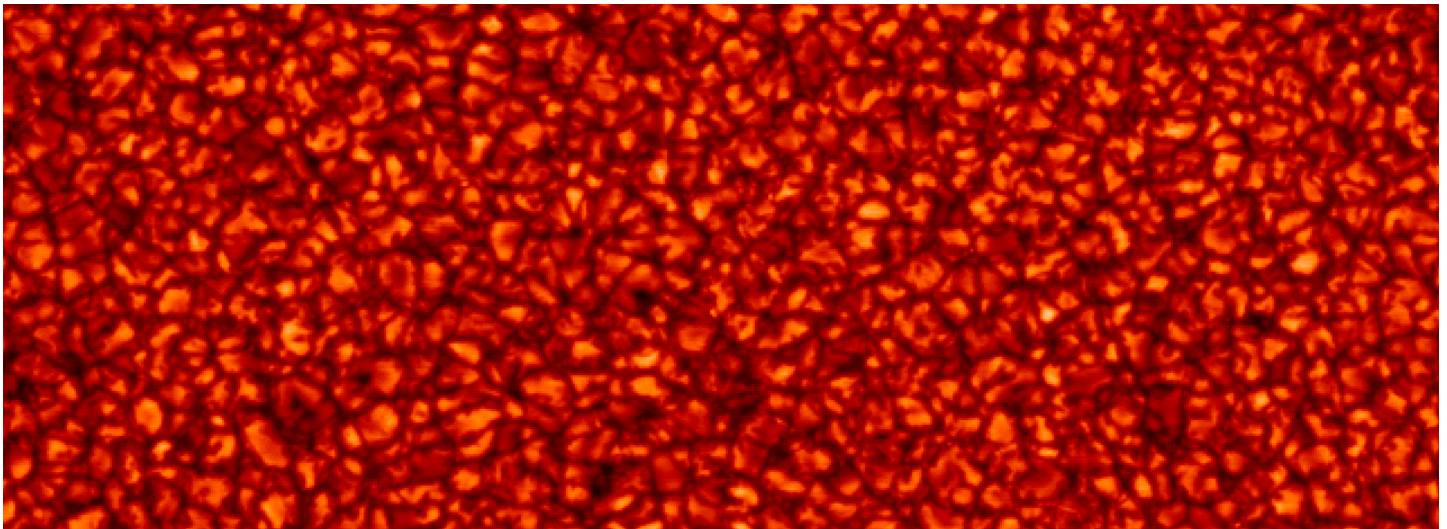
This week, APPM Department Chair Keith Julien and his team's work was highlighted in the Colorado Arts and Sciences Magazine.

Recent work that offers a solution to the "convective conundrum" from Professor Julien, University of Sydney's Geoffrey Vasil, and Southwest Research Institute's (SWRI) Nicholas Featherstone provides important insight that has implications on our understanding of space weather. It has been long puzzling scientists as to why we do not observe classically predicted giant convective flows (cells ~ 200 Mm large), but Julien's work explains that the rotation of the Sun forms cells that are actually smaller than originally predicted (cells ~ 30 Mm large).



The solar magnetic dynamo is responsible for space weather that can harm satellites, the International Space Station (ISS), disrupt radio communication, and more. Understanding convective flows in the convective zone of the sun helps researchers better model the solar dynamo, helping scientists predict and understand space weather, as explained by the research team.

To read more about this work, read the original article published in the Colorado Arts and Sciences Magazine.



Above: Example of solar granulation

Applied Math Graduate Spotlight: Dr. Zofia Stanley

In the fall of 2017, the Applied Mathematics Department welcomed Zofia Stanley to the PhD program, and 4 years later, Dr. Stanley is now starting a position as a research scientist with CIRES (Cooperative Institute for Research in Environmental Sciences) / NOAA PSL (National Oceanic and Atmospheric Administration Physical Sciences Laboratory).

Dr. Stanley's thesis research focused on data assimilation, a branch of mathematics that develops methods for combining real world data with dynamical models. A common application of data assimilation is numerical weather prediction. Weather forecasting uses initial conditions in the atmosphere, and a computer models the atmosphere's evolution in time, generating a forecast we all use. Zofia points out that obtaining these initial conditions are important and non-trivial:



“Thermometers and other measurement devices are not perfect ... [Data assimilation] uses estimates of uncertainty in both the model and the observations to create initial conditions which are representative of the current atmosphere and lead to sensible weather forecasts.”

At CIRES/NOAA PSL, Dr. Stanley is aiming to continue “to contribute to the important field of data assimilation ... At CIRES I will work on problems in data assimilation for climate models with two or more interacting components, like atmosphere-ocean models.”

The Department congratulates Dr. Stanley on both graduating from the Department, and on starting a very impressive position!

Dr. Eric Vance - Johnson Space Center/ NASA Grant

This year, Applied Mathematics Assistant Professor and Laboratory for Interdisciplinary Statistical Analysis (LISA) Director Eric Vance received a grant from Johnson Space Center/NASA in collaboration with Smead Aerospace Assistant Professors Allison Anderson (who is the principal investigator) and Torin Clark.

The project, titled Multi-Environment Virtual Training for Long Duration Exploration Missions, aims to investigate effective virtual reality (VR) training environments for long duration exploration missions (LDEM). Dr. Vance explains:

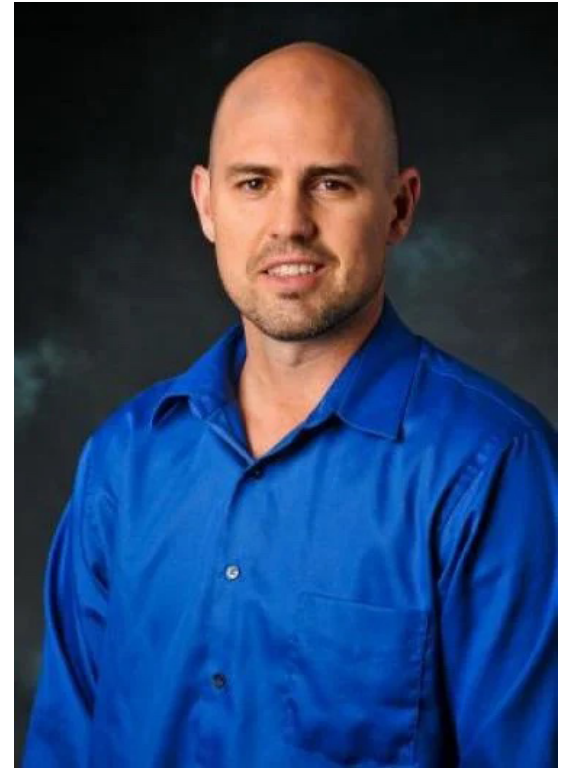
“We will be developing and testing virtual reality technology for potential use in the training of astronauts during long duration exploration missions, such as those to Mars. In our labs in Boulder, we will test how virtual reality training improves astronaut performance ... [and] design experiments to determine how well the virtual reality training mid-flight should be expected to transfer to other skills the astronauts will need to land and navigate spacecraft on Mars.”

Specifically, Dr. Vance will be an expert voice in designing required experiments and analyzing data “so that we can make inferences from in-lab performance to in-flight performance.”

From this project, Dr. Vance expects the team to be able to create an effective VR training program for astronauts on long duration space flights and investigate the ability of the program to counteract decreased brain function expected in astronauts participating in long duration missions.

This project is a continuation of Dr. Vance’s record in participating in collaborative and interdisciplinary projects in a wide variety of fields and research areas. Dr. Vance explained that any “researcher who has data or needs to collect data could benefit from collaborating with an expert in statistics,” and is why Dr. Anderson and Dr. Torin brought his expertise with statistics and data science into their project. This is not the only project in development, however; Dr. Vance expects to continue working with the team “to test whether the new techniques they develop will have a real-world impact to make space flight safer and more successful.”

Congratulations to Dr. Vance and the whole team for being awarded this grant! More information about this project and other astronaut health and performance research projects selected, visit the NASA Human Research webpage.



John T. and Jill D. Bellows Endowed Applied Mathematics Scholarship

The Applied Mathematics Department is excited to announce the establishment of the John T. and Jill D. Bellows Endowed Applied Mathematics Scholarship. Through the generosity of CU alumni Dr. John and Jill, deceased, Bellows, APPM will support upper-division undergraduate students in Applied Mathematics who require financial assistance. Dr. John T. Bellows explained that “in this day and age, many students attend college by taking loans when they can’t obtain scholarships. I hope that this scholarship will allow these specific students to finish at a time when the academic demands of college may require more time and concentration.” Dr. John and Jill Bellows (pictured in the image to the right) are 1961 graduates of the University, and specifically, Dr. John Bellows is a graduate of the original Applied Mathematics program that existed within the Engineering college until 1965. The Applied Mathematics undergraduate program was revived in 1989. Jill Bellows received a B.A. in Political Science from the University of Colorado in 1961, then a B.S. in teaching from the University of Minnesota in 1963.



Dr. Bellows started his career in the aerospace industry, tackling critical problems before retiring from engineering to pursue a career in counseling and social services. In both Dr. Bellows’ careers, he noted the importance of applied mathematics and hoped that applied mathematics students “realize that what they learn is applicable to most any field of speciality that they enter. They are not limited to math modeling of engineering elements, but what they learn is greater than just the math, it is a way of thinking and approaching any problem or issue.”

In the aerospace industry, Dr. Bellows “Formulated the Apollo Command Module control system constraints and performance parameters”, modeled sound propagation in water, developed air defense models for missile system evaluation, managed a plethora of engineering and software operations, and much more. In counseling and health professions, Dr. Bellows has been involved with counseling clients who have been diagnosed with developmental disabilities, and/or with emotional and/or chemical dependencies. Dr. Bellows has also developed an outpatient and residential program “for persons with developmental disabilities and who are substance abusers.” As well, Dr. Bellows is involved with the Los Angeles Probation Department program of Domestic Violence Rehabilitation as a facilitator, holding group sessions with domestic violence perpetrators. Dr. Bellows has been involved in teaching topics relating to both professions for almost 60 years, which contributed to both his and his wife’s dedication to education.

Many students attend college by taking loans when they can't obtain scholarships. I hope that this scholarship will allow these specific students to finish at a time when the academic demands of college may require more time and concentration.

- Dr. John T. Bellows

Being involved in two seemingly completely different careers, one might imagine that the lessons learned from each would be very different. However, Dr. Bellows noted that engineering and counseling are more similar than they might seem:

"After spending 30 years in engineering and specializing in the systems aspects of it, I learned that much, if not all, of the world is intertwined and dependent upon many other elements for successful and meaningful operation ... I learned that most systems can be expressed mathematically and manipulation of the models can bring an understanding of the elements and their interaction with the system. We, as people in society, are much like elements in a larger system. To understand how we can participate in that system with other people and be satisfied and happy is much like understanding an engineering system. Only the human system doesn't have as definitive a math model as a mechanical element. There are many more variations in the human happiness model than in any or all of the electrical-mechanical systems that I had been working with ... I worked on understanding how people can control themselves much in a similar manner as the systems that I helped design while I was an engineer."

In fact, Dr. Bellows was able to take his applied mathematics background and apply it to counseling:

"I have used the structured thinking of mathematics in my approach to counseling others because I use the therapy system developed by Dr. William Glasser who was a chemical engineer before switching to psychiatry and developing his Reality Therapy and Choice Theory."

Jill Bellows continued her education and obtained a BS in Education at the University of Minnesota and then taught middle school in the Los Angeles Unified School System until her second son was born 9 years later. She then transitioned to the travel industry as an agent, teacher, and owner of a tour company for persons with physical disabilities. She used the education that she obtained at CU Boulder and her travel experiences to bring additional learning to her students at the Los Angeles Community Colleges and her clients on her tours.



Beyond their storied careers, John and Jill placed an emphasis on traveling to learn as much as possible about the world, but to also gain perspective on their own careers:

“We started traveling with a 10 week trip to Europe in 1967 and with Jill’s education in history, I had my own private guide to the correlation of all of the historical sites that we visited. This started me on an understanding of the connection between all of the past civilizations and current developments in the engineering advancements in which I was involved. The contrast between Europe and the South Pacific and the use of the land made a lasting impact on my view of my engineering work and my counseling perspective.”

Furthermore, their travels instilled a perspective that is nearly impossible to learn without traveling and interacting with other cultures. Dr. Bellows explained that “the people in New Zealand were so very friendly and concerned with the ecology of the land” and that the native Maori people “have an interesting culture and it has been allowed to flourish since the British explorers colonized the islands. The British eventually made a treaty with the Maori that was kept, unlike the Americans here in the United States. The Maori could keep ownership of the land and the British would be the law enforcement between the seven tribes on both islands.”

These perspectives learned while traveling provide important insights in not only the many cultures of the world, but also on problems faced in the modern day, like the advancement of science and technology. While countries and populations may be divided politically, science, mathematics, and technology are places where people can come together for the benefit of the community. When speaking about the most impactful place he has traveled, Dr. Bellows commented that “it is difficult to state which place was the most impactful, but Antarctica seems to be near the top of the list. This is because it is the only land mass that doesn’t belong to a single country and is governed by the coalition countries that are doing scientific studies there. This shows that cooperation in the name of science can be achieved.”



It is the hope for future students’ success that John and Jill Bellows created the scholarship fund, augmented with the knowledge that applied mathematics can serve as a foundation for a plethora of impactful careers. The Department of Applied Mathematics is grateful for the generous support from John and Jill Bellows and hopes that this fund can serve to bolster a new generation of students who will make impactful contributions to the scientific community and world.

Distinguished Professor Mark Ablowitz Receives Hazel Barnes Prize

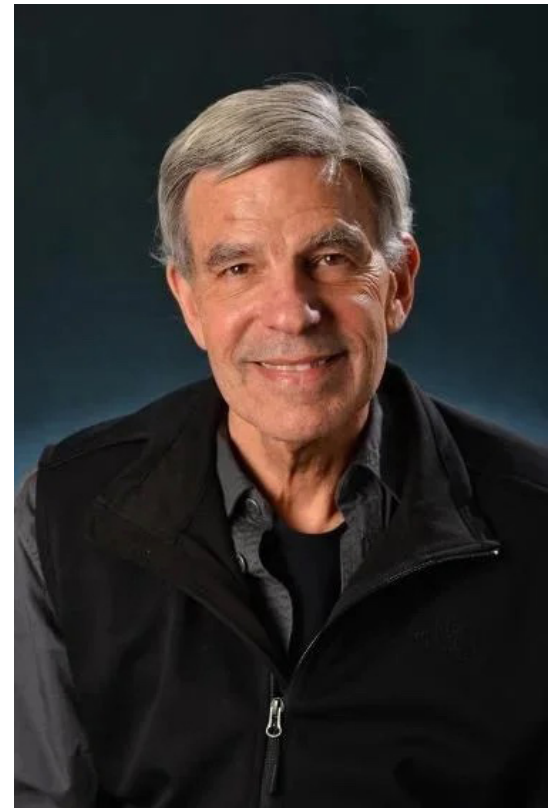
Applied Mathematics's own Distinguished Professor Mark Ablowitz has received the Hazel Barnes Prize (HBP), which is the University of Colorado Boulder's largest and most esteemed single faculty award. Chancellor DiStefano explained that "since 1992, the Hazel Barnes Prize has been awarded each year to the CU Boulder faculty member who has most consistently demonstrated a strong, enriching relationship between his or her teaching and research, and whose work has had a significant impact on students, faculty, colleagues, and the University." The prize was created in honor of Philosophy Professor Emerita Hazel Barnes, who passed in 2008 and was the first woman to be named Distinguished Professor at the University in 1979.

The Office of the Chancellor describes that HBP "nominees are regionally and nationally recognized, tenured faculty members who are not only outstanding teachers, but who also have distinguished records in research and scholarship."

The Hazel Barnes Prize is not foreign to the Applied Mathematics Department, with Professor Harvey Segur having won the coveted prize in 2011. During the May 5th spring commencement ceremony, Distinguished Professor Ablowitz will be recognized with an engraved university medal. Furthermore, in the fall, previous Hazel Barnes Prize recipients, as well faculty, students, and family will attend a reception to celebrate the achievement.

The Department congratulates Distinguished Professor Ablowitz on this monumental achievement. To read more about the prize and view past recipients, visit the Hazel Barnes Prize webpage from the Office of the Chancellor.

CU Boulder Today published an article recognizing Distinguished Professor Ablowitz's accomplishment.



Dr. Anne Dougherty: 2022 Marinus Smith Award Winner

Applied Mathematics's own Senior Instructor and Associate Department Chair Anne Dougherty has won the 2022 Marinus Smith Award. This award was created to highlight faculty members that positively impact CU students and are nominated by students and families of students. New Student & Family Programs explains:

"The faculty and staff receiving this award embody the true meaning of Be Boulder as they inspire, educate and motivate our community through innovation and passion. The award winners leave a long lasting impact on our community ... Each award winner reminds us of what it truly means to teach, mentor and support students to be the best version of themselves inside and outside of the classroom."

The New Student & Family Programs Marinus Smith Award webpage outlines the criteria for a nominee, explaining that the nominee "must advance the quality of education or the student experience at CU Boulder, model integrity and ethical conduct, and should demonstrate a high degree of respect for the contribution of every member of the CU Boulder community."

The Department congratulates Dr. Dougherty on this well-deserved award acknowledging the hard work she puts into helping students and pushing forward their careers.



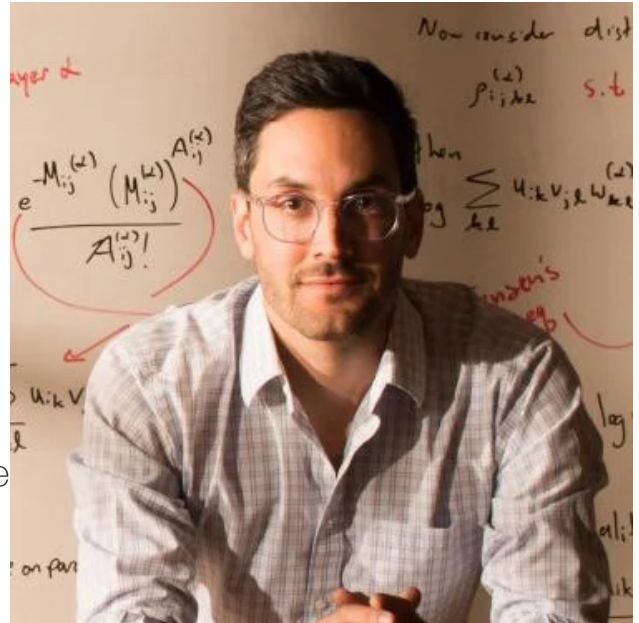
"From their first interaction, it was clear that Anne made him feel important and not only answered all of his questions, but went further to help him understand all of the possible paths he could take over his college career. She worked with him to craft solutions that would ensure he was given the opportunity to learn the subjects that were most important to him."

- Parents Tod and Robin Nasser explaining Dr. Dougherty's impact on their student, Jay.

Dr. Daniel B. Larremore:

2022 Alan T. Waterman Award Recipient

In May, Applied Mathematics Ph.D. alumnus Daniel B. Larremore received the Alan T. Waterman Award, which is presented annually by the National Science Foundation (NSF) at the National Science Board meeting. The award was established in 1975 and is given to early-career researchers “who demonstrate exceptional individual achievements in research in NSF-supported fields” (NSF). NSF Director Sethuraman Panchanathan explained that the awardees have “clearly demonstrated a superb record of scientific achievements by using creative and innovative approaches that have further strengthened basic research in their respective fields.”



Dr. Larremore graduated with a Ph.D. from Applied Mathematics in 2012, and is now an Assistant Professor in the Computer Science department and the BioFrontiers Institute. NSF explained that Dr. Larremore received the Waterman Award “For foundational research in computational epidemiology, combining mathematics and computation with real-world data to create powerful new models that provide concrete, innovative, and useful answers to globally important questions in the study of epidemic dynamics, including timely research on vaccination and testing strategies for combating the COVID-19 pandemic.”

The Department of Applied Mathematics congratulates Dr. Daniel Larremore on this momentous achievement! Information regarding the Alan T. Waterman award, such as other winners and more about Dr. Larremore’s work, can be found on the award’s webpage. CU Boulder Today also wrote a piece about Dr. Larremore and the award. Below is an NSF video of Dr. Larremore explaining his work and the award.

“I am humbled. Receiving **the Alan T. Waterman award is, simply put, the greatest honor of my career.** It opens a door for me, with my students, to throw our best efforts at harder and harder problems in infectious disease modeling and network science.”

- Dr. Larremore

WE INVITE YOU TO CONTRIBUTE TO OUR ANNUAL FUND DRIVE

We appreciate your contribution and note that donations are tax deductible.

Click link above or go to

<https://www.colorado.edu/amath/donate>



Department of Applied Mathematics
University of Colorado, Boulder
526 UCB
Boulder, Colorado 80309-0526