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MATHEMATICS NEWSLETTER
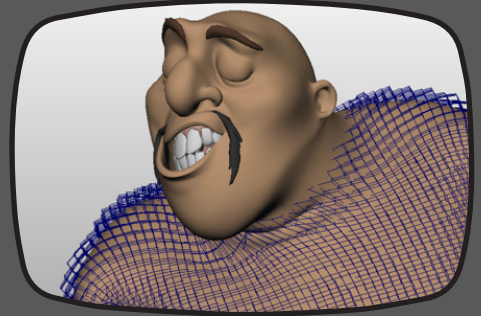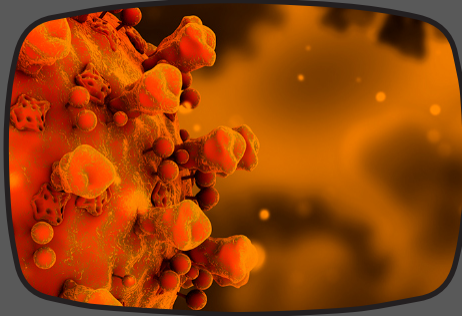
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THE UNEXPECTED
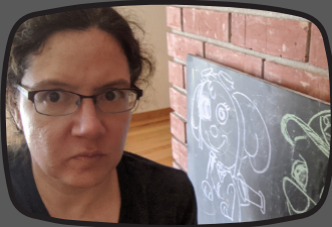
Contents

LETTER
from the chair

by Anne Schilling, Department Chair

I would like to thank everyone in the Department for their phenomenal job and dedication to switch in record time to remote operations due to the global pandemic! I know that this has put a huge strain on many of us, so I am very grateful to all who keep the Department running under these unusual circumstances. In this newsletter (pages 6-7) you can read about some of the extraordinary work that our instructors and staff did in the first few months of the pandemic to facilitate this difficult transition. Special thanks go to the members of our Committee on Remote Instruction: Erik Carlsson, Monica Vazirani, Bob Guy and Zach Johnson; as well as to Korana Burke, Rohit Thomas, Edward Tavernetti, Marianne Waage and Leng Lai for their contributions to this effort.

The one good thing about the pandemic is that it let me set a new record as the first chair who has not set foot in the chair's office in the first 100+ days on the job.

Despite the hardship of solely interacting electronically these days, there is exciting news to share. I would like to welcome Martin Fraas who has joined our Department as an Assistant Professor in mathematical physics from Virginia Tech. The Department has also hired Sameer Iyer as an Assistant Professor in analysis. Sameer will spend one more year at Princeton University before joining the Department next summer. Over the summer, we have also hired Joseph Teran. Joseph is moving to our campus from UCLA as a Full Professor and will start officially in the Winter Quarter. His work is in applied mathematics. For example his mathematical work is featured in the snow simulation for Disney Animations. Our longtime colleague Albert Schwarz retired in summer 2019. We wish him all the best!

In addition to our new faculty, we also welcome five new Krener Assistant Professors: Daniel Martin, who will be mentored by Elena Fuchs; Kathryn Link (mentor: Bob Guy), David Marsico (mentor: Joseph Biello), Didac Martinez-Granado (mentor: Misha Kapovich) and Stefan Schonsheck (mentor: Naoki Saito).

The Department hit a record with almost $6 million dollars in extramural funding this year, which constitutes a 27.8% increase from last year. Similarly, the enrollment numbers for summer session in 2020 were up by 43% compared to 2019, which is considerably higher than the increase of 1.6% during Summer Session 2019 compared to 2018. Student enrollments for fall quarter 2020 are currently also higher than they were last year. Most likely, classes for the winter quarter will still be run remotely due to the pandemic.

The past year was also successful for awards and recognitions in the Department. Jesús De Loera was awarded the 2020 UC Davis ADVANCE Scholar Award for outstanding scholarship and mentorship and the 2020 Farkas Prize in Optimization. Roger Casals was awarded both a Sloan Research Fellowship and an NSF CAREER Award. Laura Starkston was selected as a 2020 Hellman Fellow, awarded to "faculty members at the Assistant Professor rank who exhibit the potential for great academic distinction."

I would like to conclude by thanking our outgoing Department Chair Abigail Thompson for her service over the past three years.

Jesús De Loera

Roger Casals

Laura Starkston

Photo at top: Department Chair Anne Schilling stands with students in her Math 21A Calculus course.

Martin Fraas

Martin Fraas was born in Czechoslovakia and received his M.A. and Ph.D. degrees from Charles University in Prague. He had postdoctoral positions in the Technion (Israel) and ETH (Switzerland), followed by short academic stays at LMU Munich (Germany) and KU Leuven (Belgium). Martin's first position in the US was in Virginia Tech, where he was an Assistant Professor in the Mathematics Department up until his move to UC Davis this summer.

Martin's field of research is mathematical physics. Within that, he focuses on studying the mathematical structures of quantum mechanics. In each new problem, he tries to figure out what is the most appropriate mathematical language to describe, and hence better understand, quantum phenomena that are very often at the cutting edge of today's physics. Besides the relevance to contemporary physics, an exciting feature of such research is that each new phenomenon may require a new set of mathematical objects and tools. This makes the work difficult, but also exciting and interesting as you keep learning and developing new kinds of math. The canonical toolkit of quantum mechanics is linear algebra and functional analysis. Recently, Martin drew heavily on statistics in his work on quantum trajectories and geometry, and C^*-algebras in his work on the Quantum Hall Effect. He is now exploring representation theory in order to understand the problem of classification of topological phases of matter.

Martin loves doing math with other people and he has teamed up with collaborators spread across the globe. When working on his own, his preferred work space is a coffee shop. He is looking forward to exploring the coffee shop options in Davis. His favorite math books are "Statistical Structure of Quantum Theory" by Alexander Holevo and "Visual Complex Analysis" by Tristan Needham.

When not working, Martin likes to spend time with his spouse Anna, eating, hiking, biking, playing board games (Settlers of Catan and chess) and watching TV (most recently, the Great British Bake Off). He also loves poetry; his favorite poets are Shakespeare and Jorge Louis Borges.

Joseph Teran

Joseph Teran will be joining UC Davis in January 2021 from UCLA, where he has been a faculty member since 2007 and a full professor since 2014. He is an applied mathematician whose research is focused on numerical methods for partial differential equations arising in classical physics. This includes computational solids, computational fluids, multi-material interactions, fracture dynamics and computational biomechanics. Exciting applications of his work arise in virtual surgery and movie special effects with Walt Disney Animation.

He is a Fellow of the American Mathematical Society and was a recipient of a 2011 National Science Foundation's Presidential Early Career Award for Scientists and Engineers (PECASE) and of a 2010 Young Investigator award from the Office of Naval Research. In 2008, Discover Magazine named him one of the 50 "Best Brains in Science."

In his spare time, Joseph enjoys skateboarding, snowboarding and playing soccer. He also likes to play guitar and most pop culture things from the 1980s.

Krener Assistant Professors

Kathryn Link

Kathryn G. Link received her B.A. from Bryn Mawr College in 2012 before working as a research assistant at North Carolina State University with Professor H.T. Banks. In May 2020, she completed her Ph.D. in Mathematics at the University of Utah under the supervision of Professor Aaron Fogelson.

Kathryn's research interests lie at the intersection of mathematics and biology, specifically building models of complex biological systems that involve the physics of transport and mechanics as well as the biochemistry of enzymatic and inhibitory chemical reaction networks. Her thesis work focused on developing mathematical models of blood clotting and assessing the sensitivity of such models to variations and perturbations in parameters. Kathryn is currently working on building mathematical models of swimming sperm in viscoelastic fluids under the mentorship of Professor Bob Guy and Professor Becca Thomases.

Outside of mathematics, Kathryn enjoys various outdoor activities with her dog Sage including running, hiking, and climbing.

Daniel Martin

Daniel Martin received his Ph.D. last spring from the University of Colorado, over a decade after receiving his undergraduate degree. The interim was largely spent teaching in public schools in Chicago, Point Hope (Alaska), and the Bay Area. His research interests are scattered within algebraic and geometric number theory. They include Diophantine approximation, lattice-based cryptography, and Apollonian circle packing. At UC Davis he will be working under the mentorship of Professor Elena Fuchs.

Daniel is a husband and a father of two girls, a 1.8-year-old and a 3.6-year-old. Most of his day that is not devoted to math is now spent playing dress-up or hide and seek. Before kids, Daniel used to enjoy tennis, soccer, go, and chess.

Didac
Martinez-Granado

Didac Martinez-Granado received his Ph.D. this past May from Indiana University, Bloomington, and holds an M.A. in Mathematics from Cambridge University, UK and an undergraduate degree in math and physics from Universitat Autonoma de Barcelona, Catalonia, Spain. His research interests are in hyperbolic geometry, low dimensional topology and Teichmueller theory. His doctoral research focused on the study of functions defined on the space of curves on a surface and applications to curve counting. At UC Davis he is working with Misha Kapovich, and also plans to work with Joel Hass and other faculty and postdocs in related areas. Outside of mathematics, Didac has a passion for hiking, swimming and cooking.

David
Marsico

David Marsico grew up just north of New York City, and graduated from Haverford College in 2015 with a B.A. in mathematics. In 2020, he received his Ph.D. from the University of Wisconsin-Madison under the supervision of Samuel Stechmann. He joined UC Davis this Fall with a joint appointment between the Department of Mathematics and the Department of Land, Air and Water Resources (LAWR). The focus of his research is on developing theoretical and numerical methods to study atmospheric fluid dynamics. He is particularly interested in the coupling of output from different geophysical models through a process called remapping, which maps data between different discretizations of a sphere.

David looks forward to working with his UC Davis faculty mentors Joseph Biello at Math and Paul Ullrich at LAWR. In his spare time, he enjoys running.

Stefan
Schonsheck

Stefan Schonsheck recently completed his Ph.D. in Applied Mathematics at Rensselaer Polytechnic Institute. During his time at Rensselaer, he was active in the institute's SIAM chapter, spent a semester at UCLA attending the IPAM program "Geometry and Learning from Data in 3D and Beyond," and worked with researchers at IBM through the Rensselaer-IBM Artificial Intelligence Research Collaboration. He completed his thesis, "Computational Analysis of Deformable Manifolds: from Geometric Modeling to Deep Learning" in the spring of 2020, and won the Bill and Nancy Siegmann Applied Mathematical Modeling Prize for this work. This summer, he joined the UC Davis Department of Mathematics and the TETRAPODS Institute of Data Science as a Krener Assistant Professor, working under the mentorship of Professor Naoki Saito.

Stefan studies computational differential geometry, focusing on partial differential equations and optimization problems involving manifolds. He is specifically interested in applications of those subjects in shape processing, signal analysis, and machine learning in non-Euclidean domains. He also has strong interests in harmonic analysis and generative processes for both Euclidean and non-Euclidean data. Outside of work he enjoys cooking, cycling, and playing guitar.

keep on

Transitioning to Remote Instruction

by Erik Carlsson

Korana Burke was jokingly anticipating having to retask this home chalkboard if she ran into technical troubles in the middle of remote teaching. She made quick use of it a few days later, after a system update gone wrong!

The concept for the Remote Instruction Wiki logo originated with Dan Romik and finalized by Marianne Waage.

The COVID-19 outbreak in the Winter 2020 academic quarter left instructors with little time to make the best of an urgent situation. There would be more time to prepare for the Spring quarter classes, but several problems had not yet been answered, such as finding the best software for teaching a class online (Zoom had not yet taken over), or how an exam should be administered if at all. To help the Department prepare, our Department Chair Abigail Thompson appointed the Committee on Remote Instruction, consisting of myself along with Monica Vazirani and Bob Guy, soon joined by systems analyst Zach Johnson.

The committee proceeded in three waves:

1. Short term goal: basic standard for remote instruction

The most immediate goal of the committee was to produce a basic default setup for teaching a class online. Once it became clear that Zoom was superior to Canvas for lectures, the committee released a minimalist tutorial for setting up a recurring meeting in Zoom, and integrating it with Canvas. Some of the key features were getting the settings correct, down to details like turning off distracting virtual backgrounds, and avoiding unwanted visitors. In the early stages, the committee scheduled regular meetings to check in, with help from other Department members, notably instructors Korana Burke and Rohit Thomas. (See article at right.)

2. Medium term: interactive information resources

Ultimately, the committee sought to create an extensive repository of important information generated by the Department. But due to pressing challenges such as exams, it became clear that there needed to be a question and answer environment for dealing with problems with online instruction in the interim. With help from our colleague Tudor Dimofte, the committee decided to use Piazza, a popular online platform used by instructors to interact with students.

The Piazza site we set up was widely used by Department members for exchanging tips about how to deal with "Zoom bombing" and other issues with online instruction, and for advice regarding proctoring exams online, such as an original method suggested by Fu Liu that consisted of using students' webcams combined with breakout rooms.

3. Long term: Dokuwiki

In the final stages, the committee sought to create an information repository similar to Wikipedia, which could be edited by Department members. The Dokuwiki open source wiki software was identified as an appropriate solution. After a few weeks, Zach Johnson had completed the technical foundations behind the project, which became ready in early April of 2020. Shortly thereafter, Dan Romik created the overall design and organization for these pages. Several Department members have contributed to this repository, which remains a useful resource for future quarters.

Current challenges

Several longer-lasting things have come out of the committee's work, one example being Korana Burke and Rohit Thomas's excellent pedagogy hangout (see article on next page).

Since the Spring, the university administration and the Department of Mathematics have developed more specific guidelines for handling instruction during the pandemic. Some challenges still remain, for instance the use of online tutoring platforms, which have been used to cheat on exams on a regular basis. The committee expects there will be more need for the infrastructure the Department has developed in future quarters.

ROLLING

The Weekly Pedagogical Hangout

by Korana Burke and Rohit Thomas

It is almost hard to remember the beginning of March of this year. All of us who were teaching were in classrooms, lecture halls, and our offices hearing about the pandemic unfolding first in China, then in Europe, New York, and then off the coast of California. Some of us used the news to introduce freshmen to the wonders and beauty of dynamical systems while on the other side hoping for the best possible outcome. We kept our fingers crossed to just make it to the end of the Winter quarter. Things unfolded quickly and everyone in the Department turned to each other for expertise, advice, and moral support. Some people were already experts with Canvas, Gradescope, and WeBWorK, some people used Lecture Capture, Zoom, and Canvas Conferences for the first time, and everyone wondered what the Spring quarter was going to bring. As soon as it became obvious that the Spring quarter was going to be online, the two of us decided to create a space to talk about all things related to teaching and learning: the Weekly Pedagogy Hangout.

Weekly Pedagogy Hangout was born equally out of the need to continue learning from other people in the Department and to have a welcoming space to ask questions, try out new teaching approaches and technologies, and to just talk about our experiences. The two of us also wanted to help everyone feel less isolated while teaching from home. We knew there were a lot of people in the Department who would be able to offer thoughtful insight, provide links to useful content, or just listen. At the start of the spring quarter nobody knew what to expect from our students, technology, or the pandemic. However, we did know that by finding an easy way for people to collaborate with each other, it would make it easier for everyone to translate everyone's unique teaching vision into a remote classroom more efficiently and painlessly.

One of the early decisions we made was to have weekly topics centered around standard quarter themes. Some of the topics included were: how to keep students engaged in remote learning, how to proctor and administer exams, how to efficiently incorporate all the needed technology in order to make the remote teaching run as smoothly as possible, and how to minimize student cheating.

As Spring quarter transitioned into summer sessions, and summer sessions transitioned into Fall quarter, we all continued to learn more about remote teaching during our weekly meetings. Our first meetings were full of "has anyone figured this out yet" questions as everyone was trying to switch to remote teaching overnight. After the first shock of teaching remotely faded and everyone got into their new teaching routine, we also got to spend more time talking about pedagogy. Lively discussions resulted in creative ways to assess students (oral exams), engage them in successful group work, entice them to show up to and participate in live lecture meetings, and many others. A relatively small group of curious individuals also proved to be a perfect place to test out or debug the technology.

We would like to thank all our regular and irregular participants for attending and offering their immensely helpful insight and for bringing great questions. We appreciate your dedication to teaching and supporting students. Finally, we extend our invitation to come and visit our hangout, which is still ongoing, to all of the graduate students, postdocs, lecturers, Krener Assistant Professors, faculty, and staff who are curious about teaching and learning; anyone who hasn't yet taught remotely; or anyone who just wants to hang out with the people in the Department.
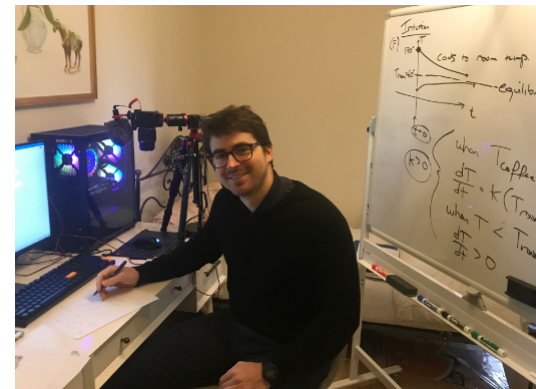
Instructors have made many adjustments in instruction. Above is Edward Tavernetti, showing off a camera rigged for document display and writing, as well as the traditional white board, before he starts his class. These are some of the solutions discussed in the Hangout.
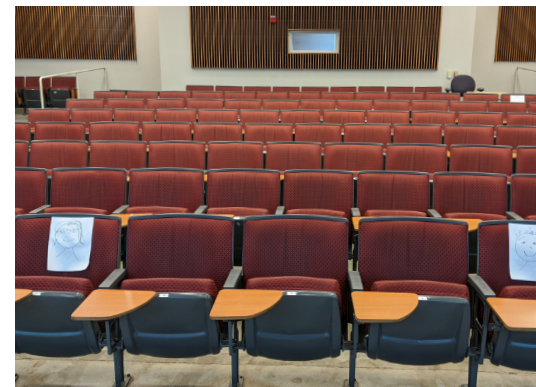
UC Davis has lecture halls with video recording capability, usually used to record while students attend. Korana Burke had a much emptier room to teach to as she made use of Geidt Hall to record over Spring Break.
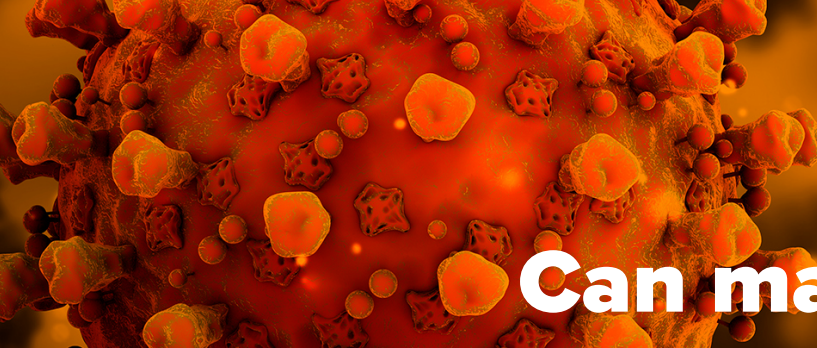
Can mathematics predict the evolution of coronaviruses?

by Javier Arsuaga and Mariel Vazquez

As SARS-CoV-2, the coronavirus responsible for COVID-19, resurfaces worldwide, the two of us, mathematical biologists at UC Davis along with molecular biologist Raymond Rodriguez are collecting data and developing new mathematical and biophysical methods for predicting the evolution of the virus.

In the Spring of 2020, when the virus first emerged, we decided to pause some of our lines of research and focus on developing a new area of research that would increase our understanding of the COVID-19 pandemic. Given our team's expertise in molecular biology, we wanted to develop a mathematical model to describe how the genome of the virus mutates while spreading across the human population. The question was motivated by the 1918 flu pandemic, whose mortality incidence increased dramatically between different waves of viral infection.

Starting a new interdisciplinary, time-sensitive research project is a complicated business and two key ingredients are needed — good students, and funds to support the research effort. With a grant from the newly formed Center for Data Science and Artifical Intelligence (CeDAR), we recruited three excellent students: graduate student Ryan Polischuk and undergraduate students Sofia Jakovcevic and Teresa Díaz Jordá. With their help, enough preliminary data was generated to apply for a RAPID grant. RAPID grants are one-year awards from the National Science Foundation (NSF) designed to address urgent societal problems. The award was announced early in June and was jointly funded by the Division of Computational Chemistry and the Division of Mathematical Biology at the NSF.

But one might ask, how can mathematics be used to analyze viral DNA sequences and how can this information be used to predict viral evolution? At the center of the project is the development of an algorithm that emulates the evolution of the virus through the processes of recombination (a cut-and-paste mechanism between different genomes) and single-point mutation. These kinds of algorithms, however, can be very unrealistic and simulate processes that may be far from the true evolution of SARS-CoV-2.

To narrow down the scope of the algorithm, we proposed to use the large number of currently available SARS-CoV-2 DNA sequences. To extract the relevant information from the data, Jakovcevic and Jordá are developing methods that combine stochastic processes and topological data analysis (TDA). These methods should reveal how frequently the virus mutates, those regions of the viral genome most prone to mutation, and the mechanism of mutation. We have learned that since the virus was first detected, it has been evolving mainly through point mutations and that many of these mutations have taken place in the gene coding for the spike (S) protein. The S protein coats the surface of the virus and is used to recognize, bind and

subsequently infect human cells.

The information provided by these mathematical approaches is extremely useful, but not sufficient, to fully understand how these mutations help the virus evolve in humans. To address this problem, Polischuk, currently supported by a fellowship from The Global Healthshare Initiative, is developing methods that quantify the interaction of the S protein with the human receptor, ACE2. The methods we are developing will allow us to rank mutations and determine which are most likely to give a selective advantage to the virus.

As the project progresses, our understanding of the SARS-CoV-2 infection process grows weekly, if not daily. Additionally, new students and researchers are joining the group. Since June 2020, three high school students (Nathan Solomon, Apurva Mishra—Davis Senior High School and Ahmed Shaki—Kimball High School, Tracy), one undergraduate student (Caitlin Brown), and one researcher (Georgina Gonzalez) have joined the research team. Through this research experience, we are all learning how complex societal problems like pandemics require multi-disciplinary, team science approaches. Today, mathematics is playing an increasingly important role in deciphering and solving complex, global problems that threaten the health and well-being of humankind.
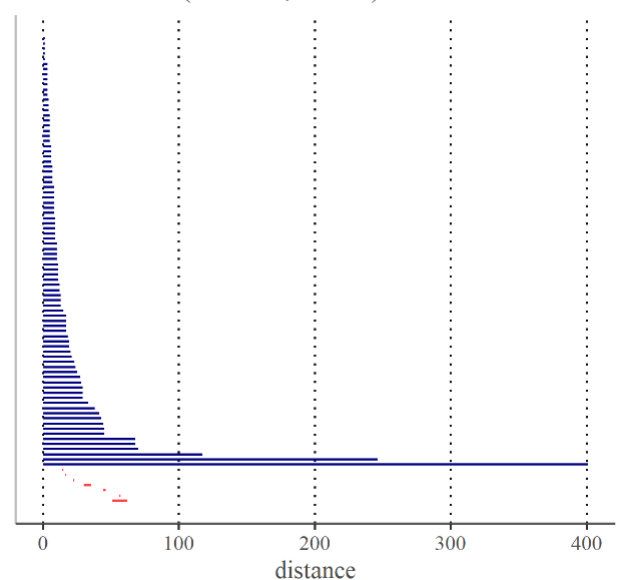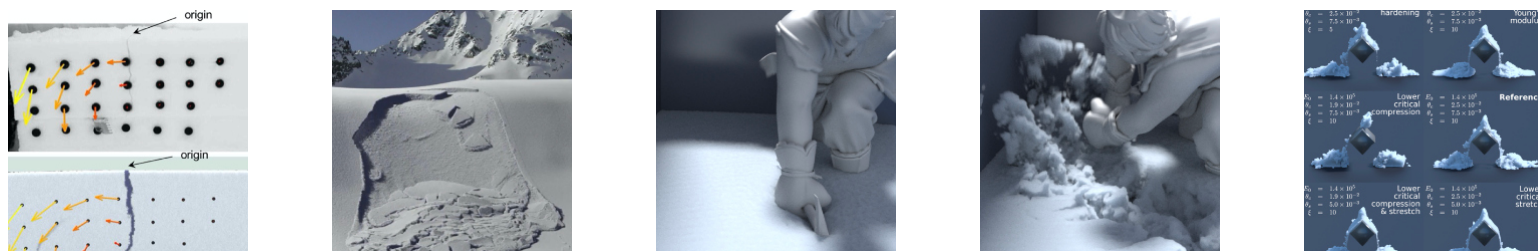

Figure: Results obtained using Topological Data Analysis (TDA) on 101 sequences collected between March and July, 2020. The absence of red bars (first homology) suggests there is very little recombination in the evolution of the virus.

Snow Business

Scientific Computing for Modern Visual Effects
by Joseph Teran

Applied mathematics has a very exciting modern application: visual effects. In modern movies, effects artists create Computer Generated Imagery (CGI) to enhance storytelling ability and engage viewers in new and compelling ways. In effects-heavy movies like The Avengers, CGI is composited with live action performances via green screen. Furthermore, fully animated features like those from Pixar consist entirely of CGI. While it is not surprising that CGI requires mathematics and computer science, the degree to which modern effects make use of numerical methods for partial differential equations (PDEs) is not widely recognized.

Traditionally computer graphics research is concerned with algorithmic and geometric aspects of synthesizing light transport in photography. Modern approaches allow the user to create digital renderings of purely computer generated worlds with nearly perfect visual realism. These digital worlds consist of geometric digital assets where polygonal meshes are used to idealize general geometric shapes. To make a movie, (rather than a photograph) the digital assets must be moved from frame to frame by animators to create motion in the computer generated scene. However, modern effects use polygon meshes with millions of vertices which makes the animation process very expensive. The task of moving millions of polygon vertices for each frame (30 per second) in a movie is non-trivial. Furthermore, the level of realism achieved by the synthetic photography is so high that the animated motion must have a similar level of realism. Imagine animating water pouring into a cup. If a single rendered frame of the movie looks indistinguishable from a photograph, the motion must look similarly real. If not, the viewer tends to notice the mismatch in levels of realism rather acutely (a phenomenon often referred to as the *uncanny valley*).

Fortunately, applied mathematicians have many decades of experience developing computing techniques for simulating motion. Classical physics provides governing partial differential equations that dictate the dynamics of most of our everyday world. For example, the Navier-Stokes equations famously describe the dynamics of water. Other materials obey similar but less well-known equations. In fact, the dynamics of almost everything we interact with in our everyday lives (e.g., clothing, sand, snow, soil, soft tissues, see figure) can be described by the PDEs associated with conservation of mass and momentum:

$$\frac{\partial \rho}{\partial t} + \frac{\partial \rho}{\partial \mathbf{x}}\mathbf{v} + \nabla \cdot \mathbf{v}\rho = 0$$

$$\rho\left(\frac{\partial \mathbf{v}}{\partial t} + \frac{\partial \mathbf{v}}{\partial \mathbf{x}}\mathbf{v}\right) = \nabla \cdot \boldsymbol{\sigma} + \mathbf{f}.$$

Here $\mathbf{v}$ is the velocity, ρ is the mass density and $\mathbf{f}$ is externally applied force. $\boldsymbol{\sigma}$ is the stress in the material associated with its particular mechanical response (which will vary depending on the type of material). These equations are nonlinear and can rarely be solved directly, however with scientific computing we can approximate their solution very accurately. Although traditionally developed for engineering applications, numerical methods for these PDEs are now indispensable tools in the movie making process.

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Simulation for visual effects
The above images show visual simulation of snow dynamics using [7] and a generalization of this approach for avalanche simulation in [2].

These images above show simulation of soft tissues and clothing from [1, 3] and [6] which can be used for animating characters.

These final images show coupling between different materials needed for creating a compelling virtual environment [4, 5, 8].

Jesús De Loera

Martin Fraas, new faculty

Fernanda Valdovinos,
new faculty

Raissa D'Souza, joining
Science's Board of
Reviewing Editors

Graduate Group in Applied Mathematics

by Jesús De Loera, Chair of the Graduate Group in Applied Mathematics

Our Graduate Group in Applied Mathematics (GGAM) and its graduate program continue to thrive and grow. We elected a new executive committee: Krishna Balasubramanian (Statistics), Tim Lewis (Math), Alan Hastings (Environmental Science and Policy), and Shiqian Ma (Math). We are grateful to Xiadong Li, Thomas Strohmer, and Blake Temple for their dedication and service to our program.

GGAM was reviewed by a panel of experts and we received the report with recommendations for improvement at the end of the Spring 2020 quarter. We are currently implementing some suggested changes to our operations to make our program stronger and more efficient. Some recommendations point to important challenges that we are committed to tackle, such as reaching more diversity in our programs, others are new ideas to make us more efficient and take on the bigger challenges. For example, GGAM will expand the admissions committee to allow for more than one faculty to read each graduate application so that we are able to look at applicants more carefully.

Fall 2020 started for GGAM with an incoming class of twelve new Ph.D. students, selected from a highly competitive pool of applicants. The COVID-19 pandemic has unfortunately stranded some of our students abroad and we have remote instruction that diminishes our contact. Several new faculty joined GGAM, giving our graduate students additional opportunities for research interactions and collaborations. We now have faculty from twenty-four departments and centers across the university. One of them is Martin Fraas, a mathematical physicist who joined the Department of Mathematics this summer; you can read about him and his work on page 3 of this newsletter. Another new GGAM member is Fernanda Valdovinos. Fernanda is a theoretical ecologist and network scientist, and joined UC Davis in July 2020 as an assistant professor in the Department of Environmental Science and Policy. Before coming to Davis she was an assistant professor in the University of Michigan's Department of Ecology and Evolutionary Biology and the Center for the Study of Complex Systems since January 2018. Her group studies the structure and dynamics of ecological networks at ecological and evolutionary scales, including their resilience to biodiversity loss, biological invasions, climate change, and exploitation by humans.

Our program's graduates continued to go on to impressive careers in academia and industry (see the list of graduates included on page 12). We continued our series of Ph.D. exit seminars, each accompanied by a reception to celebrate the research achievements of the graduating doctoral students. The GGAM faculty continues to increase our reputation and prestige by winning awards, grants, and making contributions to the university. In addition to Department of Mathematics faculty achievements discussed in this newsletter, I would like to mention that our esteemed colleague and GGAM member Raissa D'Souza, who holds a joint appointment in the Department of Computer Science and the Department of Mechanical and Aerospace Engineering, will join *Science*'s Board of Reviewing Editors. *Science* is one of the world's most prominent scientific journals, and D'Souza will assist the publication's editors in identifying the best paper submissions in the fields of network science, applied math and machine learning to be sent out for in-depth peer review, as well as identifying the most qualified reviewers. Congratulations Raissa!

We were still able to run in February 2020 our wonderful GGAM Mini-Conference before the pandemic shut down the university. The event showcased the breadth of research that GGAM offers, with short talks from GGAM faculty members. This has been a major recruitment event for many years and we are already making plans to adapt it for the new online reality. Let me finish by sending our best wishes from GGAM to our community of readers and supporters in these stressful times.

Graduate Program

by Becca Thomases, Vice Chair for Graduate Affairs

The Mathematics graduate program continues to thrive. We awarded 9 Ph.D.s in 2019-2020, and our graduates have continued on to postdoctoral and lecturer positions as well as jobs in industry. Our graduates include Subhadip Dey whose dissertation under Michael Kapovich was titled *Discrete isometry groups of symmetric spaces of noncompact type*. Subhadip began a position as a Gibbs Assistant Professor at Yale in Fall 2020. Alvin Moon has moved to a postdoctoral position at the QMATH Center at the University of Copenhagen after completing his dissertation, *Stable Properties of Gapped Ground State Phases in Quantum Spin Chains* with Bruno Nachtergaele. Jingyang Shu began a position as a Research Assistant Professor at Temple University, after completing his dissertation titled *Sharp Fronts for the Surface Quasi-Geostrophic Equation,* with John Hunter.

Our current graduate students have also received many awards and fellowships. Jennifer Brown, a fifth year student of Motohico Mulase, was awarded a fellowship to attend the program Knots, Strings, Symplectic Geometry and Dualities at the Mittag-Leffler Institute in Sweden during Fall 2020. Jianping Pan, a fifth year student of Anne Schilling, was awarded the Professors for the Future fellowship for 2020-21 from UC Davis Graduate Studies. Black Jiang received a Summer GSR award from UC Davis Graduate Studies, and Chengyang Wang and Jack Wesley received the College of Letters and Science Dean's Summer Fellowship for 2020.

This fall we welcomed 14 new graduate students to the program, bringing the total number of graduate students in the program to 68. One of our new students, Ashleigh Adams, was granted the National Science Foundation's Graduate Research Fellowship. Due to the current pandemic, several of our first-year graduate students have not moved to Davis yet, and are taking their first-year courses from locations such as Mexico and Tennessee. However, I have heard that they are still getting to bond over difficult homework assignments in Zoom breakout rooms! We are impressed with their flexibility and persistence and can't wait to greet them in person when they are able to move to Davis.
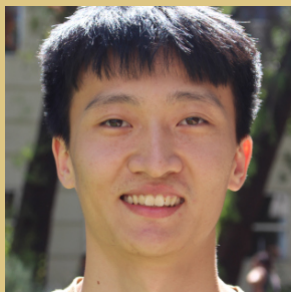

Becca Thomases
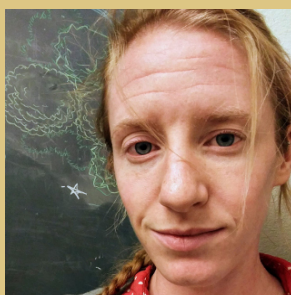
Jennifer Brown

Black Jiang

Chengyang Wang

William Jack Wesley

Mathematics for the Future

The Department of Mathematics wishes to thank all alumni, parents, students, faculty, staff and friends who support the Department each year. For a list of our endowed funds, please see our web site:

http://www.math.ucdavis.edu/about/donation/

Your gift to the Department is tax deductible as allowable by law, and you can choose to have your name published or remain anonymous.

Your gift can be used towards undergraduate and graduate support, faculty and research support, and/or Departmental priorities. Your gifts ensure our future success.

Give Online

If you would like to give, please go to the UC Davis secured giving site at:

https://give.ucdavis.edu/Go/MathGift

Please click on "Donate to this Fund" and follow the prompts.

A list of donors can be found at the end of this newsletter. Thank you for your continuing support.

We appreciate the many donors who double or triple the impact of their gifts through their employers' matching gift program. For more information about matching gifts, you can go to:

http://matchinggifts.com/ucdavis/

For additional questions please contact the Development Office at (530) 752-3429. For your reference, disclosures can be viewed at:

https://giving.ucdavis.edu/resources/disclosures

CONGRATULATIONS

Chen, Ji • Applied Mathematics • *Nonconvex Matrix Completion: From Geometric Analysis to Algorithmic Analysis*
Adviser: Li

Cuello, William • Applied Mathematics • *Persistence of Single and Multispecies Systems in the Face of Environmental Uncertainty*
Adviser: Schreiber
Post Degree Placement: Hill Assistant Professor, Rutgers University

Dey, Subhadip • Mathematics • *Discrete isometry groups of symmetric spaces of noncompact type*
Adviser: Kapovich
Post Degree Placement: Gibbs Assistant Professor, Yale University

Gallup, Nathaniel • Mathematics • *Dots and Dominos, Zigzags and Squares*
Adviser: Kuperberg

Lazarus, Tynan • Mathematics • *Step-wise Adjustable Iterated Function Systems*
Adviser: Xia
Post Degree Placement: Lecturer, University of Arizona

Luo, Yanwen • Applied Mathematics • *The Spaces of Shapes and Geodesic Triangulations on Surfaces*
Post Degree Placement: Hill Assistant Professor, Rutgers University
Adviser: Hass

Moon, Alvin • Mathematics • *Stable Properties of Gapped Ground State Phases in Quantum Spin Chains*
Adviser: Nachtergaele
Post Degree Placement: Postdoc, University of Copenhagen QMATH Center

Robey, Jonathan • Applied Mathematics • *On The Design, Implementation, and Use of a Volume-of-Fluid Interface Tracking Algorithm For Modeling Convection and Other Processes in The Earth's Mantle*
Adviser: Puckett

Sanders, Robert • Mathematics • *Complexity Zoology*
Adviser: Kuperberg
Post Degree Placement: Lecturer, UC Davis

Schiffman, Benjamin • Mathematics
Adviser: Xia
Post Degree Placement: Lecturer, UC Davis

Shu, Jingyang • Mathematics • *Sharp Fronts for the Surface Quasi-Geostrophic Equation*
Adviser: Hunter
Post Degree Placement: Research Assistant Professor, Temple University

Witte, Shawn • Mathematics • *Link Nomenclature, Random Grid Diagrams, and Markov Chain Methods in Knot Theory*
Adviser: Vazquez

Wright, William • Mathematics • *An Improved Gauge Dual Descent Algorithm for Noisy Phase Retrieval*
Adviser: Bai

Zhou, Bohan • Applied Mathematics • *From optimal transport to optimal mixing flows and vice versa*
Adviser: Xia

Zhou, Yunshen • Applied Mathematics • *Solution of Nonlinear Eigenvalue Problems Arising from Constrained Rayleigh Quotient Optimization and Resonant Modes Computation of Accelerator Cavity*
Adviser: Bai
Post Degree Placement: Data Scientist, Expedia

Allen, Angier • M.A., Mathematics (Strohmer)

Corcoran, Carl • M.S., Applied Mathematics

Kalb, Arthur • M.S., Applied Mathematics

Mimmack, Kayden • M.S., Applied Mathematics

Okada, Rui • M.A., Mathematics (Strohmer)

Parmar, Krishen • M.S., Applied Mathematics

Roberts, Nicholas • M.S., Applied Mathematics

Rubin, Shanon • M.A., Mathematics

Wang, Hexiang • M.S., Applied Mathematics (De Loera)

Xue, Hongtao • M.S., Applied Mathematics

Zhang, Wiseley • M.A., Math

Life After Davis

Brandy Wiegers

I completed my Ph.D. in Applied Mathematics at UC Davis in 2008. My research focused on computational mathematical biology and numerical analysis. While I was at Davis, I worked with fellow graduate students Yvonne Lai, Spiros Michalakis, and Sarah Williams to create the Explore Math program, a mathematical outreach program that provides weekly opportunities for local students to engage in problem-solving exploration of mathematical topics with other students. This work later guided me to work at the Mathematical Sciences Research Institute in Berkeley as founding director of the National Association of Math Circles (NAMC). This organization supported those who were involved in mathematical outreach programs similar to the Explore Math program, providing mathematical exploration for students ranging in age from elementary to high school student and including community members and teachers. I developed the NAMC program to support those groups and provide training, funding, and professional recognition to the faculty, graduate students, and other mathematicians who wanted to share their love of mathematics with the greater community.

While working with NAMC, I was also running several Bay Area math outreach programs including the San Francisco Math Circle, the Oakland/East Bay Circle, and the Bay Area Circle for Teachers. In organizing these programs I had a chance to work on mathematical problems with hundreds of students across the Bay Area every week. I also got to hear engaging presentations from awesome mathematicians, including Marion Moore, whose description of four dimensional space sticks with me to this day. This work in the Bay Area led to a job at San Francisco State University as the Co-Director of the National Science Foundation's Graduate K-12 program [known as $(CM)^2$, an acronym for Creating Momentum through Community Mathematics] and the Program Director of Outreach and Student Success for the SFSU Center for Science and Mathematics Education (CSME). Over the five years at SFSU I guided more than forty Master's students through the process of applying for Ph.D. programs while also training in mathematical communication and teaching. I was blessed to have many great mentors among the faculty at SFSU. These interactions inspired me to apply for faculty positions. In 2014 I started work as an Assistant Professor at Central Washington University, where I have been ever since.

My involvement in outreach has continued during my time at CWU. I created the Kittitas Valley Math Circle and Math Circle Mentorship and Partnership (MC-MAP) programs while supporting other opportunities for students' mathematical exploration. These projects inspired me to found the Journal of Math Circles where I now serve as co-editor-in-chief. I have also coordinated professional development workshops and community service. Currently I serve as a counselor on the Council on Undergraduate Research and am an officer in several of the Special Interest Groups of the Mathematical Association of America. In September I started a new gig as the Director of the CWU Office of Undergraduate Research.

My career since Davis has taken me to places that I did not expect to go. I look fondly back at my times at Davis and continue to use the lessons I learned there about research, teaching, and sharing the beauty of mathematics with others. The friends and connections I made while in graduate school continue to model the mathematician that I am today. Thank you to everyone at UC Davis for their support and if you are interested in learning more about this type of post-graduate pathway, please contact me!

Brandy Wiegers, known to her students as "Dr. Brandy," graduated from our Department in 2008 and is currently an Associate Professor at Central Washington University. Earlier this year she received extraordinary recognition for her work in being named one of the recipients of the 2020 Henry L. Alder Award for Distinguished Teaching, a prestigious teaching award given annually by the Mathematical Association of America. Congratulations Dr. Brandy!

Further information on outreach programs called Math Circles can be found online at these websites:

National Association of Math Circles
mathcircles.org

Journal of Math Circles
digitalcommons.cwu.edu/mathcirclesjournal/

Undergraduate Program

by Tim Lewis, Vice Chair for Undergraduate Affairs, and the Undergraduate Program Committee

Final Exam Study Night

Undergraduate Research
You can read theses written by our undergraduates on our website.
math.ucdavis.edu/undergrad/research/thesis/

For tips on starting an undergraduate research topic and ongoing communication, view Roger Casals' notes from the conference in the Undergraduate Research section of the website:
math.ucdavis.edu/undergrad/research/

Is Math Teaching for You? Learn More About It!
A quick overview by CalTeach/MAST can be seen online on their YouTube channel.
youtu.be/aO3dSYXFlMU

In the 2019-20 academic year, the Department of Mathematics awarded 214 degrees (171 majors and 43 minors). We currently have 888 students enrolled in the different math majors — up by 124 from the previous year. Eleven of our degree recipients wrote senior theses on topics such as "Gene Trees", "Incompressible Fluid Ellipsoids" and "Catalan Recursions." These students were Xuyilong Chen, Sari Ogami, Yuze Luan, Vincent Lovero, Shirley Wang, Limin Huang, Ruicong Zheng, Ka Hei Michael Chu, Richard Gunter, Haleigh Miller, and Jan Tracy Camacho. Their archived theses can be found on our website.

Final Exam Study Night
On the last week of Fall Quarter 2019, the Department of Mathematics hosted its first Final Exam Study Night. We invited students to come study with friends in a comfortable and welcoming space with delicious snacks. The event was quite popular, with the room overflowing with students (leading to an expansion of the event over the course of the evening to several other of the classrooms and spaces in our building), who were engaged and learning from each other. Appearances by our faculty members Monica Vazirani and Greg Kuperberg and a handful of graduate students helped keep the atmosphere lively and productive. We were thrilled with the success of the event; creating a welcoming environment for our students to be able to build community is necessary and crucial for the program. I am thankful to undergraduate program coordinator Cydney Matteson and to our fantastic peer advisors Xitlalli Jimenez, Olivia Bailey, Amber Mendez and Annie Ngo for their help and efforts in organizing these events.

Career Night
On May 20, during the Spring Quarter, we held our annual Career Night, this time in a virtual setting. The event featured a panel discussion with Kyle Chickering, a current graudate student in Applied Mathematics, and six guest speakers — most of them former UC Davis students — who told of their experiences pursuing diverse careers in industry, education, and scientific research in the national labs. I am grateful to the six visiting panelists Brandon Dutra, Sophie Quynn, Nikki Sanderson, Katelin Jones, Weizhou Wang, and Saba Mahdavi for their participation, and to Cydney Matteson and Laura Starkston for organizing the event.

Information and Advising, Remotely
Although all classes are being held remotely in the current Fall 2020 academic year quarter, and this will likely remain the case throughout the entire 2020-21 academic year, we are making an effort to continue many of our usual events and activities remotely. We kicked off the academic year with our virtual Undergrad Welcome Event on October 5th. At the event, we discussed the great things that one can do in mathematics. I introduced the students in attendance to some of our resources and encouraged them to engage with the material, their instructors and each other.

In addition to usual drop-in advising hours, we are holding a Registration Help Workshop to aid with academic planning and preparation for the upcoming Winter 2021 quarter course registration. Peer advisors are planning remote gatherings to promote social interaction among mathematics students and answer any questions that may arise.

We invited the UC Davis CalTeach/MAST (Math and Science Teaching) program to give a virtual information session on mathematics teaching on October 13. This provided our students with information on exciting opportunities in an area where they can make an impact by helping high school students make a successful transition to college and preparing them for careers in high-demand areas of science, engineering, and technology.

Undergraduate Research Conference
On October 15 we hosted the Mathematics Undergraduate Conference 2020 on the

"Zoom-o-sphere," where students who have been doing undergraduate research gave presentations. Our undergraduate research coordinator, Professor Niels Grønbech-Jensen, started off the conversation, describing to almost 100 interested students how to get started in research. His colleague Laura Starkston gave tips to engaging in research. They were joined by fellow faculty member Roger Casals, who went into depth on the importance of communication throughout the research project. Two undergraduates, Mohammad Ismail Daud and Vincent Chen, gave presentations on research projects they conducted over the summer.

This academic year, the Department of Mathematics is offering two special topics courses for undergraduates (MAT 180): One by Joseph Biello on the topic of linear and nonlinear partial differential equations of geophysical fluid dynamics in Winter 2021, and another by Erik Carlsson in Spring 2021 on geometric representation theory.

Coffee with a Prof

In 2019 we continued the "Coffee with a Prof" program, which was started to facilitate undergraduate students connecting with faculty in a relaxed atmosphere, which allows them to ask questions about careers, life-work balance, studying mathematics, or anything else. The meetings were done over coffee, paid for by the Department, and students seem to enjoy them. We look forward to this and other ways to make our program more personal and friendly to our close to 900 majors. In keeping with the transition to online activities, we will be continuing the Coffee with a Prof meetings in a virtual setting in the upcoming Winter quarter.

Math Club

In Fall Quarter, our undergraduate Math Club has been meeting Monday nights on Zoom. The Math Club is dedicated to advancing mathematics by building a strong community among people who enjoy math. In addition to fun math puzzles, tasty snacks (when in person), and networking opportunities, Math Club meetings often include short presentations by guest speakers. If you are interested, please visit their website. And did you know they sometimes advertise sales of UC Davis math apparel? Who knows, with the right timing you may be able to score some for yourself.

As you can see, our students, faculty and staff have been active with a variety of enriching math activities. And while the struggle of remote learning is real, our mathematics majors are persevering. I am confident that they will emerge from this difficult time as better mathematicians, and with an appreciation for the value of human interaction in the pursuit of mathematical knowledge and personal growth.

Coffee with a Prof with Angela Cheer (above) and John Challenor (below).

Math Club
Details on Math Club, including scheduled events and meetings, can be found on Facebook or their website.
facebook.com/groups/ucdmathclub/
math.ucdavis.edu/~mathclub/

G. Thomas Sallee Mathematics Teaching Award

The G. Thomas Sallee Mathematics Teaching Award honors Professor Emeritus Tom Sallee's 40-year career with the Department, his dedication to being an excellent teacher, and his life goal of developing and supporting talented mathematics educators. The prize recognizes the best teaching of lower-division mathematics courses on an annual basis.

Recipient – Jose Rodriguez Simental

G. Thomas Sallee Mathematics Prize

This prize recognizes exceptional undergraduate students of junior or senior standing who competed in this year's Spring Mathematics Competition.

Recipient – Ruicong Zheng
 Honorable Mention: Liang Guo, Xingyue Chen

Henry L. Alder Award

Professor Henry L. Alder was at Davis from 1948 till 1994, serving as Department Chair from 1992 to 1994.

Professor Alder was a strong advocate for quality teaching. This award provides support to mathematics graduate students at UC Davis and is given each year to the graduate students in mathematics who is deemed to be the top performing teacher.

Recipient – Andrew Alameda, Joseph Pappe

William K. Schwarze Scholarship in Mathematics

William Karl Schwarze received a bachelor's degree at UC Davis and went on to become a mathematics teacher in San Francisco. After his death in 1988, a trust he established has donated to the Schwarze Scholarship to be presented today. This award is given to graduate students in Mathematics who have demonstrated outstanding mathematical scholarship and exceptional promise of making a strong professional contribution as a mathematics teacher and educator at the pre-college or college level.

Recipients – Wencin Poh, Eric Severson

McCurdy Family Scholarship

The McCurdy Family Scholarship is awarded to undergraduate students in the College of Letters and Sciences at UC Davis. Selection of recipients is based on academic merit and promise. The Scholarship is restricted to students with junior or senior class standing, and may include any undergraduate major offered in the Department of Mathematics.

Recipients – Safiyyah Ahmed, Jessica Morales

FINDING
FINDING
FINDING
EXCELLENCE

Department Awards

Robert Lewis Wasser Memorial Scholarship

Robert Lewis Wasser began studying mathematics at UC Davis in 1991. After his tragic death in an automobile accident in 1993, prior to his Junior year, his grandmother, Vera May Wasser, initiated the Robert Lewis Wasser Endowment in his memory. Its goal is to benefit promising mathematics students at UC Davis.

Recipients – Raymond Chan

Hazel B. Jacoby Fellowship

The Jacoby Fellowship is awarded by the Department of Mathematics for the purposes of both recruiting intellectually promising graduate students entering their first year of graduate-level study and retaining outstanding continuing graduate students.

Recipients – Kayleigh Adams, Gal Dimand, Jianping Pan

Alice Leung Scholarship in Mathematics

Alice Siu-Fun Leung received a Master's degree in Mathematics in 1975 from UC Davis, and remembered this time in her life fondly. This award is given to graduate students in Mathematics who have shown exceptional promise in all aspects of mathematics, including research, scholarship and teaching.

Recipient – "Black" Fushuai Jiang, Haotian Li

Eric C. Ruliffson Scholarship in Mathematics

Eric Canady Ruliffson attended UC Davis from 1964-1968, where he both loved the study of math and excelled in it. The Eric C. Ruliffson Scholarship in Mathematics is awarded annually to students of junior or senior standing majoring in mathematics.

Recipient – Ulises Jaime-Yepez, Daniel Sandoval

Evelyn M. Silvia Scholarship for Future Mathematics Teachers

Professor Evelyn Silvia came to the UC Davis Department of Mathematics in 1973. The focus of Evelyn's passion and unwavering commitment was to develop talented mathematics teachers at the K-12 grade level. This scholarship recognizes a junior or senior with a major in mathematics, applied mathematics or statistics who has shown an interest in teaching mathematics.

Recipient – Victoria Beck

Yueh-Jing Lin Scholarship in Mathematics

Yueh-Jing (Jean) Lin and Chau-Hsiung (Mike) Chuang are alumni of UC Davis who met while they were graduate students on campus. This endowment provides scholarship support to one or more mathematics students each year who are high-achieving mathematics students, either undergraduate or graduate.

Recipients – Olivia Bailey, Jennifer Brown

Galois Group Service Award

The Galois Group represents the voice of graduate students in the Department.

Every year, the Galois Group presents an award to recognize outstanding service and/or sustained commitment to the graduate group.

Recipient – Becca Thomases

Departmental Citation Awards

These Departmental awards recognize undergraduate students of exceptional ability who have taken both a very strong selection of mathematics courses and have made substantial contributions to the Department or their program.

Recipients – Olivia Kate Bailey, Dannie Rae Kiel, Christopher David Lefrak, Amber Ashley Mendez

Citation for Outstanding Performance

These citations honor undergraduates who have taken a very strong selection of mathematics courses and distinguished themselves with exceptionally high grade point averages.

Recipients – Olivia Kate Bailey, Limin Huang, Christopher David Lefrak, Vincent Louie Lovero, Yuze Luan, Sari Ogami, Zhijie Wang, Ruicong Zheng

Honors and Awards

List of past award recipients — plus descriptions of all active endowments, programs, and awards — can be found on our website:

https://www.math.ucdavis.edu/about/donation/

Life After Davis

Kellen Broemmelsiek

After graduating from UC Davis in 2018 with a Bachelor's of Science in Mathematics, I moved to the Bay Area to live with my grandfather (since deceased). I applied to various software companies in the area until I obtained an internship in data science at Integration Appliance, Inc.

The work I engage in consists of data analysis, product prototyping, natural language processing, natural language understanding, and natural language generation. The data I work with is primarily in the legal domain.

In my work I have used mathematics from various areas including numerical methods for building experimental models, and some probability for evaluating model performance along with linear algebra and optimization. The mathematical methods I use in projects vary, and are determined by business solutions. For example, at one point a coworker had an idea for handling scheduling for our clients. There were a variety of constraints involved in this scheduling that needed to be formulated mathematically. The resulting formulation took the form of a mixed-integer-programming model. From here, I used a Python optimization API to build a prototype.

I work in a small team. We interact with other teams when a project demands multiple skill sets. Before the pandemic, I would frequently meet in person with members of other teams, discuss ideas and objectives, and then work alone. Nowadays the process is as you might imagine: I take a video call with members of other teams, discuss objectives, and then work alone.

Looking back to my time at UC Davis, the undergraduate research experience I did with Bob Guy and Becca Thomases, and readings in the mathematical biology research group, prepared me to work with the types of open questions and problems I have encountered. These days I often work with people who know less math than me. This can be a challenge, and at first I struggled with communication. After learning some business and software lingo, I was able to more effectively use mathematical terminology to describe ideas. Finally, the undergraduate mathematics lounge at Davis was excellent training for mingling with caffeine-addicted coworkers.

Are you a Graduate?

We want to hear from you! Please send us information about yourself so that we can stay in touch and share in your experiences outside of UC Davis.

Please complete our Alumni Questionnaire:

http://www.math.ucdavis.edu/news/alumni_quest

or send e-mail to:

mso@math.ucdavis.edu

We will do our best to include it in the next newsletter.

Life After Teaching

Albert Schwarz

I retired on July 1, 2019 and immediately started a long trip: seven countries in seven months. (I had needed to stay in Davis since 2012.) I visited the Simons Center (Stony Brook, NY), the Institute for Theoretical Physics (Sao Paulo, Brazil), IHES (Bures-sur-Yvette, France), Skolkovo (Moscow, Russia), MPIM (Bonn, Germany), a conference in Luxembourg, Hebrew University (Jerusalem, Israel), Weizmann Institute (Rehovot, Israel), and University of Warwick (UK).

I have finished the work on translating my book, "Mathematical Foundations of Quantum Field Theory" published by World Scientific in 2020. The book was translated by Dmitry Shemetov and I am very grateful for his work. I have added a chapter with new results to this book.

I retired from teaching, not from research. I am working in various directions. I have written a short paper where I have proposed a new geometric approach to quantum theory. The starting point of this approach is a convex cone of states; the standard formulas for probabilities can be derived from the first principles in this approach. Convex cones are closely related to Jordan algebras; I am writing now a longer paper where I am analyzing, in particular, scattering theory in geometric approach and in the approach based on Jordan algebras. The scattering matrix in this situation is a generalization of inclusive scattering matrix, defined in my recent papers. (Inclusive cross-sections can be calculated as linear combinations of matrix elements of inclusive scattering matrix. The conventional scattering matrix cannot be used to consider the scattering of quasiparticles.)

Due to the pandemic, I was forced to reschedule my visits to Germany and France. I am not sure that the new dates in 2021 are realistic, but for now, I can attend seminars and give talks while sitting in my living room.

Most people want to live long, but they want to remain young. It is very difficult to reconcile these desires. I am trying! Thanking my Facebook friends for congratulations with my 85th birthday, I wrote: "If I could disregard the cataract, knee pain, etc, I would say that I am 85 years young." Since then, I had cataract surgery, and my knee is fine (fingers crossed). I know that the life expectancy tables give me less than 6 years. However, at this moment, I am 86 years young!
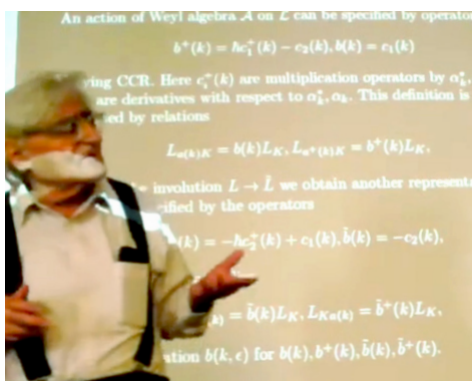
Albert Schwarz, giving a talk on thermo-field dynamics and collisions of quasi-particles at the UC Davis Joint Theory Seminar, September 2019. You can view the recorded lecture online at:
https://youtu.be/nq2QgUr8_Ic

Staff Update
by Gladis Lopez, Chief Administrative Officer

This has been a very interesting, unusual year in the Administrative office. COVID-19 has changed the way we operate by working remotely since mid-March. I want to commend the staff for adjusting to so much change and for continuing their excellent work from home. We have an excellent team and we have all pulled together to transition to online business operations as smoothly as possible. Needless to say, we quickly learned how to use Zoom and it has kept us connected. Our focus has continued to be excellent customer service.

This year we welcomed our new Department Chair Anne Schilling. Thank you Abby Thompson for all your support and great leadership for the past three years as Department Chair.

During this year, we submitted 46 proposals to different external funding agencies and 24 projects were funded. Our student staff advisors provided student assistance to a large number of students. The Spring quarter had 6,109 undergraduate students enrolled in classes offered by the Department.

This year we gave STAR awards to Tina Denena and our IT team (Leng Lai, Zach Johnson and Marianne Waage). This is an important recognition given to staff for their outstanding job performance.

Stephanie Zarate, who is currently pursuing a Master's degree in Higher Education Leadership and Policy Studies at Cal State University, Sacramento, was awarded four scholarships from the UC Davis Staff Scholarship: The Larry N. Vanderhoef Staff Scholarship, Latinx Staff and Faculty Association Scholarship, UC Davis Retirees' Association Career Enhancement Award and the UC Davis Health African American Faculty and Staff Association Scholarship (AAFSA). Congratulations Stephanie!

Cydney Matteson, Undergraduate Staff Adviser, gave birth to a beautiful little girl on October 26, 2020. Welcome Zoey!

Our staff fun events such as BBQs, end of the academic year lunch and Halloween party did not happen this year but we are very much looking forward to the day we can get together and have a staff celebration.

I want to thank all our staff for their amazing work and for their flexibility as we had to go through so much change.

We look forward to another productive year!

The Department of Mathematics wishes to gratefully acknowledge the generosity of the following donors, who have contributed to its support over the past several years.

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American Society for
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BC Trust
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    & Linda Bernheim
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    & Yueh-Jing Chuang
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