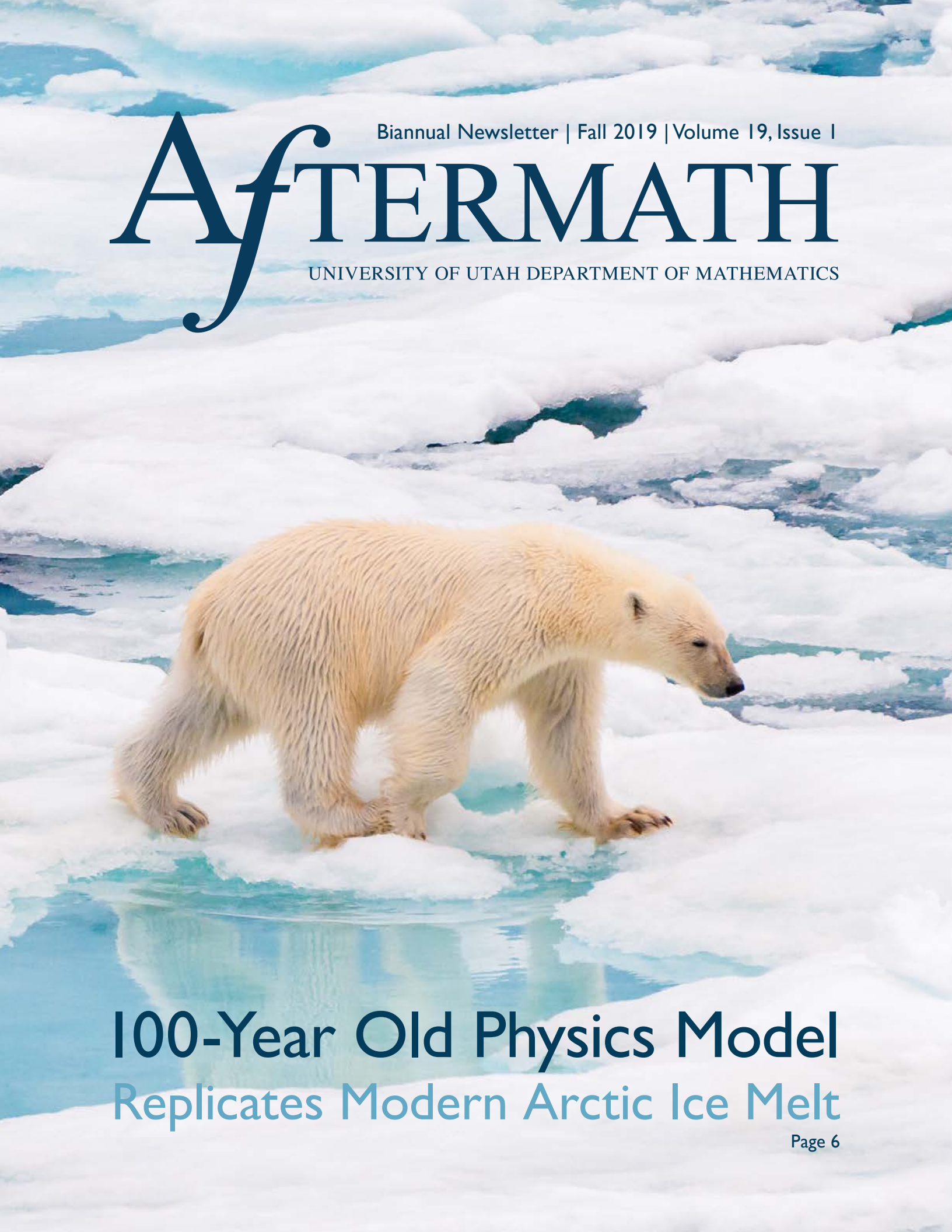
Biannual Newsletter | Fall 2019 | Volume 19, Issue 1

AFTERMATH

UNIVERSITY OF UTAH DEPARTMENT OF MATHEMATICS



100-Year Old Physics Model Replicates Modern Arctic Ice Melt

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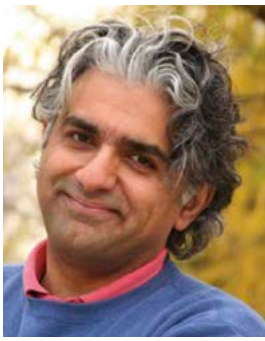
In This Issue

The Crocker Science Center is housed in the historic and newly renovated George Thomas Building. The center serves as a world-class facility for science education with state-of-the-art teaching laboratories and flexible classroom spaces. The building also has integrated advising and tutoring centers.

Message from the Chair

With the final weeks of fall semester upon us, this is a natural time to reflect on some of the many accomplishments of the Department of Mathematics in the past year.

We are proud to have welcomed two new faculty members to the U and to our department:



Davar Khoshnevisan

- Assistant professor *Sean Howe* joined our department from Stanford University, where he was a National Science Foundation Postdoctoral Scholar. His research interests include arithmetic and algebraic geometry, representation theory, and number theory.

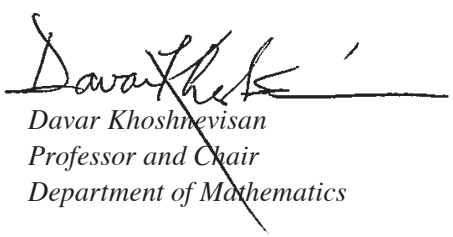
- Assistant professor *Priyam Patel* joined us from the University of California, Santa Barbara, where she was assistant professor. Her research interests include low-dimensional topology, hyperbolic geometry, and geometric group theory.

During the past year, we were fortunate to have our faculty recognized with the following awards: Distinguished Professor *Mladen Bestvina* was awarded the U's Distinguished Scholarly and Creative Research Award; Distinguished Professor *Ken Golden* was recognized in several venues—including *Scientific American* and *Wired*—for his work in using a nearly 100-year-old physics model to understand the rate of ice melt in the Arctic; Distinguished Professor *Christopher Hacon* was elected to the prestigious Royal Society of London; Instructor *Kelly MacArthur* received two University teaching awards; and Professor *Firas Rassoul-Agha* was named a Fellow of the Institute of Mathematical Statistics. These awards represent a snapshot of the total number of local, national, and international prizes awarded to our excellent faculty.

The achievements of our department would not be possible without your support. Your passion for mathematics drives the department forward, and creates ideal conditions for transformative research, novel discoveries, and highly effective educational experiences.

To help advance our work, please consider supporting the *Crimson Laureate Society*, established by the College of Science in 2017. This 1,000-member society of science and mathematics supporters is a pivotal force that will drive Utah Mathematics forward in 2019 and beyond. For more information on how to support the Department of Mathematics through the *Crimson Laureate Society* please contact the College of Science at 801-581-6958, or visit www.science.utah.edu/giving. We are ever grateful for your support and generosity.

Sincerely,



Davar Khoshnevisan
Professor and Chair
Department of Mathematics

Jason Albright:

Modeling Fluid Dynamics at Los Alamos

University of Utah math alum, Jason Albright, Ph.D., joined Los Alamos National Laboratory (LANL) in 2016 as a postdoc and transitioned to a scientist at the renowned facility in New Mexico two years later.

Albright's research focuses on both developing and applying algorithms for computational fluid dynamics. LANL has always taken a leading role in this field going back to the pioneering work of several mathematicians and physicists, including John von Neumann, Robert Richtmyer, Peter Lax, and Francis Harlow, among others.

"I was attracted to working at LANL for a number of reasons," said Albright. "One was the opportunity to take a much closer look at the phenomena I'm modeling through experiments with real fluids. Experiments are the best litmus test for predictions we make from computational simulations." As physicist Richard Feynman said, "It doesn't matter how beautiful your theory is, it doesn't matter how smart you are. If it doesn't agree with experiment, it's wrong." Over the past 75 years, LANL has developed the capabilities to conduct research involving experiment, computation, and theory together to help us achieve our core mission in national security."

Years at the U

Albright received a bachelor's degree as well as a Ph.D. in Mathematics from the U. Originally interested in chemistry, he found his way to the Math Department, where he benefited from the guidance provided by Professor Don Tucker. Today, Tucker continues to serve as a mentor, a colleague, and a dear friend. "I'm still learning new ways to be a better mathematician from Don," said Albright.

During graduate school, he worked with Yekaterina Epshteyn, associate professor of mathematics. "Her intelligence, rigor, focus, and indefatigable work

ethic shaped my years as a graduate student into a special opportunity," said Albright. "Studying with someone recognized for their contributions to, not just one, but several different areas in her field remains a source of motivation. Among many remarkable experiences we shared were the research conferences we attended together, including the 2015 International Congress on Industrial and Applied Mathematics in Beijing. In addition, my thesis research was awarded a University of Utah Graduate Research Fellowship, which was truly gratifying. I look forward to many years of ongoing collaboration with Yekaterina as a respected mentor and university colleague."

Jason Albright

Professor Epshteyn remembers, "Jason was among my very first Ph.D. students. When I first met him in my graduate numerical analysis class, he immediately impressed me with his great curiosity, creativity, and deep passion for learning and research. It is truly rewarding to see how all the knowledge he gained during his undergraduate and Ph.D. studies at the U, as well as the ideas he developed in his Ph.D. thesis, have helped him with his current research and work in general. I very much look forward to continuing our collaboration in the future."

Albright appreciates the interactions he had with professors in the Math Department. "What many outsiders might not be fully aware of is just how accomplished the faculty in the department are, both as scholars and teachers. The courses I had from Professor Emeritus Robert Brooks, Distinguished Professor Mladen Bestvina, and Professor Peter Trapa taught me something new about mathematics and offered lessons about the value of perseverance in the midst of the difficulties faced learning the subject. Much of the success I've had so far reflects the education I received from many wonderful mentors in the department, especially Yekaterina and Don."

When Albright isn't working, he enjoys hiking in the trails around Los Alamos. He also likes the artistic traditions in the Southwest, noting that the patterns used in traditional weavings and pottery designs often use symmetry and geometry in creative ways that interest him as a mathematician.

Future research

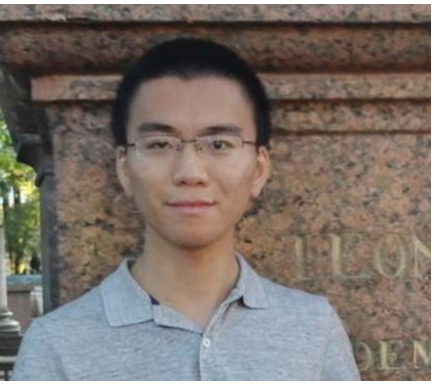
Recently, Albright's research has taken to combining partial differential equation-based (or PDE-based) numerical algorithms used in computational fluid dynamics with emerging tools from data science and machine learning.

"By taking advantage of data-driven approaches to eliminate bottle necks that exist in PDE-based algorithms, we're discovering better strategies to optimize an algorithm's accuracy, speed, and flexibility," he said. Albright also sees the potential to apply what he and his collaborators are learning from this strategy to discover something new about the mathematics behind computations. "In turn, this may lead down a path to understand how to apply these enhanced algorithms to design higher-fidelity, multi-scale methods that can be used to answer more fundamental questions about the nature of fluid dynamics."

"Exploration into new mathematical and computational tools is also at the heart of what Feynman said," noted Albright. "The ultimate goal is to uncover where current theory is incomplete, so we can return to the drawing board to improve upon it."

Learning Abroad: Adventures in Eastern Europe and Russia

Dylan Johnson



Jing Guo

Dylan Johnson and Jing Guo are both math majors at the U, and each decided to study math in a foreign country as part of their undergraduate experience.

Dylan learned about "Budapest Semesters in Mathematics" (BSM) from a flyer in the Math Department. Jing completed the same program, as well as another called "Math in Moscow" (MiM). For both programs, the instruction is in English, and students are encouraged to study a language, too.

"I knew absolutely nothing about Hungary before coming to Budapest, so there have been a lot of strange and surprising experiences," said Dylan. "It's the little things that stand out and make day-to-day life so different and interesting."

While Dylan really enjoys math, he didn't want his entire university education to revolve only around one subject. He figured that by studying abroad he could balance his desire to learn about politics, language, and culture and still stay on track with his math education. "I thought it would be valuable to experience math from a different perspective, not just from professor to professor at the U, but across a new culture," he said.

Jing also wanted to experience different philosophies of doing mathematics in order to think about problems from various perspectives. "Russian mathematicians usually teach at a pace comparable to U.S. grad schools, while keeping the focus on proofs and solving problems," said Jing. "Sometimes they [the instructors] would mention how one theorem or concept in one course would work in another and vice versa."

Both Dylan and Jing have found the quality of the math instruction to be first rate with BSM. Dylan likes how different the instruction is from what he's experienced in the U.S. "Rather than the U.S. emphasis on distinctly different math subjects, the Budapest program offers Hungarian-style courses that blend a whole bunch of different math subjects into one," he said. "Even my class devoted to real analysis actively pulls in from my other classes via the homework. In this way, I feel that I not only learn about math but also experience a new kind of mathematical pedagogy."

Jing notes that the Budapest and Moscow programs provide courses that are not usually offered at the U, such as representation theory and knot theory, as well as combinatorics—the field of mathematics concerned with problems of selection, arrangement, and operation within a finite or discrete system.

"I would say Russian and Hungarian mathematics are different by nature," said Jing. "Traditionally, "Hungarian mathematics" relies mostly on so-called elementary methods that generally require nothing more than linear algebra. This isn't true for Russian mathematics—it requires a higher understanding of math."

Culture and Culture Shock

Dylan admits to a bit of culture shock in Budapest. "Hungarian culture perceives smiling at strangers as insincere, so I've had to adjust from the American habit of smiling freely at people I don't know." He has also learned to adjust to the European lifestyle of small, frequent grocery trips instead of long, exhaustive trips where everything is hauled home in the car. "Each lifestyle has its own advantages and disadvantages, but together they make up a wonderful and immersive experience."

Both students have had the opportunity to sightsee and travel when they weren't in class. "We've had mini-seminars about the Hungarian language, culture, and music, as well as weekend trips. I was able to enjoy a wonderful trip to Romania," said Dylan.
Jing took advantage of Moscow, visiting museums and galleries, such as the Pushkin Museum and the Tretyakov Gallery. He saw ballet and had the opportunity to watch opera at the Bolshoi Theatre. He also traveled to St. Petersburg, as well as Bratislava, Brno, and Novi Sad during his semester in Budapest.

Dylan and Jing recommend both programs to students who want to experience a different approach to a mathematics education. "Some courses are hard, for sure," said Jing. "But you can learn a lot if you put in the time and effort." Dylan suggests that students need to have taken the equivalent of Math 3210 to do well in the BSM program.

For more information about BSM or MiM, visit https://www.budapestsemesters.com/ or https://mathinmoscow.org/. For more about the U's study abroad programs, visit https://learningabroad.utah.edu/.

Paris with Avery Hazelbaker

Avery Hazelbaker

The need to take a summer math class evolved into an amazing summer in Paris for Avery Hazelbaker, a mathematics and pre-med major. "I needed to take a math class, so I just searched "learning abroad differential equations" on Google and the CEA Paris Engineering program popped up."

Hazelbaker had a "bucket list" of things she wanted to do before she graduated from the U, and studying abroad was one of them. "I had traveled to Europe with my family when I was younger," she said, "but I'm not sure I appreciated it enough at the time. I wanted to go again, study math, and really dive into the culture."

She gives high marks to the CEA program because of the math instruction and the opportunity to meet different kinds of people. "I absolutely loved my math professor—he was so much fun, very nice, and extremely knowledgeable," said Hazelbaker. "He would spend 10-15 minutes of class going over some common French words and phrases to help us understand and become more comfortable with French culture." She liked the differences between the U.S. teaching and the French learning style. "In France, the teachers expect the students to write out what they're doing for each step, so they can confirm that students know what they're doing," said Hazelbaker. "At the U, instructors assume students know why they're doing something if the work is correct."

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100-Year Old Physics Model Replicates Modern Arctic Ice Melt

The Arctic is melting faster than we thought it would. In fact, Arctic ice extent is near record lows. When that happens—when a natural system behaves differently than scientists expect—it's time to take another look at how we understand the system. University of Utah mathematician Ken Golden and atmospheric scientist Court Strong study the patterns formed by ponds of melting water atop the ice. The ponds are dark, while the ice is bright, meaning that the bigger the ponds, the darker the surface and the more solar energy it absorbs.

Distinguished Professor Ken Golden

So, it's more than a little important to know how the ice's reflectivity, also called albedo, is changing. That's a key component in understanding the balance between solar energy coming in and energy reflected out of the Arctic. Earlier work showed that the presence or absence of melt ponds in global climate models can have a dramatic effect on long term predictions of Arctic sea ice volume.

To model the melt ponds' growth, Golden, Strong and their colleagues tweaked a nearly 100-year-old physics model, called the Ising model that explains how a material may gain or lose magnetism by accounting for how atoms interact with each other and an applied magnetic field. In their model, they replaced the property of an atom's magnetic spin (either up or down) with the property of frozen (white) or melted (blue) sea ice.

"The model captures the essential mechanism of pattern formation of Arctic melt ponds," the researchers write, and replicates important characteristics of the variation in pond size and geometry. This work is the first to account for the basic physics of melt ponds and to produce realistic patterns that accurately demonstrate how melt water is distributed over the sea ice surface. The geometry of the melt water patterns determines both sea ice albedo and the amount of light that penetrates the ice, which significantly impacts the ecology of the upper ocean.

"It was really an intriguing study using a powerful tool that could have applications in other climate models," said Donald Perovich, a sea ice geophysicist at Dartmouth College in New Hampshire, who wasn't involved with the study. As Perovich noted, "there's something—to my mind—magical when you get these mathematical frameworks that explain things as varied as magnetism and melt ponds."

Distinguished professor Ken Golden received some well-deserved publicity for his work in prestigious publications, such as *Scientific American*, *Wired*, *EOS*, and *Physics World*. The paper on the Ising model for melt ponds was published in June 2019 in *New Journal of Physics* and since then has been downloaded more than 2,700 times.

Ryleigh Moore: Adventures in the Arctic

Mathematics Ph.D. student, Ryleigh Moore, was one of three American graduate students invited to participate in the Multidisciplinary drifting Observatory for the Study of Arctic Climate (MOSAiC) expedition out of Tromsø, Norway from September 20 - October 28, 2019. The flagship German icebreaker, *RV Polarstern*, will be frozen in ice and drift for a full year through the Central Arctic, following in the footsteps of an earlier 19th century expedition. This is the first time a modern research icebreaker will study near the North Pole throughout the polar winter—it is the largest Central Arctic expedition ever, with 19 countries, more than 600 people, and a budget that exceeds $155 million.

Competition was fierce for the coveted spots in the MOSAiC School—there was an 8% acceptance rate worldwide for applicants, and Moore was one of 20 to be accepted. Moore works on characterizing and modeling the evolution of Arctic melt pond geometry with the U's Distinguished Professor Ken Golden. Moore was the only mathematician in the MOSAiC School.

During the first leg of the year-long study, MOSAiC School students, scientists, and other MOSAiC partners worked together to deploy scientific instrumentation and offer support for the Russian research vessel, *Akademik Fedorov*. The *Fedorov* traveled to 85 degrees north alongside the *Polarstern* to help identify a main ice floe for which the *Polarstern* will drift with for the entire year and to set up a distributed network consisting of scientific instrumentation around the main floe. Specifically, Moore led the deployment of three seasonal ice mass balance (SIMB3) buoys in the distributed network.

"This was a once in a lifetime experience to lead the deployment of the SIMB3 buoys in the Central Arctic," said Moore. "There were challenges while preparing for the deployments, but I'm happy to report that all three installations were successful and all of the buoys are transmitting the data properly." With the last buoy installation completed, Moore stood on the ice floe in awe of the exquisite orange and red horizon as the Arctic entered polar night. She couldn't believe the amazing beauty of the expansive sea ice. "I am so grateful to the MOSAiC School, Professor Golden, and the University of Utah for this amazing experience."

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During her stay, she traveled on weekends to various cities in Europe. She also spent time getting to know the "arrondissements" in Paris. She was able to see a World Cup game, visit several chateaus in the Loire Valley, and attend quieter events, such as a classical music concert at L'église de la Madeleine.

Hazelbaker was fortunate to live in housing that included not only CEA students but also other students who were attending universities in Paris. "I became extremely close with three girls," she said. "One was born in South Africa but has lived most of her life in France, another was from Germany, and a third had family in Africa but had been born in Lyon. These girls showed me what it was really like to live in Paris and how to make the most of the experience by immersing myself in the culture and not just seeing it from the outside. I didn't know that I would be living with people who weren't Americans, but it was the best thing that could have happened. I made the best friends and had experiences that wouldn't have happened if I hadn't been living with people from another culture."

She encourages her U classmates to consider learning abroad. "Everyone should try it if they have the chance," said Hazelbaker. "It's such an amazing experience. I know it sounds like a cliché, but you really do learn a lot about yourself, and you become a better person. I would love to return to Paris."

For more information about the CEA programs, visit ceastudyabroad.com/find.

Alumni Profile: McKay Hyde

From Academia to Goldman Sachs

McKay Hyde (B.A. Physics and Honors B.A. Mathematics '97) always enjoyed math and science, but it was taking a series of physics classes at the U, between his junior and senior year in high school, that changed his life. "I always enjoyed mathematics," he said. "But physics showed me how mathematics could be used to solve real-world problems. That was tremendously exciting to me and still is."

McKay Hyde, Courtesy of Goldman Sachs

Today Hyde is managing director in Equities Engineering for the New York office of Goldman Sachs and is responsible for building systems to manage securities inventory and collateral, working closely with teams across Engineering, as well as the Finance, Operations and Securities divisions. "I like being part of a cross-functional team, building relationships and working together to find solutions that impact the organization and the clients we serve," he said. "The combination of using mathematics and computer science applied to practical problems is very rewarding."

He joined Goldman Sachs in 2006 and was named managing director in 2010. At Goldman Sachs, Hyde has had a range of responsibilities. He was head of the global Market Risk Technology team within Finance and Risk Engineering. Before that, Hyde led the Trading Strats team for Interest Rate Products in New York as well as the Core Quant Strats team, which developed models, algorithmic trading methods, and pricing infrastructure used by a number of trading desks. ("Strat" is a term that originated with Goldman Sachs to describe individuals that use tools from mathematics and computer science to build financial models and other tools to solve problems across the business.) In his Core Quant Strat role, Hyde led the build out of the Strat teams in Bengaluru (formerly Bangalore), India, known as "The Silicon Valley of India."

Roots in Utah and at the U

Hyde grew up in Salt Lake City and North Salt Lake, graduating from Woods Cross High School. Hyde met his wife, Marie, in an "outstanding" honors class taught by Professor Emeritus Jack Newell ("Education and Identity"), who served as dean and principal architect of the U's Liberal Education Program. In his first two years at the U., Hyde was also active in the U's music program, playing the trumpet in several university bands—Concert, Marching, Pep, and Jazz.

He credits the education he received at the U with helping prepare him for a career in the financial sector. "I received a tremendous education in physics and mathematics, including research experience working in the Cosmic Ray group and in probability theory. The U provides great value as an institution—a quality education at a reasonable cost," he said. He also has great memories of three professors who made a difference for him as an undergraduate: Davar

McKay Hyde and his family.

Khoshnevisan (current chair of the Math Department), who was Hyde's undergraduate research advisor in mathematics; Martha Bradley, former dean of the Honors College and currently associate vice president Academic Affairs, senior associate vice president of Undergraduate Studies, and dean of Undergraduate Studies; and the late Professor Gale Dick, whose "physics lectures were a work of art," said Hyde.

Using Agile Principles in Undergraduate Research

Hyde believes students should be encouraged to participate in research opportunities early in their undergraduate years, and he applauds the decision of the College of Science to focus on a new program called the Undergraduate Research Initiative. "Research is very different from coursework—it's really a separate skill," said Hyde. "Encouraging undergrads to work together in research provides a far richer educational experience that really pays off in preparing students for demanding careers."

To that end, Hyde thinks the same concepts and principles that teams use in Agile software development can effectively be applied to something like the Undergraduate Research Initiative program. "Creating an Agile environment—whether in software development or research—is essentially the same," said Hyde. "It involves developing and supporting a culture that encourages a team of people to work toward a common goal. To that end, a large project or research problem can be broken down into smaller tasks. A "scrum master" or team leader evaluates the special skills and talents of each individual on the team, assigns them to specific tasks, and the team comes together frequently (typically during a daily "stand up") over focused "sprints" (typically 2-3 weeks long) to complete those tasks yielding demonstrable progress at the end of each sprint. By repeating this process, the team improves while building confidence and trust through repeated accomplishment of its goals."

Previous Academic Career

Before his career at Goldman Sachs, Hyde was a professor. After earning degrees at the U. in 1997, he completed a Ph.D. in Applied and Computational Mathematics from the California Institute of Technology in 2003. He worked as a postdoc in the School of Mathematics at the University of Minnesota and later at Rice University as assistant professor of computational and applied mathematics.

When Hyde first left academia to work at Goldman Sachs, he wondered if he would need to dress and act like a "stereotypical banker." He discovered it was a much easier transition. "I found smart people from technical fields applying their skills in finance," he said. "It made me realize the importance of being open to new opportunities—taking the skills and talents you have and using them in different fields to build relationships with others and do meaningful work. That's really what it's all about."

Hyde and Marie enjoy living in New Jersey and have four children: a son studying music at Berklee College of Music; a daughter at Brigham Young University (currently serving a church mission in Peru); and a son and daughter in high school.

China Mauck

Cody FitzGerald

Rebecca Hardenbrook

Math Grad Students Selected as Campus Innovators

Last spring, the Utah Museum of Fine Arts (UMFA) and the J. Willard Marriott Library launched the first in a three-year round of awards for the University's faculty, staff and students: the Fellowship in Collections Engagement, or FICE. Five projects were selected that promise to foster innovative, interdisciplinary, collections-based scholarship and creativity, while highlighting the strengths of the UMFA's and Marriott Library's collections. The awards are part of a joint project, "Landscape, Land Art, and the American West," meant to stimulate research, pedagogy and engagement with the collections and resources of the Museum and the Library. The project is supported by the Andrew W. Mellon Foundation and matching funds from the U.

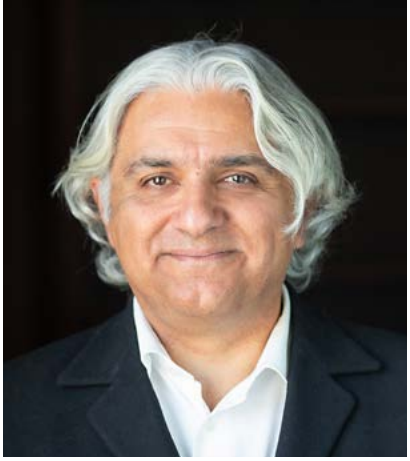
Awardees were chosen for their innovation in object-based learning and teaching. Their proposed projects engage primary-source material that suggest compelling evidence for a more dynamic and diverse picture of the American West than well-worn Manifest Destiny narratives traditionally suggest. These projects represent the disciplinary breadth of work happening on campus:

Graduate students from the U's department of mathematics—Cody FitzGerald, China Mauck and Rebecca Hardenbrook—outlined an inventive quantitative approach to primary source materials in the UMFA's and Marriott Library's collections.

FitzGerald, Mauck and Hardenbrook seek to use machine learning to quantify commonalities intrinsic to the western landscape genre in their project, "Learning Art: What Makes Western Art 'Western'?" By pulling their visual data from the Museum's and Library's databases, the students will develop training sets that will comparatively analyze photos and paintings depicting landscape scenes. The students intend to apply machine learning techniques to discover like structural elements that are characteristic of the western landscape; their findings will assist them in developing a categorization algorithm, which they hope will ultimately aid the Museum and Library in sorting vast quantities of information about their collections that would be impractical on a human scale.

FICE awardees will give public presentations at the conclusion of their fellowships, reflecting upon their year-long experience in advancing scholarship and creativity in the arts and sciences at the U through the Museum's and Library's collections. The UMFA and Marriott Library will continue the annual fellowships over the next two school years.

U Professor and Chair Named Fellow of American Mathematical Society



Davar Khoshnevisan

Davar Khoshnevisan, professor and Chair of the Department of Mathematics, has been named a member of the 2020 Class of Fellows of the American Mathematical Society (AMS). The Society recognizes members who have made outstanding contributions to the creation, exposition, advancement, communication, and utilization of mathematics.

"I'm pleased to see my contributions to mathematics recognized and join my colleagues in our department who are also AMS Fellows," said Khoshnevisan. "I believe my selection as a Fellow is the fourteenth induction within the Department of Mathematics at the U, so this is as much a statement about my work as it is about the terrific intellectual environment within the department. It is a big honor to be a part of our program at the U and to help advance our field. The American Mathematical Society plays a crucial role in the development of mathematics worldwide. I am proud that my colleagues and I contribute to this important endeavor."

Khoshnevisan remembers being taught calculus by an uncle when he was very young. As part of the lesson, his uncle would weave in stories about mathematics and mathematicians—famous ones from the history of mathematics, as well as those his uncle had met in his own studies of the subject. "I knew then that mathematics would not be just a job but instead a lifelong pursuit of truth and discovery," said Khoshnevisan. "I still try to aim for this in my research today."

Khoshnevisan originally trained to be a researcher in mathematical statistics and probability theory. During the past 10-15 years, his work has largely been in "stochastic analysis," an area that lies on the intersection of probability theory and function theory. Science and math historians agree that probability theory was born, probably after the 8th century, as a way to study what we now called "cryptography." Probability theory resurfaced again when mathematicians in the 16th and 17th centuries began analyzing "games of chance." The mathematical foundations of probability evolved much later in the early decades of the 20th century, which led to an explosion of ideas and to the introduction of new areas of intellectual activity in which "chance" plays a central role. In turn, this has opened up challenging problems in mathematics and created an entirely new paradigm of "stochastic models" that lies at the heart of many science and engineering models today. During the past decade, Khoshnevisan's work has revolved around developing mathematical ideas and techniques that aid the rigorous analysis of complex systems in science and engineering.

Khoshnevisan received a Ph.D. from University of California, Berkeley, in statistics in 1989. He joined the faculty at the Massachusetts Institute of Technology for a year and the University of Washington for three years before moving to Utah and the U in 1993 as an assistant professor in mathematics. He has been an honorary fellow at the University of Wisconsin-Madison, a visiting member of the Mathematics Research Institute at Berkeley, as well as the Kavli Institute of Theoretical Physics at the University of California, Santa Barbara. He was a Simons Visiting Professor at the Mathematical Research Institute of Oberwolfach in Germany and an invited professor at École Polytechnique Fédérale de Lausanne, the University of Paris, and the University of Lille. He is a 2015 Fellow of the Institute of Mathematical Statistics (IMS) and was an IMS Medallion Lecturer in 2018.

We Support Mathematics

Welcome to the Crimson Laureate Society. Thank you for your support to the Department of Mathematics.

Members of the Crimson Laureate Society are advocates for the department and science, making their voices heard in ensuring that the work of our faculty, researchers, graduate and undergraduate students continues.

Thank you for your support and participation. We encourage all alumni and friends of the department to join the Crimson Laureate Society today.

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Thomas W. and Cathy Saxton

Math for America

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MOOG, Inc.

Deans Club $500 - $999

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