

## Ypsilanti Math Corps Program Debuts at UM

Math Corps is a phenomenal program originating at Wayne State University that has changed the lives of thousands of students from Detroit over the past few decades (visit [mathcorps.org](http://mathcorps.org) for more information). It is a free math summer camp for middle school and high school students. Among those who have attended the Wayne State program, 80-90% of them go on to college. Inspired by this program, members of the UM Math Department recently started a Math Corps site.

Professors Stephen DeBacker, Sarah Koch, and Yunus Zeytuncu (UM-Dearborn) ran a Math Corps program in Summer 2019 for middle school and high school students from Ypsilanti, MI. They were awarded a Faculty Structured Outreach Support Fellowship, from the Center for Educational Outreach at UM, to run a pilot program for four weeks on Central Campus in Ann Arbor. About 40 middle school students and 20 high school students from the Ypsilanti area attended, working with ten college students from UM. In addition, several members of the Math Department including undergraduates, postdocs, graduate students, faculty, and staff volunteered their time to work with the Math Corps campers over breakfast each morning. Pictured below is Stephen DeBacker with students.



One of the great strengths of the Math Corps is the “kids teaching kids” model. The high schoolers are the tutors and the mentors of middle schoolers. The college leaders are the tutors and the mentors of the high schoolers. Every student in the program always has someone to look up to and someone

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## View From the Chair's Office Anthony Bloch

The Mathematics Department had a busy and exciting year. As always I would like to thank our faculty and staff for all their work and contributions and for making this department such a pleasant and exciting place to work.

I would like to acknowledge the contributions of our Associate Chairs: Andreas Blass, Dick Canary, Kristen Moore, and Karen Smith, as well as Personnel Committee Chair Ralf Spatzier, Doctoral Chair Mattias Jonsson, Stephen DeBacker, head of the undergraduate program, Admissions Chair Kartik Prasanna, Applied and Interdisciplinary Mathematics Program Director Silas Alben, and everyone else who has worked so hard on departmental issues this year. As I write this we are preparing for an external review, and would like to thank our internal committee for helping to prepare, and in particular Jenny Young, Heather Kleber and Doreen Fussman who worked on our self study. I want to thank Doreen Fussman, our Chief Administrator, and her extremely capable staff who work hard every day to keep our department running smoothly.

On the hiring front we were happy to hire Asaf Cohen who joins us in financial mathematics. Alex Wright was here last year but joins formally this year. We are also happy to welcome several visitors including Aaron Pixton who is the Gehring Visiting Professor this year, as well as Giovanni Russo, and Lyudmyla Barannyk. We are pleased to have an exciting new group of Postdoctoral Assistant Professors and a large and excellent class of new graduate students.

Our program in financial mathematics continues to do well under the leadership of Erhan Bayraktar, along with the actuarial program directed by Roger Natarajan. Charlie Doering was reappointed as head of Complex Systems, and Lydia Bieri now directs the Michigan Center for Applied and Interdisciplinary Mathematics

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## Faculty News

**Professor Bhargav Bhatt** is one of 16 scientists nationally to be named a 2019 Simons Investigator. The Simons Investigator program recognizes outstanding theoretical scientists, who will receive a significant and stable base of research support from the foundation, enabling them to undertake long-term study of fundamental questions. The intent of the program is to find



and support scientists in their most productive years, when they are establishing creative new research directions, providing leadership to the field, and effectively mentoring junior scientists.

**Dr. Mark Conger**, who teaches Mathematics in the LSA Comprehensive Studies Program, received the 2019 Golden Apple Award in recognition of his outstanding commitment to students. The award annually honors a UM faculty member for outstanding teaching, and is the only teaching award at UM given by students. Award recipients are



charged each year with giving a lecture as if it's their last. Conger's lecture was entitled "The Local, the Global, and the Nature of Infinity."

**Professor Sergey Fomin**, the Robert M. Thrall Collegiate Professor of Mathematics, has received a 2019 Simons Fellowship. The Simons Fellows programs in both Mathematics and Theoretical Physics provide funds to faculty for up to a semester-long research leave from classroom teaching and administrative obligations.



**Professor Karen E. Smith**, the M. S. Keeler Professor of Mathematics and Associate Chair for Graduate Studies, has been elected to the National Academy of Sciences. In April, 2019 the Academy announced the election of 100 new members and 25 foreign associates who are recognized for their distinguished and continuing achievements in original research. Election to the National Academy is considered one of the highest



honors for scientists. This cohort of NAS members includes the most women ever elected in any one year.

**Assistant Professor Alex Wright** received the Michael Brin Dynamical Systems Prize for Young Mathematicians from Penn State University. The prize is given bi-annually to recognize outstanding contributions to dynamical systems made by researchers within four years of their PhD. In addition, in January Wright received the 2019 Levi L. Conant Prize from the Ameri-



can Mathematical Society (AMS). He is being recognized for his article "From rational billiards to dynamics on moduli spaces" published in 2016 in the Bulletin of the American Mathematical Society (Vol. 53, pp. 41-56). The Conant Prize is awarded annually to recognize the best expository paper published in either the Notices of the AMS or the Bulletin of the AMS in the preceding five years.

### Promotions:

**Wei Ho** was promoted to Associate Professor with tenure.  
**Silas Alben** was promoted to Professor.

### Postdoc Teaching Awards:

Frederick Gehring Award: Harrison Bray  
 Juha Heinonen Award: Christin Bibby  
 Allen Shields Award: Luke Edholm  
 B. Alan Taylor Award: Alexandros Saplaouras



## New Faculty

**Asaf Cohen** joined the UM Mathematics Department in 2019 as an Assistant Professor.



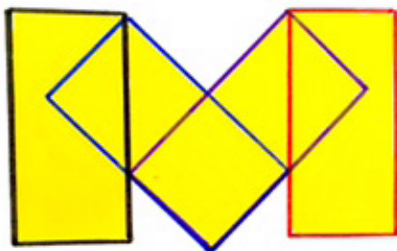
He received his PhD in Probability and Statistics from Tel-Aviv University in 2013, under the direction of Eilon Solan. Professor Cohen was a Postdoc Assistant Pro-

fessor at UM from 2014-2017, and an Assistant Professor of Statistics at the University of Haifa from 2017-2019.

Professor Cohen's research interests are in applied probability, stochastic processes, and control theory. Specifically, he focuses on mean-field games, mathematical finance and actuarial science, diffusion scale and large deviation scale analysis of stochastic control problems and games. His work has included machine learning, model uncertainty, risk-sensitive control, heavy traffic regimes, and partial differential equations techniques in stochastic control and differential games.

**Alex Wright** is now an Assistant Professor, and was profiled in 2018.

### Math Puzzle by Catriona Shearer



*If each of the four congruent rectangles above has area 673, what total area do they cover when arranged like this? (answer can be found elsewhere in this newsletter)*

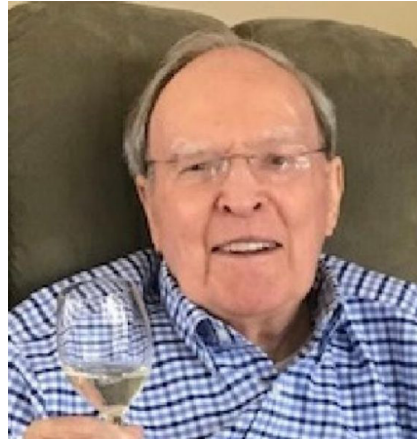
## James Kister, 1930-2018

James ("Jim") Milton Kister, Professor of Mathematics, passed away in October, 2018, at his home in Ann Arbor, surrounded by close family. Born and raised in Cleveland, OH, he left for Wooster College in 1948, and started

graduate work in mathematics at Harvard in 1952. Due to health concerns, he soon left for Tucson, AZ, during which time he recovered enough to take a job at Los Alamos National Laboratory. As a research assistant there from 1953-1956,

Professor Kister worked with some of the earliest electronic computers on a variety of scientific projects, including, with several others, the design of a program for a computer to play chess. He soon returned to graduate school at the University of Wisconsin to complete his PhD in mathematics, with a specialty of topology.

In 1959 Professor Kister was hired by the UM Mathematics Department as an instructor, and was promoted to assistant professor in 1961, associate professor in 1964, and professor in 1966. He stayed until his retirement in 1998. He served as department chair from 1971-1973, and was associate chair for graduate studies from 1988-1992 and 1994-1996. Professor Kister helped to guide the academic careers of many promising mathematicians. He directed eight doctoral students who themselves went on to academic careers. He took full advantage of professional opportunities to travel, spending extended periods at the Institute for Advanced Study at Princeton, the University of Virginia, UCLA, and the Universities of Cambridge, Oxford, London and Paris.



Professor Kister taught at mathematics summer schools in Italy, specifically in Perugia (1991) and Corona (1992), from which several Eastern European students were recruited for U.S. graduate schools, including

UM. As associate chair for graduate studies, he developed relationships with Spelman and Morehouse Colleges, and had success recruiting their students to Michigan.

During a postdoctoral fellowship at the University of Virginia in 1960-61, Professor Kister solved a famous old problem of P.A. Smith by producing an example of a periodic

transformation of higher dimensional Euclidean spaces with no fixed points. While at the Institute for Advanced Study in Princeton from 1962-64, Professor Kister became interested in John Milnor's important work on "microbundles," and he proved that Milnor's microbundles were in fact classical topological bundles. This important step vastly simplified the current theory and finally showed that the topological manifold theory could be described with elegance and simplicity unmatched by the classical differential theory.

Professor Kister was married to Susan Spence from 1956-1972 and his only child Karen was born in 1957. During his stay in Oxford in 1977 he met an English mathematician, Jane Bridge, on the faculty there. The two returned to Ann Arbor together, and were pleased to celebrate their 40th wedding anniversary shortly before he died. He is survived by his wife Jane, his daughter Karen (Tim Athan) two grandchildren, and four great grandchildren.

## Quant Students Win Competition

A team of UM Quantitative Finance and Risk Management Master's Program students was one of five winners of the Eighth Annual Academic Affiliate Membership Student Competition sponsored by the International Association of Quantitative Finance (IAQF). The competition, which attracts nearly fifty teams from twenty academic programs each year, tasked students with preparing solutions in response to a problem dealing with credit spreads. UM's Team Submartingale included Quant Finance students Rick Yuankang Xiong (team captain), Hui Cai, Israel Diego-Guerra, Yifei Lu, Xinye Xu, and Yuan Yin.

Team Submartingale met weekly to research and prepare their solution, drawing heavily on their graduate courses in their work. According to Team Captain Rick Xiong, "Machine learning and time series forecasting were very exciting topics for all of us, so everyone was highly motivated to complete their assigned portion of the work and to optimize our quantitative methods." Xiong also applauded the team's systematic way of working together, stating, "We made sure to apply the four-eyes principle to our work, which I think was crucial in ensuring accuracy."

Four of the six team members have since completed their Quant Master's Program. Hui Cai returned to his hometown of Shanghai to start his position with Bloomberg, while Rick Xiong accepted a position with State Street in Hangzhou. Yifei Lu joined MSCI's model validation team in Norman, OK. Yuan Yin has been accepted into Illinois Institute of Technology, where she will pursue a PhD in Mathematical Finance.

Team Submartingale is the first UM Quant Program team to participate in this competition. Team members were invited to attend a celebration honoring the winners and an informal presentation of their work at a reception in New York in October 2019. Additional details are available on the Quant website [quant.lsa.umich.edu](http://quant.lsa.umich.edu).

## Words from the Associate Chair for Graduate Studies

Our graduate programs continue to thrive! For the 2019-2020 school year, we have an especially large entering cohort, with 32 incoming PhD students, four new Marjorie Lee Browne (MLB) Master's students, and another three Master's students. In case you are unfamiliar with it, our MLB program is a "bridge to the PhD program" for students from underserved communities, which until this year admitted only AIM students. Notably, two of our four new MLB scholars intend to study theoretical mathematics.

The data revolution has created high-level demand for mathematicians, and there are many fulfilling mathematical careers outside academia that are increasingly attractive for our PhD graduates. Two 2019 Michigan Mathematics PhDs are beginning this fall at AI research labs at Google, for example. To accommodate skyrocketing student and postdoc interest in industry careers, we have instituted an annual panel discussion in which PhD alumni tell us about their work and mingle with current PhD students. This year's panel featured:

Bill Correll (PhD 2002), Senior Research Scientist, Radiant Solutions, Ypsilanti, MI.

Nicolas Ford (PhD 2013), Google AI Residency Program.

Rafe Kinsey (PhD 2014), Strategic Development, Spark Investment Management LLC.

Sarah Kitchen (UM postdoc 2013-2017), Research Scientist/Engineer, Michigan Tech Research Institute.

Brian Wyman (PhD 2010), Senior Vice President, Operations and Data Analytics, The Innovation Group.

I am very grateful for the panelists' generosity with their time, expertise, and wisdom. Please let me know if you are interested in serving on our Non-Academic Careers panel in the future!

One of my goals as Associate Chair is to strengthen our relationships with our PhD alumni. Reconnecting with you all has been my favorite part of this job. I've been super impressed by how accomplished and happy Michigan Math PhD alumni seem to be! Please check out our new Advice and Resources website for math graduate students ([sites.lsa.umich.edu/math-graduates/](http://sites.lsa.umich.edu/math-graduates/)), which contains a section for alumni. We'd love to share some advice or perhaps a job announcement you might like to post there!

Professor Karen Smith  
Associate Chair for  
Graduate Studies



*Left: PhD Graduate Francesca Gandini. Right: PhD Graduate Robert Walker with Associate Chair Mattias Jonsson.*



## Spotlight on Doctoral Alumni

### Douglas Shaw

Professor of Mathematics, University of Northern Iowa

Dr. Shaw received his PhD in 1995 for his thesis “*A Non-Associative Approach to the Finite Projective Plane Conjecture*,” under the direction of Thomas Storer.

Doug Shaw came to Michigan from Syracuse New York, where he was a systems engineer at GE, parlaying his one year in industry into a lifetime of didactic yet entertaining anecdotes.

Doug is currently a full Professor of Mathematics at the University of Northern Iowa (UNI), a university that values both excellent teaching and scholarship from its faculty. He came to UNI from a postdoc at the University of Minnesota, where he met his wife, Laurel. They now have a mortgage, a dog, and a 13 year old daughter, Frances. Frances, who grew up playing in college classrooms in the afternoons and surrounded by mathematics in the evenings, wants to be a teacher when she grows up. Doug served four years on the Cedar Falls Board of Education, 2014-2018.

At UNI Doug loves to teach math courses from developmental to graduate-level, but also has taught courses in theater, business innovation, and first-year oral and written communication. He even gave a presidential scholar course on Gödel, Escher, Bach by Douglas Hofstadter. Hofstadter had visited the University to give a rare talk there, and attended Doug’s office hours to chat. Doug is a well-loved and influential professor at UNI. He was recently chosen as the first recipient of the Beverly Funk Barnes Educator Excellence Award at UNI for his passion, creativity, dedication to students, and commitment to his community.

Doug credits his success to his preparation at the University of Michigan, where he had both excellent research and teaching mentors, and the opportunity to have full responsibility for teaching classes, which was vital experience for his job search. At Michigan, he was one of the pioneers of our groundbreaking and nationally influential calculus reform program, under the direction of Mort Brown. He also helped develop our instructor development program, under Pat Shure and Bev Black.

As an avid practitioner of Inquiry Based Learning, Doug coauthored a paper on using IBL to teach Liberal Arts Mathematics with Theron Hitchman (UM PhD 2003), a major leader

in the international IBL community. Doug has taken the Small Group Instructional Diagnostics technique he learned from the University of Michigan’s Center for Research on Learning and Teaching to UNI, where it is now being used to help improve instruction there.

A gifted improvisational actor, Doug has developed techniques for incorporating improv in the classroom, particularly STEM classrooms, which has led to an association with the International Applied Improvisation Network. He has recently published *Social Nonsense*, a book of “Creative diversions for two or more players.” This is a book of writing, drawing, and storytelling games designed to give people fun, creative, alternatives to getting out their phones when they are with their family and friends.

Doug loves his Alma Mater, and since 2011 he has returned to Ann Arbor every summer to teach in the Michigan Math and Science Scholars program in the UM Mathematics Department.

### Math Corps

(continued from page 1)

to learn from. This is quite powerful: the younger students see themselves in the older students and are inspired to realize their full potential. Another part of the Math Corps magic is the supportive and caring environment it provides. Everyone in the Math Corps feels a strong sense of family. The program is for life: Math Corps participants are always welcome to return in subsequent summers. In fact, when Math Corps alumni describe the incredible impact that the program has had on them, they inevitably mention their “Math Corps family.”

The results of the very first Ypsilanti Math Corps at UM were significant. The pre/post test data for the middle school students in particular showed measurable improvement (the average test score tripled!), and every participant expressed a strong desire to return next summer. Continuing to follow the Math Corps philosophy of believing in and celebrating children, DeBacker, Koch, and Zeytuncu hope to run this program annually. To this end, the Math Department is actively working with different offices at the University to find long-term funding.



Math Corps students in action.

## 2019 Graduate Program Fellowships & Awards

### Allen L. Shields Fellowship

Joseph Kraisler

### The Wirt and Mary Cornwell Prize

Trevor Hyde  
Takumi Murayama

### Cortright Fellowship

Yongkai Qiu

### Juha Heinonen Memorial Graduate Student Fellowship

Karen Butt

### Marjorie Lee Browne Scholars

Fernando Angulo Barba  
Karina Aponte  
Joseph Ballardo  
Lemar Callaway III  
Esteban Coronel Balcazar  
Uzziel Cortez  
Daniel Maes  
Moise Mouyebe

### Mathematics Alumni/ Alumnae Scholarship

Fanchen He

### Mathematics Department Graduate Student Awards

Francesca Gandini  
Mark Greenfield  
Devlin Mallory  
Nathan Vaughn  
Leighton Wilson

### Mathematics Department Summer Research Grants

John Holler  
Daniel Irvine  
Patrick Kelley  
Harry Lee  
Andrew O'Desky  
Matthew Olson  
Salman Siddiqi  
Alexander Vargo  
Nathanial Vaughn

### National Science Foundation Fellow

Shelby Cox  
Alana Huszar  
Christopher York

### Peter Smereka Thesis Award

Raymundo Navarrete

### Poorman Fellowship

Nancy Hong

### Prasad Family Fund Fellowship

Lara Du  
Montek Gill  
Yifeng Huang

### Rackham International Student Fellowship

Christiana Mavroyiakoumou  
Shubhodip Mondal

### Rackham One-Term Dissertation Fellows

Gilyoung Cheong  
Angus Chung  
Montek Gill  
Yifeng Huang  
Matthew Olson

### Rackham Outstanding GSI Award

Jasmine Powell  
Daniel Irvine

### Rackham Predoctoral Fellowship

Emanuel Reinecke  
Harry Richman  
Rachel Webb

### Rackham Science Award

Joseph Ballardo  
Craig Bolles  
Amanda Bower  
Attilio Castano  
Esteban Coronel Balcazar  
Elizabeth Collins-Wildman  
Uzziel Cortez  
Anthony Della Pella

Jonathan Guzman  
Alex Kapiamba  
Moise Mouyebe  
Jenia Rousseva  
Ursula Trigos-Raczkowski  
Robert Walker

### Sweetland Fellowship

Rachel Webb

### Sumner B. Myers Memorial Prize

Visu Makam

### Department of Mathematics Outstanding Teaching Award

Christina Athanasouli

### The Karen Rhea Excellence in Teaching Award

Salman Siddiqi

### The Mort Brown Excellence in Teaching Award

Jacob Haley

### The Pat Shure Excellence in Teaching Award

Lara Du

### Usha Sharma Bhalla Fund

Christina Athanasouli

### Mathematics Department Graduate Fellowship

Jorge Arce Garro  
Craig Bolles  
Anna Brosowsky  
Jack Carlisle  
Attilio Castano  
Brian Chen  
Can Chen  
Ruian Chen  
Yiwang Chen  
Gilyoung Cheong  
Robert Cochrane  
Elizabeth Collins-Wildman

Saibal De  
Peter Dillery  
Bradley Dirks  
Deshin Finlay  
Karthik Ganapathy  
Alexander Ginsberg  
Andy Gordon  
Haoyang Guo  
Aleksander Horawa  
James Hotchkiss  
Mitul Islam  
Zhan Jiang  
Zhi Jiang  
Sameer Kailasa  
Sayantan Khan  
Ryan Kohl  
Benjamin Krakoff  
Jiayu Liang  
Claire Lin  
Yiyang Liu  
Yunze Lu  
Steffen Maass  
Caleb Mayer  
Andrew McMillan  
Michael Mueller  
Alapan Mukhopadhyay  
Ilia Nekrasov  
Khoa Nguyen  
Swaraj Sridhar Pande  
Carsten Petersen  
Samantha Pinella  
Jenia Rousseva  
Yuping Ruan Kannappan  
Sampath David Schwein  
Yonatan Shelah  
Sanal Shivaprasad  
Binglin Song  
Rishi Sonthalia  
Daniel Stoll  
Nawaz Sultani  
Derrick Sund  
Ursula Trigos-Raczkowski  
Konstantinos Tsouvalas  
John Wakefield  
Yinan Wang  
Nicholas Wawrykow  
Yueqiao Wu  
Wijit Yangjit  
Berkay Yilmaz  
Jingjie Zhang  
Xin Zhang  
Yili Zhang  
Bradley Zykoski

## 2019 Doctorate Degrees

**Yuanyuan Chen** completed the dissertation “*Filtration theorems and bounding generators of symbolic multi-powers*” under the direction of Mel Hochster. Yuanyuan will be a Software Engineer at Zoox.

**Francesca Gandini** completed her dissertation “*Ideals of subspace arrangements*” under the direction of Harm Derksen. She has accepted a position at Kalamazoo College.

**Han Huang** completed the dissertation “*High dimensional phenomenon in convex geometry and spectral theorem of random graphs*” under the direction of Mark Rudelson. Han has accepted a position at Georgia Tech.

**Trevor Hyde** completed his dissertation “*Polynomial statistics, necklace polynomials, and the arithmetic dynamical Mordell-Lang conjecture*” under the direction of Jeff Lagarias and Michael Zieve. He has accepted a position at the University of Chicago.

**John Kilgore** completed his dissertation “*Weyl’s Law for singular algebraic varieties*” under the direction of Lizhen Ji. He has accepted a position at Radiant Solutions/Maxar.

**Robert Lutz** completed his dissertation “*Electrical networks, hyperplane arrangements and matroids*” under the direction of Jeff Lagarias. He has accepted a position at Mathematical Sciences Research Institute.

**Andrew Melfi** completed his dissertation “*Theoretical and numerical analyses of deviations between Kingman’s Coalescent and the Wright-Fisher Model*” under the direction of Divakar Viswanath.

**Rongxiao Mi** completed the dissertation “*Gromov-Witten theory and type II extremal transitions*” under the direction of Yongbin Ruan. Rongxiao has accepted a position at Harvard.

**Takumi Murayama** completed the dissertation “*Seshadri constants and Fujita’s conjecture via positive characteristic methods*” under the direction of Mircea Mustață. Takumi will be an NSF Postdoc at Princeton.

**Jiah Song** completed the dissertation “*Mathematical modeling and simulations of traffic flow*” under the direction of Smadar Karni. Jiah will be Data Scientist Analyst at Ford Motor Company.

**Matthew Stevenson** completed his dissertation “*Applications of canonical metrics on Berkovich spaces*” under the direction of Mattias Jonsson. He has accepted a position at Google.

**Qingtang Su** completed the dissertation “*Long time behavior of 2d water waves*” under the direction of Sijue Wu. Qingtang has accepted a position at University of Southern California.

**Yitong Sun** completed the dissertation “*Random features methods in supervised learning*” under the direction of Anna Gilbert.

**Philip Tosteson** completed the dissertation “*Representation stability, configuration spaces, and Deligne-Mumford compactifications*” under the direction of Andrew Snowden. He will be an NSF Postdoc at the University of Chicago.

**Umang Varma** completed the dissertation “*A paucity of data in machine learning: Applications in single cell RNA sequencing and ranking*” under the direction of Anna Gilbert.

**Robert Walker** completed his dissertation “*Uniform symbolic topologies in non-regular rings*” under the direction of Karen Smith. He will be an NSF Postdoc at the University of Wisconsin.

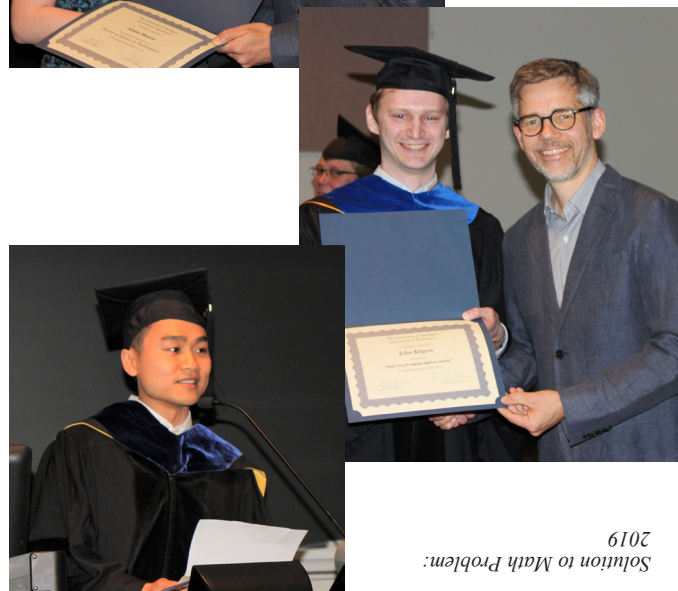
**Bowei Wu** completed his dissertation “*Spectrally-accurate algorithms for simulating vesicle Stokesian flows and their application to electrohydrodynamics*” under the direction of Shravan Veerapaneni.

**Hao Wu** completed the dissertation “*New applications of random matrix theory in spin glass and machine learning*” under the direction of Jinho Baik.

**Ming Zhang** completed the dissertation “*Quantum K-Theory with level structure*” under the direction of Yongbin Ruan. Ming has accepted a position at the University of British Columbia.



Left: Master’s recipient Alana Huszar with Professor Mattias Jonsson; Below right: PhD recipient John Kilgore with Professor Mattias Jonsson; Below left: Commencement speaker and PhD recipient Bobbie Wu.



2019  
Solution to Math Problem:



# Undergraduate Awards Ceremony and Commencement Activities

*Top row l-r: Professor Kristen Moore presents the Donald J. Lewis Mathematical Merit Scholar Award to Tali Khain; Professor Michael Zieve presents the George Piranian Excellence in Mathematical Writing Award to Noah Luntzlara; Cathy Rusco presents the Lois Zook Levy Award to Sarah McNair-Wilson; Graduate Trey Austin with Professor Stephen DeBacker. Second row l-r: Donald J. Lewis Mathematical Merit Scholar Award recipients; Bychinsky Award winner James Hazelden with Professor Stephen DeBacker; Graduate Briana Staggers. Third row l-r: Professor Hugh Montgomery with Virginia Tech Math Competition high scorer Wangqiao Xu; Graduate Kendra Robbins; Graduate Noah McNeal; Graduate Robert Weinbaum; Fourth row l-r: Graduate Amanda Burcroff; Graduate Carly Burwell.*



## Undergraduates Receive National Recognition

Three undergraduate Mathematics Students have earned national academic scholarships. **Amanda Burcroff** and **Noah McNeal** were awarded Marshall Scholarships. They were among 48 students who received the awards out of over 1000 applications in 2018. Marshall Scholarships provide full funding for a year of study in any subject at any institution in the United Kingdom. Amanda and Noah both graduated in 2019, and are the fifth and sixth UM mathematics students to receive this recognition.

Undergraduate **Noah Luntzlara** received a 2019 Goldwater Scholarship from the Barry Goldwater Scholarship and Excellence in Education Foundation. He is one of 496 students to be named Goldwater Scholars out of over 5000 applicants. These students are recognized for their impressive academic and research credentials.





## 2019 Undergraduate Awards and Fellowships

The William Lowell Putnam competition is a rigorous 12 question exam which tests the originality and technical competence of math students. More than 4,500 students participated in this year's competition. The top scorers from the department were **Omer Siddiqui**, **Noah Luntzlara**, and **Conor Thompson**.

In the 36th Annual University of Michigan Undergraduate Mathematics Competition **Luke Keirnan** placed first, **Arav Agarwal** placed second, and **Junshan Chen** placed third.

### Evelyn O. Bychinsky Awards

Fangu Chen  
James Hazelden  
Ruizhe Huang  
Stephen Jasina  
Shijia Li  
Yifan Lu  
Jared Stolove  
Alexander Vidinas  
Annie Xu

### Leon P. Zukowski Prize for Math Lab Mentoring

Daniel Kaiser

### Mathematics Alumni/Alumnae Scholarship

Noah McNeal

### Jack McLaughlin Award in Algebra

Charles Devlin

### Wilfred Kaplan Award in Applied Mathematics

Tali Khain

### William LeVeque Award in Number Theory

Jaeyoon Kim

### Frank Raymond Award in Geometry and Topology

Piriyakorn Piriyatamwong

### George Piranian Excellence in Mathematical Writing Award

Noah Luntzlara

### Sumner B. Myers Award in Analysis

Yichen Liu

### Outstanding Achievement in Mathematics

Mufeng Gao  
Melissa George  
Zhihao Guo  
Benjamin Johnsrude  
Mingda Liu  
Bobby McGovern  
Jeffrey Ohl  
Gregory Raskind  
Upamanyu Sharma  
Tianyu Yang  
Yuan Yao  
Jiaxi Yin  
Yi Zhou

### Otto C. Richter Prize for Actuarial Science

Nabil Ahmed  
Kah Jun Lim  
Yuan Shi

### Irving Wolfson Award for Actuarial Science

Bradley Pineless

### CIGNA Award for Actuarial Science

Mark Cappaert  
Emily Coffield  
Owen Langejans

### D.W. Simpson Award for Actuarial Science

Keera Feng

### Natarajan Family Award for Actuarial Science

Yuan Shi

### Lois Zook Levy Award for K-12 Teaching

Sarah McNair-Wilson

### Donald J. Lewis Mathematical Merit Scholars

Nabil Ahmed  
Ryan Britton  
Mengyang Cao  
Ryan Capouellez  
Shiliang Gao  
Yingsi Jian  
Wenyu Jin  
Tali Khain  
Max Kontorovich  
Noah McNeal  
Roi Orzach  
William Warner  
Robert Weinbaum  
Coco Zhang  
Yuci Zhou

### Margaret S. Huntington Prize in Actuarial Research

Yuxuan Cao  
Ming Hint Chui  
Maya Crystal  
John Desmond Filbin  
Trevor Kelterborn  
Li Hsuan Lin  
Zachary Murry  
Kathleen O'Gorman  
Harshith Tenepalli  
Zhanning Zhu

### Outstanding Graduating Seniors

Amanda Burcroff  
Piriyakorn Piriyatamwon  
Mengxi Wang  
Eric Winsor

### Wirt and Mary Cornwell Prize in Mathematics

Jaeyoon Kim

### L.C. Cortright Memorial Scholarship

Fizza Ahmd  
Joshua Gordon  
Nameer Hirschkind  
Eric Huang  
Stephen O'Donnell

Bochem Pham  
Vidya Srinivas  
Jacob Strange  
John Yang

### Frank H. and Agnes A. Davis Scholarship

Henry Fleischmann  
Andrew Gadbois  
James Milleville  
Connor Novak  
Killian Olson  
Wen Plotnick  
Shihao Su  
Jishi Sun  
Matthew Wang

### Ben Dushnik Scholarship

Jing-Yi Liu  
Matthew Polgar

### Carl Hahn Fischer Scholarship

Shijie Cheng  
David Geering  
Jacob Hall  
Cody Laskowski

### Marilyn and Stewart Gloyer Scholarship

Alexander Cepo  
Dylan Debaun

### Miner S. Keeler Scholarship

Koichi Anderson  
Yuxuan Bao  
Robert Buhring  
Liam Clancy  
Cameron Derwin  
John Dolan  
Benjamin Doubek  
Jeremy D'Silva  
Maryam El-Hage  
Scott Guest  
Keshav Gupta  
Cooper James  
Stephen Jasina  
Luke Kiernan  
Alec Korotney  
Owen Langejans  
Grace Liu  
Noah Luntzlara  
Grace O'Brien  
Jeffrey Ohl  
Shankar Prabhu  
Jason Ross  
Alexander Saigeon  
Matthew Sawoski  
Chance Stephenson  
Matthew Supran  
Alexander Tew  
Kenneth Wang  
Zheng Yang  
Ziyi Zhang

### Virginia McCulloh Scholarship

William Garland

## Actuarial Program Highlights

We are continuing to maintain our elite status as one of the 33 Centers of Actuarial Excellence in the world as designated by the Society of Actuaries.

We held our 17th Annual Nesbitt-Huntington Actuarial Commencement on May 4, 2019 with Alexa L. Nerdrum, a 1995 alumnus, as our keynote speaker. The quality of students (23) who graduated during the past academic year was impressive. They passed a total of 84 (3.2 average) actuarial exams. Ten of them majored in a second area. On the average they had one summer internship. Above all, 16 of them found employment immediately upon graduation.

The beginning of the school year typically brings a surge in actuarial enrollments. Currently, there are 116 students who have declared Actuarial Math as their major; 36 of them are majoring in one additional area, and twenty one of them with additional minors. A record number (47) of our actuarial students have added a major and/or minor in areas related to actuarial science, namely, Data Science, Statistics, Economics, and Business Administration. In addition, there are at least seven students who are pursuing dual degrees (having to complete 158 credits, as opposed to normal 120, before graduation) in Actuarial Mathematics and Business Administration/Engineering.

We are also experiencing a significant increase in the number of high school students who have expressed interest in pursuing the actuarial profession. This is exciting for the program.

It is always a pleasure to work closely with our student club Student Actuaries at Michigan (SAM). The SAM Board does an outstanding job assisting the members (more than 225) in course planning, passing actuarial exams, finding internships, and securing full time jobs.

I am extremely pleased that our network of employers is increasing annually. They tell us that the quality of our students is also increasing each year. That is music to our ears.

We encourage all the alumni/ae to join University of Michigan Actuaries group in LinkedIn [www.linkedin.com/groups/2486220](http://www.linkedin.com/groups/2486220).

B. Roger Natarajan  
Actuarial Program Director

## Notes from the Chair

(continued from page 1)

(MCAIM). I would like to thank John Schotland for his service as the previous head of MCAIM, which ran some excellent conferences this year including one in honor of Joel Smoller.

Our faculty continue to accrue numerous honors. Many are funded externally, sometime from multiple sources. Karen Smith was appointed a member of the National Academy of Science, Bhargav Bhatt received a Simons Investigator Award and Sergey Fomin a Simons Fellowship (see page 2).

Our department has developed several excellent outreach programs to the community including the wonderful Math Corps (detailed on page 1). Bob Griess runs the Wolverine Express program, and we still hold weekly Math Circles. The Michigan Math and Science Scholars summer program attracts outstanding high school students from around the world for its three sessions.

Our innovative calculus program continues to do well as does our center for Inquiry-Based Learning directed by Ralf Spatzier. As mentioned above we will have an external review this year, and we host the visiting committee in October.

We are very grateful for the wonderful donations to our department from alumni, faculty, emeritus faculty, and friends. Marilyn and Stewart Gloyer have pledged additional funds to their scholarship endowment that will support students pursuing a secondary teaching certificate in Mathematics. In addition, the Alan Kaylor Cline fund was established by Alan Cline and Elaine Rich, which will provide support to undergraduate students with financial need. We received over \$9,000 in donations on November 27, 2018, for Giving Blue-day. This money was used to enhance the graduate and undergraduate commencement ceremonies. We look forward to another successful Giving Bluesday on December 3!

Anthony Bloch  
Alexander Ziwet Professor & Chair

*Participants in the Actuarial Alumni Leadership Council meeting in September, 2019. Front row l-r: Karen MacDonald, Susan Smith, Joseph Marker, Mario Imbarrato, Michael Frank, Kristen Moore, JJ Carroll, Kevin Dyke, Tom Terry, Tom Levy, Dave Hartman, Roger Natarajan, Back row l-r: Keera Feng, Lee-Yang Lin, Brad Pineless, Ed Martin, Kelley Clevenger.*





## Alumni Updates

**Karen Uhlenbeck** (BS 1964; PhD 1968 Brandeis) has been awarded the 2019 Abel Prize in recognition of her pioneering achievements in geometric partial differential equations, gauge theory, and integrable systems, and for the fundamental impact of her work on analysis, geometry and mathematical physics. She is the first woman to receive the Abel Prize, which is given annually by the Norwegian Academy of Science and Letters. It is considered one of the highest honors in mathematics.

**Christopher Swanson** (MS 1996, PhD 1999) received a Meritorious Service Award in recognition of his outstanding service to the Ohio Section of the Mathematical Association of America during the MathFest in Cincinnati, OH, in August 2019. The Ohio Section selects one member to receive this award every 5 years. He is currently Professor of Mathematics and Director of the Academic Honors Program at Ashland University.

**Olivia Walch** (PhD 2016) is a Post-doctoral Research Fellow at the UM Department of Neurology. As a Math Phd student, Olivia worked with Professor Danny Forger to develop the successful Entrain App for helping travelers shift their circadian rhythms to reduce jet lag. She is currently working on a grant from the UM Exercise and Sport Science Initiative, studying the circadian rhythms of athletic performance, as well as an M-Cubed grant which looks at sleep and circadian rhythms in fibromyalgia patients. The success of Entrain inspired Olivia to establish a start-up company called Arcascope to bring research on circadian rhythms to mobile phones.

### Michigan Reception 2020 Joint Mathematics Meetings

**Thursday, January 16, 2020  
5:30 pm to 7:00 pm**

Capitol Ballroom I, Hyatt Regency

RSVP to [math.mich@umich.edu](mailto:math.mich@umich.edu)

All are welcome! See you in Denver!

## Where's Your Math T-shirt Been?

*First row l-r: Siblings Natalia (2020) and Michael (2018) Jenuwine in Budapest; Tianji Cong (2020) in Sichuan; Alex Wang in Ljubljana, Slovenia. Second row l-r: Kyle Sinclair (2011) at Angkor Wat; Julie Rakas (2019) and Justin Vorhees (2019) at the Arc de Triomphe; Gregory Zelanka on the Gatlinburg Skybridge. Third row l-r: Thomas Tay at the Microsoft headquarters in Seattle; Emily Witt (2011) and Daniel Hernandez (2011) at the University of Kansas with specially designed VOTE math shirts; Rongxiao Mi (2019) and Mark Shoemaker (2013) at Colorado State University; Alex Wright shows off the back of the VOTE shirt (with a cartoon by Olivia Walch (2016)) with Jenny Wilson in East Hall.*





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Watch for our email!  
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Ralf Spatzier

*Photos by Michigan Photography,  
the Department of Mathematics,  
or submitted by the individuals.*

**Please send alumni updates or other information to [math.mich@umich.edu](mailto:math.mich@umich.edu)**

## Want Your Own Math T-Shirt?

Here is your chance to represent the UM Math Department in the stylish shirts highlighted on the previous page. Complete the order form below by placing a number (signifying the quantity desired) in the appropriate boxes (sizes are standard adult), complete your address information, and return to the address at right along with your check or money order (payable to the Department of Mathematics). **T-shirts are \$10 each, shipping and handling is included.**

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