MATH ALLIANCE

Math Alliance News

March 2021
Volume 9, Issue 3

A publication of the *Corporation for the National Math Sciences Alliance*

Upcoming Events

AMS paraDIGMS Spring Conference
Virtual
April 23-26, 2021

2021 WAM Program
Virtual
May 22-28, 2021

Field of Dreams Conference
Virtual
Nov. 5-6, 2021

Thoughts from the Director...

David Goldberg

Executive Director of the Math Alliance

Spring is officially here, hooray!! This past month I am sure almost all of us (if not every one of us) marked a year of living a little (or a lot) differently. We're reminding ourselves of the date last year we were last in a classroom, or in the office, or gathered in the coffee room with colleagues, or the day we canceled this trip or that conference. We are hoping next March we are marking anniversaries of certain good things again.

One topic of recent discussion among many of my colleagues is the effect of the pandemic on admissions (both graduate or undergraduate). Even before COVID-19 universities and programs were re-evaluating the role of standardized tests in admissions, and there were many instances of admissions processes changing to "test optional" formats. I have been a proponent of eliminating these tests in admissions, particularly in graduate programs. In part this is based on my experience as a grad chair having admitted many successful students without putting great weight on GREs. It is also probably tied to the fact that my own GREs were not particularly good, yet I was pretty successful as a grad student. Of course, these are not data, but anecdotes.

Several years back I was at a workshop where there were several presentations on negative effects on diverse communities when programs relied too heavily on GREs. Since then, the Math Alliance has had several internal conversations, as well as conversations with others, about ways we can work to assess the true predictive value of the GRE, and how we can encourage programs to give them less weight (if not eliminate them all together). The studies on the subject are a bit hard to synthesize, which makes it hard to convince anyone of your position. Of course, any study of a correlation between GRE scores and performance in graduate school can only include those who were actually admitted, which already narrows the conclusions that can be drawn.

Due to COVID-19 many students have been unable to take the GRE in time for admission in the fall of 2021. So, many programs have, at least temporarily, suspended their GRE requirements. Programs should reflect on any effect of this forced change to their process. We would love for graduate programs to e-mail us any of their COVID experiences they think are of note. I expect a lot of programs will be pleasantly surprised to find they could successfully admit excellent groups of students, who, in aggregate, will perform comparably to previous groups, without relying on GRE scores as a metric. It will be interesting to also compare the demographics of these students to previous groups. Programs may want to ask themselves if there is any reason to go back to requiring the GRE. Since they have already been thrown into this experiment, maybe they should try it for a few more years. I would wager we would have enough anecdotes that it would start to look like data.

New Associate Director Announced

The Math Alliance is pleased to welcome Dr. Nitsan Ben-Gal, a Data Science Specialist at 3M Corporation, as our new Associate Director for Industrial Relations. Dr. Adrian Coles, of Eli Lilly & Co., has been serving as Associate Director for Industrial Relations for the last couple of years, and we want to thank Dr. Coles for his tremendous contributions to the Math Alliance in this role. We also know we will continue to work with Dr. Coles in his roles as Chair of the ASA Committee on Minorities in Statistics, Co-Chair of the ASA Anti-Racism Task Force, and in his role at Eli Lilly. Dr. Ben-Gal received her Ph.D. from Brown University in 2010, then held positions in academia at the Weizmann Institute and IMA before moving to 3M in 2014. We know Dr. Ben-Gal will continue our growing connections with private sector concerns, including helping us develop a community of mentors in the private sector who can advise Math Alliance Scholars in their pursuit of career paths outside of academic settings. Thanks, and welcome aboard Dr. Ben-Gal!!!

Things to note in the AMS Notices

April

A Word From… Kirsten Bohl and David Eisenbud on National Math Festival. Highlights events featuring Erica Graham*, Raegan Higgins*, Candice Price*, and Emille Davis.

Ricardo Cortez*, Michael Hill*, Yannick Sire*, and Talitha Washington* named Fellows of the AMS.

**Math Alliance Mentor †Math Alliance Scholar*

Items of Interest in the AMSTAT NEWS

March

Nick Horton*, Anindya Bhadra*, Eric Laber*, Kun Chen*, Kellie Archer*, Arman Sabbaghi*, Yichuan Zhao*, Michael Pennell*, Dale Zimmerman*, and Luis Mestre†, on ballot for ASA offices

SFASA Celebrates Holiday Season with Positive Outlook, features Keynote by Xihong Lin*

Justice, Equity, Diversity, and Inclusion (JEDI) Outreach Group seeks submissions for an emblem "that properly reflects JEDI and its mission to strengthen our community by making it more just, equitable, diverse, and inclusive".

**Math Alliance Mentor †Math Alliance Scholar*

Now Accepting 2021-22 F-GAP Nominations!

The Facilitated Graduate Applications Process (F-GAP) is an Alliance program that provides undergraduate Juniors and Master's students with the advice and assistance needed to begin the application process as they apply to graduate programs.


F-GAP will help students choose departments that are most appropriate to their goals and aspirations. The Alliance Community will work with the student as they prepare their applications to graduate programs and will assist in tracking the progress of their applications through the admissions process. The Alliance Community will assist in maximizing the chances that Alliance Scholars will be admitted, with support, to a department or program where they will thrive. We will pair each eligible student with one of our Doctoral Alliance Mentors who will work with the students local mentor to create a mentoring team that will aid in the application process.

If you know of a Juniors or Master's student who will be graduating in the Spring of 2022 and will be applying to graduate programs for Fall 2022 please submit student nominations here: https://mathalliance.org/fgap-nomination-form/. As part of this submission, you will be asked to check a box stating that you have read the document, "Selecting students for the F-GAP program: FAQs.")


Mathematically Gifted and Black 2021 Honorees

As part of Black History Month the website mathematicallygiftedandblack.com honors one black mathematician each day. Below are those honorees that are associated with the Math Alliance:

- **February 2nd- Ashley Swain, PhD-** Math Alliance Scholar
- **February 6th- Angela Robinson, PhD-** Math Alliance Scholar
- **February 9th- Roderick Holmes, PhD-** Math Alliance Mentor
- **February 15th- Cory Colbert, PhD-** Math Alliance Scholar
- **February 17th- Shanise Walker, PhD-** Math Alliance Scholar
- **February 23rd- Nicole Joseph, PhD**– Although not officially a mentor, she has collaborated with us several times in the past.
- **February 24th- Reginald McGee, PhD-** Math Alliance Scholar and now Math Alliance Mentor
- **February 27th– Ranthony Edmonds, PhD–** Math Alliance Scholar and now Math Alliance Mentor (*wasn't listed last month due to newsletter publishing date*)

Hidden NORMS Webinar Series

Hidden NORMS: Navigating Obstructive Rules in the Mathematical Sciences

This webinar series, aimed at undergraduate students, brings together a star-studded lineup of speakers and panelists who uncover existing mathematical norms and provide concrete advice on how to navigate them for academic and professional success.

Full program description here: https://aimath.org/hiddennormsdescription.pdf
Register now! tinyurl.com/HiddenNORMS

Co-organized by Kimberly Hadaway, Pamela E. Harris, Vanessa Rivera Quiñones, and Dwight Williams II

Polymath Jr Research Experience for Undergraduates

The goal of this remote program is to provide opportunities to undergraduates who wish to explore research mathematics. The program consists of research projects on a wide variety of mathematical topics. Each project is guided by an active researcher with experience in undergraduate mentoring. All undergraduates who have experience with writing mathematical proofs are eligible. Part-time participation is also allowed; preference is given to students who will not have an undergraduate degree by July 2021.

The program will run from June 21st to August 15th, 2021. For more details, see https://geometrynyc.wixsite.com/polymathreu and **apply by early April** at https://www.mathprograms.org/db;

For additional questions contact adam.sheffer@baruch.cuny.edu.

Scholarships Available for the Summer Institute in Statistical Genetics

26th Summer Institute in Statistical Genetics (SISG)

For more than two decades, the Summer Institute in Statistical Genetics (SISG) has introduced geneticists to modern methods of statistical analysis and statisticians to the challenges posted by modern genetic data. Bruce Weir serves as the Director of SISG.

2021 Dates: Online July 7-23, 2021 Scholarship information and Application

- General registration is open.
- Design a program relevant to your interest by choosing from module offerings.
- Most participants take 2 or 3 modules. Each module is two-and-a-half days.
- Participants receive a certificate of completion.

The goal of SISG is to strengthen the statistical and genetic proficiency and career preparation of scholars from all backgrounds, especially those from groups historically underrepresented in STEM such as racial and ethnic minority groups, low income, first generation college students, veterans, and differently abled and 2SLGBTQ groups.

For more information see the programs webpage.

paraDIGMS Spring Conference

The AMS is excited to announce the paraDIGMS 2021 Spring Conference, which will be hosted virtually by the Institute of Mathematical and Statistical Innovation (IMSI) on **April 23-26, 2021**. The conference will highlight work by individuals and organizations to build a diverse and equitable profession through graduate education, while also challenging us to see how far we still have to go.

Plenary speakers for the conference are: Erica J. Graham, Shirley Malcom, Kasso Okoudjou, and Francis Su.

For more details and to register: visit the conference webpage.

Bolstering the Advancement of Masters in Mathematics

BAMM!

Join our supportive and growing community of master's students and faculty mentors!

BAMM! CSU Sites:

- Cal Poly Pomona
- Fresno State
- San Francisco State University

Contact:

- John Rock, Cal Poly Pomona (jarock@cpp.edu)
- Kimberly Seashore, San Francisco State University (kimseash@sfsu.edu)
- Oscar Vega, Fresno State (ovega@csufresno.edu)
- Robin Wilson, Cal Poly Pomona (robinwilson@cpp.edu)

What is BAMM?

The BAMM! program provides financial support and mentoring for Master's students who wish to pursue a Ph.D. in the mathematical sciences. BAMM! is a fulfilling, cohort-based program in which each participant receives up to **$20,000** in scholarships (up to $10,000 annually for academic years 2021-22 and 2022-23) at any of the three BAMM! CSU sites. Key features of BAMM! include but are not limited to a supportive community of fellow students and mentors, advanced coursework in the mathematical sciences, research experiences, continual guidance, and opportunities to attend conferences to network and gain experience presenting results.

Application Requirements

- A personal statement addressing a desire to pursue a Ph.D. in the mathematical sciences, including Pure Mathematics, Applied Mathematics, Statistics, and Mathematics Education.
- Two recommendation letters from mathematical sciences faculty.
- Unofficial transcripts from bachelor's-granting institution.
- A bachelor's degree conferred by August 2021.
- **Application Deadline: April 12, 2021.** (Apply online.)
- **Website:** https://tinyurl.com/y79hutaz

Eligibility

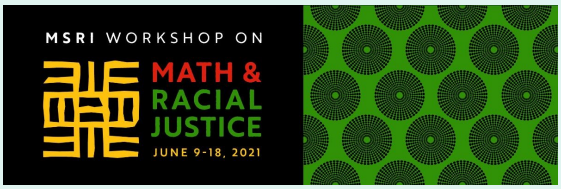
Applicants for the BAMM! program must:

- Be eligible for Financial Aid.
- Be U.S. citizens or permanent residents.
- By Fall 2021, be enrolled in a Master's program in the mathematical sciences at a BAMM! CSU site: Cal Poly Pomona, Fresno State, or San Francisco State University.

Low-income students with demonstrated financial need and students from underrepresented groups in the mathematical sciences are particularly encouraged to apply.

Funded by NSF S-STEM grants DUE-1930373, DUE-1930419, and DUE-1930553.

MSRI
Mathematical Sciences Research Institute



MSRI Workshop on Mathematics & Racial Justice

June 9-11 & June 16-18, 2021 · Online Workshop

The overarching goal of the Workshop on Mathematics and Racial Justice is to explore the role that mathematics plays in today's movement for racial justice. For the purposes of this workshop, racial justice is the result of intentional, active and sustained anti-racist practices that identify and dismantle racist structures and policies that operate to oppress, disenfranchise, harm, and devalue Black people. This workshop will bring together mathematicians, statisticians, computer scientists, and STEM educators as well as members of the general public interested in using the tools of these disciplines to critically examine and eradicate racial disparities in society. Researchers with expertise or interest in problems at the intersection of mathematics, statistics and racial justice are encouraged to participate. This workshop will take place over two weeks and will include sessions on Bias in Algorithms and Technology; Fair Division, Allocation, and Representation; Public Health Disparities; and Racial Inequities in Mathematics Education.

Organizers: Caleb Ashley (Boston College), Ron Buckmire (Occidental College), Duane Cooper (Morehouse College), Monica Jackson (American University), Omayra Ortega* (Sonoma State University), Robin Wilson* (California State Polytechnic University, Pomona)

**denotes lead organizers*

Register using the links below to receive the Zoom links and password for the workshop sessions, which are held in Pacific Standard Time beginning June 9, 2021.

Register Online

2021 Workshop Sponsors

The 2021 Workshop on Mathematics and Racial Justice is sponsored by the National Science Foundation, the American Mathematical Society (AMS), the Center for Minorities in the Mathematical Sciences, and the National Association of Mathematicians (NAM).

MSRI has been supported from its origins by the National Science Foundation (NSF), now joined by the National Security Agency (NSA), over 100 Academic Sponsor departments, by a range of private foundations, and by generous and farsighted individuals.

Central Convergence Research Experiences for Undergraduates (CCREU)

The Central Convergence Research Experiences for Undergraduates (CCREU, https://www.cwu.edu/reu/CCREU) is a summer program with research across a broad range of mathematical topics including topology, number theory, applied math, probability, and statistics. Interlaced with the mathematical research projects are professional development training, seminars by guest mathematicians, and field trips to local sites. Students will give presentations at the CC-REU research symposium and produce a written report suitable for publication. Students will also be eligible for travel funding to present their results at regional or national mathematics conferences after the summer program.

Given our current pandemic situation, CC-REU in 2021 will be conducted fully virtually. The program is a full-time eight-and-a-half-week summer research program, running June 28 – August 24, 2021.

Additional details:

Eligibility: The National Science Foundation requires every REU participant to be a US citizen or permanent resident. In addition, all participants must return to their undergraduate institution after the REU and be full-time undergraduate students in Fall 2021. We especially encourage students from groups traditionally underrepresented in STEM and early career students (students with two or three years remaining of their degree) to apply.

Participant support: Undergraduates accepted for this research experience will be eligible for a $5,100 stipend, additional weekly substance support that we are still working to finalize, and up to $1000 in travel funds to support travel to national research conferences in 2021-2022.

Participant Expectations: CC-REU is a full-time eight-and-a-half-week summer research program. Student participants are expected to commit at least 40 hours every week the program is in session and, as such, should not commit to other activities (such as courses or part-time jobs) during the REU program.

Apply Now - applications will be reviewed beginning April 15th.

More information:
Research projects with CC-REU for Summer 2021

History of CC-REU

Student Resources

Apply Now

Frequently Asked Questions.

Contact us: If you have any questions regarding the CC-REU program at CWU, please contact us at brandy.wiegers@cwu.edu

Acknowledgment: The 2021–2023 CC-REU is currently funded by the NSF (DMS-2050692) and will expand on the previous programs funded by the MAA National Research Experience for Undergraduates Program (NSF DMS–1652506). CC-REU program is directed by Dr. Brandy Wiegers and Dr. Sooie-Hoe Loke.

Students can Nominate Themselves for Membership in the Society for Clinical Trials

We are pleased to announce a new award opportunity that will be managed by the newly formed SCT Equity, Diversity and Inclusion Committee (ED&I)in an effort to extend invitations to students from underrepresented groups in the fields of biostatistics, statistics, epidemiology, nursing, data sciences and computer science to promote a racially and ethnically diverse SCT Membership.

This new Award category will be guided by the definitions of race and ethnicity used by the National Institutes of Health and will serve as a pipeline for students from underrepresented groups to have a one year membership of SCT and registration for the Annual Meeting (May 17-May 20, 2021) sponsored by SCT.

In addition, all awardees will be invited to attend a welcome reception with the SCT President, Chair and Members of the ED&I committee and will have an opportunity to network with SCT Leadership.

We welcome interested students to submit their nomination by filling the form: https://www.sctweb.org/studentAward.cfm and emailing a copy of your current Student ID and a letter from your advisor certifying that you are a student to info@sctweb.org.

Please note that nominees may not be current or previous members of SCT, and each institution may nominate up to two students.

The deadline for submitting nomination is April 23, 2021. Awardees will be notified by May 7, 2021.

For additional questions, contact info@sctweb.org.

For information on SCT, visit https://www.sctweb.org/.

Aspire Alliance's IAspire Leadership Academy

The NSF-funded Aspire Alliance's IAspire Leadership Academy is accepting applications for the third cohort of fellows. The program's purpose is to elevate the preparedness of academic leaders from underrepresented groups so they can aspire to and succeed in more senior leadership roles. This program offers fellowships to individuals from traditionally underrepresented groups currently in formal or non-formal leadership roles in STEM higher education at both two and four-year institutions. We hope you'll share this opportunity with faculty who have participated in Math Alliance programs and activities.

IAspire Leadership Fellows will gain critical leadership skills across numerous competencies. They will have opportunities to learn how to lead more effectively in increasingly complex environments and build confidence to influence institutional transformation either in their current position or as they rise to other positions of leadership. **The program fee for fellows (valued at $10,000) is reduced to $7,500 with the remainder covered by the NSF INCLUDES Grant.**

The Program at a Glance
This program is structured in two phases. The first phase is a 12-month immersive leadership experience includes:

- Three 1-week on-site sessions
- Virtual small group learning sessions held monthly
- Training on and exposure to self-assessment, team leadership skills development, organizational dynamics, and leading change
- Connection to a diverse peer network
- Formal Self and 360° assessments
- Leadership skills application through an institutional action project
- Supported mentoring/coaching with a senior leader of the participant's choice
- Development and planning of an institutional action project to apply leadership skills obtained in the program

The second phase is an in-residence component where Fellows will be focused on applying learned leadership skills through the implementation of their unique action project at their institution and receiving support from their peers.

The deadline for applications to join the second cohort of fellows is **Friday, April 16, 2021**.

We are asking you to bring this opportunity to the attention of underrepresented faculty or other leaders who might be interested and to campus administrators who are in a position to serve as Fellow sponsors. For resources to share this opportunity with your networks, please check out our IAspire Newsletter and Social Media Toolkit.

More Information and How to Apply
Visit the IAspire Leadership Academy website for more details. Click here to see what the fellows of Cohort 1 said about their experience.

2021 Graduate Student Mathematical Modeling Camp

We are pleased to announce the Sixteenth Annual Graduate Student Mathematical Modeling Camp, GSMMC 21. The camp will take place from June 9-12, 2021. Hopefully, it will occur in person at the University of Delaware in Newark, DE. However, we are planning to offer the Camp in virtual format if necessary.

The GSMM Camp is a workshop designed to teach graduate students a broad range of problem-solving skills, including mathematical modeling and analysis, scientific computation, and critical assessment of solutions. Guided by an invited faculty mentor, graduate students work in teams on highly interdisciplinary problems inspired by real industrial applications. As a result, the Camp provides a valuable educational and career-enhancing experience outside of the traditional academic setting.

Here are some past problems from the 2019 Camp:

- Drug Delivery in Contact Lenses
- Cutting with water: From fish to fracking
- Flow and Fouling in Elastic Membrane Filters

MPI Workshop

The Camp is run in conjunction with the MPI Workshop the following week, held this year at the University of Vermont. MPI focuses on real-world open-ended industrial problems, and draws both faculty and student attendees. With the skills obtained at GSMMC, campers become valuable participants in the problem-solving teams at the workshop, helping to solve the posed problems. The Workshop also provides mentoring and networking opportunities for Campers with academic and industrial representatives. We expect that most Campers will automatically be registered for and supported at MPI. For more information about MPI, you may visit the Web page for the 2021mpi Workshop.

Application

Financial support is available for participants, but is limited. The selection will be based on academic background and interests as indicated in the application form and on a letter of recommendation from a faculty sponsor. Women and students from underrepresented groups are especially encouraged to apply.

Applications must be completed by April 23, 2021 for full consideration, and successful applicants will be notified by early to mid-May.

BEAM

Bridge to Enter Advanced Mathematics

Summer Positions Available!

This summer, *change the lives* of underserved students with exceptional potential in mathematics.

Bridge to Enter Advanced Mathematics is a free program for students from low-income and historically marginalized communities who show exceptional potential in mathematics.

All students and staff at Union College in Summer 2019

For Summer 2021, we are hiring...

...college professors and classroom teachers as faculty. Design your own courses on favorite math topics. Teach to small classes of motivated middle schoolers.

...graduate students as junior faculty, designing and teaching courses with structured support and mentorship.

...college students as student life counselors and teaching assistants.

COVID-19 Note: In Summer 2021, BEAM will be running all of our programs virtually. Technology can be provided for those who need it to participate. Please see our website for more information on this, as well as details such as salary and other compensation.

For more information and how to apply:

beammath.org/jobs

"Teaching at [BEAM] was a great joy, and I highly recommend it as an outreach initiative to get involved in!"

- Professor Mohamed Omar, Harvey Mudd College

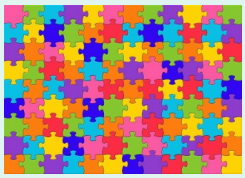
Faculty member Evelyn Owhor with students in NYC 2018

UNC CHARLOTTE

Math Research Opportunity

Dates: June 1 - July 23, 2021 (8 weeks)
Location: All meetings will be held remotely via Zoom

Program description:
Two teams of three undergraduate students will conduct research at UNC Charlotte over the summer. Each team will be paired with a UNC Charlotte graduate student, who will act as a team leader, and the projects will be directed by Dr. Kevin McGoff. The first two weeks of the project will serve as a "ramp-up" period, during which participants will learn the background material necessary for successful completion of the project. Throughout the project, participants will get training and experience in mathematical communication. By the end of the project period, participants will be expected to produce both a final report and a final presentation.

Topic:

This project will focus on some problems in discrete probability. In particular, participants will investigate patterns that arise in randomly generated strings and arrays of symbols. Discovery of these patterns will enable the analysis of algorithms that are used for genome sequencing, jigsaw puzzle solving, and photo alignment. Depending on the interests of the participants, the project may be more theoretical (i.e., focused on proofs) or more computational (i.e., focused on running and analyzing numerical experiments).

Funding:
Each student participant will receive a stipend of $4500 for the 8-week program. Funding for this program has been provided by the National Science Foundation under the DMS award number 1847144.

Commitment:
This project is expected to be an intensive research experience. During the eight weeks of the program, participants are expected to work full-time on their project. In particular, participants should not hold other jobs or be enrolled in classes during that time.

Eligibility:
Applicants must be a U.S. citizen or permanent resident of the United States; be a college-bound high school senior to rising college senior; be and remain a student in good standing; and plan to complete an undergraduate degree program. Students from colleges/universities with limited opportunities for research and/or from underrepresented groups in mathematics are especially encouraged to apply.

Prerequisites:
There are no official prerequisites for this project; however, experience with any of the following topics would be helpful: college-level probability and statistics, a course in proof-based mathematics (usually either advanced calculus or abstract algebra), and mathematical computation.

Housing:
As this project will be conducted remotely, participants will be responsible for their own housing.

To Apply:
Please have the following documents sent to kmcgoff1@uncc.edu with your name in the subject line.
Statement of purpose: explain why you want to do mathematics research this summer and what you hope to get out of this program in particular. Transcripts (unofficial accepted). Two letters of recommendation.

Applications will be accepted up until the start of the program. However, priority will be given to applications completed by **April 15th, 2021**. For questions, comments, or concerns, please email kmcgoff1@uncc.edu.

University of Minnesota Master of Financial Mathematics (MFM) Two Fully Covered Fellowships for the Incoming Class of 2021

We are pleased to let you know about the University of Minnesota's Master of Financial Mathematics (MFM) program. We are now accepting applications for the incoming class of fall, 2021. Oftentimes STEM students are not aware that they are a great fit for the field of quantitative finance. We invite you to consider our MFM and the many opportunities we provide, **which include two special, fully funded fellowships, each with an approximate value of $94,000 to cover tuition and living costs for the two-year MFM.**

What is the MFM?
The MFM will prepare you to enter the high-paying, fascinating and satisfying field of quantitative finance, where you can combine skills in mathematics, statistics and data science to do detailed risk modeling. Examples of "quant" jobs include derivatives traders, quantitative risk analysts, investment research analysts, model validators, actuaries, risk regulators, data scientists and academics with a focus on quantitative finance and related domains.

Benefits of the MFM:

- Ninety percent placement rate over the past 5 years
- Highly supportive, tight-knit community of students and alumni
- The MFM program's curriculum, combining theory and practice, is designed by practitioners
- The MFM is housed in the U of MN School of Mathematics, rated 9th in the U.S. for Applied Mathematics
- Strong alumni network—they work in wide variety of firms-The Federal Reserve Bank, Amazon, Slack, Citi, Travelers, Morgan Stanly, and Allianz. They also move on to PhD programs that further support their interest in quantitative finance.

Learn more: MFM homepage, MFM Fellowships, Attend an Information Session

- First Round of Applications are due by 2/1/21;
- **We accept applications after this date for the second round of applications reviewed between March and May of 2021**
- You should apply for the MFM and the MFM Fellowships simultaneously

Summer 2021 DRUMS
Directed Research for Undergraduates in Mathematics and Statistics

The Mathematics and Statistics Departments of North Carolina State University invite qualified applicants for a Research Experiences for Undergraduates (REU) program that pairs mathematics and statistics students for interdisciplinary summer research projects. Proposed projects span applications in applications including disease modeling (COVID-19), physiology, imaging, and extreme weather events; using tools from linear algebra, partial differential equations, probability, sensitivity analysis, parameter inference, optimization, and machine learning. In addition to the technical aspects of the program, students also receive a background in useful auxiliary skills like mathematical programming, writing reports in LaTeX, applying for graduate school, and preparing scientific presentations. Details of this program and a list of projects can be found at https://math.sciences.ncsu.edu/undergraduate/drums/.

The DRUMS program will use a hybrid format in which some students will work at NCSU and some will participate remotely for 10 weeks during summer and during the 2021 fall semester. Formal summer activities will be May 24th – August 1st, with arrival on 23rd. The work during the fall semester will be conducted online via zoom. The time commitment for this part of the program will be approximately 5 hours per week including a 1h weekly remote meeting.

We encourage students of all backgrounds to apply. This includes students who might have nontraditional mathematical and/or statistical training, or who are just beginning their mathematical studies.

Students will need to submit a curriculum vitae/resume, a transcript (unofficial is fine), and two reference letters. In addition, students will need to submit a one-page personal statement. One letter should list a local faculty member who is willing to serve as a contact to NCSU faculty (the contact person is needed to help coordinate activities during the fall semester). The personal statement should include the reason(s) why you wish to participate in the DRUMS REU at NCSU.

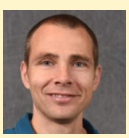
Due to restrictions from NSF and NSA, our program is restricted to US citizens and permanent residents, and participants must be undergraduate students at the time of participation.

Students will receive a stipend in the amount of $6,000 for the 10 weeks, housing, a partial meal allowance, and travel support up to $500 per student to cover transport to and from NCSU.

Application Deadline: Review of applications begins February 15 and will continue until all slots are filled. Please apply at https://www.mathprograms.org/db/programs/1054

Contact Information:

Mette Olufsen (msolufse@ncsu.edu)
Professor of Mathematics
North Carolina State University



Brian Reich (brian_reich@ncsu.edu)
Distinguished Professor of Statistics
North Carolina State University

Research Opportunities in Mathematics for Underrepresented Students

Dates: June 1 – August 7, 2021
(dates approx.)

ROMUS

Host: The Ohio State University
Columbus, Ohio

THE OHIO STATE UNIVERSITY

Apply: https://www.mathprograms.org/db/programs/1073

ROMUS is an innovative mathematics summer program that offers undergraduates the opportunity to pursue research under the tutelage of experienced faculty members. Students work with a faculty member on a project of mutual interest for 8-10 weeks during the summer. In addition to the research projects, all accepted students will participate in various cohort activities. These experiences will most likely be virtual/remote, but the possibility remains for some in-person activities.

The projects will be in the following areas:

- *Computational Mathematics, Numerical Modeling*
- *Computational Number Theory*
- *Topological Data Analysis & Directed Algebraic Topology*
- *Knot Theory & Low-Dimensional Topology*
- *Dynamical Systems & Geometry*
- *Operator & Quantum Algebra*
- *Combinatorics & Random Matrices*
- *Cellular Automata, Statistical Mechanics & Probability*
- *Combinatorics & Model Theory*

Applications are welcome from students from all schools. Applications from students from traditionally underrepresented groups are particularly encouraged. REU participants are paid a stipend during the summer depending on in-person vs remote participation as well as travel and lodging as applicable. Please note, REUs are intended primarily for US citizens and Permanent Residents. Because of funding limitations, international students will be considered on an ad-hoc basis.

Applications will begin being evaluated in mid-to-late February and accepted until all slots are filled. For additional questions please contact Tony Nance at nance.1@osu.edu.

IAS | PCMI PARK CITY MATHEMATICS INSTITUTE

A program of the Institute for Advanced Study

July 11-31, 2021

Fully Virtual Summer Program

Graduate Summer School Program

Three one-week sessions:

- July 12-16 – Motivic Homotopy
- July 19-23 – Illustrating Mathematics
- July 26-30 – Number Theory

Applications accepted through April 5, 2021

www.ias.edu/pcmi

See webpage for full details and instructions how to apply

Week 1 – Motivic Homotopy	
Organizers: Benjamin Antieau, Marc Levine, Oliver Röndigs, Alexander Vishik and Kirsten Wickelgren	Lecturers: Frédéric Déglise, Phillippe Gille, Daniel Krashen, Matthew Morrow, and Kirsten Wickelgren
Overview: *The PCMI Workshop "An introduction to motivic homotopy theory and its applications" is being held as an online preparation for our planned PCMI Summer School on motivic homotopy theory and its applications. Motivic homotopy theory arose out of the work of Morel and Voevodsky in the 1990s and since then has developed into both a powerful tool for understanding many arithmetic aspects in algebra and algebraic geometry, as well as being a fascinating generalisation of classical homotopy theory with an active development in its own right. We will host five introductory talks of two lectures each by experts in motivic homotopy theory and the fields to which it has been applied. Two of the lectures will discuss the basics of motivic categories and motivic cohomology, while the remaining three will deal with areas of application: foundational questions on the arithmetic of fields and its relation to algebras, quadratic forms and cohomology classes, the closely related area of G-bundles in algebraic geometry, and the refinement of classical invariants of enumerative geometry to quadratic forms. Beside the online lectures, we will hold online discussion and question and answer sessions.*	
Week 2 – Illustrating Mathematics	
Organizers: Aaron Abrams, Jayadev Athreya, David Bachman, Remi Coulon, Gabriel Dorfsman-Hopkins, Edmund Harriss, Alexander Holroyd, Sabetta Matsumoto, Laura Taalman, and Glen Whitney	
Overview: *The Illustrating Mathematics PCMI Graduate Summer School aims to erase the artificial divide between research and outreach in mathematics. It is impossible to "find" a mathematical idea without explaining it; exploration and exposition are two sides of the same coin. One striking example of this is the epochal work of William Thurston; often his theorems were accompanied by pictures and computer programs, illustrating the underlying ideas. We will bring together mathematicians from a range of fields, and practitioners from the digital arts (animation, 3D printing, laser cutting, CNC routing, virtual reality, computer games, etc) to share their expertise in mathematics and with the procedural tools used to illustrate mathematics. The school is targeted both to graduate students and to mathematics community members from all backgrounds. In addition to online lectures from a variety of mathematicians and practitioners, our school will consist of several workshops to train participants in a variety of digital media.*	
Week 3 – Number Theory	
Organizers: Jennifer Balakrishnan, Bjorn Poonen, and Akshay Venkatesh	Lecturers: Tim Dokchitser, Hendrik Lenstra and a 3rd lecturer to be determined
Overview: *As a precursor for the in-person program ``Number Theory Informed by Computation'' at PCMI in 2022, this week-long workshop will consist of lecture series on topics including algorithmic algebraic number theory and the inverse Galois problem.*	

Questions? Contact: pcmi@ias.edu

IAS/Park City Mathematics Institute, Institute for Advanced Study, 1 Einstein Drive, Princeton, NJ 08540

MAA Project NExT

NEW EXPERIENCES IN TEACHING

Launch the NExT stage of your career

MAA Project NExT (New Experiences in Teaching) is a year-long professional development program for new(ish) or recent PhDs in the mathematical sciences. The program is designed to connect new faculty with expert teachers and leaders in the mathematics community and address the three main aspects of an academic career: teaching, research, and service.

Recent program sessions have included:

- getting your research and grant-writing off to a good start,
- innovative teaching and assessment methods and why they work,
- finding your niche in the profession,
- attracting and retaining underrepresented students,
- balancing teaching, research, and service demands,
- starting an undergraduate research program, and
- preparing for tenure.

MAA Project NExT Fellows join an active community of faculty who have become award-winning teachers, innovators on their campuses, active members of the MAA, and leaders in the profession.

MAA Project NExT welcomes applications from new(ish) and recent PhDs in postdoctoral, tenure-track, and visiting positions. We particularly encourage applicants from underrepresented groups, including women and minorities. Applications for the 2021 cohort of MAA Project NExT Fellows are due on **April 15, 2021** and can be found at **projectnext.maa.org**.

Project NExTers (Silver '19) at MAA MathFest in Cincinnati.

Application deadline: April 15, 2021

projectnext.maa.org • projectnext@maa.org

MATH ALLIANCE
MEMBER INSTITUTION

Tenure-Track Assistant Professor of Mathematics at George Mason University

The Department of Mathematical Sciences at George Mason University invites applications for three tenure-track positions at the rank of Assistant Professor, to begin in August 2021. George Mason University has a strong institutional commitment to the achievement of excellence and diversity among its faculty and staff, and strongly encourages candidates to apply who will enrich Mason's academic and culturally inclusive environment.

About the Department:
The Mathematical Sciences Department at George Mason University offers strong and flexible programs in undergraduate, graduate and Ph.D. Mathematics. Students can specialize in a diverse selection of areas in pure, applied and computational mathematics. A faculty of world-class educators with exemplary qualifications and progressive experience attracts new research opportunities; recruits highly qualified and motivated students from across the country and abroad; and provides unparalleled insight and expertise toward the development of marketable academic programs. For more information about the department, visit us on the web at math.gmu.edu.

Responsibilities:
The successful candidates will be expected to teach at both the undergraduate and graduate levels and to support the department's Ph.D. program in Mathematics. These positions are in support of the state-funded Tech Talent Investment Program (TTIP) which seeks to increase the number of Virginia graduates at the bachelor's and master's level in technology and computing related fields including mathematical sciences. The search will focus on applicants with expertise in the areas of computational and theoretical mathematics related to modeling, dynamical systems, graph theory, combinatorics, and probability, but all disciplines will be considered.

Required Qualifications:
Candidates must possess a Ph.D. degree by 25 August 2021 and must have strong records in both research and teaching.

Preferred Qualifications:
Candidates with postdoctoral experience are preferred. Preference will be given to candidates whose research interests align with those of the department and with the TTIP goals.

Special Instructions to Applicants:
For full consideration applications must be received by J**anuary 29, 2021,** but applications will be accepted until the position is filled. Applications must include a cover letter, curriculum vitae, research statement, teaching statement and at least four letters of recommendation, one of which discusses teaching. Applications must be submitted online at https://jobs.gmu.edu/.

Other correspondence may be directed to math@gmu.edu or by regular mail to:
Search Committee (Tenure-Track Assistant Professor)
Department of Mathematics Sciences
Exploratory Hall, Room 4400
Mail Stop 3F2
George Mason University
Fairfax, VA 22030

George Mason University is an equal opportunity/affirmative action employer, committed to promoting inclusion and equity in its community. All qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, national origin, age, disability or veteran status, or any characteristic protected by law.