

# CAL POLY POMONA

## Mathematics and Statistics

Volume 20/21 Issue 2

Spring 2021

### INSIDE THIS ISSUE

Message from the Chairs

Student News

Scholarships

Sophie's Circle

Faculty News

Global Classroom

TEA

### **Message from the Chairs**

Dr. Arlo Caine and Dr. Jenny Switkes  
Math/Stats co-chairs for Spring 2021

Together, we all are making it through the challenging Spring 2021 semester! It has taken perseverance, understanding, kindness towards one another, and just plain hard work on the part of our students, faculty, and staff. We thank you all for making our department the special place that it is, even online.

To those of you who are graduating this spring, with either the Bachelor of Science Degree or the Master of Science Degree, we want to extend our sincere congratulations. It takes serious commitment to finish a degree during a pandemic, and you have done it. We are very proud of you, and we wish you the best in your future endeavors. We hope you will keep in touch.

By the way, for students and recent graduates looking for their next career step, the Cal Poly Pomona Career Center resources are available to you free of charge for the whole first year after your graduation. For continuing students, it's not too late to sign up for summer courses! We are offering many upper division mathematics and statistics courses, including core, elective, and special topics courses.

Over the summer, Dr. Berit Givens will return from her sabbatical. In fact, you may have noticed that she is teaching Combinatorics online this summer. We look forward to more of her outstanding leadership of our department.

## Message from the Chairs (Continued)

This Spring we've grappled with the immensely complex tasks of looking ahead and scheduling and then re-scheduling the fall semester as the university plans a safer return to campus in light of the improving public health situation. At the same time, we've been part of the evaluation efforts of our many lecturers, looking back over the work done in the past year and a half, and truly appreciated the many ways our Mathematics and Statistics instructors met the challenge of the switch to remote instruction, engaged in professional development over the summer, and navigated teaching fully online through the fall and spring semesters. Thank you.

We have enjoyed the opportunity to serve as your Interim Co-Chairs this semester. It truly has been a privilege. We wish you a wonderful summer break and we look forward to seeing you this summer or fall, online or in-person.



Throughout the semester, Dr. Jenny Switkes has enjoyed hiking in the hills near her apartment. Santiago Oaks State Park is desolate and beautiful, and Dr. Switkes was surprised by a roadrunner near the spot where she took this selfie.

Chino Hills State Park has been exceptionally green (and crowded) due to new growth after last year's fires. As she uses her trails app and climbs the hills, she thinks about the different mathematical measures of elevation gain: highest elevation minus lowest elevation; or the more meaningful cumulative elevation gain, ignoring elevation loss. Net change of elevation on a loop hike? Well, that's trivial!



### BAMM!

John Rock

BAMM! Was started to bridge equity gaps among students wishing to pursue PhDs in the mathematical sciences. The program provides financial support, mentoring and community building activities to Master's students enrolled at Fresno State, San Francisco State and Cal Poly Pomona.

Although the deadline for the 2021-2022 deadline has already passed, we hope everyone will keep this program in mind for the future!

- *Students:* If you are from an underserved and underrepresented group with interest in -- and drive for -- pursuing a PhD in the mathematical sciences, then you should apply! Grades and transcripts are not nearly as important as who you are as an individual and your story to get here.
- *Colleagues:* BAMM! scholars must be enrolled in a master's program at one of three California State Universities listed above. So, advise graduating and rising seniors about the existence of BAMM! and put your students in contact with one of the Co-PIs. A quick email can spark a meaningful and lasting relationship.

For all the details, visit <https://tinyurl.com/y79hutaz>

### 2020/2021 PUMP URG

The program PUMP-URG is designed to prepare underrepresented students to continue graduate studies, ideally doctoral programs, and create a supportive community. Many students and faculty of our Department have collaborated with this program in different ways. There were three research groups this year:

- ***Metric Basis Reconfiguration***  
Jimmy Morentin, Evelyn Torrico, and Briana Foster-Greenwood (Faculty Mentor)
- ***An Application of a Weighted Discrete Hardy Inequality on Trees to the Friedrich's Inequality on a Fractal Domain***  
Andrew Aguilar, Jezreel Sabugo-Llamas, and Fernando Lopez-Garcia (Faculty Mentor)
- ***The Topological Symmetry Groups of the graphs in the Peterson Family***  
Deion Elzie, Daniel Silva, and Robin Wilson (Faculty Mentor)

## Celebrating Our 2020-2021 Scholarship Recipients!

Jillian Cannons, Amber Rosin, and Cristina Runnalls

We wish to congratulate this year's scholarship recipients.

**John and Rosetrina Flaig Mathematics  
Scholarship Recipients:**

Heliezer Espinoza  
Diana Morales

**Stuart Friedman Memorial Scholarship  
Recipient:**

Christopher Muzquiz

**Armando Gallegos Memorial Mathematics  
Endowed Scholarship Recipient:**

Heliezer Espinoza

**Samuel Gendelman Memorial Scholarship  
Recipient:**

Weizhong Wang

**Dr. Emil R. Herzog Department  
Scholarship Recipient:**

Evelyn Guerra

**Mr. and Mrs. Keith Soon Kim Mathematics  
and Science Scholarship Recipient:**

Jamie Thomas

## 9th Annual Student RSCA Conference 2021

Our department had a strong showing at the Research, Scholarly and Creative Activities Conference this year! Below are the following presenters:

- ***The Reconfigurations of Metric Bases***  
Jimmy Morentin, Evelyn Torrico, and Briana Foster-Greenwood (Faculty Mentor)
- ***The Relationship between Technological Self-Efficacy and Mathematical Self-Efficacy in Online Learning***  
Marie Pitre, and Cristina Runnalls (Faculty Mentor)
- ***Species Conservation in North American Forests, 1982-2020***  
Danielle LaVine, and Adam King (Faculty Mentor)
- ***An Application of a Weighted Discrete Hardy Inequality on Trees to the Friedrich's Inequality on a Fractal Domain***  
Andrew Aguilar, Jezreel Sabugo-Llamas, and Fernando Lopez-Garcia (Faculty Mentor)

## Sophie's Circle

Kesh Weinstein and Marion Farschman

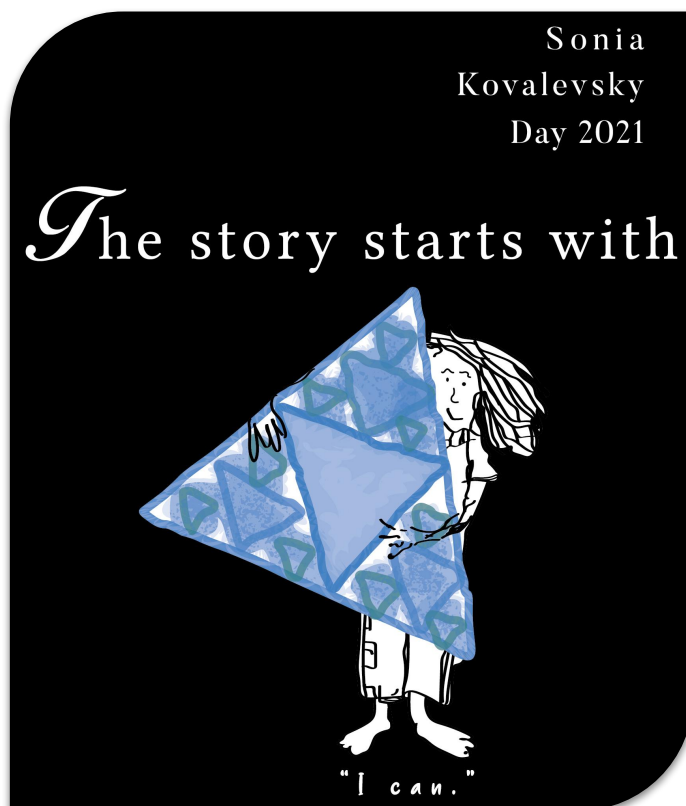
Meeting through Zoom this year allowed us to host presentations by speakers like Dr. Estrella Johnson (Virginia Tech) from outside Southern California. We had speakers talk about their mathematical journeys, experiences completing mathematical degrees, and transitioning to graduate schools and their respective STEM careers. In addition to our general meetings, we kept our community feel for members by hosting multiple club game nights, movie nights, and themed events based on holidays.

The biggest event that Sophie's Circle has put together last academic year was Sonia Kovalevsky Day. Sophie's Circle, along with CSU Fullerton and Pomona College, planned on hosting SK Day at CPP in April 2020, with an anticipated 200 participants - 160 of those being middle school and high school students. While we had to cancel the event in April 2020 due to COVID-19, we were prepared to host the event virtually in 2021. On April 17th, there were 95 students registered with around 70 in attendance. There were 27 volunteers who led 15 different activities based around different mathematical topics. Dr. Alissa Crans was the keynote speaker with our own Dr. Cristina Runnalls as the event advisor, which made the event even more special. Students will be receiving a book (either "Women Who Count" by Shelly M. Jones or "Dream Jobs in Math" by Colin Hynson), several math based games, and an event t-shirt with the main design created by CPP's own Dr. Briana Foster-Greenwood.

Sophie's Circle received The Club of the Year Award from Science Council while our secretary, Marion Farschman, received the Scheduler Award.

Sophie's Circle won the MAA Tensor Women & Mathematics Grant. With the grant money, we are planning to begin our Women in Mathematics Mentorship Program (WMMP) and Women in Mathematics Undergraduate Research Experiences (WMURE). These programs will support mentoring and research relationships between club members and Math & Stats professors at CPP.

For the next academic year, current president and founder, Kesh Weinstein, will be overseeing all of the College of Science clubs as President of Science Council. Marion Farschman will be assuming the role as president of Sophie's Circle. Marion has been a board member of Sophie's Circle since the club first started conducting meetings back in 2018 and chartered in 2019. We are very excited to witness the great work that Marion will be leading for the club.



## Global Classroom: An International Experience

Fernando Lopez-Garcia

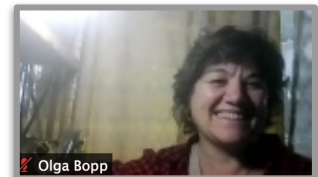
Mathematics faculty member Fernando Lopez-Garcia and collaborators Professors Roberto Ben and Antonio Cafure taught a sequence of global meetings on series and fractals connecting students from the United States and Argentina to explore how people from different countries can learn from one another and develop a greater understanding of each other's cultures. This international multicultural initiative consisted of three ninety-minute long virtual meetings. During these events, a group of twenty students from our department and Universidad Nacional de General Sarmiento (UNGS) in Buenos Aires discussed questions related to geometric series, fractals, and dimensions. Some of the goals that motivated this initiative were to have a friendly international experience from home, to strengthen our global perspective, to resignify our knowledge in Spanish and English, to expand our network, and overall to enjoy doing mathematics together. Below are some of the comments received from the students:



*“Help me visualize and understand the application of what we learn in Calculus class.”*

*“Despite any and all differences, we all have math in common.”*

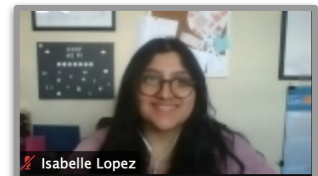
*“Excelente experiencia...vamos por otras!”*



**Participants from UNGS:** Ana Belén Rebeco, Claudia Fernández, Débora Belén Altamirano, Edith Noemí Galeano, Giuliana Petacchi, Laura Lebilao, Macarena Belén Romero, Marcela Palavecino, Olga Bopp, Yamila Luna, Yésica Yanina León.



**Participants from CPP:** Araceli Garcia, Cooper Salomon, Helia Koochekmanesh, Isabelle Lopez, Jamie Thomas, Jocelyn Haro, Len White, Natasha Arnold, Tian Zhao.



**Organizers:** Antonio Cafure (UNGS Professor), Fernando Lopez-Garcia (CPP Professor), Matthew Walters (Director of the International Center at CPP), and Roberto Ben (UNGS Professor).



## Notable Faculty Recognition

Professor Alan Krinik received the **Ralph W. Ames Distinguished Research Award** for his outstanding and extended record of scholarly work on Markovian models and matrix properties. During his career at CPP, he has helped edit five research monographs, published 33 articles, and directed 29 graduate students in their master's thesis.

Congratulations to Dr. Krinik!

## Notable Faculty Presentation

Dr. Stacy Brown gave a plenary talk at OK-TX RUME 2021 Conference hosted by Texas State University in April 2021. The title of the talk was *"When Students' Theoretical Thinking Clashes with a Primary Pedagogical Example: A Study of the Didactics of Proof by Contradiction."*

## Teaching Experiment Academy

Stacy Musgrave



The Teaching Experiment Academy (TEA) is a cross-campus collaboration with UC Irvine, San Jose State University and Cal Poly Pomona to enhance the quality of STEM education through the implementation of Mastery Learning and Specifications Grading. In a Specifications Grading system, students earn a grade of pass/not pass on course standards and have the opportunity to revise work until they demonstrate mastery. Dr. Musgrave will serve as a peer coach to support the Cal Poly Pomona cohort this summer and fall as instructors from various STEM departments redesign their courses with the components of Mastery Learning and Specifications Grading. If you are curious about Mastery Learning or Specifications Grading, resources are available through the TEA website: <https://tea.dtei.uci.edu>. If you would like to participate in the STEM Course Redesign Program, it's not too late to apply! Information on how to apply is on the website. Applications are due by Sunday, June 6.

This issue was produced by the 2020-2021 Newsletter Committee:  
Fernando Lopez-Garcia and Stacy Musgrave