MATHEM@TICS

"All the ν's fit to print"

Department of Mathematics | Ithaca College
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This issue is dedicated to our graduating majors and minors in mathematics and in data science. Congratulations!

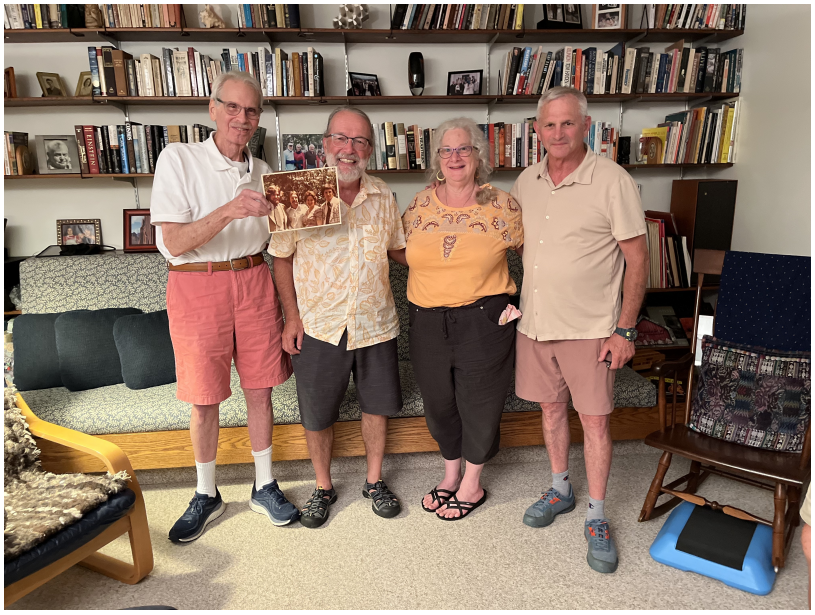
ν_0: From the Desk of the Chair

Happy Square (Root) Day! In this issue, we celebrate our graduates, not only those who will be graduating this May, but also those who have graduated in a past May or December. The first year of my chairmanship of the math department draws to a close, and my eyes are a bit misty, not on account of the pollen in the air but because we say goodbye and best of luck to another wonderful group of students who are off to Great Places! Read on to learn more about so many of our graduates, beginning with some from 50+ years ago. I invite all of you to drop me a line at mathchair@ithaca.edu when you have something you'd like to share.

Ted Galanthay, chair

In June, 2024 we celebrated our 50th reunion. There were 4 Math majors in our class: Roger Preis, Greg Timm, Naomi Zowader and myself, Jim Linsky. We have kept in communication with each other and have made occasional (but not frequent enough) visits. This was a special gathering. As we get older (we're all 72) traveling becomes more of a concern. But we came from Maryland, Vermont, Cape Cod, and Texas. We all have our own memories of 4 years at IC but conversations often drifted back to the math classroom. We have fond memories of professors Shirley Hockett, Connie Elson, Marty Sternstein, John Rosenthal, Steve Hilbert, John Maceli, and others. Also influential was, and still is, Dave Bock. Dave was at IHS during our student teaching and I believe was an instructor at IC for a bit before retirement. Dave still lives in Newfield where he hosted our private reunion dinner.

–Jim Linsky, Class of 1974



ν_1: Hats off to our Graduates

Earth Sonrod will be graduating with a B.S. in Mathematics and minors in Physics and Data Science from Bangkok, Thailand. Earth often stopped by the math & physics professors' offices, interrupting their work and keeping them busier with his questions. Motivated by his curiosity and passion for travel, Earth enjoyed attending conferences alongside the math and physics departments. Besides various research and TA experiences, Earth was a regular solver of the department newsletter problems and the more challenging Putnam and COMAP competitions. Earth will move to the other side of the States, pursuing a PhD in Computational Science at Claremont Graduate University.

Victoria Conrad is a computer science major, data science minor from Natick, MA. One of her fondest memories of math at Ithaca College was working on a project for Linear Algebra where she was working with one of her friends and the two of them ended up spending hours in Williams listening to music, doodling on the whiteboard and calculating network flows. After graduation, she is going to be in the rotational program at Staples working as a software engineer back in Massachusetts.

Kian Broderick is from Ridgefield, Connecticut and will be graduating with a BA in mathematics and a BMO in violin performance. One of his favorite memories from IC is from the research experience class junior year. He did a project on the Fibonacci numbers, and it was a lot of fun working so closely with classmates and professors and having the opportunity to present at math conferences. He also enjoyed making close friends and working together on projects. Post graduation, he is looking forward to teaching and performing as a violinist while studying for the actuarial exams.

Surya Sharma is a senior at Ithaca College, majoring in Computer Science with a minor in Mathematics. Originally from India, Surya has developed a deep appreciation for the intersection of logic, creativity, and problem-solving that both fields offer. One of her most memorable and impactful courses was Mathematical Experimentation, which she took in the spring of 2023 with Professor Dan. This class sparked her curiosity about the research side of mathematics, exploring patterns in fractals and Pythagorean triples, asking why certain patterns worked while others did not. It opened her eyes to the joy of curiosity and the process of discovery in mathematics, and she is especially grateful for Professor Dan's patience and support throughout the course. As she approaches graduation, Surya is still exploring what path she will take next. She hopes to gain experience through a job in the tech industry, especially in areas that blend design thinking with machine learning.

Sameed Mubasher is a senior at Ithaca College, double majoring in Math and Finance and is from Pakistan. One of his great memories at IC is when he took up Game Theory as the focus of his research for the Capstone Project. While tricky to understand at its core, Sameed took up this challenge and delivered the best possible result. Throughout his research, Sameed was fascinated by the application of Game Theory across different principles, particularly his other area of interest, Finance. He was amused by the fact that something as simple as profit or loss is influenced by a vast number of instruments that one would ignore otherwise. Moving forward, Sameed wants to work in a place where the ideas from both Math and Finance influence decisions.

Bella Petito is an Architectural Studies and Mathematics double major from East Greenwich, Rhode Island. Bella's favorite aspect of the IC Math Department was the opportunities to connect course topics to her interests in art and architecture, such as exploring perspective drawing in Modern Geometry, frieze groups in Abstract Algebra, and symmetries in Math and Art. As a member of Math Club, her favorite memory was creating a Fibonacci-themed Escape Room and being able to watch the group work together to solve it. Next year, Bella will be attending Rochester Institute of Technology to pursue her Master of Architecture degree.

Phuong Ha is a double major in Mathematics and Computer Science. One of her favorite memories at IC was attending the Math Club's Halloween event, where students teamed up to solve math-themed puzzles in an escape room-style challenge. The collaborative spirit, the thrill of cracking each clue, and the reward of candy at the end made it a highlight of her time in the department. It reminded her how much fun math can be when shared with others. Next year, Phuong plans to enter the workforce - whether in math, computer science, or something unexpected, she's excited to find her place.

Brianna Bownas is a math major from Millbrook, NY. Some of her favorite memories from her time at IC include presenting her research on the concept of

digital roots at both the MAA Seaway Conference and the Hudson River Undergraduate Math Conference, as well as working on the crossword puzzles on the math board. She has enjoyed working with all the math faculty over the past couple of years in a wide variety of classes and greatly appreciated all of the help and knowledge they have given her.

Tisa Manandhar, Mathematics and Psychology double major

Will Moore, Mathematics major

Alex Rice, Mathematics major

Nate Travis, Mathematics major

Sarah Weinel, Mathematics major

Paul Gagliano, Computer Science major, Data Science minor

Kyler Lester, Chemistry major, Data Science minor

Vanessa Mpofu, Computer Science major, Data Science minor

Ikrom Numonov, Computer Science major, Data Science minor

Duncan Tasker, Computer Science major, Data Science minor

Lilly Johnson, Chemistry major, Mathematics minor

Andrew McGee, Physics major, Mathematics minor

Yash Mohod, Physics major, Mathematics minor

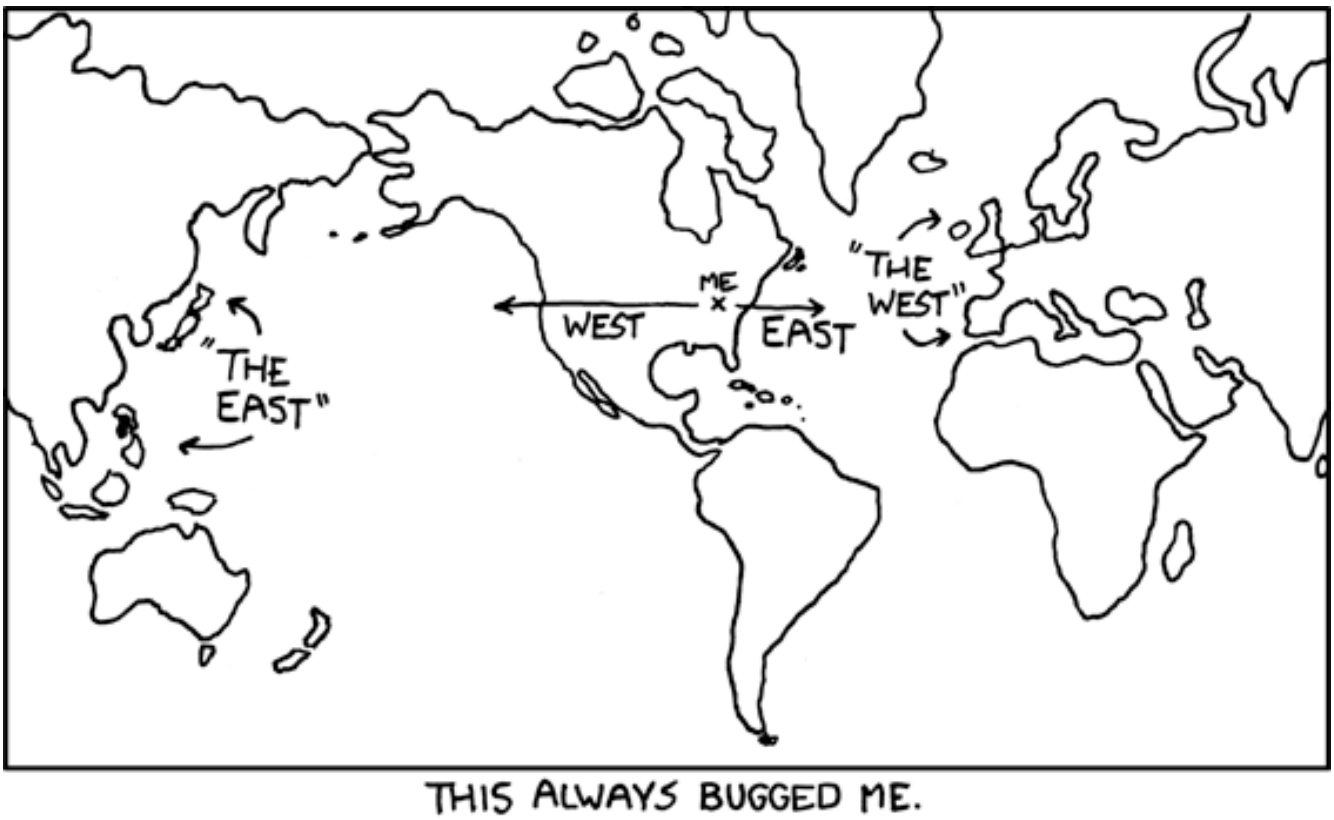
Owen Poles, Computer Science major, Mathematics minor

Samuel Smith, Physics major, Mathematics minor

Aidan Trierweiler, Computer Science major, Mathematics minor

Paige Turcotte, Accounting major, Mathematics minor

Miles Wheaton, Chemistry major, Mathematics minor



THIS ALWAYS BUGGED ME.

https://xkcd.com/503/

ν_2: Math Department Events 2024-25

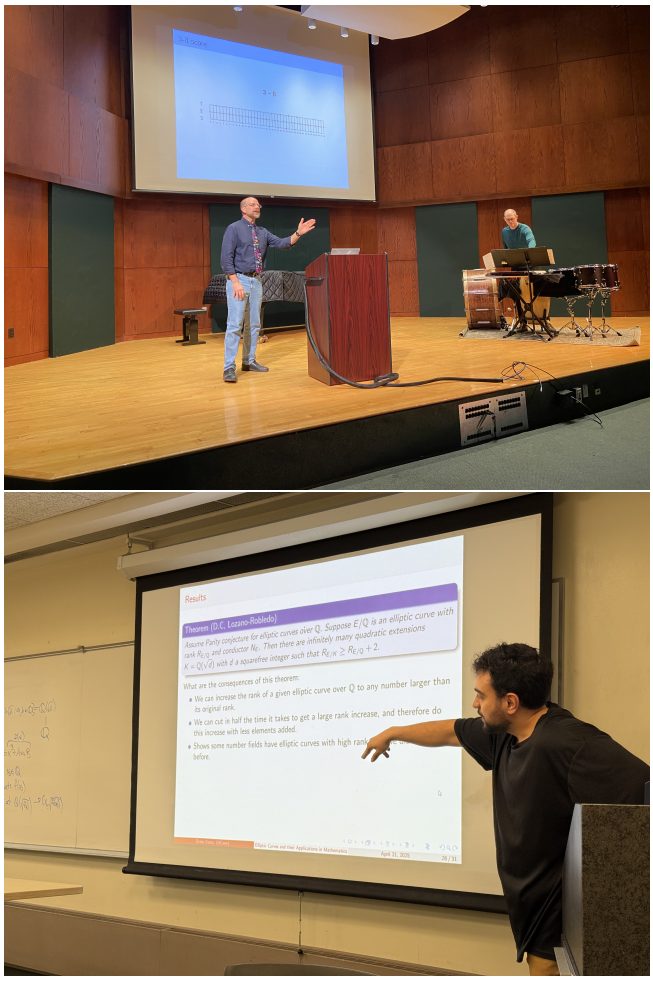
Department Colloquia and Interdisciplinary Speaker Series

The 2024-25 season of the Mathematics Colloquium series featured a variety of topics shared by faculty, students, alumni, and guests. In the fall, Earth Sonrod described his and Sarah Wrzos' work on modeling the evolution of the sex ratio in sea lampreys during the COMAP Mathematical Contest in Modeling; Ted Galanthay highlighted the other COMAP problems that student teams could have chosen and presented possible solution approaches. Sal Puglisi (2018 graduate) captivated the audience as he described how his IC education prepared him to apply his skills and learn new skills as a data scientist in the banking and financial tech industries. Cindy Scheibe (IC faculty) shared how the media can use statistics and mathematical concepts for purposes of dis- or misinformation and how educators can use media literacy approaches to teach students to analyze, evaluate, and question messages in their heavily mediated world. Megan Martinez (IC faculty) explained how the hitomezashi style of stitches from the sashiko family can be encoded with binary strings so that the resulting symmetries can be determined purely by observing the binary strings in the pattern.

In the spring, Tom Pfaff (IC faculty) and Mike Truesdell (IC faculty) explored some of the theoretic choices that composer Iannis Xenakis may have made while creating "Psappha." The talk included live demonstrations in which Mike played various percussion instruments for the audience to hear how the different theoretical choices, explained by Tom, could lead to a much differently sounding piece of music. Dylan Costa (2021 graduate) wowed the audience with a tutorial on elliptic curves and open problems in number theory.

The Interdisciplinary Speaker's Series sponsored Cindy's, Megan's, and Tom and Mike's talks. If you have suggestions for future iterations of this series, please let us know!

—Ted Galanthay



Spring colloquiua

Celebrating our students' achievements

In Fall 2024, the mathematics department held an awards ceremony to recognize and honor several students for their outstanding achievements in mathematics. The awards were distributed across four categories: The *Noether Award* in Mathematics was presented to Brianna Bownas, Phuong Ha, Bella Petito, and Miles Wheaton; the *Ramanujan Award* was given to Sarah Wrzos, Vanessa Mpovu, Connor McGeehan, Tisa Manandhar, Kyler Lester, Uday Lambda, Paul Gagliano, Kian Broderick, Partick Bierach, and Earth Sonrod; the *Newton Award* recipients were Anna Bello, Liam Breslin, Eudmarly Letrois Gedeon, Gianna Marin, and Sarah Mooney . Lastly, the *Most Improved Award* was bestowed upon Ryan Cooke, Ethan Guys, Ryan Kan, Mustafa Niazi, Noah Noble, Jose Rojs, Bella Scolaro, and Matthew Thompson.

Four students and four faculty travelled to the Hudson River Undergraduate Mathematics Conference at Union College on April 5. Kian Broderick, Breanna Bownas, and Sarah Wrzos presented research completed under the supervision of Professors Pete Maceli and Osman Yurekli.

The Ithaca College Upsilon Chapter of the Pi Mu Epsilon math society welcomed Anna Bello on Monday, April 14th. Math majors Kian Broderick and Breanna Bownas presented their research into digital roots which involved Kian playing mathematical sequences on his violin. Professor Osman Yurekli, serving as the chapter advisor, both coordinated and emceed the event.

—Ted Galanthay

Hudson River Undergraduate Math Conference group photo

Math Club

Ithaca College's Math Club enjoyed many events this year. We had a lot of fun at the Math Department Picnic in the fall, which was something new this year. Math Club also hosted a math related escape room relating around the Fibonacci sequence, as well as the well loved game nights. We most enjoyed Math Club's Origami Night where we made a giant triakispentakis dodecahedron which is on display by the math department offices on the third floor. We are actively looking for new members, so keep an eye out for updates next fall! Best of luck to our graduating seniors who will be greatly missed!

—Sarah Wrzos, Math Club President

Math Club's Escape Room and Origami nights with the triakis-pentakis dodecahedron

Outreach Events

The Ithaca College Math Department believes that reaching out to our community to share our expertise and love of mathematics is the best way to make math accessible to a diverse group of students. We had several faculty on leave in the spring semester, so the remaining small but intrepid group of faculty led only one outreach event in Spring 2025 which was made a success with contributions from students and faculty from Physics, Computer Science, and Biology.

Nineteen Annual Mathematical Exploration Days and going strong. This spring, the math department hosted 15 schools, 60 students, and 27 teachers for a day of math competitions followed by a potpourri of math activities for students to choose from. This is a collaborative endeavor, with all math faculty, many students, as well as faculty from other departments contributing their time. Activities include Mathematical Origami, Recreational Math, Law of Cosines, Constructing Hypercube Models, Music Sets, Bubbles, Cup Stacking, Lissajous Curves, Patterns with Parametric Functions, Music Recommendation, Fold and Cut, Chomp, Sim, A Biochemist does Mental Math, and Hands-On Explorations with Mobius Strips. The teachers also get a special presentation just for them when the students are doing the team math competition. This is one of the rare academic "field trips" that high school math teachers can take advantage of, and they and their students appreciate the opportunity as most schools return year after year.

—Tom Pfaff and Ted Galanthay



2025 Math Exploration Day

ν_3: Faculty Accomplishments

Aaron Weinberg participated in the Erdos Insitute's Data Science Boot Camp in both the fall and spring semesters. In the fall semester, he collaborated with Emilie Wiesner and Dan Visscher on the project "Predicting Problematic Internet Use." In the spring semester, he collaborated with students from other institutions on the project "Predicting Power Outages." In the fall, their team won 1st place in the Boot Camp (out of 35 teams) and won a silver medal in the Kaggle competition; in the spring their team was among the top 5 in the Boot Camp (out of 38 teams).

ν_4: What's the Problem... with Professor Brown

A little fun with complex numbers:
Suppose that positive integers a, b, c, d satisfy $ac - ad - bd - bc = 0$. Use $(a + bi)(c + di)$ to show that $\frac{\pi}{4} = \arctan(b/a) + \arctan(d/c)$.

Send complete answers to Professor Brown at dabrown@ithaca.edu. Those submitting correct answers will have their names printed in the following newsletter. People who correctly solve all problems from Volume 6 of the newsletter will receive a special prize at the end of the year.

October's problem: Is there an injective and surjective function $f : (0, \infty) \to (0, \infty)$ with derivative equal to its inverse; that is, $f' = f^{-1}$? If not, explain why. If so, provide an example.

Solution to Prof. Brown's previous problem:

Yes, there is such a function: $f(x) = \phi^{1-\phi} x^{\phi}$, where $\phi = \frac{1+\sqrt{5}}{2}$ (Golden Ratio) is such an example.

Honor role (solvers from Issue 2): Earth Sonrod (current student)

...get more department news and photos at:

Ithaca College Mathematics Alumni and Friends

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