

MATH EM@TICS

“All the ν 's fit to print”

Department of Mathematics | Ithaca College

May 6, 2021 | Vol. 2 Iss. 4

This issue is dedicated to our graduating math majors and minors. This year's class began their college career in “before times” and finished the last year and a quarter in “pandemic times”. Many of them have written for this newsletter memories of their studies at IC and plans for the future.

Congratulations all! We are grateful for the time we have had together and the imprints you have left on us and our department over your time here.

ν_0 : From the Desk of the Chair

Congratulations to our graduating math majors and minors! You've worked hard and achieved a lot! We're sad to see you go, but we know that you will do great things! Be sure to keep in touch with us. We love hearing about everything you are doing with your lives.

To those of you returning next fall, we cannot wait to welcome you back to full in-person classes! It'll be great to work with you without the technological

barriers. Be sure to let us know what you are up to over the summer.

To everyone: take some time to rest, get out in the world again, and enjoy a long peaceful summer!

One last joke from the chair: Why can't you trust a mathematician holding graphing paper?

Because they must be plotting something!

—Dave Brown

ν_1 : Hats off to our Graduates

Dylan Costa is a double major in Mathematics and Cello Performance from Danbury, CT. One of his favorite memories from his time at IC was the time he spent in the math lounge working through difficult proofs with other math majors. The way ideas bounced off everyone in the room is unforgettable. The opportunity to do research in recursions and group theory are some of the most fun projects he got to work on with many different mentors in the math faculty. Next year, Dylan is entering a Ph.D. program in Mathematics at The University of Connecticut and will become a teaching assistant for the Department of Mathematics.

Alyssa Haber is a graduating senior with a major in Mathematics with a teaching option and a minor in Deaf Studies. Her favorite memories at Ithaca College come from inside the Williams classrooms. She made the greatest friend, Kellie Wainwright through

the math program. They would eat chicken fingers from the pub, order pizza, and stay up all hours of the night to study and complete their research. One of her greatest accomplishments was researching with Kellie to complete their research paper on the Figurate Series. She has made great relationships with all of her math professors and is very thankful for all of their help throughout the years. Next year, Alyssa hopes to have a job teaching high school math somewhere on Long Island.

Rachel King is a senior Mathematics major and Business Analytics minor at Ithaca College. One of her favorite memories through the math department was connecting with and learning from (now graduated) math majors especially for the upper-level courses. She found calculus to be challenging and was able to gain more foundation to be successful in Calculus 1-3. Rachel's favorite math course at Ithaca College

was Intermediate Statistics with Professor Conklin. She realized her love for statistics and passion for data science which she hopes to continue after graduation. Rachel has been applying to many different data analyst positions across the country.

Damion Lance is a graduating Mathematics major originally hailing from Portland, OR. He has many fond memories working on projects with his peers at IC including an investigation into counting the number of unique nets to a given polyhedron. He plans on returning home to the west coast and finding work in data analysis.

Xinran Liu is a double major in Psychology and Mathematics. She is from Dunhuang, China, and she has been living in the US for about five years. One of her favorite memories at IC was when she presented her Capstone Thesis. She was able to share what she had learned about structural equation modeling and its applications in psychology. As she worked on her thesis with Professor Matt Thomas, she found this amazing connection between math and psychology and realized her passion in quantitative methods. She will be a Ph.D. student studying Quantitative Psychology at Arizona State University in the fall.

Sean McQuillan is a senior graduating with a Bachelors of Science in Computer Science and minors in both Game Development and Mathematics from New Hampton, NY. One of his favorite memories at IC was during his Calc III class. With a class size of 6, they all got pretty friendly. One day during class on zoom, Professor Seltzer was not teaching from his usual office. One of them had joked that we needed a full house tour after, and Stanley delivered. Every day of class after, he would begin his presentations with different pictures of his house, whether that be a pet lounging about, or a freshly cut lawn. Next year, Sean begins work as a Software Developer at Epic Systems in Madison WI, where he will be moving in August.

Justin Moczynski is completing a B.S. in Mathematics, a B.A. in Computer Science, and minors in Honors, Business Administration, and Business Analytics. A favorite mathematics memory of his during his time at Ithaca College was when he worked on proving combinatorial identities on a whiteboard in the wet classroom next to the pool in the Athletics and Events Center. The entire board was filled with previously proven combinatorial identities, sequences of numbers representing different permutations and combinations, and paths to and from coordinates.

His swimming and diving teammates were impressed when they saw all the work required for generalizing counting.

Oluwasekemi “Kemi” Odumosu is a senior Physics B.A. with minors in Mathematics and Computer Science at IC. At some point in every successful college career, a student discovers the value of office hours. For Kemi, this occurred during a visit to Ted’s office for help in Calculus 3. She had never considered herself a “math person” and felt that the concepts she was learning evaded her understanding. Although she felt embarrassed, Ted was completely understanding and talked through problems with her until she was caught up with the material. Though progress had been slow, Kemi left the meeting feeling more confident than ever in her math ability. This encouraged her to explore other math classes, and eventually discover a home in statistics. Next fall, Kemi will be attending a Master of Science in Public Policy and Management with a Data Analytics track at Carnegie Mellon University.

Rup Patel is a Computer Science major and Mathematics minor from Rock Hill, NY. His favorite math memory was in Ethnomathematics when he learned to convert numbers and decimals to different bases which directly related to his future programming classes. He also enjoyed learning about some of the ancient number systems that existed because it showed him how Math has changed over time. After graduation, he will begin his career as a Software Engineer at Ursa Space Systems in Ithaca.

Raymond Rogers is a Physics major, Math minor and AFROTC cadet from Cortland, NY. One of his favorite memories at IC was watching all the pieces fall together with his schooling. He found it interesting to have to take his math required courses and then watch how they applied to his physics courses. It is always interesting to see how the two worlds relate to each other, and this is applied to any classes that make connections more apparent between the two. Next year, Raymond will be at Cannon Air Force Base and other trainings working with drones.

Savanna Scott is a Math Education major from the small town of Newfield, NY (just outside of Ithaca!). She has had two ‘homes’ during her time at Ithaca College—the math and education departments. However, the math department holds a special place in her heart. Savanna has lots of great memories from her time at IC, but one of her favorite places to spend time was in the math lounge. This small room on

the third floor of Williams fostered Savanna's love, appreciation, and understanding for mathematics. From writing out proofs to puzzling over probability, the white boards and chalk boards in that room often served as an extension of her brain. Savanna will be staying at Ithaca College for another year to complete the 13-month graduate program in Childhood Education.

Nicholas Thompson is a Sound Recording Technology major with a Mathematics minor. His favorite memory out of the four years at Ithaca College was when he wrote and produced a song for his Junior Seminar class. The song was written by building chords out of polyominoes of increasing number. As the song progresses, the bigger the polyominoes are, the more dissonant sounding they become. (You can find the song on Spotify/Apple Music under Junior Seminar '19 by Cousin Julius.) He says his goal was to "listen to math". Nicholas is excited to be coming back to Ithaca for the MAT Math Education graduate program.

Jessica Tornai is graduating this May with her B.A. in Mathematics and minors in Spanish, Interdisciplinary Studies, and Education Studies. Some of her favorite memories of the Math Department at IC were Monday evening Tensor talks, listening to a successful female mathematician share her work, and then being able to share dinner with her and the other female math majors and professors. A particular favorite moment was when a presenter gave all the guests "spy pens"—pens that doubled as flash drives. Next year, Jessica will pursue her Masters in Elementary Education at UNC-Chapel Hill.

Drake Tubbs is a graduating senior in Physics with a Mathematics minor from Massena, NY. Their most

cherished experience at IC was meeting their fiancée in a mutual music class, Erica Erath, who graduated in 2019 from the Music School. Drake's time at IC proved challenging when their mother passed away in late 2016, however through the aftermath Drake found strong support from Professors and peers. Drake made a lot of personal growth during this period of time and found a passion for Science Communication. In the coming years, Drake intends to continue exploring this passion.

Kellie Wainwright is a graduating senior with a major in Mathematics (teaching option) and a minor in Coaching. Her favorite math memories including hiding on Teresa in Geometry, and completing research on the Figurate Series with her best friend, Alyssa Haber. She will miss eating chicken fingers from the pub and studying for finals in Williams past midnight. Kellie has accepted a math teaching position with the Anchorage (Alaska) School District for the fall.

Michelle Britt, Television-Radio major, Math minor

Amelia Chady, Computer Science major, Math minor

Isabelle Dickey, Acting major, Math minor

Carl Fortna, Math major, Physics minor

Juliana Gamboa-Wilson, Integrated Marketing Communication major, Math minor

Evan Hangle, Cinema and Photography major, Math minor

Sydney Kay, Chemistry major, Math minor

Jennifer Lema, Architectural Studies major, Math minor, Art minor, Graphic Design minor

Cobi O'Connell, Computer Science major, Math minor

Erich Ostendarp, Computer Science major, Math minor, Web Programming minor

Gabriel Pesco, Math major, Computer Science major

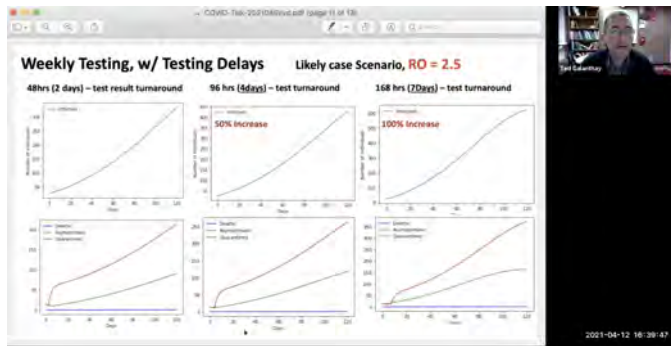
Jediah Tau, Physics major, Math minor

Brooke Volastro, Biology major, Math minor

ν_2 : Math Department Happenings: putting the “e-” in e-vents.

What has the Mathematics Department been up to this spring? We’re glad you asked! Here are some of the activities and events we had going on this semester. While these events moved online this year, they are recurring and we anticipate they will run in person again this coming year. Keep your eyes out for these and other opportunities to get involved in 2021–2022—we are always looking for more students to be involved!

Spring Colloquium Series



Hybrid Optimization Algorithms

The demand for Hybrid Optimization Algorithms is increasing in the last two decades to minimize the weaknesses in the individual algorithm. In particular, Derivative-Free Optimization (DFO) methods are applicable for these problems where the derivatives are not available or hard to compute. Hybridizing different stochastic methods to form a robust algorithm deals with slow convergence and minimizes problems. This talk will introduce hybrid algorithms between global and local optimization solvers and give many real-life applications.

Ahmad Almomani
SUNY-Geneseo

During the spring semester, the **Math Department Colloquium** hosted eleven speakers from as far away as Salt Lake City, Utah and within a distance of epsilon from Williams Hall at Ithaca College. The online platform allowed speakers to reach students wherever they were. During Mathematics and Statistics Awareness month (April), we hosted two speakers who use statistics to tackle social injustices. In sum, the

invited speakers’ topics included the mathematical modeling of COVID-19, bias in policing, quantitative approaches to social justice, numerical algorithms, neuron dynamics in the brain, math pedagogy, and topics beyond linear algebra. The weekly colloquia attracted students and faculty from mathematics, sociology, business, and biology.

—Ted Galanthay

Whalen Symposium

The **James J. Whalen Academic Symposium** is Ithaca College’s annual academic showcase. At the symposium, students from across campus—with the support of faculty mentors—present independent and original scholarly and creative work. This year’s symposium featured presentations by four mathematics research groups. Emma Anderson ’22 and Lucy Loukes ’22 presented on “Refractions through the tiling of a plane”; their project investigated the geometric patterns of a ray of light as it travels through a plane tiled by different polygonal shapes. In “Cut it out: Counting the divisions of a rectangular grid,” Jacob Brown ’22 used combinatorics and abstract algebra to develop counting formulas for the divisions of an $n \times m$

The slide is titled "Refractions Through the Tiling of a Plane" and is presented by Emma Anderson and Lucy Loukes from the Department of Mathematics at Ithaca College. It includes several sections: "Definitions" (Tiling, Orbit, Refraction, Period), "Example: Hexagonal Tilings" with four diagrams (Figure 1-4) showing light paths through hexagonal tiles, "Theorems: Hexagonal Tilings" (Theorem 1-4) describing periodic orbits, "Further Explorations: Wedges" with a diagram of a star-like shape, and "Phase Periodic Orbit - Rectangle" with a diagram of a zigzag path.

grid into pieces. The project led by Sainabou Jallow ’22 and Carl Fortna ’21—“Exploration of Variations on an algorithm for recording real numbers”—focused on patterns in number representations in varying number bases. Jamie Woodworth ’22 used linear algebra and probability to model and analyze the childhood game Chutes and Ladders in “Chutes and Ladders: An analysis.” As a mentor to some of the groups, it was an exciting opportunity to see them publicly share their work with aplomb, to field questions from the audience with confidence, and to be a part of the larger intellectual life of the college. Well done to all!

—Emilie Wiesner

Women in Math Day



with our current math majors and a career panel

The Fourth Annual **IC Women in Math Day**, a day for high school girls and their families, was held remotely this year on Feb. 6, 2021. The day included a Q&A consisting of women that use mathematics in their career (and it included two of our math alums: Britney Mazzetta '18 and Lindsay-Leigh Consolati '96). We were able to draw participants from a wide geographic area, and even had participants on the West Coast! It was a fun way to showcase all the things you can do with mathematics after college.

—Megan Martinez

National Math Festival

The National Math Festival went online this year and the Ithaca College Mathematics Department went with it! We created balloon and pipe-cleaner versions of the platonic solids with kids and adults across the country. We talked about how to create the shapes, how the sides fit together, and a little about how many balloons you need to make each shape and why. The kids had fun and made some amazing creations. Dan Visscher's kids played along. See their creations below.

Ithaca College students and faculty have attended the previous festivals in person and helped kids create balloon polyhedra. This year, we presented from Williams Hall. Thanks to Dave Brown and Dan

Visscher! We hope to be back live in Washington, D.C. for the next one so if you're here in the spring of 2023, consider going with us! It is great to see all the kids excited about creating wearable geometric constructions. To find out more or to see what else went on, go to www.nationalmathfestival.org.

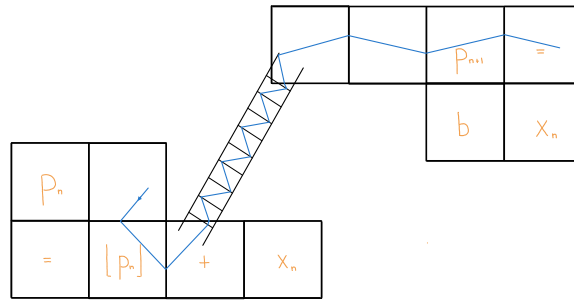
If you need a break from studying for finals, videos from the festival are at vimeo.com/msri/2021-national-math-festival-online-events.

To learn more about the balloon constructions, visit [Vi Hart Balloon Booklet | Celebration of Mind](#). If you haven't discovered Vi Hart, you should definitely look into [her work](#).

—Teresa Moore



Proceedings of the Research Experience Course 2021



A new student peer-reviewed journal, in connection with the Research Experience course (Math 39810), has published the first of two issues. It is available at:

<https://wwwcdn.ithaca.edu/file-download/download/public/34912>

Theorem. The Math Department is a virtually abelian group.

Proof. A group is *abelian* if its elements commute, and *virtually abelian* if it contains a finite index abelian subgroup. Indeed, there was a finite index subgroup of math faculty that commuted this semester. (Other faculty, perhaps more interested in differential calculus and linearization, kept Zooming in.) We look forward to seeing everyone back in the physical classrooms of Williams Hall in the fall.

—D.V.