Mathematics Newsletter

Mathematics Department

2012

# Math Department Newsletter, 2011-2012 (Year in Review)

Mathematics Department
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# 2011-2012 Year in Review

The Mathematics Department is proud to inaugurate its first "Year in Review." The department had a great year with many accomplishments by both faculty and students. Dr. Jason Molitierno began his term as chair on July 1, 2011, succeeding Dr. Peter Loth. The department conducted a search to hire a new tenure-track faculty member. After an exhaustive search, we look forward to welcoming Dr. Bernadette Boyle this coming fall. Dr. Boyle recently completed her Ph.D. at Notre Dame University in the field of algebraic geometry. This will be a homecoming for Dr. Boyle as she grew up here in Fairfield!

The Mathematics Department was buzzing with activity this year! In the classroom, we offered two new courses: History of Mathematics created and taught by Dr. Stockton, and Geometry & Topology created and taught by Dr. Lazowski. Outside of the classroom, Dr. Stockton led a field trip to the Rare Book and Manuscript Library at Columbia University where students from the Math Club and the History of Mathematics class got to see the "Plimpton 322" Babylonian clay tablet, the first printed English editions of Euclid's *Elements*, an astrolabe, and other historical manuscripts & artifacts. Dr. Loth advised two teams of students participating in the COMAP (The Consortium for Mathematics and its Applications) Mathematical Contest in Modeling, a worldwide mathematical contest. David Choy '12, Justin Dion '12, and Shannon Figueroa '12 received the final designation "Successful Participant'' for their solution to *Problem A: The Leaves of a Tree*. Cody Knox '14 and Robert Lycoudes '12 received the final designation "Successful Participant'' for their solution to *Problem B: Camping along the Big Long River*. Carrying on a long-standing tradition of inviting an off-campus speaker, Dr. Molitierno invited Dr. Bob Devaney from Boston University to give the math talk "Chaos Games and Fractal Images" to the general university community. Over 300 students packed the University Commons to see this talk!

Under the leadership of Ashley Rodriguez '12, president of the Math Club, the Math Club had a fantastic year. Working with Dr. Lazowski, faculty advisor to the Math Club, she organized several "game afternoons" in which students got together to play the board game "Risk" and discuss some mathematical strategies for winning the game. These game afternoons were a prelude to the invited talk that would be given at the Pi Mu Epsilon induction ceremony (see next paragraph for details). Ashley, Dr. Lazowski, and Dr. Molitierno organized the first Alumni Night held in several years. We were thrilled to welcome back Tom Cernera '10, Lauren Di Stefano '09, Frank Egan '07, Kyle Evans '11, Tanya Kaplan '09, and Marc Wilson '09. Over 30 students came to listen to SHU math major alums speak about how they are applying their math degree to their careers. Given the success of this event, this will become a yearly tradition!
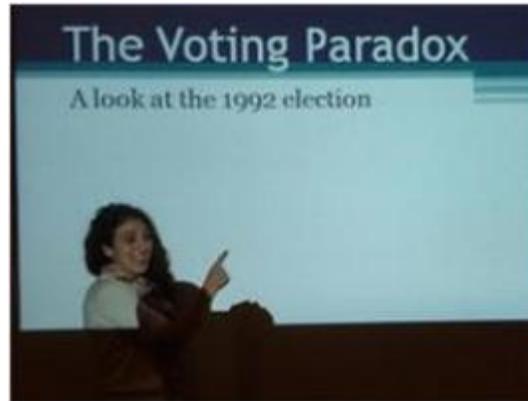
The department was pleased to induct several students into the Pi Mu Epsilon honor society this year: Antonio Carella '12, Josephine Ferrantelli '12, Shannon Figueroa '12, Alexandra Kowalsick '12, Robert Lycoudes '12, Breanna McLaughlin '12, Laura Quagliata '12, Monica Reed '12, Ashley Rodriguez '12, Annie Rouquie '12, Allison Thurston '12, Anna Kadlof '13, Mark Lee '13, Suzanne May '13, and Ashley Bua '14. Dr. Corey Manack from Amherst College gave the keynote address "The Mathematics of the Board Game Risk". Congratulations to all of our inductees, and a special thank you to Dr. Lazowski for organizing such a classy event!

We are very proud of the accomplishments of our majors. Lindsay Guilmette '12 is the recipient of the Gold Medal of Excellence in Mathematics, and D'Anna Farmer '12 is the recipient of the Silver Medal of Excellence in Mathematics. The gold and silver medals are given to the top two graduating senior math majors. Anna Kadlof '13 was the recipient of the Rose Marie Kinik Award for outstanding junior math major (she is pictured with Professor Kinik). Ashley Bua '14 and Erin Puschak '14 received the awards for outstanding sophomore math majors. Finally, Malvina Reinhold '15 and Steven Yearwood '15 won the awards for outstanding freshmen math majors.

Some of our students also presented their research at the Northeastern Sectional Meeting of the Mathematical Association of America which was held at Connecticut College. Lindsay Guilmette '12 presented her paper "Maximum Flow in Networks", Alexandra Kowalsick '12 presented "Voting Theory", Katelyn Kmiotek '12 presented her research "Propositional Logic in Computer Science", and Annie Rouquie '12 presented "Using Linear Algebra to Analyze Big East Football". All presentations were well attended and very well received. Two students also received awards in the university-wide Writing Across the Curriculum contest for papers they wrote for Dr. Stockton's History of Mathematics class. Lindsay Guilmette '12 won first prize for her paper "The History of Maxwell's Equations" while Kathleen Perzanowski '13 won an Honorable Mention for her paper "The Role of Cryptology in WWII". Congratulations to them both!









As we say goodbye to our graduates, we are excited for what the future holds for them. D'Anna

Farmer '12 will be pursuing a Ph.D. in mathematics. Lindsay Guilmette '12 will be studying physics at Central Connecticut State University. Kate Kmiotek '12 will be pursuing a master's degree in mathematics education at Stony Brook University. Robert Lycoudes '12 is pursuing opportunities for employment as a financial analyst. Annie Rouquie '12, Monica Reed '12, Laura Quagliata '12, Breanna McLaughlin '12, and Alexandra Kowalsick '12 will be staying around SHU to complete the five-year master's program in Education. Annie and Breanna have landed internships at Hillcrest Middle School in Trumbull while Ali and Laura will be interning at Madison Middle School in Trumbull. Justin Dion '12 will be taking a macroeconomics course to complete his business minor. While doing this, he will be looking for employment focusing on jobs with analytical skill requirements and will be coaching part time at Fairfield Fencing Academy. We wish all of our graduates the best of luck in their future endeavors and hope they stay in touch.

The math faculty has had a very productive year. Dr. Jason Molitierno published his book "Applications of Combinatorial Matrix Theory to Laplacian Matrices of Graphs". The book was published by Taylor & Francis and is part of the CRC Series on Discrete Mathematics. Dr. Molitierno also received the university's Excellence in Scholarship Award. Congratulations to Dr. Molitierno! In addition, he gave the talks "Do Students Really Understand What They're Doing?" at MathFest in Lexington, KY, and "The Algebraic Connectivity of Graphs as a Function of Genus" at the Joint Mathematics Meetings in Boston. Finally, Dr. Molitierno gave the invited address "Let's Review Undergraduate Linear Algebra by Using Graph Theory" at the Northeastern Section Meeting of the MAA at Connecticut College.

Dr. Peter Loth had a very fruitful year continuing his research in abelian group theory. His paper "Infinitary equivalence of $Z_p$-modules with nice decomposition bases" (with Göbel, Leistner, and Strüngmann) was published in the refereed periodical Journal of Commutative Algebra **3** (2011), 321-348. Dr. Loth gave the invited presentation "Infinitary equivalence of abelian groups with partial decomposition bases" at the Groups and Model Theory Conference in Mülheim, Germany. At the Joint Mathematics Meetings in Boston, Massachusetts, he presented the paper "Abelian groups with partial decomposition bases". Finally, Dr. Loth gave the invited talk "Infinitary equivalence of Warfield groups" at the Algebra Seminar at Wesleyan University. We are proud of Dr. Loth for his accomplishments this year.

Dr. Julianna Stockton also accomplished a lot this year. She published the article "Mathematical Competitions in Hungary: Promoting a Tradition of Excellence & Creativity" which appeared in The Mathematics Enthusiast in January 2012. She had extensive conference activity this year. As a Project NExT Fellow, she attended both MathFest in Lexington, KY, and the Joint Mathematics Meetings in Boston. While at MathFest, she presented "Designing a New History of Mathematics Course". At the Joint Meetings, Dr. Stockton organized the panel "Turning Teaching Into Scholarship." She also attended the workshop "Authorship of Student Projects Based on Primary Historical Sources for Courses in Mathematics or Computer Science" at New Mexico State University. Closer to home, Dr. Stockton gave the talks "Breaking Barriers: Supporting Girls and Women in the STEM Fields" and "Writing the Language of Mathematics" here at SHU. Her use of tablet PC technology was highlighted in the SHU Academic Technology Showcase. This summer, Dr. Stockton will be working on the project "Teachers' Advanced Mathematics Knowledge: Understanding What Transforms the Elementary, Middle, and

Secondary Teaching of Mathematics" with the summer stipend she earned through a University Research/Creativity Grant (URCG).

Dr. Lazowski has been very productive this year as well. He published the paper "Finite Factors of Bernoulli Schemes and Distinguishing Labelings of Directed Graphs" in The Electronic Journal of Combinatorics, 19 (2012), P1. This was co-authored with Stephen Shea. He also attended Mathfest in August and gave a talk "Using Elementary Probability and Statistics to Understand the Florida Panther Population" in the contributed paper session "Trends in Undergraduate Mathematical Biology Education." Dr. Lazowski was also awarded the "New Hampshire Institute of Politics Jeanne D. Smith Incentive Fund" with his co-investigator Stephen Shea. Congratulations to Dr. Lazowski!

Dr. Hema Gopalakrishnan and Professor Rosemary Danaher have begun an exciting new initiative in the department for local teachers. This initiative began in the summer of 2011 when Professor Danaher and Dr. Gopalakrishnan attended a workshop in Washington D.C. titled, "How to set up and run a math teachers' circle" sponsored by the American Institute of Mathematics (AIM). They attended the workshop along with a team of three teachers from Fairfield County, CT. At the workshop they formed The Fairfield County Math Teachers' Circle (FCMTC). During the 2011-2012 academic year, the FCMTC has been planning a three day workshop for middle school mathematics teachers to be held in July 2012 at Sacred Heart University. This workshop will be sponsored by the National Association of Math Circles (NAMC), the AIM and Sacred Heart University.

We look forward to another exciting year next year. Three faculty members will be teaching freshman seminars in the College of Arts & Sciences' new Freshman Experience program: Dr. Lazowski will be teaching "The Mathematics of Sports", Dr. Stockton will be teaching "From Zero to Infinity: and Beyond!", and Dr. Molitierno will be teaching "Mathematics Without Calculations: It's a Beautiful Thing!" The department will be planning off campus events such as a field trip to a site of mathematical interest and will bring students to the Northeast Sectional Meeting of the Mathematical Association of America to be held at Bridgewater State College in November. On campus, we plan to hold another Alumni Night, a Pi Day celebration on March 14th (3/14), hold problem solving competitions, and will build on our student activity in the Math Club. Stay tuned!