DREXEL UNIVERSITY

College of

Arts and Sciences

Department of Mathematics

Annual Report

2024-25

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Content Collected by:

Anatolii Grinshpan
Sobha Philip
Hugo Woerdeman

Designed by:

Raisa Sharif

Tenure Stream Faculty

David Ambrose
Professor
PhD – Duke University

Jonah Blasiak
Associate Professor
PhD – University of California, Berkeley

B. Cooper Boniece
Assistant Professor
PhD – Tulane University

Darij Grinberg
Assistant Professor
PhD – Massachusetts Institute of Technology

Pavel Grinfeld
Associate Professor
PhD – Massachusetts Institute of Technology

Yixin Guo
Associate Professor
PhD – University of Pittsburgh

	R. Andrew Hicks *Professor* PhD – University of Pennsylvania
	Pawel Hitczenko *Professor* PhD – Warsaw University
	Georgi Medvedev *Professor* PhD – Boston University
	Cecilia Mondaini *Associate Professor* PhD – Federal University of Rio de Janeiro
	Shari Moskow *Professor, Undergraduate Advisor* PhD – Rutgers University
	James E. Pascoe *Assistant Professor* PhD – University of California, San Diego

Ronald Perline

Associate Professor

PhD – University of California, Berkeley

Eric Schmutz

Professor

PhD – University of Pennsylvania

Li Sheng

Associate Professor

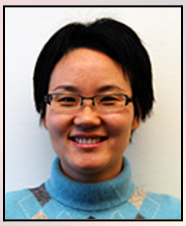
PhD – Rutgers University

Gideon Simpson

Professor,

Associate Department Head, Graduate Advisor

PhD – Columbia University



Xiaoming Song

Associate Professor

PhD – University of Kansas

Jurij Volčič

Assistant Professor

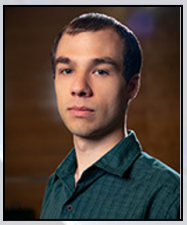
PhD – University of Auckland

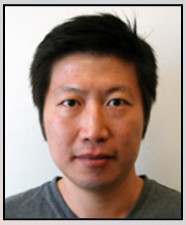
	Hugo J. Woerdeman *Professor* PhD – Vrije University, Amsterdam
	J. Douglas Wright *Professor, Department Head* PhD – Boston University
	Jingni Xiao *Assistant Professor* PhD – Hong Kong Baptist University
	Thomas Pok-Yin Yu *Professor* PhD – Stanford University

Teaching Faculty

	Jason Aran *Teaching Professor,* *Associate Department Head* MS – Drexel University
	Patricia D. Bobo *Assistant Teaching Professor* MA, Actuarial Science – Temple University

	Fernando Carreon *Teaching Professor* PhD – University of Texas, Austin
	Daryl Falco *Associate Teaching Professor* MS – Drexel University
	Raymond Favocci *Associate Teaching Professor* MS – Drexel University
	Ramesh Garimella *Associate Teaching Professor* PhD – University of Toledo
	Anatolii Grinshpan *Associate Teaching Professor* PhD – University of California, Berkeley
	Andrew Klimas *Assistant Teaching Professor* DA – Idaho State University

	Caitlin Klimas *Assistant Teaching Professor* DA – Idaho State University
	Jeffrey LaComb *Assistant Teaching Professor* PhD – Duke University
	Oksana Odintsova *Teaching Professor* PhD – Omsk State University
	Dimitrios Papadopoulos *Associate Teaching Professor* EdD – Drexel University
	Joel Pereira *Assistant Teaching Professor* PhD – University of North Carolina
	Adam Rickert *Associate Teaching Professor* MS – Drexel University

	Jeanne Steuber *Associate Teaching Professor* MS – Boston University
	K. Shwetketu Virbhadra *Assistant Teaching Professor* PhD – Physical Research Laboratory, India
	Richard White *Assistant Teaching Professor* MS – St. Joseph's University
	Dennis Yang *Associate Teaching Professor* PhD – Cornell University
	Matthew Ziemke *Associate Teaching Professor* PhD – University of South Carolina

Adjunct Faculty

Anthony J. D'Alesandro
Adjunct Instructor
MS – Rutgers University

June Gordon
Adjunct Instructor
MS – Drexel University

Boris Kheyfets
Adjunct Instructor
PhD – Drexel University

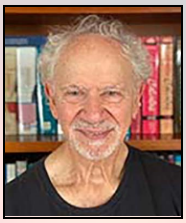
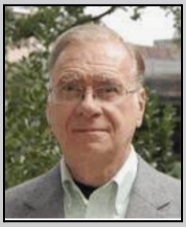
Susanne Kriete
Adjunct Instructor
MS – University of Stuttgart, Germany

Marna A. Mozeff
Adjunct Instructor
EdD in Higher Education Administration – University of Florida

Rolando Placeres Jimenez
Adjunct Instructor
PhD in Physics – Federal University of São Carlos

	Patrick R. Shields *Adjunct Instructor* PhD – Drexel University
	Olga Trubina *Adjunct Instructor* PhD – Moscow State Pedagogical University
	Sergio Zefelippo *Adjunct Instructor* MA – Villanova University

Emeriti Faculty

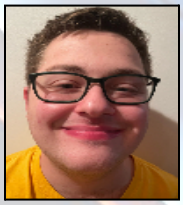
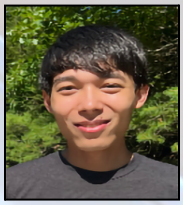
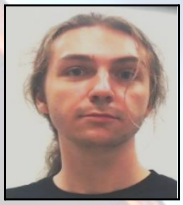
	Howard Anton *Professor Emeritus* PhD – Polytechnic Institute of Brooklyn
	Robert Boyer *Professor Emeritus* PhD – University of Pennsylvania
	Robert Busby *Professor Emeritus* PhD – University of Pennsylvania

	William Goh *Associate Professor Emeritus* PhD – Ohio State University
	Marci Perlstadt *Associate Professor Emeritus* PhD – University of California, Berkeley
	Chris Rorres *Professor Emeritus* PhD – Courant Institute, New York University
	Patricia Russell *Teaching Professor Emerita* MS – Drexel University
	Justin Smith *Professor Emeritus* PhD – Courant Institute, New York University
	Jet Foncannon *Professor Emeritus* PhD – University of Edinburgh

Staff

	Paige Chmielewski *Academic Advisor*
	Kenneth Hemphill *Department Administrator*
	Sobha Philip *Director of the Math Resource Center*

Teaching & Research Assistants

 Sultan Aitzhan	 Michael Becht	 Rachel Brunner	 Julian Bushelli	 Juliane Dalben
 Liam Doherty[1]	 Elizabeth Ehme	 Sarah Gift	 Anish Gosh	 Abdellah Islam
 Amanda Johnson	 Benny Liber	 Peter Mao	 Risitha Nambuwasam	 Ibukun Ogunjimi
 Kayode Oluwasegun	 Anya Pant	 Nicholas Radley	 Hayden Ruff	 Jessica Tomasko
 AJ Tortoriello	 Jasper Ty	 Hunter Wages	 Tingyu Zhou	

[1] Part-time PhD student

In Memoriam: Loren N. Argabright

(Jan. 29, 1933 – Sept. 4, 2024)

Loren Neil Argabright passed away on September 4, 2024. He was 91. He was a Professor of Mathematics at Drexel University for over 30 years and served as Department Head in the period 1974-1988. His education includes the following degrees: B.S. 1954, Nebraska State Teachers College; M.S. 1958, University of Kansas; Ph.D. 1963, University of Washington (PhD Thesis "Invariant means on topological semigroups" with advisor Edwin Hewitt). His career brought him to the University of California, Berkeley (1963-1965), the University of Minnesota (Assistant Professor, 1965-1970) and the University of Nebraska, Lincoln (Department Chair, 1970-1974).

When he arrived at Drexel, in 1974, he had the mandate to gain approval from the Commonwealth of Pennsylvania for the Department of Mathematics Ph.D. program. It was under Argabright's tenure that the undergraduate and graduate programs in computer science were created. To reflect the department's focus on this growing discipline, it changed its name to Mathematics and Computer Science in 1983.

On a personal level, he was a longtime member of Trinity Presbyterian Church, Cherry Hill. Dr. Argabright and his wife, Elsie raised their family in Cherry Hill and spent the latter years at Medford Leas. He is the husband of the late Elsie W. Argabright, loving father of Larry and Jonathan Argabright, and dear grandfather of Alexander Argabright.

In Memoriam: Jingmin Chen

(August 27, 1989 – July 30, 2024)

Jingmin graduated from University of Science and Technology of China with a bachelor's degree and received her PhD in mathematics from Drexel University under Thomas Yu's supervision in 2015 and moved on into the financial sector. She was a great student and a good friend to many of her fellow TAs from that period. She had a career in finance for CitiGroup as a quantitative analyst and had a passion for traveling, quilling, furniture renovations, cooking and blogging. She married Humberto Silva Naves on November 1, 2018. Jingmin is survived by her husband, Humberto Silva Naves, her daughter, Isabel Jingmin Naves and her parents Changshu Chen and Qiuyun Ai.

In Memoriam: Sergio Zefelippo

(1954 – March 1, 2025)

On March 1, 2025, Sergio Zefelippo, 70, passed away unexpectedly. He was the son of the late Sergio Zefelippo Sr. (2002) and Maria Rosa Leporace (2023). He was the beloved brother of Eugene Ralph Zefelippo (Joanne) and Roxane Linda Henning (David Sr.). Dearest uncle of Martin Richard Zefelippo (Christine), Nicholas Pio Zefelippo, David Donald Henning, Jr., Maria Rosa Zefelippo, and Gabrielle Rose Henning and dear great-uncle of Olivia Rose Zefelippo.

Sergio attended Father Judge High School, where he participated in soccer, earning a varsity letter, and went on to play soccer for the United Soccer League of Pennsylvania while in college. He graduated from LaSalle with a BA in Math and obtained his Master's in Mathematics at Villanova. Attending St. Joe's, he also obtained an additional Master's degree for Secondary Education and finally completed his doctorate in Education (Ed.D) at Widener. Through the years, while working on his various educational degrees, Serge did what he loved most- he taught students Math.

Beginning his teaching career at Saint Basil Academy, he transitioned to Woodrow Wilson HS after 7 years, where he retired from high school teaching after 19 years. He taught at Arcadia University (19 years) and was actively teaching at both Drexel (almost 40 years) and the University of Pennsylvania (almost 12 years) until his passing.

Publications

Publications from the calendar year 2024. Names in bold are associated with Drexel's Mathematics Department.

Patrice Abry, **B. Cooper Boniece**, Gustavo Didier and Herwig Wendt. On high-dimensional wavelet eigenanalysis. *Ann. Appl. Probab.* 34 (6) 5287 - 5350, 2024.

Lanre Akinyemi, Francis Erebholo, Valerio Palamara, and **Kayode Oluwasegun**. A study of non-linear Riccati equation and its applications to multi-dimensional nonlinear evolution equations. *Qual. Theory Dyn. Syst.*, 23:Paper No. 296, 43, 2024.

Udoh Akpan, Lanre Akinyemi, Daniel Ntiamoah, Alphonse Houwe, and Souleymanou Abbagari. Generalized stochastic Korteweg–de Vries equations, their Painlevé integrability, N-soliton and other solutions. *Int. J. Geom. Methods Mod. Phys.*, 21(7):Paper No. 2450128, 27, 2024.

David M. Ambrose, Fazel Hadadifard, and James P. Kelliher. Contour dynamics and global regularity for periodic vortex patches and layers. *SIAM J. Math. Anal.*, 56(2):2286–2311, 2024.

David M. Ambrose, Milton C. Lopes Filho, and Helena J. Nussenzveig Lopes. Existence and analyticity of the Lei-Lin solution of the Navier-Stokes equations on the torus. *Proc. Amer. Math. Soc.*, 152(2):781–795, 2024.

David M. Ambrose, Pavel M. Lushnikov, Michael Siegel, and Denis A. Silantyev. Global existence and singularity formation for the generalized Constantin-Lax-Majda equation with dissipation: the real line vs. periodic domains. *Nonlinearity*, 37(2):Paper No. 025004, 43, 2024.

David Aristoff, Mats Johnson, **Gideon Simpson**, Robert J Webber, The fast committor machine: Interpretable prediction with kernels, *J. Chem. Phys.* 161(8), 084113, 2024.

Kelly Bickel, Greg Knese, **James Eldred Pascoe**, and Alan Sola. Local theory of stable polynomials and bounded rational functions of several variables. *Annales Polonici Mathematici*, 133:95–169, 2024.

Jonah Blasiak, Mark Haiman, Jennifer Morse, Anna Pun, and George H. Seelinger. LLT polynomials in the Schiffmann algebra. *J. Reine Angew. Math.*, 811:93–133, 2024.

Jonah Blasiak, Jennifer Morse, and Anna Pun. Demazure crystals and the Schur positivity of Catalan functions. *Invent. Math.*, 236(2):483–547, 2024.

B. Cooper Boniece, José E. Figueroa-López, and Yuchen Han. Efficient integrated volatility estimation in the presence of infinite variation jumps via debiased truncated realized variations. *Stochastic Process. Appl.*, 176:Paper No. 104429, 26, 2024.

B. Cooper Boniece, Lajos Horváth, and Peter M. Jacobs. Change point detection in high dimensional data with U-statistics. *TEST*, 33(2):400–452, 2024.

R. Chen, L. Mančinska, and **J. Volčič**. All real projective measurements can be self-tested, *Nat. Phys.* 20 (2024), 1642-1647.

Nicholas DeFilippis, **Shari Moskow** and John C Schotland. Nonlinearity helps the convergence of the inverse Born series. *Inverse Problems*, 40: 125020, 2024

V. Druskin, **S. Moskow**, and M. Zaslavsky. ROM inversion of monostatic data lifted to full MIMO. *SIAM J. Imaging Sci.*, 17(4):2196–2211, 2024.

Vladimir Druskin, **Shari Moskow**, and Mikhail Zaslavsky. Reduced order modeling inversion of monostatic data in a multi-scattering environment. *SIAM J. Imaging Sci.*, 17(1):334–350, 2024.

Sarah Gift and **Hugo J. Woerdeman**. Real factorization of positive semidefinite matrix polynomials. *Linear Algebra Appl.*, 683:125–150, 2024.

Nathan E. Glatt-Holtz, Andrew J. Holbrook, Justin A. Krometis, and **Cecilia F. Mondaini**. Parallel MCMC algorithms: theoretical foundations, algorithm design, case studies. *Trans. Math. Appl.*, 8(2):Paper No. tnae004, 70, 2024.

Darij Grinberg. The Bhargava greedoid as a Gaussian elimination greedoid. *Electron. J. Combin.*, 31(2):Paper No. 2.28, 47, 2024.

Darij Grinberg. The entry sum of the inverse Cauchy matrix. *Math. Intelligencer*, 46(1):46–48, 2024.

Darij Grinberg and Nadia Lafrenière. The one-sided cycle shuffles in the symmetric group algebra. *Algebr. Comb.*, 7(2):275–326, 2024.

Darij Grinberg and Nadia Lafrenière. The somewhere-to-below shuffles in the symmetric group and Hecke algebras. *Sém. Lothar. Combin.*, 91B:Art. 16, 12, 2024.

Darij Grinberg and Ekaterina A. Vassilieva. The enriched q-monomial basis of the quasisymmetric functions. *Electron. J. Combin.*, 31(4):Paper No. 4.20, 65, 2024.

Darij Grinberg and Ekaterina A. Vassilieva. Quasisymmetric expansion of Hall-Littlewood symmetric functions. *Sém. Lothar. Combin.*, 91B:Art. 86, 12, 2024.

Yuhui Guo, Jian Song, and **Xiaoming Song**. Stochastic fractional diffusion equations with Gaussian noise rough in space. *Bernoulli*, 30(3):1774–1799, 2024.

Pawel Hitczenko. A class of polynomial recurrences resulting in (n/log n, n/log2 n)-asymptotic normality. *Matematica*, 3(3):1069–1084, 2024.

Pawel Hitczenko and Nick Wormald. Multivariate asymptotic normality determined by high moments. *Proc. Amer. Math. Soc.*, 152:5411–5427, 2024.

Igor Klep, Victor Magron, **Jurij Volčič**, and Jie Wang. State polynomials: positivity, optimization and nonlinear Bell inequalities. *Math. Program.*, 207(1-2):645–691, 2024.

Shunlian Liu and **David M. Ambrose.** Well-posedness of a model equation for water waves in fluids with odd viscosity. *J. Dynam. Differential Equations,* 36(4):3159–3173, 2024.

Joshua A. McGinnis and **J. Douglas Wright**. Approximation of (some) random FPUT lattices by KdV equations. *Phys. D*, 463:Paper No. 134154, 13, 2024.

Georgi S. Medvedev and Dmitry E. Pelinovsky. Turing bifurcation in the Swift-Hohenberg equation on deterministic and random graphs. *J. Nonlinear Sci.*, 34(5):Paper No. 88, 36, 2024.

James E. Pascoe and **Hugo J. Woerdeman**. The degree one Laguerre-Pólya class and the shuffle-word-embedding conjecture. *Canad. Math. Bull.*, 67(3):760–767, 2024.

C. Rorres. The righting arm in Archimedes' on floating bodies. *Ship Technology Research*, 71(2):213–226, May 2024.

Won Hee Ryu, John D Russo, Mats S Johnson, Jeffrey P Thompson, David N LeBard, **Gideon Simpson**, David Aristoff, Robert J Webber, Jeremy T Copperman, Daniel M Zuckerman, Data-driven variance reduction in weighted ensemble simulations, *Biophysical Journal* 123(3), 423a, 2024.

Joshua Sin, **John W. Bonnes**, **Luke C. Brown**, and **David M. Ambrose**. Existence and computation of stationary solutions for congestion-type mean field games via bifurcation theory and forward-forward problems. *J. Dyn. Games*, 11(1):48–62, 2024.

Alma van der Merwe, Madelein Thiersen, and **Hugo J. Woerdeman**. The c-numerical range of a quaternion skew-Hermitian matrix is convex. *Adv. Oper. Theory*, 9(4):Paper No. 87, 9, 2024.

Alma van der Merwe, Madelein van Straaten, and **Hugo J. Woerdeman**. Fejér-Riesz factorization in the QRC-subalgebra and circularity of the quaternionic numerical range. *Adv. Oper. Theory*, 9(2):Paper No. 33, 14, 2024.

Alma van der Merwe, Madelein van Straaten, and **Hugo J. Woerdeman**. Partial isospectrality of a matrix pencil and circularity of the c-numerical range. *Linear Algebra Appl.*, 689:247–259, 2024.

E. A. Vassilieva and **D. Grinberg**. Weighted posets and the enriched monomial basis of QSym. *Fundam. Prikl. Mat.*, 25(1):53–65, 2024.

K. S. Virbhadra. Compactness of supermassive dark objects at galactic centers. *Can. J. Phys.*, 102:512, 2024.

K. S. Virbhadra. Conservation of distortion of gravitationally lensed images. *Phys. Rev. D*, 109(12):Paper No. 124004, 6, 2024.

J. Volčič. Constant-sized self-tests for maximally entangled states and single local projective measurements. *Quantum*, 8, Mar 2024.

J. Volčič, Linear Matrix Pencils and Noncommutative Convexity. In: Alpay, D., Sabadini, I., Colombo, F. (eds) *Operator Theory*. Springer, Basel, 2024.

J. Douglas Wright. Approximation of Calogero-Moser lattices by Benjamin-Ono equations. *SIAM J. Math. Anal.*, 56(4):5583–5603, 2024.

M. Zaslavsky, **S. Moskow** and V. Druskin. Data-driven reduced order models for radar imaging in multi-scattering environments, *2024 IEEE Research and Applications of Photonics in Defense Conference (RAPID)*, Miramar Beach, FL, USA, 2024, pp. 01-02.

Presentations

Sultan Aitzhan, *“Existence of coherent structures in a model for flame fronts,”* Research Day, Drexel University, Philadelphia, PA, May 29, 2025

David M. Ambrose, *"The Birkhoff-Rott integral for non-decaying, non-periodic flows,"* Workshop on Nonlinear Water Waves: Rigorous Analysis and Scientific Computing, Banff International Research Station, Banff, Canada, October 29, 2024

David M. Ambrose, *"Some non-decaying, non-periodic existence theory for fluid equations,"* Analysis Seminar, Temple University, Philadelphia, November 18, 2024

David M. Ambrose, *"Some non-decaying, non-periodic existence theory for fluid equations,"* Long Time Behavior and Singularity Formation in PDEs - Part VII, NYU Abu Dhabi, UAE, December 10-14, 2024

David M. Ambrose, *"Nonseparable mean field games with pseudomeasure initial distributions,"* 14th American Institute of Mathematical Sciences (AIMS) Conference, Abu Dhabi, UAE, December 16-20, 2024

David M. Ambrose, *"Some nonseparable mean field games with singular measures as initial data,"* Durham Symposium on Mean Field Games, Durham University, UK, March 27, 2025

David M. Ambrose, *"Some existence results for non-separable mean field games,"* Applied Math Seminar, Baylor University, Waco, TX, April 7, 2025

David M. Ambrose, *"Analysis and computation of models of flame fronts,"* AMS Western Sectional Meeting, University of Denver, Denver, CO, August 23, 2025

Juliane Baiochi Dalben, *“On the long-time behavior of 2D stochastic hydrostatic Navier-Stokes equations,”* SIAM New York-New Jersey-Pennsylvania Section Conference, Rochester Institute of Technology, Rochester, NY, November 1-3, 2024

Juliane Baiochi Dalben, *“On the long-time behavior of 2D stochastic hydrostatic Navier-Stokes equations,”* Workshop for Research and Workforce Development in Fluid Mechanics, University of Nebraska-Lincoln (Lincoln, NE, USA), May 9-11, 2025

Juliane Baiochi Dalben, *“Stability of the long-time statistics of the stochastically forced Rayleigh–Bénard convection,”* Research Day, Drexel University, Philadelphia, PA, May 29, 2025

Juliane Baiochi Dalben, *"A general form of Harris' theorem and its applications in stochastic fluid dynamics,"* SPDEs Workshop at Ohio State University, Columbus, OH, June 3–5, 2025

Juliane Baiochi Dalben, *"On study of exponential mixing properties of the stochastically forced Boussinesq system for Rayleigh–Bénard convection,"* Mathematical Congress of the Americas (MCA 2025), Miami, FL, July 21–25, 2025

B. Cooper Boniece, *"An iterative approach to volatility estimation,"* Probability Seminar, University of Tennessee, Knoxville, TN, November 12, 2024

B. Cooper Boniece, *"On data-driven tuning for truncated realized variations,"* CMStatistics Conference, King's College, London, December 16, 2024

Darij Grinberg, *"Monomial identities in the Weyl algebra,"* Combinatorics and Arithmetic for Physics (IHES), November 22, 2024

Darij Grinberg, *"The random-to-random shuffles and their q-deformations,"* KTH Stockholm, March 19, 2025

Darij Grinberg, *"The random-to-random shuffles and their q-deformations,"* Rutgers University, April 30, 2025

Darij Grinberg, *"The random-to-random shuffles and their q-deformations,"* AlCoVE: an Algebraic Combinatorics Virtual Expedition, virtual, May 29–30, 2025

Darij Grinberg, *"Five questions on symmetric group algebras,"* SageDays 129, Hokkaido University, Sapporo, Japan, August 4, 2025

Pawel Hitczenko, *"Limiting distribution of some of the Graham–Knuth–Patashnik recurrences,"* International Conference on Probabilistic, Combinatorial and Asymptotic Methods for the Analysis of Algorithms (AofA 2025), Fields Institute, Toronto, ON, Canada, May 5 - 9, 2025

Georgi S. Medvedev, *"Emerging applications of graphons in Dynamical Systems,"* Mathematics Colloquium, Rutgers University - Camden, November 2024

Georgi S. Medvedev, *"The Kuramoto model on graphs,"* Mathematics Seminar, Institut Denis Poisson, Universite d'Orléans, Orléans, France, January 2025

Georgi S. Medvedev, *"Metastability in the stochastic Kuramoto model of coupled phase oscillators,"* Minisymposium "Dynamical Systems on Networks and Fractals," SIAM Conference on Applications of Dynamical Systems, Denver, CO, May 11–15 , 2025

Georgi S. Medvedev, *"The Kuramoto model on Sierpinski gasket,"* the 8th Cornell Conference on Analysis, Probability, and Mathematical Physics on Fractals, Ithaca, NY, June 16–20, 2025

Georgi S. Medvedev, *"The Kuramoto model on Sierpinski gasket,"* Workshop on Dynamical Systems and Celestial Mechanics, Tohoku University, Sendai, Japan, August 6, 2025

Cecilia F. Mondaini, *"An involution framework for Metropolis–Hastings algorithms on general state spaces and applications,"* Penn/Temple Probability Seminar, September 17, 2024

Cecilia F. Mondaini, *"On the locally self-similar blowup for the generalized SQG equation,"* Analysis Seminar, Temple University, October 28, 2024

Cecilia F. Mondaini, *"Estimating the long-time statistical bias in approximations of SPDEs,"* One World Stochastic Numerics and Inverse Problems (OWSNIP) Seminar, online, May 28, 2025

Cecilia F. Mondaini, *"Estimating the long-time bias in numerical approximations of SPDEs,"* SPDE Workshop at Ohio State University, June 3–5, 2025

Cecilia F. Mondaini, *"Estimating the long-time bias in numerical approximations of SPDEs,"* Brin Mathematics Research Center Workshop on Stochastic PDEs, University of Maryland, June 23–27, 2025

Cecilia F. Mondaini, *"Unique exponential ergodicity for SPDEs: general framework and applications,"* Special Session on Stochastic Partial Differential Equations, Mathematical Congress of the Americas (MCA 2025), Miami, FL, July 21–25, 2025

Shari L. Moskow, *"The Lippmann Schwinger Lanczos algorithm for inverse scattering problems,"* Special Session "Computational Inversion and Reduce Order Modeling," SIAM Conference Texas-Louisiana Section, Waco, Texas, Oct 11–13, 2024

Shari L. Moskow, *"Nonlinearity helps convergence of the inverse Born series,"* 14th American Institute of Mathematical Sciences (AIMS) Conference, Abu Dhabi, UAE, December 16–20, 2024

Shari L. Moskow, *"The inverse Born series for the reconstruction of Kerr nonlinearities,"* AMS Special Session "Operators in Inverse Problems, Differential Equations, and Machine Learning," Joint Mathematics Meetings, Seattle, WA, January 8–11, 2025

Shari L. Moskow, *"Scattering by obstacles with periodic material properties, boundary correctors and inversion,"* mini-symposium "Wave propagation in random multi-scale media and applications," Conference on Mathematics of Wave Phenomena, Karlsruhe, Germany, February, 2025

Shari L. Moskow, *"On optimality and bounds for internal solutions generated from impedance data driven Gramians,"*
WICOM: Waves and Imaging in Complex Media, Paris, France, June 2025

Shari L. Moskow, *"On optimality and bounds for internal solutions generated from impedance data driven Gramians,"* Women in Inverse Problems Workshop (WiIP) at AIP, Rio de Janeiro, Brazil, July 2025

Shari L. Moskow, *"The Inverse Born series for the reconstruction of Kerr nonlinearities,"* mini-symposium "Analysis of Inverse Problems for Partial Differential Equations," AIP, Rio de Janeiro, Brazil, July 2025

Kayode Oluwasegun, *"Investigation of oceanic wave solutions to a modified (2+1)-dimensional coupled nonlinear Schrödinger system,"*
The 42nd Southeastern-Atlantic Regional Conference on Differential Equations, West Virginia University, Morgantown, WV, November 9-10, 2024

Kayode Oluwasegun, *"Theoretical Advances in Population Models with Free Boundaries: Existence Results,"* Mathematical Modeling of Biological Interfacial Phenomena Workshop, Institute for Mathematical and Statistical Innovation (IMSI), University of Chicago, Chicago, IL, December 9-13, 2024

Kayode Oluwasegun, *"Theoretical Advances in Population Models with Free Boundaries: Existence Results,"* Emerging Directions Workshop, National Institute for Theory and Mathematics in Biology (NITMB), Chicago, IL, February 17-21, 2025

Kayode Oluwasegun, *"Investigation of oceanic wave solutions to a modified (2+1)-dimensional coupled nonlinear Schrödinger system,"*
SIAM Conference on Computational Science and Engineering (CSE25), Fort Worth Convention Center, Fort Worth, Texas, March 3-7, 2025

Kayode Oluwasegun, *"Waves, Equations, and the Coast: Modeling Ocean Waves with Math,"* Three Minute Thesis Competition (3MT), Drexel Emerging Graduate Scholars Conference 2025, Drexel University, Philadelphia, PA, May 8, 2025

James E. Pascoe, *"Beyond physical maze solvers via modern portfolio theory,"* Mathematics of Intelligences, Institute for Pure & Applied Mathematics, Los Angeles, CA, September 27, 2024

James E. Pascoe, *"Reproducing Kernel Hilbert Spaces and some applications,"* Joint Mathematics Meetings, Seattle, WA, January 8–11, 2025

James E. Pascoe, *"Spectral constants and dilation theory,"* Operator Analysis on Function Spaces, Pacific Institute for the Mathematical Sciences, St. John's College, Winnipeg, Canada, June 13–15, 2025

James E. Pascoe, *"The lifting constant from the cross to the bidisk,"* International Workshop Operator Theory and its Applications (IWOTA), Enschede, The Netherlands, July 2025

Hayden Ruff, *"Corner Scattering,"* Research Day, Drexel University, Philadelphia, PA, May 29, 2025

Gideon Simpson, *"Searching for Stationary Solutions in Nonlocal Model,"* Minisymposium "Dynamical Systems on Networks and Fractals," SIAM Conference on Applications of Dynamical Systems (DS25), Denver, Colorado, May 11–15 , 2025

Gideon Simpson, *"Continuum Limits and Metastability in Stochastic Kuramoto,"* One World Stochastic Numerics and Inverse Problems (OWSNIP) Seminar, June 18 , 2025

Xiaoming Song, *"Large deviations for functionals of some self-similar Gaussian processes,"* Research Day, Drexel University, Philadelphia, PA, May 29, 2025

Hugo J. Woerdeman, *"Correlation matrices: Completions, Maximum Entropy and Maximal Determinant Principal Submatrices,"* Research Seminar, Business Analytics and Statistics, The University of Tennessee, Knoxville, September 6, 2024

Hugo J. Woerdeman, *"Matrices with rotation and/or reflection invariant higher rank numerical ranges,"* International Workshop Operator Theory and its Applications (IWOTA), Enschede, The Netherlands, July 2025

Hugo J. Woerdeman, *"Contractive realization theory for the annulus and other intersections of discs on the Riemann sphere,"* International Workshop Operator Theory and its Applications (IWOTA), Enschede, The Netherlands, July 2025

Hugo J. Woerdeman, *"Strictly Stable Hurwitz Polynomials and their Determinantal Representations,"* 7th Summer Workshop on Operator Theory (SWOT), Kraków, Poland, July 2025

J. Douglas Wright, *"Models for Radiating Solitary Waves,"*
Analysis Seminar, University of Pennsylvania, Philadelphia, PA, February 13, 2025

J. Douglas Wright, *"Models for Radiating Solitary Waves,"* Dynamical Systems Seminar, University of Leiden, The Netherlands, February 21, 2025

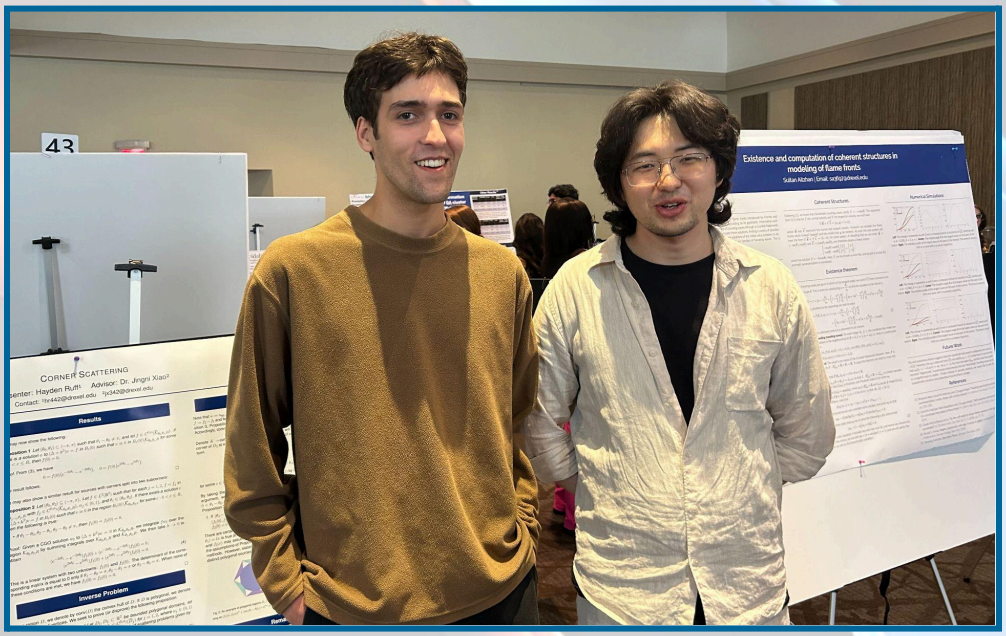
J. Douglas Wright, *"Approximation of (some) random FPUT lattices by KdV Equations,"* Conference on Mathematics of Wave Phenomena, Collaborative Research Center, Karlsruhe Institute of Technology, Germany, February 24-28, 2025

J. Douglas Wright, *"Calogero-Moser and Benjamin-Ono are friends,"* IMACS Conference on Nonlinear Evolution Equations, Athens, GA, April 16, 2025

Jingni Xiao, *"Regularity of nonscattering geometries,"*
Special Session "Computational Inversion and Reduce Order Modeling," SIAM Conference Texas-Louisiana Section, Waco, TX, Oct 11–13, 2024

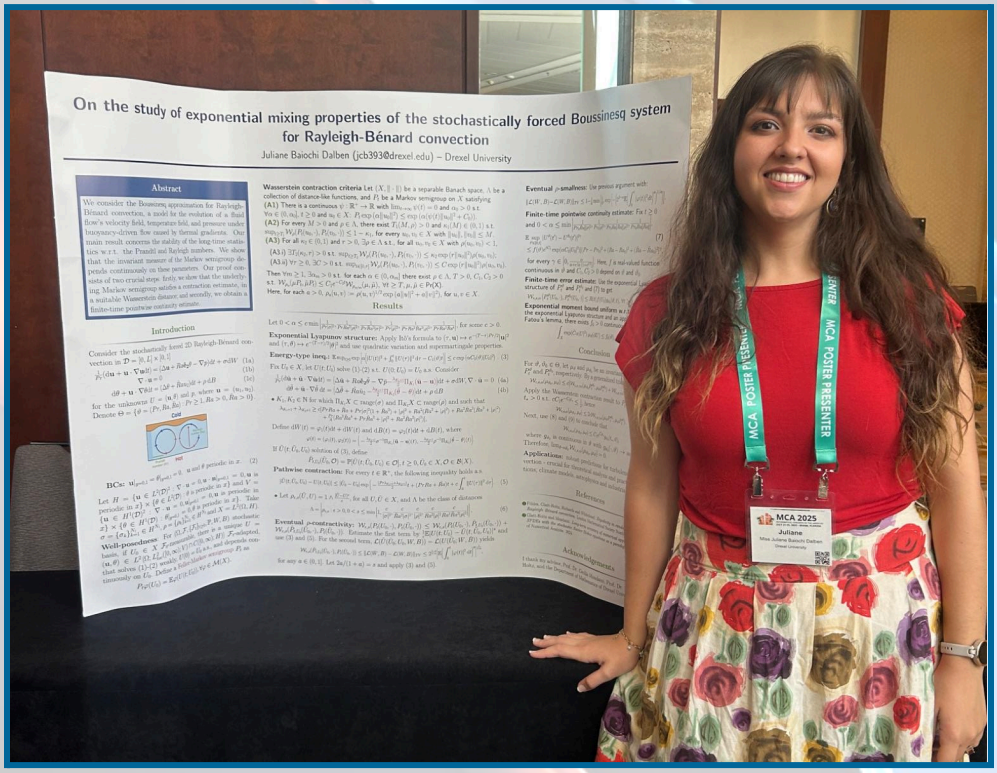
Jingni Xiao, *"Finiteness of Non-Scattering Wavenumbers,"* AMS Special Session "Operators in Inverse Problems, Differential Equations, and Machine Learning," the 2025 Joint Mathematics Meetings, Seattle, WA, January 8-11, 2025

Jingni Xiao, *"Finiteness of non-scattering wavenumbers,"*
Seminar, Qilu University of Technology, China (virtual), March 6, 2025



Hayden Ruff (left) and Sultan Aitzhan (right) presenting their posters at CoAS Research Day, Drexel University, Philadelphia, PA, May 29, 2025.

Kayode Oluwasegun presenting his poster at the Emerging Directions Workshop at the National Institute for Theory and Mathematics in Biology, Chicago, December 2024.



Juliane Baiochi Dalben presenting her poster at the Mathematical Congress of the Americas (MCA 2025), Miami, FL, July 21-25, 2025

Grants

David M. Ambrose, PI, National Science Foundation, DMS 2307638,
Well-Posedness and Singularity Formation in Applied Free Boundary Problems, 2023-2026, $300,000

Jonah Blasiak, PI, National Science Foundation, DMS 2154282,
Collaborative Research: Special Functions for Diagonal Harmonics and Schubert Calculus, 2022-2025, $170,236

B. Cooper Boniece, Co-PI, National Science Foundation, DMS 2309570,
Moment Invariant Data Aggregation for Signal Processing and Distribution Learning, 2023-2026, $360,000

B. Cooper Boniece, PI, National Science Foundation, DMS 2413558,
Collaborative Research: Systemic Shock Inference for High-Frequency Data, 2024-2027, $100,000

Georgi Medvedev, PI, National Science Foundation, DMS 2406941,
Collaborative Research: Emerging Applications of Self-Similarity in Dynamical Networks, 2024-2027, $170,814 (co-PI: Matthew Mizuhara, The College of New Jersey)

Cecilia Mondaini, PI, National Science Foundation, DMS 2239325,
CAREER: Analysis of uncertainty, long-time statistics and singularity formation in fluid flow models, 2023-2028, $481,439

Shari L. Moskow, PI, National Science Foundation, DMS 2308200,
Data driven inversion methods and image reconstruction for nonlinear media, 2023-2026, $270,000

Shari L. Moskow, PI, National Science Foundation, DMS 2008441,
Novel Image Reconstruction Methods in the Frequency Domain, 2020-2025, $324,988

Shari L. Moskow, Co-PI, National Science Foundation, DUE 1758345,
Preparing Mathematics and Science Teachers for Middle School, 2018-2025, $1,199,374

James E. Pascoe, Co-PI, United States - Israel Binational Science Foundation, 2022235,
Local and algebraic phenomena in noncommutative function theory, 2025-2027, $146,400

Jurij Volčič, Co-PI, United States - Israel Binational Science Foundation, 2022235, *Local and algebraic phenomena in noncommutative function theory,* 2023-2024, $146,400

Jurij Volčič, PI, National Science Foundation, DMS 2348720, *Advances in rational operations in free analysis,* 2024-2024, $155,009

Hugo J. Woerdeman, PI, National Science Foundation, DMS 2000037, *Modern Aspects of Multivariable Operator Theory and Matrix Analysis*, 2020-2024, $249,000

Hugo J. Woerdeman, PI, National Science Foundation, DMS 2348720, *Advances in rational operations in free analysis,* 2024-2027, $113,127

J. Douglas Wright, Simons Foundation, Collaborations in Mathematics and the Physical Sciences, MPS-TSM-00007725, ***Nonlinear waves in noisy and other complex environments,*** 2024-2029, $42,000

Jingni Xiao, PI, National Science Foundation, DMS 2307737, *Nonscattering Phenomena and Inverse Scattering*, 2023-2026, $270,000

Thomas Yu, PI, National Science Foundation, DMS 1913038, *Geometric Approximation and Variational Problems*, 2019-2025, $299,999

Appointments

Sultan Aitzhan, Participant,
Workshop for Research and Workforce Development in Fluid Mechanics, University of Nebraska-Lincoln (Lincoln, NE, USA), May 9-11, 2025.

Jonah Blasiak, Member,
Scientific Committee for the Mid-Atlantic Algebraic Geometry and Combinatorics Workshop

Abdellah Islam, Participant,
Georgia Algebraic Geometry Symposium '25, University of Georgia, Athens, GA, March 21-23, 2025

Abdellah Islam, Participant,
Graduate student and postdoc boot camp for the 2025 Algebraic Geometry Summer Research Institute, Colorado State University, July 8–12, 2025.

Georgi S. Medvedev, Co-organizer (with Matthew S. Mizuhara), Minisymposium *"Dynamical Systems on Networks and Fractals,"* SIAM Conference on Applications of Dynamical Systems (DS25), Denver, Colorado, May 11–15 , 2025

Cecilia Mondaini, Co-Organizer (with Anne Bronzi, Nathan Glatt-Holtz, Javier Gomez-Serrano, Igor Kukavica, and Wojciech Ozanski), Special Session *"New Developments in Mathematical Fluid Dynamics,"* Mathematical Congress of the Americas, Miami, FL, July 21-25, 2025

Cecilia Mondaini, Co-organizer of the Special Session *"Statistical Approaches to PDE Inverse Problems"* at the SIAM Conference on Analysis of Partial Differential Equations (SIAM PD25), Pittsburgh, PA, November 17-20, 2025.

Shari L. Moskow, External Examiner, MSc in Mathematical Modeling, University of Limerick, Ireland

Shari L. Moskow, Participant, *"Women in Analysis (WoAN) - A Research Collaboration Workshop for Women in Analysis,"* Banff International Research Station (BIRS), Banff, Canada, May 11–16, 2025

Shari L. Moskow, Participant, SQuaRE program *"Scattering Properties of Multiscale Heterogeneous Media,"* American Institute of Mathematics (AIM), Pasadena, CA, August 11–15, 2025

James E. Pascoe, Senior Visiting Scientist, *"Mathematics of Intelligences,"* Institute for Pure & Applied Mathematics (IPAM), Los Angeles, CA, September-December 2024

James E. Pascoe, Participant, *"NC function theory: The non-Commutative Frontier of Analysis and Algebra,"* Banff International Research Station (BIRS), Banff, Canada, May 4–9, 2025

James E. Pascoe and **Hugo J. Woerdeman**, Organizers, Special Session *"Matrix Analysis and Applications,"* Joint Mathematics Meetings, Washington, DC, January 4–7, 2026

Xiaoming Song, Co-organizer, *"Pathways Workshop: Kinetic Theory & Stochastic Partial Differential Equations,"* Simons Laufer Mathematical Sciences Institute (SLMath), Berkeley, CA, August 21–22, 2025

Hugo J. Woerdeman, Board Member of the International Research Center for Tensor and Matrix Theory of Shanghai University

Hugo J. Woerdeman, Vice President, International Workshop Operator Theory and Analysis (IWOTA) Steering Committee

Hugo J. Woerdeman, Co-organizer (with André C. M. Ran). Special Session *"Matrix theory and linear algebra,"* International Workshop on Operator Theory and its Applications. University of Twente, Netherlands, July 14-18, 2025

Hugo J. Woerdeman, Steering Committee Liaison, International Workshop on Operator Theory and its Applications (IWOTA 2025), University of Twente, Netherlands, July 14-18, 2025

Jingni Xiao, Co-organizer. Special Session *"Recent Advances in Theoretical and Computational Inverse Problems,"* The 2024 SIAM New York-New Jersey-Pennsylvania Section Conference, Rochester, New York, November 2024

Jingni Xiao, Participant, *"Women in Analysis (WoAN) - A Research Collaboration Workshop for Women in Analysis,"* Banff International Research Station (BIRS), Banff, Canada, May 11-16, 2025

Jingni Xiao, Participant, SQuaRE program *"Scattering Properties of Multiscale Heterogeneous Media,"* American Institute of Mathematics (AIM), Pasadena, CA, August 11-15, 2025

Several faculty members also serve as reviewers for funding agencies (such as the National Science Foundation) and as referees for professional journals. However we do not provide specifics as these assignments are confidential.

Editorial Positions

David Ambrose, Division Editor,
Journal of Mathematical Analysis and Applications

Pawel Hitczenko, Editorial Board Member,
Open Journal of Discrete Mathematics

Georgi S. Medvedev, Associate Editor,
Discrete and Continuous Dynamical Systems - B

Georgi S. Medvedev, Associate Editor,
Networks and Heterogeneous Media

Shari Moskow, Associate Editor,
Inverse Problems

Shari Moskow, Associate Editor,
Inverse Problems and Imaging

Shari Moskow, Associate Editor,
SIAM Journal on Applied Mathematics

James E. Pascoe, Associate Editor,
Complex Analysis and Operator Theory

K. Shwetketu Virbhadra, Editorial Board Member,
Time and Space

K. Shwetketu Virbhadra, Section Board Member, Mathematical Physics
Axioms

Hugo J. Woerdeman, Associate Editor,
Annals of Functional Analysis

Hugo J. Woerdeman, Editor-in-Chief,
Operators and Matrices

Hugo J. Woerdeman, Guest Editor,
Integral Equations and Operator Theory

J. Douglas Wright, Associate Editor,
Communications in Analysis and Mechanics

Undergraduate Course Enrollment

Class	Fall	Winter	Spring	Summer
Math 100	281	98	83	49
Math 101	713	320	156	69
Math 102	79	232	134	33
Math 105	86			
Math 107	16		28	18
Math 110	31	37	23	21
Math 111	74			
Math 116	212	41		
Math 117		413	55	
Math 119			144	
Math 121	522	144	94	14
Math 122	229	441	240	30
Math 123	71	84	151	20
Math 171	119	60	55	31
Math 172	31	68	60	29
Math 173	30	25	46	26
Math 180		57	89	
Math 200	185	208	337	102
Math 201	228	197	224	117
Math 210	89	137	112	132
Math 220	30	20	19	
Math 221	121	175	108	113
Math 222	10			
Math 235	4			
Math 239	27	26	106	
Math 250	21			
Math 285	16			
Math 291	40	39	31	17
Math 300	37			
Math 301		16		
Math 305	21		13	
Math 311	114	99	85	
Math 312		22	23	29
Math 313			23	
Math 318		10		
Math 320		13		
Math 321		16		
Math 322	15			
Math 323		29	14	
Math 331	19			
Math 332		12		
Math 387		22		
Math 401	24			
Math 402		18		
Math 410	118		60	
Math 411		101		52
Math 449		8		
Math 450			7	
Math 483			14	
Math T180				26
Math T480		11		

Special Topics Courses

Fall Term:

MATH T880 – *Inverse Problems* – Jingni Xiao

Winter Term:

MATH T480 – *Numerical Linear Algebra*– Shari L. Moskow

MATH T880 – *Positive Polynomials and Sums of Squares* – Hugo J. Woerdeman

Spring Term:

MATH 701 - *Introduction to the symmetric group algebra* – Darij Grinberg

MATH T880 – *Dynamic Networks* – Georgi Medvedev

Spring Term:

MATH T180 - *Dragons Prep: Elementary Number Theory* – Raymond Favocci

Undergraduate Research Projects

David Ambrose and **Michael Gribbin**

"Blowup and global existence in nonlinear parabolic equations with conserved mean"

David Ambrose, Shari Moskow and **Aiza Nygman**

"Transmission Eigenvalue Perturbations for Radially Symmetric Media"

Darij Grinberg and **Jonathan Parlett**

"Fixed Point Homing Shuffles"

Anatolii Grinshpan, Hugo Woerdeman and **Brennan Finn**

"Arveson Extension Theorem and Semidefinite Programming"

Shari Moskow and **Rose Lancaster**

"Transmission Eigenvalues for Periodic Media: A one-dimensional study"

Independent Studies

Fall Term:

MATH I399 – *Statistics for Risk Modeling* – Patricia D. Bobo

MATH I399 – *Probability & Statistics III* – Jason S. Aran

Summer Term:

MATH I399 – *Topics in Applied Mathematics* – Ronald Perline

Departmental Service Assignments

Department Head: J. Douglas Wright
Associate Head & Graduate Advisor: Gideon Simpson
Associate Head & Scheduling: Jason Aran
Undergraduate Advisor: Shari Moskow

Graduate Program
Chair: Gideon Simpson*
Members: Darij Grinberg, Jingni Xiao, Pawel Hitczenko, Cooper Boniece, Hugo Woerdeman*, Cecilia Mondaini, Xiaoming Song*
*Qualifying Exam Subcommittee

Graduate Admissions
Chair: Jonah Blasiak
Members: Cooper Boniece, Yixin Guo, Eric Schmutz, Jingni Xiao

Undergraduate Program: Service
Chair: Jason Aran
Members: Li Sheng, Daryl Falco, Caitlin Klimas, Oksana Odintsova, Adam Rickert, David Ambrose, Fernando Carreon

Undergraduate Program: Majors/Minors
Chair: Shari Moskow
Members: Pawel Hitczenko, Cooper Boniece, Xiaoming Song, Li Sheng, Jeff LaComb, Ramesh Garimella, David Ambrose, Dennis Yang, Dimitrios Papadopoulos, Daryl Falco, Patricia Bobo, Fernando Carreon

Undergraduate Program: Recruitment
Chair: Ron Perline
Members: Doug Wright, Ramesh Garimella, Andrew Klimas

Transfer Credit Coordinator: Eric Schmutz & Xiaoming Song

Colloquium Coordinator: Ron Perline

Library Liaison: R. Andrew Hicks

Math Competition Coordinator: Darij Grinberg

Math Student Organization Faculty Advisor: Caitlin Klimas

Actuarial Society Faculty Advisor: Daryl Falco

Pi Day Planning Committee: Adam Rickert, Anatolii Grinshpan, Andrew Klimas, Caitlin Klimas in role as MSO lead

Diversity, Equity, Inclusion Committee:
Chair: Ramesh Garimella
Members: Pavel Grinfeld, Dennis Yang, Matthew Ziemke

Placement Exam Coordinator: Ray Favocci

Coffee Break Committee: R. Andrew Hicks, Li Sheng, Joel Pereira

Bulletin Board Wrangler: K. Shwetketu Virbhadra

Award Committee:
Chairs: Yixin Guo and Fernando Carreon
Members: Matt Ziemke, Jeff LaComb, Pawel Hitczenko

Annual Report: Anatolii Grinshpan, Hugo Woerdeman

Tenure and Promotion Committee:
Chair: Thomas Yu
Members: All tenured faculty at appropriate rank

Teaching Faculty Promotion Committee:
Chairs: Fernando Carreon, Oksana Odintsova, Jason Aran
Members: All teaching faculty at appropriate rank

Analysis Seminar
Organizers: Anatolii Grinshpan, Hugo Woerdeman

PDE/Applied Math Seminar
Organizers: Cecilia Mondaini, Jingni Xiao

CAGE Seminar
Organizers: Jonah Blasiak, Darij Grinberg

Probability and Statistics Seminar
Organizers: Cooper Boniece, Xiaoming Song

Bullpen:
Richard White, Pavel Grinfeld, Jeanne Steuber, Jurij Volčič, James Pascoe, Georgi Medvedev

ABET Material Collectors
Andrew Klimas, Raymond Favocci, Dimitrios Papadopoulos, Guang Yang, Caitlin Klimas, Yixin Guo, Jeffrey LaComb, Hugo Woerdeman, Ronald Perline, Jason Aran

Course Coordinators:

Fall
100: Li Sheng
101: Oksana Odintsova and Fernando Carreon
105: Jason Aran
116: Caitlin Klimas and Ray Favocci
121: Dimitrios Papadopoulos
200: Andrew Klimas

Winter
100: Li Sheng
101: Oksana Odintsova
116: Caitlin Klimas and Ray Favocci
122: Dimitrios Papadopoulos
200: Andrew Klimas

Spring
101: Oksana Odintsova
102: Patricia Bobo
119: Adam Rickert
122: Ray Favocci
200: Dimitrios Papadopoulos

University Service Assignments

David Ambrose, Member, *Academic Transformation Core Competency and Curricular Revision Committee*

Jason Aran, Senator, *Faculty Senate*

Fernando Carreon, Member, *CoAS Undergraduate Curriculum Committee*

Ramesh Garimella, Member, *Goldwater Nomination Committee*

Pawel Hitczenko, Member (Faculty Senate Representative), *Five year review Committee for the Dean of Westphal College of Media Arts & Design*

Shari Moskow, Member, *Chemistry Department Head Search Committee*

Oksana Odintsova, Member, *Teaching Assistant Excellence Committee*

Oksana Odintsova, Member, *CoAS NTT Faculty Promotion Committee*

Kayode Oluwasegun, Vice President of Finance, *Graduate Student Association (GSA)*

Kayode Oluwasegun, GSA Representative, *Senate Committee for Student Life*

James Pascoe, Member, *CoAS Faculty Council Committee*

Dimitrios Papadopoulos, Organizer, *Summer Camps*

Ronald Perline, Member, *CoAS NTT Faculty Promotion Committee*

Gideon Simpson, Member, *Budget, Planning, and Development Committee, Senate*

Gideon Simpson, Member, *CoAS Strategic Staffing Initiative Committee*

Xiaoming Song, Faculty Marshal, *CoAS Commencement*

K. Shwetketu Virbhadra, Alternate Senator, *Faculty Senate*

K. Shwetketu Virbhadra, Bachelors Marshal, *CoAS Commencement*

Jurij Volčič, Member, *CoAS Faculty Council Committee*

Hugo J. Woerdeman, Member, *CoAS Tenure and Promotion Committee*

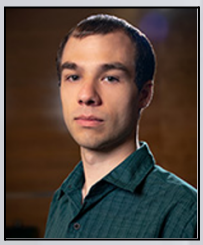
Hugo J. Woerdeman, Hooding Assistant, *CoAS Commencement*

J. Douglas Wright, Member, *Academic Transformation Core Competency and Curricular Revision Committee*

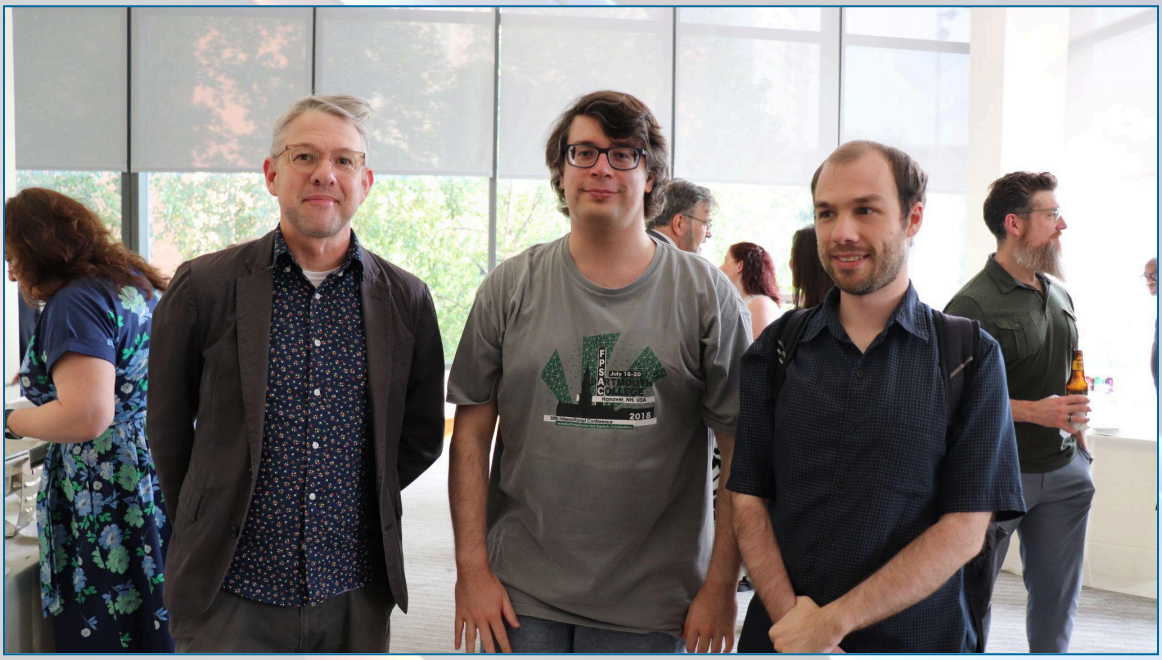
Matthew Ziemke, Member, *Drexel Standing Committee on Artificial Intelligence*

Promotions

Darij Grinberg
Tenure & Promotion to
Associate Professor



Jeffrey LaComb
Promotion to
Associate Teaching Professor



Faculty Recognition Reception, June 3, 2025

Retirements

Eric Schmutz

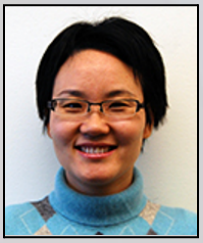
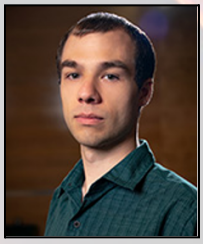
Eric Schmutz earned his PhD from the University of Pennsylvania in 1988 (under H.S. Wilf). He has been a faculty member at Drexel since 1988. Dr. Schmutz specializes in discrete mathematics, including probabilistic methods, asymptotic enumeration, and topics in number theory. His Erdős number is one. He has a multitude of coauthors and four direct mathematical descendants: Caroline Shapcott, Le Yu, Charles Burnette, and James Thomas.

Jeanne Steuber

Jeanne Steuber is a Drexel alumnus (BS 1986) and a Boston University alumnus (MS 1990). She has been a teaching faculty member at Drexel since 2005. Professor Steuber has extensive experience in teaching mathematics and computer science, as well as an extensive experience in industry (software engineering). She is an outstanding undergraduate mentor and students love her.

Jeanne gets a surprise present during the departmental meeting on June 4

Service Recognition

25 Years  Pawel Hitczenko	**25 Years**  Robert Hicks
20 Years  Hugo Woerdeman	**15 Years**  Xiaoming Song
5 Years  Jeffrey LaComb	**5 Years**  Darij Grinberg
5 Years  Cecilia F. Mondaini	**5 Years**  Fernando Carreon

Graduate Student Awards

Albert Herr Teaching Award

The Albert Herr Teaching Assistant Award is given annually to teaching assistants who have excelled in the classroom. The award was established in memory of Al Herr, a distinguished and much-admired faculty member of the Department of Mathematics, who retired in 1993 after 36 years of service in the department. The award was established after his death in 1995 and the first award was presented in the spring of 1997.

The 2025 awardees are: **Hunter Wages and Kayode Oluwasegun**

Dianna C. Dale Emerging Leader Award

The Dianna C. Dale Emerging Leader Award from the Graduate Student Association (GSA) is presented to a new member of the student government who has made exceptional contributions towards the goals of GSA, and whose leadership will be invaluable in the future.

The 2025 awardee is: Kayode Oluwasegun

Kayode Oluwasegun (middle) receiving his award at the USGA & GSA annual transition dinner held at the Academy of Natural Sciences on June 1. Anil Kumar Karapa, Executive Vice President of GSA, is on the left and Ashley Archer, the Director for Student Engagement, Involvement & Leadership, is on the right. In 2025-2026 Oluwasegun will take over as Executive Vice President.

Undergraduate Student Awards

The Robert J. Bickel Endowed Scholarship

Presented in honor of Robert J. Bickel, who was a member of the Mathematics Department from 1946 to 1987.
Recipients denoted below:

Marc DeCarlo
Major: Computer Engineering & Mathematics
Class of 2026
Wallingford, PA

Marc is a fourth-year student pursuing a dual major in computer engineering and mathematics. He has served as a Math Undergraduate Teaching Assistant. His research involves applying mathematical models to develop algorithms for spiking neural networks on embedded systems. He enjoys teaching and mentoring students and plans to pursue a PhD after graduation. His academic interests include information theory, high-performance computing, and machine learning.

Charlotte Buren-Hanley
Major: Mathematical Statistics
Class of 2026
Boulder, CO

Being a native Coloradan, Charlotte has a deep connection with nature that fuels her drive to be an environmental advocate. She hopes to pair her two passions–statistics and sustainability–to save the world from the climate crisis with mathematics. She is currently in her second co-op at Merck & Co., Inc., on their Scope 3 Sustainability team. There, she is working to quantify, model, and reduce GHG emissions across their vast supply chain. On campus, Charlotte serves as president of the Mathematics Student Organization. A highlight of her 2024/25 presidency was a field trip to the National Museum of Mathematics in New York City–the organization's first off-campus event.

Emilee Huynh
Major: Mathematics
Class of 2026
Naples, FL

Emilee Huynh is a third-year Mathematics major with minors in Finance and Actuarial Science. She works as a math tutor at the Math Resource Center and serves as the Vice President of the Math Student Organization (MSO). Emilee is also a member of the Drexel Finance and Investment Group and Drexel Dragons for UNICEF. She completed a co-op at CHUBB as a COG Co-op Global Treaty Outward.

Jonathan Parlett
Major: Mathematics & Computer Science
Class of 2025
West Chester, PA

Jonathan Parlett is a senior pursuing a dual major in mathematics and computer science. He is interested in algebra, combinatorics, number theory, and pretty much everything else depending on the day. Soon to be a graduate student in the mathematics department at University of Georgia. Recipient of Outstanding Undergraduate Teaching Assistant Award, Undergraduate Research Mini Grant and the Navy and Marine Corp Achievement Award. Member of Computer Science Theory Reading Group, Institute of Electrical and Electronics Engineers and the Math Student Organization.

Yaa Adu-Gyamfi
Major: Mathematics
Class of 2026
Tema, Ghana

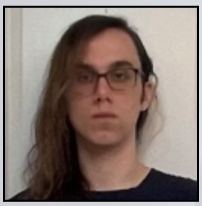
Yaa Adu-Gyamfi is a third-year Mathematics major with minors in Economics and International Business. She completed a co-op at Venerable as an Actuarial Co-op Student within the Finance Organization.

Andrew To
Major: Computer Science & Mathematics
Class of 2026
Thai Binh, Vietnam

Andrew To is pursuing a Computer Science and Mathematics dual major with a minor in Artificial Intelligence and Machine Learning. He completed co-ops as a Simulation Developer at Deep Brook Software LLC and as a Trade Surveillance Group/Risk Management Co-op at PJM Interconnection LLC.

Aiza Nygman
Major: Computer Science & Mathematics
Class of 2026
Nur-Sultan/Astana, Kazakhstan

Aiza Nygman is a third-year student pursuing a Mathematics major with a minor in Computer Science, originally from Kazakhstan. She works as a math tutor at the Math Resource Center and serves as the President of Drexel's Debate Union. Aiza is also a member of the Pennoni Honors College, Drexel's Artificial Intelligence Organization, and the Women's Network. She completed a co-op as a Tech Ops Specialist with Silver Management Group of Companies.



Michael Gribbin
Major: Mathematics
Class of 2028
King of Prussia, PA

Michael is a Mathematics major with a minor in Physics. He is currently a Mathematics Research co-op at Drexel University, working under the mentorship of Dr. David Ambrose. In addition, he serves as a math tutor at the Math Resource Center. Passionate about both math and science, Michael enjoys exploring the connections between the two fields. Outside of academics, he spends much of his time reading and gardening.

Lois Divoll
Major: Mathematical Statistics
Class of 2027
Worcester, MA

Lois Divoll is pursuing a major in Mathematical Statistics with a minor in Data Science. She has gained hands-on experience through co-op positions at Exelon, where she served as an EU Support Co-op, and at Comcast Corporation, where she contributed to DE&I Analytics and Reporting initiatives.

Emma Petruskevicius
Major: Finance & Mathematics
Class of 2026
Matawa, NJ

Emma is a Finance and Mathematics major with a minor in Actuarial Science. She gained practical experience through co-op roles at TMNA Services as an Internal Audit co-op and at Coscia Contract as a Project Manager.

Henry Nguyen
Major: Computer Science & Mathematics
Class of 2027
Philadelphia, PA

Henry is a Computer Science major with a minor in Computer Graphics, Vision, and Interaction. He completed a co-op as a Software Developer – Test Automation at Susquehanna International Group LLP and has also worked as a Game Developer at Drexel University.

Tiffany Getonga
Major: Mathematics
Class of 2027
Nairobi, Kenya

Tiffany is a Mathematics major and Data Analytics student. She works as a math tutor at the Math Resource Center and serves as the President of Drexel's Black Student Union.

Marley Kronemeyer
Major: Mathematical Statistics
Class of 2027
Cape May, NJ

Marley is a Mathematical Statistics major who has completed co-op positions at PECO as an Application Support Analyst and at BlackRock as a Portfolio Management/Trading Assistant.

Grace Li
Major: Mathematics
Class of 2026
Bear, Delaware

Grace is a Mathematics major currently completing a co-op as an EdTech IT Intern at Lavner Camps and Programs.

The Dr. Robert C. Busby Endowed Award

Presented to a high-achieving Mathematics student who volunteers as a mentor or tutor.

Jason Gordon is pursuing a major in Mathematical Statistics. He currently works as a teaching assistant and tutor in the math department and also serves as a tutor at the Community College of Philadelphia.

The Dr. Richard and Professor Dorothy Sasin Endowed Scholarship

Presented to a high-achieving Mathematics student.

Danko Ramirez is a Mathematical Statistics major with a minor in Econometrics and Data Analytics. He works as a tutor and teaching assistant and serves as the event coordinator for the MSO. Currently, he is an Actuarial co-op student at Venerable, contributing to the Finance organization. Danko is from Mexico and loves teaching, Greek mythology, going to the gym, playing soulslike games and, of course, mathematics.

The Frank H.M. Williams Endowed Prize

Presented annually in recognition of academic achievement in mathematics.

Rachelle Pena is a rising senior double majoring in mathematics and computer science at Pennoni Honors College. She is a math tutor at the Math Resource Center and is currently on her third co-op working as a data analyst at Hamilton Lane. She previously worked at Vanguard as an application engineer and at the University of Pennsylvania as a programmer analyst. She is also treasurer of the Drexel Track Club.

Yilin Yang Outstanding Undergraduate Research Award

Presented to an undergraduate Mathematics major who has conducted outstanding research in the field.

Rose Lancaster is a mathematics major and philosophy minor currently tutoring at the MRC. She is also a part of the BS/MS program in mathematics. She is researching transmission eigenvalues with Professor Shari Moskow. Additionally, Rose is an avid member of the fencing club.

Graduating Class of 2024-2025

Mathematics Undergraduate Majors

Bachelor of Arts

Saquib Baig, *Cum Laude*
Sarah Colalillo, *Summa Cum Laude*
Dat Do, *Cum Laude*
Parker Hsin
Abhishek Jeyapratap, *Summa Cum Laude*
Sophia Kujawski, *Magna Cum Laude*
Isabella Lazzaro, *Magna Cum Laude*
Jia Cong Li, *Magna Cum Laude*
Mimi McCullough, *Magna Cum Laude*
Amanatun Nesa
Xiaohan Wang
Nathan Xaysena, *Magna Cum Laude*

Bachelor of Science

Jeevesh Attri, *Magna Cum Laude*
Zacharia Bridgers
Jenny Chen, *Magna Cum Laude*
Linus Cook, *Summa Cum Laude*
Trent Huber, *Magna Cum Laude*
Sarah Midla, *Summa Cum Laude*
David O'Hara, *Magna Cum Laude*
Jonathan Parlett, *Magna Cum Laude*
Thomas Pett, *Cum Laude*
Haseeb Sajid

Dean Brown & Trent Huber

Dean Brown & Jonathan Parlett

Minor in Mathematics

Oscar Balan
Shawn Blank
Joseph DeMario
Rafef Elsaid
Joseph Fang
John Ferraioli
Elias Gkouveris
Kristina Hristova
Matthew Jones
Anastasia Kolker
Nathan Kong
Jonathan Lai
Patrick Le
Madeline Lee
Daniel Luo
Hasan Muhammed
Lily Muller
Vasyl Nesteryuk
Mounica Paladugu
Mukul Periwal
Vu Pham
Katherine Quintero
Srija Saha
Aneesh Sahu
Zhandos Shandybayev
William Soleo
Thiago Viegas
Gary Wang
Jacquelyn Welby
Sharese Williams
Hope Wilson
Rose Worrall

Minor in Actuarial Science

Jenny Chen
Patrick Le
Haseeb Sajid
Zoe Schneider

Master of Science

Rachel Brunner
Anish Ghosh
Epitakaduwe Gamage Risitha Randima Nambuwasam
Jessica Tomasko

PhD Graduates

On May 29, **Sarah Gift** successfully defended her thesis *"Constructive Solutions to A. Horn's Problem, Determinantal Representations, and Real Fejér-Riesz Factorization"* written under the supervision of **Professor Hugo J. Woerdeman.**

On June 2, **Amanda Johnson** successfully defended her thesis *"An Analysis of the Entrainment of a Thalamacortical Neuron to Periodic Sensorimotor Signals"* written under the supervision of **Professor Yixin Guo. Dennis Yang** was co-advisor.

Co-op Employers

BlackRock
CHUBB
Comcast Corporation
Drexel University
EverClean Eastern LLC
FMC Corporation
Glenmede
Hamilton Lane Advisors, Inc.
Lavner Camps & Programs
Medidata Solutions, Inc.
Merck
Monitoring Analytics
Philly Office Retail
Venerable
West Pharmaceutical Services

Drexel Mathematics Colloquium

10/2
Pawel Hitczenko (Drexel University)
"2024 Abel Prize: Michel Talagrand and (some of) his work"

10/16
Joseph Gerver and Jinxin Xue (Rutgers University – Camden)
"A new model for a non-collision singularity with 4 bodies"

10/30
Sanne ter Horst (North-West University – Potchefstroom, South Africa)
"The convex invertible cone approach to Nevanlinna-Pick interpolation"

01/08
Marek Ptak (Uniwersytet Rolniczy/University of Agriculture in Kraków – Kraków, Poland)
"The square roots of some classical operators"

01/22
André C. M. Ran (Vrije Universiteit Amsterdam and North-West University – South Africa)
"Eigenvalues of rank one perturbations of matrices"

02/12
Xiaoming Song (Drexel University)
"Stochastic fractional diffusion equations with Gaussian noise rough in space"

04/02
Hugo J. Woerdeman (Drexel University)
"Optimal interpolation in Hardy and Bergman spaces: a reproducing kernel Banach space approach"

04/16
David Reimann (National Museum of Mathematics (MoMath))
"Symmetry Groups: The mathematical connection between patterns in Moorish architecture and the artwork of M.C. Escher"

04/30
Yelena Mandelshtam (Institute for Advanced Studies, Princeton University)
"Voronoi Cells, Zonotopes, and Tropical Algebraic Curves"

Analysis Seminar

10/11
Sarah Gift (Drexel University)
"Construction of a Solution to the Positive Semidefinite Rank 2 Horn Problem"

10/18
Hugo Woerdeman (Drexel University)
"Optimal interpolation in Hardy and Bergman spaces: a reproducing kernel Banach space approach"

10/25
Jurij Volčič (Drexel University)
"Maximal device-independent randomness in every dimension"

11/01
Anatolii Grinshpan (Drexel University)
"Sleeping armadillos"

11/08
Ramesh Garimella (Drexel University)
"Spectral images"

11/15
Abdellah Islam (Drexel University)
"Positivity of hereditary quadratic noncommutative polynomials"

11/22
Hugo Woerdeman (Drexel University)
"Indefinite determinantal representations versus nonsingularities on the noncommutative d-torus"

01/17
James Pascoe (Drexel University)
"Reproducing kernel Hilbert spaces" (reading seminar)

01/24
Chi-Kwong Li (William & Mary and IQC Waterloo)
"Linear maps on normed vector spaces preserving parallel and TEA pairs"

01/31
Hugo Woerdeman (Drexel University)
"The Christoffel–Darboux kernel" (reading seminar)

02/07
Bob Boyer (Drexel University)
"Univariate Christoffel-Darboux analysis" (reading seminar)

02/21
Henry Wolkowicz (University of Waterloo, Canada)
"The omega-condition number: applications to preconditioning and low rank generalized Jacobian updating"

02/28
Boyu Li (University of New Mexico)
"Universality of simple cycle reservoirs and dilation theory"

03/07
Anatolii Grinshpan (Drexel University)
"Multivariate Christoffel-Darboux analysis" (reading seminar)

03/14
Thomas Yu (Drexel University)
"Empirical Christoffel-Darboux analysis" (reading seminar)

04/04
Gideon Simpson (Drexel University)
Gaussian process regression and the kernel method

04/11
James Pascoe (Drexel University)
"Diversification, empirical sparsity, and the invisible hand in quadratic programs over reproducing kernel Hilbert spaces (RKHS)"

04/18
Matthew Ziemke (Drexel)
"Generating quantum dynamical semigroups"

05/16
Julian Bushelli (Drexel)
"The extended free functional calculus"

05/23
Hugo Woerdeman (Drexel)
"Contractive realization theory for the annulus and other intersections of discs on the Riemann sphere"

06/06
Ramesh Garimella (Drexel)
"Non-maximal closed prime ideals in a unital commutative Banach algebra are accessible"

Combinatorics, Algebra & Geometry (CAGE) Seminar

10/10
Greta Panova (University of Southern California)
"Computational Complexity in Algebraic Combinatorics"

10/17
Jennifer Wang (University of Pennsylvania)
"The dimension of the bigraded components of diagonal harmonics are polynomials in n"

11/07
Nikita Borisov (University of Pennsylvania)
"Representation Stability and Stable Ranges via Monomial Expansions"

11/14
Tristan Larson (North Dakota State University)
"Asymptotics of bivariate generating functions with logarithms"

12/05
Steve Melczer (University of Waterloo)
"Effective Algebraic Computation from Constants to Multivariate Generating Functions"

01/16
Qendrim Gashi (University of Prishtina/University of Maryland)
"Maximal cliques of sets of strongly orthogonal roots"

01/23
Colleen Robichaux (University of California, Los Angeles)
Positivity of Schubert coefficients

02/13
Lucas Gafnon (York University)
The quasisymmetric flag variety and equivariant forest polynomials

02/20
Steve Melczer (University of Waterloo)
"Effective Algebraic Computation from Constants to Multivariate Generating Functions"

03/06
Mark Skandera (Lehigh University)
"A generalization of Deodhar's defect statistic for multiplication of Kazhdan-Lusztig elements"

03/13
Patricia Commins (University of Minnesota)
"Left regular bands with symmetry"

04/03
Katie Waddle (University of Michigan)
"Spherical friezes"

04/10
Sarah Brauner (Brown University)
"Crystal skeletons: combinatorics and axioms"

04/17
Darij Grinberg (Drexel University)
"The one-sided cycle shuffles and their spectra"

04/24
Yelena Mandelshtam (University of California, Berkeley)
"KP solitons from algebraic curves and the positive Grassmannian"

05/01
Steven Karp (University of Notre Dame)
"Positivity in real Schubert calculus"

05/08
Darij Grinberg (Drexel University)
"The random-to-random shuffles and their q-deformations"

05/15
Ben Adenbaum (Florida Gulf Coast University)
"On the Toggleability Spaces of Diagrams"

06/05
Tom Roby (University of Connecticut)
"Dynamical algebraic combinatorics: rotating, toggling, whirling, orbiting, averaging"

Partial Differential Equation (PDE) and Applied Mathematics Seminar

09/24
David Ambrose (Drexel University)
"A unified and extended Hilbert transform and Birkhoff-Rott integral"

10/01
Doug Wright (Drexel University)
"Approximation of Calogero-Moser Lattices by Benjamin-Ono Equations"

10/08
Zehui Zhou (Rutgers University)
"On the Convergence of Stochastic Gradient Descent and Its Variants for Inverse Problems"

10/15
Rik Westdorp (Universiteit Leiden)
"Stochastic Soliton Dynamics in the Korteweg-De Vries Equation with Multiplicative Noise"

10/25
John Schotland (Yale University)
"Nonlocal PDEs and Quantum Optics"

10/29
Fadil Santosa (John Hopkins University)
"Determination of small elliptical anomalies in EIT using minimal measurements"

11/08
Anna Mazzucato (Penn State University)
"On the Euler equations with in-flow and out-flow boundary conditions"

11/19
Rakesh (University of Delaware)
"Fixed angle inverse scattering for velocity"

12/03
Shari Moskow (Drexel University)
"The Lippmann Schwinger Lanczos algorithm for inverse scattering problems"

02/21
Haim Grebnev (Yale University)
"The Non-Abelian X-Ray Transform on Asymptotically Hyperbolic Spaces"

03/07
Georgi Medvedev (Drexel University)
"Harmonic maps from post-critically finite fractals to the circle"

04/04
Shanyin Tong (Columbia University)
"A policy iteration method for inverse mean field games"

04/11
Xiong Wang (Johns Hopkins University)[2]
"Interacting Particle Systems on Networks: joint inference of the network and the interaction kernel"

04/18
Shixu Meng (Virginia Tech)
"Exploring Low-Rank Structures in Inverse Scattering"

05/09
Atilla Yilmaz (Temple University)
"Homogenization of nonconvex Hamilton-Jacobi equations in stationary ergodic media"

05/30
David Herzog (University of Iowa)[2]
"Ergodicity and convergence to equilibrium for Langevin dynamics with general potentials"

[2] Jointly with the Probability and Statistics Seminar

Probability & Statistics Seminar[3]

01/17
Gideon Simpson (Drexel University)
"Recent Mathematical Developments in Weighted Ensemble"

01/31
Benjamin Leinwand (Stevens Institute of Technology)
"ACRONYM: Augmented degree corrected, Community Reticulated Organized Network Yielding Model"

02/28
Kenichiro McAlinn (Temple University)
"Bayesian Causal Synthesis for Meta-Inference on Heterogeneous Treatment Effects"

03/14
Nilanjan Chakraborty (Missouri University of Science and Technology)
"Statistical Inference for Subgraph counts"

04/25
Adam Waterbury (Denison University)
"Kernel Estimation for Nonlinear Dynamics"

05/02
Didong Li (UNC Chapel Hill)
"Gaussian Processes Parameter Inference: From Application to Theory"

05/09
Atilla Yilmaz (Temple University)
"Homogenization of nonconvex Hamilton-Jacobi equations in stationary ergodic media"

05/16
Ray Shuyang Bai (University of Georgia)
"An Unusual Example of Extremal Clustering"

06/06
Joshua McGinnis (University of Pennsylvania)
"Homogenization of a Spatially Extended, Stochastic Ion Channel Model"

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[3] Talks that were jointly with the PDE & Applied Math seminar are listed there

Actuarial Information Sessions

Pictured left to right: Tabbi Levengood, Kayla Faustner (Drexel '24, Math)

Patricia Bobo and Daryl Falco organized two actuarial information sessions.

On October 7, 2024, two representatives, Tabbi Levengood and alum Kayla Faustner (Drexel '24, Math), from AmeriHealth came to Drexel to discuss the actuarial profession and career paths to our math majors. A dozen students attended the presentation.

On October 16, 2024, two representatives from Cigna, Sean Sautner and Jacob Digman, met with approximately 15 students to mainly discuss Cigna's Actuarial Executive Development Program (AEDP). They also provided the students with information about being an actuary in the healthcare industry.

The presentations were extremely informative for the students because they explained from soup to nuts the role of an actuary, that is for example, evaluating future events and the risks associated with said events, as well as the process of sitting for and taking actuarial exams.

Math Student Organization

Board Members

Charlotte Buren-Hanley
President

Emilee Huynh
Vice President

Cole Anderfski
Vice President

Danko Ramirez Shareyeva
Event Coordinator

Sharon Francis
Treasurer

Lois Divoll
Media Coordinator

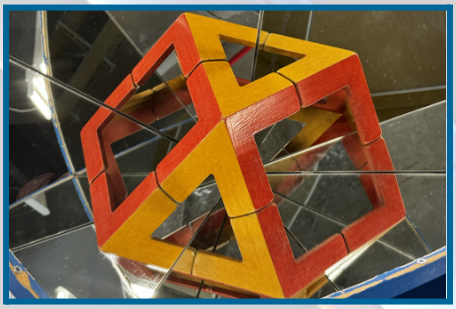
MSO Instagram: @drexelmso
MSO Discord: https://discord.gg/ABFawfjr
Contacts: ccb323@drexel.edu [] drr86@drexel.edu

In the 2024-2025 year, the MSO and their members created a lot of good memories, friends, and lessons. Below you will see some of the best ones!

Field Trip!

- National Museum of Mathematics in New York City
  - On the morning of Sunday, March 9th, 2025, 45 Drexel students boarded a charter bus and took off to the Big Apple. Here, students got to spend the day exploring the numerous exhibits of the National Museum of Mathematics in New York City.
  - The MSO would like to thank the Math Department Faculty and our generous donors for their support in making this event come to fruition. We couldn't have done it without you!

National Museum of Mathematics in New York City



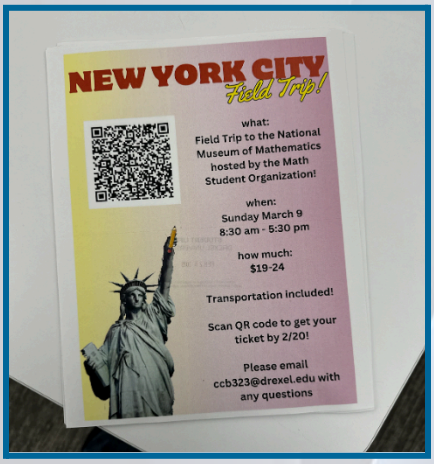
Polyscope: Insert a simple wooden shape into the mirrored wells to create amazing polyhedral images.

Square-Wheeled Trike: Take a smooth ride on square wheels.

MoMath: The National Museum of Mathematics is an award-winning museum that highlights the role of mathematics in illuminating the patterns and structures.

Slice-A-Cone: Circles, ellipses, parabolas, hyperbolas are called *conic sections*. They can all be obtained by slicing the cone $x^2+y^2=z^2$ with a plane.

MoMath: The National Museum of Mathematics is an award-winning museum that highlights the role of mathematics in illuminating the patterns and structures.
Pictured: Rachel Hoffecker & Charlotte Buren-Hanley



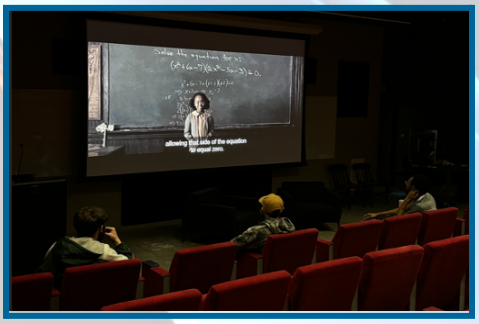
More than 20 promotional invitational posters were hung around campus!

Events Hosted

The MSO board planned and executed 22 events in the 2024-25 year!

- Math Movie Nights: 6
- Study Squads: 4
- General Body Meetings: 3
- Math Games: 3
- Competition Math: 2
- Putnam Talk: 1
- Poker Night: 1
- NYC Field Trip: 1
- Welcome Week: 1

During all the Movie Nights, the MSO made sure to provide everyone with a good bowl of popcorn!



On Friday, February 21st the MSO watched the movie “Hidden Figures”, a true story of three African American female mathematicians who played a crucial role in the early days of the US space program.

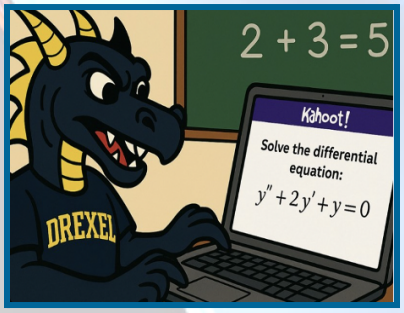
On Friday, May 10th the MSO held a friendly poker tournament while we had a conversation on the strategies and mathematics behind the game.

On Friday, January 24th the MSO took over PISB 120 and watched "The Man Who Knew Infinity", a biographical movie on the short and eventful life of the mathematician Srinivasa Ramanujan.

On Thursday, February 6th the MSO held a GBM. We discussed the agenda for the term, took in ideas from members and had a delicious pizza to complement the meeting.

Math Games: A fun-filled event featuring math-inspired games like Prime Climb, Math Tac Toe, SET, and Sumology!
Also a variety of puzzles and brainteasers at different difficulty levels to challenge your ingenuity and keep you thinking.

Putnam Exam Info Session: The Putnam Exam, one of the most prestigious and challenging undergraduate math competitions in the world. Graduate student Jasper Ty, joined us for this exciting event where he broke down everything needed to know about the exam.



Competition Math for Fun! Join the MSO in solving competitive math problems! This event is all about diving into challenging, competition-style problems in a collaborative setting.

SIAM Chapter

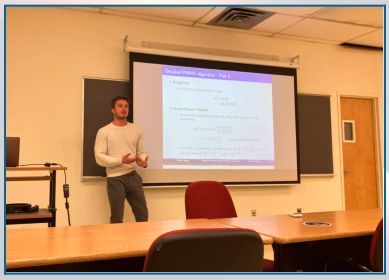
(Society for Industrial and Applied Mathematics)

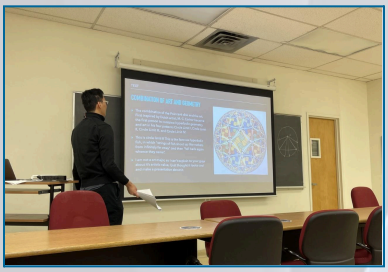
Board Members

			
Michael Becht *President*	Abdellah Islam *Vice President*	Hunter Wages *Treasurer*	Jessica Tomasko *Secretary*

Presentations

October 7 *The Inverse Function in Free Function Theory & the Currently so-called "Functor to functor functor calculus"* Julian Bushelli	October 21 *Minesweeper: Logic, Computation, Physics?* Jasper Ty
October 28 *Halloween Party*	November 4 *Counting Restricted Necklaces* Peter Mao
November 11 *Noncommutative Quadratics* Abdellah Islam	November 18 *Posets and Rowmotion* Michael Becht

November 25 *When is a Triangle a Square?* Nick Radley	December 12 *End of Quarter Party*
January 13 *Corner Scattering* Hayden Ruff	January 27 *Schubert Polynomials* Jasper Ty
February 3 *Exploring the Capset Problem: An Introduction* Ibukun Ogunjimi	February 10 *Algebraic Music Theory* Benjamin Liber
February 17 *Functor to Functor: Functor Calculus (now with genuine functors!!)* Julian Bushelli	February 24 *The Large Deviations Principle (LDP) for the Nonlinear Schrödinger (NLS) equation* Sultan Aitzhan
March 3 *Adaptive Random Fourier Features*  Hunter Wages	March 10 *Integration Bee*

April 9 *Epsilon Talk: Pattern Formation in Swarmalators*  AJ Tortoriello	April 9 *Epsilon Talk: Hyperbolic Fish*  Tingyu Zhou
April 16 *Epsilon Talk: Liquid Crystals* Elizabeth Ehme	April 30 *Noncommutative Gröbner bases and Bergman's diamond lemma* Jasper Ty
May 7 *Feynman's Trick Integral Extravaganza* Nick Radley	May 14 *The Interpolation Problem* Abdellah Islam
May 21 *Dissertation Practice* Sarah Gift	May 28 *Dissertation Practice* Amanda Johnson
June 6 *Active Learning Strategies* Jessica Tomasko	*Report by Abdellah Islam*

MathBytes

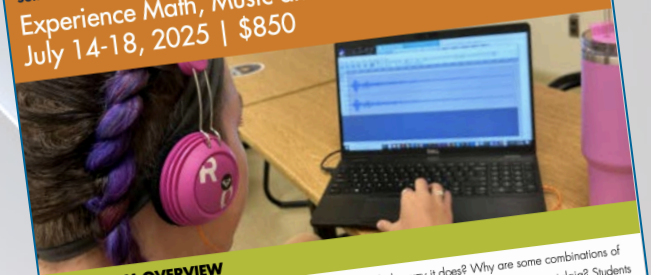
MathBytes is a graduate student-led club that focuses on building relationships outside of the classroom/academic setting. During the 2024-2025 academic year, MathBytes' main activity was competing in Trivia every Wednesday night at New Deck Tavern, a local Penn/Drexel pub. Trivia is taken very seriously at New Deck Tavern, sometimes there as many as 40 teams competing. While success was limited when the team was first founded in 2022, we are now one of the "Mount Rushmore Squads" at New Deck Tavern. In the 2024-2025 season, we have added 10 wins and 7 second place finishes.

In the upcoming academic year, we will continue to develop new social events for MathBytes. Some ideas that have been discussed are museum nights, putt-putt competitions, volleyball tournaments, and of course, continuing to rack up weekly trivia wins at New Deck Tavern. *Report by Hunter Wages.*

2025 Summer Camps

SUMMER INSTITUTE | DREXEL UNIVERSITY COLLEGE OF ARTS AND SCIENCES

Experience Math, Music and Coding
July 14-18, 2025 | $850



PROGRAM OVERVIEW

Can you feel the beat? Have you ever wondered why music sounds the way it does? Why are some combinations of notes pleasant while others are unpleasant? Why do some sounds make us feel joy and others bring nostalgia? Students in Drexel's Math, Music and Coding Camp will investigate these harmonic questions through the lens of mathematics. In this one-week program presented by the Department of Mathematics, we'll explore how math can help us make sense of different aspects of sound and music. Each day, students will apply musical and mathematical concepts using a coding platform called Sonic Pi, an open-source live coding language for music creation and performance used by professional musicians, VR developers, and programmers. This program is open to students regardless of musical background. We will be using algebra and trigonometry, but calculus is not a prerequisite.

PROGRAM DETAILS

DATES ..... July 14–18, 2025
LOCATION ..... Drexel University, Philadelphia, PA, 19104
FORMAT ..... On-campus, commuter, optional residential stay (additional fee).
TUITION COST $850
ELIGIBILITY ..... Rising high school juniors and seniors.
DEADLINE ..... June 20, 2025
DISCOUNTS ..... Early Bird (Pay non-refundable tuition by April 30, 2025): $800

SUMMER INSTITUTE | DREXEL UNIVERSITY COLLEGE OF ARTS AND SCIENCES

Sample Schedule | July 14-18, 2025

Program content and sequence may change due to weather, staff schedules or other circumstances.

DAY 1
Pythagorean Tuning System

- Introduction to tuning systems
  - » Pythagorean tuning
  - » Just intonation
- What we hear: the mathematics of the four main attributes of sound
  - » Coding introduction
  - » Writing your first bit of "musical code"

DAY 2
Western Music Theory

- Chords, Scales, and Rhythm
- How modern (western) music theory evolved from the Pythagorean system
- Using mathematics to explain why/how we build chords and scales like we do
- Implementing chords and scales with code
  - » **Mini project 1:** write a melody with a chord progression

DAY 3
Outside the Box

- Looking at non-Western/European music theories
- Using mathematics as a bridge between different musical cultures
- Applying different techniques of composition with code
  - » **Mini project 2:** Making music with non-Western scales and rhythms

DAY 4
Sampling

- Working with non-musical sounds to make music
- Exploring the mathematics behind sampling, adding effects, and modifying recorded sounds
- Working with "found sounds"
  - » **Mini project 3:** Record a non-musical sound and make something musical out of it with code

DAY 5
Recital Day!

- Spend the first half of the day refining our final compositions.
  - » Bring together everything from the first four days
- After lunch we'll have our recital where we'll each share what we worked on and what we hope to learn and do next

APPLY TODAY: drexel.edu/summer/arts-sciences

QUESTIONS? Email us! coas@drexel.edu

SUMMER INSTITUTE | DREXEL UNIVERSITY COLLEGE OF ARTS AND SCIENCES

Experience Crytology: Coding and Decoding Secret Messages
July 14-18, 2025 | $850

PROGRAM OVERVIEW

Mission Possible! Drexel's Mathematics Department will lead students on a fascinating journey into the world of cryptography, the art of secret communication through coding and decoding. This cryptic and highly specialized technique involves the skillful transformation of plain messages into enigmatic text, rendering them comprehensible only to their intended recipients. In an age marked by the widespread use of modern communication technologies, the need for security in transmitting vital messages over the Internet has become a paramount concern. Future James Bonds will have the opportunity to utilize software such as Excel or Python.

PROGRAM DETAILS

DATES ..... July 14–18, 2025
LOCATION ..... Drexel University, Philadelphia, PA, 19104
FORMAT ..... On-campus, commuter, optional residential stay (additional fee).
TUITION COST $850
ELIGIBILITY ..... Rising high school sophomores, juniors and seniors.
DEADLINE ..... June 20, 2025
DISCOUNTS ..... Early Bird (Pay non-refundable tuition by April 30, 2025): $800

SUMMER INSTITUTE | DREXEL UNIVERSITY COLLEGE OF ARTS AND SCIENCES

Sample Schedule | July 14-18, 2025

Program content and sequence may change due to weather, staff schedules or other circumstances.

DAY 1

- Overview of Cryptology
- Foundational Mathematical Concepts in Cryptography
- Practical Application of Excel in Cryptography
- Caesar Cipher

DAY 2

- Exploring the Multiplicative Cipher
- Understanding Affine Transformations in Cryptography
- Hands-on Practice: Coding and Decoding Exercises

DAY 3

- Understanding matrix multiplication and inverses for 2 × 2 Matrices
- Introduction to the Hill Cipher in Cryptography
- Practice Exercises

DAY 4

- Exponential Ciphers
- RSA Encryption
- Practice Exercises

DAY 5

- Review of the topics
- Group presentations on assigned topics
- Wrap-up

APPLY TODAY: drexel.edu/summer/arts-sciences

QUESTIONS? Email us! coas@drexel.edu

Drexel University College of Arts and Sciences

Pi Day

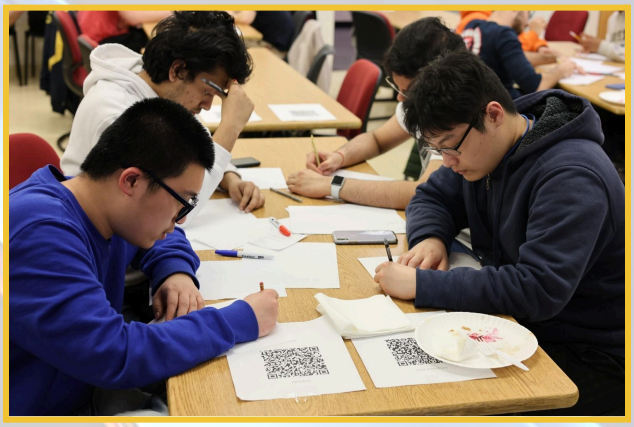
Pi Day was held on March 14, 2025. The event consisted of several competitive games: Math Taboo, Jeopardy, and Integration Bee.

There were many happy smiles captured by **Dimitri Papadopoulos**, our designated photographer.

The Math Taboo was run by **Andrew and Caitlin Klimas**.
In a tough battle, the team of **Michael Gribbin, Rose Lancaster, Greg Warren, Maia and Michael Grinshpan**, guessed the most words correctly. There were some lucky guesses!

Adam Rickert ran Jeopardy, with the help of Juliane Dalben. 12 teams participated in the competition, which consisted of several rounds. The room was packed!

In a fantastic display of knowledge, the first place was won by the team “Irrational rainbow” of Kiana Ahmari, Nicholas Biglin, Eliah Seignourel, and Saffron Verhagen.



6 teams took part in the Integration Bee run by Anatolii Grinshpan, Andrew Klimas, and Adam Rickert. After five rounds, two teams tied for the first place: “Fundamental Group” of Brian Gerra, Abdellah Islam, Nick Radley, and Jasper Ty and “AG fan club” of Michael Gribbin, Emilee Huynh, Rose Lancaster, Greg Warren, and Michael Grinshpan. “Fundamental Group” won the tiebreaker, and “AG fan club” won the bonus round and earned the highest score.

In the end, everybody was so exhausted by doing the integrals that there was no energy left for the Pie Eating Competition. Oh well, we may have one next year.

Math Resource Center

Overview

The Math Resource Center (MRC) at Drexel University, located in Room 207 of the Korman Center, serves as a vital academic support hub for undergraduate students enrolled in mathematics courses. Operating as part of the McGonigal Academic Resource Center (ARC), the MRC offers free, walk-in tutoring and specialized exam preparation sessions, contributing significantly to the academic success of students across various disciplines.

Mission & Services

The MRC's mission is to provide accessible, expert and systematic tutoring for all undergraduate math courses offered by the Department of Mathematics. Services include:

- In-Person Tutoring:
  - Available Monday through Thursday from 10 a.m. to 7 p.m., and Friday from 10 a.m. to 4 p.m., with no appointment necessary.
- Study Booster Sessions:
  - Focused review sessions held during midterms and finals week for courses such as Math 100, 101, 102, 117, 121, 122 and 200.
- Tutoring Staff:
  - Comprising faculty, math graduates and undergraduate students who have excelled in the courses they tutor, ensuring relatable and effective peer support.

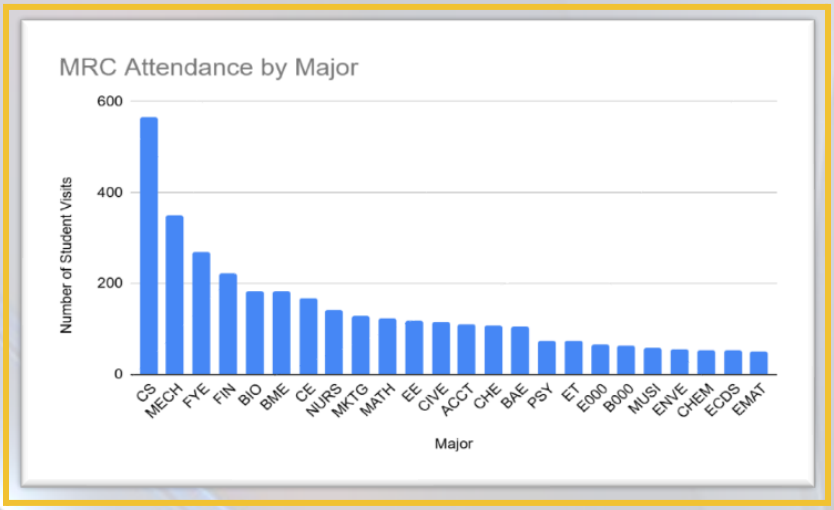
Student Engagement & Impact

In the 2024–2025 academic year, the MRC continued to experience high engagement levels, with consistent attendance during regular tutoring hours and increased participation during Study Booster Sessions. These sessions are particularly beneficial for students seeking targeted assistance before exams.

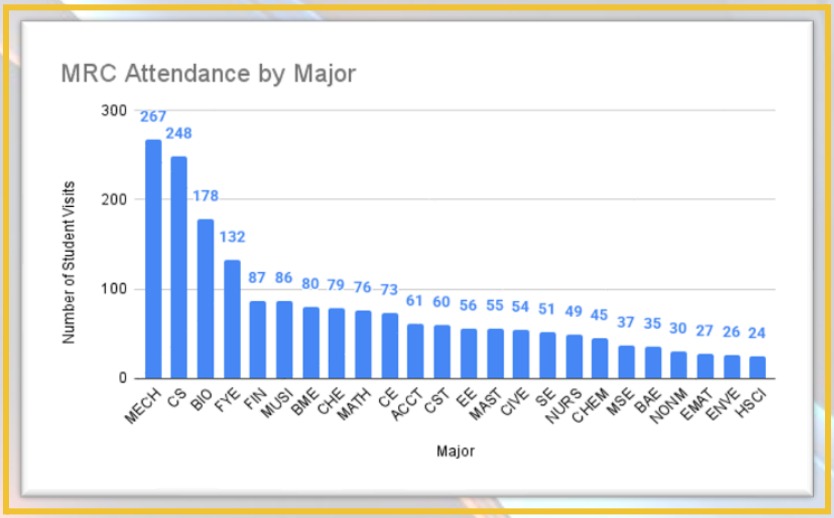
The MRC recorded 4543, 2376, 2036 student visits during the fall, winter and Spring quarters respectively.

Comparison of MRC Attendance by Major

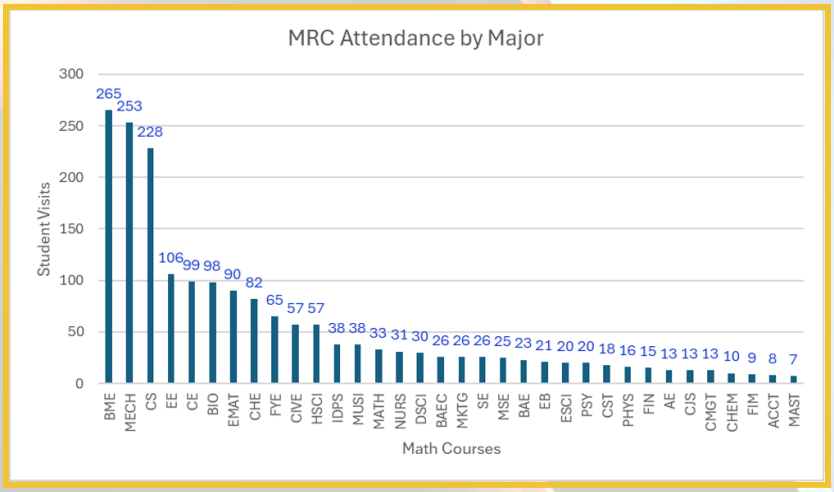
Fall:



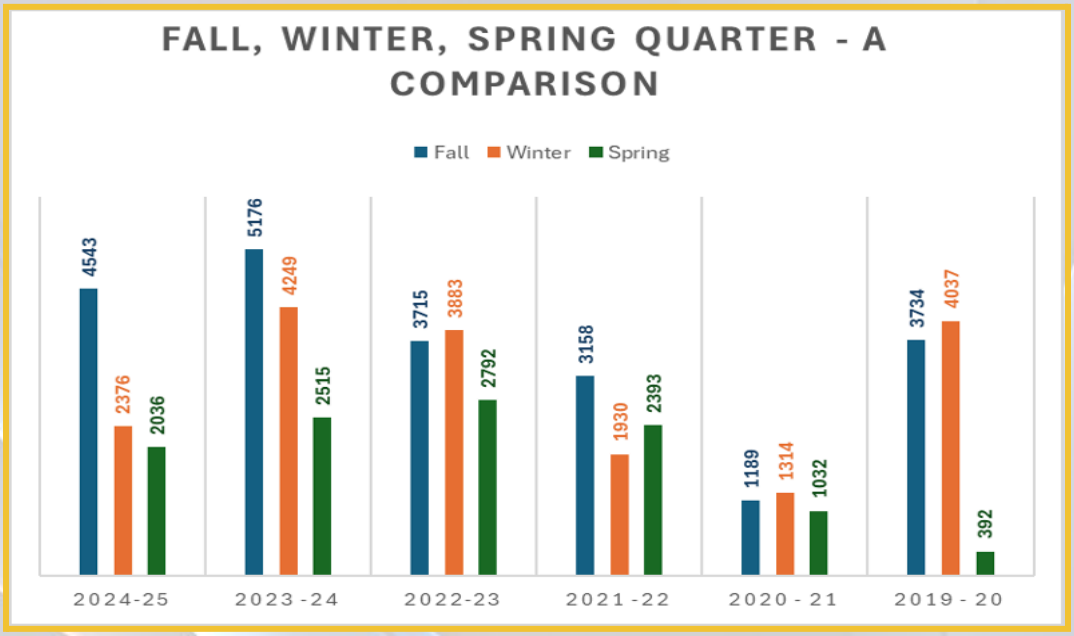
Winter:



Spring:



MRC – Student Visits – A Comparison from 2019- 20 to 2024-25



Feedback from students indicates that regular visits to the MRC have led to significant improvements in their mathematical understanding and academic performance. Many students report enhanced confidence in tackling course material and a deeper comprehension of complex concepts.

Integration with Academic Resource Center

As a component of the ARC, the MRC benefits from a collaborative environment that includes other academic support services such as writing assistance, academic coaching, and tutoring for other STEM subjects. This integration streamlines access to resources, fostering a comprehensive support system for students.

MRC in Action

CoAS Open House

Fall Peer Tutor Orientation


Tutoring in Progress


Future Directions

Looking ahead, the MRC plans to:

- Expand Online Tutoring Options:
  - To accommodate students who prefer remote assistance or are unable to attend in person.
- Enhance Collaboration with Faculty:
  - To align tutoring sessions more closely with course curricula and address specific student needs.
- Increase Outreach Efforts:
  - To raise awareness about the MRC's services among incoming students and encourage early utilization of resources.

Contact Information

For more information or to access tutoring services, students can visit the MRC at:
Location: Korman Center, Room 207, 15 South 33rd Street, Philadelphia, PA 19104
Phone: (215) 571-3594 **Email:** sp955@drexel.edu
Website: https://drexel.edu/coas/academics/departments-centers/mathematics/math-resource-center/

The MRC remains committed to supporting Drexel students in their academic endeavors, providing a welcoming environment where they can seek assistance, build confidence, and achieve success in their mathematical studies.

Report Prepared By: Sobha Philip

In & Around Korman

~Snowy Days~

~Campus Bunnies~

~Spring Term Wawa Lunch~