Department of Mathematics

Annual Report 2011—2012

DREXEL UNIVERSITY
College of
Arts and Sciences

Message From the Department Head

Dear Alumni and Friends,

It is my pleasure to present our department's annual report which highlights and documents the many activities and accomplishments of our faculty and students.

Again our department has enjoyed recognition by numerous awards to our faculty and students. Assistant Professor Simon Foucart won the Antelo Devereux Award for Young Faculty in support of his research in Compressive Sensing, and Teaching Assistant Professor Daryl Falco won the Barbara G. Hornum Award for Teaching Excellence in recognition of his educational accomplishments as well as his co-curricular activities with our undergraduates. Our graduate students did very well this year as well: Daniel Parry was awarded the Graduate Student Research Award, Jeffrey Armstrong both the Teaching Assistant Excellence Award and the Al Herr Teaching Assistant Award, and David Kimsey the Outstanding Doctoral Dissertation Award. In addition, Teaching Assistants Michael Minner, Scott Rome and Brian Scott were also among the nominees of the Teaching Assistant Excellence Award. Finally, Avinash Dalal was recognized by the The Society for Industrial and Applied Mathematics (SIAM) for his outstanding efforts for Drexel's SIAM Student Chapter. The accomplishments of our undergraduates also deserve special recognition. At the annual honors day last spring, Michael Valle and Anna Petrone won the Robert J. Bickel Award; Juliana Speroni, Devin Scott, Huey Wong, and Ashley Devine won the Harry Muchnic award; and Daniel Zollers won the Frank Williams prize. Finally, Martin Ghaidarov and Justin Mangiaraci received First and Second Senior Honors, respectively. Kudos to all!

Finally, let me mention that the department itself was recognized as well by being invited to be among 10 mathematics department to be highlighted at the 2012 Joint Mathematics Meetings in held in Boston. As a consequence, we made a video that was available on several websites (MAA, AMS, etc.). In January 2012 alone the video had 10,894 views. If you would like to see it, please search for it on YouTube using for instance 'Drexel Department of Mathematics'.

As always we welcomed several new department members. David Koslicki joined our department as Postdoctoral Associate working with Simon Foucart on the project "Improving Analysis of Microbial Mixtures through Sparse Reconstruction and Statistical Inference", while Assistant Research Professor Yang Liu joined the department working with David Ambrose on the project "Efficient Surface-Based Numerical Methods for 3D Interfacial Flow with Surface Tension". David Scheinker is a new Visiting Assistant Professor working with Hugo Woerdeman on problems related to the Nevanlinna-Pick interpolation problem. Our undergraduate teaching mission received fresh support from two new teaching faculty members: Huilan Li and Dennis Yang. Also, on the staff there were some changes: Byron Greene took over as Coordinator of the Math Resource Center and Paige Reinertsen joined our department as Administrative Coordinator.

This year's distinguished lecture series brought to campus Professor Bernd Sturmfels, Professor of Mathematics, Statistics and Computer Science at UC Berkeley and expert in algebraic statistics and computational algebraic geometry. In his lecture aimed at a general audience, he explained the importance of 'Tropical Mathematics' including some of its applications, while in his more technical lecture he described the significance of the central curve in linear programming.

With Byron Greene taking over the coordination of our Mathematics Resource Center we have seen some significant changes: the room was reorganized by taking away several of the partitions and by introducing a new entrance at door 249. With that and the newly installed ceiling fans, the center has gained a more spacious and comfortable feeling. This was all very welcome as again we saw a substantial increase in attendance from the previous academic year.

On a more technical note, as the University changed the timing of the annual review process we have adjusted the time period that is covered in our grants, publications and presentation sections. From now on we will cover these accomplishments by calendar year, with the current issue covering the 2011 calendar year.

We hope that you are as excited about our department as we are. We greatly appreciate your feedback and your involvement as it helps enormously in accomplishing our mission of excellence in research and education.

Thank you and Best Wishes,

Hugo J. Woerdeman
Professor and Department Head

Tenured/Tenure-Track Faculty

David M. Ambrose, Ph.D. (Duke University) Assistant Professor. Applied analysis and scientific computing for nonlinear systems of partial differential equations, especially free-surface problems in fluid dynamics.

Robert P. Boyer, Ph.D. (University of Pennsylvania) Professor. Functional analysis, C*-algebras and the theory of group representations.

Patrick Clarke, Ph.D. (University of Miami) Assistant Professor. Homological Mirror Symmetry, Landau-Ginzburg Models, Algebraic Geometry, Symplectic Geometry.

Bo Dong, Ph.D. (University of Minnesota) Assistant Professor. Numerical analysis and scientific computing, in particular, discontinuous Galerkin methods, hybridizable finite element methods, and mixed finite element methods.

Simon Foucart, Ph.D. (University of Cambridge) Assistant Professor. Compressive Sensing; Approximation Theory, especially Spline Functions; Computational Mathematics; Applied and Classical Analysis.

Pavel Grinfeld, Ph.D. (Massachusetts Institute of Technology) Associate Professor. Intersection of physics, engineering, applied mathematics and computational science.

Yixin Guo, Ph.D. (University of Pittsburgh) Assistant Professor. Biomathematics, dynamical systems, ordinary and partial differential equations and math education.

R. Andrew Hicks, Ph.D. (University of Pennsylvania) Associate Department Head, Professor. Robotics, computer vision, catadioptics.

Pawel Hitczenko, Ph.D. (Warsaw University) Professor. Probability theory and its applications to analysis, combinatorics, wavelets, and the analysis of algorithms.

Dmitry Kalyuzhnyi-Verbovetskyi, Ph.D. (Kharkov National University) Associate Professor. Operator theory, systems theory, complex analysis, C*-algebras and harmonic analysis.

Tenured/Tenure-Track Faculty

Georgi S. Medvedev, Ph.D. (Boston University) Associate Professor. Applied mathematics, nonlinear diffusion equations, mathematical biology, dynamical systems, numerical methods.

Jennifer Morse, Ph.D. (University of California, San Diego) Professor. Algebraic and tableaux combinatorics, discrete math, symmetric and special functions, basic hypergeometric series.

Shari Moskow, Ph.D. (Rutgers University) Associate Department Head, Professor. Applied PDEs and numerical analysis, in particular homogenization theory, inverse problems, and related asymptotic and numerical methods.

Ronald K. Perline, Ph.D. (University of California at Berkeley) Associate Professor. Applied mathematics, numerical analysis, symbolic computation, differential geometry, mathematical physics.

Marci A. Perlstadt, Ph.D. (University of California at Berkeley) Associate Professor. Applied mathematics, computed tomography, numerical analysis of function reconstruction, signal processing, combinatorics.

Eric Schmutz, Ph.D. (University of Pennsylvania) Professor. Probability, combinatorial optimization.

Li Sheng, Ph.D. (Rutgers University) Associate Professor. Discrete optimization, probabilistic methods in combinatorics, operations research, graph theory and its application in molecular biology, social sciences and communication networks, biostatistics, computer science.

Justin R. Smith, Ph.D. (Courant Institute, New York University) Professor. Homotopy theory, operad theory, quantum mechanics, quantum computing.

Hugo J. Woerdeman, Ph.D. (Vrije Universiteit, Amsterdam) Department Head, Professor. Matrix and operator theory, systems theory, signal and image processing, and harmonic analysis.

J. Douglas Wright, Ph.D. (Boston University) Assistant Professor. Partial differential equations, particularly the behavior of nonlinear waves in systems arising in hydrodynamics, optics and cell biology.

Tenured/Tenure-Track Faculty

Thomas Yu, Ph.D. (Stanford University) Associate Professor. Multiscale mathematics, wavelets, applied harmonic analysis, subdivision algorithms, nonlinear analysis, applied differential geometry and data analysis

Teaching Faculty

Jason Aran, M.S. (Drexel University) Instructor.

Michael Daniel, Ph.D. (University of Colorado) Assistant Teaching Professor. Number Theorist specializing in Modular Forms and Function Fields.

Alexander Dolgopolsky, Ph.D. (Case Western Reserve University) Associate Teaching Professor. Applied mathematics.

James W. Donnelly, M.S. (Drexel University) Associate Teaching Professor. Math foundations of engineering.

Daryl Falco, M.S. (Drexel University) Assistant Teaching Professor. Discrete mathematics and automata theory.

Raymond J. Favocci, III, M.S. (Drexel University) Assistant Teaching Professor.

Anatolii Grinshpan, **Ph.D.** (University of California, Berkeley) Assistant Teaching Professor. Function Theory and Operator Theory, Harmonic Analysis, Potential Theory

Robert Immordino, M.S. (Drexel University) Assistant Teaching Professor

Teaching Faculty

Taylor Kingsbury, M.S. (Drexel University) Instructor

Huilan Li, Ph.D. (York University) Assistant Teaching Professor

Hwan Yong Lee, Ph.D. (University of Utah) Assistant Teaching Professor

Andrey Melnikov, Ph.D. (Ben Gurion University) Assistant Teaching Professor

Marna A. Mozeff, M.S. (Drexel University) Undergraduate Advisor, Associate Teaching Professor.

Gregory L. Naber, D.A. (Carnegie-Mellon University) Teaching Professor. Topology, differential geometry, and mathematical physics, particularly relativity and gauge theory.

Adam C. Rickert, M.S. (Drexel University) Associate Teaching Professor.

Oksana P. Odintsova, Ph.D. (Omsk State University) Associate Teaching Professor. Math education.

Dimitrios Papadopoulos, M.S. (Drexel University) Instructor

Patricia Henry Russell, M.S. (Drexel University) Teaching Professor. Probability and statistics.

Teaching Faculty

Judy T. Smith, M.A. (West Chester University) Assistant Teaching Professor.

Jeanne Steuber, M.S. (Boston University) Assistant Teaching Professor.

Kenneth Swartz, Ph.D. (Harvard University) Assistant Teaching Professor. Applied Probability and Statistics

Vaishalee Wadke, M.S. (Columbia University) Instructor.

Richard White, M.S. (St. Joseph's University) Instructor.
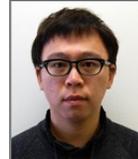
Dennis G. Yang, Ph.D. (Cornell University) Assistant Teaching Professor

Visiting Faculty / Post Doctoral Associates

David Koslicki, Ph.D. (Penn State University) Post Doctoral Associate

Yang Liu, Ph.D. (University of Minnesota) Assistant Research Professor

David Scheinker Ph.D. (University of California San Diego) Visiting Assistant Professor

Adjunct Faculty

John Coppola, M.S. (Widener University)
Harold Gilman, M.S. (Temple University)
June Gordon, M.S. (Drexel University)
Boris Kheyfets Ph.D. (Drexel University)
Elana Koublanova, Ph.D. (Leningrad State University)
Wanda Kunkle, M.S. (Drexel University)
Leo Lampone, Ph.D. (Drexel University)
Yun Yoo, Ph.D. (Drexel University)
Sergio Zefillipo, M.A. (Villanova University)

Emeritus Faculty

Loren N. Argabright, Ph.D. (University of Washington) Professor Emeritus
Robert C. Busby, Ph.D. (University of Pennsylvania) Professor Emeritus
Ewaugh F. Fields, Ed.D. (Temple University) Dean Emeritus, Professor Emeritus
William M.Y. Goh, Ph.D. (Ohio State University) Associate Professor Emeritus
Charles J. Mode, Ph.D. (University of California at Davis) Professor Emeritus
Chris Rorres, Ph.D. (Courant Institute, New York University) Professor Emeritus
Jet Wimp, Ph.D. (University of Edinburgh) Professor Emeritus

Staff

Mindy Gilchrist
Graduate Program Coordinator

Byron Greene
Administrative Coordinator
(until Jan, 4, 2012)
Manager, Math Resource Center
(starting Jan. 5, 2012)

Kenneth Hemphill
Budget Coordinator

C. Gene Phan
Computer Specialist

Paige Reinertsen
Administrative Coordinator
(starting Mar. 5, 2012)
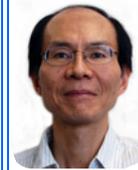
David Shen
Manager,
Math Resource Center
(until Jan. 4, 2012)

Teaching Assistants and Research Assistants

Gulnara Abduvalieva

Jeffrey Armstrong

Lei Cao
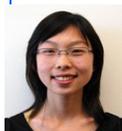
Jingmin Chen

Avinash Dalal

Phillip Gaudreau

Timothy Hayes

Derek Heilman

Daniel Jordon

Kimberly Kilgore

Nicole Krick

Selcuk Koyuncu

Michael Minner

Daniel Parry

Heather Richardson

Scott Rome

Brian Scott

Xin Shao

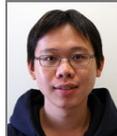**Caroline Shapcott**

Xuezhi Tang

**Kelly Toppin**

Jonah Smith

Chung Wong

Le Yu

New Visiting Faculty Profiles

David Koslicki
Postdoc

David earned his PhD from Penn State under the advisement of Manfred Denker and is interested in adapting techniques from symbolic dynamics to genomic analysis. Before coming to Drexel, David had short research appointments at UCLA and Georg-August Universität, Göttingen. Education: PhD. mathematics, Pennsylvania State University (2012) B.S mathematics, Washington State University (2006) Research interests: Mathematical: Martin boundaries, countable state Markov chains, potential theory, symbolic dynamics. Biological: Alignment-free analysis of next generation sequencing data, entropy techniques, models of molecular evolution, characterizing epigenetic variation.
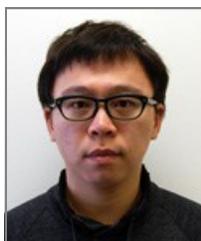
Yang Liu
Assistant Research Professor

Yang Liu received a Ph.D in Mathematics from University of Minnesota in 2011, under the supervision of Professor Yoichiro Mori. His dissertation project is in the field of numerical analysis. He completed a B.S. in Mathematics at University of Science and Technology of China in 2005.

David Scheinker
Visiting Assistant Professor

David Scheinker earned a PhD in Mathematics under Jim Agler from the University of California San Diego in 2011 and Bachelors and Masters degrees in Mathematics from the University of Pennsylvania in 2005. Before joining Drexel, David taught at the University of San Diego. His research is in operator theory and functions of several complex variables. He is currently studying the theory of bounded analytic functions and how the theory of bounded analytic illuminates and is illuminated by operator theory and von Neumann's inequality. In addition to his research, David has authored a book of math problems and solutions, is currently working on a popular book about the infinite titled "Infinity in Wonderland," and has spent several summers teaching theoretical math to gifted 10 and 11 year olds for the Johns Hopkins CTY program.

New Teaching Faculty Profiles

Huilan Li
Assistant Teaching Professor

Huilan Li earned her Bachelor's Degree and Master's Degree in Mathematics from the Beijing Normal University in 1999 and 2002. She continued her doctoral studies in Mathematics at the York University in Toronto. After completing her Ph.D. in 2007, she spent half year at Fields Institute and eight months at LaCIM in the Universite du Quebec a Montreal as a Postdoctoral Fellow. From 2008-2011, Huilan was a Postdoctoral Fellow at the American Institute of Mathematics and the Drexel University. Her research interests are Algebraic and Enumerative Combinatorics, Representation Theory of Finitely Dimensional Algebras, Algebraic and Arithmetic Number Theory and Algebraic Geometry.

Dennis G. Yang
Assistant Teaching Professor

Dennis Guang Yang earned his Ph.D. in Theoretical and Applied Mechanics from Cornell University in 2008. He was a Visiting Assistant Professor in the Department of Mathematics at Cornell from 2008 to 2010. During the 2010-11 academic year, he was an Assistant Research Professor in the Department of Mathematics at Drexel University, and he became an Assistant Teaching Professor in Fall 2011. His research areas are dynamical systems, neurodynamics, and classical mechanics.

New Staff Profile

Paige Reinertsen
Administrative Coordinator

Paige Reinertsen is a Drexel alumna who received her B.S. in Culinary Arts in 2005 and became a Pastry Chef in Philadelphia. She returned to Drexel 2007 to work for the DragonCard Office and is presently pursuing a B.A. in English. She continues to bake for fun for humans as well as dogs, and recently became a volunteer for the Philadelphia Animal Welfare Society. (PAWS).

Department of Mathematics

Top Row: Derek Heilman, Scott Rome, Thomas Yu, Ken Hemphill, Simon Foucart, Taylor Kingsbury, Hugo Woerdeman, Robert Immordino, Eric Schmutz, David Koslicki, Kelly Toppin • **Standing Row Rear:** Andrew Hicks, Jonah Smith Michael Minner • **Standing Row Front:** Gene Phan, James Donnelly, Jingmin Chen, Jeffery Armstrong, Phillip Gaudrerau, Raymond Favocci, Dmitry Kaliuzhnyi-Verbovetskyi, Mindy Gilchrist, Bo Dong, Richard White, Doug Wright, Xin Shao, Daniel Parry, Pavel Grinfeld, Yixin Guo, Marna Mozeff • **Sitting:** Daniel Jordon, Byron Greene, Anatolii Grinshpan, Kenneth Swartz, Caroline Shapcott, Timothy Hayes, Oksana Odintsova, Jeanne Steuber, Chung Wong, Shari Moskow, Heather Richardson

Employee Service Award Recipients

The Drexel University Employee Service Awards Ceremony was held on December 15, 2011, at the Sheraton Philadelphia City Center Hotel. The following members of the Drexel Mathematics department were recognized for their service at Drexel University.

Five Year Award Recipients

Daryl Falco	Assistant Teaching Professor
Anatolii Grinshpan	Assistant Teaching Professor
Yixin Guo	Assistant Professor
Jennifer Morse	Professor
Richard White	Instructor
Paige Reinertsen	Administrative Coordinator

Faculty Awards

Antelo Devereux Award for Young Faculty

Pictured: Provost Greenberg, Brian Daly, Simon Foucart, Dean Murasko

Dr. Simon Foucart earned a Masters of Engineering from the Ecole Centrale Paris and a Masters of Mathematics from the University of Cambridge in 2001. In 2006 he received his Ph.D. in Mathematics at the University of Cambridge, specializing in Approximation Theory. After two successful postdoctoral positions at Vanderbilt University and Université Paris 6, he joined Drexel's Mathematics Department in 2010 and has already demonstrated his amazing aptitude in research with a portfolio that includes 17 well cited publications in strong peer reviewed journals, a book contract for his joint 600 page manuscript 'A Mathematical Introduction to Compressive Sensing,' an interdisciplinary NSF grant, and a strong national and international reputation, evidenced by his many invited talks and seminars across the globe. His research was also recognized by the *Journal of Complexity* for which Dr. Foucart received the 2010 Best Paper Award. Dr. Foucart intends to continue his research by expanding on the theoretical and practical range of Compressive Sensing. In particular, he would like to apply his findings in bioinformatics, precisely in genomics and metagenomics. Indeed, emerging cutting edge mathematical techniques have not reached these areas yet.

Faculty Awards

Barbara G. Hornum Award for
Teaching Excellence

Pictured: Provost Greenberg, Daryl Falco, Sr. Vice Provost DiNardo

Assistant Teaching Professor Daryl Falco, MS Mathematics and MS Computer Science, started graduate work at Drexel University in 2001. He worked as a research assistant for the Intelligent Time-Critical Systems Laboratory and as a teaching assistant for the mathematics department where he received the Albert Herr Teaching Assistant Award in 2003. In January 2007 he joined the Department of Mathematics as a full-time teaching faculty member. Daryl has been teaching a variety of undergraduate classes, including algebra, calculus, and discrete mathematics, with consistent and overwhelming praise from the students. In addition, he is the founding faculty advisor of the Mathematics Student Organization (MSO). In this role Professor Falco had the important role in establishing the traditions of the club: promoting mathematics through guest speakers, fun problems and challenges, and off-campus trips to student conferences. The annual Pi Day celebration is an important event in the Mathematics Department and Daryl organized the first Drexel Integration Bee. This mathematical take on a spelling bee where teams of students solve integrals has since become a standard Pi Day feature. Professor Falco's other activities include teaching for the Gateway Program where he assists international students in building their mathematical vocabulary and presentation skills. He also teaches for the Dragon Summer Program and the Drexel Engineering Summer Diversity Program, where he prepares incoming freshmen for the rigors of a college mathematics course.

Faculty Grants

Ambrose, David, National Science Foundation, DMS 1016267, Collaborative Research: Efficient Surface-Based Numerical Methods for 3D Interfacial Flow with Surface Tension, 2010-2013, $269,989

Ambrose, David, National Science Foundation, DMS 1008387, Dispersive PDE and Interfacial Fluid Dynamics, 2010-2013, $159,000

Ambrose, David, National Science Foundation, DMS 0707807 (renumbered DMS 0926378), Long-Time Behavior of Free-Surface Problems in Fluid Dynamics, 2007-2011, $119,999

Dolgolpolsky, Alex, National Science Foundation, DMS 0948881, Student Support for the International Symposium Plasma Chemistry, 2010-2011, $18,000

Foucart, Simon, National Science Foundation, DMS 1120622, Improving Analysis of Microbial Mixtures through Sparse Reconstruction and Statistical Inference, 2011-2014, $667,322

Grinfeld, Pavel, Steffens 21st Century Foundation, Hamilton Fluid Films, 2011-2014, $31,000

Grinshpan, Anatolii, National Science Foundation, DMS 0910628, Decompositions for Multivariable Schur-class Functions, Christoffel-Darboux Type Formulas, and Related Problems, 2009-2012, $475,578

Hicks, R. Andrew, National Science Foundation, DMS 0908299, Distributions for Optical Design, 2009-2012, $264,00

Hitczenko, Pawel, National Security Agency, H98230-09-1-0062, Probabilistic Properties of Permutation Tableaux and Other Combinatorial Structures, 2009-2011, $66,506

Hitczenko, Pawel, National Science Foundation, Analysis and Probability, $25,500, December 1, 2011 – November 30, 2013.

Hitczenko, Pawel, Simons Foundation, Collaborative research in Combinatorics and Probability, 2011-2016, $35,000

Kaliuzhnyi-Verbovetskyi, Dmitry, National Science Foundation, DMS 0901628, Decompositions for Mulivariable Schur-class Functions, Christoffel-Darboux Type Formulas, and Related Problems, 2009-2012, $475,578

Kaliuzhnyi-Verbovetskyi, Dmitry, US-Israel Binational Science Foundation, BSF 2010432, Noncommutative Function Theory and its Applications, 2011-2015, $88,000

Medvedev, Georgi, National Science Foundation, DMS 1109367, Mathematical Analysis of Synchronization in Complex Networks, 2011-2014, $139,835

Morse, Jennifer, National Science Foundation, DMS 1001898, Combinatorics of Affine Schubert Calculus, K-theory, and Macdonald Polynomials, 2010-2013, $150,000

Morse, Jennifer, National Science Foundation, DMS 0652641, FRG: Affine Schubert Calculus: Combinatorial, geometry, physical, and computational aspects, 2007-2011, $671,270

Faculty Grants

Morse, Jennifer, National Science Foundation, DMS 0652668, FRG: Affine Schubert Calculus: Combinatorial, geometry, physical, and computational aspects, 2007-2011, $103,528

Moskow, Shari, National Science Foundation DMS: Collaborative Research: Direct Reconstruction Methods for Optical Tomography and Related Inverse Problems, 2011-2014, $289,998.

Moskow, Shari: National Science Foundation, DMS 1153905, Timed for a Successful Career: NSF/AWM Travel Grants for Women in the Mathematical Sciences 2011-2014, $492,399

Moskow, Shari, DOE, Recognition of and Activities for Women in Mathematical Sciences. 2010-2013, $251,235

Woerdeman, Hugo, National Science Foundation, DMS 0901628, Decompositions for Mulivariable Schur-class Functions, Christoffel-Darboux Type Formulas, and Related Problems, 2009-2013, $475,578

Wright, J. Douglas, National Science Foundation, DMS 0807738, Dynamics and Interactions of Free Fluid Interfaces, 2008-2012, $111,162

Wright, J. Douglas, National Science Foundation, DMS 0908299, Distributions for Optical Design, 2009-2012, $264,000

Wright, J. Douglas, National Science Foundation, DMS 1105635, Degenerate Dispersive Effects in Partial and Lattice Differential Equations, 2011-2014, $202,837

Yu, Thomas, National Science Foundation, DMS 1115915, Topics in Geometric and Multiscale Numerical Methods, 2011-2014, $230,827

Yu, Thomas, National Science Foundation, DMS 0915068, Multiscale Modeling and Approximation in Novel Geometric and Nonlinear Settings, 2009-2012, Amount: $175,000

Faculty Appointments / Conference Organizations

Ambrose, David, Session Organizer of Scientific Committee for The Seventh IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, University of Georgia, Athens, GA 2011

Ambrose, David, Co-organizer, Minisymposium for SIAM Conference on Nonlinear Waves and Coherent Structures, Seattle, Washington, June 13-16, 2012

Dolgolpolsky, Alex, Member of Organizing Committee, International Symposium On Plasma Chemistry, Philadelphia, PA 2011

Faculty Appointments / Conference Organizations

Dong, Bo, Special session on finite element methods in AMS 2012 Spring Southeastern Section Meeting

Grinfeld, Pavel, Co-organizer (with JC Nave), Mini-symposium at Equadiff, Loughborough University, Loughborough, UK, 2011

Hitczenko, Pawel, Organizer, Analysis and Probability, Bedlewo, Poland, 2012

Morse, Jennifer, Formal Power Series and Algebraic Combinatorics, Executive Officer on Permanent Program Committee: Reykavik, Iceland (2011), San Fransisco, CA (2010)

Medvedev, Georgi, Co-organized special session 'Stochastic Networks and Applications to Neuroscience", AIMS Conference of Differential Equations and Dynamical Systems, Orlando, FL, July 2012

Moskow, Shari, Organizer, "Applied Analysis for the Material Sciences", 60th birthday conference for Michael Vogelius, Luminy France, May 27-31, 2013

Naber, Gregory, Standing Committee for the 14th International Conference on Geometry, Integrability, and Quantization, Varna, Bulgaria, June 2012

Naber, Gregory, Scientific Advisory Committee, International Conference on Mathematical Sciences, Bolu, Turkey, December 28-31, 2012

Sheng, Li, Program Committee Member, International Conference on Computer Communication Networks, ICCCN2011, Maui, Hawaii, July 31 - August 4, 2011

Wright, J. Douglas, Grant Reviewer for Council for Physical Sciences of the Netherland Organization for Scientific Research

Woerdeman, Hugo, Minisymposium organizer at the International Workshop of Operator Theory and its Applications, Seville, Spain, July 2011.

Woerdeman, Hugo, Member of the Nominating Committee of the International Linear Algebra Society.

Woerdeman, Hugo, Chair of the International Linear Algebra Society (ILAS) Institutional Membership Committee.

Woerdeman, Hugo, Member of the Organizing Committee for the 2013 International Linear Algebra Society (ILAS) meeting to be held June 2013 in Providence, RI, USA.

Faculty Publications

Boady M., **P. Grinfeld**, and J. Johnson, "A symbolic computation system for the calculus of moving surfaces," *ACM Communications in Computer Algebra*, **45**(2) p.176, 2011

Boady M., **P. Grinfeld**, and J. Johnson, "Boundary variation of Poisson's equation: a model problem for symbolic calculus of moving surfaces," International. J. Math. Comp. Sci., **6**(2), p.65-84, 2011

Boyer, Robert P and William M.Y. Goh, "Generalized Gibbs phenomenon for Fourier partial sums and de la Vallee sums," *Journal of Applied Mathematics and Computing*, **37**, 421-442, 2011

Cohen, A., R. DeVore, **S. Foucart,** and H. Rauhut, "Recovery of functions of many variables via compressive sensing," *Proceedings of SampTA*, Singapore, 2011

Foucart, S., "Hard thresholding pursuit: an algorithm for compressive sensing." *SIAM Journal on Numerical Analysis*, **49**(6), p.2543-2563, 2011

Foucart S., "Recovering jointly sparse vectors via hard thresholding pursuit," *Proceedings of SampTA,* Singapore, 2011

Grinfeld, Pavel, "Small Oscillations of a Soap Bubble", *Studies in Applied Mathematic,* **128**(1), 30-39, 2011

Grinfeld, Pavel, "A Proposed Experiment for the Verification of Thompson's Nucleation Theory", *Ferroelectrics,* **413** (1), p. 65-72, 2011

Guo, Yixin and Rubin, J., "Multi-site Stimulation of Subthalamic Nucleus Diminishes Thalamocortical Relay Error in a Biophysical Network Model. Neural Networks", Elsevier. Volume **24**, Issue 6, 602-616. 2011 Special Issue: Neurocomputational Models of Brain Disorders.

Guo, Yixin, Park C, Rong M, Worth RM, Rubchinsky LL. Modulation of Thalamocortical Relay by Basal Ganglia in Parkinson's Disease and Dystonia. *BMC Neuroscience*, **12**(Suppl 1):P275, 2011

Guo, Yixin and Rubin, J., "Multi-site Stimulation of Subthalamic Nucleus Diminishes Thalamocortical Relay Error in a Biophysical Network Model. Neural Networks", Elsevier. Volume **24**, Issue 6, 602-616. 2011 Special Issue: Neurocomputational Models of Brain Disorders.

Guo, Yixin, Park C, Rong M, Worth RM, Rubchinsky LL. Modulation of Thalamocortical Relay by Basal Ganglia in Parkinson's Disease and Dystonia. *BMC Neuroscience*, **12**(Suppl 1):P275, 2011

Guo, Yixin and **Yang, Dennis G**., Entrainment of a Thalamocortical Neuron to Periodic Sensorimotor Signals, BMC Neuroscience, 12(Suppl 1):P135, 2011

Hitczenko, P. and Wesolowski, J. S., Renorming divergent perpetuities, *Bernoulli,* **17**, 880-894, 2011

Faculty Publications

Haglund, **J. Morse**, and Zabrocki. A compositional shuffle conjecture specifying touch points of the Dyck path. Canadian Journal of Math. 64 (4), 822-844,2012.

Dasse-Hartuat, S. and **Hitczenko, P**., Some properties of random staircase tableaux, Proceedings of the 8th Workshop on the Analytic Algorithmics and Combinatorics, pp. 58-66, 2011

Hitczenko, P., Convergence to Type I distribution of the extremes of sequences defined by random difference equation, Stochastic Processes and their Applications, 121, 2231-2242, 2011

Kaliuzhnyi-Verbovetskyi, D., "Noncommutative formal power series and noncommutative functions," 50th IEEE Conference on Decision and Control and European Control Conference, p. 3842-3847, 2011

Medvedev, G., Synchronization of coupled limit cycles, J. of Nonl. Sci., 21 (3), 441-464, 2011.

Naber, G., Topology, Geometry and Gauge Fields: Interactions, Second Edition, Applied Mathematical Sciences 141, Springer, New York, 2011

Naber, G., The Geometry of Minkowski Spacetime, Second Edition, Applied Mathematical Sciences 92, Springer, New York, 2011

Schmutz, E., Period Lengths for Iterated Functions, Combinatorics, Probability & Computing 20(2), 289-298, 2011

Sheng, Li, Chen, D., Liang, Q., Singh, S., Sense through Wall Human Detection Using UWB Radar., EURASIP Journal on Wireless Communications and Networking, 2011:20, doi:10.1186/1687-1499-2011-20, 2011

Smith, Justin, "Model-categories of coalgebras over operads," Theory and Applications of Categories, 25(8), p189-246, 2011

Nava-Yazdani, Esfandiar and **T. Yu,** "On Donoho's Log-Exp Subdivision Scheme: Choice of Retraction and Time-Symmetry", SIAM Multiscale Modeling and Simulation 9, p.1801-1828, 2011

Mihaly Bakonyi and **Hugo J. Woerdeman**, Matrix Completions, Moments and Sums of Hermitian Squares, Princeton University Press, Princeton, NJ, 2011.

Woerdeman, Hugo, and **Koyuncu, S**. The Inverse of a Two-level Positive Definite Toeplitz Operator Matrix, Operator Theory: Advances and Applications, 218, 387–401, 2011

Wright, J. Douglas and Spirn, D., Linear Dispersive Decay Estimates for the 3+1 Dimensional Water Wave Equation with Surface Tension, Canadian Mathematical Bulletin, 2011

Wright, J. Douglas and Hoffman, A., Exit Manifolds for Lattice Differential Equations, Proceedings of the Royal Society Edinburgh: Section A, v. 140, no. 1, 77-92, 2011

Faculty Presentations

Ambrose, David, Partial Differential Equations Seminar, Two Problems in Interfacial Fluid Dynamics, Boston University Math Department, Boston, MA March 2011

Ambrose, David, The Seventh IMACS International Conference on Nonlinear Evolution Equations and Wave Phenomena: Computation and Theory, Numerical Methods for Time-Periodic Interfacial Flows, University of Georgia Center for Continuing Education, Athens, GA, April 2011

Ambrose, David, FACM 2011: Frontiers in Applied and Computational Mathematics, Time-Periodic Solutions of Nonlinear Systems of PDE, New Jersey Institute of Technology, University Heights Newark, NJ, June 2011

Ambrose, David, AMS Eastern Sectional Meeting, Some Existence Results for Equations with Degenerate Dispersions, College of the Holy Cross, Worcester, MA, April 2011

Ambrose, David, 3rd Workshops on Fluids and PDE, Existence Problems in Interfacial Fluid Dynamics, University of Campinas, Institute of Mathematics, Statistics, and Scientific Computation, Campinas, Brazil, June 2011

Ambrose, David., Invited, Well-Posedness Issues for Degenerate Dispersive Equations, AMS Southeastern Section Meeting, Wake Forest University, Winston Salem, NC, September 2011

Ambrose, David., *Some Analytical Results for Equations with Degenerate Dispersion,* PDE and Applied Math Seminar, University of California, Riverside, CA, Oct. 12, 2011

Ambrose, David., Two Existence Problems in Interfacial Fluid Dynamics, Computational and Applied Mathematics Colloquium, Penn State, December 2011

Boyer, Robert, Asymptotics and Zeros for Partition Statistics Polynomials, Joint Math Meetings, Invited, New Orleans, LA, January 2011

Foucart, Simon, Compressive Sensing and the Hard Thresholding Pursuit algorithm, Colloquium, Department of Mathematics, Townson University, Towson, Maryland, April 2011

Foucart, Simon, Recovering Space Vectors Via Hard Thresholding Pursuit, Seminar, Whiting School of Engineering, Johns Hopkins University, Baltimore, Maryland, March 2011

Foucart, Simon, Geometry of L_1^n via Compressive Sensing. VIGRE Seminar, Department of Mathematics, University of Georgia, Athens, Georgia, February 2011

Foucart, Simon, Hard Thresholding Pursuit: An Algorithm for Compressive Sensing; The Dimension of Trivariate Spline Spaces on Alfeld Splits, International Symposium in Approximation Theory, Invited, Vanderbilt University, Nashville, TN, May 2011

Foucart, Simon, Recovering Jointly Sparse Vectors via Hard Thresholding Pursauit, 9th International Conference on Sampling Theory and Applications, Invited, Nanyang Technological University, Singapore, May 2011

Faculty Presentations

Foucart, Simon, Hard Thresholding Pursuit for Sparse Reconstruction, AMS Southeastern Meeting, Invited, Conference, Statesboro, GA, March 2011

Guo, Yixin, Deep Brain Stimulation Diminishes Thalamocortical Relay Errors in Computational Models, Mathematical Neuroscience Workshop , International Center for Mathematical Sciences, Edinburgh, UK, April 2011

Guo, Yixin and **Yang, Dennis G.**, Entrainment of a Thalamocortical Neuron to Periodic Sensorimotor Signals, SIAM Conference on Applications of Dynamical Systems, Snow Bird, UT, May 2011

Guo, Yixin, Spatio-temporal evolution equations and neural fields, CIRM, Marseille, France, November 2011

Hicks, A., The Geometry of Optical Design, Dept. of CIS, UPenn, September 2011

Hitczenko, Pawel, On Random Staircase Tableaux, 8th Analytic Asymptotics and Combinatorics (ANALCO) (a satellite meeting to SODA), January 2011

Hitczenko, Pawel, Two-Sided Bounds for Tails of Thin Tailed Perpetuities, Probability Seminar, CUNY Graduate Center, May 2011

Hitczenko, Pawel, Some Properties of Random Staircase Tableaux, 15th International Conference Random Structures and Algorithms 2011, Atlanta GA, May 2011

Hitczenko, Pawel, On Tails of Perpetuities, 22nd International Meeting on Probabilistic, Combinatorial and Analytic Methods in the Analysis of Algorithms (AofA), Bedlewo, Poland, June 2011

Hitczenko, Pawel, High Dimensional Probability, BIRS, Tail bounds and extremal behavior of light-tailed perpetuities, Banff, Canada, October 2011

Hitczenko, Pawel, Probability Seminar, Behavior of the maxima of sequences defined by linear equations with random coefficients, Technical University of Warsaw, Poland, December 2011

Kaliuzhnyi-Verbovetskyi, Dmitry, Noncommutative Power Series and Noncommutative Functions, International Conference Function Theory and Operator Theory: Infinite Dimensional and Free Setting, Ben-Gurion University, Beer-Sheva, Israel, June 2011

Kaliuzhnyi-Verbovetskyi, Dmitry, Noncommutative Power Series and Noncommutative Funcations, International Workshop in Operator Theory and Applications, University of Seville, Seville, Spain, July 2011

Kaliuzhnyi-Verbovetskyi, Dmitry, Matrices with Normal Defect One, International Workshop in Operator Theory and Applications, University of Seville, Seville, Spain, July 2011

Kaliuzhnyi-Verbovetskyi, Dmitry, Noncommutative power series and noncommutative functions, 50th IEEE Conference on Decision and Control and European Control Conference, Orlando, FL, December 2011

Faculty Presentations

Morse, J., Representation theory and symmetric functions, American Math Society, Wake Forest University, Winston-Salem, NC, September 2011

Moskow, Shari, Spectrally Matched Grids for Anisotropic Problems, Invited, Applied Inverse Problems, Minisymposium, Texas A&M University, College Station, TX, May 2011

Moskow, Shari, Inverse Born Series for the Calderon Problem, Invited, NJIT FACM Conference, June 2011

Moskow, Shari, Scattering and Resonances of Thin High Contrast Photonic Structures, Invited, ICIAM, Vancouver, BC, Canada, July 2011

Moskow, Shari, Inverse Born Series for the Calderon Problem, ICIAM, Minisymposium, Vancouver, BC, Canada, July 2011

Moskow, Shari, Invited, Scattering and Resonances of thin high contrast photonic structures, Inverse Problems and Analysis Seminar, University of Delaware, Newark, DE, October 2011

Moskow, Shari, Invited, Inverse Born series for the Calderon problem, AMS 2011 Fall Western Sectional Meeting, University of Utah, Salt Lake City, Utah, October 2011

Moskow, Shari, Invited, Scattering and Resonances of thin high contrast photonic structures, AMS 2011 Fall Western Sectional Meeting, University of Utah, Salt Lake City, Utah, October 2011

Sheng, Li, Physical Mapping of DNA, Invited, Joint meeting of The 5th National Conference in Intelligent Computing, Nanjing, Jiangsu Province, China, July 2011

Sheng, Li, Probe Interval Graphs in NDA Physical Mapping , Probe Interval Graphs in NDA Physical Mapping, National University of Defense Technology, Changsha, Hunan Province, China. July 2011

Sheng, Li, Graph Theory in Molecular Biology, Topics in Graph Theory in Molecular Biology, National University of Defense Technology, Changsha, Hunan Province, China, July 2011

Woerdeman, Hugo, Multivariable Moment Problems, Colloquium, Temple University, Philadelphia, May 2011

Woerdeman, Hugo, The Multivariable Matrix Valued K– Moment Problem on Rd, Cd and Td, International Workshop on Operator Theory and its Applications, Seville, Spain, July 2011

Woerdeman, Hugo, Uniqueness in A. Horn's Problem, International Workshop on Operator Theory and its Applications, Seville, Spain, July 2011

Woerdeman, Hugo, Rank Properties of Multivariable Moment Matrices, International Conference for Industrial and Applied Mathematics, Vancouver, BC, Canada, July 2011

Wright, J. Douglas , Interaction Manifolds in Reaction Diffusion Systems, Math Department, North Carolina State University, Raleigh, NC, February 2011

Faculty Presentations

Wright, J. Douglas , Well-Posedness Issues for Degenerate Dispersive Equations, Conference on Frontiers in Applied and Computational Mathematics, New Jersey Institute of Technology, University Heights Newark, NJ, June 2011

Wright, D., Well□posedness issues for degenerate dispersive equations, Special Session on "Nonlinear Dispersive Equations" at the Fall Southeastern Sectional of the AMS at Wake Forest University, Winston-Salem, NC, September 2011

Wright, D., Well□posedness issues for degenerate dispersive equations, Special Session on "Connections between dispersive PDE's and fluid mechanics" at the SIAM Meeting on Analysis of PDE in San Diego, CA, November 2011

US Patent Issued

R. Andrew Hicks was awarded US Patent 8,1180,606, "Wide-Angle Substantially Non-Distorting Mirror" . This mirror is capable of providing a substantially undistorted wide-angle field of view. It is particularly useful as a driver's side mirror of a vehicle to provide an enlarged, substantially undistorted field of view which may be used to reduce or eliminate blind spots.

Editorial Positions

Ambrose, David, Guest Editor, *Mathematics and Computers in Simulation*

Medvedev, Georgi, Editorial Board, *Discrete and Continuous Dynamical Systems B*

Morse, Jennifer, Associate Guest Editor: *Journal of Combinatorics*

Naber, Gregory, Editorial Board, *Journal of Dynamical Systems and Geometric Theories*

Naber, Gregory, Associate Editor, *Journal of Geometry and Symmetry in Physics*

Woerdeman, Hugo, Associate Editor, *SIAM Journal of Matrix Analysis and Applications*

Woerdeman, Hugo, Editor, *International J. of Information and System Sciences*

Special Topics Courses

Winter 2012	**Spring 2012**
Math 498 Actuarial Math II Taught by: Le Yu	Math 680 Applied Probability Taught by: Eric Schmutz
Spring 2012 Algebraic Geometry Taught by: Patrick Clarke	**Spring 2012** Approximation Theory Taught by: Simon Foucart

Honors Day Awards

The Drexel University College of Arts and Sciences Honors Day was held on May 24, 2012 in the Mandell Theater. This year's winners are:

Frank H.M. Williams Prize: Daniel J. Zollers

Bickel Award: Michael Valle, Anna Petrone

Muchnic Award: Juliana Speroni, Devin Scott, Huey Wong, Ashley Devine

Ashley Devine is a senior earning her BA in Mathematics and Sociology. Although she was not the strongest math student in grade school, "fondly" remembering having to rewrite her multiplication tables over and over again, her interest to study math was piqued by her high school teachers, Teacher Abby and Ralph. Ashley transferred to Drexel in 2008 after studying abroad in Istanbul, Turkey. She was coming to Drexel to study Mechanical Engineering, but decided to continue with the degree in math. As her career advanced she decided to pick up Sociology as a dual major, feeling as though her interest in Statistics would give her a heads up when doing future research. Ashley has been a dedicated tutor in the math resource center and as a volunteer math tutor for grade school student in the Philadelphia area. Although Ashley does not plan to go into teaching, she will continue to tutor students hoping to spur their interest in math as her own was by educators that were willing to work with and encourage her. Ashley would like to thank the math department for their dedication to their students success.

Anna Petrone is a graduating senior with a double major in math and economics. Since elementary school she has had a passion for math, owing much to her early teachers. As a pre-junior, Anna discovered her interest in economics, and she was able to bolster her study of the subject with the strong analytical skills provided by the Drexel math department. Anna owes her experience in computational science to her co-op at Independence Blue Cross and to the courses she took towards her physics minor. After graduating, Anna will be working in Washington DC as a research assistant for the Board of Governors of the Federal Reserve, in the department of Macroeconomic and Quantitative Studies. She is truly grateful for her professors and for the quality and variety of coursework offered at Drexel.

Devin Scott started at Drexel in 2008 as a business major, switching to economics in 2009. After realizing that he wanted to pursue a Ph.D. in economics, Devin added a math major in 2010. Within a term, he realized that the math major would be a real challenge; two years later, Devin is grateful to have had the opportunity to struggle through and eventually understand a lot of truly interesting material under some of the best professors at Drexel. Over his four years here, Devin has been captain of Drexel's mock trial team for four years and a resident assistant for three. Starting in June, he will be working full-time in Drexel's Office of Institutional Research, Assessment, and Effectiveness; he will begin submitting graduate school application in late 2012.

Honors Day Awards

Juliana Speroni has two loves in her life: Mathematics and soccer. For as long as she can remember she has had an interest in numbers that eventually developed into a love for Calculus. She joined the Mathematics Department in 2009 as an incoming freshman. Since then she has been an academic tutor at the Math Resource Center. This sparked her interest in Education and she is currently enrolled in the BS/MS, receiving her Bachelor of Science in Mathematics, and her Master of Science in Teaching, Learning, and Curriculum during her 5 years at Drexel. Eventually her ultimate goal is to teach high school Calculus. Juliana is also a member of the Drexel University Division 1 Women's Soccer team. As a student athlete, she finds herself constantly busy however she is very grateful for all the academic and athletic experiences given to her. She is especially appreciative of how supportive, caring, and knowledgeable the Math Department has been over her time at Drexel.

Michael Valle grew up in Northeast Philadelphia and was home schooled by his parents. He always had a wide variety of interests, but in his early teens took an interest in video game programming. This required proficiency in mathematics and so he taught himself algebra, trig, calculus and linear algebra from books. In doing so, he realized how beautiful mathematics was and how comfortable and natural it felt. He later entered The Community College of Philadelphia to study Computer Science and Math, where his abilities were recognized and fostered by the late Dr. David A. Santos. He transferred to Drexel University where he had the opportunity to work on an undergraduate research project with Dr. David Ambrose in Partial Differential Equations. He particularly enjoyed working and learning from Dr. Ambrose, as well as Professors Jennifer Morse, Greg Naber, Thomas Yu, and Doug Wright. He plans to continue his study of mathematics and computer science in grad school.

Huey Wong is a math major and fine art minor student. Her next adventure after math study began a few summers ago where her initial intention was to get her feet wet on learning to paint. However, as it turned out she turned out to be capable of gaining and contributing much more than what she had originally bargained for so far. From having a hard time drawing simple sketches to being able to paint still life, portrait and landscape, she has gradually expanded her skill and perspective through art. In the process, she's won 2nd place in the Design Excellence Award in Design I class and 3rd place in Design II class, and also joined other fine art minor students in the first annual graduating fine art minor exhibition. She also likes to play Guzheng, a Chinese plucked zither. In addition to the achievements in Drexel, she manages to participate in many Guzheng performances and fundraisers in New Jersey. While math remains her foundation, Huey has now included painting as her second potential career choice.

Dan Zollers joined Drexel University in 2007 as a Computer Science major and added Mathematics as a second major in his third year. Math was always one of his better subjects, but he did not realize how much he liked the subject until he was able to participate in the Putnam Competition in 2009. Since adding math, he has enjoyed tutoring in the Math Resource Center and taking advanced classes such as Abstract Algebra and Analysis. In the Fall of 2012, he will begin working towards a Ph. D. in Pure Mathematics at the University of Maryland, and his ultimate goal is to conduct research in Mathematics as a university professor.

Undergraduate Awards

Senior First Honors
- Martin Ghaidarov

Senior Second Honors
- Justin Mangiaracina

▼ Hugo Woerdeman, Ashley Devine, Devin Scott, Julia Speroni, Huey Wong, Donna Murasko

▲ Hugo Woerdeman, Anna Petrone, Donna Murasko

▲ Don Williams, Dan Zollers, Hugo Woerdeman, Donna Murasko

Bachelor of Science Degrees Awarded

Mathematics Majors

Owens, Colleen A
Ghaidarov, Martin Vanev Magna Cum Laude
Grin, Kirill   Cum Laude
Mangiaracina, Justin J   Magna Cum Laude
Mulay, James J
Wands, Alexander   Cum Laude
Biscoe, Aaron H
Chan, Ka Yan
Devine, Ashley L   Cum Laude
Jenkins, Joseph C
Lang, Christine N
Petrone, Anna M   Magna Cum Laude
Stoyanov, Mariyan Mladenov
Valle, Michael   Magna Cum Laude
Viets, Nathan   Cum Laude
Williamson, Sigrid L
Zollers, Daniel J   Summa Cum Laude

Mathematics Minors

Ahmed, Tausif Mohamed
Al-Amri, Mohammed F
Brennan, Jon M
Chase, Greg
Chen, Jiaxi
Duong, Yen-Duyen P
Fortino, Kelsea M
Hlinka, Marek
Humphreys, Melissa Susan
Iannuzzi, Daniel Lawrence
Jayachandran, Rajkumar
Kapp, Michael T
Karagodov, Aleksandr
Katzias, Amanda L
Kovangji, Agron
Marron, Matthew E
Quann, Brendan E
Serrahima, David R
Stagliano, Laura
Turner, David Michael
Wang, Han

Masters of Science Degrees Awarded

Heather Richardson

Doctor of Philosophy Degree Awarded

On May 5, 2012, **Ms. Caroline Shapcott** presented and defended with success her Ph.D thesis entitled "Part-Products of Random Integer Compositions." Her Ph.D advisor was Professor Eric Schmutz.

On May 7, 2012, **Mr. Selcuk Koyuncu** presented and defended with success his Ph.D. thesis entitled "The Inverse of Two-level Toeplitz Operator Matrices." His Ph.D. advisor was Professor Hugo Woerdman.

On June 14, 2012, **Mr. Lei Cao** presented and defended with success his Ph.D thesis entitled "A new Formulation and Uniqueness of Solutions to A. Horn's Problem." His Ph.D advisor was Hugo Woerdeman.

Distinguished Visitor Lecture Series

April 30, 2012
Bernd Sturmfels

Colloquium

September 29, 2011
Jerry Bona
University of Illinois at Chicago
Water Wave Theory and Some of Its Applications

October 20, 2011
Philippe Rigollet
Princeton University
Exponential Screening and Optimal Rates of Sparse Estimation

November 3, 2011
Carlo Laing
Massey University
Chimera States in Heterogeneous Kuramoto Networks

November 10, 2011
Amitabha Bose
New Jersey Institute of Technology
Dynamics on Random Graphs

November 17, 2011
Jennifer Morse
Drexel University
Pieri RULES!!

January 19 , 2012
Pawel Hitczenko
Drexel University
Perpetuities

February 9, 2012
Guillaume Bal
Columbia University
Hybrid Inverse Problems

February 16 , 2012
Walter Strauss
Brown University
Steady Rotational Water Waves

February 23, 2012
Robert Sedgewick
Princeton University
From Analysis of Algorithms to Analytic Combinatorics

Colloquium

March 1, 2012
Michael Vogelius
Rutgers University
Electromagnetic Cloaking At All Frequencies

March 8, 2012
John Pelesko
University of Delaware
Soap Films in Electric Fields

April 5, 2012
David Koslicki
Drexel University
Symbolic Dynamics and DNA

April 12, 2012
Robert Miura
New Jersey Institute of Technology & Rutgers-Newark
Migraine with Aura and Cortical Spreading Depression

April 19, 2012
Mark Levi
Pennsylvania State University
Physical Reasoning in Mathematics

April 26, 2012
J. Thomas Beale
Duke University
Numerical Methods for Interfaces in Fluids and Regularizing Effects in Difference
Equations

May 10, 2012
Ivan Sterling
St. Mary's College of Maryland
Curves of Constant Torsion and Pseudospherical Surfaces

May 17, 2012
Remi Gribonval
Institut de Recherche en Informatique et Systèmes Aléatoires
Should Penalized Least Squares Regression Be
Interpreted As Maximum A Posteriori Estimation?

May 24, 2012
David Golomb
Ben Gurion University
Modeling Whisking In Air And Against Objects

Analysis Seminar

September 30
Andrey Melnikov
Drexel University
A new solution of the KdV equation using evolutionary vessels

October 7
Dmitry Kaliuzhnyi-Verbovetskyi
Drexel University
The Bessmertnyi class: old and new results

October 28
Daniel Parry
Drexel University
On the Distribution of the Number of Summands in a Random Partition with Respect to a Boltzmann Weighting

October 14
Dmitry Kaliuzhnyi-Verbovetskyi
Drexel University
The Bessmertnyi class: old and new results (cont.)

October 21
Selcuk Koyuncu
Drexel University
Zero product of two-level Toeplitz operators

November 4
Hugo Woerdeman
Drexel University
Three variable stable polynomials

November 11
Simon Foucart
Drexel University
On the dimension of multivariate spline spaces, especially on Alfeld splits

November 18
Dmitry Kaliuzhnyi-Verbovetskyi
Drexel University
Good old Loewner's theorem: a proof by A. Koranyi and B. Sz.-Nagy

December 2
Dmitry Kaliuzhnyi-Verbovetskyi
Drexel University
Good old Loewner's theorem: a proof by A. Koranyi and B. Sz.-Nagy (cont.)

Analysis Seminar

January 13
Selcuk Koyuncu
Drexel University
Transfer function realization of rational inner functions (after A. Kummert)

January 20
David Scheinker
Drexel University
Rational Inner Functions on the Disk and on Polydisks

January 27
David Scheinker
Drexel University
Rational Inner Functions on the Disk and on Polydisks II

February 3
Andrey Melnikov
Drexel University
Examples of solutions of the KdV equation using evolutionary vessels

February 10
Hugo Woerdeman
Drexel Universtiy
Stable symmetric polynomials and the Schur-Agler class (after G. Knese)

February 17
Chris Jankowski
University of Pennsylvania
Completely positive maps and E-semigroups

February 24
Hugo Woerdeman
Drexel University
The principal minor assignment problem (after K. Griffin and M. J. Tsatsomeros)

March 2
Daniel Markiewicz
Ben-Gurion University
Aligned semigroups of endomorphisms of $B(H)$

March 9
Simon Foucart
Drexel University
Schumaker's conjecture: do Bernstein operators induce P-matrices?

Analysis Seminar

March 23
Victor Vinnikov
Ben-Gurion U.
A Tour of Free Noncommutative Convexity

April 13
Thomas Yu
Drexel University
"Approximation of Scattered Manifold-Valued Data"

April 20
Hugo J. Woerdeman
Drexel University
"Determinantal Representations and the Hermite Matrix"
(after T. Netzer, D. Plaumann, and A. Thom)

April 27
Andrey Melnikov
Drexel University
"On a solution of the Sturm-Liouville and the Korteweg-de-Vries equations with
periodic and almost periodic parameters using theory of vessels"

May 11
Robert Boyer
Drexel University
"Gibbs Measures and the Young Bouquet: Work of A. Borodin and G. Olshanski"

May 18
Thomas Yu
Drexel University
"Proximity analysis in approximation methods for manifold-valued data"

June 1
Robert Boyer
Drexel University
"Gibbs Measures and the Young Bouquet: Work of A. Borodin and G. Olshanski
(cont.)"

June 8
Avi Dalal
Drexel University
"k-Schur Functions and a New k-Pieri Rule"

Combinatorics and Algebraic Geometry Seminar

September 29
Adriano Garsia, UCSD
University of Pennsylvania
Parking Functions and Diagonal Harmonics, the Continuing Saga

October 18
Patricia Hersh
NC State
Symmetric chain decomposition for cyclic quotients of Boolean
algebras and relation to cyclic crystals

October 27
John Shareshian
Washington University
Nontrivial homology in order complexes of coset posets of finite groups

November 3
Melody Chan
UC Berkeley
Tropical hyperelliptic curves

November 10
Mirko Visontai
Penn University
Stable Multivariate Eulerian Polynomials for Some Coxeter Groups

February 16
Martha Yip
Penn University
Counting Jordan forms of upper triangular nilpotent matrices over finite fields

March 13
Meesue Yoo
KIAS
The combinatorics of the HMZ operators applied to Schur functions

Mar 15, 2:00
Eugene Gorsky
SUNY Stonybrook
Compactified Jacobians, semigroups and partitions
University of Pennsylvania

PDE/Applied Mathematics Seminar

September 27
Doug Wright
Drexel University
Well-posedness Issues in Degenerate Dispersive Equations

October 11
Benjamin Seibold
Temple University
The Analogy of Phantom Traffic Jams and Detonation Waves

October 18
Gideon Simpson
University of Minnesota
Singularities & Global Existence in the Derivative Nonlinear Schrodinger Equation:
A Preliminary Report

November 8
Jeremy Bellay
University of Maryland
Using community structure to understand network function and dynamics

February 7
Nathan Totz
Duke University
A Rigorous Justification of the Modulation Approximation to the 2D Full Water Wave
Problem

February 21
Steve Schecter
North Carolina State University
Concatenated Traveling Waves

February 28
Irina Mitrea
Temple University
Regularity Properties of Green Functions in Non-smooth Domains

PDE/Applied Mathematics Seminar

March 6
Fioralba Cakoni
University of Delaware
Transmission Eigenvalues in Inverse Scattering Theory

March 13
Ming Chen
University of Pittsburgh
Ill-posedness of a weakly Dispersive Boussinesq System

March 20
Vedran Sohinger
University of Pennsylvania
Bounds on the Growth of High Sobolev Norms of Solutions to Nonlinear Schrodinger
Equations

April 10
Bob Pego
Ilon University
Carnegie MeAsymptotic stability of solitary waves in a water wave model with indefi-
nite variational structure

April 24
Nsoki Mavinga
Swarthmore
Nonresonance on the boundary and strong solutions of elliptic equations with
nonlinear boundary conditions

May 22
Carlo Fazioli
NJIT
Overlapping patches for dynamic surface problems

June 5
David Ambrose
Drexel University
Scattering of electromagnetic waves by thin, high-contrast dielectrics

SIAM Seminar

October 11
Daniel Jordon
"Estimating Catastrophic Loss"

October 25
Avinash Dalal
"k-Schur Functions and a New k-Pieri Rule"

November 8
Michael Minner
"An Overview of Compressive Sensing"

November 15
Scott Rome
"An Inverse Problem in Glaciology"

January 17
Daniel Parry
" Conjecture on Random Compositions of a Composition of a Positive Integer"

January 24
Jennifer Morse
" PhD Information Session"

February 14
Lei Cao
"Littlewood Richardson Coefficients and A. Horn's Problem"

February 28
Kim Kilgore
"Computing Solutions to the Helmholtz Equation in Three Dimensions"

March 13
Selcuk Koyuncu
"Zero Product of Toeplitz Operators"

April 10
Austin J. Daughton,
Temple University,
"Riemann's Zeta Function and its Functional Equation"

April 17
Jingmin Chen
" C^2 Subdivision and Willmore Energy Minimization"

May 1
Phillip Gaudreau
" Entropy and Applications"

May 15
Jonah Smith
"A Brief Introduction To The Riccati Equation"

Departmental Committees

Departmental Committees 2011-2012

Tenure and Promotion
 Schmutz, Chair
 All tenured faculty members

Graduate Program (including Assessment)
 Morse, Chair
 Ambrose
 Dong
 Foucart
 Guo
 Hitczenko
 Moskow
 Sheng (spring)
 Graduate Advisor: Morse
 Qualifying Exam Subcommittee:
  Ambrose, Foucart, Woerdeman

Undergraduate Program (including Assessment)
 Hicks, Chair
 Boyer (spring)
 Clarke
 Kalyuzhnyi-Verbovetskyi
 Perlstadt
 Grinshpan
 Wright
 Yu
 Undergraduate Advisor: Mozeff

Teaching Faculty Promotion
 Perlstadt, Chair
 Dolgopolsky
 Donnelly
 Medvedev
 Mozeff
 Naber
 Odintsova
 Rickert
 Russell
 Smith (Justin)

College and University Events Coordinator: Grinfeld
Colloquium Coordinator: Ambrose
Distinguished Speaker Coordinator: Yu
Library Liaison: Hitczenko
Website coordinator: Kalyuzhnyi-Verbovetzkii
CoAS Undergraduate Program representative: Hicks
CoAS Graduate Program representative: Morse
CoAS Tenure and Promotion representative: Schmutz
University 101 representative: Perline
Math 121-122-123 coordinator: Hicks, Perline, Smith (Judy)
Math 101-102 coordinator (fall/winter): Odintsova
Math 101-102 coordinator (winter/spring): TBA
Math 100 coordinator: Mozeff (fall)
Math 110 coordinator: Schmutz
Math Competition coordinator: Naber
Mathematics Student Organization faculty adviser: Falco
Placement Exam Coordinator: Jason Aran
Pi Day Coordinators: Jason Aran, Daryl Falco, Marna Mozeff, Adam Rickert

Mathematics Resource Center

The Math Resource Center continues to be the premier math tutoring service on Drexel's campus. Students visit the MRC from the first day of class through finals week. The MRC 's weekly average of student visits is 305 and a grand total of 9,297 student visits for the academic year. The previous record of attendance has been far superseded due to the additional space added in the Winter term. In the Fall term alone students visits per week averaged 307. The MRC is staffed by math department faculty, Teaching Assistants, and undergraduate students. Their service and dedication to Drexel students create a learning environment that makes the MRC effective . The MRC continues to set new goals by working to add an online math tutoring component.

Fall 2011

Winter 2012

Spring 2012
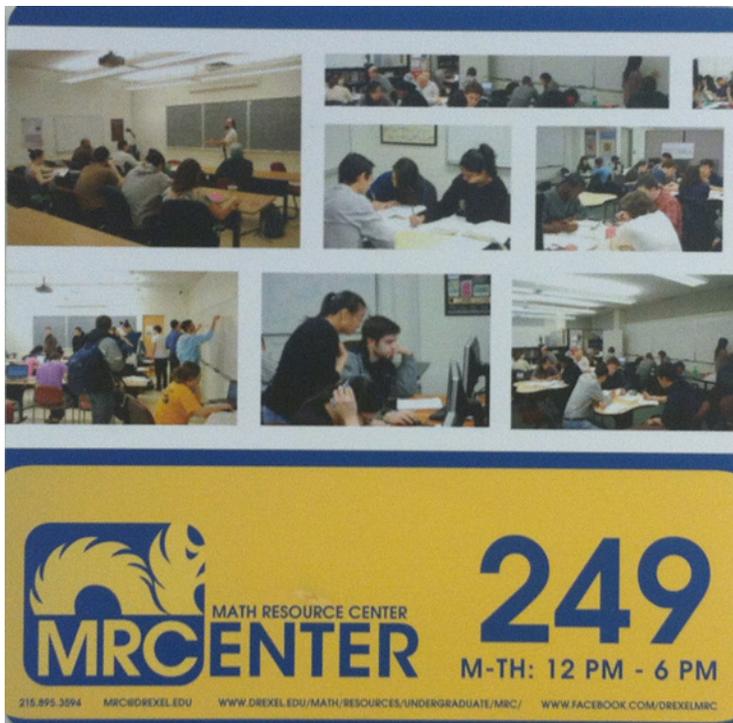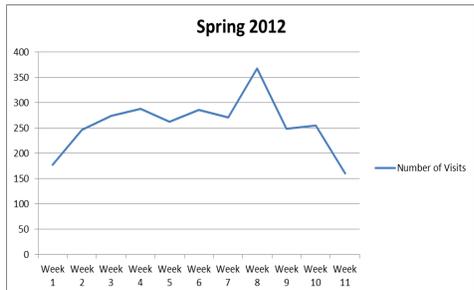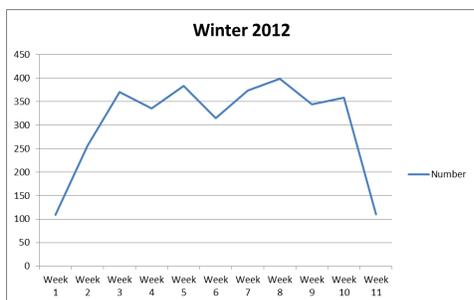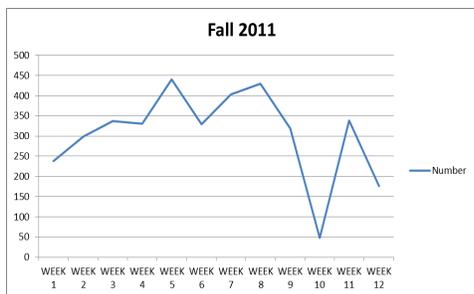
The MRC is open every term and provides tutoring for every math department offered course. The operating hours are Monday through Thursday 10am – 6pm and Friday 10am – 4pm.

Mathematics Resource Center

"Whether I was getting help from my teacher there during her normal office hours or from someone I had never met before I always left feeling I had a solid grasp of the material, and this was due to the extra tutors there being so friendly and easy to understand."

"I left feeling more confident regarding how to do simple equations."

"The tutors are always patient and very helpful. I've never had a bad experience. Thanks for all your help!"

"There is always a tutor available for every math course offered."

"The tutoring service was vital to my success in Calc II."

"I never had a less than pleasant experience. Thank you for the service you provide!"

"I think that the tutors at the Resource Center are very knowledgeable and do their best to help the students. Also, the tutors are very responsive to any of the student's questions and are more than willing to slow down and help them understand a concept."

Graduate Presentations

Selcuk Koyuncu, Zero Product of Two-level Toeplitz Operators on Hardy space of bidisc, Drexel University, Analysis Seminar, Philadelphia, PA, Fall 2011

Yu, Le, Automorphisms of Random Trees, 40 Years and Counting: AWM's Celebration of Women in Mathematics, Brown University, Providence, RI, September 2011

Daniel Jordan, "Estimating Catastrophic Loss" Drexel University", Philadelphia, PA, October 2011

Avinash J. Dalal, "k-Schur Functions and a New k-Pieri Rule" Drexel University, Philadelphia, PA, October 2011

Michael Minner "An Overview of Compressive Sensing" Drexel University, Philadelphia, PA, November 2011

Scott Rome "An Inverse Problem in Glaciology" Drexel University, Philadelphia, PA, November 2011

Selcuk Koyuncu, Transfer Function Realization of Rational Inner Functions, Drexel University, Analysis Seminar, Philadelphia, PA, Winter 2012

Caroline Shapcott, Part-products of random S-restricted compositions, Joint Mathematics Meetings, Boston, MA, January 2012

Daniel Parry " Conjecture on Random Compositions of a Composition of a Positive Integer", Drexel University, Philadelphia, Pa, January 2012

Eric Schmutz & **Yu, Le**, Automorphisms of Random Trees, Joint Mathematics Meetings, Boston, MA, January 2012

Lei Cao " Littlewood Richardson Coefficients and A. Horn's Problem" Drexel University, Philadelphia, PA, February 2012

Kim Kilgore "Computing Solutions to the Helmholtz Equation in Three Dimensions" Drexel University, Philadelphia, PA, February 2012

Caroline Shapcott, Part-products of random integer compositions, University of Rhode Island, Kingston, RI, March 2012

Caroline Shapcott, Sequences and generatingfunctionology, Bard College at Simon's Rock, Great Barrington, MA, March 2012

Selcuk Koyuncu, "Zero Product of Toeplitz Operators" Drexel University, Philadelphia, PA, March 2012

Avinash J. Dalal, "k-Schur Functions", College of Arts and Science Research Day, Drexel University, Philadelphia, PA, April 2012

Caroline Shapcott, Part-products of random integer compositions, Indiana University South Bend, South Bend, IN, April 2012

Graduate Presentations

Caroline Shapcott, Sequences and generatingfunctionology, Davidson College, Davidson, NC, April 2012

Jingmin Chen " C^2 Subdivision and Willmore Energy Minimization" Drexel University, Philadelphia, April 2012

Parry, Daniel, An Arithmetic Formula for the Partition Function, Drexel University, Philadelphia, PA, May 2012

Phillip Gaudreau " Entropy and Applications" Drexel University, Philadelphia, PA, May 2012

Jonah Smith "A Brief Introduction To The Riccati Equation" Drexel University, Philadelphia, PA, May 2012

Avinash J. Dalal, The ABC's of Affine Grassmannians and Hall-Littlewood Polynomials, International Summer School and Conference on Schubert Calculus, Osaka City University, Osaka, Japan, July 2012

Avinash J. Dalal, The ABC's of Affine Grassmannians and Hall-Littlewood Polynomials, 24th International Conference on Formal Power Series and Algebraic Combinatorics, Nagoya University, Nagoya, Japan, July 2012

J. Morse & **Avinash J. Dalal,** The ABC's of Affine Grassmannians and Hall-Littlewood Polynomials. To appear in the proceedings of Discrete Mathematics and Theoretical Computer Science (DMTCS), July 2012

Graduate Publications

Selcuk Koyuncu, The Inverse of Nonsymmetric Two-level Toeplitz Operator Matrix, vol.437, Iss.9, 2012, Pages 2142–2158, Linear Algebra and Its Applications, joint with Hugo J. Woerdeman

Caroline Shapcott, Part-Products of 1-Free Integer Compositions, The Electronic Journal of Combinatorics, Volume 18, issue I, (2011) P235

Daniel Parry, On the Zeros of Plane Partition Polynomials, Electronic Journal of Combinatorics, joint with Robert Boyer, Volume 18 (2) (2012) P30
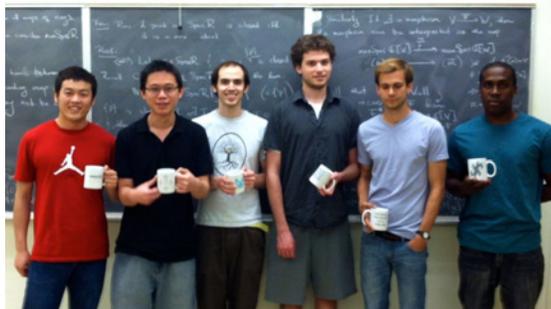
Undergraduate Research Co-op

Andrew Zigerelli, Research Co-op: Project title: *Simulation of Willmore flow* Funding source: DMS 0915068 and DMS 1115915, PI: Thomas Yu

Ryan Wasson, Research Co-op: Project title: *Normal defect of certain classes of matrices*. Funding source: DMS 0901628, PI: Hugo Woerdeman

Student Activities

SIAM Chapter

The Society for Industrial and Applied Mathematics is one of the largest applied mathematics and computational science organizations in the world and sponsors almost 100 student chapters around the globe. For the 2011-2012 academic year, the officers of Drexel's Student Chapter of SIAM were Daniel Parry, President; Avinash Dalal, Vice President; Phillip Gaudreau, Treasurer; and Daniel Jordon, Secretary.

Our chapter held a biweekly seminar consisting of 12 individual talks from Drexel graduate students as well as a series of Epsilon Talks (10-minute expository talks by first year Ph.D. students) and Austin Daughton, a graduate student from Temple University, was an invited speaker. This year we awarded the SIAM Student Chapter Certificate of Recognition to Avinash Dalal for outstanding service and contributions to the chapter.

Mathematics Student Organization

The Mathematics Student Organization (MSO), also known as the "Math Club," is a student-run organization whose mission is to promote mathematics and related fields by providing a casual and relaxed environment conducive to learning. The MSO is committed to bringing together undergraduate students with a common interest in various aspects of mathematics. The organization meets these goals by sponsoring events that include: guest speakers, fun mathematical problems and challenges, math movies and television programs, and entertaining math-related activities and games. The club also maintains a math library from which students can borrow books, novels, and periodicals about mathematics and related disciplines.
The MSO website is: http://www.pages.drexel.edu/~dsomso/

Student Activities

MathBytes

MathBytes is the Mathematics Department's graduate student organization. We seek to promote interest and research in the field of mathematics and also to protect and attend to the interests and concerns of our students. Membership is open to all students pursuing a graduate degree in mathematics at Drexel. The Graduate Student Association provides funding and support for each of our events. For the 2011-2012 academic year, MathBytes' officers were Michael Minner, President; Jingmin Chen, Vice President; and Phillip Gaudreau, Treasurer. MathBytes began the year with a Fall Social event where current members and new graduate students were able to socialize together. At the end of the fall quarter, MathBytes sponsored a Poker Night with the undergraduate mathematics student organization; participants were split into groups and enjoyed a friendly game of Texas Hold'em. During the winter term, we held a public viewing of the documentary, "Top Secret Rosies: The Secret Computers of WWII," with an introduction by Dr. Jennifer Morse. MathBytes and the Physics Graduate Student Association (PGSA) cosponsored a Board Game Night allowing students from both departments to relax and socialize following final exams. The second annual 'Epsilon Talks' event afforded each of the first-year graduate students the opportunity to present a short talk to fellow students on topics of their own choosing. At our end of year celebration, we congratulated our recent graduates and wished good luck to those preparing for qualifying and candidacy exams. We intended to hold a Volleyball & BBQ event with the PGSA; however, due to inclement weather we held an impromptu rainy day board game social to bring the year to a close.
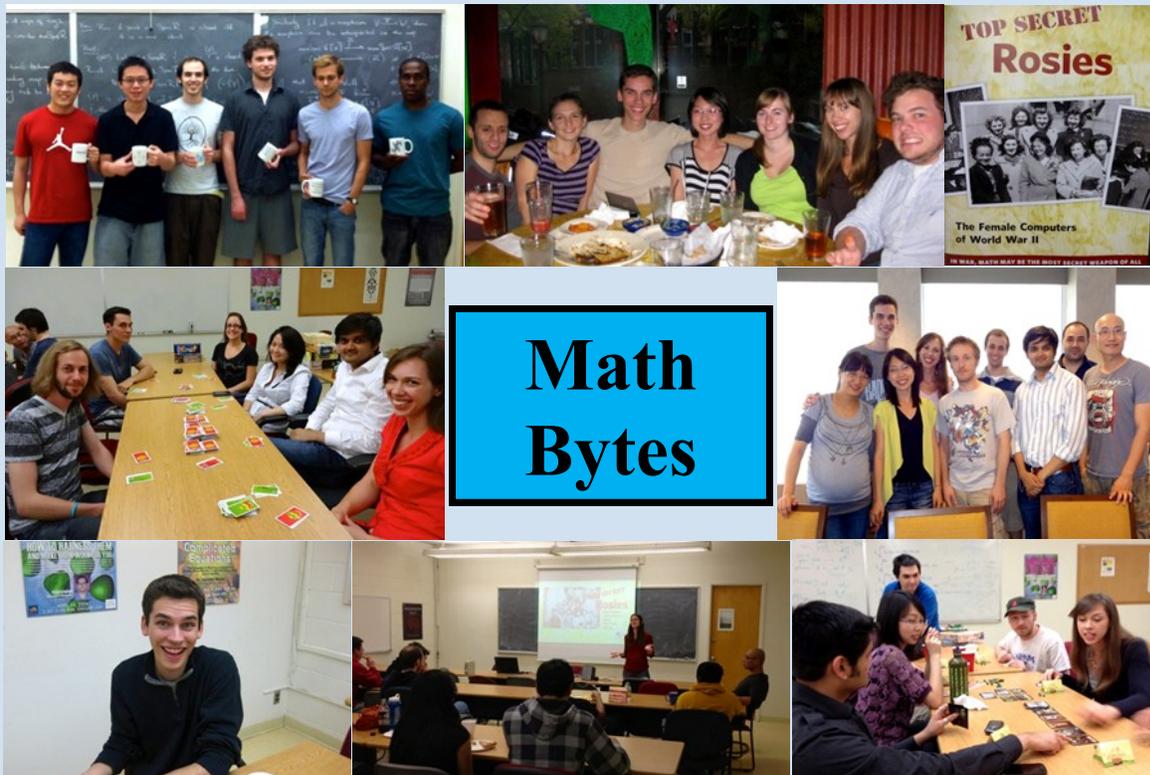
Student Activities

Pi Day

On Friday, March 16, 2012, the Math Department was proud to celebrate our 7th annual Pi Day celebration. (We realize the 14th is actually Pi Day, but sometimes it's OK to sacrifice accuracy for convenience!) The festivities occurred during the final week of the winter term, allowing our majors to relax and have fun before they headed into finals and then out on co-op.
Pi Day always includes food, fun, games and prizes. It continues to grow in size as we expand our activities. This year's events included favorite games from years past such as Jeopardy and Bingo, all Pi-themed of course!

Our Integration Bee continues to grow in popularity. This mathematical take on a spelling bee has teams of students solve increasingly difficult integrals until one team is crowned Integration Champions! This year we had over forty students participate; so many that we had to move to a bigger room!
Our newest event is Math Taboo, where students try to get their teammates to guess a mathematical word by giving various clues. However, the clues cannot contain any "taboo" words. For example, can you get someone to say the word PROOF without giving them the clues THEOREM, TRUTH, REASON, QED, or PUDDING? The game was very popular and we look forward to running it again in future years.
A great time was had by all at our 2012 Pi Day celebration. We are already looking forward to Pi Day 2013!

Graduate Student Awards

Pictured: John DiNardo, Provost Greenberg, President Fry, Ms. Kimsey (David's Mother) and Hugo Woerdeman

David Kimsey is Awarded the Outstanding Doctoral Dissertation Award

June 1, 2012 — David Kimsey, who received his Ph. D. last summer, won the Outstanding Doctoral Dissertation Award for Mathematical Sciences and Engineering given by Drexel University's Office of Graduate Studies. Once again we at the Math Department are incredibly proud and excited for David!

Pictured:
Dr. Shyamalendu Bose and Daniel Parry

Daniel Parry is Awarded the Student Research Award

The 2012 Graduate Student Research Award is presented by the Office of Graduate Studies. The Graduate Student Excellence Committee selects graduate students (full-time master's and doctoral), who have exhibited outstanding research/scholarship/creativity in the past year, for certificates of recognition and monetary awards that are handed out at a ceremony on Graduate Student Day.

Avinash Dalal is Awarded a Certificate of Recognition

Each year our SIAM Chapter recognizes one student for outstanding service and contributions by awarding a certificate of recognition.

Student Award Nominees

Michael Minner

Scott Rome

Brian Scott

We would like to acknowledge our graduates that were nominated but did not acquire the various student awards. Job well done!

Graduate Student Awards

Jeffrey Armstrong is Awarded the Teaching Excellence Award

Alexis Finger and
Jeffrey Armstrong

Congratulations to Jeffrey Armstrong for winning the 2012 Teaching Assistance Excellence Award.

The Committee on Teaching Assistant Excellence seeks nominations of outstanding Drexel University teaching assistants each year. Students, faculty and staff are encouraged to nominate teaching assistants for certificates of recognition and monetary awards. A TA should exhibit the following as criteria to be considred for the award. The TA should

•be enthusiastic and knowledgeable about the subject matter
•show organizational skills and be prepared when covering course materials
•motivate and encourage students and generally stimulate learning
•be available for individual help
•communicate course material clearly
•use fair and effective evaluation techniques

Jeffrey Armstrong is Awarded the Al Herr Award

Jeffrey Armstrong and
Robert Boyer

The Albert Herr Teaching Assistant Award is presented to a Teaching Assistant of the Department of Mathematics who has excelled in teaching. This award was established in honor of Albert Herr (1935 - 1995) for the unsurpassed standards he set in the teaching of mathematics and for his lasting and distinguished service to the department from 1957 to 1993.

Jeffrey Armstrong was the recipient of the 2012 Albert Herr Teaching Assistant Award. The award was presented by Dr. Robert Boyer at a Math department celebration, congratulations!

Social Events

Annual End of Year Reception

We know

how to

PARTY!!!

Social Events

Senior Luncheon on June 4th at Sabrina's Cafe. Everyone had a lovely time!— with (left, front to rear) Aaron Biscoe, Shari Moskow, Marna Mozeff and Hugo Woerdeman, (right, rear to front) Mariyan Stoyanov, Dan Zollers, Michael Valle and Sigrid Williamson.

On June 17th the Woerdemans held a potluck at their home.

Donations

The Department of Mathematics donated 3 Dell computers to the Second Mennonite Church in Northern Philadelphia. The donated equipment will allow the youth in their community to learn how to use the computers, software and do research online.

Fresh, Young and Innovative - Drexel University Department of Mathematics

Video description:

Drexel University has a vibrant, young and diverse Department of Mathematics with a wide breadth of exciting research. In addition to an active seminar/colloquium culture, the school has close connections with AWM and SIAM and offers a graduate internship at SIAM. Undergraduates are supported through a unique co-op structure that allows for 18 months of research or corporate experience throughout the program. These opportunities put Drexel students ahead of the game when they graduate.

The video was made by WebsEdge, who in collaboration with the American Mathematical Society (AMS) and the Mathematical Association of America (MAA) produces JMM TV at the Joint Mathematics Meetings. Our video was shot on December 6, 2011, and was included in the TV broadcast at the 2012 Joint Mathematics Meetings in Boston which attracted over 7,200 participants.

"One of the things that we do to make sure that our graduate students are prepared for careers in the long-term is to bring them into contact with the larger mathematical community by running seminars and sending our students to conferences." Shari Moskow, Professor and Associate Department Head

"We support the undergraduates in an unusual way; meaning, they can do research for a very extended period of time. The way Drexel works is something that's very unique to the university because it's a co-op program." R. Andrew Hicks, Professor and Associate Department Head

Caroline Shapcott
Mathematics Graduate Student, Drexel University

"I had a great experience with the SIAM internship, people are wonderful and it was a great place to work. I had the opportunity to work in an office setting and to correspond with some of the most prominent mathematicians of our day. When I graduate from Drexel I'd like to teach, but also continue my research, and I feel like I've got a very good background here at Drexel in doing both of those things. I had a lot of time in the classroom and also time interacting with the faculty here." Caroline Shapcott, Mathematics Graduate Student

"The Co-op Program gave me the opportunity to gain practical knowledge from what I learned in the classroom. You take three co-op cycles here at Drexel, so you really have three six-month jobs on your resume. It really makes you stand out when you apply for jobs." Mark Kondrla, Jr., Mathematics Undergraduate

Mark Kondrla Jr.
Mathematics Undergraduate Student, Drexel University