THE MATHEMATICAL ASSOCIATION OF AMERICA

Annual Meeting of The Metropolitan New York Section

Borough of Manhattan Community College
The City University of New York
199 Chambers Street
New York, New York

MAY 5, 2012
8:45 AM – 5:40 PM

MATHEMATICS DEPARTMENT

199 CHAMBERS STREET, ROOM N520
New York, NY -10007
TEL: 212-230-1335 FAX: 212-748-7459

May 5, 2012

Dear MAA-Metro NY Conference Participants,

As the conference organizers for the Annual Meeting of the Metropolitan New York Section – Spring 2012, we would like to extend a warm welcome to the Borough Manhattan Community College, CUNY. This conference boasts a diverse array of presentations on mathematics teaching, learning, and research. We hope you will enjoy the talks, presentations and performance.

We sincerely appreciate the contribution of all who are presenting at today's conference. We are also grateful to our Senior Vice President of Academic Affairs, Dr. Sadie Bragg; our Department Chair, Dr. Annie Han; the speakers Dr. Noam Elkies (Havard University) and Dr. Paul Zorn (St. Olaf College); actress /performer Ms. Gioia De Cari; director Ms. Miriam Eusebio, and finally to the conference coordinator Dr. Farley Mawyer.

We would like to thank the publishing companies Pearson, Cengage Learning, Hawkes Learning Systems, McGraw-Hill, and Jones and Bartlett Learning for their financial support. Also, a special thanks to the marketing team from Pearson.

We hope you will return to your institutions with new ideas that can be implemented in your classroom and your research. Have a great conference!

Best regards,

The Organizing Committee

The MAA Annual Meeting of The Metropolitan New York Section

Borough of Manhattan Community College, CUNY

May 5, 2012

8:45-9:30 AM	Registration and Refreshments	Richard Harris Terrace
8:45-3:30 PM	Book Exhibits	Richard Harris Terrace
9:30-9:45 AM	Welcome: Dr. Sadie Bragg, Senior Vice President of Academic Affairs Borough Manhattan Community College, CUNY Dr. Farley Mawyer, Chair, Metropolitan New York Section of the MAA York College, CUNY	N-402
9:45-10:45 AM	Invited Speaker: How Many Points Can a Curve Have? Dr. Noam D. Elkies Harvard University	N-402
10:45-11:00 AM	Break	
11:00-12:00 PM	Invited Speaker: Revisiting Familiar Places: What I Learned at the Magazine Dr. Paul Zorn St. Olaf College	N-402
12:00-1:00 PM	Lunch (with time to visit the book exhibits)	Richard Harris Terrace
1:00-1:30 PM	Awards Ceremony - including prize raffle and section business	Richard Harris Terrace
1:30-3:00 PM	Theater Performance: *"Truth Values: One Girl's Romp Through M.I.T.'s Male Math Maze"* The celebrated one-woman show written and performed by Gioia De Cari	Theater 2
3:00-5:40 PM	Contributed Papers Sessions:	
	Pedagogy Session	N-404
	Mostly Research Session	N-402
	Miscellaneous Session	N-440
	Mostly Student Session	N-414
3:00-5:40 PM	Contributed Poster Session	N-402
3:00-5:40 PM	Commercial Presentations	S-630
3:15-4:00 PM	Panel Discussion: Dr. Dan King, Sarah Lawrence College - Moderator Truth Values: Women in Mathematics Ms. Gioia De Cari, Writer/Performer, "Truth Values: One Girl's Romp Through M.I.T.'s Male Math Maze" Dr. Juliette Kennedy, University of Helsinki, Institute for Advanced Study (2011-2012) Dr. Janet Liou-Mark, New York City College of Technology Dr. Bianca Santoro, City College of New York	Richard Harris Terrace
3:00-5:40 PM	Hospitality	N-438

How Many Points Can a Curve Have?

Dr. Noam D. Elkies, Harvard University

Abstract:

Diophantine equations, one of the oldest topics of mathematical research, remain the object of intense and fruitful study. A rational solution to a system of algebraic equations is tantamount to a point with rational coordinates (briefly, a "rational point") on the corresponding algebraic variety *V*. Already for *V* of dimension 1 (an "algebraic curve"), many natural theoretical and computational questions remain open, especially when the genus *g* of *V* exceeds 1. (The genus is a natural measure of the complexity of *V*; for example, if *P* is a nonconstant polynomial without repeated roots then the equation $y^2 = P(x)$) gives a curve of genus *g* iff *P* has degree 2*g* + 1 or 2*g* + 2.) Faltings famously proved that if *g* > 1 then the set of rational points is finite (Mordell's conjecture), but left open the question of how its size can vary with V, even for fixed *g*. Already for *g* = 2 there are curves with literally hundreds of points; is the number unbounded? We briefly review the structure of rational points on curves of genus 0 and 1, and then report on relevant work since Faltings on points on curves of given genus *g* > 1.

Speaker Biography:

Noam D. Elkies is professor of mathematics at Harvard and the youngest person ever tenured at the University. His research on elliptic curves, lattices and other aspects of the theory of numbers has been recognized by such prizes and awards as the Presidential Young Investigator Award of the National Science Foundation and the Prix Peccot of the College de France; his work in mathematical exposition was recognized by awards from both the American Mathematical Society and the Mathematical Association of America. He currently holds several records for ranks of elliptic curves and related Diophantine questions, including several that will be the topic of his invited talk.

Alongside his mathematical career, Elkies has been playing the piano and composing since the age of three. Born in New York, he studied piano with A.Vardi in Israel, and with J.Carlson at the Juilliard Pre-College after returning to the States in 1978, where he graduated with highest honors in 1982; his composition teachers have included Sadai, Davidovsky and Kirchner. His solo performances include Bach's Brandenburg Concerto #5 with the Metamorphosen Chamber Ensemble, and Elkies' own Rondo Concertante, with the Greater Boston Youth Symphony Orchestras' Repertory Orchestra in Boston's Symphony Hall. Flow from traditional idioms, include the above mentioned Rondo Concertante; the "Brandenburg Concerto #7", commissioned and premiered by Metamorphosen; and Yossele Solovey, Harvard's Lowell House Opera of 1999. He is also known as a solver and composer of chess problems, and won the World Chess Solving Championship in 1996.

Revisiting Familiar Places: What I learned at the Magazine

Dr. Paul Zorn, St. Olaf College

Abstract:

Among the perks of editing Mathematics Magazine, as I did from 1995 to 2000, was the chance to see and learn an enormous variety of mathematics. Much of it was familiar, but a surprising amount was new, or different. Can there possibly be anything new to learn about cubic polynomials? Countable sets? Equilateral triangles? Bijective functions? The short answer is yes, and I'll give some examples that worked for me. The Magazine and other MAA journals are rich sources of novel - and often surprising - views of supposedly familiar and thoroughly understood topics from undergraduate mathematics. That such examples exist testifies the depth and richness of our subject, including at the undergraduate level.

Speaker Biography:

Paul Zorn is a professor of mathematics at St. Olaf College in Northfield, Minnesota. Born, raised, and schooled through high school in India, he moved to the U.S. to attend Washington University in Saint Louis, majoring in mathematics and English. He did his PhD, in several complex variables, at the University of Washington, Seattle, under the direction of Edgar Lee Stout. Paul's professional interests include complex analysis,

mathematical exposition, textbook writing, and the role of mathematics among the liberal arts. In 1987 he received MAA's Allendoerfer Prize for an article, published in Mathematics Magazine, on the then---recently---proved Bieberbach conjecture. From 1996 to 2000 he was Editor of Mathematics Magazine. He and a St. Olaf colleague, Arnie Ostebee, co-authored several calculus textbooks. His most recent book, *Understanding Real Analysis*, was published by AK Peters in 2010.

Truth Values: One Girl's Romp Through MIT's Male Math Maze

Ms. Gioia De Cari

"[M.I.T. Biologist Nancy] Hopkins says she did not enjoy the tumult surrounding the Summers controversy, 'but if it had the effect of bringing this issue forward and inspiring this young woman to write this fabulous play . . . I'd say it was worth it, because this is an important play.'" - The Boston Globe

Created as a response to former Harvard President Lawrence Summers' now infamous suggestion that women are less represented than men in the sciences because of innate gender differences, "Truth Values: One Girl's Romp Through M.I.T.'s Male Math Maze" is a true-life tale that offers a humorous, scathing, insightful and ultimately uplifting look at the challenges of being a professional woman in a male-dominatedfield.

Over the course of the 75-minute solo show, writer/performer and "recovering mathematician" Gioia De Cari brings to life more than 30 characters in a hilarious and deeply touching performance that has earned raves from critics and stirred audiences to standing ovations. The play has been embraced nationally as a fresh voice on issues concerning women in math and science, and is often paired with post-performance discussions. An impressive collection of academic luminaries has participated in talk-backs thus far, including Michael Sipser, Chair of Mathematics, M.I.T., Abigail Stewart, Professor of Psychology and Women's Studies, University of Michigan Ann Arbor; and Virginia Valian, Professor of Psycology, Hunter College, and author of "Why So Slow? The Advancement of Women".

"Truth Values" premiered in August 2009 at the New York International Fringe Festival, winning a FringeNYC Overall Excellence Award, and since then has been presented at close to 30 venues nationally, including numerous sold-out performances, such as at the celebrated La Jolla Playhouse, at San Francisco's Zeum Theatre, where the play was sponsored by the Mathematical Sciences Research Institute in conjunction with the 2010 Joint Mathematics Meetings, and at M.I.T., where it was presented as part of the Institute's 150th anniversary celebration.

Biography:

The passionately eclectic Gioia De Cari is an actress, playwright, classical singer and "recovering mathematician." She began her performance career in experimental opera while a teaching fellow in mathematical logic at Harvard. Since then, she has played numerous leading acting roles in theater, commercials and films, including the multi-award-winning film Lower East Side Stories, which screened at the Museum of Modern Art in New York City, Slamdance, and many festivals in the U.S. and internationally.

Gioia's first solo play, The 9th Envelope, which she wrote and performed, received a rave in OOBR: "De Cari commanded the stage with energy, poise and range." Her second solo, Truth Values: One Girl's Romp Through MIT's Male Math Maze, an autobiographical story of her past as a mathematician, was awarded a Puffin Foundation grant. Truth Values premiered in the New York International Fringe Festival in August 2009, winning a FringeNYC Overall Excellence Award and enthusiastic reviews: "[FOUR STARS] . . . De Cari . . . inhabits no fewer than 30 roles with gusto" (TimeOut New York); "Funny and insightful . . . replete with hilarious characters . . . The story is riveting . . . go see this show!" (CurtainUp). Truth Values received its regional premiere on the mainstage of the Central Square Theater in Cambridge, MA where it was nominated for an IRNE (Independent Reviewers of New England) award. Gioia continues to tour Truth Values throughout the U.S.; more information can be found at unexpectedtheatre.org.

Gioia has studied acting with the legendary teacher and solo show director Wynn Handman, and playwriting with the late Milan Stitt of Carnegie Mellon. After graduating summa cum laude from UC Berkeley, she earned a master of science degree from the Massachusetts Institute of Technology. An accomplished singer as well, Gioia released her debut album, Quiet Songs, with her husband, classical guitarist John Olson, in 2006. Gioia is a proud member of Actors' Equity Association, Screen Actors Guild and The Dramatists Guild of America.

Contributed Paper and Poster Sessions: 3:00 – 5:40 PM

Pedagogy Session — Room N-404

Co-Presiders: *June L. Gaston, Borough of Manhattan Community College*
Kathleen Offenholley, Borough of Manhattan Community College

3:00 p.m. **Using 'Discovery Mathematics' to Teach Properties in Elementary and Intermediate Algebra**

Jenna Hirsch, Borough of Manhattan Community College

Using 'Discovery Mathematics' in Elementary and Intermediate Algebra renews student interest in learning mathematics, and results in a richer understanding of mathematical properties. During this presentation, the term discovery mathematics will be introduced along with a brief history of its roots. A sample lesson plan involving exponentiation or logarithmic properties will be presented using discovery mathematics. Instructors will then be challenged to create their own lesson plan in their respective mathematics classes using discovery mathematics.

3:20 p.m. **Connecting Teaching and Learning Using ePortfolio**

Mangala Kothari, LaGuardia Community College

Over the past three years LaGuardia is leading in using student's ePortfolio, a digital tool that allows students to deposit to their academic work, reflect on their learning and share it on World Wide Web. Through ePortfolio students can exchange their ideas, connect with their peers and acquire meaningful knowledge of the subject material. In this paper, I would like to share my experience of using ePortfolio in Precalculus class and showcase how the use ePortfolio helped students to enhance their understanding of the subject and also benefited me to refine pedagogy.

3:40 p.m. **Games Based Learning in Mathematics**

Kathleen Offenholley, Borough of Manhattan Community College

Games-based learning is an interactive, interdisciplinary pedagogy that uses best practices in collaborative learning and simulations. Games in mathematics classes have the potential to decrease anxiety, increase motivation, and to deepen learning. Dr. Offenholley understands first-hand the potential that games-based learning offers. She will give a short introduction to the theory and evidence for games-based learning, followed by several examples of games that can be played in mathematics classes.

4:00 p.m. **The Design of Learning Trajectories in Elementary Algebra**

Bronislaw Czarnocha, Hostos Community College (co-author and presenter)
W. Baker, Hostos Community College (co-author)
O. Dias, Hostos Community College (co-author)
V. Prabhu, Bronx Community College (co-author)

After a short introduction to the methodology of Teaching-Research/NYCity model (Czarnocha, Prabhu, 2006) followed by sketch of LT framework, both trajectories will be presented, their theoretical justification discussed and instructional sequences designed to guide students along the trajectories will be analyzed. Of particular interest will be (1) the research conducted on adults' learning trajectories of fractions, which turned out to be significantly different than for children, and (2) the example of adaptive instruction suggested by the Linear Equation LT.

4:20 p.m. **The Effects of Study Skills Training and Peer Coaching of 'At-Risk Students' on Retention and Passing Rates in a Remedial Math Course**

Chris McCarthy, Borough of Manhattan Community College

We will discuss the results of a study undertaken at the Borough of Manhattan Community College of CUNY on the effects of study skills training and peer coaching of 'at-risk students' in remedial math (Introduction to Algebra). The heart of the study paired the most at-risk students (as determined by a diagnostic we devised) with peer (student) coaches.

4:40 p.m. **Scripted Collaborative Learning in Intermediate Algebra**

Alla Morgulis, Borough of Manhattan Community College
Claire Wladis, Borough of Manhattan Community College

We tested scripted collaborative learning projects in Intermediate Algebra and Trigonometry. Twelve pairs of experimental and control sections were chosen so that each pair had the same instructor and assignments. Surveys, pre/post-tests, and success rates were used to assess intervention effectiveness. Statistical analysis suggests that the intervention had a significant effect on student success as measured by increases in student performance on exams of approximately two-thirds of a letter grade and a thirteen percentage point gain in successful course completion.

5:00 p.m. **Using Technology and Midterm Assessment to Improve Successful Completion of Developmental Mathematics Courses**

Michael George, Borough of Manhattan Community College
Kathleen Offenholley, Borough of Manhattan Community College
Claire Wladis, Borough of Manhattan Community College

This study tested an intervention designed to raise the completion rates of arithmetic and basic algebra courses by implementing a departmental midterm as a method of identifying at-risk students, followed by a required set of online assignments for all students who did not pass the midterm exam. Significant gains in retention rates were obtained, with retention in some semesters as high as 50% greater than the semester prior to the intervention.

5:20 p.m. **Minority Enrollments and Success Rates in Online Mathematics and STEM Courses**

Katherine Conway, Borough of Manhattan Community College
Alyse Hachey, Borough of Manhattan Community College
Claire Wladis, Borough of Manhattan Community College

Significantly fewer Hispanics enrolled in mathematics and STEM courses both face-to-face and online in this study. Analyzing comparable face-to-face and online STEM courses, significantly fewer minorities and men enrolled online, and white students had significantly higher success rates both face-to-face and online. However, the gap between Black and Hispanic Male success rates and other ethnic/gender groups in STEM courses actually decreased in the online environment in this study.

Mostly Research Session — Room N-402

Co-Presiders: *Lucio Prado, Borough of Manhattan Community College*
Abdramane Serme, Borough of Manhattan Community College

3:00 p.m. **The Platonic Solids: A Modern Existence Proof Through Graphs**

Jean Nicolas Pestieau, Suffolk Count Community College

In this paper we revisit a seminal result in geometry – the proof of the existence of the five convex and regular polyhedra known as the Platonic solids. The Greek mathematicians Theaetelus and Euclid were able to prove this remarkable result more than 2,000 years ago. Here, however, we provide an elegant and modern proof that relies solely on graphs and some elementary algebraic topology.

3:20 p.m. **An Optimal Basketball Free Throw**

David Seppala-Holtzman, St. Joseph's College

An examination of the geometry of the configuration space of all basketball free throws yields an optimal shot in the sense of being most forgiving of error.

3:40 p.m. **A Sinusoidal Infinite Product Generated by a Binomial Coefficient Formula**

Armen Baderian, Nassau Community College

A familiar binomial coefficient formula, defined on the complex plane, is an analytic function. As a finite product, we consider the analyticity of the extended infinite product. We derive, with functions of the analytic finite product, a class of analytic infinite products including the sine function.

4:00 p.m. **IA-automorphisms of Groups with Almost Constant Upper Central Series**

Marianna Bonanome, New York City College of Technology (co-author and presenter)
Margaret H. Dean, Borough of Manhattan Community College (co-author)
Marcos Zyman, Borough of Manhattan Community College (co-author)

Gathering information on the nature and structure of a group's automorphism group is a difficult task. Some results are known for "well behaved" groups such as free and nilpotent groups, but there is much to be explored. We will describe how our results help shed light on a particular subgroup of a group's automorphism group and present an interesting example leading to a surprising conclusion.

4:20 p.m. **Divisibility of Power Sums and the Generalized Erdos-Moser Equation**

Jonathan Sondow, Princeton University (alumnus, co-author, and presenter)
Kieren MacMillan, Rice University (alumnus and co-author)

Using elementary methods, we find the highest power of 2 dividing a power sum $1^n + 2^n + \cdots + m^n$. An application is a simple proof of Moree's result that if (*a*,*m*,*n*) is any solution of the generalized Erdos-Moser Diophantine equation $1^n + 2^n + \cdots + (m-1)^n = am^n$, then *m* is odd. A preprint of our paper to appear in *Elemente der Mathematik* is available at http://arxiv.org/abs/1010.2275.

4:40 p.m. **The Fibonacci-Pythagoras Connection**

Mohammad Javadi, Nassau Community College
Ron Skurnick, Nassau Community College

In this presentation, we will show that each subsequence of 4 consecutive numbers in the Fibonacci sequence generates a distinct (not necessarily primitive) Pythagorean triple. Nevertheless, there are infinitely many Pythagorean triples that are not generated by any subsequence of 4 consecutive numbers in the Fibonacci sequence.

5:00 p.m. **On the Conditions of the Convergence of the Extended Iterative Refinement**

Abdramane Serme, Borough of Manhattan Community College

This presentation covers the concepts of the Schur aggregation for solving ill conditioned linear system Ax = b. The Schur aggregation reduces the linear system Ax = b by using the SMW formula. The computation of $x = A^{-1}b$ is reduced to the computation of the Schur aggregate $S = I_r - V^H C^{-1} U$. We compute S using the extended iterative refinement algorithm to solve $W = C^{-1}U$. We will discuss the conditions of the iterative refinement convergence to $W = C^{-1}U$.

5:20 p.m. **Occupy Phase Space! The Mathematics of Dissent and Oppression**

Jeff Suzuki, Brooklyn College

We present mathematical models for the interaction between a regime and an opposition group. Consequences of regime action against the group are explored, and ideas for teaching and research are suggested.

Miscellaneous Session — Room N-440

***Co-Presiders**: J.C. Familton, Borough of Manhattan Community College*
Mark Jagai, Borough of Manhattan Community College

3:00 p.m. **A New Way to Teach the Derivative – Using Local Linearity**

Jason Samuels, Borough of Manhattan Community College

Most students have great difficulty with first semester calculus – even those who do well often memorize techniques without understanding. I have reorganized the curriculum around the concept of local straightness. This novel sequence of instruction begins with guided discovery using technology and leads to formal and rigorous calculus. Students learning in this approach have demonstrated high levels of proficiency and enthusiasm. The talk will present the curriculum, evidence of student success, and materials for your classroom.

3:20 p.m. A Note on Computing Determinants

Holly Carley, New York City College of Technology

I will describe a point of view of computing determinants that is little-known and appreciated. This new point of view results in reducing error in hand computations and reducing the space needed to perform such a computation. This will be of interest to anyone teaching the beginnings of linear algebra.

3:40 p.m. Teaching Spherical Geometry to Undergraduates

Marshall Whittlesey, California State University San Marcos

We survey some of the standard theorems of spherical geometry and compare them to those of plane geometry. We also will discuss some of the interesting applications of spherical geometry in astronomy, crystallography and geodesy. We suggest spherical geometry as a good subject for future high school teachers to learn, but also think more mathematicians should be generally aware of its theorems and applications.

4:00 p.m. Bridging the Gap in Mathematics Education

Jaewoo Lee, Borough of Manhattan Community College

One of the challenges that we face today is giving students a unified view toward mathematics. In this talk, we will take a look at a project for Calculus students. It is an attempt to connect the discrete mathematics and continuous mathematics. It can be easily implemented by MAPLE, therefore encouraging students to experiment with it. Finally, we can use this project to give students a valuable experience dealing with what is a proof and what is not.

4:20 p.m. How the Analysis of Current Economic Growth, Income and Employment can be used in Teaching an Introductory Statistics Course that Speaks to Students

Alexander Atwood, Suffolk County Community College

The statistical analysis of economic growth, of changes in income and of changes in employment opportunities provides a powerful way to motivate students to study introductory Statistics. From the years 2000 to 2010, changes in several economic indicators serve to highlight what is happening in the USA.

4:40 p.m. Mathematics for Elementary Math Teachers Training in Shanghai

Hong Yuan, Borough of Manhattan Community College and New York City College of Technology

Much of Shanghai's success in mathematics arises from the quality of its teachers. This presentation will introduce the elementary teacher preparation program at Shanghai Normal University (SHNU). SHNU is responsible for training 100 percent of pre-service elementary teachers and leading in-service teachers in Shanghai. The presenter will review the mathematics content and method courses in elementary teacher preparation program. The topics in mathematics content courses for pre-service and in-service teachers training will be emphasized.

5:00 p.m. Diagrammatic Reasoning Skills of Pre-Service Mathematics Teachers

Margaret Karrass, Borough of Manhattan Community College

Diagrammatic reasoning skills are at the core of teachers' content knowledge for teaching. A study, conducted among pre-service mathematics teachers, revealed that there is a relationship between prospective teachers' geometric knowledge and their ability to recognize, interpret, and explain "visual theorems". This discussion will focus on the results of the study and the questions it raised regarding pre-service teachers' knowledge assessment and curriculum content of teacher education programs.

5:20 p.m. An Introduction to *Processing*

Jacob Gagnon, Worcester Polytechnic Institute

Processing (http://processing.org/) is an easy to use software for creating interactive visualizations, animations, mathematical applets, games, and artwork. The software is versatile allowing your interactions to be saved as a windows application, a mac application, a linux application, an interactive web applet, an android app (smartphones and tablets), or as an ios app (iphone/ipad). In this tutorial, I will introduce some fundamental concepts in using the processing software, and I will demo some educational mathematical web interactions created with *Processing*.

Mostly Student Session — Room N-414

***Co-Presiders**: Barbara Lawrence, Borough of Manhattan Community College*
Michael Kent, Borough of Manhattan Community College

3:00 p.m. Jury Size and Quota using SAM

Jean Guillaume, Brooklyn College (student, co-author, and presenter)
Jeff Suzuki, Brooklyn College (co-author)

Dissatisfaction with jury verdicts often occurs after a contentious trial, like that of Casey Anthony, and leads to calls for changing the jury system. We'll use a mathematical model to explore the implications of changing the size of the jury or the number of jurors required to render a verdict.

3:20 p.m. Exploration of Patterns in the Recursive Collatz Conjecture

Max Levine, Paul D. Schreiber High School (student)
Advisor: Anthony Tedesco

The purpose of my project was to explore a way to solve complex problems. Utilizing the Collatz Conjecture, a true but unproven rule of recursion, I will explain how, working with data, pattern-analysis and studying similar problems, I was able to generate rules that were incorporated into a Java program. Ultimately, over 99% of the problem was predicted along with full prediction of various Collatz-like rules. From this and last year's research, a theory on recursion was formulated.

3:40 p.m. Is a Maximal Antichain a Quantum Cover?

Karmen Tracy Yu, New York City College of Technology (student)
Advisor: Katy Craig

A cover is a quantum cover if it satisfies the statement: if the measure of the cover is zero, then the whole set has the measure of zero. The research goal is to determine a general class of covers that is a quantum cover. The first step has been to study an application of quantum measure theory to the Young's triple-slit experiment, to see if the conjecture holds in this context.

4:00 p.m. An Analysis of "Flood-it"

Paige Cardaci, St. Joseph's College (student)
Megan Dever, St. Joseph's College (student)
Elizabeth Fiorella, St. Joseph's College (student)
Teresa Napoli, St. Joseph's College (student)
Alison Nunziata, St. Joseph's College (student)
Advisor: David Seppala-Holtzman

We examine the relationship between the number of cells in a "Flood-it" grid and the maximum number of steps allowed for a "win."

4:20 p.m. Fourier Series Analysis and its Applications

Ricardo Campos, St. Joseph's College (student)
Kelly Laveroni, St. Joseph's College (student)
Advisor: Vasil Skenderi

This presentation will provide an in-depth analysis of Fourier Series in its trigonometric component. We will first define the generalized Fourier Series as a linear composition of sine waves and prove how to find the coefficients of the series. Several examples will be shown and the idea of uniform convergence will be explained. The end of the presentation will mention different applications of the Fourier Series.

4:40 p.m. Napier's Bones, Babbage's Brain, and the Little Professor

Agnes M. Kalemaris, Farmingdale State College

How are they related? They are all displayed in the mathematics exhibit at the Science Museum in London, England. Other items include slide rules for specialized applications, creative constructions of Klein bottles, and instruments for mathematical drawing. Although the website recommends a half-hour visit, for a mathematician, a full afternoon is necessary but not sufficient! This presentation will highlight some of the treasures that are displayed and include some photographs.

5:00 p.m. **Enhancing Mathematics Learning: Peer Leaders and the Peer-Led Team Learning Project**

A. E. Dreyfuss, New York City College of Technology
Janet Liou-Mark, New York City College of Technology
Laura Yuen-Lau, New York City College of Technology
Mursheda Ahmed, New York City College of Technology (student)
Connie Lu, New York City College of Technology (student)
Juan Mejia, New York City College of Technology (student)
Gendaris Tavera, New York City College of Technology (student)
Lori Younge, New York City College of Technology (student)

New York City College of Technology has embraced Peer-Led Team Learning (PLTL) to support students in the learning of mathematics for the past four years. Peer leaders have been trained in a one credit course and attend a weekly leadership seminar. Impact of this program on the student participants and peer leaders will be presented. This project is supported by NSF STEP Grant #0622493and the BMI.

5:20 p.m. **Creating Case Studies in Mathematics: An Internship Experience**

Reneta Lansiquot, New York City College of Technology
Janet Liou-Mark, New York City College of Technology
Amelise Bonhomme, New York City College of Technology (student)
Tisha Brooks, New York City College of Technology (student)
Travion Joseph, New York City College of Technology (student)
Fariyal Malik, New York City College of Technology (student)
Shelford Mitchell, New York City College of Technology (student)
Jonathan Okoro, New York City College of Technology (student)
Karmen Tracy Yu, New York City College of Technology (student)

An internship was created to provide Applied Mathematics students an opportunity to create case studies based on basic mathematical concepts. Case studies are designed to engage students, as well as help students develop analytic and problem solving skills, encourage mathematical explorations, and apply new knowledge and skills. The presentation will focus on the steps needed to create a good case study and the challenges and benefits of developing them.

Poster Session — Hallway of N-402

***Presider**: Jerry G. Ianni, LaGuardia Community College*

Stimulating Basic Mathematics Activities Using Public Contemporary Issues

Abdelhamid Kadik, LaGuardia Community College
Zahidur Rahman, LaGuardia Community College

This presentation aims to stimulate student enthusiasm through activities by relating mathematics to current public health issues, using real-life problems or scenarios, and collaborative learning. Contemporary issues are introduced with mathematical approaches (i.e. graphical, numerical and analytical) and students should be able to grasp the application and problem-solving strategies involved. These simulations should build awareness of the applicability of basic skills and topics covered in the classroom to the outside world, enabling them to be more active participants in their external environments.

Save Money on MTA MetroCards

Mamadou Dioum, Borough of Manhattan Community College (student)
Advisor: Ke Xin

Every time you take the subway in NEW YORK CITY, you face a mathematics problem. However, Maple Software can help us to solve this math problem easier and faster.

Expanding the Community of Women in STEM through the Navigation by Mentoring and Leadership Project

Reginald Blake, New York City College of Technology
A. E. Dreyfuss, New York City College of Technology
Reneta Lansiquot, New York City College of Technology
Janet Liou-Mark, New York City College of Technology
Milica Jevtic, New York City College of Technology (student)
Karmen Yu, New York City College of Technology (student)
Suhua Zeng, New York City College of Technology (student)

The Navigation by Mentoring and Leadership Project promotes and supports a community of women majoring in mathematics and other science and engineering technology disciplines. The key components of the project involve mentoring, leadership opportunities, luncheons with female mathematicians, career preparation workshops, conference participation, and exposure trips. This project is supported by an MAA Tensor Foundation Grant and NSF STEP Grant #0622493.

Optimal Allocation and Scheduling of Inspection Operations under Multiple Risk Categories

Renee Clarke, New York City College of Technology (student, co-author, and presenter)
Elsayed A. Elsayed, Rutgers University (co-author)
Darlena Kern, Pepperdine University (co-author)
Minge Xie, Rutgers University (co-author)

Cargo containers can be used as a means of smuggling various substances. A portion of the containers, based on a risk assigned attribute, are screened in an optimal sequence in order to minimize accepting a container containing contraband and any penalties incurred for not meeting their delivery due date. A 2specific screening strategy is generated for each container, and a genetic algorithm and an appropriate scheduling algorithm can be optimized simultaneously to solve this problem in a reasonable time period.

Spectral Analysis of Soil Moisture Time Series

Amelise Bonhomme, New York City College of Technology (student, co-author, and presenter)
Nir Krakauer, City College of New York (co-author)
Kibre Tesfa, City College of New York (co-author)
Advisors: Reginald Blake and Janet Liou-Mark

Soil moisture data and observation is helpful to weather and climate, runoff potential and flood control, soil erosion and slope failure, reservoir management, and water quality. Spectral analysis interprets the information from the soil moisture time series in the frequency domain. To estimate of the spectral density of a signal, the method used is the Lomb Periodogram; this analyzes the frequency of unevenly spaced data. The coherence plot of the data being analyzed demonstrates the correlation between two signals. This project is supported by NSF REU Grant #1062934.

The Hessian

Omari-Khalid Rahman, Borough of Manhattan Community College (student)
Advisor: Abdramane Serme

Elementary calculus begins with the study of single variable functions. As a student progresses through their 1st year calculus sequence they will inevitably encounter multi-variable functions. Multi-variable functions differ significantly from single variable functions, and these differences affect how we view, obtain and study the derivative of a multi-variable function. The techniques of introductory calculus are insufficient to study the behavior of a multi-variable function, and thus the goal of this project is to demonstrate how one overcomes such limitations.

The Cayley Graph of a Group

Carlo Fervil, Borough of Manhattan Community College (student)
Advisor: Marcos Zyman

My poster deals with Cayley graph of groups. In particular, I show how to measure the distance between two elements in a group G. If G is free abelian of finite rank or the direct product of a finite cyclic group with an infinite cyclic group, I discuss how G becomes a metric space.

Commercial Presentations — Room S-630

3:00 p.m. Hawkes Learning Systems

Thinking about combining course materials to streamline classes, redesign course formats, and lower costs for students? Hawkes Learning Systems provides the support you need for successful implementation! Learn more about our new combination course offerings and how Hawkes leads to success in a variety of class structures.

3:40 p.m. A WHOLE NEW WORLD: Building Affordable Effective Materials for Students with Pearson

4:20 p.m. Cengage Learning – The Future of Online Homework, Technology Integration, and Instructor Support

In this session we will talk about online homework and the evolution of methods for integrating with campus learning management systems. We will also discuss CourseCare, an unparalleled program for providing ongoing training and support for adopted technology.

5:00 p.m. McGraw Hill

Happy with your pass rates? Happy with your retention rates? If the answer is no, you're not alone! Your local McGraw Hill Math Team invites you to witness ALEKS and Connect Hosted by ALEKS - our proven adaptive technology that WILL improve both pass rates and retention rates! No two students start with the same knowledge base and no two students progress at the same pace yet all students have to master the same course material. Let us show you how ALL of your math students will succeed with ALEKS!! Examine the evidence yourself!

METROPOLITAN NY SECTION OF THE MAA
TREASURER'S REPORT
May 05, 2012

Accounts *	Balance (05/05/12)	Balance (05/05/11)
1. Business Checking	10,101.77	9,948.86
2. Business Money Market Account	2,271.30	2,270.44
3. 6-Month Business CD	20,741.99	20,700.27

Withdrawals - Business Checking Account (05/05/11 - 05/05/12)			
Check #	**Description**	**Amount**	**Date**
798	Dan King (post card, printing and postage)	347.96	05/08/11
799	Farley Mawyer (post-meeting dinner reimb.)	341.98	05/08/11
800	Alan Tucker (coffee)	70.42	05/11/11
801	Armen Baderian (name badges, dots, tickets)	128.43	05/11/11
802	VOID		
803	Ron Skurnick (registration table assistant)	100.00	05/17/11
804	Henry Kepner (honorarium and travel expenses)	851.90	05/17/11
805	Aparna Higgins (honorarium and travel expenses)	807.59	05/23/11
806	Stony Brook Foundation (catering, table rental and SBF fees)	1,540.34	05/23/11
807	Raymond N. Greenwell (reimb. for Putnam mugs)	153.40	01/30/12
Account Maintenance Fees (May 2011 – May 2012)		18.95	05/01/12
	TOTAL	**4,360.97**	

* All with JPMorgan Chase

Deposits - Business Checking Account		(05/05/11 - 05/05/12)
Description	**Amount**	**Date**
Deposit (pre-reg. 50 cks. for $1295 and cash $50, walk-in 6 cks for $140 and cash $450, publishers 2 cks for $160)	2,180.00	05/03/11
Deposit (Metropolitan NY Sec. of the MAA Graph Theory Fund)	140.00	06/03/11
Deposit (Spring 2011 mtg. registration)	15.00	06/03/11
Deposit (Metropolitan NY Sec. of the MAA Graph Theory Fund)	145.00	07/06/11
Deposit (book sales Spring 2011 mtg.)	56.88	08/26/11
Deposit (Subvention 2011)	1,677.00	08/26/11
Deposit (Metropolitan NY Sec. of the MAA Graph Theory Fund)	200.00	03/10/12
Deposit (Metropolitan NY Sec. of the MAA Graph Theory Fund)	100.00	03/15/12
TOTAL	**4,513.88**	

Graph Theory Fund
Metropolitan NY Section of the MAA

Accounts * (Business Checking Account)	Balance	Balance
	(05/05/12)	(05/05/11)
Graph Theory Fund Metro NY Section of the MAA	920.00	335.00

Withdrawals – from Metro NY Section of the MAA (Business Checking Account)			(05/05/11 - 05/05/12)
Check #	**Description**	**Amount**	**Date**
NONE			

Deposits – from Metro NY Section of the MAA (Business Checking Account)		(05/05/11 - 05/05/12)
Description	**Amount**	**Date**
Deposit (Metropolitan NY Sec. of the MAA Graph Theory Fund)	140.00	06/03/11
Deposit (Metropolitan NY Sec. of the MAA Graph Theory Fund)	145.00	07/06/11
Deposit (Metropolitan NY Sec. of the MAA Graph Theory Fund)	200.00	03/10/12
Deposit (Metropolitan NY Sec. of the MAA Graph Theory Fund)	100.00	03/15/12
TOTAL	**585.00**	

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Newsletter Editor	**Abraham S. Mantell** Nassau Community College (SUNY)	(516) 572-8092 mantell@ncc.edu
Student Chapter Coordinator	**David Seppala-Holtzman** St. Joseph's College	(718) 636-7254 dholtzman@sjcny.edu
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Graph Theory Notes Liaisons	**John W. Kennedy** Queens College **Louis V. Quintas** Pace University	johnwken@gmail.com lquintas@pace.edu

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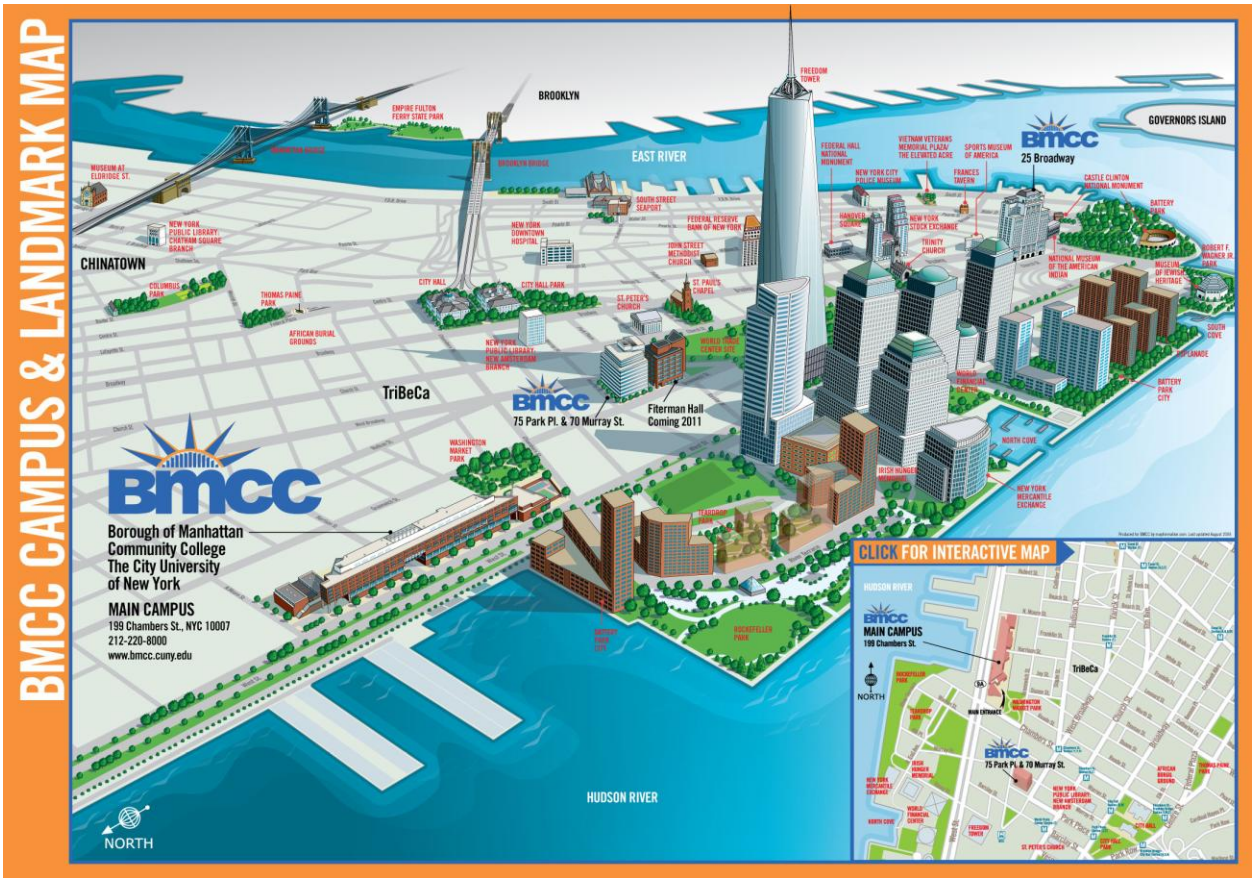

Map of the Borough of Manhattan Community College, CUNY