THE MATHEMATICAL ASSOCIATION OF AMERICA

THE MAA METROPOLITAN NEW YORK SECTION 2014 ANNUAL MEETING

SATURDAY, MAY 3, 2014

NASSAU COMMUNITY COLLEGE

MAA
MATHEMATICAL ASSOCIATION OF AMERICA

NCC
NASSAU COMMUNITY COLLEGE

WELCOME

Department of Mathematics, Computer Science, and Information Technology
Nassau Community College
One Education Drive
Garden City, NY 11530

Saturday, May 3, 2014

Dear MAA-Metro NY Conference Participants,

As members of The Organizing Committee for the 2014 Annual Meeting of the Metropolitan New York Section of the Mathematical Association of America (MAA), we would like to welcome all the participants to Nassau Community College. This conference includes a wide variety of presentations on mathematics pedagogy and research. We hope you will enjoy the talks, the presentations, and the performance.

We sincerely appreciate the contributions of all who will be presenting at today's conference. We are grateful to our Department Chair, Carmine DeSanto, to the keynote speakers, Dr. Tim Chartier (Davidson College), Dr. Linda Braddy (MAA), and Dr. Ruth Charney (Brandeis University), and to the Chair of the Metropolitan New York Section of the MAA, Dr. Jerry G. Ianni. We would also like to express our gratitude to the Nassau Community College Foundation, to Pearson, and to McGraw Hill for their financial support.

We wish each and every one of you a wonderful, enriching experience at today's conference!

Best regards,

The Organizing Committee

NCC
NASSAU COMMUNITY COLLEGE
STATE UNIVERSITY OF NEW YORK

THE MAA ANNUAL MEETING OF THE METROPOLITAN NEW YORK SECTION

MAY 3, 2014

NASSAU COMMUNITY COLLEGE
STATE UNIVERSITY OF NEW YORK

8:15-9:25 AM	Registration and Refreshments	CCB Multipurpose Room
8:15-3:20 PM	Book Exhibits	CCB Multipurpose Room Hallway
9:30-9:45 AM	Welcome and Introductions: Prof. Carmine DeSanto, Chair of the Dept. of Mathematics, Computer Science, and Information Technology Nassau Community College, SUNY Dr. Jerry G. Ianni, Chair, Metropolitan New York Section of the MAA LaGuardia Community College, CUNY	CCB Multipurpose Room
9:45-10:35 AM	Invited Speaker: Mathematical Celebrity Look Alike Dr. Tim Chartier, Davidson College	CCB Multipurpose Room
10:35-10:45 AM	Break	
10:45-11:20 AM	Invited Speaker: "You should be a math major!" Dr. Linda Braddy, Mathematical Association of America	CCB Multipurpose Room
11:20-11:40 AM	Awards Ceremony and Business Meeting	CCB Multipurpose Room
11:45-12:55 PM	Lunch (Visit the book exhibits)	CCB Multipurpose Room
1:00-1:50 PM	Invited Speaker: An Excursion into the Strange World of Singular Geometry Dr. Ruth Charney, Brandeis University	CCB Multipurpose Room
1:50-2:00 PM	Break	
2:00-3:00 PM	Mime-matics Performance Dr. Tim Chartier, Davidson College	CCB Multipurpose Room
3:00-3:20 PM	Break	
3:20-5:20 PM	Contributed Paper Sessions: Pedagogy Session Mostly Research Session Miscellaneous Session Student/Commercial Session	 Building G, Room 245 Building G, Room 249 Building G, Room 251 Building G, Room 235
3:20-5:20 PM	Contributed Poster Session	Building G, 2nd Floor Hallway
3:00-5:45 PM	Hospitality	CCB Multipurpose Room

INVITED SPEAKERS

"You should be a math major!"

Dr. Linda Braddy, Deputy Executive Director, MAA

Abstract: Are you a faculty member who has ever said, "You should be a math major!" to a promising student who was majoring in another field or who was still undecided? What kind of answer did you get, and how did you respond? Are you a student who is considering further study in mathematics but are unsure if that would open as many doors of opportunity as other fields of study might? Lack of information about the lucrative job opportunities for someone with a degree in mathematics, particularly those outside the world of academia, is one reason why capable students don't choose mathematics as their major. In this talk, we will examine several of the non-academic careers available in mathematics.

Biography: Linda Braddy is Deputy Executive Director of the MAA and holds a Ph.D. in mathematics from the University of Oklahoma. Prior to joining the MAA in 2012, she served as dean of the Division of Mathematics and Natural Sciences at Tarrant County College (TCC) in Texas, and immediately prior to that as a tenured professor of mathematics and department chair at East Central University (ECU) in Oklahoma. During her tenure at ECU and subsequently at TCC, she acquired a combined $4.7 million in external funding for projects focused on improving student success in general education mathematics courses; providing research and summer enrichment programs for students; providing scholarship opportunities for students; and providing professional development programs for K-12 mathematics teachers. She currently oversees MAA grant-funded programs with combined budgets of $11 million, as well as the Meetings and Facilities Department, Project NExT (and is a 2001 fellow herself), the American Mathematics Competitions program, and MAA public policy efforts.

An Excursion into the Strange World of Singular Geometry

Dr. Ruth Charney, Brandeis University, Polya Lecturer

Abstract: In high school, we learn about the geometry of the plane. Later, we encounter the geometry of smooth manifolds. In this talk, we take a peek at the mind-bending geometry of singular spaces and their applications.

Biography: Ruth Charney is a Professor of Mathematics at Brandeis University and the President of the Association for Women in Mathematics. She is also a Fellow and a Trustee of the American Mathematical Society. She received her Ph.D. from Princeton and taught at Berkeley, Yale, and Ohio State Universities before returning to her undergraduate alma mater, Brandeis, in 2003. She was never sure whether she was a topologist or an algebraist, and is now happily immersed in geometric group theory, a combination of the two.

Mathematical Celebrity Look Alike

Dr. Tim Chartier, Davidson College

Abstract: Who is your celebrity look alike? LeBron James? Jackie Chan? Adele? Rihanna? Vector norms enable us to discern what celebrity looks most like a selected individual. Linear algebra allows us to explore what linear combination of celebrity photos best approximates a selected photo. Would you describe yourself as a cross between Ben Stiller and Hugh Jackman or possibly Marilyn Monroe and Jennifer Aniston? In this talk, we learn how to answer this question using linear algebra and on the way get a sense of how math aids in facial recognition.

Biography: Tim Chartier is an Associate Professor in the Department of Mathematics and Computer Science at Davidson College. In 2014, he was named the inaugural Mathematical Association of America's Math Ambassador. He is a recipient of a national teaching award from the Mathematical Association of America. Published by Princeton University Press, Tim coauthored Numerical Methods: Design, Analysis, and Computer Implementation of Algorithms with Anne Greenbaum. As a researcher, Tim has worked with both Lawrence Livermore and Los Alamos National Laboratories on the development and analysis of computational methods targeted to increase efficiency and robustness of numerical simulation on the lab's supercomputers, which are among the fastest in the world. Tim's research with and beyond the labs was recognized with an Alfred P. Sloan Research Fellowship.

He serves on the Editorial Board for Math Horizons, a mathematics magazine of the Mathematical Association of America. He chairs the Advisory Council for the Museum of Mathematics, which opened in 2012 and is the first museum of mathematics in the United States. Tim has been a resource for a variety of media inquiries which includes fielding mathematical questions for the Sports Science program on ESPN. He also writes for the Science blog of the Huffington Post.

As an artist, Tim has trained at Le Centre du Silence mime school and Dell'Arte School of International Physical Theater. He also studied in master classes with Marcel Marceau. Tim has taught and performed mime throughout the United States and in national and international settings.

In his time apart from academia, Tim enjoys the performing arts, mountain biking, nature walks and hikes, and spending time with his family.

Mime-matics

In Mime-matics, Tim Chartier explores mathematical ideas through the art of mime. Whether creating an illusion of an invisible wall, wearing a mask covered with geometric shapes, or pulling on an invisible rope, Dr. Chartier delves into mathematical concepts such as estimation, tiling, and infinity. Through Mime-matics, audiences encounter math through the entertaining style of a performing artist who has performed at local, national, and international settings.

Contributed Paper and Poster Sessions: 3:20 – 5:20 PM

PEDAGOGY SESSION — Building G, Room 245

Presider: *Jessica Bosworth, Nassau Community College*

3:20 p.m. Deducing the Age of an Ancient Natural Nuclear Reactor in a Pre-calculus Class

Alexander Atwood, Suffolk County Community College

An ancient natural nuclear fission reactor was operational in Oklo, Africa some 2 billion years ago. By modeling the radioactive decay of two Uranium isotopes (U-235 and U-238) in the reactor which have differing half-lives, students in precalculus can calculate when this reactor was operational, how long it was operational and the characteristics of the reactor.

3:40 p.m. Making Connections between Mathematics and Music: The Case of the Golden Ratio

Emad Alfar, Nassau Community College
Chia-ling Lin, Nassau Community College
Daniel Ness, Dowling College

The Golden Ratio has been a topic of both philosophical and practical discussion since ancient times. Focus on the golden ratio has always been of interest throughout the last three millennia because many natural phenomena and outcomes of human production are based on it. The Golden Ratio has been observed in context as abstract as continued fractions and as commonplace as pineapples. Discussion connecting the golden ratio with music often has focused on how scale tunings and composition coevolved as well as the idea of self-reference in music and in mathematics. This presentation focuses on the use of the golden ratio as it pertains to the structure and organization of a musical composition, in particular, a piano sonata by Mozart and another work for piano by Bela Bartok.

4:00 p.m. Using "Flipped Classroom" Pedagogy to Teach Elementary Algebra: A Practice Based Learning Approach

Mangala R. Kothari, LaGuardia Community College

This paper explores a practice-based approach to teach in Elementary Algebra, the second of two developmental math courses at LaGuardia Community College. The study investigates the impact of implementing a modified flipped classroom approach focused on in-class practice and instant feedback on student performance. In this presentation I would like to share my experience and show that how a class time-saving strategy of modified flipped classroom approach helped students master the course material gradually and improved their academic performance.

4:20 p.m. The "Flipped" Road Ahead

Jerry Chen, Suffolk County Community College

With the advanced technology, more classes are being flipped in K-12 schools and colleges. In this talk, the journey of how a college professor who partially flipped a Precalculus class in the Fall 2013 semester and an Intermediate Algebra class in the Spring 2014 semester will be adventured.

4:40 p.m. Classroom Response System in Introductory Statistics Courses

Myung-Chul Kim, Suffolk County Community College

The use of classroom response system can help student learning, engagement and perception during the class. Also, it can enlighten the instructor to sources of student difficulties. In this talk, the effective use of clickers, when teaching statistics, will be presented.

5:00 p.m. **Approximating the Value of π by Inscribing Regular *n*-gons in, and Circumscribing Regular *n*-gons about, a Unit Circle**
Mohammad Javadi, Nassau Community College
Ron Skurnick, Nassau Community College

In this presentation, we use the perimeters and areas of regular *n*-gons ($n \geq 3$) that are inscribed in, and circumscribed about, a unit circle to approximate the value of π.

MOSTLY RESEARCH SESSION — Building G, Room 249

Presider: *Sallie Touma, Nassau Community College*

3:20 p.m. **Stable Configurations of Finitely Many Mutually Repelling Points**
Marina Nechayeva, LaGuardia Community College

We are interested in various properties of finitely many mutually interacting points on certain types of compact Riemannian manifolds, where the interaction propagates along all mutually connecting geodesics. We are currently studying the flat torus case, using the Poisson summation formula. Among questions which naturally arise in this context are, for example, unicity of energy minimizing stable configurations and equidistribution of such configurations, as the number of points tends to infinity.

3:40 p.m. **Primary Pseudoperfect Numbers and Arithmetic Progressions**
Jonathan Sondow, New York City
Kieren MacMillan, Toronto, Canada

A *primary pseudoperfect number* (*PPN*) is an integer $K > 1$ satisfying the Egyptian fraction equation $1/K + \sum 1/p = 1$, the sum being over all primes *p* dividing *K*. PPNs arise in studying perfectly weighted graphs associated to singularities in $\mathbb{C}^2$, and are related to Sylvester's sequence, Giuga numbers, and Znám's problem. All PPNs are square-free, and all except 2 are pseudoperfect. The known ones are

$$2, 6, 42, 1806, 47058, 2214502422, 52495396602, 8490421583559688410706771261086$$

Remarkably, the *n*th one has exactly *n* (distinct) prime factors. We derive striking arithmetic progressions of PPNs modulo $6^2 \cdot 8$ and $6^3 \cdot 4$ and 2^7. A conjectured extension implies that if $1^m + 2^m + \cdots + k^m = (k+1)^m$ and $m > 1$, then $k \geq 10^{10^{16}}$. Our paper is being revised for the *Monthly*.

4:00 p.m. **A Canonical Conical Function**
David Seppala-Holtzman, St. Joseph's College

Motivated by the intriguing similarity of the values of the "Universal Parabolic Constant" and the "Equilateral Hyperbolic Constant" of Reese and Sondow, we developed a single construct which applies to all conics and yields a continuous, differentiable function dependent only on eccentricity.

4:20 p.m. **From Avogadro to Einstein to Perrin and the Nobel Prize**
Armen Baderian, Nassau Community College
Mohammad Javadi, Nassau Community College

In 1811, Amedeo Avogadro proposed that a gas is composed of molecules, and that at constant temperature and pressure, the number of molecules of the gas is proportional to the volume. Albert Einstein's 1905 paper on Brownian motion, which, when verified, was convincing proof of the existence of atoms and molecules, includes a derivation of an equation that contains Avogadro's constant, the number of molecules in a mole (mean atomic mass in grams). This constant is defined in terms of the statistical mean distance between the random collisions of the molecules of a gas during Brownian activity. In 1926, Jean Perrin was awarded the Nobel Prize in Physics, primarily for accurately evaluating Avogadro's number based upon meticulous experimentation performed in 1908.

4:40 p.m. **The Combinatorial Ballot Problem and Virtual Pascal's Triangles**

Chris McCarthy, Borough of Manhattan Community College
Johannes Familton, Borough of Manhattan Community College

The combinatorial ballot problem asks, "What is the probability that the winner of an election will always be in the lead as the votes are tallied?" This question was posed and solved over 100 years ago. Our method of solution identifies each possible ordering of the ballots with a lattice walk. We then use virtual Pascal's triangles (analogs of the virtual fields and charges used in the method of images from electrostatic physics) to count the relevant lattice walks.

5:00 p.m. **Complete Synchronization on Networks of Identical Oscillators with Diffusive Delay-Coupling**

Stanley R. Huddy, State University of New York at New Paltz
Joseph D. Skufca, Clarkson University (co-author)

This talk discusses when complete synchronization is possible on networks of identical oscillators with diffusive delay-coupling and a single constant delay. It is found that complete synchronization is possible if at least one of the following conditions is met: (1) the network is regular, (2) the system solution is tau-periodic, or (3) the synchronized solution is a fixed point. Numerical simulations of five-node networks with chaotic node dynamics are presented as examples of synchronization on such networks.

MISCELLANEOUS SESSION — Building G, Room 251

Presider: *Angela Oglesby, Nassau Community College*

3:20 p.m. **Evolution of the Course "Mathematics in Modern Technology"**

Yevgeniy (Eugene) Galperin, East Stroudsburg University of Pennsylvania

We discuss the approach of making the discrete wavelet transform the centerpiece of a course titled "Mathematics in Modern Technology" as well as unorthodox approaches to introducing convolution, Fourier series, Fourier transforms, digital image processing, and computer vision to undergraduate students with very limited background in mathematics. The course has been successfully taught at East Stroudsburg University of Pennsylvania since 2008.

3:40 p.m. **Lie Algebraic Methods in Quantum Mechanics: A Topic for Undergraduate Mathematics Research**

Frank Wang, LaGuardia Community College
Shenglan Yuan, LaGuardia Community College

Community College mathematics curriculum is primarily concerned with elementary algebra; even in a calculus course, tremendous amount of time is devoted to algebraic manipulation. As a result, most students, including those who are interested in math, have extremely limited exposure to other branch of mathematics, such as modern algebra. To encourage undergraduate research, we have been offering many faculty talks with topics that are suitable for community college students to give students the taste of mathematical research. As an example, to introduce the application of (Lie) algebraic methods in quantum mechanics to motivated students. Algebraic methods are not only elegant but also powerful: we will demonstrate how to use a computer algebra system to obtain solutions of a Schrödinger equation recursively. We will also share our experience, and our material, which is accessible and feasible for students at various levels.

4:00 p.m. **New Infinite Series Expansions for Functions of Pi and for Fibonacci and Lucas Numbers**

Harvey J. Hindin, Emerging Technologies Group, Inc.

We derive new infinite series expansions for functions of pi and Fibonacci and Lucas numbers. These expansions comprise alternating sign components of the sin and/or cos of (n * ln (phi)) where n is the index of the alternating series and phi is the golden ratio (1 + SQRT (5)) / 2. For the Fibonacci and Lucas number expansions, the variable N (the N-th Fibonacci or Lucas number) appears. Algebraic functions of n appear in the general series term for all derived series. Hyperbolic functions are also found.

4:20 p.m. Combinatorial Techniques for Reversal and Transposition Distances

Sanju Vaidya, Mercy College

In the last twenty years, many scientists have developed mathematical models to analyze evolutionary distances which involve reversals and transpositions of segments of chromosomes. The problems of finding any evolutionary distances involving transpositions are still open. We will use combinatorial algorithms of Young tableaux and permutations to analyze evolutionary distances which involve reversals and transpositions. Moreover, we will analyze the Cloud model, developed by Daniel Dalevi and Niklas Eriksen, for bacterial genomes using a generalization of Young tableaux.

4:40 p.m. Divisibility Ideas and Other Palatable Morsels Associated with the Fibonacci and Lucas Sequences

Jay L. Schiffman, Rowan University

This paper will address questions involving divisibility ideas in the popular Fibonacci and Lucas sequences. The use of technology as manifested by CAS graphing calculators and MATHEMATICA as well as the use of mathematical induction and modular arithmetic will aid in our discovery to view some surprising results. We conclude by discussing which members of the sequences are abundant and odd abundant numbers. I am still attempting to resolve one of these queries.

5:00 p.m. GPS and Mathematics

Chris Roethel, Nassau Community College
Mahmood Pournazzari, Nassau Community College

We will look at a simplified version of the mathematics and formulas involved in the calculations of distances involved in GPS tracking and navigating.

STUDENT/COMMERCIAL SESSION — Building G, Room 235

Presider: *Rachel Rojas, Nassau Community College*

3:20 p.m. Melody Recognition Regardless of Rate or Range

David Seppala-Holtzman, St. Joseph's College (faculty advisor)
Franky Rodriguez, St. Joseph's College (student)

Taking a unique twist on melody recognition software, I decided to write a program that can recognize a monophonic melody regardless of what tempo or key it is played in. Using different algorithms to obtain the change in semitones and change in durations, the program has the ability to take input from a midi controller and play the notes, convert and analyze the melody to arrays, and find a match in a database.

3:40 p.m. MyMathLab

Anabel Darini, Suffolk County Community College

MyMathLab® is a series of text-specific, easily customizable online courses for Pearson textbooks in mathematics and statistics. Powered by CourseCompass™ (Pearson Education's online teaching and learning environment) and MathXL® (our online homework, tutorial, and assessment system), MyMathLab gives you the tools you need to deliver all or a portion of your course online. MyMathLab® provides a rich and flexible set of course materials, featuring free-response exercises that are algorithmically generated for unlimited practice. Students can also use online tools, such as video lectures, animations, and a multimedia textbook, to improve their understanding and performance. Instructors can use MyMathLab's homework and test managers to select and assign online exercises correlated directly to the textbook. They can also create and assign their own online exercises and import TestGen® tests for added flexibility. MyMathLab's online gradebook–designed specifically for mathematics and statistics–automatically tracks students' homework and test results and gives the instructor control over how to calculate final grades.

4:00 p.m. **Solving the Delian Problem with Origami**

Shenglan Yuan, LaGuardia Community College (faculty advisor)
Anastassiya Neznanova, LaGuardia Community College (student)

This talk will describe the steps needed for constructing $\sqrt[3]{2}$ with a single square piece of paper. Along the way we will also present Haga's theorem, dividing the paper into thirds with nothing more than folds. We will also show the mathematical proofs that the folds give the precise properties we are seeking.

4:20 p.m. **Decrypting the RSA Encryption Algorithm**

Vasil Skenderi, St. Joseph's College (faculty advisor)
Colleen Fitzsimons, St. Joseph's College (student)
Daniel Ferguson, St. Joseph's College (student)

How exactly does the RSA Encryption algorithm keep our Internet transactions secure? Listen as we explore the fundamental concepts of mathematics and encryption that ensure the RSA Encryption algorithm's strength.

4:40 p.m. **Teaching and Learning Math with ALEKS**

Christine Brady, Assistant Professor at Suffolk Community College, Ammerman Campus

ALEKS: Assessment and LEarning in Knowledge Space uses adaptive questioning to quickly and accurately determine exactly what a student knows and doesn't know in a course. ALEKS then instructs the student on the topics he/she is *most ready to learn*. As a student works through a course, ALEKS periodically *reassesses* the student to ensure that topics learned are also *retained*. ALEKS courses are very complete in their topic coverage and ALEKS *avoids multiple-choice questions*. A student who shows a high level of mastery of an ALEKS course will be *successful* in the actual course he/she is taking and in their related *subsequent courses. Spend a few minutes at www.ALEKS.com and take the Free Trial as an instructor and student to see for yourself!*

5:00 p.m. **Simulations as a Predictor of the Finite Sums of Fractional Powers of Uniform Distributions**

Satyanand Singh, New York City College of Technology (faculty advisor)
Steve Tipton, New York City College of Technology (student)

We will use simulations to predict the sum of finite fractional powers of uniform distributions that are independent and identical on the interval [0,1]. We will show for specific cases by theoretical analysis that our predictions are true on certain finite intervals. We will also discuss some applications of our studies.

CONTRIBUTED POSTER SESSION — Building G, 2nd Floor Hallway

Enriching Activities for Teaching Mathematical Concepts Using Art

Sanju Vaidya, Mercy College (faculty advisor)
Maria Capodieci, Mercy College (student)
Lisette Valdovinos, Mercy College (student)

Many artists, such as Leonardo Da Vinci, have used mathematical concepts in their artwork. The main objective of this project is to create enriching activities for teaching mathematical concepts using art skills. We will create a poster which will show the history of using mathematical concepts in art, lesson plans for teaching mathematical concepts using art, and recent statistical data showing that art education in relation to math engages a student's cognitive, social, emotion, and sensory motor skills.

Algorithms Concerning Graphs Whose Vertices are Forests with Bounded Degree

Sung-Hyuk Cha, Pace University (faculty advisor)
Edgar G. DuCasse, Pace University (faculty advisor)
Louis V. Quintas, Pace University (faculty advisor)
Joshua Shor, Pace University (student)

Define *F(n, f)* to be the graph with vertices the set of unlabeled *f*-forests of order *n* with vertex *v* adjacent to vertex *u* if and only if *v* and *u* differ by exactly one edge. Here, algorithms devised from the formulas for the order and size of *F(n, f)* are implemented on computers and so that several experimental observations from the large computed data are made both visually and analytically.

The Bus-Driver Sanity Problem

Philip Lombardo, St. Joseph's College (faculty advisor)
Daniel Ferguson, St. Joseph's College (student)

There exists a certain bus driver who suffers from migraines, the intensity of which can be expressed as a function of Kid-Minutes, the unit of Kids the bus driver is exposed to multiplied by the duration of exposure. The bus driver wants to find a route that will allow for the smallest measurement of kid minutes.

Language of Animals, Birds, Fish, and Insects

Irina Neymotin, Farmingdale State College (faculty advisor)
Arthur Hoskey, Farmingdale State College (faculty advisor)
Lev Neymotin, Farmingdale State College (faculty advisor)
Kevin Allison, Farmingdale State College (student)
Vanessa Dofat, Farmingdale State College (student)
Keith Jacobsen, Farmingdale State College (student)
Robert Wentzel, Farmingdale State College (student)

This presentation details the complexity of animal languages and shows attempts to interpret meanings from samples. This is done through the use of signal analysis software, allowing us to look at the Fourier Transformations of different audio signals. This shows the range of frequencies used and how the frequencies change over time. With this, we can detect patterns used by different species, and attempt to analyze their meaning. This was done over different species of cats, birds, whales, and insects.

Foundational Math Courses: Why Use Peer Support?

Janet Liou-Mark, New York City College of Technology (faculty advisor)
Sandie Han, New York City College of Technology (faculty advisor)
A.E. Dreyfuss, New York City College of Technology (faculty advisor)
Loudia Desir, New York City College of Technology (student)
Vanessa Gonzalez, Park Slope Collegiate High School (student)
Julia Rivera, New York City College of Technology (student)
Jian Sun, New York City College of Technology (student)

In a minority-serving institution, the highest mathematics course enrollments with over 1300+ students are in foundational courses. The pass rates for Foundation of Mathematics (MAT 1175) and Intermediate Algebra and Trigonometry (MAT 1275) have been consistently dismal. With only ~50% of the students passing, City Tech has begun to offer courses with an additional peer-led workshop. Results from three years of implementing the Peer-Led Team Learning instructional model will be presented. (This project is supported by NSF MSP Grant #1102729.)

Summer Bridge Programs for Incoming Freshmen: Why Is It Important to Have a Math Preparatory Component?

Janet Liou-Mark, New York City College of Technology (faculty advisor)
A.E. Dreyfuss, New York City College of Technology (faculty advisor)
Jennifer Hernandez, John Jay College of Criminal Justice (student)

The Teaching-Assistant-Scholars Bridge-to-College Summer Academy is designed to acclimate first-year students to college life. In addition to preparing students the skills needed to successfully navigate college, a nine-hour mathematics preparatory workshop is designed for them to do well in their first mathematics course. The best practices and lessons learned in creating a viable summer program will be presented. (This project is supported by NSF MSP Grant #1102729.)

Utilizing Graph Theory to Analyze the EXFOR Database

David Brown, Brookhaven National Laboratory (advisor)
John Hirdt, St. Joseph's College (student)

Graph theory can be utilized in order to analyze databases in new and unique ways. We will look at the EXFOR nuclear physics database and what conclusions we can draw by applying varying graph theory metrics. We expect to identify the most important elements and their reactions in the eyes of experimental physicist of the world. This will allow us to draw conclusions as per the database as a whole without looking at each individual piece of data.

Music Genome: Mathematical Analysis of Musical Productions

Irina Neymotin, Farmingdale State College (faculty advisor)
Arthur Hoskey, Farmingdale State College (faculty advisor)
Lev Neymotin, Farmingdale State College (faculty advisor)
Shannon Vollmer, Farmingdale State College (student)
Kiersten Keppler, Farmingdale State College (student)
Joe Vermilyea, Farmingdale State College (student)
Sean Moore, Farmingdale State College (student)
John Iaquinto, Farmingdale State College (student)

This presentation outlines the growing interest in the field of music genome and discusses the challenges put forth by analysis of complex music signals. Fourier Transform and spectral representation are incorporated in this project in order to identify the notes and their duration in simple musical productions—such as chords—as recognized by the human ear. We then attempt to compare the differences in the musical genome of three different instruments: piano, electronic keyboard, and guitar.

METROPOLITAN NEW YORK SECTION OF THE MAA

TREASURER'S REPORT
MAY 3, 2014

Accounts *	Balance (05/03/14)	Balance (05/05/13)
1. Business Checking	8,589.74	10,838.24
2. Business Money Market Account	16,292.46	16,279.60
3. 6-Month Business CD	1,762.33	1,761.09

Withdrawals - Business Checking Account (05/05/13 - 05/03/14)			
Check #	**Description**	**Amount**	**Date**
828	Abraham Mantell (40 booklets, Graph Theory Fund, inv # 18468)	82.40	05/05/13
829	Daniel King (Postcard postage)	240.83	05/05/13
830	Unitech copy (180 newsletter copies)	243.00	02/05/13
831	Alan Tucker (Honorarium, 2013 meeting)	300.00	05/05/13
832	Cindy Lawrence (Honorarium, 2013 meeting)	200.00	05/05/13
833	Tim Nissen (Honorarium, 2013 meeting)	200.00	05/05/13
834	Glen Whitney (Honorarium, 2013 meeting)	200.00	05/05/13
835	Liselot Ramirez Bido (MAA book sale assistant)	75.00	05/05/13
836	Juana De Las Mercedes Pena (MAA book sale assistant)	75.00	05/05/13
837	David Gleich (Honorarium and travel expenses,2013 meeting)	1,060.05	05/05/13
838	Abraham Mantell (Plaques inv # 22363, 2013 meeting)	150.00	05/06/13
839	Ron Skurnick (Registration table assistant)	100.00	05/07/13
840	David Gleich (Travel expenses, 2013 meeting)	170.00	05/11/13
841	Armen Baderian (Name-badge clips)	85.80	05/14/13
842	Void		
843	Aramark Services Inc. (Lunch, Spring 2013 meeting)	1,683.50	05/28/13
844	Abraham Mantell (Hot/cold snack pack, 2013 meeting)	681.88	06/03/13
845	Unitech Copy Inc. (GTN)	100.00	06/04/13
846	Aladdin Food Manag. Services (2013 delegate assembly)	175.00	10/18/13
847	Florin Cutrina (2013 Putnam mug)	190.28	12/30/13
848	Abraham Mantell (4imprint inv # 8717041)	1,160.28	02/06/14
	Returned check and fee (Stale dated)	52.00	02/06/14
	TOTAL	**7,225.02**	

* All with JPMorgan Chase

Deposits - Business Checking Account		(05/05/13 - 05/03/14)
Description	**Amount**	**Date**
Deposit (Pre-reg. 52 cks for $1525 and cash $90,walk-in 13 cks for $565 and $385 cash)	2,565.00	05/11/13
Deposit (Publishers 2 cks)	180.00	05/17/13
Deposit (Metropolitan NY Section of MAA Graph Theory Fund)	230.00	05/29/13
Deposit (Metropolitan NY Section of MAA Graph Theory Fund)	175.00	07/12/13
Deposit (Spring 2013 sale)	30.52	08/30/13
Deposit (Subvention 2013)	1,506.00	08/30/13
Deposit (Metropolitan NY Sec. of MAA Graph Theory Fund)	290.00	01/31/14
TOTAL	**4,976.52**	

GRAPH THEORY FUND
METROPOLITAN NEW YORK SECTION OF THE MAA

Accounts * (Business Checking Account)	Balance (05/03/14)	Balance (05/05/13)
Graph Theory Fund Metro NY Section of the MAA (Business Checking Account)	930.60	565.00

Withdrawals – from Metro New York Section of the MAA (Business Checking Account)			(05/05/13 - 05/03/14)
Check #	**Description**	**Amount**	**Date**
827	Unitech Copy (Graph Theory Fund, GTN 62, 50 copies)	95.00	02/14/13
828	Abraham Mantell (40 booklets, Graph Theory Fund, inv # 18468)	82.40	05/05/13
845	Unitech Copy Inc. (GTN)	100.00	06/04/13
	Returned check and fee (Stale dated)	52.00	02/06/14
	TOTAL	**329.40**	

Deposits – to Metro New York Section of the MAA (Business Checking Account)		(05/05/13 - 05/03/14)
Description	**Amount**	**Date**
Deposit (Metropolitan NY Section of MAA Graph Theory Fund)	230.00	05/29/13
Deposit (Metropolitan NY Section of MAA Graph Theory Fund)	175.00	07/12/13
Deposit (Metropolitan NY Sec. of MAA Graph Theory Fund)	290.00	01/31/14
TOTAL	**695.00**	

* All with JPMorgan Chase

MAA Metro New York Section Officers

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Jerry G. Ianni (Chair), Elena Goloubeva, Raymond N. Greenwell, Janet Liou-Mark, Cal Mittman, and David Seppala-Holtzman

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