THE MATHEMATICAL ASSOCIATION OF AMERICA

The MAA Metropolitan New York Section 2015 Annual Meeting

SUNDAY, MAY 3, 2015

New York City College of Technology, CUNY

MAA
MATHEMATICAL ASSOCIATION OF AMERICA

NEW YORK CITY COLLEGE OF TECHNOLOGY

NEW YORK CITY
COLLEGE OF TECHNOLOGY
THE CITY UNIVERSITY OF NEW YORK
300 JAY STREET, BROOKLYN, NY 11201-1909

MATHEMATICS DEPARTMENT
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May 3, 2015

Dear MAA Metro New York Section Meeting Participant,

As members of the Local Organizing Subcommittee for the 2015 Annual Meeting of the Metropolitan New York Section of the Mathematical Association of America (MAA), we would like to welcome all the participants to New York City College of Technology (City Tech). Throughout this year, the MAA is celebrating its centennial. In keeping with the grassroots tradition of our national organization, we have included a wide variety of presentations and activities that reflect the diverse interests and broad spectrum of the mathematical community.

On the schedule for today we have three wonderful talks by our invited speakers, Dr. Marjorie Senechal, Dr. Judy Walker, and Dr. Jennifer Slimowitz Pearl. Throughout the day we will also have inspiring faculty and student presentations, engaging round-table discussions, and a challenging math bowl for students. We are grateful to all of the presenters for sharing their expertise, knowledge, enthusiasm, and passion for mathematics.

We are also grateful to President Russell Hotzler, Vice President Miguel F. Cairol, Dr. Jerry G. Ianni, Ms. Jewel Escobar, and City Tech's Mathematics Department under the leadership of Dr. Jonathan Natov for their support. To the publishing companies, Cengage and Pearson, thank you also for your support. Without all of your contributions, this conference would not have been possible.

Again, thank you for coming and being a part of today's special activities. Enjoy the conference!

With best regards,

Sandie Han
Sandie Han

Boyan Kostadinov
Boyan Kostadinov

Janet Liou-Mark
Janet Liou-Mark

Ariane Masuda
Ariane Masuda

Satyanand Singh
Satyanand Singh

Johann Thiel
Johann Thiel

Lin Zhou
Lin Zhou

WELCOME

THE MAA ANNUAL MEETING OF THE METROPOLITAN NEW YORK SECTION

MAY 3, 2015

8:30-12:00 PM	Registration and Refreshments	Namm 119
9:00-3:30 PM	Book Exhibits	Namm First Floor
9:45-10:00 AM	WELCOME AND INTRODUCTIONS Dr. Russell Hotzler, President New York City College of Technology, CUNY Dr. Jerry G. Ianni, Chair, Metropolitan New York Section of the MAA LaGuardia Community College, CUNY	Atrium Amphitheater Atrium Ground 30
10:00-10:50 AM	INVITED SPEAKER Monsters, Penrose Tilings, and Aperiodic Crystals Dr. Marjorie Senechal Smith College and The Mathematical Intelligencer	Atrium Amphitheater Atrium Ground 30
10:50-11:00 AM	Break	Namm 119
11:00-11:50 AM	CONCURRENT SESSIONS Session I: National Science Foundation (NSF): Organization, Programs, and Tips Dr. Jennifer Slimowitz Pearl Program Director in the Division of Mathematical Sciences at NSF	Atrium Amphitheater Atrium Ground 30
	Session II: National MAA Math Major Presentation Dr. Abraham Mantell	Namm 719
	Session III: Student Math Bowl Dr. Raymond Greenwell, Dr. David Seppala-Holtzman,& Dr. Johann Thiel	Namm 720
12:00-1:20 PM	Lunch (Visit the book exhibits) FACULTY ROUNDTABLE DISCUSSION: Seeking Funding and Collaborations Facilitators: Dr. Urmi Ghosh-Dastidar, New York City College of Technology Dr. Sandie Han, New York City College of Technology FACULTY/STUDENT ROUNDTABLE DISCUSSION: Peer Mentoring Programs Facilitators: Dr. Annie Han, Borough of Manhattan Community College Dr. A.E. Dreyfuss, New York City College of Technology STUDENT ROUNDTABLE DISCUSSION: Applying to Graduate School Facilitators: Dr. Nadia Benakli, New York City College of Technology Joseph Bendana, Yoonhee Kang, Melanie Lorek, CUNY Graduate Center Christopher Chan, Hunter College	Namm 119
1:30-2:10 PM	Awards Ceremony and Business Meeting Centennial Video from National MAA	Atrium Amphitheater Atrium Ground 30
2:15-3:25 PM	INVITED SPEAKER What color is my hat? And what does that have to do with my iPod? Dr. Judy Walker Aaron Douglas Professor, Chair of the Department of Mathematics University of Nebraska--Lincoln	Atrium Amphitheater Atrium Ground 30
3:25-3:35 PM	Break	Namm 720

3:40-4:10 PM	COMMERCIAL PRESENTATIONS ALEKS Math Learning System – Ms. Susan Hessney	Namm 717
3:40-5:40 PM	CONTRIBUTED PAPER SESSIONS	
	Mostly Research Session	Namm 716
	Miscellaneous Session	Namm 718
	Faculty/Student Session	Namm 719
	Student Session	Namm 723
3:40-5:40 PM	CONTRIBUTED POSTER SESSION	Namm 7th Floor Hallway
3:00-5:45 PM	Hospitality	Namm 720

INVITED SPEAKERS

MONSTERS, PENROSE TILINGS, AND APERIODIC CRYSTALS

Dr. Marjorie Senechal

Smith College and The Mathematical Intelligencer

Abstract: Regular pentagons don't tile the plane, as Johannes Kepler discovered long ago. The gaps didn't bother him but overlaps did; they're monsters, he said, and quit. 350 years later Roger Penrose took another look and came up with his now-famous aperiodic tiles. Are Penrose tilings more than intriguing toys? Are they, as many people hoped, also found in nature? Do they describe the atomic structures of real aperiodic crystals (so-called quasicrystals)? In this talk I'll show why many people hoped the Penrose tilings would do that job, but Kepler's monsters do it better.

Biography: Marjorie Senechal grew up in Lexington, Kentucky, and received a B.S. from the University of Chicago and M.S. and Ph.D. degrees from the Illinois Institute of Technology, all in mathematics, and taught at Smith College throughout her career.

Now Marjorie is the Louise Wolff Kahn Professor Emerita in Mathematics and History of Science and Technology at Smith College, Northampton, MA, and editor-in-chief of the international quarterly journal, The Mathematical Intelligencer. She is a Fellow of the American Mathematical Society.

Her latest books are "I Died for Beauty: Dorothy Wrinch and the Cultures of Science (OUP)," and "Shaping Space: Exploring Polyhedra in Nature, Art, and the Geometrical Imagination) (Springer)," both 2013. Earlier books include "Crystalline Symmetries, Quasicrystals and Geometry," "Long Life to Your Children! A Portrait of High Albania (with Stan Sherer)," and "American Silk, 1830-1930" (with Jacqueline Field and Madelyn Shaw).

WHAT COLOR IS MY HAT? AND WHAT DOES THAT HAVE TO DO WITH MY IPOD?

Dr. Judy L. Walker

Aaron Douglas Professor, Chair of the Department of Mathematics
University of Nebraska—Lincoln

Abstract: As each of three people enter a room, either a blue hat or a white hat (with the color chosen randomly and independently) is placed on his or her head. Each person can see the other hats but not their own. They can discuss strategy before they enter the room, but after they've entered no communication is allowed. Once they've looked at the other hats, the players must simultaneously guess their own hat colors or pass. The group shares a prize if at least one person guesses correctly and no one guesses incorrectly. The "obvious" strategy (one person guesses "Blue" no matter what and the other two pass) yields a 50% success rate. Is there a better strategy? What if there are more than three players? We will use the theory of error-correcting codes to find the optimal strategy for this game in many situations.

Biography: Judy Walker received her undergraduate degree from the University of Michigan and both her master's degree and her Ph.D. from the University of Illinois at Urbana-Champaign. She has been at the University of Nebraska Lincoln since 1996, and currently serves as Aaron Douglas Professor and Chair of the Department of Mathematics there. Her research is in algebraic coding theory and she is author of the book "Codes and Curves" published by the AMS as part of their Student Mathematical Library. She spent much of the fall 2011 semester as a Visiting Professor at Centre Interfacultaire Bernoulli, EPFL in Lausanne, Switzerland.

Dr. Walker is a co-founder of the Nebraska Conference for Undergraduate Women in Mathematics and has served as an elected member of the AWM Executive Committee and the AMS Council. She was the lecturer for the undergraduate portion of the IAS/PCMI Mentoring Program for Women in 1999 and was one of three lecturers at the 2007 Summer School in Coding Theory at the Sophus Lie Conference Center, Nordfjordeid, Norway. She has won several teaching awards, including the University of Nebraska's system wide Outstanding Teaching and Instructional Creativity Award in 2014 and the MAA's Deborah and Franklin Tepper Haimo Award in 2006. She served as the MAA's Polya Lecturer for 2009-2011.

NATIONAL SCIENCE FOUNDATION: ORGANIZATION, PROGRAMS, AND TIPS

Dr. Jennifer Slimowitz Pearl

Program Director in the Division of Mathematical Sciences at the National Science Foundation

Abstract: This presentation will give an overview of NSF, opportunities for faculty and students, and tips for writing strong proposals. There will be plenty of time for discussion.

Biography: Jennifer Slimowitz Pearl is a Program Director in the Division of Mathematical Sciences at the National Science Foundation. She manages the DMS Infrastructure program and is active in NSF's efforts to support the training of students and postdoctoral researchers in the mathematical sciences. She recently completed an assignment in the Office of the Assistant Director in NSF's Directorate of Mathematical and Physical Sciences, examining partnerships between NSF and non-profit funders of basic research in MPS disciplines. She was formerly a Program Director in NSF's Office of International Science and Engineering. Dr. Pearl has held positions at the National Academies and at Rice University. She was an AAAS/NSF Science and Technology Policy Fellow and was awarded a NSF/NATO Postdoctoral Fellowship to conduct research at the Université du Québec à Montréal. Dr. Pearl earned her Ph.D. in mathematics specializing in symplectic geometry from the State University of New York at Stony Brook and her B.S. in mathematics from Duke University.

CONTRIBUTED PAPER AND POSTER SESSIONS

3:40 – 5:40 PM

Namm Building, 7th Floor

MOSTLY RESEARCH SESSION — Namm 716

Presider: *Satyanand Singh, New York City College of Technology*

3:40 p.m. **Ends and End Compactifications**

Malgorzata Marciniak, LaGuardia Community College

Ends, originally introduced by Freudenthal in 1931, found a number of applications, for example in analysis or graph theory. Recently they were of interest for nonstandard analysis as an interpretation of "remote points."

4:00 p.m. **Topics in Linear Algebra through the Uncertainty Principle**

Yevgeniy (Eugene) Galperin, East Stroudsburg University of Pennsylvania

We introduce several topics in linear algebra (such as the Vandermonde Matrix) within the context of the discrete version of the Uncertainty Principle of Donoho and Stark. We also help the students appreciate the importance of non-commutativity of operators through the proof and a discussion of the classical uncertainty principle.

4:20 p.m. **Exploring The Integer Sequence 1, 12, 123, …, 123456789, 1234567891, 12345678912, 123456789123, etc.**

Jay L. Schiffman, Rowan University

The integer sequence 1, 12, 123, … , 123456789, 1234567891, 12345678912, 123456789123, etc. will be explored with the goals securing prime outputs in the sequence as well as determining which composite integers never enter the sequence as prime factors. The deployment of MATHEMATICA 9.0 to furnish the complete factorizations for the initial one hundred eight inputs will be explored. With the aid of modular arithmetic, recurring prime factors from complete groupings such as 123456789, 123456789123456789, 123456789123456789, etc. will be explored as well as future directions for companion sequences that serve to furnish additional stimulating research.

4:40 p.m. **An Accidental Sequence**

Satyanand Singh, New York City College of Technology

We will study a Diophantine Equation raised by Bennett which is pivotal in establishing that the perfect powers of five have few ternary digits in their ternary expansions. In particular we will consider the equation 3^a+3^b+2=n^5, where (n,3)=1 and a>b>0 and establish its insolubility when the pair (a,b) has opposite parity and even parity by elementary methods. In the case for the pair (a,b) with odd parity there is one known solution a=3, b=1 and n=2. We will illustrate by computation that no other solutions exist for n< 2+6(10^6) and touch upon the birth of the Sequence A224920. We will then discuss pertinent related open problems.

5:00 p.m. **The Infinite Motion Conjecture**

Simon M. Smith, New York City College of Technology

The Infinite Motion Conjecture is an unsolved problem in mathematics. It is very easy to describe. Nevertheless, it has many surprising and deep connections to other areas of pure and applied mathematics. During my talk I'll describe everything you need to know in order to start trying to solve this fun but important problem.

MISCELLANEOUS SESSION — Namm 718

Presider: *Lin Zhou, New York City College of Technology*

3:40 p.m. Estimating the Number of Extraterrestrial Civilizations in a Statistics Class

Alexander Atwood, Suffolk County Community College

The Drake Equation, formulated by Astronomer Frank Drake in 1961, provides a means of quantitatively estimating the number of advanced extraterrestrial civilizations in our galaxy which may be detectable by their radio emissions. The equation consists of seven factors, of which five are conditional probabilities. A critical examination of these five probabilities and their corresponding uncertainties provides a powerful way of motivating the study of probability in a Statistics Class. We can then ask, "Are we alone in the galaxy?"

4:00 p.m. Quantitative Structure-Property Relationships Models for Chemical Compounds

Sanju Vaidya, Mercy College
Geetha Surendran, Mercy College

In the last twenty years, many scientists have developed mathematical models to analyze structures of various chemical compounds. Graph theory has provided many powerful tools to solve problems in many areas of chemistry such as chemical isomer enumeration and Quantitative Structure-Property Relationships (QSPR) models. We will describe various topological indices of molecular graphs. Moreover, we will develop QSPR models based on the topological indices for analyzing properties such as densities and refractive indices of certain chemical compounds.

4:20 p.m. Building a Community for Math Majors

Lisa Cook, Suffolk County Community College
Christine Brady, Suffolk County Community College

Suffolk County Community College's Math and Computer Science department has taken an active role in improving the communication between faculty and their math majors. This presentation will showcase the events and workshops that the department has organized in order to create a welcoming environment for students as well as increase recruitment and retention.

4:40 p.m. Mathematics in Movies and Television Shows

Elana Reiser, St. Joseph's College

In this presentation you will see how mathematics is embedded in the popular culture and how that math featured in movies and television shows is directly related to math learned in the classroom. Participants will be introduced to a mathematical topic through a clip from a movie or television show. Background information will be provided, followed by a short activity for participants to work on.

5:00 p.m. A General Perturbation Method on a Fluid Mechanics Problem

Myungchul Kim, Suffolk County Community College

The rotation of a cylinder in a very viscous fluid is basic in fluid mechanics. In this talk, a general perturbation method for determining a stream function of the regular polygonal cylinders rotating in a very viscous fluid will be presented.

5:20 p.m. Interest in Interest

Holly Carley, New York City College of Technology
Marie Celius, New York City College of Technology

This presentation will be on a quantitative reasoning project given to students. This project created an interest in interest.

FACULTY/STUDENT SESSION — Namm 719

Presider: *Johann Thiel, New York City College of Technology*

3:40 p.m. **Courses with Peer-Led Workshops: Examining Mathematics Self-Efficacy, Task Value, and Goal Orientation**

Amarou Bah, New York City College of Technology
A.E. Dreyfuss, New York City College of Technology
Sandie Han, New York City College of Technology
Rezwon Islam, New York City College of Technology
Janet Liou-Mark, New York City College of Technology
Francois Mertil, New York City College of Technology

Success in mathematics may be explained by one's self-efficacy, task value, and goal orientation. A study on students' responses about their perceived ability to solve mathematics problems was conducted in mathematics courses that offered an additional peer-led session. The extra one-hour session per week allowed students to work on problem sets as a team. Results showed statistically significant attitudinal changes across mathematics levels.

4:00 p.m. **I Don't Know Which Way the Bicycle Went: Necessary and Sufficient Conditions for Directional Ambiguity**

David Seppala-Holtzman, St. Joseph's College

In their lovely little book, "Which Way Did the Bicycle Go?" Konhauser, Velleman and Wagon address the question of the title in the opening pages. We are presented with a set of bicycle tracks preserved in the mud and we are asked to determine the direction of travel. The authors provide a simple, elegant solution. A question left unanswered, because it was not asked, is: Is it possible to have a set of bicycle tracks that leave the direction of travel indeterminate? The answer to this question is "yes." In this talk, we address this question and derive necessary and sufficient conditions for the direction of travel to be ambiguous.

4:20 p.m. **Using Differential Equations to Model Heavy Metal-Spent Tea Leaves Adsorption Kinetics**

Min Yeong Hong, Borough of Manhattan Community College
Kwangmin Kim, Borough of Manhattan Community College
Seonin Cho, Borough of Manhattan Community College
Chris McCarthy, Borough of Manhattan Community College

Using differential equations we model the clearing of heavy metal ions from waste water by adsorption. The adsorption substrate are spent tea leaves (e.g., from the production of Snapple Ice Tea). The parameters of the model are estimated by fitting the model to time series data from lab experiments using a non-linear least squares method implemented in R (statistical software).

4:40 p.m. **Machine Learning Musical Literacy**

Franky Rodriguez, St. Joseph's College

Human beings are naturally gifted at recognizing parts in a song and variations within a piece of music. What about a computer? By using machine learning and MIDI files, I wrote a program that can subset musical pieces into unique sections and find variations between those sections by decision tree. A human then checks its output and corrects it if need be; saving the program's history and corrections in a database for the machine to consult later and "learn."

5:00 p.m. **Matrix Factorization and the ADI Method: The Common Element**

Richard Myers, Hofstra University

The LU factorization of certain tridiagonal matrices leads to an efficient sequence for solving tridiagonal systems. Such systems appear in the ADI method for approximating quasilinear partial differential equations.

5:20 p.m. **Classification of Some Cases of a Single-Vertex Flat-Foldable Origami**

Anastassiya Neznanova, Queens College

This presentation discusses flat-foldable origami and its applications in science and engineering. The paper presents the theorems of Maekawa and Kawasaki and proves that for a flat-foldable origami the difference between mountain and valley creases (which will be defined) from a vertex is always 2. The flat-foldability of a single vertex with 4, 6 and 8 angles will be investigated to determine the total amount of possible folds. Illustrations will be included with the proof.

STUDENT SESSION — Namm 723

Presider: *Ariane Masuda, New York City College of Technology*

3:40 p.m. **Simulating and Animating Spatial Interactions between Species Living on a Torus with Given Population and Migration Dynamics**

Michael Cruz, Borough of Manhattan Community College
Boyan Kostadinov, New York City College of Technology

In this computational biology project, we create a computer simulation and animation of spatial interactions between species. All simulations are coded using R. The habitat for spatial interactions is modeled by a 2D lattice with periodic boundary conditions that wrap the lattice into a torus. The population dynamics is based on the Nicholson-Bailey family of models for coupled interactions between species, while the migration dynamics is based on the average inflow of migrating species from the nearest 8-neighbor migration zone.

4:00 p.m. **The SENCER Prospect Park Biodiversity Project: An Interdisciplinary Learning Approach**

Victor Adedara, New York City College of Technology
Bryan Cespedes, New York City College of Technology
Andrew Cook, New York City College of Technology
Farjana Ferdosy, New York City College of Technology
Edrouine Gabriel, New York City College of Technology
Natassa Gavalas, New York City College of Technology
Urmi Ghosh-Dastidar, New York City College of Technology
Sandie Han, New York City College of Technology
Diana Samaroo, New York City College of Technology
Eni Sejdini, New York City College of Technology
Liana Tsenova, New York City College of Technology
Erica Yeboah, New York City College of Technology
Mallessa Yeboah, New York City College of Technology

The presentation will focus on the background and the process of the SENCER Prospect Park Biodiversity Project, with emphasis on the multi-disciplinary collaboration and learning.

4:20 p.m. **Courses with Peer-Led Workshops: Examining Gender Differences in Self-Efficacy Towards Mathematics**

Joe Nathan Abellard, New York City College of Technology
A.E. Dreyfuss, New York City College of Technology
Janet Liou-Mark, New York City College of Technology
Andrew Maloney, New York City College of Technology
Rushdha Rafeek, New York City College of Technology
Ricky Santana, New York City College of Technology
Jeremy Sanchez, New York City College of Technology
Farjana Shati, New York City College of Technology

Gender differences are prominent when examining self-efficacy beliefs in mathematics. Self-efficacy is defined as one's views about one's capability to succeed in a task. This study surveyed the self-efficacy beliefs of undergraduates enrolled in several foundational mathematics courses. The participants from these sections all attend a compulsory one-hour peer-led workshop component which they attended once a week to solve problems collaboratively. Gender differences were found in the self-reported responses. (This project was supported by NSF MSP Grant #1102729.)

4:40 p.m. **An Interactive App for Computing and Visualizing Key Statistics of Various Probability Distributions**

Steven Tipton, New York City College of Technology
Boyan Kostadinov, New York City College of Technology

The goal of this project is to create an interactive Shiny App that computes and visualizes key statistics of a list of probability distributions, including key mathematical expressions and results typeset in LaTeX. The app would serve as an interactive probability calculator as well as a compact mathematical reference for the most common probability distributions at the undergraduate level, including some more exotic distributions like the Lognormal and Pareto distributions, which are widely used in financial and actuarial science.

5:00 p.m. **The SENCER Prospect Park Biodiversity Project: What Do We Learn about Our Environment?**

Victor Adedara, New York City College of Technology
Bryan Cespedes, New York City College of Technology
Andrew Cook, New York City College of Technology
Farjana Ferdosy, New York City College of Technology
Edrouine Gabriel, New York City College of Technology
Natassa Gavalas, New York City College of Technology
Urmi Ghosh-Dastidar, New York City College of Technology
Sandie Han, New York City College of Technology
Diana Samaroo, New York City College of Technology
Eni Sejdini, New York City College of Technology
Liana Tsenova, New York City College of Technology
Erica Yeboah, New York City College of Technology
Mallessa Yeboah, New York City College of Technology

The presentation will disseminate results from the SENCER Prospect Park Biodiversity Project, and compare them with results of other studies found in literature.

5:20 p.m. **The Quantitative Reasoning Fellows Program at City Tech**

Nadia Benakli, New York City College of Technology
Joseph Bendana, CUNY Graduate Center
Yoonhee Kang, CUNY Graduate Center
Melanie Lorek, CUNY Graduate Center

Quantitative Reasoning (QR) at City Tech was developed as a pathways course a few years ago. The presenters, QR coordinator and QR fellows at City Tech, will discuss different activities that they have designed for the course.

CONTRIBUTED POSTER SESSION — Namm 7th Floor Hallway

The SENCER Prospect Park Biodiversity Project

Urmi Ghosh-Dastidar, New York City College of Technology (faculty advisor)
Sandie Han, New York City College of Technology (faculty advisor)
Diana Samaroo, New York City College of Technology (faculty advisor)
Liana Tsenova, New York City College of Technology (faculty advisor)
Victor Adedara, New York City College of Technology (student)
Bryan Cespedes, New York City College of Technology (student)
Andrew Cook, New York City College of Technology (student)
Farjana Ferdosy, New York City College of Technology (student)
Edrouine Gabriel, New York City College of Technology (student)
Natassa Gavalas, New York City College of Technology (student)
Eni Sejdini, New York City College of Technology (student)
Erica Yeboah, New York City College of Technology (student)
Mallessa Yeboah, New York City College of Technology (student)

The poster presentation documents the process, activities, and the results of the SENCER Prospect Park Biodiversity Project.

Heartbeat Analysis: Examination of Heartbeat and Breathing Rate for Different Post-Exercise Relaxation Modes

Irina Neymotin, Farmingdale State College (faculty advisor)
Alex Perlin, Farmingdale State College (student)
George Carlucci, Farmingdale State College (student)
Robert Fauerbach, Farmingdale State College (student)
Harold Chavez, Farmingdale State College (student)

Our presentation outlines the effects of the exercise on the sound signal produced by the heart. Specifically, we utilized Fourier transformations and spectral analysis to determine how the heart was affected by the mode of the post-exercise relaxation.

Math Made Exciting Using Cryptography Games

Sanju Vaidya, Mercy College (faculty advisor)
Afolabi Alawode, Mercy College (student)

When dealing with Math equations one can observe that students tend to interact with problem solving when there is a bit of fun in it. Students dull out when it is straight math but when you are able to input a form of game to solve the math equation it makes them more eager and willing to solve the math problem. So I created games based on substitution ciphers to explain algebraic concepts for middle school students.

Lion Sound Analysis

Irina Neymotin, Farmingdale State College (faculty advisor)
Jude Mariarajan, Farmingdale State College (student)
Dominick Soldezzo, Farmingdale State College (student)

In this presentation, we are going to talk about the Fourier series in the sound analysis. As per the topic of the non-human language, we took the Lion Sound Analysis with Fourier series using by the SIGVIEW Application. We are going to talk about the Male, Female and Kid lions. Those various types of lions are growling with the different frequency and the energy. FFT diagram and the spectrogram will show the highest peaks of the each type of lion. From this, we could get the difference between both lion's growling. Our presentation (poster) shows our analysis of audio signals produced by three different lions: a male lion roar, a female lion roar, and a lion cub roar. We used Fourier transformations and spectral analysis to identify patterns in the roaring of lion.

Enriching Math with Music and Art

Sanju Vaidya, Mercy College (faculty advisor)
Matthew Glashoff, Mercy College (student)

Math is commonly perceived as hard and boring for children. To fix this problem, we can enrich math with music and art. The Fibonacci sequence is commonly used to portray art, music, and nature. Math is used within music because all music notes are taught in fractions. We are creating lesson plans that involve math and music. There is much historical background and statistical data supporting the positive impact music has had on student improvement and math standardized test scores.

Music as a Universal Language

Irina Neymotin, Farmingdale State College (faculty advisor)
Matthew Arendt, Farmingdale State College (student)
Jonathan Cohen, Farmingdale State College (student)

Our poster shows the step by step process of our analysis of the given chords and melody, and provided all the graphs and explanations. Spectral representation and Fourier Transform were used in this "music genome" project in order to identify the notes and their duration in simple musical productions like chords and melodies that are recognized by human ears.

A Model of Gas Exchange in the Lung

Ariane Masuda, New York City College of Technology (faculty advisor)
Silma Samayeen, New York City College of Technology (student)
Ling Yang, New York City College of Technology (student)

Discrete-time dynamical systems provide a description that relates a quantity measured at the beginning and the end of an experiment or a time interval. For example, by knowing how much several bacteria cultures grow in one hour, we can predict what will happen in the long run. We are interested in exploring a graphical technique to estimate the solutions called cobwebbing. We use this method to study a model that investigates the chemical dynamics in the lungs.

Fourier's Gift

Satyanand Singh, New York City College of Technology (faculty advisor)
Rezwon Islam, New York City College of Technology (student)

We will illustrate with Fourier analysis techniques how to find the sum of some common and not so common convergent series which has widespread applications. Our work is based on making an appropriate choice of a periodic function and extending it as a sum of arcs of cosines and sines. Extensive use will be made of symmetry and integral calculus. These techniques are presented from an elementary perspective and can easily be duplicated to generate the sums of additional series.

An Exploration of Urban Undergraduate Students' Identities as Math Learners

Nadia Stoyanova Kennedy, New York City College of Technology (faculty advisor)
Saloua Daouki, New York City College of Technology
Rushdha Rafeek, New York College of Technology (student)

This study aims at answering the following questions: How do students understand themselves as math learners? What beliefs about mathematics and attitudes towards mathematics do students hold? How may they have been shaped by their previous mathematics classroom experiences? Students from two precalculus classes were interviewed. The collected data was analyzed and conclusions were drawn.

METROPOLITAN NEW YORK SECTION OF THE MAA

TREASURER'S REPORT

May 3, 2015

Accounts *	Balance (05/03/15)	Balance (05/03/14)
1. Business Checking	9,943.53	8,589.74
2. Business Money Market Account	13,304.80	16,292.46
3. 6-Month Business CD	1,762.90	1,762.33

Withdrawals - Business Checking Account		(05/03/14 - 05/03/15)	
Check #	**Description**	**Amount**	**Date**
849	Crown Trophy (service award)	170.00	05/05/14
850	Daniel King (printing/ postcard postage)	295.80	05/05/14
851	Unitech printing & copy center (newsletter)	192.00	02/05/14
852	Crown Trophy (teaching award)	170.00	05/05/14
853	Janet Liou-Mark (postcard)	85.59	05/05/14
854	Ron Skurnick (registration table assistant)	100.00	05/05/14
855	Fauve Williams (MAA book sale assistant)	75.00	05/05/14
856	Alex Hugger (MAA book sale assistant)	75.00	05/05/14
857	Michael Gu (tech-help)	100.00	05/05/14
858	Top Flight Catering (lunch Spring 2014 mtg.,+350.00 paid by pub.)	2,233.00	05/05/14
859	Abraham Mantelll (post-meeting dinner reimb)	406.00	05/05/14
860	Ron Skurnick (centerpieces flowering reimb)	220.00	05/05/14
861	Armen Baderian (name-badge clips)	209.58	05/14/14
862	Tim Chartier (honorarium and travel expenses: Total 1,870.33 - 1000.00 paid by NCC Foundation)	870.33	07/02/14
863	Jay L. Schiffman (refund for dupl. meeting reg.)	35.00	08/29/14
864	Steven H. Weintraub (honorarium)	150.00	12/01/14
865	Aladdin Food Management Services (2014 delegate assembly)	349.75	10/08/14
866	Top Flight Catering (Graph Theory Fund GTD 68, breakfast & lunch)	453.80	12/08/14
867	Abraham Mantell (moonlight meeting tote)	814.20	02/10/15
868	Florin Catrina (reimbursement for Putnam souvenir mug)	130.68	01/08/15
	TOTAL	**7,135.73**	

* All with JPMorgan Chase

Deposits - Business Checking Account		(05/03/14 - 05/03/15)
Description	**Amount**	**Date**
Deposit (Pre-reg. 56 cks for $1548 and cash $125,walk-in 9 cks for $830 and $725 cash)	3,228.00	05/05/14
Deposit	100.00	05/24/14
Deposit (Spring 2014 book sale)	24.02	08/28/14
Deposit (Subvention 2014)	1,362.00	08/28/14
Deposit (Transfer from savings to checking)	3,000.00	08/28/14
Deposit (Metropolitan NY Sec. of the MAA Graph Theory Fund, GTD 68 registration & donation)	730.50	12/23/14
Bank Fee Reversal	45.00	
TOTAL	8,489.52	

GRAPH THEORY FUND
METROPOLITAN NEW YORK SECTION OF THE MAA

Accounts * (Business Checking Account)	Balance (05/03/15)	Balance (05/05/14)
Graph Theory Fund Metro NY Section of the MAA (Business Checking Account)	1,206.70	930.00

Withdrawals – from Metro New York Section of the MAA (Business Checking Account)			(05/03/14 - 05/03/15)
Check #	**Description**	**Amount**	**Date**
866	Top Flight Catering (Graph Theory Fund GTD 68, breakfast & lunch)	453.80	12/08/14
	TOTAL	**453.80**	

Deposits – to Metro New York Section of the MAA (Business Checking Account)		(05/03/14 - 05/03/15)
Description	**Amount**	**Date**
Deposit (Metropolitan NY Sec. of the MAA Graph Theory Fund, GTD 68 registration & donation)	730.50	12/23/14
TOTAL	**730.50**	

* All with JPMorgan Chase

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