

The 90th A N N U A L M E E T I N G
of the
M I C H I G A N M A A
and
M i c h M A T Y C



Unviersity of Michigan – Flint
Riverfront Banquet Center
May 2-3, 2014

The 2014 Annual Meeting of the Michigan Section of the Mathematical Association of America and the Michigan Mathematical Association of Two-Year Colleges is being held on Friday and Saturday, May 2 and 3, at the University of Michigan - Flint campus. Registration, exhibits, talks, and coffee/refreshment breaks will occur in the Riverfront Banquet Center (1 Riverfront Ctr W, Flint Township, MI 48502).

Registration can be done either online at

<https://www.umflint.edu/math/2014-michigan-mathematics-meetings>

or beginning at 8:00am on Friday at the registration desk at the meetings.

Program Notes:

This program has a table of contents has a calendar of events, a table of contents of talks and speakers, and then a listing of all of the abstracts. Talks by undergraduates are denoted with an asterisk "*", and in the abstracts, the talks by graduate students are denoted with a dagger "†". A floor plan for Curtiss Hall can be found at the end of the booklet.

Meals:

Meals at the meetings require advance registration. All meals take place in Room E.

- Friday lunch: Deli meats and cheeses; lettuce, tomatoes, pickles; baked breads and rolls; two salads; and beverages.
- Friday banquet: marinated London broil, grilled chicken marsala, garden and Caesar salads, herbed redskin potatoes, wild rice, green bean amandine, and carrot cake. Beverages, coffee, tea and water. Cash bar prior to the meal.
- Saturday lunch: Mexican chopped salad, cumin black beans, cilantro lime rice, grilled flatbread, chipotle orange roasted chicken, carne asada con papas rancheros, and sopapillas; soda and coffee.
- Saturday banquet dinner:

AWM Breakfast:

The Saturday morning AWM breakfast is at Damon's Restaurant, 4960 Towne Centre Road (Four Points Hotel) at 7:00–8:30. The reservation is under the name of Patrick Pan, MAA. Please RSVP to Ruth Favro at rfavro@ltu.edu.

Parking:

Since UM-Flint final exams will be over by the time of the conference, participants can park in any structure on campus. This includes:

- The UPAV (University Pavilion Ramp); or

- The Harrison Ramp; or
- Lot T.

We have been notified that office will be instructed to ignore parking restriction in these areas for the duration of the conference. All of these lots are within a 5-minute walk of the Riverfront building, where the talks will be held. Maps of the campus, and specific directions to the lots can be found at

<http://maps.umflint.edu/>

Do not park in lot P at WSW, or at any spots with a parking meter, as these spots will be strictly enforced (they are reserved for the Early Childhood Development Center and the Urban Health and Wellness Center).

Lodging:

A full description of hotel options, prices, and reservation deadlines is available from the *Hotel Information* link on the main Meetings website.



Room A

Room B

Room C

8:00
9:00am

9:00
9:10am

9:10
10:00am

10:10
10:55am

11:00
11:30am

11:30
11:50am

12:00
12:20pm

12:30
2:00pm

Registration
Lobby

Welcome
Room E

Better Than We Deserve
Matt Boelkins, Grand Valley State University
Room E

Scenario Based Assessments and the
Standards for Mathematical Practice
Pat Herbst, University of Michigan

It Takes a Mathematics Department
Stephen DeBacker,
University of Michigan

Coffee Break
Room D

Elliptic Curves do Arise
from Ellipses
Mahesh Agarwal,
University of Michigan - Dearborn

Space-Time Dilation
Gerry Cox,
Lake Michigan College

Hidden Markov Models and
Automatic Music Transcription
Brendt Gerics,
University of Michigan - Flint

Automatic Parallel Parking Design
Trang Nguyen,
University of Michigan - Flint

Quantitative Reasoning Requirement
Khairul Islam,
Eastern Michigan University

Influences on Career Selection by
Women Mathematics Majors
Katrina Piatek-Jimenez,
Central Michigan University

Lunch
Room E

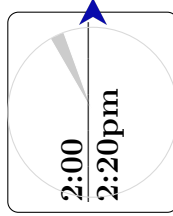
Continued on next page



Room A

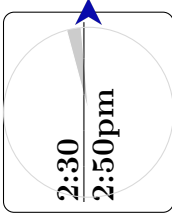
Room B

Room C



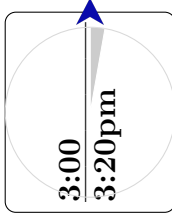
A Year with Free Texts
Jeffrey Kallenbach,
Siena Heights University

Discussion on the Michigan Transfer Agreement
Jack Rotman,
Lansing Community College



Relationships between Scottish curved stone balls and Platonic solids
David Reimann,
Albion College

Implicit Euler Approximation for Differential Inclusion
Yuan Tian,
Wayne State University



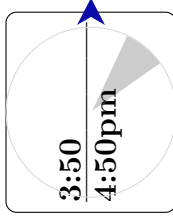
Combining and Convolving Fractals
Cameron McLeman,
University of Michigan - Flint

Characterization of weak-mixing rank-1 cut and stack transformations
Andrew-David Bjork,
Siena Heights University



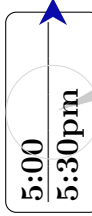
Coffee Break
Room D

Lawrence Technological University Students Location



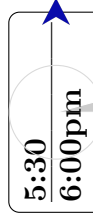
Getting Undergraduates Involved in Mathematics Research
Lloyd Douglas, First Vice President, Mathematics Association of America
Room E

Full Stability in Second-Order Cone Programming
Ebrahim Sarabi,
Wayne State University



Business Meeting
Room E

Lawrence Technological University Students Location



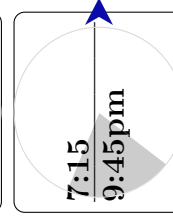
Break

Lawrence Technological University Students Location



Social Hour (Cash Bar)
Room E

Lawrence Technological University Students Location



Awards Dinner
The Symmetric Group and Fair Division: Does Knowledge Matter?
Brian Hopkins,
St. Peter's College

Lawrence Technological University Students Location



Room A

Room B

Room C

7:00
8:30am

9:00
9:50am

10:00
10:45am

10:45
11:15am

11:15
11:35am

11:45
12:05pm

12:15
12:35pm

12:40
2:00pm

AWM Breakfast
501 Grill???

Combinatorial Fixed Point Theorems
Francis Su, Harvey Mudd College
Room E

Modeling Hepatitis C Virus
Dynamics
Libin Rong,
Oakland University

Building (+) Transitions to College
Mathematics & Statistics
Brin Keller,
Michigan State University

Coffee Break
Room D

Topological Data Analysis
Matthew Zabka,
Wayne State University

The Euler - Pappus Problem
Brian McCartin,
Kettering University

Adjusting Child Support Payments
in Michigan
Michael Jones,
Mathematical Reviews

Introducing the Golden Ratio into
Mathematics Classes
Jim Ham,
Delta College

Resampling with Applications in R
Khairul Islam,
Eastern Michigan University

Can You Hear the Harmonic Series
Diverging?
Eric Barth,
Kalamazoo College

Lunch
Mathematics, Soap Films, and (a Touch of) Biology
John Oprea,
Cleveland State University

Project NExT

Room E

The Symmetric Group and Fair Division: Does Knowledge Matter? Brian Hopkins	8
Getting Undergraduates Involved in Mathematics Research Lloyd E. Douglas	8
Combinatorial Fixed Point Theorems Francis Edward Su	8
Mathematics, Soap Films and (a Touch of) Biology John Oprea	9
Scenario based assessments and the Standards for Mathematical Practice Pat Herbst	10
It Takes a Mathematics Department. Steven DeBacker	10
Modeling Hepatitis C Virus Dynamics Libin Rong	10
Building (+) Transitions to College Mathematics and Statistics Brin Keller	11
Better than we Deserve Matt Boelkins	12
Can You Hear the Harmonic Series Diverging? Eric Barth	13
Implicit Euler Approximation for Differential Inclusions Yuan Tian	13
An Introduction to Topological Data Analysis Matthew Zabka	13
This is a title placeholder Students Placeholder	13
Quantitative Reasoning Requirement: Objectives, Implementation and Outcome Assessment Khairul Islam	14
Resampling with applications in R Khairul Islam	14

Towards a complete characterization of weak-mixing rank-1 cut and stack transformations with bounded parameters. Andrew-David Bjork	14
Modeling hepatitis C virus dynamics Libin Rong	15
Space-Time Dilation Gerry Cox	15
Hidden Markov Models and Automatic Music Transcription Brendt Gerics	15
A Year With Free Texts Jeffrey Kallenbach	16
On Combining and Convolving Fractals Cam McLeman	16
Elliptic curves do arise from ellipses Mahesh Agarwal	16
Simulation for Automatic Vehicle Parallel Parking Design by Using Fifth Degree Polynomial Path Planning Trang Nguyen	16
The Euler-Pappus Problem Brian McCartin	17
Relationships between Scottish carved stone balls and Platonic solids David A. Reimann	17
Introducing the golden ratio into mathematics classes Jim Ham	17
Influences on Career Selection by Women Mathematics Majors Katrina Piatek-Jimenez	18
Adjusting Child Support Payments in Michigan Michael A. Jones	18
Full stability in second-order cone programming. Ebrahim Sarabi	18

Brian Hopkins, (Saint Peter's University)

The Symmetric Group and Fair Division: Does Knowledge Matter?

Sports drafts and divorce settlements are examples of situations where players take turns selecting indivisible goods. Like other topics in fair division, the situation is made more interesting because people may value the goods in different ways. In this talk, we focus on the case of two players, where the machinery of permutations is surprisingly applicable. How many possible outcomes are there? In what circumstances do both players get their best possible outcomes? How can one best take advantage of knowing the other's preferences? What happens when a player's motivation switches from greed to spite, the common good, or selfless altruism? In this colorful talk, we'll sample some applied algebraic combinatorics and address these issues along with the provocative question of the title.



7:15pm Room E

Lloyd E. Douglas, (Mathematical Association of America)

Getting Undergraduates Involved in Mathematics Research

This talk will take a look at the history of Research Experiences for Undergraduates (REU) in the mathematical sciences at the National Science Foundation. It will give a perspective on the changes and similarities in the REU program over the past 26 years and discuss factors that have influenced the trends in undergraduate research in mathematics. It will also give concrete examples of the obstacles for getting involved with undergraduate research and some advice on how to overcome those obstacles. Participants will have ample opportunity to raise issues and get questions answered in this interactive discussion.



Friday, 3:50pm Room E

Francis Edward Su, (Harvey Mudd College)*Combinatorial Fixed Point Theorems*

The Brouwer fixed point theorem and the Borsuk-Ulam theorem are beautiful and well-known theorems of topology that admit combinatorial analogues: Sperner's lemma and Tucker's lemma. In this talk, I will trace recent connections and generalizations of these combinatorial theorems, including applications to the social sciences. Some of this work includes research with undergraduates.

**Saturday, 9:00am Room E****John Oprea**, (Cleveland State University)*Mathematics, Soap Films and (a Touch of) Biology*

Why do one-celled creatures take the shapes they do? What is the mathematics of breathing? More and more, Mathematics is intruding into the realm of biology. Here we will see how mathematical notions of "shape" fit into our understanding of living things. Mathematicians have ways of measuring shape and of determining shape through optimization. This fits well with Nature's penchant for economy, so it isn't surprising (in retrospect) that soap films, which arise from surface tension's ability to shrink surface area, are a kind of analog computer for optimizing shape. This talk will examine a bit of the mathematics underlying the formation of soap films and then use soap film demonstrations to illustrate the concepts. Since audience participation is required for soap film experiments, attendees are encouraged not to wear formal attire!

**Saturday, 12:40pm Room E**

Pat Herbst, (University of Michigan)

Scenario based assessments and the Standards for Mathematical Practice

The Common Core's Standards for Mathematical Practice establish expectations on how students need to engage in mathematical work. For teachers to promote such engagement they need to be able to recognize opportunities for such engagement in their daily work. This talk describes how project ThEMaT has developed scenario-based materials to assess teachers' recognition of opportunities for students to engage in activities that meet the Standards for Mathematical Practice.



Friday, 10:10am Room A

Steven DeBacker, (University of Michigan)

It Takes a Mathematics Department.

As evidenced by many of the talks at this conference, mathematics is a beautiful, and often useful, subject. Talks at this conference also demonstrate the profession's concern for effective pedagogy, its commitment to engaging students in scholarship and research, and its dedication to providing pathways to the STEM disciplines. So, why do so few domestic students pursue mathematics? I have been thinking pretty seriously about this question since 2003. Since 2007 I have served as the Undergraduate Program Director in my department, and, together with my department, I have worked to implement some non-standard ways to draw more people to the mathematics major. This talk will discuss some of these methods as well as their possible effectiveness.



Friday, 10:10am Room B

Libin Rong, (Oakland University)*Modeling Hepatitis C Virus Dynamics*

Therapy with interferon plus ribavirin leads to hepatitis C virus (HCV) clearance in less than 50% of treated patients. New treatment using direct-acting antiviral agents (DAAs) has the potential to cure patients unresponsive to the interferon-based therapy. In this talk, I will review mathematical models used to study HCV dynamics under interferon-based therapy and introduce new models for DAAs. Treatment implications obtained from these modeling studies will also be discussed.

**Saturday, 10:00am Room A****Brin Keller**, (Michigan State University)*Building (+) Transitions to College Mathematics and Statistics*

The Common Core State Standards (CCSS) for Mathematics outline a core of mathematics that all students should study to be college and career ready – and additional (+) mathematics that students should learn to take advanced mathematics. We'll examine these standards for the large number of high school students planning to major in college programs that do not require calculus. Using examples from a fourth-year high school course, we'll illustrate the design and implementation of one alternative pathway or transition to college mathematics and statistics.

**Saturday, 10:00am Room B**

Matt Boelkins, (Grand Valley State University)

Better than we Deserve

One of my favorite classes to teach is our capstone, “The Nature of Modern Mathematics.” A central theme in the course involves leading students to develop rich, thoughtful answers to the question, “What is mathematics?” Teaching this course has led me to personally reflect regularly and deeply on what mathematics is like; one of my conclusions has been that mathematics is so unified, works so well, and is so beautiful, that it’s better than we deserve.

In this talk, we will reflect on three different aspects of our subject and, in the process, answer the aforementioned question in three different ways. Along the way, we’ll consider a few of my favorite theorems, discuss the value of different perspectives in the process of doing mathematics, and reflect briefly on how these observations about mathematics can inform several different areas of our collective professional work.



Friday, 9:10am Room E

Eric Barth, (Kalamazoo College)

Can You Hear the Harmonic Series Diverging?

The language of mathematics often coincides with that of music. In this talk, we will explore the connection suggested by the harmonic series, a mathematical name that has a powerful suggestion of music in it. The harmonic series is well-known to mathematics students because it provides an interesting example of divergence. Can the musical content of the harmonic series help us understand how this divergence happens? By developing definitions that assign musical sounds to the terms of a series in a natural way, we can produce sonic versions of several convergence theorems. This leads us to the conclusion that yes, you can hear the sound of divergence in the harmonic series if you know what to listen for! Along the way, we will also find satisfying musical examples of convergent geometric series.



Saturday, 12:15pm Room B

Yuan Tian, (Wayne State University)

Implicit Euler Approximation for Differential Inclusions

This paper concerns the generalized Bolza problem for relaxed one-sided Lipschitz differential inclusion. We develop a set-valued version of the implicit Euler scheme and construct a discrete approximation. Then under relaxed one-sided Lipschitz condition, we show this approximation has $W^{1,2}$ norm convergence. Furthermore, with the Lipschitz condition of differential inclusion, the necessary optimality condition for the original differential inclusion is obtained by using this approach.



Friday, 2:00pm Room B

Matthew Zabka, (Wayne State University Grad Student)

An Introduction to Topological Data Analysis

Using topology to investigate the shape of data has been shown to be useful in several applications, including digital imaging and cancer research. In this talk we shall introduce the idea of topological data analysis and give two examples of its methods: persistent homology and the mapper process.



Saturday, 11:15am Room A

Students Placeholder, (Lawrence Tech)*This is a title placeholder*

Abstract placeholder

Friday, 3:00pm Room C**Khairul Islam, (Eastern Michigan University)***Quantitative Reasoning Requirement: Objectives, Implementation and Outcome Assessment*

Some mathematics courses such as College Algebra, Calculus I, Mathematical Reasoning, Introductory Statistics, etc. are considered as quantitative reasoning (QR) courses for the General Education program. The idea of QR courses is to integrate theory and applications to develop students' abilities for critical thinking and problem solving. Specific objectives of QR courses may include analyzing real-life problems using appropriate mathematical model and computational skills, interpreting analytical results, identifying predictability and limitations of analytical model, etc. In this talk, we intend to provide some real life examples utilized in fitting models towards the implementation of the QR requirement and outcome assessment in the course.

Friday, 12:00pm Room B**Khairul Islam, (Eastern Michigan University)***Resampling with applications in R*

Making a valid inference about a parameter via interval estimation or test of hypothesis requires the standard error of the statistic involved in the process of the inference. Often, the standard error of the desired statistic may not be known if the sampling distribution of the statistic is unknown. As such, an inference may not be possible. However, due to the availability of the modern computational facility, the resampling or bootstrap method is well known to overcome the difficulty of estimating the standard error without knowing the sampling distribution of the statistic. This presentation will utilize computational facility in R for resampling. Some applications of resampling will be introduced.

Saturday, 12:15pm Room A

Andrew-David Bjork, (Siena Heights University)

Towards a complete characterization of weak-mixing rank-1 cut and stack transformations with bounded parameters.

After a brief description of the mixing properties of measure preserving dynamical systems, we show that for bounded rank-1 cut and stack transformations, weak mixing is equivalent to total ergodicity. With results from Gao and Hill, this yield an explicit description of which bounded rank-1 transformations are weak mixing, based on their (bounded) cutting and spacer parameters. We also show that there is a rank-1 transformation with bounded cutting parameter (but unbounded spacer parameter) that is totally ergodic but not weak mixing.



Friday, 2:30pm Room B

Libin Rong, (Oakland University)

Modeling hepatitis C virus dynamics

Therapy with interferon plus ribavirin leads to hepatitis C virus (HCV) clearance in less than 50% of treated patients. New treatment using direct-acting antiviral agents (DAAs) has the potential to cure patients unresponsive to the interferon-based therapy. In this talk, I will review mathematical models used to study HCV dynamics under interferon-based therapy and introduce new models for DAAs. Treatment implications obtained from these modeling studies will also be discussed.



Saturday, 10:00am Room A

Gerry Cox, (Lake Michigan College)

Space-Time Dilation

In the Theory of Relativity, time dilation is the difference in time as measured by instruments in two different references frames. One reference frame moving with respect to the other will create this condition, or the two reference frames may be in different gravitational settings.

It will be shown that as one clock moves with respect to a stationary clock, their times differ. The stationary clock moves faster than the moving clock. This demonstrates one aspect of space-time in the Theory of Relativity. It may also demonstrate how an individual could be transported to a future time.



Friday, 11:30am Room B

Brendt Gerics, (University of Michigan, Flint)

Hidden Markov Models and Automatic Music Transcription

Hidden Markov models (HMMs) are powerful tools in pattern recognition and have been used in processes such as voice recognition and musical score following. Our aim is to create a program that will allow the user to play or sing a single voiced song and, with the help of an HMM, create the sheet music of what was played.



Friday, 11:30am Room C

Jeffrey Kallenbach, (Siena Heights U)

A Year With Free Texts

I have over the last little while made an effort to use free/open source/digital texts as often as possible, including DE, Abstract Algebra, and Numerical. The results have been mixed, but on the whole very positive. I will present some preliminary observations on the first year (or so).



Friday, 2:00pm Room A

Cam McLeman, (University of Michigan - Flint)

On Combining and Convolving Fractals

Motivated by a construction in which we obtain an interesting one-dimensional fractal as a merging of the Cantor Set with the Sierpinski Triangle, we explore processes for merging two fractal constructions into one. As a special case, we introduce a convolution operation on certain families of fractals, and investigate the Hausdorff dimension of such a convolution in terms of those of its constituents.



Friday, 3:00pm Room A

Mahesh Agarwal, (University of Michigan - Dearborn)

Elliptic curves do arise from ellipses

We show that the locus of the foci of a family of ellipses that are tangential to the sides of a triangle with one prescribed point of tangency is an elliptic curve. We further show that every isomorphism class of elliptic curves over \mathbb{R} can be realized in this manner.



Friday, 11:30am Room A

Trang Nguyen, (University of Michigan-Flint)

Simulation for Automatic Vehicle Parallel Parking Design by Using Fifth Degree Polynomial Path Planning

Automatic parallel parking program and its related problems about safety, accuracy, and flexibility have been a big concern for automatic land vehicular control. This paper is based on a previous paper by Mehrdad Simkani and Shuwen Zhang, with some additional calculations to come up with a simulation for the automatic parallel parking model by using Mathematica. In this paper, the initial position of the car before parking is also an important issue to be discussed.



Friday, 12:00pm Room A

Brian McCartin, (Kettering University)

The Euler-Pappus Problem

Conjugate diameters play a central role in the study of conic sections. In Book VIII of his Collection (4th Century A.D.), Pappus provided the first explicit construction of the principal axes of an ellipse from a pair of its conjugate diameters. However, he omitted any demonstration of the validity of his construction. Thus, it was left for Euler (1750) to provide the first synthetic demonstration of Pappus's construction. This presentation will review Pappus's construction as well as Euler's corresponding demonstration.



Saturday, 11:15am Room B

David A. Reimann, (Albion College)

Relationships between Scottish carved stone balls and Platonic solids

Over 425 Neolithic stone balls with carved knobs have been found in the northern Scotland. There is no recorded use of these objects, which has resulted in much speculation about their purpose. In some cases, the symmetry of the knob placements is consistent with symmetry associated with Platonic solids. However, these objects are clearly not polyhedra and thus do not represent examples of Platonic solids, despite recent claims to that effect. Their symmetric form contributed to their aesthetic appeal, thus they can be considered very early examples of mathematical art.



Friday, 2:30pm Room A

Jim Ham, (Delta College)

Introducing the golden ratio into mathematics classes

The golden ratio appears frequently in nature and mathematics. Because of its ubiquity, many claim, sometimes dubiously, that it is present in architecture, art, biology, and elsewhere. Its ubiquity in mathematics is undeniable. Ways that the golden ratio can be introduced into mathematics courses in the first two years of college will be shared.



Saturday, 11:45am Room B

Katrina Piatek-Jimenez, (Central Michigan University)

Influences on Career Selection by Women Mathematics Majors

Currently there is a shortage of Americans entering mathematical careers. Furthermore, women remain underrepresented in these fields. Through a longitudinal study, I have collected data from 12 women mathematics majors on what they desire in a future career. I then conducted follow-up interviews with a subset of these women 3-5 years later to learn what careers they actually chose and what influenced their career selection. During this talk I will discuss my findings and will suggest implications on how to help retain women in the field of mathematics.



Friday, 12:00pm Room C

Michael A. Jones, (American Mathematical Society)

Adjusting Child Support Payments in Michigan

For divorced parents in Michigan, the base monetary support each parent is expected to contribute to raising their child is adjusted according to the number of nights spent with the parents. Curiously, this adjustment is based on a rational polynomial function parameterized by k . In the 2004 Michigan Child Support Formula Manual, $k = 2$, meaning the polynomials are quadratic; while $k = 3$ (for cubic polynomials) in both the 2008 and 2013 editions. We use calculus to explain the effect of changing k , prove an equivalent formulation by applying the derivative/anti-derivative relationship, and apply this formulation for cases in which the total level of base support is fixed, but there is a change in the amount contributed by each parent. This talk is based on a paper co-authored with Jennifer Wilson (Eugene Lang College, The New School for Liberal Arts, New York).



Saturday, 11:45am Room A

Ebrahim Sarabi, (Graduate Teaching Assistant)

Full stability in second-order cone programming.

The Talk presents complete characterizations of Lipschitzian full stability of locally optimal solutions to problems of second-order cone programming (SOCP) expressed entirely in terms of their initial data. These characterizations are obtained via appropriate versions of the quadratic growth and strong second-order sufficient conditions under the corresponding constraint qualifications. We also establish close relationships between full stability of local minimizers for SOCPs and strong regularity of the associated generalized equations at nondegenerate points. Our approach is mainly based on advanced tools of second-order variational analysis and generalized differentiation.



Friday, 3:00pm Room B

Michigan Section of the Mathematical Association of America

2013-2014 Officers and Staff

<i>Chair</i>	Michael Bolt, Calvin College
<i>4-Yr Vice Chair</i>	Michele Intermont, Kalamazoo College
<i>2-Yr Vice Chair</i>	Frances Lichtman, Delta College
<i>Sec/Treas</i>	Mark Bollman, Albion College
<i>Governor</i>	Matt Boelkins, Grand Valley State University
<i>Past Chair</i>	Dan Isaksen, Wayne State University
<i>Newsletter Ed</i>	Katie Ballentine, Mathematical Reviews
<i>Dir. MMPC</i>	Stephanie Edwards, Hope College
<i>Webmaster</i>	Sid Graham, Central Michigan University
<i>PIO</i>	Robert Xeras, Siena Heights University, retired

2014 Annual Meeting Program Committee

<i>Chair</i>	Michele Intermont, Kalamazoo College
<i>Members</i>	Frances Lichtman, Delta College Paul Pearson, Hope College Cam McLeman, University of Michigan - Flint
<i>Program Design</i>	Frances Lichtman, Delta College

2012 Annual Meeting Local Arrangements Committee

<i>Chair</i>	Hasan Al-Halees, Saginaw Valley State University
<i>Members</i>	Nancy Colwell, Saginaw Valley State University Anthony Crachiola, Saginaw Valley State University Patrick Pan, Saginaw Valley State University

MichMATYC 2011-2012 Officers and Staff

<i>President</i>	Maria Andersen, Muskegon Community College
<i>Past President</i>	Lisa Winch, Kalamazoo Valley Community College
<i>Sec/Treas</i>	Sam Bazzi, Henry Ford Community College
<i>Historian</i>	John Dersh, Grand Rapids Community College
<i>Newsletter/Web</i>	Jack Rotman, Lansing Community College
<i>State Delegate</i>	Wendy Conway