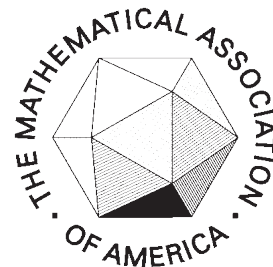


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## Michigan Section – MAA NEWSLETTER

Volume 38, Number 2

April 2012

**Michigan Section Annual Meeting  
Saginaw Valley State University  
May 4–5, 2012**

Coming to  
Saginaw ...

Tom Fiore  
*Morphisms in a Musical  
Analysis of Schoenberg*

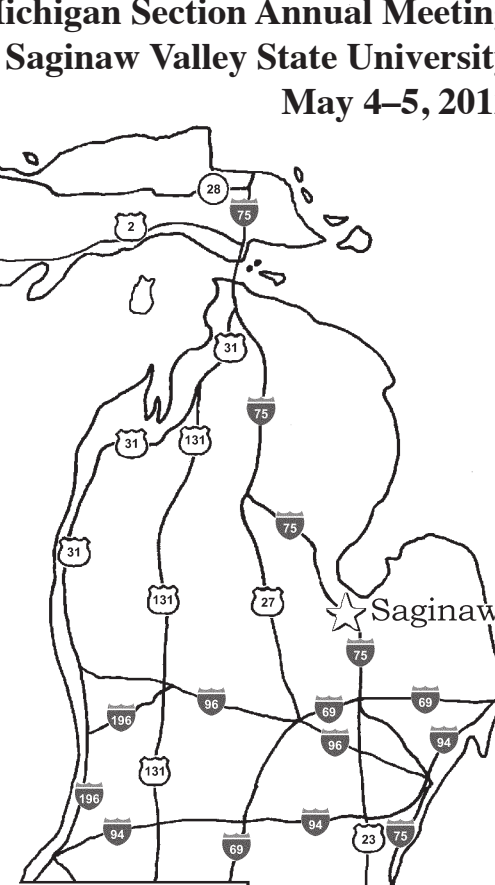
Kathleen Heid  
*Topics in Mathematics Education*

Sommer Gentry  
*Faster, Safer, Healthier: Adventures  
in Operations Research*

Darren Narayan  
*Beyond the Widgets: Real World  
Applications of Mathematics*

Doug Ensley  
*The Higher Mathematics of Eeny-  
Meeny-Miney-Moe*

... and much more



**ALSO IN THIS ISSUE:**

**55<sup>th</sup> Annual Michigan Mathematics Prize Competition**

**Mathematical Association of America**  
**Michigan Section Newsletter**  
**Volume 38, Number 2**

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**www.michmaa.org**

**Abbreviations**

C = College	MTU = Michigan Technological U
CC = Community College	NMU = Northern Michigan U
CMU = Central Michigan U	OU = Oakland U
EMU = Eastern Michigan U	SHU = Siena Heights U
FSU = Ferris State U	SVSU = Saginaw Valley State U
GVSU = Grand Valley State U	U = University
KU = Kettering U	UDM = U of Detroit Mercy
LSSU = Lake Superior State U	UM = U of Michigan
LTU = Lawrence Technological U	WMU = Western Michigan U
MSU = Michigan State U	WSU = Wayne State U

**Calendar of Events**

April 25–28, 2012	NCTM Annual Meeting, Philadelphia, PA
<b>May 4–5, 2012</b>	<b>Michigan Section Meeting, SVSU</b>
August 2–4, 2012	MAA MathFest, Madison, WI
November 8–11, 2012	AMATYC Annual Meeting, Jacksonville, FL
January 9–12, 2013	MAA/AMS Annual Meeting, San Diego, CA
April 17–20, 2013	NCTM Annual Meeting, Denver, CO
August 1–3, 2013	MAA MathFest, Hartford, CT
Oct. 31–Nov. 3, 2013	AMATYC Annual Meeting, Anaheim, CA
January 15–18, 2014	MAA/AMS Annual Meeting, Baltimore, MD
April 9–12, 2014	NCTM Annual Meeting, New Orleans, LA
August 7–9, 2014	MAA MathFest, Portland, OR
November 20–23, 2014	AMATYC Annual Meeting, Nashville, TN
January 10–13, 2015	MAA/AMS Annual Meeting, San Antonio, TX
August 5–8, 2015	MAA MathFest, Washington, DC
November 19–22, 2015	AMATYC Annual Meeting, New Orleans, LA
January 6–9, 2016	MAA/AMS Annual Meeting, Seattle, WA
November 17–20, 2016	AMATYC Annual Meeting, Denver, CO
January 4–7, 2017	MAA/AMS Annual Meeting, Atlanta, GA
November 9–12, 2017	AMATYC Annual Meeting, San Diego, CA

**Organizational Web sites**

Michigan Section–MAA	sections.maa.org/michigan
MAA	www.maa.org
NCTM	www.nctm.org
MCTM	www.mictm.org
AMATYC	www.amatyc.org
MichMATYC	www.michmatyc.org
MMPC	sections.maa.org/michigan/mmmpc
MiNExT	www.hillsdalesites.org/personal/dmurphy/MiNExT.html

## Annual Meeting, May 4–5

The Annual Meeting of the Michigan Section of the MAA and MichMATYC (the Michigan Mathematical Association of Two-Year Colleges) will be held on Friday and Saturday, May 4–5, 2012 at Saginaw Valley State University. The Program Committee is delighted to announce an exciting collection of plenary, local-invited, and contributed talks that are devoted to interesting results in mathematics as well as the teaching and learning of mathematics.

As in recent years, in order to save on printing costs, an advance copy of the meeting program is not included in the Spring *Newsletter*. Details about the schedule, program, and abstracts are available on the program Web page: [www.math.wayne.edu/~isaksen/Conference/12michmaa](http://www.math.wayne.edu/~isaksen/Conference/12michmaa). The page also can be accessed through the Section Web site: [sections.maa.org/michigan](http://sections.maa.org/michigan). As usual, a printed version of the program (including abstracts) will be provided at the meeting.



The meeting begins Friday morning with a local-invited talk by **Tom Fiore** from UM-Dearborn titled “Morphisms in a Musical Analysis of Schoenberg, String Quartet No. 1, Opus 7”. Tom recently received the MAA’s Hasse Award for the article “Musical Actions of Dihedral Groups” which appeared in *The American Mathematical Monthly*. Also Friday morning are local-invited talks by **Kathy Burgis** (Lansing CC) and **Amy Hlavacek** (SVSU). Kathy is the Chair of Mathematics and Computer Science at Lansing CC and will speak on “Developmental Mathematics: Out of the Shadows and Under the National Spotlight”. Amy has been a leader in the MichiganNExT program and will speak on “Surface Embeddings: An Overview”.

At the Friday luncheon, **Kathleen Heid** of Penn State University will give a talk on a topic in mathematics education. She has served on the Board of Governors for the MAA and on the Board of Directors for the National Council of Teachers of Mathematics.

For the Friday afternoon plenary talk, **Sommer Gentry** from the United States Naval Academy will give a presentation titled “Faster, Safer, Healthier: Adventures in Operations Research”. Sommer will describe how operations

research maximizes the number of kidneys available for transplants. Her work has attracted the attention of major media outlets. In 2009, she won the MAA's Henry L. Alder award for distinguished teaching by a beginning mathematics faculty member.

At the Friday awards banquet, **Colm Mulcahy** of Spelman College will deliver the evening address titled "The Mathematics, Magic and Mystery of Martin Gardner", in which he will survey some of the many contributions made by Gardner to the field of recreational mathematics. Colm is an expert on the mathematics of playing cards and writes a regular column on the topic for the MAA.

Saturday will open with a plenary talk by **Darren Narayan** from the Rochester Institute of Technology titled "Beyond the Widgets: Real World Applications of Mathematics". This talk will feature a number of real-world applications of mathematics to industrial problems. Darren is heavily engaged in directing research by undergraduates. He is also a recipient of the MAA's Henry L. Alder award.

Also Saturday morning are local-invited talks by **Filiz Dogru** (GVSU) and **Garry Johns** (SVSU). Filiz will speak on "Outer (Dual) Billiards". In her talk she will discuss her current research in dynamical systems. Garry will speak on "Are We There Yet? In Search of the Best Discrete Distance". Garry's entire academic training took place at institutions in the Michigan Section, including Bachelor's, Master's, and Ph.D. degrees.

The meeting ends with a lecture by **Doug Ensley** (Shippensburg U), which will conclude the Saturday luncheon. Doug's talk is titled "The Higher Mathematics of Eeny-Meeny-Miney-Moe", in which he will survey results from the ancient Josephus Problem. Doug is currently the Second Vice President of the MAA.

As in previous years, the meeting includes 20-minute contributed talks covering a variety of topics in mathematics and mathematics education. This includes sessions devoted to talks by undergraduate and graduate students. Please continue to encourage your students to give a talk. Once again, the Ron Mosier Memorial Award will be presented to the student(s) with the most outstanding talk. The deadline for student abstracts is March 28.

As of this writing, there remains space in the program for additional contributed talks by faculty. Contributions from faculty and students will be accepted beyond the deadlines as long as space permits. Abstracts can be submitted electronically at the Web page mentioned above.

An important aspect of the meeting is the book exhibits from the MAA and from other publishers. As in recent years, there will be no "cash and carry" book sales from the MAA at the meeting. MAA books will be dis-

*Annual Meeting continued on page 11*

## Chairperson's Report

Given the relative mildness of the Michigan winter this year, it may be hard to believe that Spring is nearly here along with our Annual Meeting. This year's conference takes place at Saginaw Valley State University on Friday and Saturday, May 4-5. Co-chairs **Dan Isaksen** (WSU) and **Kris Chatas** (Washtenaw CC), together with the rest of the program committee, have assembled a program that includes an impressive slate of invited speakers and contributed talks. We owe thanks as well for the good work of the local arrangements committee led by **Hasan**



**Al-Halees** (SVSU). Friday afternoon, the meeting includes a Mi-NExT Symposium organized by **David Murphy** (Hillsdale C) on the topic "Supervising Undergraduate Research". Full details for the Annual Meeting, including how to register, are available via the Michigan Section-MAA Web site, [sections.maa.org/michigan](http://sections.maa.org/michigan). There also is a paper registration form included with this *Newsletter*.

In fact, there is much more information to be found at the Section Web site. Thanks to Webmaster **Sid Graham** (CMU) for expanding and relocating the Web site content to the national server. It looks great!

Recently the Executive Committee has been discussing ways to make the Annual Meeting more hospitable to student participants. Please look for developments regarding a possible Friday evening activity to accompany the session of student contributed talks and encourage your students to attend. As started two years ago, the Ron Mosier Memorial Award will be presented to the student(s) with the most outstanding talk. To help consolidate these changes, there have been preliminary discussions about including the Student Activities Coordinator as an ex-officio member of the Executive Committee. Recognizing that such a change would require a change to the bylaws, we welcome all comments. At present, **John Clifford** (UM-Dearborn) serves as Student Activities Coordinator.

As of this writing, we anticipate the next Michigan Undergraduate Mathematics Conference (MUMC) on March 3, 2012 at Siena Heights University. We are grateful to **Tim Husband** (SHU) and his colleagues for taking the

*Chair's Report continued on page 6*



## Two-Year College Vice Chair's Report

At Washtenaw Community College, we have spent the last six or seven years examining the pass rates in our mathematics courses. A considerable amount of this inspection and reflection has happened at the developmental mathematics levels. Our college labels these pass rates “success” rates and has been focused on moving them ever upward. Our department has chosen to refer to these rates as “completion” rates and we have taken great pride in coming up with ways to improve them. We believe it becomes a philosophical conversation—success versus completion—and this conversation continues.



Institutionally, we have implemented several structural changes to help improve the completion rates in our courses. Some of these are as follows.

1. We established minimum reading levels necessary to take our developmental mathematics courses. Since we focus on math application over primarily skill, we believe we need to ensure our students can read at the appropriate level to support this goal. We partnered with our Academic Skills department to establish an appropriate level.

2. We worked with our registrar to create expiration dates on students' math levels. We believe that students are most successful when they take their math courses in a timely manner. We found that students would take one math course and then wait several semesters to take the next course. To help encourage having our students not only begin their math studies soon after they enter WCC, but continue the sequence once it has started, students have one year to take the math course appropriate for their level. After one year, their level will expire and drop down. Students then are required to take the COMPASS test again to re-establish their level or take the math course appropriate for their new level.

3. We implemented an attendance policy for all developmental courses at the college. The language of the policy requires 80% attendance or better during the semester or the student faces potential withdrawal or failure. We have a college-wide system of electronic letters that we can use to communicate attendance concerns throughout any semester.

4. We took a close look at our COMPASS cut scores and the curriculum in each course to make sure what we asked students to know coming into a course matched what was actually being taught in the course. We took out most repetition of topics from one course to the next and started sharing textbooks for groups of two courses to ensure this happened (basic math/pre-algebra, algebra/intermediate algebra, and college algebra/pre-calculus).

We have made lots of other small improvements and changes to help ensure higher completion rates. However, at the end of the day, what we would love to capture and embrace is true “success” in our courses. Unfortunately, this concept is often anecdotal and hard to quantify.

What is success in a math class? Some of our ideas are as follows.

1. The student realizes and commits to making the time to adequately study the material outside of class. One of the biggest challenges students face at a two-year college is having enough time to devote to their studies. Life presents them with many challenges and decisions, and having the time necessary to truly learn the mathematics is often elusive. We struggle to convince our students that what we do in class should simply ignite their desire to go home and thoroughly study and learn the material. A true success would be to see students leave class inspired to go home and master the material.

2. The student is inspired to take more mathematics. Too often, the first thing we hear out of a student's mouth is “this is the only/last math course I need...I just need to pass”. A true success to us would be hearing that the current class has inspired the student to take the subsequent course.

3. The student gains a level of confidence and security previously unknown to him/her. Sadly, we get so many students with negative math stories and experiences. A true success is taking those students and helping them find a new level of confidence and comfort with their learning of mathematics.

As we move forward, we will continue to use the label “completion” as it relates to the number of students who earn a C or better in our courses. We will continue to investigate structural improvements that could be implemented at the institutional level to improve these rates. However, at the fundamental level, we will continue to strive each day for more true reflections of success in our courses. Both mindsets are challenging, but necessary for our institution.

**Kris Chatas, Two-Year College Vice Chair**

*Chair's Report continued from page 3*

lead in organizing this important meeting for our students. The keynote speaker is **Tim Pennings** (Hope C) giving his highly acclaimed lecture "Do Dogs Know Calculus?". The MUMC is a terrific forum in which students connect with each other around mathematics. Anyone interested in hosting a future MUMC (a 1-day event) is invited to contact any member of the Executive Committee.

For those of you planning far in advance, Lake Superior State University is the site of the next Annual Meeting slated for May 3–4, 2013 with planning already underway by **Tom Boger**. Last Fall, LSSU hosted the Upper Peninsula Regional Meeting where I was honored to receive an invitation as Section chairperson to participate as invited speaker. Based on that experience, I expect that our first Annual Meeting in the Upper Peninsula will be a memorable and rewarding event. We still are looking for a host for the 2014 Annual Meeting with a preference for an institution in the central or western part of the state—this helps us to maintain a regular geographic pattern for the conference location. Recent central and western hosts include Western Michigan University (2011), Central Michigan University (2009), and Grand Valley State University (2008). Please consider volunteering your institution for 2014!

Recently, the Executive Committee handled a request from the national MAA to support a Michigan Section Fellow in Project NExT. The MAA's goal is to sustain a level of 70–80 new Fellows every year. In the current budget, we were able to provide partial support for one Fellow, but we would be delighted to hear your ideas for how we might raise \$2500 in future years in order to support a Michigan Section Fellow at the requested amount.

Finally, on behalf of the Executive Committee, thanks to all of you who volunteer your time and energy to support the various Section activities, and to everyone who contributes to the mathematical infrastructure in our state. Your enthusiasm and your achievements, together with your commitment to serve our discipline, help us to keep mathematics strong in Michigan.

**Mike Bolt, Chair**

***SVSU in May***

## Governor's Report

At the Board of Governors Meeting in Boston last January, we were reminded that the year 2015 will mark the 100th anniversary of the MAA. Plans for celebration are well underway. The joint winter meetings that year will be held in San Antonio, and the summer meeting, MathFest, will be held in Washington, D.C.

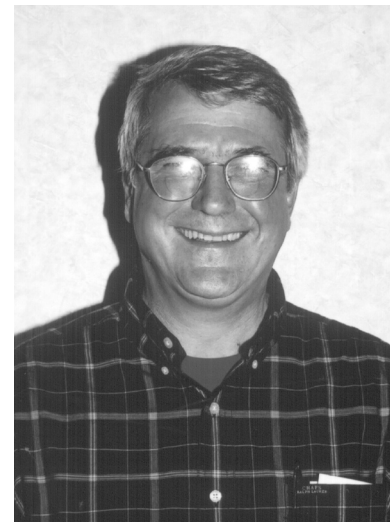
Outgoing President **David Bressoud** reported on the draft of an MAA/NCTM Joint Position on Calculus. The two groups considered how we together should envision calculus as the course that sits at the transition from high school to college for most students heading into mathematically intensive careers.

Here is the agreement that appears in the draft:

While there is an important role for calculus in secondary school, the ultimate goal of the K–12 mathematics curriculum should not be to get into and through a course of calculus by 12th grade, but to have established the mathematical foundation that will enable students to pursue whatever course of study interests them when they get to college. The college curriculum should offer students an experience that is new and engaging, helping to open their understanding of the world of mathematics while strengthening their mastery of tools that they will need if they choose to pursue a mathematically intensive discipline.

This agreement will entail the following three principles, also stated in the draft:

1. Students who enroll in a calculus course in secondary school should have demonstrated mastery of algebra, geometry, trigonometry, and coordinate geometry;
2. The calculus course offered in secondary school should have the substance of a mainstream college-level course;
3. The college curriculum should acknowledge the ubiquity of calculus in secondary school, shape the calculus curriculum so that it is appropriate for those who have experienced introductory calculus and offer alternatives to calculus.



*Governor's Report continued on page 11*

## Secretary/Treasurer's Report

I would like to thank everyone who has sent in a voluntary section dues payment for 2011-2012. At this time there are 125 dues-paying members. Fifty-three of these are sustaining members, who have paid dues of \$30 or more. The list of sustaining members can be found on page 28. In these challenging financial times, your willingness to support the activities of the Section is especially appreciated. The Michigan Section's current bank balance is \$5282.47, which is somewhat ahead of recent spring balances. We continue to have a good balance of income and expenses, and the Section remains in sound financial shape.



In addition, we now have 25 institutional members. This list can be found on page 29. If your school is not listed, you might want to remind your department chair to attend to this matter. The chart below shows that our contributing member numbers are fairly stable. If your department has not yet sent in a dues payment and wishes to do so, the membership form can be found on page 29.

	3/'08	3/'09	3/'10	3/'11	3/'12
<i>Dues-paying members</i>	140	134	136	126	125
<i>Sustaining members</i>	50	44	51	51	53
<i>Institutional members</i>	28	24	17	23	25

Once again, because of concerns about sales tax liability, the Washington office has announced that there will be no "cash and carry" book sales at Section meetings, including the upcoming Michigan Section meeting at SVSU. MAA books will still be displayed and available for purchase, but all books will be shipped from the Association's headquarters after the meeting ends. The MAA marketing officials and I apologize for this inconvenience. I will do my best to get orders processed quickly so that books you purchase will be in your hands as soon as possible. We will continue to offer the "buy one book, get one [from the Section's stock of older MAA books] free" deal that we offered last year, so that you may take some books away from the meeting with you.

If you have any questions regarding the Section's finances, please feel free to contact me.

**Mark Bollman, Secretary/Treasurer**

## Michigan NExT

The 2012 Michigan NExT Symposium will be held on the afternoon of Friday, May 4, on the campus of Saginaw Valley State University. This year's symposium will take place during the Michigan Section-MAA Annual Meeting as one of the parallel sessions on Friday afternoon. The topic of this year's symposium is "Supervising Undergraduate Research". Please consult the Michigan NExT Web page, [www.hillsdalesites.org/personal/dmurphy/MiNExT2012.html](http://www.hillsdalesites.org/personal/dmurphy/MiNExT2012.html), for more information as it becomes available. While we extend a special invitation to pre-tenure faculty members, we encourage a broad participation from everyone interested in leading undergraduate research, whether you have years and years of experience to share or are just getting started and looking for help and ideas.

To register for the symposium, you will need to register for this year's Annual Meeting, but please also e-mail **David Murphy** ([dmurphy@hillsdale.edu](mailto:dmurphy@hillsdale.edu)) to express your interest by April 25.

**David Murphy, Hillsdale C**



## Graduate Programs

### NEW Part-Time Master's Program in Mathematics

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## Teaching Award Nominations Sought

The Distinguished Teaching Award Committee—**Lisa DeMeyer** (CMU), **Mike Merscher** (LTU) and **Andrew Ross** (EMU)—is pleased to announce that the 2012 recipient of this award is **Gavin LaRose** (UM).

Gavin will join the continuing members of the Distinguished Teaching Award Committee (Mike and Andrew) to select next year's recipient of the award. Nominations for the 2013 award will be accepted beginning in the Fall. Completed nominations must be received by November 1, 2012 to be considered for the 2013 Award. A complete description of the process can be found at the Michigan Section Web site at [sections.maa.org/michigan/awards.html](http://sections.maa.org/michigan/awards.html). The person that the committee selects will receive the Michigan Section Award for Distinguished College or University Teaching of Mathematics at the Annual Meeting of the Michigan Section-MAA, and will also, upon receipt of additional supporting material, become the Michigan Section nominee for the national MAA Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics. Information about the additional supporting material that is required can be found at [www.maa.org/awards/Haimo\\_NF.pdf](http://www.maa.org/awards/Haimo_NF.pdf).

**Lisa DeMeyer, CMU**

## MAA Campus Liaisons

Your MAA liaison wants to help you stay connected by keeping you posted on the latest happenings and opportunities offered by the Michigan Section. If you're not sure who your liaison is, check the list online at [sections.maa.org/michigan/liaisons.html](http://sections.maa.org/michigan/liaisons.html).

If your institution does not have a liaison, please consider taking on this job. It's not a burdensome task, and you'll earn the appreciation of your departmental colleagues.

Please send any updates to the liaison list to **David Austin** ([austind@gvsu.edu](mailto:austind@gvsu.edu)). Thanks!

**David Austin, GVSU**

***SVSU in May***

## *Governor's Report continued from page 7*

These statements echo similar ones issued jointly by these two organizations twenty-five years ago.

As part of this discussion, David also shared some findings from the nationwide survey of Calculus I instruction that he began in 2010:

Q: How many high school students complete a year of calculus while in high school?

A: About 620,000.

Q: How many of these enroll in a remedial math class in college?

A: About one in six.

Q: How many of these enroll in Precalculus in college?

A: Nearly one in three.

Q: How many of these will take Calculus I again in college?

A: About 325,000.

Q: How many students in Calculus I in college took the AB syllabus as Juniors and the BC syllabus as Seniors, before enrolling in yet another calculus course in college?

A: About 12,000.

It is remarkable how many of the issues addressed in 1986 continue to be of concern today. I cast my vote in favor of this proposed draft.

In closing, I want to say that it looks like a wonderful list of speakers on the schedule for the Annual Meeting in Saginaw this year. I hope to see many of you there!

**John Fink, Governor**

## *Annual Meeting continued from page 2*

played and available for purchase, but all books will be shipped from the Association's headquarters after the meeting ends. For each paid book, purchasers may choose one backlisted MAA book free of charge.

Note that reservations for meals must be received by April 27. Please also be aware that there is a \$25 meeting registration fee for faculty attending the meeting. (The fee is waived for students.) This registration fee is in addition to the regular \$15 annual Section dues.

Special thanks are due to the local arrangements committee consisting of chair **Hasan Al-Halees**, **Nancy Colwell**, **Anthony Crachiola**, and **Patrick Pan** from SVSU. They have done a great job getting many important conference details in order. The program committee consists of chair **Dan Isaksen** (WSU), **Hasan Al-Halees** (SVSU), **Matt Boelkins** (GVSU), and **Kris Chatas** (Washtenaw CC).

We look forward to seeing you at SVSU!

**Dan Isaksen, Four-Year College Vice Chair**



## New Officers to be Elected at Annual Meeting

The annual business meeting of the Michigan Section-MAA will take place at 5:00 p.m. on Friday, May 4, 2013 at Saginaw Valley State University during the Annual Meeting. One of the major items of business is the election of officers. The Nominating Committee, chaired by **Tim Husband** (SHU), will propose a slate of candidates. **Dan Isaksen** (WSU) will be nominated for Chair. The Committee will be sending the nominations for Four-Year College Vice Chair and for Two-Year College Vice Chair via the MAA-Liaisons soon. Nominations from the floor are also accepted (permission of the nominees should be secured in advance). The Annual Meeting will also have reports on Section activities during the year, as well as an opportunity for members to raise other issues.

The Nominating Committee is listed on page 31.

**Tim Husband, SHU**

## Webmaster's Report

The MAA now has Facebook pages. The national organization has a page at [www.facebook.com/maanews](http://www.facebook.com/maanews). *The American Mathematical Monthly* has a page at [www.facebook.com/AmerMathMonthly](http://www.facebook.com/AmerMathMonthly). The latter gives early reports of typographical errors, and this is particularly useful for those who work on Monthly problems.

We now post contributed mathematical images on our Web site; see [sections.maa.org/michigan/contributed\\_images.html](http://sections.maa.org/michigan/contributed_images.html). **Jim Angelos** (CMU) contributed a Sieve of Eratosthenes, and **Mike Bolt** (Calvin C) contributed visualizations of complex variable functions. If you have some striking mathematical graphics that you want to add to our page, please contact me.

If you have a special lecture or other special event in your department that you want to advertise, we can post information on our Section Web page. We advertised "Transcending Differences: Tiling in Islamic and Western Culture" by Craig Kaplan at UM-Dearborn in September 2011, and we are currently advertising the Fleming Lectures by **Terence Tao** at CMU in April 2012.

**Sid Graham, CMU**

*SVSU in May*

## Doctoral Studies at Central Michigan University

### Ph.D. with Concentration in the Teaching of College Mathematics

This Ph.D. is a content-based degree designed to prepare individuals for a career in college teaching. The program consists of broadly distributed coursework, professional pedagogical components, teaching internships, and a dissertation. Areas of research strength include applied mathematics, approximation theory, combinatorics, fluid dynamics, functional analysis, operator theory, number theory, algebraic geometry, algebra, differential geometry, statistics, and mathematics education. For information contact: Graduate Coordinator, Department of Mathematics, Central Michigan University, Mt. Pleasant, MI 48859; phone 989-774-3596, fax 989-774-2414, [mthgrad@cmich.edu](mailto:mthgrad@cmich.edu), [www.cst.cmich.edu/units/mth](http://www.cst.cmich.edu/units/mth).

CMU, an AA/EQ institution, is strongly and actively committed to increasing diversity within its community ([www.cmich.edu/aaeo.html](http://www.cmich.edu/aaeo.html)).

## The Mathematics Education Admissions Committee at Michigan State University is accepting applications for its Doctoral Program in Mathematics Education

The *Doctoral Program in Mathematics Education* is designed for those who show promise of becoming researchers and leaders in state, national and international mathematics education communities. This program places an emphasis on:

- mathematics content
- mathematics education research
- research experience
- mathematics teaching

and prepares researchers to address critical issues in mathematics teaching, learning, curriculum and policy.

**Apply by December 1 for enrollment the following Fall!** Teaching and research assistantships and fellowships are available. Visit our website [www.dsme.msu.edu/mathed](http://www.dsme.msu.edu/mathed) for more information, or contact:

Lisa Keller, Mathematics Education Graduate Program Coordinator  
221 N. Kedzie, East Lansing, MI 48824

Phone: 517.432.2152 x127; Fax: 517.432.9868; or [kellerl@msu.edu](mailto:kellerl@msu.edu)

## MMPC Honors Top High School Students

A total of 102 Michigan high school students, from 32 different schools, were honored for their achievement in the 55th Annual Michigan Mathematics Prize Competition at the Awards Day program held on Saturday, February 25 at Hope College. This was the first year of the three-year term of Director **Stephanie Edwards** (Hope C).

**Tim Pennings** (Hope C) spoke on “Do Dogs Know Calculus”, and there was a poster session “Great things you can do with a strong mathematics background”. **Dean Dershem**, Dean of the Division of Natural and Applied Sciences of Hope College welcomed the banquet audience. The award winners are:

Name	School	Award
David Lu	Detroit Country Day School	Gold, First Place
Ahkan Bhattacharya	I.C.A.E.	Gold, Second Place
Hirsh Jain	International Academy	Gold, Third Place
Michael Yu	Troy Athens High School	Silver, First Level
Siddhant Dogra	Detroit Country Day School	Silver, First Level
Joseph Renzi	University Liggett School	Silver, Second Level
Nopphon Siranart	Cranbrook Kingswood	Silver, Second Level
Allen Chen	Troy High School	Silver, Third Level
Akhil Nistala	Novi High School	Silver, Third Level
Brian Xu	Detroit Cosunty Day School	Silver, Third Level

In addition 40 Bronze Awards were given, and 52 students received Honorable Mention. The top 50 students received \$20,000 in scholarships in amounts ranging from \$250 to \$2,500. The Honorable Mention winners received copies of one of the following books: *Flatland: A Romance in Many Dimensions*, by Edwin A. Abbott; *Surely You're Joking, Mr. Feynman*, by Richard Feynman; *Proofs that Really Count*, by Art Benjamin and Jennifer Quinn; *Gödel, Escher, Bach: an Eternal Golden Braid*, by Douglas Hofstadter.

Part I of the MMPC is a 40-question multiple choice test, which this year was administered on October 5. The top 1,129 participants from Part I were invited to take Part II on November 30, 2011 (which happened to be the day of a BIG Michigan snowstorm). There were 1,048 Part II participants.

Of the top 102 students, there were 18 females, 82 males, and 2 unreported.

A special thank you goes out to **Mark Bollman** from Albion College who hosted the grading day. And thank you to the graders that made grading day so fun and productive! We couldn't have done it without you all! Also, thank you to the Hope College Mathematics Department and the Division of Natural and Applied Sciences.

### MMPC Top 100 Statistics

- The top Gold Award winner, **David Lu**, is a senior. The second-place Gold Award Winner, **Ahkan Bhattacharya**, is a 7th grader. The third-place Gold Winner, **Hirsh Jain**, is a junior.
- Of the seven Silver Award winners, two are seniors, three are juniors, one is a sophomore, one did not report grade.
- **Jackie Bredenberg** was the top female winner.

### Top MMPC Results for Each Grade

Grade	Place	Score	Grade	Place	Score
12	1	97.8	8	24	69.0
11	3	89.8	7	2	93.2
10	10	79.4	6	76	54.2
9	17	73.4			

### Top 100 Results by Grade

Grade	Total	12	11	10	9	8	7	6
# in Top 102	100	27	33	21	8	7	2	1

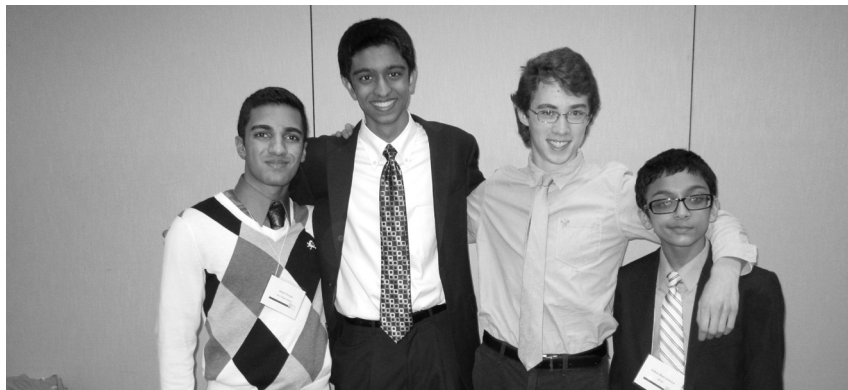
(3 grades were not reported)

### Top 102 Results by Gender

Grade	Total	M	F	Unreported
Scholarships	50	43	6	1
Honorable Mention	52	39	12	1
Total	102	82	18	2

- A student's score is the sum of the Part I score (out of 40) plus 1.2 times the Part II score (out of 50).
- The cutoff score to qualify for Part II this year was 17 (out of 40).
- The cutoff score to make the top 50 of the competition this year was 60.8.
- 25% of those who qualified for Part II were females.

# MMPC Awards Day, Hope College, February 25, 2012



Gold and Silver Award Winners (l to r): Akhil Nistala, Hirsh Jain, Joseph Renzi, and Ankan Bhattacharya.



Section Chair Michael Bolt recognized Second Place Gold Winner Ankan Bhattacharya.



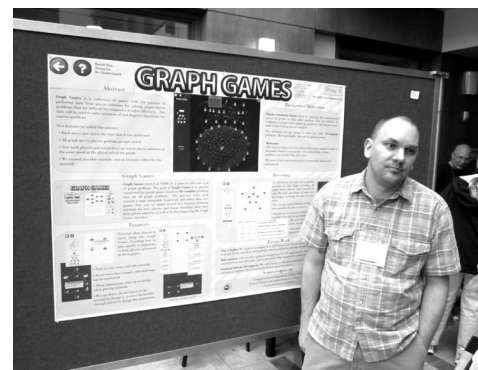
The beautifully restored Graves Hill (exterior lower l.), built in 1894, was the setting for Tim Pennings' talk, "Do Dogs Know Calculus?"



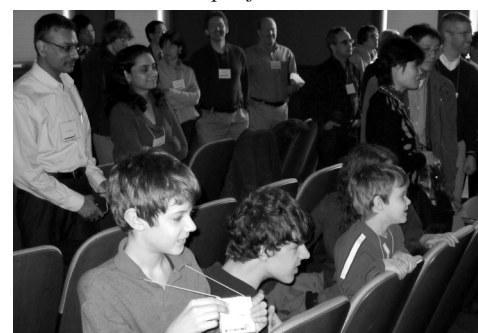
Kevin Wu (l) and Vikram Prasad gave a talk about their experience in ARML, encouraging other Top 100 winners to take part.



Ruth Favro presented the award for the top female winner to Jackie Bredenberg at a later date.



Hope students and faculty gave a poster session on their REU projects.



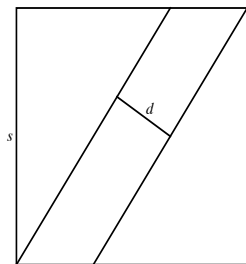
Tim Pennings demonstrates the problem-solving skills of his Welsh Corgi, Elvis, as the audience (l) looks on.



## 55<sup>th</sup> MMPC Part II Problems

The top 1000 students had 100 minutes to solve these five problems.

1. In the picture below, the two parallel cuts divide the square into three pieces of equal area. The distance between the two parallel cuts is  $d$ . The square has length  $s$ . Find and prove a formula that expresses  $s$  as a function of  $d$ .



2. Let  $S$  be a subset of  $\{1, 2, 3, 4, \dots, 10, 11\}$ . We say that  $S$  is *lucky* if no two elements of  $S$  differ by 4 or 7.
  - (a) Give an example of a lucky set with five elements.
  - (b) Is it possible to find a lucky set with six elements? Explain why or why not.
3. Find polynomials  $p(x)$  and  $q(x)$  with real coefficients such that
  - (a)  $p(x) - q(x) = x^3 + x^2 - x - 1$  for all real  $x$ ;
  - (b)  $p(x) > 0$  for all real  $x$ ;
  - (c)  $q(x) > 0$  for all real  $x$ .
4. A permutation on  $\{1, 2, 3, \dots, n\}$  is a rearrangement of the symbols. For example 32154 is a permutation on  $\{1, 2, 3, 4, 5\}$ . Given a permutation  $a_1 a_2 a_3 \dots a_n$ , an *inversion* is a pair of  $a_i$  and  $a_j$  such that  $a_i > a_j$  but  $i < j$ . For example, 32154 has 4 inversions. Suppose you are only allowed to exchange adjacent symbols. For any permutation, show that the minimum number of exchanges required to put all the symbols in their natural positions (that is,  $123 \dots n$ ) is the number of inversions.
5. Say that the number  $N$  is a nontrivial sum of consecutive positive integers if  $N$  can be expressed as a sum of 2 or more consecutive positive integers. Determine, with proof, the set of all integers  $N$  between 1000 and 2000 which are **not** nontrivial sums of consecutive integers.

## Student Chapter News

### Alpena Community College

Sigma Zeta Math/Science Honor Society inducted 6 new members this fall. They went on an end of-the-semester trip to the National Superconducting Cyclotron Laboratory at MSU. They enjoyed the tour and also had time to make brief stops at the Capitol building and MSU museum. Some of our students even took pictures with some peace protestors on the capitol lawn. Since we are from the “far north”, this was a new sight for them. We look forward to helping the department host the regional Science Olympiad Tournament in March.

### Central Michigan University

The Kappa Mu Epsilon Great Lakes Regional Convention will take place at Central Michigan University April 13–14, 2012. The keynote speaker will be **Bruce Sagan** of MSU. For more information contact [sivaram.narayan@cmich.edu](mailto:sivaram.narayan@cmich.edu).

### Grand Valley State University

The Mathematics and Statistics Club is hosting *Calculus the Musical* on March 30.

### Lawrence Technological University

Math Club is holding its annual used book sale in March. LTU student teams were busy working on the Math Competition in Modeling during the weekend of February 10. **Megan Hollowell** is President this year.



Ruth Favro (LTU) is shown accepting the MAA Certificate for Meritorious Service during the Prize Session at the 2012 Joint Mathematics Meetings in Boston.



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Detailed information is available on our Web site:

[www.math.mtu.edu/graduate](http://www.math.mtu.edu/graduate)

**For more information contact:**

Dr. Tom Drummer  
Director of Graduate Studies  
Department of Mathematical Sciences  
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1400 Townsend Drive  
Houghton, MI 49931  
(906) 487-3044, [tdrummer@mtu.edu](mailto:tdrummer@mtu.edu)  
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## Michigan Undergraduate Mathematics Conference

The 14th annual Michigan Undergraduate Mathematics Conference took place in Dominican Hall on the campus of Siena Heights University on Saturday, March 3. **Tim Pennings** of Hope College presented “Do Dogs Know Calculus? Do Dogs Know Bifurcations?”. The event drew over 100 students and faculty from 18 different colleges and universities (15 Michigan, 3 Ohio). Tim (with Elvis) had a dynamic and engaging presentation that took the audience from the shores of Lake Michigan to Nimes, France; and from max/min to related rates to bifurcation problems. Elvis was in rare form, contemplating problems from the derivative of  $x^3$  to “Where is your ball?”. There were 20 student presentations, including 2 poster presentations, that encompassed a range of topics in pure and applied mathematics, from projectile motion to graph theory, as well as one in mathematics education and a presentation on function theory from a high school student.

This year attendees were presented with a challenge from the PME chapter from the University of Findlay (Ohio), dubbed the “Barbie Bungee Border Brawl”. Teams of students and faculty were given materials plus a graphing calculator and were instructed to build a mathematical model that could be used to determine the number of rubber bands needed to have Barbie safely drop a specified distance without hitting her head. It should be noted that a team from Michigan defeated the challengers from Ohio and the trophy resides in our state!

The event concluded with a prize session, in which various donated books, a copy of Maple, TI-Nspire CAS graphing calculator, t-shirts and other promotional items were given away. Major sponsors for the 2011–2012 MUMC were Siena Heights University, the RUMC grant program administered by the MAA (via NSF grant DMS-0846477), Pi Mu Epsilon, Maplesoft, and Texas Instruments. We send out thanks to the faculty from our Michigan colleges and universities who supported the conference, not only by attending the conference but also encouraging their students to present and attend. Next year’s conference will again be hosted by Siena Heights University. As soon as a date has been finalized it will be posted on the Section’s Web site and an announcement sent through the department liaisons.

**Tim Husband, SHU**

*SVSU in May*

## News from the Campuses

### *Alpena Community College [reported by Dan Rothe]*

Alpena Community College begins this semester with a dip in enrollment after the big increases last year. We started offering Intermediate Algebra online taught by **Kristen Berles**. Precalc is also in development as a possible online class taught by **Meghan Cameron**. [rothed@alpenacc.edu]

### *Central Michigan University [reported by Sid Graham]*

**Terence Tao** from UCLA will give the inaugural Fleming Lecture at Central Michigan University April 18 and 19. See [www.cst.cmich.edu/mathematics/news\\_and\\_events.shtml](http://www.cst.cmich.edu/mathematics/news_and_events.shtml) for more details. • **Sivaram Narayan** has been awarded a 3-year NSF-REU grant to continue the REU site. **Chin-I Cheng**, **Erin Militzer**, **Pete Vermeire** and Narayan will be REU mentors for Summer 2012. For more information about the REU site visit [www.cst.cmich.edu/mathematics/research/REU\\_and\\_LURE.shtml](http://www.cst.cmich.edu/mathematics/research/REU_and_LURE.shtml). • **Susan Cooper** has been awarded grants from NSA, NSF, and PIMS to support the workshop “Connections Between Algebra and Geometry” at the University of Regina May 29 to June 1. The workshop is intended for graduate students and recent Ph.D.’s. See [www.ndsu.edu/pubweb/~ssatherw/Regina2012](http://www.ndsu.edu/pubweb/~ssatherw/Regina2012) for full details. [sidney.w.graham@cmich.edu]

### *Grand Valley State University [reported by Paul Fishback]*

**Steve Schlicker** and **Matt Boelkins** are on sabbatical this spring. • **Edward Aboufadel** with REU students **Nathan Marculis** (GVSU 2012), **SaraJane Parsons**, and **Clark Bowman** were one of three winning teams for the Innocentive Challenge by the city of Boston, developing an algorithm to detect potholes from data collected by smartphones. The team won a \$9000 prize. • **David Austin** has received the University Teaching Award. • **Leah Wischmeyer** (GVSU 2012) won the MCTM Miriam Schaefer Scholarship in 2011. • The Michigan Council of Teachers of Mathematics Scholarship Endowment Fund Committee (MCTM-SEF) is engaged in writing 13 grade-level books intended for children and their families to engage in recreational mathematics outside of school. The books are also a great resource to use with children throughout the summer to mitigate summer learning loss. In addition, teachers have found the games and activities to be a great supplement to their daily class activities. Books in the Michigan Mathematics Activity Book Series are available in print from the MCTM Web site ([www.mictm.org](http://www.mictm.org)). [fishbacp@mail.gvsu.edu]

### *Hope College [reported by Todd Swanson]*

**Stephanie Edwards**, MMPC Director, and Hope College hosted the Michigan Mathematics Prize Competition Awards Day on February 25 (see [math.hope.edu/mmcp/](http://math.hope.edu/mmcp/) for details). **Tim Pennings** gave the keynote presentation, “Do Dogs Know Calculus?”. • Tim also gave the keynote address, “Do Dogs Know Calculus and Bifurcations?”, at the Michigan Undergraduate Mathematics Conference on

March 3. [swansont@hope.edu]

### *Lawrence Technological University [reported by Mike Merscher]*

Prof. Emer. **Ruth Favro** received the MAA national award for Meritorious Service. **CJ Chung** was promoted to Prof. • **Dawn Archey** of UDM spoke recently to a student audience about how Google decides to rank its search results. CJ Chung and **Chris Cartwright** have been preparing for Robofest 2012 with many events, including Roboparades and a Robo Sumo demonstration that drew over 10,000 observers. Robofest World Championship will be at LTU in May. The 42nd Annual LTU Math Competition for High School Students, guided by **Mike Merscher**, will be held on April 29. [mmerscher@ltu.edu]

### *Saginaw Valley State University [reported by Anthony Crachiola]*

We mourned the loss of **Joe Matti** who passed away on November 11. Joe joined the department in 1969 and retired in 2008. He was a dear colleague who often referred to the department as family. **Anthony Crachiola** and **Todorka Nedeva** are on sabbatical this semester. The annual SVSU high school Math Olympics Competition will be held on March 23. The Michigan Section-MAA Annual Meeting will be held at SVSU on May 4–5. [acrachio@svsu.edu]

### *Schoolcraft College [reported by Randy Schwartz]*

**Zhi Hu** (Schoolcraft C) will be giving a talk on actuarial mathematics on April 6 at Schoolcraft, sponsored by the Math and Physics Club. • **Sandra Kerr** has been named as a recipient of the NISOD Excellence Award, given annually by the National Institute for Staff & Organizational Development (NISOD) to recognize excellence in teaching and leadership at institutions of higher education. The award will be presented at the annual NISOD conference in Austin, TX this May. [rschwartz@schoolcraft.edu]

### *University of Michigan-Flint [reported by Ken Schilling]*

**Howard Thompson** will be a Research Member of the Mathematical Sciences Research Institute in the Commutative Algebra program during Fall semester of 2012. **Laura McLeman** led a discussion session titled “Engaging in Dialogue about Researching Mathematics Teacher Educators’ Practice Related to Teaching Diverse Populations” at the 16th annual Association of Mathematics Teacher Educators in Fort Worth, Texas. **Ricardo Alfaro** began a two-year term as interim Associate Dean of the College of Arts and Sciences in the Fall. UM-Flint alumna **Ayla Boyd** gave a talk titled “What I wish I had known about the Actuarial Profession when I was in College”. The Mathematics Department began offering a new M.A. program, designed around the needs of high school mathematics teachers, during the Fall semester. Our department’s secondary Teacher Certificate Program achieved national recognition by NCATE (on our first try!); the accreditation effort was led by **Krista Hansen** and **Laura McLeman**. The 45th annual Math Field Day was held on February 28, and Family Math Night was held on March 27. [ksch@umflint.edu]

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## Contest News

**AMC 8.** The MAA Committee on the American Mathematics Competitions (CAMC) is dedicated to the goal of strengthening the mathematical capabilities of our nation's youth. The CAMC believes that one way to meet this goal is to identify, recognize and reward excellence in mathematics through a series of national contests called the American Mathematics Competitions. What happens before and after the AMC Contests can have lasting educational value. Talents will be enhanced if one practices beforehand, by working through previous examinations, by participating in math leagues and, most importantly, by studying mathematics more intensely than one normally does in school.

The American Mathematics Contest 8 (AMC 8) for students in grades 8 and below is a 25-question, 40-minute multiple choice examination in junior high school (middle school) mathematics designed to promote the development and enhancement of problem solving skills; to demonstrate the broad range of topics available for the junior high school mathematics curriculum; and to promote excitement, enthusiasm and positive attitudes towards mathematics.

The 2011 AMC 8 Exam was taken by 3795 students from 58 schools (up 3 from 55 in 2010) in Michigan on November 15, 2011. The overall Michigan average score was 9.95, up from 8.78 of last year.

Two students in Michigann got the perfect score of 25: **Yannis Bi** from Meads Mill Middle School (Northville) and **Justin Xu** from Boulan Park Middle School (Troy), both 8th graders. The team winner was Boulan Park Middle School with a score of 73.

Seven students in Michigann got the score of 24. Among them, there are one 5th grader and one 6th grader: **Freddie Zhao** (5th grade) and **Spencer Liu** (6th grade), both from Boulan Park Middle School (Troy). All others are 8th graders: **Safal Bora** from Boulan Park Middle School (Troy), **Bogdan Manga** from Birmingham Covington School (Bloomfield Hills), **Zachary Obsniuk** from ICAE (Troy), **Skanda Palani** from Boulan Park Middle School (Troy), and **Anil Palepu** from Novi Middle School (Novi).

**HMMT 2012.** The Harvard-MIT Mathematics Tournament (HMMT) is an annual math tournament for high school students, held at MIT and at Harvard in alternate years. HMMT is deeply committed to running a successful tournament and promoting mathematical curiosity in high school students. With over 100 teams and nearly 900 competitors from across the nation and the world, the HMMT is one of the largest math contests held in the United States. It is run exclusively by MIT and Harvard students. Most of them participated in math contests in high school, and they try to

incorporate what they liked best about those competitions into HMMT to make the contest both challenging and entertaining for all the participants. The 2012 tournament took place at Harvard University on Saturday, February 11.

**Ada Dong, OU**

## Distinguished Service Award

Past Chair **Tim Husband** is delighted to report that **Norm Richert** of Mathematical Reviews and Michigan Section-MAA *Newsletter* Editor has been selected to receive the Section's 2011–2012 Distinguished Service Award. Details will appear in the Fall 2012 *Newsletter*, and Norm will be recognized at the awards banquet at SVSU on Friday, May 4, 2012.

For every way you teach.  
For every way they learn.



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## Sustaining Members Listed

The Michigan Section dues structure includes a sustaining individual member category for those who make a \$15 contribution beyond the basic dues rate of \$15. For 2011–2012, as of February 15, the 53 members of the Section listed below are sustaining members. The Section is grateful to those several individuals who generously exceeded the suggested sustaining member contribution. If you have not already sent in your dues, please do so, using the form on page 29, and please be generous!

Edward Aboufadel	John Kiltinen
Larry Beauchamp	Douglas Lapp
Louis Bragg	P. Gavin LaRose
Mary Bragg	William Lewis
Robert Bruner	László Lipták
Joseph Buckley	David Lubke
Tim Carroll	Tom Miles
Nancy Colwell	Jack Miller
James Dudziak	Gerry Moultime
Peter Duren	Robert Myers
John Dwyer	Mel Nyman
Paul Eenigenburg	Mary Oliver
Graeme Fairweather	John Petro
Ruth Favro	David Redman
Richard Fleming	Norm Richert
Daniel Frohardt	Frank Sherburne
Chris Gardiner	Carl Sinke
R. Kent Gilbert	Larry Smyrski
Tony Gioia	Elliot Tanis
Sidney Graham	Richard Vandervelde
Jerrold Grossman	Gerard Venema
Jim Ham	Sylvia Verdonk
Paul Hewitt	Bette Warren
Margret Höft	Deborah Welsh
William Jackson	Matt Wyneken
Jeffrey Johns	Robert Xeras
Michael Jones	

## Institutional Members

As of February 15, the 25 colleges and universities listed below have begun or renewed their institutional memberships in the Michigan Section for 2011–2012. Tardy institutions and others who wish to join are encouraged to send in their dues, using the form below.

Albion College	Lake Superior State University
Alma College	Lansing Community College
Andrews University	Michigan Technological University
Aquinas College	Monroe County Community College
Calvin College	Northern Michigan University
Central Michigan University	Oakland University
Delta College	Olivet College
Grand Valley State University	University of Michigan-Ann Arbor
Henry Ford Community College	University of Michigan-Dearborn
Hillsdale College	University of Michigan-Flint
Hope College	Wayne State University
Kalamazoo College	
Kellogg Community College	

## Section Dues: Individual • Institutional

The 2011–2012 individual and institutional membership dues for the Michigan Section are now being accepted. The \$15 individual dues payment (or \$30 contributing member payment) and the \$40 (small school) or \$70 (large school) institutional dues help support the activities of the Section such as its annual meeting and *Newsletter*. This coupon may be used to submit dues payments.

Enclosed is a check for:	Regular Dues	@ \$15	<input type="checkbox"/>
	Sustaining Membership	@ \$30	<input type="checkbox"/>
	Small Institutional Dues	@ \$40	<input type="checkbox"/>
	Large Institutional Dues	@ \$70	<input type="checkbox"/>

Name \_\_\_\_\_

Institution \_\_\_\_\_

Mailing Address \_\_\_\_\_

E-mail Address \_\_\_\_\_

Make checks payable to the Michigan Section–MAA, and mail them to: **Mark Bollman, Secretary/Treasurer, Michigan Section–MAA, Department of Mathematics and Computer Science, Albion College, Albion, Michigan 49224-5013.**

# COMMITTEES AND APPOINTMENTS

## Michigan Section Mathematical Association of America

### Contact Information

#### Executive Committee

<i>Chair</i>	Michael Bolt (12)	Calvin C	mbolt@calvin.edu	616-526-6719
<i>Vice Chair</i>	Kris Chatas (12)	Washtenaw CC	kchatas@wccnet.edu	734-477-8566
<i>Vice Chair</i>	Dan Isaksen (12)	WSU	isaksen@math.wayne.edu	313-577-2479
<i>Sec/Treas</i>	Mark Bollman (13)	Albion C	Mbollman@albion.edu	517-629-0261
<i>Past Chair</i>	Timothy Husband (12)	SHU	thusband@sienaheights.edu	517-264-7647
<i>Governor</i>	John Fink (13)	Kalamazoo C	John.Fink@kzoo.edu	269-337-7062

#### Michigan Mathematics Prize Competition (MMPC)

<i>Director</i>	Stephanie Edwards (14)	Hope C	sedwards@hope.edu	616-395-7224
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#### Exam Committee:

<i>Chair</i>	Eddie Cheng (12)	OU	echeng@oakland.edu	248-370-4024
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<i>Member</i>	Hugh Montgomery (14)	UM-AA	hlm@umich.edu	734-763-3269
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