



Michigan Section Mathematical Association of America

NEWSLETTER

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The Michigan Section of the Mathematical Association of America and MichMATYC



The clock tower at Hillsdale College, the host for the 2016 MAA Michigan section meeting

92nd Annual Meeting

Hillsdale College
Hillsdale, Michigan
April 1-2, 2016

Meeting Information

All information about meals, travel, lodging and the meeting schedule are available on the meeting website:

[<sections.maa.org/michigan/meetings/2016_Spring_annual_meeting.html>](http://sections.maa.org/michigan/meetings/2016_Spring_annual_meeting.html).

2016 Annual Meeting Program Committee

Chair

Gavin LaRose, University of Michigan, Ann Arbor

Members

Dave Gaebler, Hillsdale College

Jan Roy, Montcalm Community College

2016 Annual Meeting Local Arrangements Committee

Chair Dave Gaebler, Hillsdale College

Member

David Murphy, Hillsdale College

Officer Nominations for 2016–17

At the 2016 section meeting, Brian Snyder will rotate into the past-chair position, and Gavin LaRose will be rotated into the chair position.

The following are the nominations for offices so far. Elections will take place at the business meeting.

Four-Year Vice Chair **Laura McLeman** (UM-Flint)

Two-Year Vice Chair **Jan Roy** (Montcalm CC)

Secretary/Treasurer **Mark Bollman** (Albion C)

Chair's Report

By Brian Snyder (LSSU)

Welcome to the Michigan Section's online *Newsletter*! Hopefully you are reading this on a smart device with a cup of coffee, tea, or cocoa to shake off the chill of the winter. There is so much to talk about that we needed an extra day stuffed into the calendar this year!



The 2016 section meeting is just around the corner. In addition to our colleagues affiliated with the Michigan Mathematical Association of Two-Year Colleges, we will also have the Michigan Undergraduate Mathematics Conference as a special parallel session of the section meeting. The meeting will be held on April 1–2 and hosted by Hillsdale College. More information on the meeting has been posted on the Section's website <sections.maa.org/michigan/>. Be sure to bookmark the site and check back often. The Awards Dinner is a wonderful opportunity to meet with old friends and new, and to celebrate the people who comprise the Michigan section.

The Michigan Mathematics Prize Competition has been completed. This fall, over 6000 students took Part I of this competition and over 1100 advanced to Part II. The co-directors of the competition, **Kim Rescorla** and **Carla Tayeh** from Eastern Michigan University, have gathered tests, obtained help from a multitude of graders, and invited the top 100 stu-

dents from across Michigan to the Awards Banquet on March 12, 2016 in Ypsilanti. As a section, this is a large undertaking that would not be feasible without the work of Kim and Carla (and all the directors before them), along with all those who show up in the middle of winter to spend the day grading. If you would like to assist with the MMPC, please let us know.

If you are already a member of the MAA and are either living or working in the state, you are automatically a member of the Michigan section. If you would like to assist the Michigan section, please consider a voluntary contribution. All proceeds stay in Michigan to assist with our activities. You have the option of paying by check or via PayPal. Information about both methods is available at <sections.maa.org/michigan/dues.html>.

Since the last *Newsletter* appeared, a new editor joined our ranks. I would like to take the opportunity to welcome **Victor Piercey** from Ferris State as the *Newsletter* editor.

We are in the process of getting ready for more meetings in the near future. This August, MathFest will be returning home to Columbus, Ohio, the birthplace of the MAA. In January 2017, the Joint Mathematics Meetings will be held in Atlanta, Georgia. In 2017, the section meeting will be in Big Rapids and hosted by Ferris State on March 31 – April 1. Be sure to watch for information about a special meeting in the spring of 2018 that will be very exciting.

Thanks for taking some time to read this *Newsletter*. We all have many commitments on our time and attention, and I am happy that you spent some time reading about the Michigan section—your friends and colleagues in mathematics. ■

Webmaster's Report

By Paul Pearson (Hope C)

Please send updates, corrections, and suggestions for improvement to the section website and Facebook page to <MichMAAWebmaster@gmail.com>. ■

Secretary-Treasurer's Report

By Mark Bollman (Albion C)

I would like to thank everyone who has sent in a voluntary section dues payment for 2015-2016. At this time there are 80 dues-paying members. Fifty-one of these are sustaining members who have paid dues of \$30 or more. The list of sustaining members can be found on [page 9](#).



In these challenging financial times, your willingness to support the activities of the section is especially appreciated. In particular, I would like to thank **William Jackson** for his continued support of the Ron Mosier Award as a supplement to his voluntary dues. His contribution will guarantee that the section can continue to recognize the outstanding student talk at the Annual Meeting.

In addition, we now have 22 institutional members. This list can be found on [page 9](#). If your school is not listed, you might want to remind your department chair to attend to this matter. Last year at this time there were 85 dues-paying individual members, including 37 sustaining members and 21 institutional members. Our contributing member number is down slightly, our sustaining membership is slightly higher, and our institutional membership count is holding steady. If your department has not yet sent in a dues payment and wishes to do so, the membership form can be found on this page.

The section's current bank balance is \$6000.70, which is as high as it has been recently as we reap the savings of moving this *Newsletter* online. We continue to have well-balanced income and expenses, and the section remains in sound financial shape. With two years of experience with the online *Newsletter* format, the Executive Committee will begin exploring new opportunities that these funds might facilitate.

MAA book sales will continue at the Annual Meeting. Once again, the Washington office of the MAA will provide all section members, not just those attending

the meeting, with a 35% discount coupon code that can be used to order MAA books online within one week (before or after) of the meeting. The section will receive a 10% commission on books ordered through this alternative. Further details about this program will be available at the section meeting.

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

Michigan Section Dues

Your voluntary dues contribution will help support the activities of the Michigan section, such as the Annual Meeting and the *Newsletter*. Dues may be submitted online via PayPal (log in to your account at paypal.com and specify MichiganSectionDues@gmail.com as the address of the recipient), or you may print and mail this form and a check to the address given below.

Enclosed is a check for:

- ☐ \$15 regular dues
- ☐ \$30 sustaining membership
- ☐ \$40 small institution dues
- ☐ \$70 large institution dues

Name _____

Institution _____

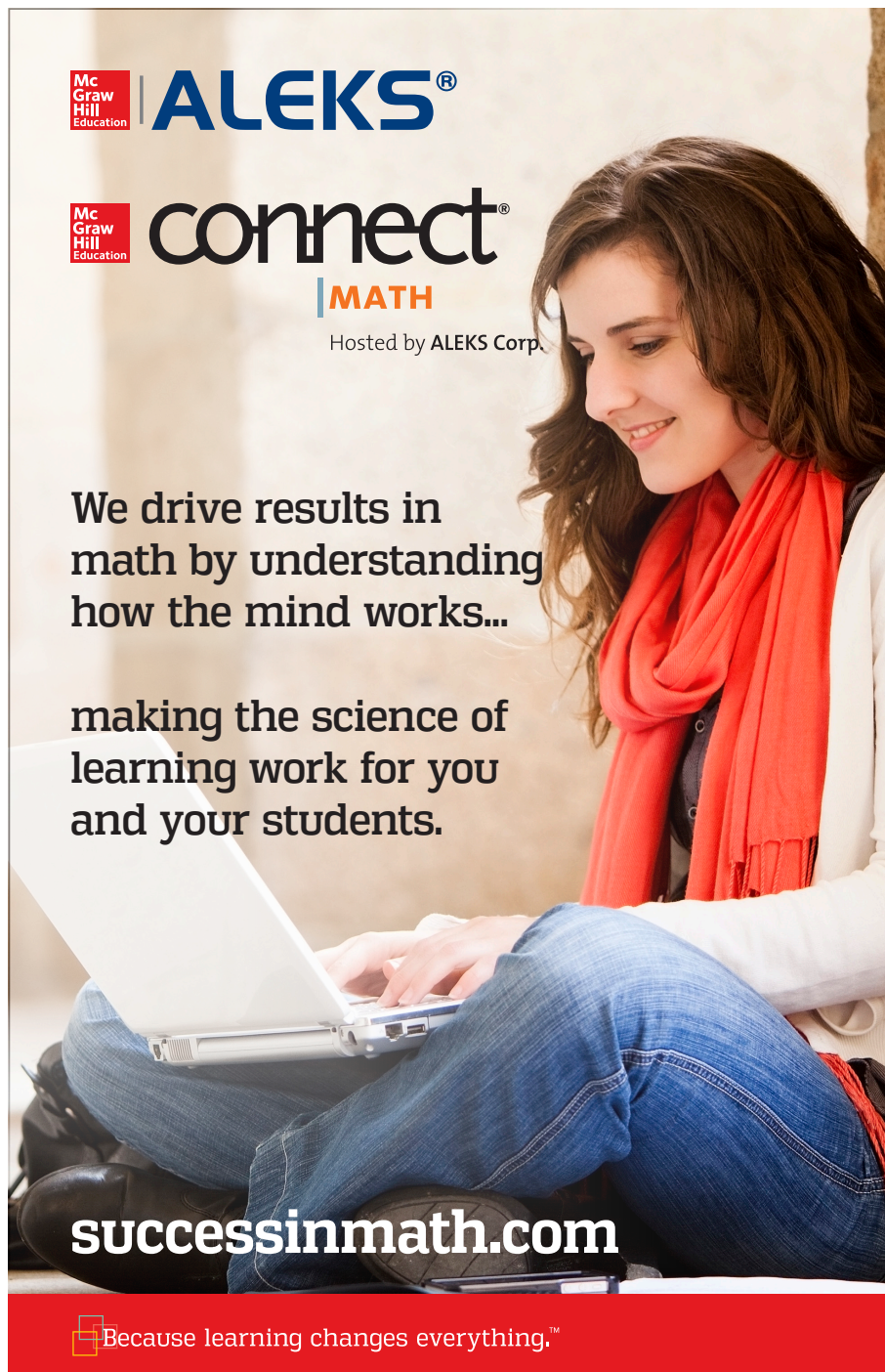
Mailing address _____

Email address _____

Make checks payable to Michigan Section—MAA, and mail them to Mark Bollman, Secretary-Treasurer, Michigan Section—MAA, Department of Mathematics and Computer Science, Albion College, Albion, MI 49224-5013.

David Murphy (Hillsdale College) Wins 2016 Distinguished Teaching Award

The Distinguished Teaching Award Committee—**Katie Ballentine** (Mathematical Reviews), **Matt Boelkins** (GVSU), **Frances Lichtman** (Delta College), **Christine Phelps** (CMU), and **Ken Schilling** (UM-Flint)—is pleased to announce that the 2016 recipient of the Award for Distinguished Teaching of College or University Mathematics is **David Murphy**, associate professor of mathematics at Hillsdale College. David is receiving the award for wide-ranging teaching experiences across the undergraduate curriculum, mentoring of students' undergraduate theses, textbook authorship, and work with the Hillsdale summer math camp. ■



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Governor's Report

By Matt Boelkins (GVSU)

It is somewhat hard for me to believe that this is my 6th and final *Newsletter* report as Governor of the Michigan section. Since taking the position in Spring 2013, I've had the good fortune to attend 6 consecutive national MAA meetings: MathFests in Hartford, Portland, and DC, and Joint Meetings in Baltimore, San Antonio, and Seattle. In every case, I've benefited from seeing old friends and making new ones, attending thoughtful sessions by a wide range of different speakers, and having the chance to participate in some of the great work of the Association.



Every time I attend a national conference, I encounter new ideas and perspectives that will shape and affect my upcoming work. Here are three examples that I've been reflecting on since my return from the beautiful city of Seattle, thoughts that I think others might benefit from considering:

1. **Alan Schoenfeld's** (UC Berkely) talk – “What makes for powerful classrooms - and what can we do, now that we know?”

A leader in K–12 mathematics education, Schoenfeld's plenary address was something of a meta-reflection on the past three decades of research in the field, with lessons included for collegiate mathematics. He discussed the “TRU Framework” (Teaching for Robust Understanding) and asked the question “If you had to focus on five things to improve mathematics teaching, what would they be?”

Schoenfeld posited the following five items: (a) the mathematics itself, (b) cognitive demand, (c) access and equity, (d) agency and identity, and (e) formative assessment. A classroom that exhibits all five items

will include rich and interesting mathematics that opens doors to problem-solving and sense-making, challenging problems that pose opportunities for growth and productive struggle, a setting where all students have meaningful access to the mathematics being studied, an atmosphere where students can find themselves and see the power of their own thinking, and assessment that provides a feedback loop to students and meets them where they are. While acknowledging that “probably everyone recognizes these things,” Schoenfeld observed that there are no quick fixes, that we all really know what is needed, and it will take hard work from us as a community. His observations resonated strongly with me, in particular the fact that any classroom that exhibits all five items will be a classroom that produces great thinkers and problem-solvers.

May each of our college-level classrooms increasingly exhibit these important traits.

2. Conversation with **Kent Morrison** and **David Farmer** from the American Institute of Mathematics <aimath.org/>.

Some of you may know that I've written a free, open-source calculus textbook, “Active Calculus” <gvsu.edu/s/xr>. Through that project, I'd previously met Kent and David, who each are part of AIM's Open Textbook Initiative <aimath.org/textbooks/>. During the Joint Meetings, I visited with them both at the AIM booth in the exhibit hall and learned of several exciting developments in the e-textbook and open source movement. As a result, I will be going to AIM in late April for a week-long workshop to learn about a new markup language called MBX (Mathbook XML). MBX will be a new format that “will then easily convert to print, PDF, HTML, EPUB, and Jupyter Notebooks.” The basic idea is that by using this new language (to which one can convert from LaTeX fairly easily), the author then has the ability to produce multiple different output formats that translate across a host of different available devices. One of the most exciting additional developments is that Rob Beezer has found a way to make WeBWorK exercises live in the electronic version of an MBX text; that is, students can actually complete exercises within their textbooks and get

“Schoenfeld observed that there are no quick fixes, that we all really know what is needed, and it will take hard work from us as a community.”

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immediate feedback!

If you've not checked out AIM's page on free and open texts <aimath.org/textbooks/approved-textbooks/>,

I urge you to do so. It offers a growing collection of high quality work that contributes positively to student learning and negatively to their list of college expenses.

3. Bates College's "Goals for Math Majors"

In one of the contributed talks I attended, the speaker was sharing her goals for teaching calculus in an active way. When she put her goals on the screen, she referenced the fact that some of them came from the department list developed by the faculty at Bates College. After the talk, I looked it up, and found a great one-page summary of what a student might or should get out of majoring in mathematics. I encourage you to read it: <www.bates.edu/mathematics/resources/goals-for-math-majors/>. One subset of the goals could well be those for the MAA itself:

- Understand the value of a community of learners
- Value and take advantage of group-study as a tool
- Participate in (and create) a math community (people and ideas)
- Develop an advisor/advisee relationship
- Connect with past, present, future peers
- Engage each other mathematically

In closing, here are a few other important things to know or remember:

- The next two summer MAA meetings (MathFest) are each within driving distance for those of us in Michigan: Columbus 2016 and Chicago 2017. Michigan's own **Gerard Venema** (Calvin C) works hard at organizing each program in his role as Associate Secretary of the MAA. Please see <www.maa.org/meetings/mathfest> for more details.

- In addition to the free/open books noted earlier at the AIM site, don't miss the fact that the MAA has quite a few textbooks in process or in print <www.maa.org/publications>. As MAA books are reasonably priced and of high quality, please consider these as possible options for your students and courses.

- We are in the early planning stages of a tri-Section Meeting in April 2018 for the Indiana, Illinois, and Michigan Sections. Such meetings have occurred twice in the past (25 years ago in 1993, and 50 years before that in 1943). For this meeting, Valparaíso

University has graciously agreed to host, and we look forward to a larger regional gathering with many of us from each of these sections of the MAA. More details will follow. **Michele Intermont** (Kalamazoo C) and I are serving on the organizing committee. If you have ideas or suggestions, please share them with either of us.

I hope to see you in Hillsdale in early April for the annual Section Meeting, where I look forward to (literally) passing the governor's

baton to either Stephanie Edwards (Hope C) or Steve Schlicker (GVSU). I wish you a productive and effective remainder to your current semester of professional work. ■



A view of Seattle, location of the 2016 Joint Mathematics Meetings.



Downtown Seattle and Mount Rainier

Distinguished Teaching Award

Call for Nominations for 2017 Award

Nominations for the 2017 award for Distinguished College or University Teaching of Mathematics from the Michigan Section of the Mathematical Association of America are now being accepted. The Distinguished Teaching Award Committee strongly urges departments to nominate deserving faculty for this award. While there are many outstanding teachers in the section, we of course can only consider those who are nominated for the award. So please nominate an outstanding instructor from your department! Nominations of deserving candidates from groups (or type of institutions) who have historically been under-represented in mathematics or in the list of previous recipients of the award are particularly encouraged. Past recipients are listed at the webpage <sections.maa.org/michigan/history.html#award>.

The person selected by the committee will receive the Michigan Section Award for Distinguished Teaching of College or University Mathematics at the Annual Spring Meeting of the Michigan Section, and will also, pending submission 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.

Nomination Instructions

Completed nominations must be received by December 16, 2016 to be considered for the 2017 Award. The nomination form is available on the section's web site <sections.maa.org/michigan/awards.html> as a Microsoft Word file.

Send an electronic copy of the completed form to **Ken Schilling** at <ksch@umflint.edu>; please use "Michigan DTA Nomination" as the subject. E-mail is preferred, but you may also send it by mail to:

Ken Schilling
Department of Mathematics
University of Michigan-Flint
303 E. Kearsley Street
Flint, MI 48502

Anyone may make a nomination (of someone else; self-nomination is not permitted), but nominations from chairs or MAA liaisons in departments of mathematical sciences are especially requested.

Eligibility for the Award

To be considered for the award, a nominee must:

- Be a member of the Mathematical Association of America.
- Be a college or university teacher who currently teaches a mathematical science at least half-time during the academic year in a public or private college or university (from two-year college teaching through teaching at the Ph.D. level) in Michigan. Those on approved leave (sabbatical or otherwise) during the academic year in which they are nominated qualify if they fulfilled the requirements in the previous year.
- Have at least seven years' experience in teaching the mathematical sciences.
- Have had teaching effectiveness that can be documented.
- Have had influence in their teaching beyond their own institution.
- Foster curiosity and generate excitement about mathematics in their students.
- Be widely recognized as extraordinarily successful in their teaching, broadly interpreted. ■

Sustaining Members 2015–2016

The Michigan section voluntary dues structure includes a sustaining member category for those who make a \$15 contribution beyond the basic dues rate of \$15. As of mid-February, the 51 section members listed below are sustaining members for 2015–2016. 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 4](#), and please be generous!

Edward Aboufadel	Paul Eenigenburg	John Jones	David Redman
Hyman Bass	Ruth Favro	Michael A. Jones	Norman Richert
David Basterfield	Richard Fleming	John Kiltinen	Bruce Sagan
Larry Beauchamp	Dan Frohardt	Frances Lichtman	Steven Schlicker
Louis Bragg	Chris Gardiner	László Lipták	Larry Smyrski
Mary Bragg	R. Kent Gilbert	Vincent Maltese	Elliot Tanis
Robert Bruner	Sid Graham	Brian McCartin	Richard Vandervelde
Joseph Buckley	Jerry Grossman	Jack Miller	Gerard Venema
Tim Carroll	Jim Ham	Robert Myers	Sylvia Verdonik
Robert Chaffer	Konrad Heuvers	Mel Nyman	Bette Warren
Nancy Colwell	Margret Höft	Walter Parry	Matt Wyneken
Peter Duran	William Jackson	Dennis Pense	Robert Xeras
John Dwyer	Gerald Janusz	John Petro	

Institutional Members 2015–2016

As of mid-February, the 22 institutions listed below have begun or renewed their institutional memberships in the Michigan section for 2015–2016.

Albion College
 Alma College
 Calvin College
 Central Michigan University
 Gogebic Community College
 Henry Ford College
 Hope College
 Kalamazoo College
 Lake Superior State University
 Mathematical Reviews
 Michigan Technological University
 Montcalm Community College
 Mott Community College
 Northern Michigan University
 Oakland University
 Olivet College
 Saginaw Valley State University
 Spring Arbor University
 University of Michigan–Dearborn
 Wayne State University
 West Shore Community College
 Western Michigan University



59th Michigan Mathematics Prize Competition

By **Kim Rescorla (EMU) and Carla Tayeh (EMU)**
MMPC Co-Directors

The 2015-16 (59th) Michigan Mathematics Prize Competition got underway on October 6th when 4882 students from 131 schools across the state of Michigan had 100 minutes to complete a 40-question multiple-choice exam. On December 9th, the top 1188 finalists went on to compete in Part II, which consisted of five proofs. (See the problems starting on [page 11.](#))

Grading Day was hosted by **Mark Bollman** at Albion College. We thank Mark, and extend a special thanks to all the graders from across the state for making this event so productive and so much fun. The competition would not be possible without your service. Next year, Grading Day will be on Saturday, January 14, 2017. Please mark your calendars!

The 2016 Awards Banquet will be held on March 12,

during which Professor **Timothy Pennings** of Davenport University will give the talk “Do Dogs Know Calculus?”. The top 50 competitors will share \$20,000 in scholarships ranging from \$2500 to \$250 while the 50 Honorable-Mention winners will receive copies of *The Physics Book* by Clifford Pickover.

Please look to the Fall *Newsletter* for a detailed report on the Awards Banquet and the names of the top competitors. (The winners are kept secret until the Awards Banquet.)

For their generous support of the MMPC we would like to thank Eastern Michigan University and Mu Alpha Theta. Thanks also to all of the supportive school supervisors who took time out of their busy schedules to encourage their students to participate in the MMPC. Thanks to the parents who inspire their children to do their best daily. And, most of all, thanks to all student competitors – they are amazing! ■

MMPC Top 100 Statistics

	Count	Part I Score	Part 2 Problem Scores					Part 2 Score	Total Score
			Prob. 1	Prob. 2	Prob. 3	Prob. 4	Prob. 5		
Average Score by Grade									
Grade 12	36	30.3	9.4	9.9	5.9	2.9	5.9	34.0	71.0
Grade 11	20	28.8	8.6	9.3	6.4	2.7	5.5	32.5	67.7
Grade 10	20	29.8	9.2	9.7	6.8	2.5	7.1	35.2	72.0
Grade 9	17	30.0	8.0	9.5	7.7	2.8	5.7	32.7	70.4
Grade 8	7	28.7	9.1	8.6	5.6	2.1	6.7	32.1	67.3
Average Score by Gender									
Female	13	27.7	9.3	9.8	6.5	2.3	5.3	33.2	67.6
Male	87	30.0	8.9	9.5	6.4	2.8	6.2	33.8	70.6

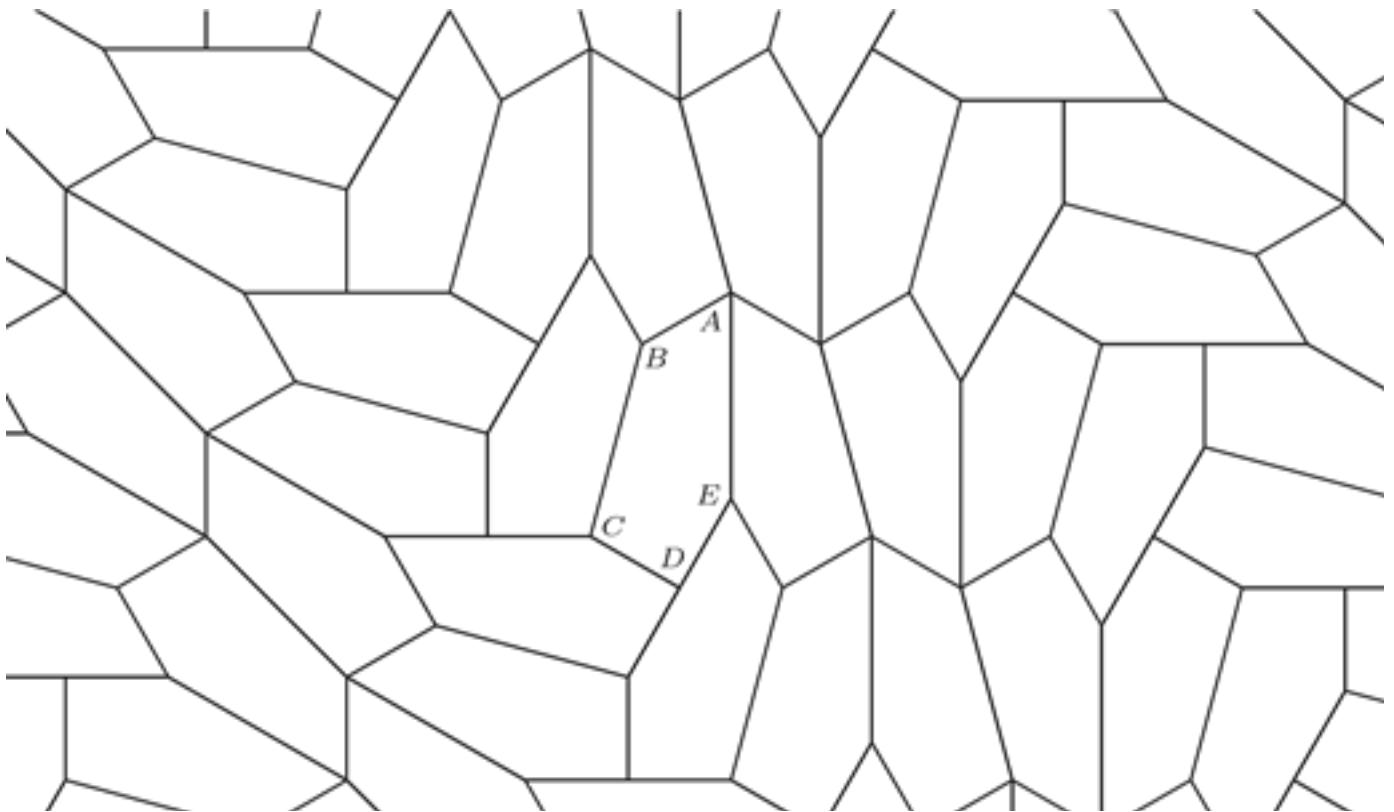
- The Total Score is the Part I Score (out of 40) plus 1.2 times the Part II Score (out of 50) for a maximum possible Total Score of 100 points.
- The cutoff score to qualify for Part II this year was 17 points. There were 1167 students who qualified in this way. Another 21 students scored the highest in their school and were also invited to compete in Part II.
- The cutoff to make the top 50 was 67.6 while the cutoff to make the top 100 was 57.6.

59th MMPC Part II Problems

The finalists had 100 minutes to solve these five problems. More information about the problems is available on the MMPC website <<http://www.emich.edu/math/mmpc/>>.

1. Consider a right triangle with legs of lengths a and b and hypotenuse of length c such that the perimeter of the right triangle is numerically (ignoring units) equal to its area. Prove that there is only one possible value of $a + b - c$, and determine its value.
2. Last August, Jennifer McLoud-Mann, along with her husband Casey Mann and an undergraduate David Von Derau at the University of Washington, Bothell, discovered a new tiling pattern of the plane with a pentagon. This is the fifteenth pattern of using a pentagon to cover the plane with no gaps or overlaps. It is unknown whether other pentagons tile the plane, or even if the number of patterns is finite. Below is a portion of this new tiling pattern.

Determine the five angles (in degrees) of the pentagon $ABCDE$ used in this tiling and explain your reasoning.



3. Let $f(x) = \sqrt{2019 + 4\sqrt{2015}} + \sqrt{2015} x$. Find all rational numbers x such that $f(x)$ is a rational number.
4. Alice has a whiteboard and a blackboard. The whiteboard has two positive integers on it, and the blackboard is initially blank. Alice repeats the following process:
 - Let the numbers on the whiteboard be a and b , with $a \leq b$.
 - Write a^2 on the blackboard.
 - Erase b from the whiteboard and replace it with $b - a$.

MMPC Problems continued from page 11

For example if the whiteboard began with 5 and 8, Alice first writes 25 on the blackboard and changes the whiteboard to 5 and 3. Her next move is to write 9 on the blackboard and change the whiteboard to 2 and 3.

Alice stops when one of the numbers on the whiteboard is zero. At this point the sum of the numbers on the blackboard is 2015.

- (a) If one of the starting numbers is 1, what is the other?
- (b) What are all possible starting pairs of numbers?

5. Professor Beatrix Quirky has many multi-volume sets of books on her shelves. When she places a numbered set of n books on her shelves, she doesn't necessarily place them in order with book 1 on the left and book n on the right. Any volume can be placed at the far left. The only rule is that, except for the leftmost volume, each volume must have a volume somewhere to its left numbered either one more or one less. For example, with a series of six volumes, Professor Quirky could place them in the order 123456, or 324561, or 564321, but not 321564 (because neither 4 nor 6 is to the left of 5).

Let's call a sequence of numbers a *quirky sequence of length n* if:

- the sequence contains each of the numbers from 1 to n , once each, and
- if k is not the first term of the sequence, then either $k+1$ or $k-1$ occurs somewhere before k in the sequence.

Let q_n be the number of quirky sequences of length n . For example, $q_3=4$ since the quirky sequences of length 3 are 123, 213, 231, and 321.

- (a) List all quirky sequences of length 4.
- (b) Find an explicit formula for q_n . Prove that your formula is correct. ■

Call for Presenters

The Michigan Mathematical Association of Two-Year Colleges invites presentations from faculty for the next annual conference.

Delta College October 14-15, 2016

Proposals should be sent via email to **Mary Roberson** at maryroberson@delta.edu with "MichMATYC Presentation Proposal" in the subject line. Talks may focus on any subject related to mathematics, curriculum, or pedagogy. Topics of particular interest include: accessibility, common core, flipping the classroom, open educational resources, pathways, and software applications for the classroom. All presentations will be given on Saturday, October 15.

Talks should be 20 minutes in length, including a few minutes for questions.

The deadline for first consideration for proposals is March 31, 2016. If you have any questions, please contact Mary Roberson.

From the Origin: A Section for Opinion

From the Origin provides a forum for lively discussion of issues of importance to the mathematical community. The Michigan Section–MAA Newsletter solicits opinion pieces for publication in this column from anyone in the Michigan mathematical community. In addition, comments on pieces published in earlier issues are welcomed.

Responding to Challenges: Changing the Mathematics Curriculum in the First Two Years

By Jack Rotman (Lansing CC)

Editor's Note: This article is appearing in both the MichMAA and the MichMATYC Newsletters.

Michigan is unique in our approach to organizing higher education in the state. We do not have a governing body, or a coordinating group, for colleges and universities. However, we are not unique in offering an outdated mathematics curriculum in the first two years. Our precalculus and calculus courses have remained essentially unchanged for the past half-century (and longer), in spite of dramatic changes both in the mathematical sciences and in our client disciplines.

In this short article, I want to present:

- Information on our current precalculus courses, including rates of transfer to other institutions;
- Data and documented needs relative to mathematics in the first two years; and
- A call to action in Michigan.

Michigan Precalculus Courses

At the global level of our curriculum, we can examine the sequence and titles of courses used as prerequisites to a standard calculus course at our institutions. With a focus on a sample of public institutions, I examined these courses (as of February 2015) using 27 institution web sites (15 community colleges, 12 universities).

A second step in this global analysis was to look

at transfer rates. This was completed by pulling data from the receiving institutions' transfer sites (26 of them) for all of these 39 courses. Here is a summary of the transfer data:

- 72% of the 1014 (39 times 26) combinations resulted in known data about transfer
- 28% was 'missing data' (unable to determine transfer)
- Of the known data, 82% of the prerequisites to calculus transferred as a prerequisite to calculus
- Of the known data, 18% of the prerequisites to calculus FAILED to transfer as a prerequisite to calculus.

Complete details about this transfer study are available at www.devmathrevival.net/?page_id=2144.

Data and Documented Needs Related to our Curriculum

The curriculum of precalculus and calculus has not changed in any significant way for a long time. In his article "The Pitfalls of

Precalculus" <launchings.blogspot.com/2014/10/the-pitfalls-of-precalculus.html>, David Bresoud cites results from a large study ($n > 10000$) which looked at different student backgrounds and precalculus enrollment as predictors of calculus success. It is noteworthy that well-prepared students who took precalculus did significantly worse in calculus than similar students who did not take precalculus. You may know that developmental mathematics has been under attack for

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From the Origin continued on page 14

“Michigan is unique in our approach to organizing higher education in our state. We do not have a governing body, or a coordinating group, for colleges, and universities.”

From the Origin continued from page 13

a lack of evidence for benefits; the data for precalculus may be even worse than that for developmental mathematics.

In the newest CUPM Curriculum Guide, the MAA CRAFTY team presents a summary of much of the criticism of our curriculum along with directions to consider for improving mathematics curricula. Their webpage <www2.kenyon.edu/Depts/Math/schumacher/public_html/Professional/CUPM/2015Guide/CUPMDraft.html> has a chapter on calculus courses.

The National Academy Press published “Mathematical Sciences in 2025” (available at <www.nap.edu/catalog/15269/the-mathematical-sciences-in-2025>), a broad overview of the future of undergraduate mathematics. Although not directed at any specific course, the chapters in this book highlight modern trends. It is interesting that the authors have much to say concerning numerical methods.

The “Common Vision” project (MAA, AMATYC, ASA, AMS, and SIAM) has a report which also speaks to the curriculum in the first two years (<www.maa.org/sites/default/files/pdf/CommonVisionFinal.pdf>). This report summarizes many of the needs for renewal of our curriculum.

Our client disciplines have needs which are not met

“The data for precalculus may be even worse than that for developmental mathematics.”

by current mathematics courses. This results in important mathematics being taught in non-math courses (or not taught at all). Biology majors are learning about matrices and modeling in their biology courses, even though these students are required to take at least one semester of calculus. Engineers have been using a mix of symbolic and numeric methods for many years. In general, they are not getting the numeric methods from us. For all client disciplines, the theme is “very diverse mathematical background”. A list of topics needed for engineering is at <www.efunda.com/math/math_home/math.cfm> .

A Call to Action in Michigan

We need to get a renewed focus on purpose in the curriculum. Precalculus courses in Michigan are not preparing students for calculus; calculus courses are not preparing students to use mathematics in either their STEM programs or on the job. In addition, we have an inefficient design that can involve 4 or 5 courses at the college level (3 calculus courses, along with possibly 1 or 2 prerequisite courses). Acceleration is just as important at the college level as it is at the developmental level.

Consider this alternative model:

- One single semester precalculus as the standard prerequisite for calculus, made more rigorous with a focus on ‘need for calculus’
- Two semesters of calculus as the standard, includ-

Michigan Paths to Calculus I

College Algebra & Trig 1 semester	College Algebra and College Trig 2 semesters	Precalculus 1 semester	Precalculus 2 semesters	College Algebra and Precalculus 2 semesters	Trig and Precalculus 2 semesters
MSU; OCC	Macomb, MSU, CMU, OCC, EMU, MTU, FSU, Mott, Monroe County, GVSU, Schoolcraft, Montcalm, (Muskegon*)	Macomb, GRCC, WMU, LCC, CMU, Henry Ford, UM-D, EMU, MTU, Mott, Oakland, Monroe County, Montcalm	LCC	KVCC, SVSU, Washtenaw, Jackson, NMU, UM-F	Delta, NMU, Kellogg, St. Clair
2	12 plus 1	13	1	6	4

* Muskegon CC courses do not have “College” in their titles.

From the origin continued from page 14



Jack Rotman, Lansing CC

ing differentiation, integration, multiple variable, and numeric methods, made possible by eliminating the massive clutter in our current courses.

Because of how Michigan structures higher education, mathematics faculty have considerable control over the curriculum and articulation. We have many reasons to undertake a renewal of our curriculum. The two chief reasons are “meet student needs” and “teach good mathematics”.

This work depends upon a diverse group collaborating on this exciting process. Please consider participating. If you are interested, please contact me <rotmanj@lcc.edu> whether you want to be involved in the work or be a leader for the work. ■

40th Lower Michigan Mathematics Competition

Hope College is excited to host the 40th Lower Michigan Mathematics Competition on Saturday, April 9, 2016. The competition consists of a 10-problem paper-and-pencil exam taken by teams of two to three undergraduates. A school may enter multiple teams. The LMMC schedule on Saturday, April 9, 2016 is:

8:45 am - 9:15 am, check in at the Schaap Science Center Atrium
9:30 am - 12:30 pm, competition
12:30 pm - 1:30 pm, lunch
1:30 pm - 2:30 pm, solution session

The registration fee is \$35 per team to help defray expenses. Lunch will be provided. Please register using the Google form available at <tinyurl.com/zupxzfb> and mail the \$35 team registration fee by Tuesday, March 29, 2016. Checks should be made out to Hope College and mailed to:

Cathy Stoel (for LMMC)
Department of Mathematics
Hope College
P.O. Box 9000
Holland, MI 49422-9000

Interview with Bob Megginson

By David Austin (Grand Valley State U)

Editor's Note: The selection below was taken from an interview with Robert Megginson. The full interview can be found at <<http://sections.maa.org/michigan/misc/megginson.response.pdf>>

After earning an undergraduate degree in physics, **Robert Megginson** spent eight years working at the Roper Corporation as a computer systems software specialist before attending graduate school at the University of Illinois, where he finished his PhD in 1984. Since 1991, Bob has been in the mathematics department at the University of Michigan, where he is now an Arthur F. Thurnau Professor and Professor of Mathematics.

In addition to his mathematical research into the geometry of Banach spaces, Bob's efforts to increase the number of students from underrepresented groups, particularly Native Americans, in mathematics and other STEM-related fields has been widely recog-



Megginson continued on page 17



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Megginson continued from page 16

nized. For example, he developed a summer program for students in the Turtle Mountain Chippewa Nation in North Dakota and led that program for many years. In addition, Bob has served on a number of national committees, through organizations such as the MAA, the American Indian Science and Engineering Society, and the Mathematical Sciences Research Institute, that work to address this problem.

A more complete biography is available at <www.maa.org/programs/underrepresented-groups/summa/summa-archival-record/robert-eugene-megginson>.

AUSTIN:

Are there ways in which your Native American heritage gives you a unique perspective as a mathematician and a teacher of mathematics?

MEGGINSON:

Though I don't believe Native Americans are evolutionarily programmed to think any differently from anyone else, I do believe that culturally we may be better primed to deal with wicked problems than those trained in traditional Western ways of linear thinking. I'm using the term wicked problem here in its technical sense; for a working definition and my argument about Natives and wicked problems, see my science policy article accessed by clicking the appropriate link at <sacnas.org/about/stories/sacnas-news/summer-2014>. Since I believe that 21st century STEM professionals are going to get many opportunities to deal with wicked problems, I try to bring discussions about that into my classrooms.

AUSTIN:

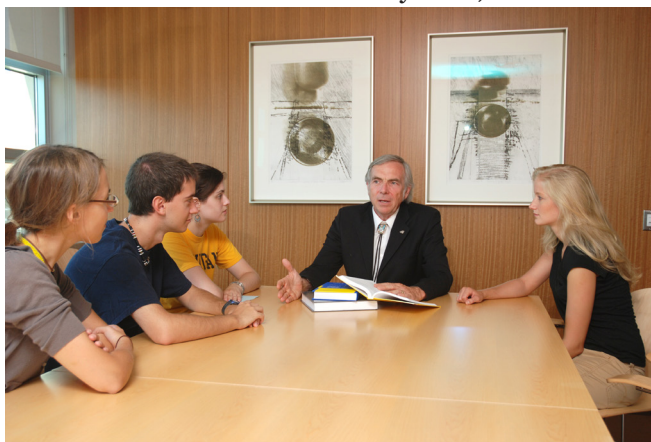
I have read that you are one of only twelve Native Americans to hold a Ph.D. in mathematics, which leads me to believe you have faced some of the challenges that the students you mentor face. Can you describe your own experience as a Native American entering the mathematical community and how you use that experience in working with students from underrepresented groups?

MEGGINSON:

Actually, that number is an old guess by some source-

es, and I hope it is larger now, though it's difficult to tell since the NSF is now suppressing small numbers in table cells breaking out degree achievement by ethnicity, due to privacy concerns that many of us interested in the numbers have been challenging. But in any case we can hope that the numbers are now substantially larger than the five that the AAAS could find in a study done in the 1970s about the barriers to Native American participation in mathematics. Also, I credit the AMS for doing its best to report the numbers in its annual reports on the state of the profession, but there may be issues beyond their control in the way that numbers for Native Americans are reported.

In any case, we know that the numbers, whatever they are, are too small, and we need to improve them. Though I believe that I've directly helped Native students with significant mentoring toward mathematics-based careers, and am now co-PI on a big AISES grant to try to point more toward mathematics-based careers, I think that one of the biggest things that



I and other Native mathematicians can do, by our presence in the profession, is to show that the term "American Indian mathematician" is not an oxymoron.

AUSTIN:

Are there other challenges currently faced by students in underrepresented groups as they enter the mathematical community?

MEGGINSON:

Many, including a problem common to many first-generation students who like mathematics: convincing family and many others in their communities that there really are good jobs out there awaiting people who are prepared to enter mathematics-based careers. (Though I hasten to add that in the case of Native Americans, the value of having mathematically capable scientists and engineers who can return to reservations to help their people is well known to tribal leaders and generally encouraged quite strongly.) ■

Contest News

By Dave Friday (Macomb CC)

AMC

The American Mathematics Contest 8 (AMC 8) for students in grades 8 and below is a 25-question, 40-minute multiple choice examination in middle school mathematics designed to:

- promote the development and enhancement of problem solving skills;
- demonstrate the broad range of topics available for the junior high school mathematics curriculum; and
- promote excitement, enthusiasm and positive attitudes towards mathematics.

The 2015 AMC 8 exam was taken by 149,277 students from 2,499 schools, with an average score of 8.55 out of 25 total points. The top 1% scored 21 or above. In Michigan, 2,408 students from 36 schools took the exam.

No students in Michigan got a perfect score of 25 (down from six last year), but seven students earned

a score of 24 (down from sixteen students last year): 8th grade **Pranav Arunandhi** (Lawrence Tech, Southfield), 6th grader **Reagan Choi** (Boulan Park MS, Troy), 8th grader **Srihari Ganesh** (Lawrence Tech, Southfield), 8th grader **Ishan Goel** (Lawrence Tech, Southfield), 7th grader **S. Ramanujam** (East MS, Plymouth), 8th grader **Pratham Soni** (Boulan Park MS, Troy), and 7th grader **Alexander Xu** (Boulan Park MS, Troy). There was a tie for team winner between Boulan Park MS and Lawrence Tech; both teams had scores of 72 out of 75.

Results from the AMC 10/12 A and AMC 10/12 B are still pending.

Since taking over in Fall 2013, we have had our third awards ceremony, hosted by Macomb Community College. **Cap Khoury** (Lawrence Technological University, Southfield) delivered the keynote speech on the subject of “ p -adic Numbers”. Dinner was provided by the University Center of Macomb Community College. Also in attendance was **Ruth Favro** (LTU) to help honor the winners.

Congratulations to all of the 2015 AMC 8 winners! ■

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New Newsletter Editor in 2016

By Victor Piercey (Ferris State U)

Thank you to all of our readers and members of the section executive board for such a warm welcome as the editor of the *Newsletter*. **Katie Ballentine** (Mathematical Reviews) has done an excellent job and we should all express our appreciation to her. I am looking forward to my time ahead. Please feel free to share any thoughts or suggestions for anything you would like to see in the *Newsletter*. Of course, please submit manuscripts as well! ■

Institution News

Albion College

By Mark Bollman • mbollman@albion.edu

Recent visitors to the department include **Jeremy Troisi** (Albion 08, Purdue U) and **Stavros Christofi** (Western Connecticut State U). The Math/CS Department at Albion encourages people from around the world, and our section colleagues in particular, to show their support for mathematics by wearing plaid on International Plaid Day: April 24, the last Friday of Mathematics Awareness Month. ■

Alpena Community College

By Dan Rothe • rothed@alpenacc.edu

Steve Lewis is training for the new electrical bachelors program. **Jim Berles** is working on several projects, some of which involve GIS. **Meghan Cameron**, **Mike Kelley**, and **Dan Rothe** are left as the remaining full time math instructors. In order to cover the load, Mike and Dan are both teaching overloads this semester. Dual enrollment in higher math classes continues to be strong. In particular, we have lots of Alpena High School students in Calculus II, Differential Equations, and C++ Programming at the main campus in Alpena. We have a good-sized class of mostly Rogers City High School students in an early morning College Algebra (really a Finite Math class) offered in Rogers City. Math class enrollments at the Huron Shores Campus in Oscoda are up and we are hopeful of continued growth in that location with the new Industrial Technology/Manufacturing Lab on that campus. Overall, we are at about the break-even point on enrollment relative to last spring. After several semesters of decline, we are hopeful that the numbers have stabilized. ■

Central Michigan University

By Sid Graham • sidney.w.graham@cmich.edu

Louis Nirenberg (Courant Institute) will deliver the 2016 Fleming Lectures. He will give the lectures on April 14 and April 15. He will speak on “The Maximum Principle and Some Applications.” The Fleming Lectures were founded by Professor Emeritus Richard Fleming. The department is also hosting a special colloquium series this year. In Mathematics Education, **Catherine Lewis** (Mills College) will speak on March 17. Her title will be “Lesson Study to Improve Mathematics Instruction: Recent Research.” In Statistics, **Nancy Reid** (University of Toronto) will speak on April 17. Her title will be announced later. **Kartik Prasanna** (University of Michigan) will speak at a meeting of the AMS Graduate Student Chapter. Date and topic will be announced later. ■

Delta College

By Frances Lichtman • franceslichtman@delta.edu

The Mathematics Division at Delta College looks forward to hosting the 2016 MichMATYC Annual Conference. The conference will take place Friday and Saturday, October 14 and 15. We invite our colleagues at four-year colleges and universities to join us and to consider giving a contributed talk, as this venue is ideal for discussing issues related to curriculum or pedagogy. Topics of particular interest include accessibility, common core, flipping the classroom, open educational resources, pathways, and software applications for the classroom. The Call for Presenters is included in this *Newsletter* on [page 12](#). ■

Eastern Michigan University

By Carla Tayeh • ctayeh@emich.edu

Professor **Jiuqiang Liu**, along with his colleagues at

Institution News continued from page 19

Xi'an University of Finance and Economics in China, is planning a conference on Game Theory and Applications to be held in Xi'an, China, in June 2016. Professor **Ovidiu Calin's** book *An Informal Introduction to Stochastic Calculus with Applications* was recently published. Thank you to both our current and retired EMU faculty along with EMU alumni who volunteered to help grade Part II of the Michigan Mathematics Prize Competition (MMPC), including **Katie Ballentine, Steve Blair, Ovidiu Calin, John Curran, Dave Folk, Chris Hee, Randy Keller, Andrew Livingston, Walter Parry, Kim Rescorla, Katy Shields, Carla Tayeh, Bingwu Wang, and Bette Warren**. Thank you to everyone who helped grade the MMPC exam! ■

Hope College

By Todd Swanson • swansont@hope.edu

Brian Yurk has returned from sabbatical and **Vicki-Lynn Holmes** is currently on sabbatical. **Jill VanderStoep** and **Todd Swanson** are part of an author team that just had their text *Introduction to Statistical Investigations* published by John Wiley & Sons. This text introduces statistical inference using simulation-based methods. Hope College is looking forward to hosting the Lower Michigan Mathematics Competition this year. ■

Lansing Community College

By Homa Ghaussi Mujtaba • ghaussih@lcc.edu

Lansing Community College would like to announce that **Andrea Hoagland** is now serving as Associate Dean for Science and Mathematics. Andrea has a BS in mathematics from Michigan State University and a master's degree in math education from New York University. She started at LCC as an adjunct faculty member in 2004 and has been a full-time faculty member since 2010. She has been and will continue to be a great asset to our administrative team. **Tristan Williams** has joined LCC as a full time faculty member this fall. This will be Tristan's third year of full-time community college teaching. He holds a BS in mathematics from the University of Wisconsin-Eau Claire and a master's degree from the University of Iowa. After leaving Iowa City, he and his wife moved to Ohio, where he taught for two years at Edison Community College. He has taught a variety of courses ranging from developmental Algebra to the calculus sequence. Tristan sought the position at LCC to be closer to his family in western Michigan. We welcome Tristan as our newest full-time team member. Using the Heart of Student Success grant

provided by Lansing Community College, the calculus program led by **Dr. Jing Wang, Maria Johnson, Dr. Homa Ghaussi Mujtaba, and Nan Jackson** has purchased a new 3D printer. The goal is to incorporate the Mathematica software program and 3D printing into our calculus curriculum so that our students can visualize and touch three-dimensional figures which are normally difficult for students to imagine. ■

Lawrence Technological University

By Mike Dabkowski • mdabkowski@ltu.edu

The LTU Math Department added **Michael Dabkowski** to the ranks of its full-time faculty this year. He teamed up with **Ruth Favro** to give some interesting presentations to the LTU Math Club. With **CJ Chung** and **Chris Cartwright** working diligently on Robofest, 2016 is sure to be an exciting year. **Pam Lowry** has started a three-year phased retirement plan. Mike Dabkowski will also be the new MAA liaison, taking over for **Mike Merscher**. ■

Michigan Technological University

By Jeanne Meyers • jemeyers@mtu.edu

Vladimir Tonchev received new funding from the US Department of Defense-National Security Agency in the amount of \$39,998 for a project titled "Combinatorial Designs, Error-Correcting Codes, and Finite Geometry". This is the first year of a potential two-year project totaling \$79,501. ■

Spring Arbor University

By Garnet Hauger • garnet.hauger@arbor.edu

Last May, we held an event for high school students. About 115 students came to experience a day relating to careers that use math, which dovetailed with the theme of Math Awareness Month (Math Drives Careers). We had various activities, including YouTube videos about mathematics in different careers, a math jeopardy game, short math contests, small group activities involving career profiles taken from the MAA and AMS websites, and a panel of SAU grads who were not math majors but who have careers that required them to use a lot of math in their careers. The day was a big success! ■

University of Michigan-Flint

By Ken Schilling • ksch@umflint.edu

Ricardo Alfaro is on sabbatical for Winter term. **Lixing Han** gave a talk on his joint solution (with **Jianhong Xu**) of Stenger's Sinc Matrix Conjecture. This solution came with a cash prize! Student **Ethan Bush** gave a talk on his REU work "An Analogue of the Median Voter Theorem in Approval Voting". The

Institution News continued on page 21

Institution News continued from page 20

49th annual Math Field Day, a day of competition for teams of high school students, will be on Friday, March 4. Family Math Night, an evening of fun with mathematical activities for children and their parents, will be on Tuesday, March 29, 6–8 p.m.. For more information on either activity call the UM-Flint Mathematics Department at (810) 762-3244. ■

Wayne State University

By Dan Drucker • drucker@math.wayne.edu

Senior Lecturer **Leonard Boehm** will be retiring at the end of the current academic year. Laureate Professor **Jonathan Borwein** of CARMA (Computer-Assisted Research Mathematics and its Applications), a research center at the University of Newcastle in New South Wales, Australia, will be giving two talks in the department in April. The first is a special lecture at 3 p.m. on Tuesday, April 12, entitled “The Lambert W function in optimization”. The second talk will be the Twenty-Fifth Annual Owens Lecture at 3 p.m. on Wednesday, April 13, entitled “Seeing Things by Walking on Numbers”. Both talks will be in Purdy/Kresge Auditorium. *The American Mathematical*

Monthly has accepted an article for publication that was written by undergraduate mathematics major **Scott Ginebaugh**. Under the supervision of Professor **Peiyong Wang**, Ginebaugh took on the challenging project of finding Wallis or Catalan type infinite product representations of fractional powers of e . He generalized previously known results and largely solved an open conjecture. Ginebaugh found two beautiful formulas that will appear with their proofs in the *Monthly*. We are in the process of considering applicants to fill a new tenure-track position, effective Fall 2016. ■

Western Michigan University

By Melinda Koelling • melinda.koelling@wmich.edu

Patrick Bennett (graph theory/combinatorics) and **Marianna Levin** (mathematics education) were hired. **Andrzej Dudek** earned tenure. **Ok-Kyeong Kim** was promoted to full professor. **Steven Ziebarth** was appointed chair of the department, and **Gene Fruedenburg** has returned to faculty. **Dennis Pence** and **Allen Schwenk** are on alternate-semester phased retirement with academic work in fall semes-

Institution News continued on page 22



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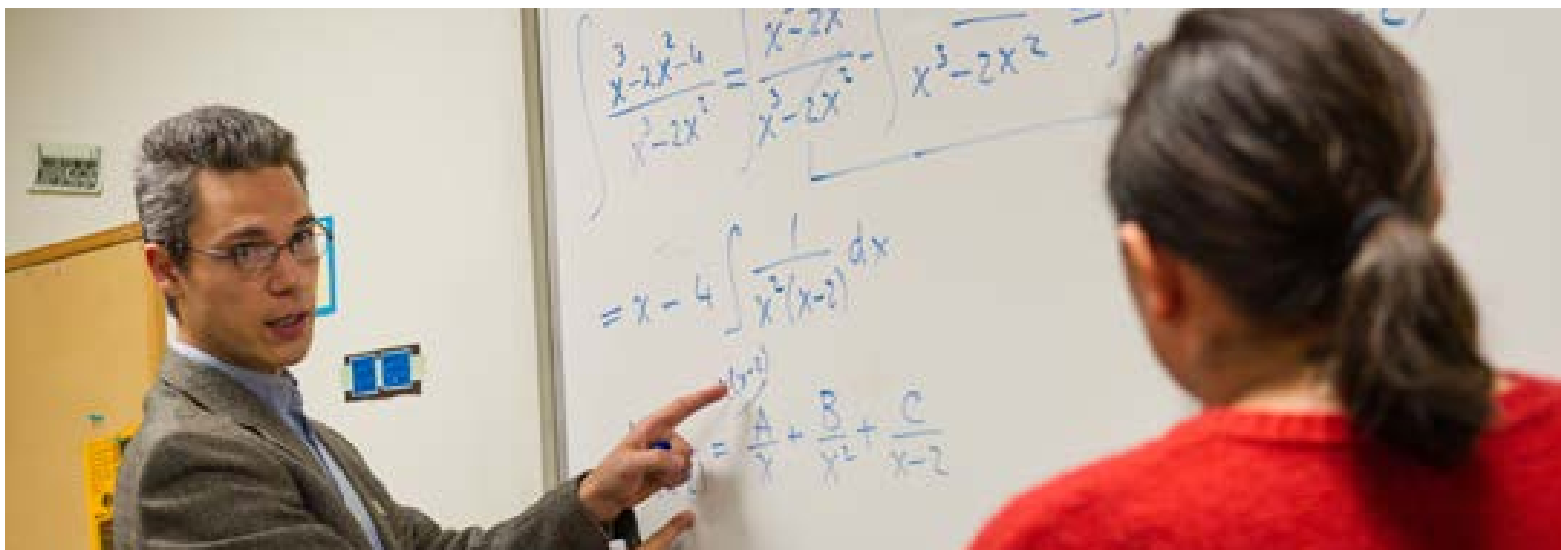
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Institution News continued from page 21

ters. **Art White** has retired. Four mathematics PhDs and two mathematics education PhDs were granted in 2014-2015. **Yuri Ledyae** presented and presided at the Royal Society, London, at an international conference on Nonlinear Analysis and Optimization. **Marianna Levin** is a STaR fellow and received a WMU internal funding award to pursue her research. **Gary Chartrand**, **Linda Lesniak**, and **Ping Zhang** have published their new 6th edition of *Graphs and Digraphs* with CRC Press. The book *The Fascinating World of Graph Theory* (Princeton University Press), coauthored by Gary Chartrand, Ping Zhang, and **Arthur Benjamin**, was named by Choice Reviews as one of nine outstanding academic titles in mathematics for 2015. The graph theory seminar will have

speakers including **Adam Wagner** (University of Illinois at Urbana-Champaign), **Andrew Suk** (University of Illinois at Chicago), and **Andrzej Rucinski** (Emory University). Links to the department seminars can be found from this page: wmich.edu/math/events. MI-AMTE Conversations Among Colleagues will meet at WMU on March 19, 2016. The Lake Michigan Workshop on Combinatorics and Graph Theory will hold its third annual meeting at Purdue on March 5–6, 2016, and the fourth meeting at WMU in March 2017. The Elementary Math Major was added in Fall 2015. We continue to develop the Actuarial Minor started four years ago. Interested students should contact **Dr. Jim Zhu**. **Melinda Koelling** is now the liaison to the MAA from WMU. ■



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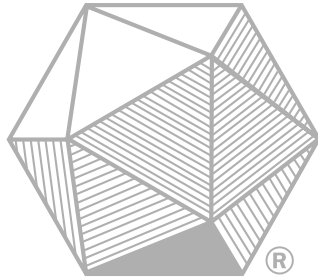
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MAA Department Liaisons

By David Austin (GVSU)

Liaison Coordinator

Your departmental liaison is responsible for helping to distribute news from the section to all members in your department. If you are receiving periodic email updates from the section, please say thanks to your liaison for their work. If you are not receiving any news from the section, then your department may not have a designated liaison. You are welcome to contact the section's Liaison Coordinator, **David Austin** <austind@gvsu.edu>, to find out if you have a liaison or to volunteer to do the job yourself. It's not a great deal of work, but your well-informed colleagues will be grateful. ■

Student Chapter News

Alpena Community College

Sigma Zeta Math/Science Honor Society inducted four new members in the fall. This is our smaller, informal induction. They will be honored in the formal ceremony along with the spring inductees later this semester. The members enjoyed a tour of the Lafarge Alpena Plant (the world's largest cement plant) courtesy of our tour guide and alumni member **Ryan Kapalla**. Kapalla is now using his engineering degree as power plant supervisor at Lafarge. It is encouraging to look at what great things our alumni are doing. To list a few others, former Sigma Zeta president **Amy Parker** now has a doctor of pharmacy and works for Rite Aid in West Branch, former president **Jillian Sanderson** works as an engineer for the Union Pacific Railroad in Nebraska, **Adam Miller** is a design engineer at Nissan North America, and **Michael Lamb** has a doctor of pharmacy and works for LaFave Pharmacy in Alpena. Numerous teachers and other professionals use their math/science degrees from ACC. Regardless of what school you teach at, remember the positive difference you make in students' lives – especially on days when problem students make you wonder if your work pays off. ■

Eastern Michigan University

Lillianna Blair is the president of our math club. ■

Lawrence Technological University

Under president **Rodrigo Sanchez Vicarte**, the LTU Math Club had some interesting short talks given by **Mike Dabkowski** and former advisor **Ruth Favro**. Mike coached the Math Challenge and Putnam teams. We have three teams competing in the Mathematical Contest in Modeling (MCM) Jan. 28-Feb. 1, working on the problems of space debris and temperature in

a bathtub. One MCM team from 2015 gave a talk at the Michigan Undergraduate Math Conference last spring. ■

Schoolcraft College

The Math and Physics Club hosted a March 16 visit by **Dr. Yunus Zeytuncu** (UM-Dearborn) to give a talk on Diophantine equations. The club was deeply involved this Winter in the AMATYC Student Math League Contest and in organizing the annual Science Day for Middle School Students. Student officers are **Joe Pepper** (president), **Steven Paris** (VP and director of social media), and **Ajay Arora** (secretary). ■

Spring Arbor University

A group of students started an actuarial science club. Meetings involve juniors and seniors sharing information with freshmen and sophomores about internships, course sequencing, finding jobs after graduation, and the future job market. There are also plans for bringing speakers to campus. The club was started by **James Brinker**, an actuarial science major who is currently a senior. ■

Western Michigan University

The current PME/Math Club officers are **Lawrence Cuneaz** (president), **Nathaniel Haeussler** (vice president), **Jamie Hallas** (treasurer), **Josh Mussche** (secretary), and **Sean English** and **Richard Hollister** (graduate representatives). Our chapter of PME had its 42nd initiation in Fall 2015. The occasion was marked by a well-attended public lecture by **Joel Hass**, "The Mathematics of Bubbles and Optimal Shapes". Weekly events are posted at <wmich.edu/mathclub/calendar.html>. ■

Calendar of Events

Michigan Section–MAA Annual Meeting

2016: [Hillsdale College](#) | April 1–2

2017: Ferris State University | March 31–April 1

Upper Peninsula Regional Mathematics Meeting

2016: Northern Michigan University | Sep. 30–Oct. 1

MAA MathFest

2016: [Columbus, OH](#) | August 3–6

2017: Chicago, IL | July 26–29

2018: Denver, CO | August 1–4

2019: Cincinnati, OH | July 31–August 3

2020: Philadelphia, PA | July 29–August 1

2021: Sacramento, CA | August 4–7

MAA-AMS Joint Math Meetings

2017: Atlanta, GA | January 4–7

2018: San Diego, CA | January 10–13

2019: Baltimore, MD | January 16–19

2020: Denver, CO | January 15–18

2021: Washington, DC | January 6–9

AMATYC Annual Conference

2016: [Denver, CO](#) | November 17–20

2017: San Diego, CA | November 9–12

2018: Orlando, FL | November 15–18

MichMATYC Annual Conference

2016: Delta College | Oct. 14–15


NCTM Annual Meeting & Exposition

2016: [San Francisco, CA](#) | April 13–16

2017: San Antonio, TX | April 5–8


2018: Washington, DC | April 25–28

2019: San Diego, CA | April 3–6



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Michigan Section–Mathematical Association of America Committees and Appointments

Executive Committee

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<i>Chair ('16)</i>	Bob Messer (Albion C) ram@albion.edu • 517-629-0287
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2016 Annual Meeting Local Arrangements Comm.

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<i>Member</i>	David Murphy (Hillsdale C) dmurphy@hillsdale.edu • 517-607-2384

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<i>Chair</i>	Gavin LaRose (UM-Ann Arbor) glarose@umich.edu • 734-764-6454
<i>Member</i>	David Gaebler (Hillsdale C) dgaebler@hillsdale.edu • 517-607-2743
<i>Member</i>	Jan Roy (Montcalm CC) janr@montcalm.edu • 989-328-1235

Michigan Section Newsletter

<i>Editor</i>	Victor Piercey (Ferris State U) piercev1@ferris.edu • 231-591-2823
<i>Assoc. Ed.</i>	Jerrold Grossman (OU) grossman@oakland.edu • 248-370-3443
<i>Assist. Ed.</i>	Katie Ballentine (Mathematical Reviews)
<i>Advert. Manager</i>	Will Dickinson (GVSU) dickinsw@gvsu.edu • 616-331-3745

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<i>Member ('16)</i>	Steve Blair (EMU) sblair6@emich.edu • 734-487-1296
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<i>Chair ('16)</i>	Michele Intermont (Kalamazoo C) intermon@kzoo.edu • 269-337-7107
<i>Member ('16)</i>	Jan Roy (Montcalm CC) janr@montcalm.edu • 989-328-1235
<i>Member ('17)</i>	Brian Snyder (LSSU) bsnyder@lssu.edu • 906-635-2658

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<i>Member</i>	John Mooningham (SVSU) jwm@svsu.edu • 989-964-4183

Other Appointments and Contacts

<i>Webmaster ('17)</i>	Paul Pearson (Hope C) michmaawebmaster@gmail.com • 616-395-7529
<i>Public Inform. Off.</i>	Bob Xeras (Siena Heights U) rxeras@sienaheights.edu • 517-265-5832
<i>AMC Coordinator</i>	David Friday (Macomb CC) fridayd@macomb.edu • 586-226-4731
<i>Liaison Coord.</i>	David Austin (GVSU) austind@gvsu.edu • 616-331-3431
<i>Archivist</i>	John W. Petro (WMU) john.petro@wmich.edu • 616-387-4591