Fall 2014, Volume 17, Number 2

Upcoming Meeting

Hope to See You at North Dakota State University in Fargo!

North Dakota State University will host the MAA-NCS Fall Meeting, September 26-27.
Our two invited speakers for the fall meeting are **Francis Edward Su** (Harvey Mudd College) and **Brett Goodwin** (University of North Dakota).
A program for the Fall 2009 meeting will be posted approximately one to two weeks on the MAA-NCS website prior to the meeting.

Invited Speakers and Biographies

- Mark R. Hoffmann, University of North Dakota
- Mark Hoffmann received his B.A. with a double major in Astronomy and Chemistry, with honors in Physics, from Northwestern University and then his PhD in Theoretical Physical Chemistry from the University of California, Berkeley. He was a postdoc at the University of Chicago for a year and then at the University of Utah for 2 years. He joined UND as an Assistant Professor in 1988 and was promoted through the ranks, being designated a Chester Fritz Distinguished Professor in 2006. He served as Chemistry Department Chair from 2003 to 2010, and has been an Assistant and now Associate Vice President in the Office of Research since 2008. His principal research interests are the development of new methods of molecular electronic structure theory, especially those that are hybrids of variational and perturbational approximations, and their application to unusual chemical problems.
- Dr. Hoffmann's talk is entitled *Quaternions and Other Beasties in Quantum Chemistry*
  Abstract: The overwhelming majority of computational methods of molecular electronic structure theory used in modern quantum chemistry are expressible in terms of low-rank algebraic objects composed of real numbers. This development was driven, or at least facilitated, by early advances in computer hardware and software. An unintended consequence is that modern quantum chemistry is generally plagued by outrageously large data sets and often difficult to interpret qualitatively results. In the past decade, there has been renewed interest in more complex (no pun intended) objects, including tensors of higher rank and/or other number systems. This talk will describe some of the experiences that the UND quantum chemistry group had and is having in these areas.

- Paul Zorn, St. Olaf College
- Born and raised in India, Paul Zorn is now in his fourth decade of professing mathematics at St. Olaf College. His professional interests include complex analysis, mathematical exposition, textbook writing, and the role of mathematics among the liberal arts. His 1986 paper "The Bieberbach Conjecture" was awarded the 1987 Carl B. Allendoerfer Award for mathematical exposition. He has co-authored several calculus textbooks with his St. Olaf colleague, Arnold Ostebee. His most recent book is Understanding Real Analysis (AK Peters, 2010). From 1996 to 2000, he was editor of Mathematics Magazine, and he recently completed a 2-year term as President of the Mathematical Association of America.

- Dr. Zorn's talk is entitled Why Math-speak is Hard: Syntax, Semantics and Pragmatics
  Abstract: This is not surprising: communicating technical ideas and fine distinctions quite naturally requires extra linguistic effort, and that effort is generally well-requited. The special difficulty of reading, writing, teaching, and learning mathematics stems, I'll argue, only partly from the genuinely complicated syntax and semantics of mathematical language. It arises also from linguistic "pragmatics": what's "heard" depends not only on what's said but also on what "hearers" bring to the "conversation". I'll illustrate with examples connecting the pragmatics and the syntactical and semantic issues, and suggest some possible "mathematico-linguistic "strategies for teaching and learning.

Officer Reports

Governor's Report

Tom Sibley, College of St. Benedict/St. John's University

The MAA continues to serve the collegiate mathematical community in vital ways. Mathfest was a highlight as always. The journals, available electronically to all members, retain their high quality of exposition and innovative ideas. And increasingly the MAA is becoming a publisher of valuable and economic textbooks. Check them out for your classes.

Behind the visible face of the MAA is an army of volunteers in quite a number of committees. Fourteen of our section members are on national committees. In general, one serves on just one committee, which typically meets once a year and conducts much of its work electronically. Please contact me if you are interested in stepping forward for this important service.

Financially the national organization is healthy overall in spite of continuing operating deficits. The good news is that the projected deficit for next year will dip to around 1% of revenue. Since we, like many organizations, depend strongly on memberships, allow me to remind you to renew your membership when it comes due. Check out the MAA web site to see the range of services the MAA provides to members.

President's Report

Joel Iiams, University of North Dakota

I attended MathFest this August. Portland was an excellent site. As part of the business meeting at the section officer's meeting, Rick Gillman and Michael Pearson urged each section to continue to discuss special ways to celebrate the upcoming MAA centennial. Also the brainstorming session topic was "What would you do if you couldn't hold a section meeting?" Meaning how would the section continue to fulfill its mission without section meetings. Universally the discussion groups agreed that the most important requirement was to continue live face-to-face interaction. That might look like having a catalog of expertise, so that any department/member could get help. The upshot being that instead of lots of people traveling for a meeting, one or two people could travel to a site for a mini-meeting. Let me stress that this doesn't mean that the MAA is trying to do away with section meetings, just that we should keep in mind that it is not the sole mission of the section to hold section meetings. Finally, our section is due for a decadal bylaw update. We have a version to vote on at the fall section meeting. It will either be in the fall newsletter or posted on the section website.

Respectfully submitted,
Joel Iiams
NCS President

Secretary's Report

Namyong Lee, Minnesota State University – Mankato

1. MAA has many awards, prizes, and lectures. Suggestions can be made at any time. Use committee reporting date (please check the attached PDF file) as a guideline for each year. It has names and e-mail addresses of the chairs who should be contacted for nominations.

2. MAA has many council and committees that members can volunteer. Please check the list from http://www.maa.org/about-maa/governance/council-and-committees-list

3. MAA asked to each section to suggest a list of ideas to celebrate MAA's Centennial. Suggestions can be emailed to the section secretary (namyong.lee@mnsu.edu).

4. The idea of t-shirts competition for each section has been cancelled due to lack of interest.

5. New centennial flags are being designed for each section. If our section wants, we may order a copy of the section□s centennial flag.

6. The teaching award winner is no longer automatically Haimo award nominee. We can nominate any of the previous ones.

Information Officer's Report

Kris Nairn, College of St. Benedict/St. John's University

Thank you for all the submissions for the fall newsletter. It has been a wonderful opportunity to learn more of what my colleagues have been doing and I'm sure that the reset of the section appreciates the information also!

If you have suggestions to make the webpages more user friendly, feel free to send them to knairn@csbsju.edu.

Campus News

Augsburg College

Summer 2013 was a busy one at Augsburg. Several of our students did research projects on campus, and several more went to off-campus programs including NIMBIOS in Tennesee and the SIBS Biostats summer program at the U of M. Faculty were working with students, attending confrences, and writing papers. We also completed our transition to a new department chair Jody Sorensen is stepping down and John Zobitz is taking over. Thanks John!

We are thrilled to introduce our newest faculty member Dr. **Miles Ott**. Miles has a Ph.D in Biostatistics from Brown University, and will be teaching introductory and advanced statistics

classes. Miles was an undergraduate mathematics major, but his interest in apply Mathematics to public health led him to earn his Masters degree in Epidemiology and Biostistics before going on to the Ph.D Miles was a visit at Carleton in 2013-2104, and we are pleased to welcome him to Augburg.

We are sad to be saying goodbye to Dr. Tracy Bibelnieks after 12 wonderful years at Ausburg. Tracy was a valued colleague and we will miss her and her expertise in applied mathematics and mathematics education. Tracy and her family have moved to Duluth and we wish her all the best. One of Tracy's many projects, the MN State High School Math League, will remain at Augsburg for the near future. *(submitted by Jody Sorensen)*

College of St. Benedict/St. John's University

We have a few updates. **Robert Hesse** is departmental chair. **Kris Nairn** continues to run Pi Mu Epsilon; **Ami Radunskaya** is the invited speaker for the conference on April 10-11, 2015. This summer Kris also resubmitted an NSF grant for MapCores (Mathematics, Physics, Computer Science Research Scholars). **Bret Benesh** will be on sabbatical this spring. **Robert Campbell** and senior SJU student Zach Silbernick submitted a paper to the Electronic Journal of Combinatorics. We had four CSB students do research on campus last summer (one in combinatorics, one is applied mathematics, one in chemistry, and the other in computer science), and one do an REU in mechanical engineering at Madison on geotechnics. *(submitted by Kris Nairn)*

Concordia College, Moorhead

Concordia College-Moorhead welcomes **Andrew Talian** as a new faculty member, for a two-year appointment. Andrew, originally from Virginia and a graduate of Lenoir-Rhyne University, received his Ph.D. at the University of Georgia in 2014. Andrew will spend the spring semester of 2015 at the Mittag-Leffler Institute of the Swedish Royal Academy of Sciences for their program on representation theory. Statistician **John Reber** received tenure and was promoted to associate professor of mathematics. **Daniel Biebighauser** returns from his spring sabbatical, in which he worked with Mark Ellingham of Vanderbilt University on a monograph in graph theory. **Oksana Bihun** worked with Italian physicist Francesco Calogero in Rome over the summer. Concordia's data analytics team consisting of students Tom Dukatz, Bryce Frentz, Megan Menth, and Erin Twohy won first place at the third-annual Midwest Undergraduate Data Analytics Competition (MUDAC), hosted by Winona State University. *(submitted by Doug Anderson)*

Concordia University, St. Paul

Daniel Maroncelli was chosen as a 2014-2015 National Project NExT Fellow. We would like to thank the Educational Advancement Foundation for their sponsorship of him as an R. L. Moore NExT fellow *(submitted by Rob Krueger)*

Gustavus Adolphus College, St. Peter

Tom LoFaro is the recipient of the inaugural Clifford M. Swanson Professorship in Mathematics, an endowed chair made possible by the

financial contributions of Clifford and Delores Swanson, graduates of Gustavus from the class of '32. Tom also became an affiliated faculty member with the Institute for the Interdisciplinary Study of Decision-Making (http://www.neuroeconomics.nyu.edu/people/thomas-lofaro/) at NYU.

Two new tenure-track faculty joined us last year. **Marian Frazier** was an undergraduate at Kenyon College and earned her PhD in Statistics from The Ohio State University. Marian's research focuses on developing efficient sampling schemes for designing computer experiments. She is currently applying a new design scheme to a problem in computational economics. She is also involved in the Statistics Education and AP Stats communities.

Lousi Yu was an undergraduate at Queen's College and earned his PhD in Computer Science from the University of Victoria. His areas of research are in social network analysis, random graph modeling, and multilingual Web mining. Louis comes to Gustavus after serving as a visiting assistant professor of Computer Science at Pomona College and a post-doctoral research fellow in the Social Computing Lab at HP Labs.

Max Hailperin served this past year on the Minnesota legislature's bipartisan task force on "electronic pollbooks" – computer systems used for administrative functions at polling places, such as checking in preregistered voters and processing same-day voter registration applications.*(submitted by Mike Hvidsten)*

Macalester College, St. Paul

We are excited to start the new academic year! Our enrollments are strong and growing, and we continue to introduce new curricula. Highlights this year include the first offering of our completely overhauled 3-course calculus sequence, and the first year of the new statistics program. The calculus sequence has been re-titled Applied Multivariable Calculus I, II and III; all three use functions of multiple variables and highlight applications.

Faculty changes.

Professors **Andrew Beveridge, Danny Kaplan, and Shilad Sen** are on sabbatical this year.

Joining us this year are faculty members Paul Cantrell, Elizabeth Ernst, Brett Jackson, Katherine Kinnaird and Elizabeth Strouse. Paul is a Macalester alum, and has taught for us before.

Elizabeth Ernst's research interests lie in the areas of computational complexity, algorithm design and analysis, and logic synthesis. Before coming to Macalester College she taught Computer Science courses on programming, algorithms, and theory of computing at the University of

Wisconsin-Eau Claire and the University of St. Thomas. Elizabeth has a PhD from The University of Michigan, where she studied high-performance algorithms for optimal logic synthesis. When not at Macalester, Beth enjoys spending time with her husband and two young children.

Brett Jackson studies 3D human-computer interaction and data visualization. His research investigates how to interact with spatial data more effectively using new computer interfaces, such as virtual reality. In his free time, he plays water polo and enjoys canoeing and hiking.

Katherine M. Kinnaird (Ph.D. Dartmouth College 2014) researches the dimension reduction problem, representing high-dimensional and noisy sequential data as a low-dimensional object that encodes relevant information. She applies her work to tasks from the interdisciplinary field of Music Information Retrieval (MIR), such as locating the chorus of a given musical song or finding all copies of a particular recording of a song. She is originally from Maryland but most recently from Vermont. As a result, she is torn as to whether Old Bay or Maple syrup makes all things better.
(submitted by Karen Saxe)

Minnesota State University, Mankato

Minnesota State University, Mankato is short on faculty causing us to reduce the number of sections of our largest courses. Dr. **Christopher Danielson**, mathematics education, left us to join Normandale Community College so he would not have so far to drive to work everyday.

We had a failed search leaving us short in statistics. Dr. **Mezbahur Rahman**, statistics, is on leave this Fall semester. Dr. **Ernest Boyd**, applied mathematics, announced his plan to retire at the end of this year so we may have trouble covering courses in mathematics for business, finance and information technology next year.

With the cuts in funding throughout the university, we may have difficulty getting authorization to fill all of our positions. For this year we hired temporary faculty to help us - Ms. **Kimberly Kaufeld** in introductory statistics as a fixed term instructor, Mr. **Jerry Burkhardt** in college algebra as an adjunct instructor, and Ms. **Sharon Crowley** also in college algebra as an adjunct instructor. The debate about fixed term and adjunct positions versus tenure track positions is affecting our department and many others within our university.

These are financially difficult times, we are facing, making it a challenge to offer the quality and quantity of courses we would like.*(submitted by Earnest Boyd)*

St. Cloud State University

St. Cloud State University welcomes two new statistics faculty members this fall in Karl D'Silva and Diane Lovett. Karl earned his Ph.D. in Statistics from North Dakota State University. Diane is currently a Ph.D. candidate (ABD) in Statistics at Western Michigan University. On sabbatical leave in 2013-14 is Dr. Leonard Onyiah. Dr. Jeff Chen will also be on leave in spring to do

grant-funded research on the history of Chinese mathematics. Earning tenure and promotion this past year was Dr. Shiju Zhang (statistics). Earning promotions were Dr. Bill Branson (Associate) and Dr. Chen (Full). Dr. Peiyi Zhao has now taken over the reigns as department chair after Dr. Dale Buske's seven-year service in this role. With a permanent dean now in place in the College of Science and Engineering, and with more and more students seeking to pursue our STEM programs, we look forward to a great year. *(submitted by Dale Buske)*

University of Sioux Falls

The University of Sioux Falls is pleased to welcome two new faculty to its program this year. **Brad Lowery**, Assistant Professor of Applied Mathematics, has accepted a tenure-track position after completing his Ph.D. at the University of Colorado – Denver. **Matthew Rieck**, Instructor of Mathematics and Computer Science, returns to his undergraduate alma mater for a one-year gig after finishing his master's degree at the University of South Dakota. *(submitted by Jason Douma)*

University of North Dakota, Grand Forks

It is with some sadness that we report the retirement of **Thomas Gilsdorf**. He was a valued member of the department for 24 years. We wish Thomas well in retirement. On the other hand, we are pleased to announce that Mohammad Khavanin and Michele Iiams have each been promoted to full professor. *(submitted by Joel Iiams)*

Section NExT

Designed for new college and university faculty in the mathematical sciences, Section NExT (New Experiences in Teaching) is a professional development program that addresses the full range of faculty responsibilities including teaching, scholarly activities, and service.

Each year, applications will be solicited for new MAA-NCS Section NExT fellows to serve for a two year term. We will accept applications from faculty who are within the first four years of beginning full-time employment with teaching responsibilities at the college or university level. The application consists of a short personal statement and a letter of support from the department chair, guaranteeing financial support for transportation, meals, and lodging at the fall and spring meetings of the North Central Section.

Conferences and Activities

MAA-NCS Team Competition

Saturday, November 15, 2014

The eighteenth annual NCS/MAA Team Contest will be held on Saturday, November 15, 2014 (three weeks before the Putnam, as has been our practice), from 9:00 a.m. to noon.

You are invited to enter as many teams as you wish, of up to three undergraduate students each, from your college or university. Keep in mind that many students who might score zero on the Putnam can profitably participate in the NCS Team Contest, and that students need not expect to place among the top teams in order to have some fun (and other benefits from) working on these problems.

The Contest will consist of ten problems, which will be graded on the basis of ten points per problem. The problems typically range in difficulty from moderately easy to Putnam level. For copies of the problems and solutions from prior years, and related information, see the NCS/MAA website

http://sections.maa.org/northcen/teamcomp.html

The members of a team work jointly on the problems, and submit their solutions as a team. Different teams should be segregated from one another, preferably in separate rooms, during the examination period. As in the previous contests, no calculators, computers, books or notes may be used. (This implies also that no cell phones or other devices with internet access or text messaging may be taken into the exam room.) Grading is normally completed and scores reported before the end of the month.

Expenses of the competition are covered by a registration fee of US $15 per team. If you wish to participate, please have your department designate a local (departmental) supervisor to

(1) make arrangements with the participating students,

(2) send in an e-mail registration,

(3) arrange for examination space for the teams,

(4) administer the test, and

(5) mail in the papers and the registration fees following the contest.

Because it is not always possible for you to predict exactly how many teams will actually participate, the registration fee need not be paid in advance, but may be submitted along with the contest papers immediately following the contest. Checks should be made payable to: North Central Section, MAA

To register for the contest, please complete and send the form at the end of this message by e-mail not later than Monday, November 3, 2014, (earlier is better) to Dr. Gerald A. Heuer heuer@cord.edu

A pdf file of the problems and one of a sheet of directions for the supervisor will be sent by email to each supervisor on Friday, November 7. The supervisor will make additional copies of the problems as needed for the participating students.

Questions about the contest, requests for clarifications, and the like, may be directed to me: heuer@cord.edu

REGISTRATION FOR EIGHTEENTH ANNUAL NCS/MAA TEAM CONTEST,

to be held on Saturday, November 15, 2014

Name of college or university_____

Name of supervisor_____

Email address of supervisor_____

Estimate (non-binding) of number of teams_____

Please e-mail your registration to: heuer@cord.edu no later than Mon., November 3, 2014.

North Dakota Sate Undergraduate Mathematics Conference (Minot State University)

The date is September 20, 2014. The program can be found at http://www.minotstateu.edu/ndumc/ Thank you for your support to NDUMC.

Regional AMS Meeting

March 14-15, 2015 Michigan State University, East Lansing, MI

Pi Mu Epsilon

April 10-11, 2015 St. John's University

MCTM

April 30-May 2, 2015, DECC, Duluth

Future Section Meetings

Spring 2015	Winona State University	April 24-25
Fall 2015	Bemidji State University	
Spring 2016	Macalester	
Fall 2016	UMN – TC	

North Central Section Bylaws:

Please note that we have ammended the bylaws and they are as follows:

ARTICLE I

Name and Purpose

1. The name of this section shall be the North Central Section of The Mathematical Association of America.
2. The purpose of the North Central Section shall be to advance the mathematical sciences, especially at the collegiate level, by carrying out the purposes of the national organization within the territory defined below in Article II, Section 1.a.

ARTICLE II

Membership

1. The membership in the North Central Section shall be as follows:
    a. Members of The Mathematical Association of America residing in Minnesota with zip codes 55000 through 56799, North Dakota with zip codes 58000 through 58899, that part of South Dakota having zip codes 57000 through 57013 and 57100 through 57699, the provinces of Manitoba and Saskatchewan, and that portion of Ontario consisting of Thunder Bay and west.
    b. Members of The Mathematical Association of America not being resident in the territory of this Section, who have become members of this Section in accordance with Article VI of the by-laws of The Mathematical Association of America.

ARTICLE III

Officers

1. The officers of the Section shall be a President, Secretary, Treasurer, President-Elect, and Information Officer. Each Section officer must be a member of the Mathematical Association of America and of this Section.
2. The Executive Committee shall consist of the officers of the Section, the Section Governor, the immediate Past-President, the Student Chapter Coordinator, and two members at large.
3. The President-Elect shall be elected annually at the spring meeting. The President-Elect shall become President for a one-year term at the expiration of the one year term as President-Elect. The Information Officer, the Secretary, the Treasurer, and the Student Chapter Coordinator shall each be elected for a term of three years. The terms of these offices are staggered. The term of office of members at large of the Executive Committee is two years. Members at large will serve staggered terms. All terms of office begin on July 1 or immediately following the Spring Meeting, whichever occurs later.
4. Candidates for President-Elect, Secretary, Treasurer, Information Officer, Student Chapter Coordinator, and the members at large of the Executive Committee shall be nominated by a committee appointed by the President; other nominations may be made by any member at the time of the annual election.
5. The President shall preside at all business meetings of the Section and all meetings of the Executive Committee, shall have general charge, and shall execute the affairs of the Section.
6. The Secretary shall record the minutes of each Executive Committee meeting and each Sectional Business meeting, keep all expository records, notify members of meetings, call for papers to be presented at the meetings, handle all the mailings, conduct correspondence for the Section, and submit an annual report to the Committee on Sections.

7. The Treasurer shall receive all monies paid into the Section, deposit such monies in a bank to the account of the Section, and shall pay all bills of the Section out of the Section funds, keep all accounts and financial records of the Section, and submit an annual report to the national office. The Treasurer shall also be the Book Sale Representative for the Section with responsibility for the sale of books at each of the Sectional meetings.
8. The Information Officer will edit the Newsletter and run the Section web site, posting items sent by other officers and also posting other items the Information Officer thinks appropriate. The Information Officer will set up and maintain links to other sites as appropriate, and will solicit, compose, and post the Section Newsletter twice a year.
9. The President-Elect shall preside at meetings in the absence of the President.
10. The Executive Committee shall conduct the affairs of the Section between meetings. It is empowered to fill any vacancy among the officers of the Section until the time of the annual election. In case of a vacancy in the office of President-Elect, a candidate for the office of President will be selected by the nominating committee and presented for election at the annual election.

ARTICLE IV

Meetings

1. The Section shall hold two regular meetings each year, one in the fall and the other in the spring.
2. The time and place of these meetings shall be decided by the Executive Committee.
3. Robert's Rules of Order shall govern the procedure in all business meetings of the Section.
4. Programs for all meetings shall be arranged by the Executive Committee.
5. The Section may hold special meetings, the time and place of which shall be determined by the Executive Committee, unless otherwise designated by a resolution passed at a regular meeting.
6. The members of the Section shall be notified in writing by the Secretary of any regular or special meeting at least fifteen days in advance of the meeting, or notification of the regular or special meeting shall be posted on the section web site and members notified in writing of the posting at least fifteen days in advance of the meeting. A quorum shall consist of not less than twenty members of the Section and no business may be validly transacted at meetings where less than a quorum is present.

ARTICLE V

Finances

1. A registration fee for each non-student member shall be collected at each regular meeting. The Executive Committee will determine annually the amount of the fee.
2. The assets of the Section shall be used exclusively to further the purposes of the Section.

3. In the event of the dissolution of the Section the remaining assets will be returned to the national organization to be used for a purpose consistent with the purposes of the national organization.

ARTICLE VI

Committees

1. The president of the section will be empowered to appoint ad hoc committees, or to make appointments to fill vacancies on standing committees.
2. The teaching award committee shall consist of the member-at-large in the last year of their term and the two most recent teaching award winners other than the member-at-large. Terms of service are implicitly defined. The committee is charged with eliciting award nominations in collaboration with departmental liaisons and chairs. The committee will select a winner from among those nominated. Unsuccessful nominations may be re-activated.
3. The service award committee shall consist of the president-elect and the two most recent service award winners other than the president-elect. Terms of service are implicitly defined. The committee is charged with eliciting award nominations in collaboration with departmental liaisons and chairs. The committee will select a winner from among those nominated. Unsuccessful nominations may be re-activated.

ARTICLE VII

Amendments

1. Amendments may be proposed by any member of the Section or by the Executive Committee. Proposed amendments shall be submitted in writing by the Secretary to all members of the Section at least fifteen days prior to the time of the meeting at which the amendments are to be considered, or proposed amendments shall be posted on the Section web site and members notified in writing of the posting at least fifteen days prior to the meeting at which the proposed amendments will be considered.
2. An amendment presented according to Article VII(1) may be approved, rejected or approved with minor modifications, by a majority of the votes cast by members at any meeting of the Section, subject to the approval of the Board of Governors of The Mathematical Association of America.

Adopted April 1978/updated May 1993/amended April 1999/amended June 2004/amended August 2014

Information for Contributors

Submissions should be sent electronically (preferred method) to the information officer

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