

MSCS



Mess

Department of Mathematics, Statistics and Computer Science
St. Olaf College
Northfield, MN 55057

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This Week's Colloquium

Title:	The Alternating Sign Matrix Conjectures
Speakers:	Eric Egge
Time:	1:30 pm Tuesday, November 14 <i>(Treats at 1:15)</i>

Abstract: In a 1991 article in the *Mathematical Intelligencer*, David Robbins made the following proclamation.

“These conjectures are of such compelling simplicity that it is hard to understand how any mathematician can bear the pain of living without understanding why they are true.”

The conjectures Robbins was referring to concern the number of alternating sign matrices of various types, and so are sometimes called the alternating sign matrix conjectures. In this talk Professor Egge will explain what alternating sign matrices are and what the alternating sign matrix conjectures say about them. One of the most striking of these conjectures was proved by Greg Kuperberg in 1995, and although Kuperberg was not the first to prove this conjecture, his proof was certainly the simplest. Professor Egge will describe the surprising connection between alternating sign

matrices and a model of ordinary ice that led to this simplicity.

About the presenter: A son, grandson, great-grandson, cousin, and nephew of various St. Olaf graduates, Eric Egge is a Carleton alum who uses his position in the Mathematics department at Carleton to make connections at St. Olaf.

Prepare your Talents...

Mark your calendars! The focal point of the MSCS spring social season, the annual Math Recital, has been scheduled. The event will take place at 7:00pm on Wednesday, April 18th in Ytterboe Lounge. All employees and students of the MSCS are invited, as well as anyone who knows an employee or student of the MSCS. Performers, start practicing. Questions? See (or email or phone) Steve McKelvey.

Carlson Winners!

Congratulations to everyone who competed in the Carlson problem solving competition this year! Six teams turned in solutions. First place (\$35 per team-member) goes to Team Koala Magick, Matthias Hunt, Paul Tveite, and Joey Paulsen. Second place (\$25 per team member) goes to Team St. Olaf, Thomas McConville, Charlie McEachern, and Dan Endean. First place in the

lower-level competition (\$35 per team member) goes to Team First Years Plus, consisting of Koya Kato, Philip Gipson, and Nathan Clement. The other three teams (Team Disjoint, Team The Good Ole College Try, and Team Awesome) get the enjoyment of solving some interesting problems, and a \$10 gift certificate to the Lion's Pause.

For those who feel left out from the joy and profit of solving problems, the North Central Section Mathematical Association of America team problem solving competition is coming up soon, on Saturday, November 11. Contact Josh Laison if you're interested in participating.

Knowles Science Teaching Foundation

The Knowles Science Teaching Foundation (KSTF) is seeking applicants for its sixth cohort of Teaching Fellows – individuals who have at least a bachelor's degree in a physical science, engineering or mathematics and now want to teach **science** or **mathematics** in US high schools. KSTF was established in 1999 to strengthen the quality of science and mathematics teaching in the United States. KSTF Teaching Fellowships support individuals professionally and financially for up to five years through a teacher preparation program to eligibility for tenure.

Eligibility Requirements:

Applicants must have earned at least a bachelor's degree in a physical science, engineering or mathematics within the past five years and be committed to teaching secondary science or mathematics in US schools.

Award Information:

Fellowships will be awarded to up to 15 individuals in the science program and up to 15 in the mathematics program. While individuals are

enrolled in a recognized teacher certification program, fellowship support includes tuition assistance and a monthly stipend as well as room, board, travel expenses and fees for summer professional development activities. Once fellows have begun teaching full-time, they are eligible to apply for instructional materials grants and school-site mentor support. Additionally, the award includes room, board and travel expenses to three Fellows' Meetings per year and membership in a professional organization.

Application Information:

Application instructions can be found online at www.kstf.org. The deadline for applications is January 16, 2007. Only online applications will be considered.

For additional information please contact Jennifer Mossgrove, jmossgrove@kstf.org (mathematics) or Rachel Foster, rfoster@kstf.org (science).

Job Openings for Math Majors!

The Target Corporation Technology Leadership Program (TLP) is designed to place team members on the fast track toward developing their leadership and technology skills. Team members will rotate through Infrastructure, Development and Support, while receiving hands-on technical training and leadership development. The goal of this program is to provide them with the resources and tools to become a future leader in Target Technology Services.

Team members will participate in an initial training program and be paired with a mentor to get their career off to a great start. As they progress toward a management position, they will receive both technical and leadership training. The Technology Leadership Program will position them to

understand both the Target Corporation business strategy and how to be a Target Brand Manager.

Career path of a TLP: Programmer Trainee>> Associate Systems Engineer>> Systems Engineer>> Senior Systems Engineer>> Business Analyst>> Manager>> Group Manager>> Senior Group Manager.

For more information please contact Jill Dietz (dietz@stolaf.edu).

Jokes for Geeks

A mathematician and a non-mathematician are sitting in an airport hall waiting for their flight to go. The 'non' has terrible flight panic.

“Hey, don’t worry it’s just every 10000th flight that crashes.” - Says the mathematician.

“1:10000? So much? Then it will surely be mine!”
- Replies the 'non'.

“Well there is an easy way out. Simply take the next plane. It’s much more probable that you go from a crashing plane to a non-crashing plane than the other way around. So you are already at 1:10000 squared.”

Problem of the Week (POW)

All Isosceles. The late great Paul Erdős originally posed this week’s problem. Find 8 points in space so that for each of the 56 triples of points they determine, at least two of the three distances between them are equal.

Submit all solutions before the appearance of the next problem to Josh Laison in person, by e-mail (laison@stolaf.edu), or by cup-and-string phone.

The first correct solution gets a prize; all correct solutions get fame and glory. Preference for the prize goes to problem-solvers who haven't won one yet.

Solution to The First Prime. Congratulations to Paul Tveite, who submitted a correct solution and won a "Trash Titan" industrial waste Matchbox truck, and to Reid Price, who submitted the following correct solution:
The first prime on the list is 8,808,808,889, or "eight billion eight hundred eight million eight hundred eight thousand eight hundred eighty nine".

Our alphabetical list will begin with: eight [8], eight billion [8,000,000,000], eight billion eight [8,000,000,008], eight billion eight hundred [8,000,000,800], . . . , eight billion eight hundred eight million eight hundred eight thousand eight hundred [8,808,808,800], Clearly none of these are prime, as they are all even (and not 2). It can also be seen that we could not somehow diverge from this initial sequence before this point, as any tail-expression beginning with eight will trump any other tail-expression, and alphabetically (billion < hundred < million < thousand < trillion) -- thus "eight hundred eight thousand", while using 'thousand', is still earlier on the list than "eighteen", the number after 'eight' alphabetically. A computer search of the numbers in the interval (8,808,808,800 - 8,808,808,900) reveals three primes: 8,808,808,807; 8,808,808,843; 8,808,808,889. The first of these three is 8,808,808,889.

If you would like to submit an article or math event to be published in the Math Mess, e-mail meyerm@stolaf.edu or dolank@stolaf.edu.

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