

MSCS



Mess

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St. Olaf College
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This Week's Colloquium

Title:	A Math-tacular Summer in Europe
Speakers:	Joe Anderson, Joey Paulsen, and Paul Tveite
Time:	1:30 pm Tuesday, September 26 (treats at 1:15)
Place:	SC 182

Do you want a chance to travel to Europe for free and obtain a global perspective on your favorite subject, mathematics? Then the NSF grant program, supervised by Bruce Hanson and Paul Humke, is just right for you! Come listen to three of your fellow students, Joe Anderson, Joey Paulsen, and Paul Tveite, talk about their summer experiences in Europe studying math.

Joe traveled to the Czech Republic and will be presenting "Czeching Out Dynamical Systems" including pictures and information on the crazy people he met, the city he worked in, and, oh yeah...math!

Joey and Paul studied in Poland and will share their presentation, "Let P be a Polish Space..." that covers their research centered around a branch of real analysis called measure theory. They will elude to the content of their work, focus on the experience of performing

research, discuss the challenges of working with Polish mathematicians, and share pictures of the city and country life in Poland.

About the presenters: Joey is a self-taught juggler and unicyclist who avoided the Polish and Hungarian barbers by cutting his own hair in Lodz. He cannot whistle and he used to own a pet salamander. Paul makes killer French toast and can negotiate foreign public transit better than some natives. Together, Paul and Joey accumulated over 400 hours of Eastern European train-travel. Joe, on the other hand, lived on meager portions in the Czech Republic due to the language barrier, which made ordering food a challenge. Joe is also known for his creative Halloween costumes including a pterodactyl, a road with cars, and a bride. He is also an All-American swimmer and can clap with one hand.

Summer Math Opportunity at NSA

The Mathematics Research Group at the National Security Agency (NSA) is offering an exceptional summer program for undergraduate mathematics students. This program presents a unique opportunity for students to work directly with NSA mathematicians on mission-

critical problems and experience the excitement of the NSA mathematics community.

Each summer, the Director's Summer Program invites two dozen exceptional students to collaborate with each other and with NSA mathematicians on problems critical to the intelligence gathering and information assurance missions of the agency. Problems often involve applications of abstract algebra, geometry, number theory, probability, statistics, combinatorics, graph theory, algorithms, computer science, and analysis. Each student will choose one or two of a variety of presented problems to focus on for his or her research. Students are expected to document their work in technical papers which are internally published at the agency.

DSP, located at Fort Meade, Maryland, runs from end of May through middle of August. Students are paid a salary commensurate with their education level. The deadline for applications is **October 15th** each year. To apply, a student should send a resume, at least two letters of recommendation from faculty members familiar with their technical work, and current transcripts. A list of courses which will have been completed by the end of the academic year should also be included. For additional information, call Mrs. Jacquie Holmgren, Program Manager at (301) 688-0983 or contact Professor Jill Dietz. (dietz@stolaf.edu).

Join the MAA!

Do you like Pi Day celebrations, puzzles, bowling, and t-shirts? If you answered 'Yes!' to any of these questions (and you like mathematics), MAA is the place for you! MAA, Mathematical Association of America, is a student run organization that is in charge of many social and informational events in the

math department. The great thing about MAA is that everyone is welcome! As long as you like math, you can be part of MAA regardless of you major. If you have any questions or you want to join, simply e-mail reedt@stolaf.edu or come to the first meeting on Wednesday, September 27th at 8:00 in SC 182.

Get Inducted

The Wall of Fame (photo gallery of mathematics majors, computer science majors and statistics concentrators) has significantly fewer members than last spring due to an annual ritual called graduation. If your mug shot -- oops, portrait -- should be on The Wall you have two options: 1) talk one of your professors into inviting the unofficial MSCS photographer to your class to 'shoot' you and your friends or 2) contact Peder Bolstad (bolstad@stolaf.edu, Old Main Annex Room 18) for a personal 'shooting.' Please excuse the violent overtones, but if that's what it takes to fill up The Wall... we're sticking to our guns!

Sport Your Math Pride

Did you forget to buy your math t-shirt last year? If you did, then you're in luck! If you didn't forget and you want another one, then you're still in luck! There are still t-shirts from the '05-'06 academic year available for only five dollars each. If you would like to purchase one, please see Donna Brakke in the Math Office for more information!

Jokes for Geeks

Question: How does a mathematician induce good behavior in her children?

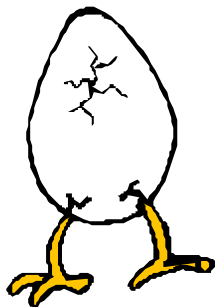
Answer: “If I've told you n times, I've told you $n+1$ times...”

Question: What does the little mermaid wear?

Answer: An algae-bra.

Problem of the Week (POW)

Egg Drop: You live in a 36-story building and you want to know which floors are safe to drop eggs from and which floors will cause the eggs to break. You only have 2 eggs. You know that: 1) Any egg which survives a fall can be reused. 2) Any egg which breaks cannot be reused. 3) If an egg breaks, it would have broken from a larger height. 4) If an egg survives, it would have survived from a smaller height. 5) The first floor might already be too high, or it could be that the 36th floor might still be safe. **What is the smallest number of egg-droppings that is guaranteed to work?**



Submit all solutions before next Monday to Josh Laison in person, by e-mail (laison@stolaf.edu), or by semaphore. The first correct solution gets a prize; all correct solutions get fame and glory.

Solution to the Problem of the Summer

The Question: Suppose that the temperature at a particular spot on the west bank of the Mississippi River has been tracked continuously for a millennia. Suppose, also, that there is a precise agreement between the temperature exactly 2006 years ago and the temperature right now. Between then and now, must there have been a pair of times, exactly one year apart, when the temperatures precisely agreed with each other?

The Solution: Yes! Let $f(t)$ be the temperature at time t , where $t=0$ is exactly 2006 years ago, and $t=2006$ is right now. Let $g(t)=f(t)-f(t-1)$. Consider the sequence of numbers $g(1)$, $g(2)$, ..., $g(2006)$. If any of them is zero, then we're done. If they're all positive, it means that $f(0)<f(1)<...<f(2006)$. If they're all negative, it means that $f(0)>f(1)>...>f(2006)$. But we know that $f(0)=f(2006)$. So some of them must be positive and some of them must be negative. Then since $g(t)$ is continuous, by the Intermediate Value Theorem, there must be a time T when $g(T)=0$. Therefore $f(T)=f(T-1)$.

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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