MSCS ⚜ MESS

Next Friday's Research Seminar

Title:	Catalan and Peri-Catalan Numbers: Counting the Effects of Nonassociativity
Speaker:	Stefanie G. Wang
Time:	Friday, November 18, 3:40pm
Place:	RNS 204

About the talk: Catalan numbers have many interpretations in mathematics. To name a few, the n-th Catalan number counts the different number of ways to triangulate a convex $(n + 1)$-gon, the number of rooted binary trees with n leaves, and the number of ways to bracket a nonassociative product of n factors.

A quasigroup has a nonassociative multiplication that is cancelative, so it comes with right and left divisions. We will introduce peri-Catalan numbers that count the reduced quasigroup words in a single argument appearing n times.

About the speaker: Stefanie Wang is a fifth-year Ph.D candidate in Mathematics at Iowa State University, expecting to complete her degree in May 2017. Her work is in nonassociative algebras, and her dissertation research consists of two main projects: the first involves finding a good isomorphism invariant for linear quasigroups, which involves representation theory of quasigroups and category theory, and the second second project has a combinatorial flavor — examining the number of inequivalent length n quasigroup words in a single generator that involve all three quasigroup operations, the so-called n-th super-Catalan number.

Stefanie's "for funsies" math interests lie in classical geometry, and she contends that "If you haven't studied The Elements, The Conics, The Almagest, or Principia, you're missing out."

MSCS T-shirt design contest

Calling all creative math lovers! The MSCS department is looking to create yet another cool math-related t-shirt, but we need your help! We are looking for creative t-shirt designs that relate to mathematics. Please submit your radical t-shirt designs to Miranda Tilton (tiltonm@stolaf.edu) by Monday, November 14th 2016, for the chance to win a free t-shirt and free pause pizza!

Two events, one night

Craving more autumn information sessions? Get a double-dose of your daily fix on Thursday, November 17th!

In last week's issue of the Mess, we included some resources for summer research opportunities for undergraduates, including the NSF-funded REU program. If you might be interested in learning more, stop by RNS 210 from 6:00-6:30pm. Questions addressed in this session include, among others, "How do I find, choose, and apply to REUs?" and the ever-controversial "Is an REU really fun or is it really, really fun?"

Afterward will follow a mathematics graduate school information night from 6:50-7:30pm in the same location. For those intrigued by the possibility of studying math after Olaf, this session will provide valuable insight, address-

ing questions such as "How and when do I decide I want to go to grad school?" and "What kind of careers use a masters or PhD in mathematics?"

For those nonplused by information sessions, the MSCS department hopes to tempt you nonetheless with pizza and discussion in-between the two sessions, from 6:30-6:50pm.

Summer teaching opportunities

The previous issue of the Mess included three summer research opportunities aimed at introducing undergraduates to the process of conducting and disseminating MSCS-related research. This week, we offer information about four summer teaching programs in which St. Olaf students have participated. Keep posted for more opportunities in future issues. And of course, for internships contact the Piper Center or search under Math Summer Intern on indeed.com

Breakthrough Collaborative: Breakthrough draws undergraduates across the country from diverse majors and backgrounds and is not limited to those intending to pursue careers in education (neither is any prior coursework in education a prerequisite for applying). What successful applicants share in common is "a deep commitment to social justice and passion for working with middle-school students." For the first two weeks of the program, partic-ipants will learn techniques essential for a successful classroom, and for the remainder of the program participants will work with students under the guidance of an experienced educator. For more information, visit www.breakthroughcollaborative.org/teach

Program in Mathematics for Young Scientists: PROMYS is a is a residential program at Boston University running from July 2nd to August 12th that offers high school students the opportunity to learn advanced mathematics. Undergraduate math majors interested in learning and sharing mathematics act as counselors, grading number theory problem sets and answering students' questions. At the same time, counselors take advanced seminars and have generous access to members of the faculty. Housing and a stipend of \$3,400 are included. For more information, visit http://www.promys.org/counselors

Explo: Explo caters to students from grades 2 to 12, providing role models—including undergraduate faculty members—who teach courses, live among students in residence halls, chaperone trips, and participate in extracurriculars. In this way, the summer staff is involved in teaching in a variety of contexts, "expanding the notion of what learning is." The program runs from June 19th to August 5th, and applications are due December 5th. For more information, visit www.explo.org/