

MSCS MESS

Department of Mathematics, Statistics, and Computer Science
St. Olaf College, Northfield, MN 55057
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No Colloquium Next Monday

MSCS Picture Day!

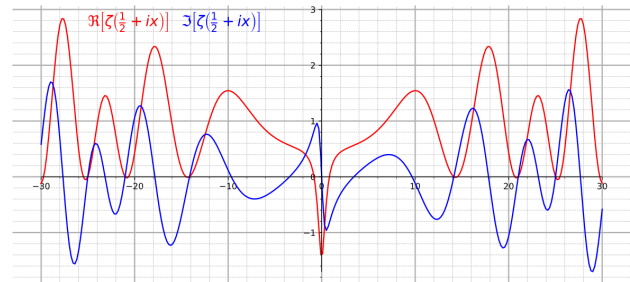
Still need to get a picture taken for our MSCS wall? There's one more day to get it taken. Visit RMS 307 (rain or shine) between 3:00 and 5:00 PM on October 2.

Next Friday's Research Seminar

Title: Snail Mail, Supercomputers, and the Riemann Hypothesis
Speaker: Kim Klinger-Logan
Time: 3:40 PM
Date: October 5
Place: RNS 204

About the Talk: The Riemann Hypothesis (RH) is one of the Clay Institute's Millennium Prize Problems, Hilbert's 8th problem, and has been open since 1859. This conjecture, if solved, would tell us about the distribution of the prime numbers among the integers. We will present a tale of recent progress towards solving RH which involves snail mail, supercomputers and, of course, some modern analysis.

About the Speaker: Kim Klinger-Logan is a sixth year PhD student at the University of Minnesota finishing her thesis in a part of analytic number theory called "automorphic forms." She is originally from San Diego, CA and has two dogs and a house in Northeast Minneapolis. In her free time, she loves rock climbing and hiking.



Northfield Undergraduate Mathematics Symposium (NUMS)

The annual Northfield Undergraduate Mathematics Symposium is going to be held at Carleton on October 2. Eight students from Carleton and St. Olaf will present their recent research in sessions starting at 3:40 PM and ending around 7:40 PM. Presenters include St. Olaf students Kyla Pohl, Jakob Hofstad, and Julie Yuldasheva. The talks will be at the Carleton Center for Mathematics & Computing room 206 and dinner will be provided. If you need transportation, contact Ellen at habero1@stolaf.edu. We hope to see you there!

NUMS: On Solvable Leibniz Algebras with an Abelian Nilradical

About Kyla Pohl's Talk: In this talk, we will dive into non-associative algebras by looking at Leibniz algebras, a generalization of Lie algebras. Leibniz algebras have a bilinear bracket operation $[\cdot, \cdot]$ that satisfies what is called the Leibniz identity:

$$[[a, b], c] = [a, [b, c]] + [[a, c], b].$$

In other words, right multiplication by any element c is a derivation. I will discuss the classification of

$2k - 1$ dimensional solvable Leibniz algebras with a k dimensional abelian nilradical.

This talk will start at 4:05 PM.

NUMS: Linear Factorization of Hypercyclic Functions for Differential Operators

About Jakob Hofstad's Talk: It is known that there exists a differentiable function f such that if one repeatedly differentiates f and creates a list out of the output functions, that any continuous function (within a finite interval) can be approximated by a function from this list to however small of an error that we desire. It is also known that similar results exist if the list is generated by other combinations of differentiation, which includes translation to the left or right by any distance. In our project, we construct such a function for each of the cases above as an infinite product of linear functions, which answers an open question posed by operator theory specialists. **This talk will start at 4:55 PM.**

To submit an article, event, or anything else for publication in the mess, email jadkow1@stolaf.edu; to receive the Mess digitally each Friday, email habero1@stolaf.edu; visit <http://wp.stolaf.edu/mscs/mscs-mess/> for a digital archive of previous MSCS Mess issues.

NUMS: Constructing Generalized Gelfand-Graev Representations

About Julie Yuldasheva's Talk: Generalized Gelfand-Graev representations (GGGRs) have originally been introduced by Kawanaka in 1985. They are important for number theory because special vectors from these representations appear in integral realizations of automorphic L-functions. L-functions have been a central object of study in number theory for over 150 years. In this project we focus on the structure of GGGRs of $GL(n)$, the group of all invertible $n \times n$ matrices, defined over a finite field. In particular, GGGRs are induced from the semi-direct product of a unipotent subgroup and the stabilizer subgroup of a character on the unipotent subgroup. The result of our project is a simple formula in terms of partition statistics for this elusive stabilizer subgroup. **This talk will start at 6:50 PM.**

Will Jadkowski, Editor
Dave Walmsley, Faculty Adviser
Ellen Haberoth, Mess Czar