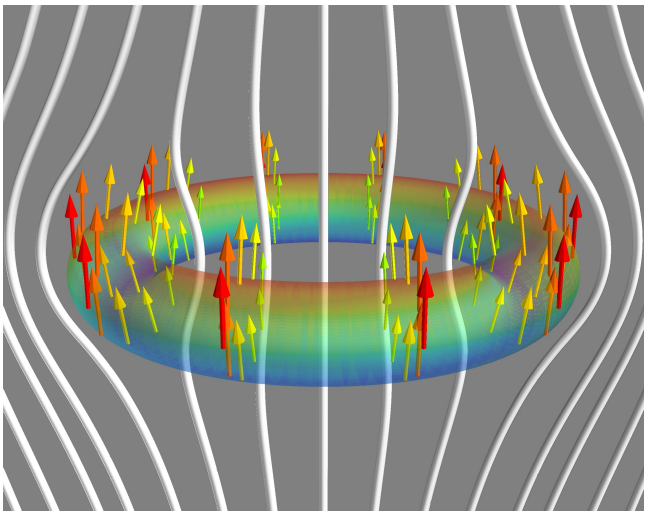
MSCS MESS

Department of Mathematics, Statistics, and Computer Science
St. Olaf College, Northfield, MN 55057
19 April 2019 | Volume 47, No. 21

Today's Research Seminar

Title:	Fluid Flows with Tiny Tubes
Speaker:	Will Mitchell '06
Time:	3:40 PM
Date:	April 19
Place:	RNS 204



About the Talk: The mechanical properties of thin fibers immersed in a viscous fluid are important in biological and industrial settings such as paper manufacturing, gel electrophoresis, and flagellar swimming. To simulate the fluid mechanical part of this problem, one turns to the Stokes system of partial differential equations. In this talk I will review the calculus of curves and tubes, motivate the use of integral equations as mathematical models, and finally show some recent numerical results on fluid flow around closed tubes.

About the Speaker: Will Mitchell studies viscous fluid mechanics. He earned a B.A. at St. Olaf College and spent several years teaching mathematics at the junior high level, first in Burkina Faso with the U.S. Peace Corps and later at the International School of Minnesota. Will then completed master's and doctoral programs at the University of Alaska-Fairbanks and the University of Wisconsin-Madison, respectively, and now teaches at Macalester College.

Next Monday's Colloquium

Title:	Blockchain Economics: Counteracting Tech Monopolies' Ability to Use Data and AI to Manipulate
Speaker:	Ashley Hodgson
Time:	3:30 PM
Date:	April 22
Place:	RNS 310

About the Talk: The talk will give a basic explanation of
(a) what blockchain does in microeconomics settings
(b) why governance is important for blockchain's success
(c) how mathematicians are needed to solve "zero knowledge proofs" to move the industry forward
(d) how an ecosystem of blockchains will likely evolve

About the Speaker: Professor Ashley Hodgson is a member of St. Olaf's Economics department and is particularly interested in research into Healthcare, Medicare, and Public Health.

Math Club Trivia Night

Pizza! Eternal Glory! Lemonade! Prizes! If you desire these, make your way over to the sixth floor lounge of Regents Hall of Mathematical Sciences to compete in the third annual Math Club Trivia night. Rumor has it MSCS Professors will be in attendance.

Who Anyone interested! Friends are welcome too
What Trivia!
When 6-8pm on April 24
Where RMS 6th floor lounge
Why For food, fun, and fame!

Math Across the Cannon	
Title:	Topological Methods for Data
Speaker:	Robert Ghrist
Reception:	3:00 PM
Talk:	3:30 PM
Date:	May 2
Place:	Olin 141, Carleton College

About the Talk: Mathematics implicates motions and machines; computations and colorings; the strings and arrows of life. Perhaps the grandest expression of the beauty and power of Mathematics is revealed in the quantification and qualification of that which is not there: holes– the mathematics of holes– will be surveyed with a fresh look at the many ways in which topology is used in data, networks, neuroscience, and optimization.

Math Across the Cannon	
Title:	A Vision of Multivariable Calculus
Speaker:	Robert Ghrist
Talk:	7:00 PM
Reception:	8:00 PM
Date:	May 2
Place:	Viking Theater

About the Talk: This talk will address certain challenges in teaching multivariable calculus. Classical texts emphasize calculus in dimensions two or three, based on 19th and 20th century applications to physics. At present, many of our students are more motivated by data and systems in higher dimensions. How can a calculus course best adapt to these needs, without overwhelming students (or professors)? This talk will outline a plan for increasing both the dimension and sophistication of multivariable calculus instruction with the use of video. Topics covered will include the use of visualization, matrix algebra, and differential forms. Note: Although the talk is about teaching multivariable calculus, it will nonetheless be accessible to and interest a wide audience. One St. Olaf Professor described his talks as "always terrific, even for non-specialists."

About the Speaker: Robert Ghrist is the Andrea Mitchell University Professor of Math and Electrical/Systems Engineering at the University of Pennsylvania. He is known for his work in the area of applied topology, specifically applications to robotics, self-assembly, sensor networks, signal processing, data analysis, and more. Ghrist has been the principal investigator on grants totaling over 10 million dollars, and he won the Chauvenet Prize from the Mathematical Association of American for his paper "Barcodes: The Persistent Topology of Data." Ghrist is also known for his teaching and, in recent years, has leveraged the power of video and animation for teaching calculus, most notably in his meticulous Calculus Blue series of videos, available on his Youtube channel.

Congrats to PME Inductees

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.*

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