MSCS MESS

Department of Mathematics, Statistics, and Computer Science
St. Olaf College, Northfield, MN 55057
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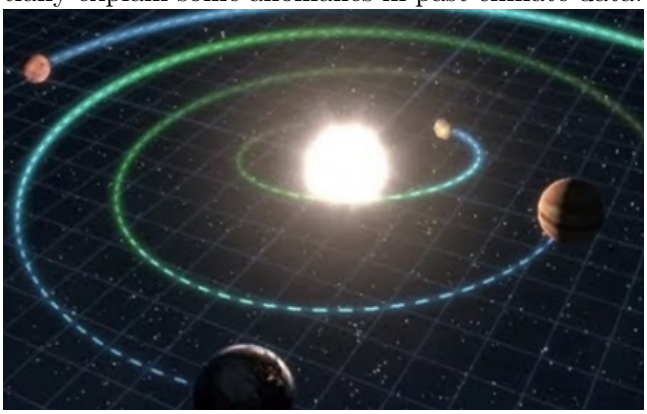
Today's Research Seminar

Title:	How Changes In Orbital Elements Could Affect Earth's Climate
Speaker:	Harini Chandramouli
Time:	3:40 PM
Date:	February 14
Place:	RNS 204

About the Talk: The details of the way in which the Earth orbits the Sun can have profound effects on Earth's climate. Elements such as the Earth's tilt or how tight the orbit is can affect temperature distribution or glacial formation. One event that could lead to such changes is if a star passes near our solar system close enough to disturb Earth's orbit. These disturbances in the orbit could have lasting effects on the climate of Earth and could potentially explain some anomalies in past climate data.



About the Speaker: Harini Chandramouli is a PhD student in Applied Mathematics at the University of Minnesota. She is interested in applied dynamical systems and their applications to celestial mechanics and climate. Outside of academics, she enjoys traveling, cooking, and reading.

Next Friday's Research Seminar

Title:	Bounding ℓ-torsion in class groups of families of number fields
Speaker:	Caroline Turnage-Butterbaugh
Time:	3:40 PM
Date:	February 21
Place:	RNS 204

About the Talk: Let K denote a number field (a finite extension of $\mathbb{Q}$) and consider the class group C_K. The size of C_K, the class number, can be thought of as a measure of the failure of unique factorization in the ring of integers K. One way to study the class number is to consider the size of each ℓ-torsion subgroup, $C_K[\ell]$, where ℓ is a fixed prime. It is conjectured that the size of $C_K[\ell]$ should be small relative to the absolute discriminant of K, and this conjecture has been proven in full in only one situation (by Gauss): when $\ell = 2$ and K is an imaginary quadratic field. In this talk I will present an effective Chebotarev density theorem that holds for all but a possible zero-density subfamily of certain families of number fields of fixed degree. As an application, we will obtain nontrivial average upper bounds on ℓ-torsion in the class groups of the families of fields.

About the Speaker: Caroline Turnage-Butterbaugh is an Assistant Professor of Mathematics at Carleton. Her research interests include group theory and number theory. She also enjoys tap dancing and traveling.

Seeking CS Tutor

The Northfield Community College Collaborative is seeking a volunteer tutor for the spring semester.

The tutor would help a student currently taking Web Page Design I, Intro to Mobile Application Development, and Web Animation courses. If you are interested, contact jamie@northfieldhci.org.

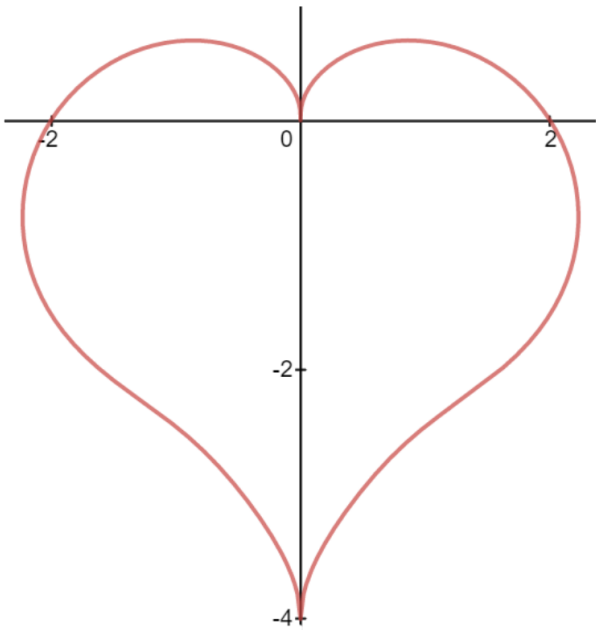
Future Colloquium

Title:	A Feast of Experimental Mathematics
Speaker:	Marc Chamberland
Time:	3:30 PM
Date:	March 9
Place:	RNS 310

About the talk: The use of computer packages has brought us to a point where the computer can be used to discover new mathematical patterns and relationships, create impressive graphics to expose mathematical structure, falsify conjectures, confirm analytically derived results, and perhaps most impressively for the purists, construct formal proofs. This talk will give some examples from my research concerning geometry, integrals, binomial sums, dynamics, and infinite series.

About the Speaker: Marc Chamberland is the Myra Steele Professor of Natural Sciences and Mathematics at Grinnell College. He has published 50 research articles in various areas, including differential equations and number theory, often with the tools of Experimental Mathematics. He is also an advocate of popularizing mathematics, including his 2015 book Single Digits and his YouTube channel Tipping Point Math.

Happy Valentine's Day!



$$r = 2 - 2\sin\theta + \sin\theta\frac{\sqrt{|\cos\theta|}}{\sin\theta+1.4}$$

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