

MSCS Mess

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St. Olaf College, Northfield, MN 55057

15 November 2013
Vol. 42, No. 09

This Week's Colloquium

Title:	Perfect powers in orbits of dynamical systems
Speaker:	Rafe Jones, Carleton
Date:	Monday, November 18th
Time:	3:30 PM
Location:	RNS 410

About the talk: The field of arithmetic dynamics seeks number-theoretic information about objects coming from dynamics. A prime example (pun intended) of such an object is the orbit of a point under a polynomial or rational function. For instance, begin with the number 1 and repeatedly apply the polynomial $f(x) = x^2 + 1$ to get the sequence 1, 2, 5, 26, ... which is called the orbit of 1 under $f(x)$. How many of these numbers are squares? How many are prime? The first question is easy, while a resolution to the second one might win a Fields medal. I'll talk about generalizations of the first questions: what kinds of rational functions can have an orbit containing infinitely many squares? How about infinitely many cubes? More generally, how about infinitely many m th powers for some fixed $m > 1$? This is work carried out with two Carleton students this past summer.

About the speaker: I went to Amherst College as an undergrad, then spent a year as a visiting student at the Ecole Normale Supérieure in Paris. I then did my graduate work in number theory and dynamical systems under the guidance of Joe Silverman (who'll be giving the Math Across the Cannon talk in a few months) at Brown University. After a post-doc at the University of Wisconsin and a few more years teaching in Massachusetts, I came to Carleton last year. I enjoy running, speaking French, and playing with my one-year-old daughter.

This Week's Seminar

Title:	Coloring the integers with Rainbow Arithmetic Progressions
Speaker:	Michael Young, Iowa State University
Date:	Friday, November 22nd
Time:	3:35 PM
Location:	RNS 204

About the Seminar:

A k -term arithmetic progression is a sequence of the form $a, a + d, a + 2d, \dots, a + (k - 1)d$, where a and d are nonnegative integers. Van der Waerden's Theorem states that given a set of colors there exists an interval $[1, n]$ such that any coloring of the integers, using all the colors, will contain a k -term arithmetic progression with each term having the same color. Given a set of colors and $k > 0$, actually determining n , called a *van der Waerden number* has proven to be a very challenging problem. In this talk, we will discuss some known results about van der Waerden numbers and introduce anti-van der Waerden numbers. An *anti-van der Waerden number* is the number of colors needed to guarantee that any coloring of the interval $[1, n]$ with all the colors must contain a k -term arithmetic progression with each term having a distinct color.

Math REU Night

Do you want to know what its like to participate in math research? Are you curious how to find and apply for Math research experiences for undergraduates? Then come to the Math REU Night hosted by PME on Monday, November 18th at 7pm in Regents 310. There will be a panel of students to describe their REU experience, the benefits of the experience, and what they learned.

MS in Science, Technology, and the Environment

The Masters of Science in Science, Technology, and Environmental Policy prepares individuals with natural science or engineering backgrounds to assume roles in public policy development and implementation. If you love science and would like to use it to help the public, consider applying to the MS-STEP program at the University of Minnesota. The program is located within the Humphrey School of Public Affairs, and students can also get a dual degree with an MS-STEP and JD. If you would like more information, please see <http://bit.ly/17W8mjG>.

Hiring Data Scientists!

Are you a senior looking for a job after graduation? Do you know Python and R? A San Francisco startup, 6Sense Insights Inc, is looking to hire people for their office in San Francisco or possibly Minneapolis. The company is focusing on creating a product to automatically generate predictive models for customers. More information and a job posting can be found at <http://www.linkedin.com/jobs2/view/9684996>.

Math Joke of the Month

Math: How do you make seven an even number?
 You delete the 's'!

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If you would like to submit an article or event to be published in the Math Mess, e-mail jacobsoj@stolaf.edu