



College of Science and Mathematics

Department of Mathematics

MATH TALKS 2015-2016

The Department of Mathematics weekly seminar series. Math Talks is open to all KSU faculty, students, and invited visitors to present any math or math-related topic. Seminars typically require little or no advanced mathematical knowledge are open to anyone.

**Unless specified otherwise, seminars are held Thursdays 12:30-1:45pm in D-237 (Marietta campus).*

Thursday, April 14, 2016

- Speaker: **Dr. Josip Derado**, Kennesaw State University
- Title: *TBA*

Thursday, March 24, 2016

- Speaker: **Dr. Jennifer Vandebussche**, Kennesaw State University
- Title: *Hall Precoloring Extensions: Relating Matchings, Independent Sets, and Coloring*
- Abstract: My research in graph theory has led me to results in the fundamental areas of matchings, independent sets, and coloring. In this talk, I will briefly describe some of my results in these areas. I will then discuss how one of my current research projects, Hall precoloring extensions of graphs, neatly ties all of these areas together. The talk will be introductory in nature, and it should be accessible to a wide audience.

Thursday, March 10, 2016

- Speaker: **Prathima Kathiresan**, Urban Teachers
- Title: *Building Secondary Mathematics Teachers in Urban Education*
- Abstract: Every child deserves a great teacher. Yet students in urban districts often receive the least effective and least experienced teachers available. Urban Teachers is changing the equation in urban education, offering high-need schools a supply of effective teachers who are ready to make a difference in students' lives and are committed to a career in teaching. This conversation will address the need, our mission, and development of a secondary mathematics curriculum that leads to a Masters of Science in Education degree from the Johns Hopkins University School of Education, the #1 ranked Graduate School of Education in the country.

Thursday, February 18, 2016

- Speaker: **Dr. Megan Cream**, Spelman College
- Title: *To Graphs and Beyond!*
- Abstract: This talk will begin with an introduction to the exciting field of graph theory. We will cover the concepts and definitions necessary to ultimately understand a recently popular research area in graph theory. As evidenced by the title, we will begin with the very definition of a graph, and progress until we can understand a newly defined graph property called chorded pancyclicity. Historically, there have been many results concerning sufficient conditions for implying the existence of certain sets of cycles in graphs. The research that is the focus of this talk, aims to extend many well known results on sets of cycles in graphs to similar results on sets of chorded cycles. We will investigate a density condition and forbidden subgraphs in claw-free graphs that imply the new property of chorded pancyclicity. This is joint work with Ronald J. Gould and Kazuhide Hirohata.

Thursday, November 5, 2015

- Speaker: **Dr. Josip Derado**, Kennesaw State University
- Title: *Generalized Viète Formulas Part Deux*
- Abstract: This week on Math Talks we will continue discussing Generalized Viète Formulas. The last time we got an overall picture. In this talk we will go through the main Theorems and results.

Thursday, November 5, 2015

- Speaker: **Dr. Josip Derado**, Kennesaw State University
- Title: *Generalized Viète Formulas - Putting geometry back into infinite products*
- Abstract: In 1593 Viète derived the first known infinite product identity. His proof was based on geometry. Since then, infinite products were mostly used as an analytical tool and their geometric background had been forgotten. This changed at the end of the 20th century with the discovery of wavelets and a new approach to self-similar sets and other types of reptiles. We will describe how Viète's formula naturally arises from the interplay between the geometry (reptiles) and analysis (wavelets).

Thursday, October 29, 2015

- Speaker: **Dr. Lake Ritter**, Kennesaw State University
- Title: *Modeling some of the bio-chemistry of atherogenesis*
- Abstract: Atherosclerosis is a slow, progressive disease that is a primary contributing factor in heart disease (the number one cause of adult death in the United States) as well as the cause of stroke, peripheral artery disease, and pulmonary embolism. In this talk, I will introduce the disease process with a focus on the inflammation driven formation of fatty plaques in the arterial wall. I will walk through construction of a mathematical model of some of the key bio-chemical processes characterizing atherosclerosis. Plaque initiation, a.k.a. Atherogenesis, is proposed as corresponding to instability of an otherwise healthy state to an inflammatory trigger. Some analytical results of the model will be offered with an eye towards a bio-medical interpretation.

Thursday, October 22, 2015

- Speaker: **Dr. Jiu Ding**, The University of Southern Mississippi
- Title: *Dynamical Geometry: From Order to Chaos and Sierpinski Pedal Triangles*
- Abstract: We take a pleasant and relaxed sightseeing on the way from order to chaos in the garden of dynamical geometry. First, we demonstrate triangle and polygon iterations with regular eventual behavior. Then, irregular behavior appears when iterating pedal triangles. New fractals, called Sierpinski pedal triangles, will be constructed. Finally, several mathematical results on the fractal dimension of Sierpinski pedal triangles will be presented.

Thursday, October 15, 2015

- Speaker: **Dr. Vira Babenko**, The University of Utah
- Title: *Mathematical model of DBS as a treatment for neurological disorders*
- Abstract: Parkinson's disease is a chronic, degenerative neurological disorder that affects one in 100 people over age 60 and causes major movement dysfunction. While the average age at onset is 60, people have been diagnosed as young as 18. An estimated 7 to 10 million people worldwide are living with Parkinson's disease. In this talk we will explore causes of this disease and mathematical models of one very promising treatment - Deep Brain Stimulation.