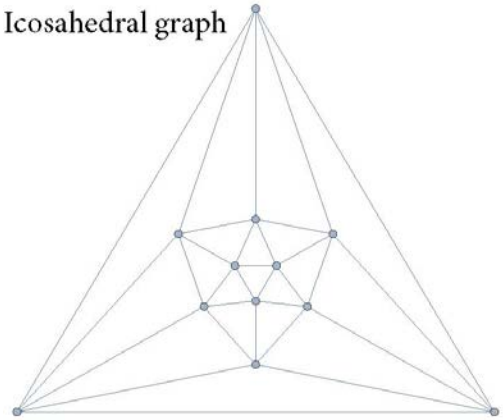
Idaho State University Department of Mathematics & Statistics

Colloquium

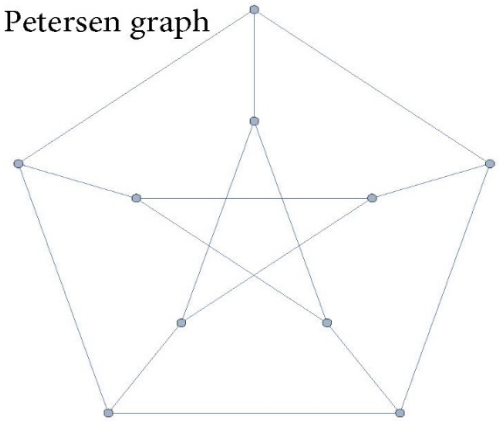
Traversing Symmetric Graphs

Abstract: Graph theory is the study of objects like in the pictures, represented as vertices connected by edges. Graphs, including those with a great deal of symmetry, are of interest in their own right, are useful within many areas of mathematics and statistics, and can be used to model connections and relationships in computer science, chemistry, biology, physics and the social sciences. Questions about traversing graphs range from easy to extremely challenging. For example, is there a path that visits all twelve vertices in the icosahedral graph below exactly once? What about through the ten vertices in the Petersen graph? Can you find such a path that also returns to the initial vertex? Conjectures dating from the early 1970s about the existence of such paths in two broad classes of highly symmetric graphs remain far from resolved. We will explore the statements of these conjectures, a couple of counter conjectures, and some recent progress.

Icosahedral graph



Petersen graph



Dr. Cathy Kriloff

Professor

Idaho State University

Friday, September 28, 2018

4:00 PM

PS 307

For colloquium attendees, there will be light refreshments in PS 317 at 3:30 PM.