VCU Discrete Mathematics Seminar

Strongly Regular Cayley Graphs

Prof Ken Smith
Sam Houston State University

Tuesday, October 21
12:30–1:20
4119 Harris Hall

Strongly regular graphs "stand on the cusp between the random and the highly structured", says combinatorialist Peter Cameron. The existence and construction of strongly regular graphs is a rich source of mathematical investigation, with applications to algebra and combinatorics.

In this talk I will describe strongly regular graphs, give a variety of examples, and then focus on those graphs which arise within a group structure. Towards the end of the talk, I will show how a certain "Fourier analysis", mapping group elements into the complex plane, allows us to construct new graphs in abelian groups of order 2^{2m}.

This talk is designed for undergraduate math majors; almost all of the concepts of the talk will be accessible to students with little experience in abstract mathematics.