Colloquium

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Friday, October 3, 2014 at 3 pm in Bell Hall 143

Strongly Regular Cayley Graphs

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.