BI-CO MATHEMATICS COLLOQUIUM

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"What's the Shape of a Group?"

Monday, November 27, 2017

Talk at 4:00 – Park 338
Tea at 3:30 – Park 339, Math/Physics Lounge

Abstract:

A group is a fundamental object of study in Abstract Algebra, and serves as a mathematical structure to help keep track of the symmetries of any type of geometric space. However, can we think of a group itself as having geometric properties? Sure! We do all the time when we draw *Cayley graphs* of groups. There's just one problem: A single group has *lots* of different Cayley graphs. So what are the *intrinsic* properties of a group that stay invariant under any possible Cayley graph? To answer this question, we'll explore a more general notion of equivalence, and then begin examining some "large scale" geometric properties of some of our favorite groups. This correspondence will unlock the fundamental power of *Geometric Group Theory*: treating groups as geometric spaces allows us to use algebra to study geometry and to use geometry to study algebra, linking together two of the most fundamental and beautiful aspects of modern mathematics.

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