Geometry, Groups and Dynamics/GEAR Seminar
(held at the Illinois hub of GEAR)

12:00 pm, Tuesday, October 13, 2015, 345 Altgeld Hall
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The topology of local commensurability graphs

Abstract: The p-local commensurability graph of a group has vertices consisting of all finite-index subgroups, where an edge is drawn between two subgroups if their commensurability index is a power of p. While commensurability is a fundamental notion, these graphs also have ties to subgroup growth, another natural invariant. What group-theoretic information can we draw from the topology of these graphs? To initiate the study of this question, we explore these graphs for a number of examples and share some of our findings. It turns out that any such graph for a group with all nilpotent finite quotients is complete. Further, this topological criteria characterizes such groups. In contrast, for any prime p, any large group (e.g. a nonabelian free group or a surface group of genus two or, more generally, any virtually special group) has geodesics in its p-local commensurability graph of arbitrarily long length. This talk covers joint work with Daniel Studenmund.
Video