UNIVERSITY AT ALBANY
State University of New York

College of Arts and Sciences
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Colloquium

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Hyperbolic groups satisfy the Boone-Higman conjecture

Friday, October 27, 2023
3:00 p.m. in Massry 221

Abstract. The 1973 Boone-Higman Conjecture predicts that every finitely generated group with solvable word problem embeds in a finitely presented simple group. In joint work with Jim Belk, Collin Bleak, and Francesco Matucci, we prove that all hyperbolic groups satisfy the Boone-Higman Conjecture, that is, every hyperbolic group embeds into some finitely presented simple group. This shows that the conjecture holds in the "generic" case for finitely presented groups. Our key tool is a new family of groups, which we call *rational similarity groups (RSGs)*, that is interesting in its own right. We prove that every hyperbolic group embeds in a full, contracting RSG, and every full, contracting RSG embeds in a finitely presented simple group, thus establishing the result. In this talk I will discuss a little history of the conjecture, define our new RSGs, and discuss how the various embeddings work. The talk will be self-contained, and I will not assume that the audience has any preexisting knowledge about any of this.