Title: The Unreasonable Effectiveness of Algebraic Topology
Speaker: Shmuel Weinberger

Abstract: One of the central paradigms of geometric topology is the reduction of geometric problems to algebraic topology and then solving those problems using the tools of that field (e.g. fibrations, spectral sequences, and algebraic tools in general). This leads to many highly nonlinear maps being implicitly constructed using algebra. In this talk, I will describe several places where algebraic topology seemingly analyzes spaces of superexponential complexity and some of the perplexing problems that arise when one considers the complexity of maps, homotopies, embeddings, isotopies, and cobordisms that algebraic topology guarantees the existence of, but which are exceedingly difficult to "see."

This talk will not require much in the way of algebraic topology and will mainly be a discussion of examples, and complexity will usually be measured in terms of volumes or Lipschitz constants.