Logic and Homogeneity of the Pseudoarc

Professor Solecki
University of Illinois

Abstract: The pseudoarc is a remarkable compact connected space; it is the generic compact connected subset of the plane or the Hilbert cube. By a fundamental result of Bing, it is homogeneous as a topological space. By work of Irwin and myself, the pseudoarc is represented as a quotient of a canonical model theoretically/combinatorially constructed object—a projective Fraisse limit. In this way, a continuous situation is discretized.

I will explain the connection between the pseudoarc and projective Fraisse limits. Further, I will describe a recent work with Todor Tsankov, in which we determine the correct partial homogeneity of the projective Fraisse limit associated with the pseudoarc. This determination involves combinatorial and basic "dual" model theoretic arguments (e.g., a notion of dual type). I will also describe a transfer theorem, through which we recover Bing’s homogeneity of the pseudoarc from our partial homogeneity of the projective Fraisse limit. I will present conjectures on further generalizations of our method.