

Dennis GARITY

Classifying simple Antoine Cantor sets

Abstract. The Antoine construction for Cantor sets in R^3 is a well know method of obtaining non standardly embedded subspaces of R^3 . Sher has shown that defining sequences for equivalently embedded Antoine Cantor sets in R^3 must match up homeomorphically at each stage. Wright associates an Antoine graph with each such Antoine Cantor set and shows that equivalently embedded Antoine Cantor sets must have isomorphic Antoine graphs.

We show that for each Antoine graph, there are uncountably many inequivalent associated Antoine Cantor sets. We then introduce additional structure on the graphs that completely classify simple Antoine Cantor sets. Even though the constructions are infinite in nature, certain three dimensional finite link invariants (the Kauffman polynomial and linking number) are the main ingredients in the classification.