1109-54-285 **Stewart Baldwin*** (baldwsl@auburn.edu). *Finite Dimensional Uniquely Homogeneous Spaces.*

A topological space X is *uniquely homogeneous* if for every $a, b \in X$ there is *exactly one* homeomorphism $h : X \to X$ such that $h(a) = b$. The definition was first given by Burgess in 1955, and van Mill constructed the first nontrivial (i.e., more than two points) examples in 1983.

Using a weak version of Martin's Axiom (MA for countable orderings), for every integer $n \geq 2$ and every integer k with $1 \leq k \leq n - 1$, we construct k-dimensional uniquely homogeneous dense subsets of $\mathbb{R}^n$. The homeomorphism groups of these spaces are all non-abelian, and can be constructed to be free groups. These are the first known examples of finite-dimensional nontrivial uniquely homogeneous spaces, and the first known uniquely homogeneous spaces having non-abelian homeomorphism groups. (Received February 03, 2015)