

Automorphism invariant measures on homogeneous structures

Abstract

A first order structure \mathcal{A} is defined to be homogeneous iff isomorphisms between finitely generated substructures of \mathcal{A} can be extended to automorphisms of \mathcal{A} . The automorphism group $Aut(\mathcal{A})$ of \mathcal{A} can be naturally endowed by a topology.

We will investigate $Aut(\mathcal{A})$ as a topological group. Continuing investigations initiated by Hrushovski, Krupinski, Pillay and others, we will present sufficient conditions implying the existence of automorphism invariant probability measures on certain subsets of \mathcal{A} , on $Aut(\mathcal{A})$ and on the spaces of types of \mathcal{A} . We also discuss uniqueness results for these measures. As we will see, related investigations may provide information on the existence of finite substructures of \mathcal{A} which are “similar enough” to the whole \mathcal{A} . We will illustrate this by presenting some recent related results. All relevant definitions will be recalled.