

Title: Dynamics of Distal Actions on Certain Compact Spaces

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Abstract

In this talk we discuss that for a semigroup \mathcal{G} of $GL(n+1, \mathbb{R})$, the following are equivalent:

1. \mathcal{G} acts distally on the unit sphere \mathbb{S}^n .
2. the closure of \mathcal{G} is a compact group.

We also get the equivalence of (1) and (2) for a semigroup of $GL(n, \mathbb{Q}_p)$ acting on the p -adic n -sphere \mathcal{S}_n . On the unit circle \mathbb{S}^1 , we consider the 'affine' actions corresponding to maps in $GL(2, \mathbb{R})$ and discuss the existence of fixed points and periodic points. As an application of the results on the unit circle, we obtain a subclass of $GL(n+1, \mathbb{R})$ such that the corresponding 'affine' actions on the n -sphere \mathbb{S}^n are not distal ($n \in \mathbb{N}$). We also consider 'affine' actions on the p -adic unit sphere \mathcal{S}_n and show that the dynamics is quite different from that on the real n -sphere. We would also like to discuss recent results; for a locally compact metrizable group G , if T is distal on Chabauty space Sub_G then T is distal on G/K^0 , for $T \in \text{Aut}(G)$ and the maximal compact normal subgroup K of G .