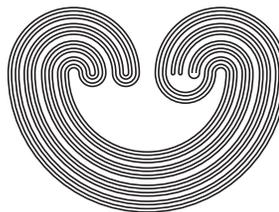


<http://topology.auburn.edu/tp/>

TOPOLOGY PROCEEDINGS



Volume 56, 2020

Pages 71–83

<http://topology.nipissingu.ca/tp/>

STABLE GROUP ACTIONS ON UNIFORM SPACES

by

PRAMOD DAS AND TARUN DAS

Electronically published on August 1, 2019

This file contains only the first page of the paper. The full version of the paper is available to Topology Proceedings subscribers. See <http://topology.auburn.edu/tp/subscriptioninfo.html> for information.

Topology Proceedings

Web: <http://topology.auburn.edu/tp/>

Mail: Topology Proceedings

Department of Mathematics & Statistics

Auburn University, Alabama 36849, USA

E-mail: topolog@auburn.edu

ISSN: (Online) 2331-1290, (Print) 0146-4124

COPYRIGHT © by Topology Proceedings. All rights reserved.

STABLE GROUP ACTIONS ON UNIFORM SPACES

PRAMOD DAS AND TARUN DAS

ABSTRACT. We extend the notions of topological stability, shadowing and persistence for homeomorphisms to finitely generated group actions on uniform spaces and prove that an expansive action with either shadowing or persistence is topologically stable. Using the concept of null set of a Borel measure μ , we extend the notions of μ -expansivity, μ -topological stability, μ -shadowing and μ -persistence for homeomorphisms to finitely generated group actions on uniform spaces and prove that a μ -expansive action with either μ -shadowing or μ -persistence is μ -topologically stable.

1. INTRODUCTION

Topological stability is a fundamental notion of a dynamical system which guarantees that the qualitative behavior of trajectories remains unaffected by continuous small perturbations. In Lyapunov stability, one considers perturbations of initial conditions in a fixed system. Unlike in Lyapunov stability, in topological stability, one considers perturbations of the system itself. Walters' stability theorem applied to Anosov diffeomorphisms of compact smooth manifolds is one of the finest results in differentiable dynamics.

Theorem 1.1 ([15, Theorem 1]). *Let M be a compact manifold and let $f : M \rightarrow M$ be a diffeomorphism. If f is Anosov, then it is topologically stable.*

2010 *Mathematics Subject Classification.* 37C75, 37C85, 37C50, 49J53, 54H20.

Key words and phrases. expansivity, persistence, shadowing, topological stability.

The first author is supported by Department of Science and Technology, Government of India, under INSPIRE Fellowship (Registration No-IF150210) program since March 2015.

©2019 Topology Proceedings.

This file contains only the first page of the paper. The full version of the paper is available to Topology Proceedings subscribers. See <http://topology.auburn.edu/tp/subscriptioninfo.html> for information.