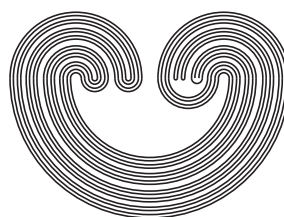


TOPOLOGY PROCEEDINGS



Volume 63, 2024

Pages 39–52

ALGEBRAIC STRUCTURES ON THE CANTOR SET

by

EVGENII REZNICHENKO

Electronically published on May 26, 2023

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.nipissingu.ca/tp/subscriptioninfo.html> for information.

Topology Proceedings

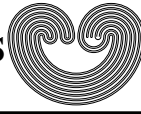
Web: <http://topology.nipissingu.ca/tp/>

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.



ALGEBRAIC STRUCTURES ON THE CANTOR SET

EVGENII REZNICHENKO

ABSTRACT. Below, by space we mean a separable metrizable zero-dimensional space. It is studied when a space can be embedded in a Cantor set while maintaining the algebraic structure. Main results of the work: every space is an open retract of a Boolean precompact group; every strongly homogeneous space is rectifiable. In this case, the space can be embedded in the Cantor set with the preservation of the algebraic structure. An example of a strongly homogeneous space is constructed which do not admit the structure of a right topological group.

1. INTRODUCTION

In this paper, we study what algebraic structures are possible on subspaces of the Cantor set \mathbf{C} , that is, on separable metrizable zero-dimensional (SMZD) spaces. Any SMZD space is Mal'tsev, moreover, it is a retract of the topological group, that is, a retral space [10].

We are primarily interested in Mal'tsev, rectifiable, retral, homogeneous SMZD spaces and (right) topological groups. It is also studied when a SMZD space with algebraic structure can be embedded in a SMZD compact space with the same structure. In particular, when the SMZD space can be embedded in \mathbf{C} with the algebraic structure preserved.

2020 *Mathematics Subject Classification.* Primary 54B10, 54C30, 54C05; Secondary 54C20.

Key words and phrases. Baire space, strongly homogeneous space, rectifiable space, retract of group, separable metrizable zero-dimensional space, right topological group.

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.nipissingu.ca/tp/subscriptioninfo.html> for information.