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by

A. V. Arhangel'skii

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Web:	http://topology.nipissingu.ca/tp/
Mail:	Topology Proceedings Department of Mathematics & Statistics Auburn University, Alabama 36849, USA
E-mail:	topolog@auburn.edu
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ON NOWHERE LOCALLY COMPACT SPACES WITH CONNECTED STONE - ČECH REMAINDER

A. V. ARHANGEL'SKII

Abstract. In this paper, we present a bunch of results related to the following general question: *when is the Stone-Čech remainder of a Tychonoff nowhere locally compact space connected?* Several sufficient conditions are given for that. In particular, the case of topological groups is studied. In the last section, a version of the above question is considered in the context of Wallman compactifications of T_1-spaces and their remainders. Some open questions are formulated.

Dedicated to the memory of Phillip L. Zenor, a fine person and an excellent topologist.

1. Introduction

All spaces under discussion are assumed to be T_1-spaces. In fact, we are mainly concerned with Tychonoff spaces, but there are a few exceptions from this rule. In terminology and notation we follow [10] and [5]. In particular, βX is the Čech-Stone compactification of X, ω denotes the set of all non-negative integers, and $\beta\omega$ is the Čech-Stone compactification of the discrete space ω. A compactification of a space X is any compact space bX such that X is a dense subspace of bX. A remainder Y of X is the subspace $Y = bX \setminus X$ of a compactification bX of X. Below we often assume that the spaces considered are nowhere locally compact (which, for Tychonoff spaces, means that there are no nonempty open subsets with compact closure). This assumption plays an essential role. When this condition holds and the spaces considered are Tychonoff, then the space and the remainder interact deeper, and the space can be interpreted as a remainder of its remainder.

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