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ANOTHER CONSTRUCTION OF SEMI-TOPOLOGICAL GROUPS

AKIO KATO

Abstract. For a nowhere compact, metrizable topological group G we use Stone-Čech compactifications once or twice to get an extremally disconnected semi-topological group $\breve{G}$ admitting a semi-open isomorphism onto G.

1. Introduction

Recall that for every space X there exists an extremally disconnected space $\mathbf{E}(X)$ called the "absolute", with a perfect irreducible map onto X. It has been well known (cf.[7, 9]) that given a topological group G one can find an extremally disconnected semi-topological group in the absolute $\mathbf{E}(G)$ admitting a semi-open isomorphism onto G. In this paper we will construct such a semi-topological group using Stone-Čech compactifications once or twice rather than the absolute, and this construction has an advantage in investigating the properties of resultant spaces. The idea of repeating Stone-Čech compactifications stems from [12, 13].

2. Basic Tools

All spaces are assumed to be completely regular and Hausdorff, and maps are always continuous, unless otherwise stated. βX denotes the Stone-Čech compactification of X. A space is *nowhere compact* (or nowhere locally compact) if it has no compact neighborhood, which is equivalent to say that the remainder $cX\backslash X$ of any or some compactification cX of X is dense in cX. A collection of nonempty open sets of X is called a π-*base* for X if every nonempty open set in X contains some member of the collection. The minimal cardinality of such a π-base is called the π-*weight* of X. Observe that any dense subspace of X has

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