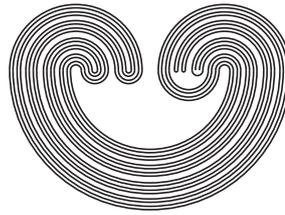


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## THE TOPOLOGICAL GROUP OF AUTOHOMEOMORPHISMS OF HOMOGENEOUS FUNCTIONALLY ALEXANDROFF SPACES

by

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**THE TOPOLOGICAL GROUP OF  
AUTOHOMEOMORPHISMS OF HOMOGENEOUS  
FUNCTIONALLY ALEXANDROFF SPACES**

SAMI LAZAAR AND HOUSSEM SABRI

**ABSTRACT.** In this paper, we study topological properties of the group of autohomeomorphisms of homogeneous functionally Alexandroff spaces.

In particular, when the functionally Alexandroff space  $(X, \mathcal{P}(f))$  is a connected homogeneous space where the map  $f$  is  $\kappa$ -to-one for some finite cardinal number  $\kappa > 1$ , we prove that its autohomeomorphism group  $\mathcal{H}(X)$  equipped with the permutation topology is a second countable, totally disconnected, locally compact (s.c.t.d.l.c.), non discrete Hausdorff group. Furthermore, in this case, or even if  $\kappa$  is an infinite cardinal number, we prove that the topology of pointwise convergence, the compact-open topology and the permutation topology which equip the topological group  $\mathcal{H}(X)$  are equivalent.

Finally, one of the main results of this paper is to prove that the group  $\mathcal{H}(X)$  is not locally compact when  $\kappa$  is an infinite cardinal number. Consequently, we deduce that the group of all isometries of a regular tree is locally compact if and only if the tree is locally finite.

**1. INTRODUCTION**

A topological space  $X$  is said to be Alexandroff space if any arbitrary intersection of open sets is open. They have been introduced in 1937 by P. S. Alexandrov in [3] under the name Diskrete Räume “discrete space”.

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