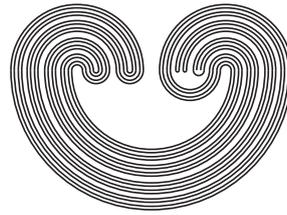


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INSERTION THEOREMS FOR SOME SPACES BY MAPS TO ORDERED TOPOLOGICAL VECTOR SPACES

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INSERTION THEOREMS FOR SOME SPACES BY MAPS TO ORDERED TOPOLOGICAL VECTOR SPACES

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ABSTRACT. In this paper, we present characterizations of some spaces such as stratifiable spaces, perfectly normal spaces, k -semi-stratifiable spaces with maps to ordered topological vector spaces. The results obtained generalize real valued functions in some known results to maps to ordered topological vector spaces. Some of them improve the corresponding results in [9].

1. INTRODUCTION

Real-valued functions are closely related to the characterizations of topological spaces. It turned out that many classes of topological spaces such as normal spaces, monotonically normal spaces, stratifiable spaces, monotonically countably paracompact spaces can be characterized with real-valued functions satisfying certain conditions. For example.

Theorem 1.1. *For a space X , the following are equivalent.*

- (a) X is stratifiable.
- (b) [11] *There exists an operator ϕ assigning to each lower semi-continuous function $h : X \rightarrow [0, \infty)$, a continuous function $\phi(h) : X \rightarrow [0, \infty)$ with $\phi(h) \leq h$ such that $0 < \phi(h)(x) < h(x)$ whenever $h(x) > 0$ and $\phi(h) \leq \phi(h')$ whenever $h \leq h'$.*
- (c) [18] *There exist operators ψ, ϕ assigning to each lower semi-continuous function $h : X \rightarrow [0, \infty)$, a lower semi-continuous function $\psi(h) : X \rightarrow [0, \infty)$ and an upper semi-continuous function $\phi(h) : X \rightarrow [0, \infty)$ with $\psi(h) \leq \phi(h) \leq h$ such that $0 < \psi(h)(x) \leq \phi(h)(x) < h(x)$ whenever $h(x) > 0$ and $\psi(h) \leq \psi(h')$, $\phi(h) \leq \phi(h')$ whenever $h \leq h'$.*

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Key words and phrases. Ordered topological vector spaces; Stratifiable spaces; Perfectly normal spaces; k -semi-stratifiable spaces; Lower (upper) semi-continuous maps.
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