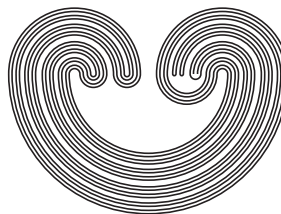


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MONOTONE METACOMPACTNESS AND RELATED PROPERTIES IN SCATTERED SPACES

JOHN E. PORTER

ABSTRACT. Monotonically metacompact spaces and related properties are studied in scattered spaces. We show that if a hereditarily metacompact scattered space is monotonically (countably) compact at each point, then the space is monotonically (countably) metacompact. We also show that if a hereditarily metacompact scattered space has a Noetherian (pair-)base of subinfinite rank at each point, then the space has a Noetherian (pair-)base of subinfinite rank. As an application, hereditarily metacompact scattered GO-spaces have a Noetherian base of subinfinite rank, and hence, are monotonically metacompact, improving on a result of Liang-Xue Peng and Li-Jun Wang [“A study on monotonically metacompact and property (A) ((B)),” *Topology Appl.* 245 (2018), 1–20].

1. INTRODUCTION

A topological space is *monotonically (countably) metacompact* if for every (countable) open cover $\mathcal{U}$, one can assign a point-finite refinement $r(\mathcal{U})$ in such a way that if $\mathcal{U}$ refines $\mathcal{V}$, then $r(\mathcal{U})$ refines $r(\mathcal{V})$. An important class of monotonically metacompact spaces are spaces with a Noetherian basis of subinfinite rank (NSR basis). We will use an equivalent definition for NSR bases (see [2]).

Definition 1.1. A basis $\mathcal{B}$ for a topological space X is said to be an NSR basis $\mathcal{B}$ if $\mathcal{B}' \subset \mathcal{B}$ and $\bigcap \mathcal{B}' \neq \emptyset$, then there exists a finite set $\mathcal{F} \subset \mathcal{B}'$ such that for every $B \in \mathcal{B}'$, there exists $F \in \mathcal{F}$ such that $B \subset F$.

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Key words and phrases. monotonically metacompact, Noetherian of subinfinite rank, NSR base, NSR pair-base, scattered.

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