Davis, Sheldon W.; **Grabner, Elise M.**; **Grabner, Gary C.**
***s*-point finite refinable spaces.** (English) Zbl 0932.54024
Int. J. Math. Math. Sci. 22, No. 2, 367-375 (1999).

The authors call a topological space X s-point finite refinable (respectively ds-point finite refinable) if for every open cover $\mathcal{U}$ of X there exists an open refinement $\mathcal{V}$ of $\mathcal{U}$ and a (closed discrete) subset $A(\mathcal{U})$ of X such that (i) for all nonempty $V \in \mathcal{V}$, $V \cap A(\mathcal{U}) \neq \emptyset$, and (ii) for all $a \in A(\mathcal{U})$ the set $\{V \in \mathcal{V} \mid a \in V\}$ is finite. Obviously, every ds-point finite refinable space is s-point finite refinable. Since it follows from two theorems of *J. R. Boone* [Pac. J. Math. 62, 351-357 (1976; Zbl 0327.54012)] that every weak $\overline{\theta}$-refinable space is irreducible, and that every irreducible space is ds-point finite refinable, both covering properties are very weak. It is shown that if λ is an ordinal with $cf(\lambda) = \lambda > \omega$ and X is a stationary subset of λ then X is not s-point finite refinable. Moreover, there exists a countably compact s-point finite refinable LOTS which is not ds-point finite refinable. However, it is not known whether there exist ds-point finite refinable spaces which are not irreducible. It is shown that a topological space is ds-point finite refinable if and only if it is irreducible of order ω in the sense of *J. R. Boone* [ibid. 62, 359-364 (1976; Zbl 0331.54009]. It is also shown that every strongly collectionwise Hausdorff ds-point finite refinable space without isolated points is irreducible. It is mentioned that H. R. Bennett has shown that a LOTS is paracompact if and only if it is ds-point finite refinable. Concerning irreducible spaces it is shown that every topological space can be embedded as a closed subspace into an irreducible space.

Reviewer: H.Brandenburg (Berlin)

MSC:

54D20 Noncompact covering properties (paracompact, Lindelöf, etc.)

Full Text: DOI EuDML