Commentationes Mathematicae Universitatis Carolinae

Miroslav Hušek

Orderability of spaces with linearly ordered uniform base

Commentationes Mathematicae Universitatis Carolinae, Vol. 20 (1979), No. 1, 192

Persistent URL: http://dml.cz/dmlcz/105916

INCLUSION ORDERING OF CLASSES OF E-COMPACTNESS

Jan Pelant, Alexander Šostak (Českosl. Akad. Věd, Praha 1, Československo), received 23.11. 1978

We answered negatively Mrówka's question [M] of whether classes between $\mathcal{K}(T(\omega_\alpha))$ and $\mathcal{K}(\mathfrak{D})$ are linearly ordered by inclusion $\subset$. ($\mathfrak{D}$ denotes the two point discrete space, $T(\omega_\alpha)$ denotes the ordered space of ordinals less than ω_α). Our results can be divided into two parts:

1. More general results: using the Solovay theorem on stationary sets we proved:

<u>Theorem</u>: Let ω_α be an uncountable regular initial ordinal. Then there are $2^{2^{\omega_\alpha}}$ classes of E-compactness which are contained in $\mathcal{K}(T(\omega_\alpha))$, contain $\mathcal{K}(\mathfrak{D})$ and are not comparable by inclusion.

2. More concrete results: we constructed several particular examples which solve Mrówka's question as well. In one of these constructions we used the compactification cN of a countable discrete space N satisfying: 1) no subsequence of N converges in cN, 2) there is no $M \subset N$ such that

$$\overline{M}^{cN} = \beta N \text{ (= the Čech-Stone compactification)}$$

These results were achieved mainly during the second author's visit to Prague in December 1973.

P. Simon has recently constructed a very similar compactification b(N) of N for which $b(N) - N$ is sequentially compact.

<u>Reference</u>:

[M] S. Mrówka: Further results on E-compact spaces, Acta math. (120)(1968), 161-185.

ORDERABILITY OF SPACES WITH LINEARLY ORDERED UNIFORM BASE

M. Hušek (Karlova Universita, 18600 Praha, Československo), received 30.11. 1978

<u>Theorem</u>: Let X be a nonmetrizable topological T_1-space induced by a uniformity with a linearly ordered base. Then the topology of X is an order-topology.

This result generalizes that for topological groups proved by P.J. Nyikos, H.-C. Reichel (Gen. Top. Appl. 5(1975), 195-204) and that for spaces without isolated points proved by R. Frankiewicz, W. Kulpa (this issue). The result for metrizable 0-dimensional spaces was proved by H. Herrlich (Math. Ann. 159(1965), 77-80).

MODEL THEORETIC APPROACH TO CONCRETE CATEGORIES

Jiří Rosický (Universita J.E. Purkyně, Brno, Československo), received 24.11. 1978

An infinitary first-order language $L_{\infty,\infty}$ has a class of function symbols, a class of relation symbols and a class of