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Chapter 1 : general topology - A Closed Set Definition of Compactness - Mathematics Stack Exchange

Received Jun 29; Accepted Sep 8. Abstract Consider L being a continuous lattice, two functors from the category of convex spaces denoted by CS to the category of stratified L-convex spaces denoted by SL-CS are defined. The first functor enables us to prove that the category CS can be embedded in the category SL-CS as a reflective subcategory. The second functor enables us to prove that the category CS can be embedded in the category SL-CS as a coreflective subcategory when L satisfying a multiplicative condition. By comparing the two functors and the well known Lowen functor between topological spaces and stratified L-topological spaces , we exhibit the difference between stratified L- topological spaces and stratified L- convex spaces. The notion of convexity considered here is considerably broader the classical one; specially, it is not restricted to the context of vector spaces. Now, a convexity on a set is a family of subsets closed for intersection and directed union. Convexities exist in many different mathematical research areas, such as convexities in lattices Van De Vel ; Varlet , convexities in metric spaces and graphs Lassak ; Menger ; Soltan and convexities in topology Chepoi ; Eckhoff ; Sierkama ; Van Mill With the development of fuzzy mathematics, convexity has been interrelated to fuzzy set theory. It is easily seen that there is some similarity between convexity and topology a family of subsets of a set closed for union and finite intersection. Similar to lattice-valued topology, the categorical relationships between convexity and latticed-valued convexity is an important direction of research. When L being a completely distributive complete lattices with some additional conditions, Pang and Shi proved that the category of convex spaces can be embedded in the category of stratified L-convex spaces as a coreflective subcategory. In this paper, we shall continue to study the categorical relationships between convex spaces and stratified L-convex spaces. We shall investigate two embedding functors from the category of convex spaces denoted by CS to the category of stratified L-convex spaces denoted by SL-CS. The first functor enables us to prove that the category CS can be embedded in the category SL-CS as a reflective subcategory when L being a continuous lattice. The second functor enables us to prove that the category CS can be embedded in the category SL-CS as a coreflective subcategory when the continuous lattice L satisfying a multiplicative condition. Precisely, from completely distributive complete lattice to continuous lattice. By comparing the two functors and Lowen functor, we exhibit the difference between stratified L- topological spaces and stratified L- convex spaces from the categorical sense. The contents are arranged as follows. Finally, we end this paper with a summary of conclusion. Throughout this paper, L denote a continuous lattice, unless otherwise stated. The following lemmas collect some properties of way below relation on a continuous lattice. Then the following identity holds.

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The following selection theorem is established: Let X be a compactum possessing a binary normal subbase S for its closed subsets. Introduction In this paper we assume that all topological spaces are Tychonoff and all single-valued maps are continuous. Recall that supercompact spaces and superextensions were intro- duced by de Groot [4]. A space is supercompact if it possesses a binary subbase for its closed subsets. Here, a collection S of closed subsets of X is binary provided any linked subfamily of S has a non-empty intersection we say that a system of subsets of X is linked provided any two elements of this system intersect. The supercompact spaces with binary normal subbase will be of special interest for us. A space X Date: Primary 54C65; Secondary 54F Key words and phrases. An S-convex map f: Let X, S be a normally supercompact space and Z an arbitrary space. If X has a closed subbase S, we say f: Let X be a space possessing a binary normal closed subbase S. Then every S-convex S-open surjection f: Another corollary of Theorem 1. Here, a map f: If X has a binary normal closed subbase S, then any S-convex S-open surjection f: Then every open S-convex surjection f: Proof of Theorem 1. Upper semi-continuous and compact-valued maps are called usco maps. By [9, Theorem 1. Therefore, we obtain a map h: It remains to show that h is continuous. We can show that the subbase could be supposed to be invariant with 4 respect to finite intersections. But instead of that, we follow the arguments from the proof of [9, Theorem 1. Consequently, we have two possibilities: Hence, h is continuous. Let X possess a binary normal closed subbase S, f: Then, by Theorem 1. Hence, f is invertible. Let us show that every S-open S-convex surjection f: Hence, by Theorem 1. So, f is A-soft. Proof of Proposition 1. According to Corollary 1. To this end, we follow the arguments from the proof of [12, Proposition 3. Then, by [10] see also [12] for another proof , there exists a function e: Consider the set valued map r: Finally, we can show that r is upper semi-continuous. According to [1], X is a Dugundji space. Suppose now, that X is connected. By [9], any set of the form IS F is S-convex, so is each r y. According to [9, Corollary 1. Hence, the map r, defined by 1 , is connected-valued. Consequently, by [1], X is an absolute extensor in dimension 1, and there exists a map r1: On the other hand, since X is normally supercompact, there exists a retraction r2 from exp X onto X, see [9, Corollary 1. Then, Proposi- tion 1. At the same time it provides more information about validity of Corollary 1. For any class A the following statements are equiv- alent: Suppose X is a compactum possessing a normal binary closed subbase S, and f: According to [9, Corollary 2. The author would like to express his gratitude to M. Choban for his continuous support and valuable remarks. Dranishnikov, Multivaled absolute retracts and absolute extensors in dimn- sions 0 and 1, Usp. Nauk 39, 5 , â€" in Russian. Fedorchuk, Some geometric properties of covariant functors, Usp. Contributions to ex- tension theory of topological structures, Symp. Berlin , Deutscher Verlag Wiss. Ivanov, Superextension of openly generated compacta, Dokl. Nauk SSSR , no. Ivanov, Mixers, functors, and soft mappings, Proceedings of Steklov Inst. Haydon, On a problem of Pelczynski: Centre Tracts 85, Amsterdam Shirokov, External characterization of Dugundji spaces and kappa- metrizable compacta, Dokl. Shchepin, Topology of limit spaces of uncountable inverse spectra, Russian Math. Surveys , â€" Notes 89 , no.

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Review: Witold Hurewicz and Henry Wallman, Dimension Theory Smith, P. A., Bulletin of the American Mathematical Society, Review: John Mills, An Introduction to Thermodynamics Wilson, E. B., Bulletin of the American Mathematical Society,

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In mathematics, in the field of topology, a topological space is called supercompact if there is a subbasis such that every open cover of the topological space from elements of the subbasis has a subcover with at most two subbasis elements.

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Chapter 6 : On the embedding of convex spaces in stratified L-convex spaces

Recall that a Wallman compactification of a space X is a compactificaâ€” tion which has a closed base satisfying the following two conditions: (a) B is closed under finite intersections and finite unions.

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Supercompactness and normal supercompactness. It is done in the more general setting of Wallman compactifications. A space is called supercompact if it has an open subbase such that every.

Chapter 8 : supercompact space : definition of supercompact space and synonyms of supercompact space

Topologies on Dual Spaces and Spaces of Linear Mappings 27 is absolutely convex and absorbent and so there is a coarsest topology. on X. in which they are neighborhoods.

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Supercompactness has been instrumental in topollogyc ly characterizing Tychonov cubes and products of spheres, producte of compact ordered M. c. Bert spaces, and products v, compact treelike spaces.