

Characterization of stratified L -topological spaces by convergence of stratified L -filters

D. Orpen* and G. Jäger

Rhodes University

g04o0341@ru.ac.za, g.jager@ru.ac.za

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L -sets over a base set X are generalizations of classical sets where subsets are not specified by *characteristic functions* from X to $\{0, 1\}$ but rather by functions from X to a lattice L . For an L -set $a \in L^X$ and an element $x \in X$, $a(x)$ is interpreted as the *grade of membership* of x in a . Stratified L -topological spaces are generalizations of topological spaces to the L -set case [1]. In [2], stratified L -generalized convergence spaces (analogous to classical convergence spaces) are defined, with the underlying lattice (L, \leq, \wedge) being a frame. The resulting category $\underline{\text{SL-GCS}}$ is topological over $\underline{\text{Set}}$ and is Cartesian-closed [2]. $\underline{\text{SL-TOP}}$, the category of stratified L -topological spaces, is isomorphic to a reflective subcategory of $\underline{\text{SL-GCS}}$ [2]. In [3] various subcategories of $\underline{\text{SL-GCS}}$ are investigated. The results of [2] and [3] are now extended to more general enriched lattices $(L, \leq, *, \otimes)$. Finally axiom schemes for L -topological spaces based on L -filters (which lead to isomorphic categories in the frame case [4]) are investigated in the more general case and conditions for isomorphism between their categories are explored.

References

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