

Bartsh, René; Dencker, Peter; Poppe, Harry

Ascoli-Arzelà-theory based on continuous convergence in an (almost) non-Hausdorff setting. Partially reprinted from the journal Applied Categorical Structures 4, No. 1 (1996). (English)

Zbl 0880.54015

Giuli, Eraldo (ed.), Categorical topology. Proceedings of the L'Aquila conference, August 31–September 4, 1994, L'Aquila, Italy. Dordrecht: Kluwer. 221-240 (1996).

This paper gives an exposition of Ascoli-Arzelà theory in the general setting of convergence spaces using filters and the concept of continuous convergence. The main general theorem, about the set $C(X, Y)$ of continuous functions from topological space X into regular space Y , is that a subset F of $C(X, Y)$ is relatively compact with respect to the continuous convergence structure if and only if F is evenly continuous and $\{f(x) : f \in F\}$ is relatively compact in Y for each $x \in X$. This is used to derive the classical Ascoli-Arzelà theorem and other well-known versions, including the characterization of compactness in $C(X, Y)$ with the compact-open topology in the case that X is a k -space.

For the entire collection see [Zbl 0844.00021].

Reviewer: R.A.McCoy (Blacksburg)

MSC:

54C35 Function spaces in general topology
54D30 Compactness
54E15 Uniform structures and generalizations
54D50 k -spaces

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relatively compact sets; continuous convergence; compactness on function spaces; compactness criteria of Ascoli-Arzelà-type; even continuity; equicontinuity; compact-open topology; uniform topology