Lowen, E.; Lowen, R.
Topological quasitopos hulls of categories containing topological and metric objects. (English) Zbl 0706.18002

For the topological categories TOP and UNIF, the topological quasitopos hulls have been described by O. Wyler [Lect. Notes Math. 540, 699-719 (1976; Zbl 0354.54001)] and by J. Adámek and J. Reiterman [Topology Appl. 27, 97-104 (1987; Zbl 0653.18007)], respectively. The authors of the paper under review undertake this task for the category of approach spaces, as introduced by the second author [Math. Nachr. 141, 183-226 (1989; Zbl 0676.54012)]; roughly, an approach space is a set which comes equipped with a function measuring the distance between points and subsets. The category AP of approach spaces gives a common roof to topological and certain generalized metric spaces. It is topological but neither hereditary [in the sense of H. Herrlich, Topology Appl. 27, 145-155 (1987; Zbl 0632.54008)] nor cartesian closed. Previously, the authors had shown that the category CAP of convergence approach spaces is a topological quasitopos containing AP [Int. J. Math. Math. Sci. 11, 417-438 (1988; Zbl 0672.54003)]. In this paper they identify the quasitopos hull of AP as a certain bireflective subcategory of CAP for which they give various descriptions.

Reviewer: W. Tholen

MSC:
18B30 Categories of topological spaces and continuous mappings (MSC2010)
18B25 Topoi
54A05 Topological spaces and generalizations (closure spaces, etc.)
54B30 Categorical methods in general topology

Keywords:
pseudo-approach space; topological quasitopos hulls; category of approach spaces; convergence approach spaces; bireflective subcategory

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References:

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