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Another proof of Banaschewski's surjection theorem. (English) Zbl 1436.06017

Categ. Gen. Algebr. Struct. Appl. 11, No. 1, 113-130 (2019).

In [Trends Log. Stud. Log. Libr. 20, 19–56 (2003; [Zbl 1034.06008](#))], *B. Banaschewski* proved that the completion lift of a uniform surjection is a surjection. In this paper, the authors present another proof of Banaschewski's theorem. The new procedure allows to present the theorem in the quasi-uniform (not necessarily symmetric) setting of entourages which is not only a technical difference, but makes the results more general in the direction to non-symmetry (while the Banaschewski proof goes from uniformity in another generalizing direction, namely to strong nearnesses). Further, they have shown how a (regular) Cauchy point on a closed uniform sublocale can be extended to a (regular) Cauchy point on the larger (quasi-) uniform frame.

Reviewer: [Xiaoquan Xu \(Zhangzhou\)](#)

MSC:

[06D22](#) Frames, locales

[54D35](#) Extensions of spaces (compactifications, supercompactifications, completions, etc.)

[54E15](#) Uniform structures and generalizations

Keywords:

[frame \(locale\)](#); [sublocale](#); [uniform frame](#); [quasi-uniform frame](#); [uniform embedding](#); [complete uniform frame](#); [completion](#); [Cauchy map](#); [Cauchy filter](#); [Cauchy complete](#)

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