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Abstract. Quasi-convergence spaces and biconvergence spaces generalize bitopological spaces in two different ways and both can be used to study convergence for non-symmetric spaces like quasi-uniform spaces or quasi-metric spaces. Quasi-convergence spaces use the convergence of pairs of filters and biconvergence spaces use convergence of filters, but come with two convergence structures. We show that both resulting categories are isomorphic for limit spaces and that this isomorphy carries over to the subcategories of pretopological and topological spaces, respectively. In particular, a topological quasi-convergence space is generated by a bitopological space. Also, we point out differences between these two approaches. To this end, we look at certain Hausdorff separation axioms for quasi-convergence spaces and for biconvergence spaces in the special case of quasi-uniform spaces.

1. Introduction

Studying convergence in non-symmetric spaces like quasi-metric spaces or quasi-uniform spaces can be done in two ways: Either study a set with two convergence structures or study a set with one convergence structure defined with the help of pair filters. The first case is considered, for example, in the theory of bitopological spaces [9], whereas the second case is used implicitly in the completion of quasi-uniform spaces [14]. Considering such biconvergence spaces or quasi-convergence spaces becomes important when we look not only at quasi-metric or quasi-uniform spaces

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