

***R*-L-filters, Their Fuzzifications and Generalizations**

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Abstract

Theory of filters and fuzzy filters on different lattice-ordered structures related to non-classical logics has been intensively studied in the last decade. This work provides an overview of further development of theory of *R*-L-filters for a given Rasiowa-implicative logic *L*. This theory provides – within the framework of Abstract Algebraic Logic (AAL) – a general treatment of untold number of existing particular results on special types of filters (e.g. positive implicative, fantastic etc.) published recently in various journals. We present the theory from both logical (AAL) and algebraic viewpoints. Since our approach is rooted in Rasiowa-implicative logics, our results are applicable in various algebraic structures connected with different logics such as MV-algebras, BL-algebras, BCK-algebras or residuated lattices.

We fuzzify the concept of *R*-L-filter in the ‘right’ manner – using a residuated conjunction instead of the traditional straightforward but actually trivial approach based on min-conjunction. We investigate the basic properties of these generalized fuzzy *R*-L-filters and demonstrate the superiority of our approach over the ‘traditional’ one. Again, our general approach generates results of numerous papers about special types of fuzzy filters (e.g. fuzzy positive implicative, fuzzy fantastic etc.) in a uniform way as obvious consequences.

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