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The saturated prefilter monad. (English) Zbl 07401510
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Summary: This paper considers some extensions of the notion of filter to the quantale-valued context, including saturated prefilter, $\top$-filter and bounded saturated prefilter. The question is whether these constructions give rise to monads on the category of sets. It is shown that the answer depends on the structure of the quantale. Specifically, if the quantale is the unit interval equipped with a continuous t-norm, then these constructions give rise to monads if and only if the implication operator corresponding to that t-norm is continuous at each point off the diagonal.

MSC:

18C15 Monads (= standard construction, triple or triad), algebras for monads, homology and derived functors for monads
18F60 Categories of topological spaces and continuous mappings
18F75 Quantales
54B30 Categorical methods in general topology

Keywords:
monad; quantale; continuous t-norm; saturated prefilter; conical $Q$-semifilter; bounded saturated prefilter; bounded $Q$-semifilter

Full Text: DOI

References:
