Positive MV-algebras

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MV-algebras extend the theory of Boolean algebras by replacing the two-element set of truth values $\{0, 1\}$ with the unit interval $[0, 1]$. They provide the algebraic semantics of Łukasiewicz many-valued logic. Inspired by the extensive study of bounded distributive lattices, which are the negation-free subreducts of Boolean algebras, we aim at developing the theory of the negation-free subreducts of MV-algebras, called positive MV-algebras. These algebras can be thought of as the many-valued version of bounded distributive lattices. We axiomatize positive MV-algebras via finitely many quasi-equations. Moreover, generalizing Mundici's celebrated equivalence for MV-algebras [4], we obtain a categorical equivalence between positive MV-algebras and certain lattice-ordered monoids with units.

This talk is based on [1], [2, Ch. 4], and a joint work with P. Jipsen, T. Kroupa and S. Vannucci [3].

References

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