

The Morita-equivalence between MV-algebras and abelian ℓ -groups with strong unit

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This talk is based on [2]. We show that the theory MV of MV-algebras is Morita-equivalent to the theory \mathbb{L}_u of abelian ℓ -groups with strong unit. This generalizes the well-known equivalence between the categories of set-based models of these two theories established by D. Mundici in [3] and allows to apply the ‘bridge technique’ of [1] to transfer properties and results from one theory to the other, obtaining new insights which are not visible by using classical techniques. Among these results, we mention a bijective correspondence between the geometric theory extensions of the theory MV and those of the theory \mathbb{L}_u , a form of completeness and compactness for the infinitary theory \mathbb{L}_u , a logical characterization of the finitely presentable ℓ -groups with strong unit and a sheaf-theoretic version of Mundici’s equivalence.

References

- [1] O. Caramello, The unification of Mathematics via Topos Theory, *arXiv:math.CT/1006.3930* (2010).
- [2] O. Caramello and A. C. Russo, The Morita-equivalence between MV-algebras and abelian ℓ -groups with strong unit, to appear in the *Journal of Algebra*, online version available at <http://www.sciencedirect.com/science/article/pii/S0021869314004487> (2014).
- [3] D. Mundici, Interpretation of AF C*-Algebras in Łukasiewicz Sentential Calculus, *J. Funct. Analysis* 65 (1986), 15-63.