

Remarks on Ideals in Lower-Bounded Dually Residuated Lattice-Ordered Monoids

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Abstract

Lattice-ordered groups, as well as *GMV*-algebras (pseudo *MV*-algebras), are both particular cases of dually residuated lattice-ordered monoids (*DRℓ*-monoids for short). In the paper we study ideals of lower-bounded *DRℓ*-monoids including *GMV*-algebras. Especially, we deal with the connections between ideals of a *DRℓ*-monoid A and ideals of the lattice reduct of A .

Key words: *DRℓ*-monoid, ideal, prime ideal.

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In 1965, K. L. N. Swamy [11] introduced the notion of a (commutative) dually residuated lattice-ordered semigroup in order to capture the common features of Abelian lattice-ordered groups and Brouwerian algebras. It turns out that well-known *MV*-algebras [1], an algebraic version of the Łukasiewicz infinite valued propositional logic, can be considered as certain bounded commutative *DRℓ*-monoids [7, 8]. The present concept of a (non-commutative) *DRℓ*-monoid is due to T. Kovář [3]:

Definition 1 An algebra $(A; +, 0, \vee, \wedge, \multimap, \multimap)$ of type $\langle 2, 0, 2, 2, 2, 2 \rangle$ is said to be a *dually residuated lattice ordered monoid* (simply, a *DRℓ-monoid*) if