PSEUDO BL-ALGEBRAS AND DRl-MONOIDS

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Pseudo BL-algebras were introduced by Di Nola, Georgescu and Iorgulescu as a noncommutative generalization of BL-algebras which give an algebraic counterpart of Basic Logic. On the other hand, (noncommutative) dually residuated lattice ordered monoids, briefly DRl-monoids, extend the concept of (commutative) DRl-semigroups which are a common generalization of commutative l-groups and Brouwerian algebras. Also pseudo MV-algebras are included among DRl-monoids.

We show that pseudo BL-algebras are categorically equivalent to bounded DRl-monoids satisfying certain additional identities. Using the duality between mentioned classes of algebras, many properties of pseudo BL-algebras are obtained. For instance, we are able to describe congruence kernels by means of normal filters. Further, we deal with representable pseudo BL-algebras. It was shown by Rachunek that BL-algebras are the duals of bounded representable DRl-semigroups, and so any BL-algebra is isomorphic to a subdirect product of totally ordered BL-algebras. However, in the case of pseudo BL-algebras, it fails. We give some characterizations of the representability and, in conclusion, it is proved that representable pseudo BL-algebras form a variety.