

ℓ -GROUPS AND PO-GROUPS VS ALGEBRAIC AND QUANTUM STRUCTURES

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ABSTRACT. Partially ordered and lattice ordered groups play an important role in the study of some algebraic and quantum structures. A typical case is that every MV-algebra is due to a known result by Mundici [Mun] and interval in an Abelian unital ℓ -group G with strong unit u . For a noncommutative version of MV-algebras, pseudo MV-algebras introduced by [GeIo], an analogous result was established in [Dvu]. If we use instead of a total operation \oplus a simple $+$, we obtain effect algebras, [FoBe], and due to the result of [Rav], if an effect algebra satisfies the Riesz Decomposition Property, RDP, then the effect algebra is isomorphic to an interval in an Abelian po-group with RDP. For pseudo effect algebras, a noncommutative generalization of effect algebras, an analogous result holds, too, if the pseudo effect algebra satisfies RDP₁, a stronger form of RDP, [DvVe1, DvVe2].

Recently there appeared a new construction of pseudo BL-algebras which starts with powers of the positive and negative cone of an ℓ -group, two injective mappings [DvKo], and the resulting algebra is a so-called kite pseudo BL-algebra. This construction can be used also for po-groups and the resulting algebra is a kite pseudo effect algebra, [Dvu1].

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