

Semilattices of Groups in a Given Variety and Rectangular Bands

Araujo, Joao

In a recent scientific paper, Monzo characterized semilattices of rectangular bands and groups of exponent 2 as the semigroups that satisfy the following conditions: $x = x^3$ and $xyx \in \{xy^2x, y^2x^2y\}$. In a subsequent paper, these semigroups were characterized by the following conditions: $x = x^3$ and $xy \in \{(xy)^2, yx\}$. This characterization contains band's idempotency ($xy = (xy)^2$) and the commutativity of groups of exponent 2 ($xy = yx$), and hence is much more natural. But the key feature of this characterization is that it prompts the conjecture that semilattices of rectangular bands and groups satisfying the identity $xy = v$ might be characterized by $xy \in \{(xy)^2, v\}$. The aim of this research was to prove this conjecture in fact holds for the special case of words v in which x and y appear the same number of times, the first letter is y and the last is x . As a very particular case of this general theorem we get the result that semilattices of rectangular bands and commutative groups are characterized by $xy \in \{(xy)^2, yx\}$.