

Free Nilpotent Minimum algebras

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Nilpotent minimum algebras (NM-algebras, for short) are bounded residuated lattices that satisfy three extra axioms: prelinearity, involution and the nilpotent minimum axiom, which roughly states that the conjunction of two elements is either their minimum or the bottom element in the lattice.

We will give a description of the free algebra in the variety of NM-algebras as a weak boolean product of directly indecomposable NM-algebras over the spectrum of its boolean skeleton. These directly indecomposable algebras turn out to be connected or disconnected rotations (see [1]) of free algebras in the variety of generalized Gödel algebras (prelinear unbounded Heyting algebras). The boolean skeleton of the free algebra is a free boolean algebra over a poset.

[1] S. Jenei, On the structure of rotation invariant semigroups. Arch. Math. Logic **42**, 489-514 (2003).