Rybakov, V. V.

Equations in free topoboolean algebra. (English. Russian original) Zbl 0624.03007
Algebra Logic 25, 109-127 (1986); translation from Algebra Logika 25, No. 2, 172-204 (1986).

Let Λ be a modal or superintuitionistic logic and $F_\omega(\Lambda)$ the free algebra of rank ω in the variety of algebras corresponding to Λ. For each of the logics S4 and Int the author obtains the following main results. Let Σ_f be the signature of $F_\omega(\Lambda)$ enriched by the free generators as constant operations. Then: 1) The universal theory of $F_\omega(\Lambda)$ is decidable and there exists an algorithm constructing an obstacle (i.e., roughly speaking, a counter-example) for those universal formulas of Σ_f that are false in $F_\omega(\Lambda)$. 2) There exists an algorithm verifying the solvability of equations in $F_\omega(\Lambda)$ and finding the solutions of solvable equations.

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MSC:

03B25 Decidability of theories and sets of sentences
03G10 Logical aspects of lattices and related structures
06B25 Free lattices, projective lattices, word problems
08B20 Free algebras

Keywords:

modal logic; superintuitionistic logic; free algebra; S4; Int

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