On Algebraic Counterparts of Some Properties of Superintuitionistic Predicate and Intuitionistic Polymodal Logics

Dmitry Tishkovsky

It was shown in [1] that for each superintuitionistic predicate logic L there exists a intuitionistic polymodal propositional logic ML such that every polymodal formula of ML is a metatheorem of the logic L. Using this fact it is possible to construct algebraic semantics for the class of superintuitionistic first-order logics [1].

In the paper we discuss derivation interpolation property (IPD), implicative interpolation property (IP), ordinary Beth property (B2) and projective Beth property (PB2) [2] of the logics mentioned above.

Algebraic counterparts of these properties were found for superintuitionistic first-order logics and for intuitionistic polymodal logics and special equivalence theorems were proved for these logics.

A corollary of the theorems is that if a polymodal propositional logic ML corresponds to some superintuitionistic predicate logic L in above sense then possession by ML of property IPD (IP, B2, PB2) implies possession by L of property of the same name.

[1] Tishkovsky D. E. On algebraic semantics for superintuitionistic predicate logics, Algebra i logika (in russian), v.38, No1, 1999, pp.68–95.

[2] Maksimova L. Explicit and Implicit Definability in Modal and Related Logics, Bull. of the Section of Logic, v.27, No1/2, 1998, pp.36–39.

Address: Institute Mathematics of Siberian Branch of Russian Academy of Sciences, ul.Arbuzova 5 kv.150, Novosibirsk 630117, Russia
E-mail: tishkov@math.nsc.ru