Logic Programs and Recursive Stable Models

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September 10, 2013

Abstract

In general, the set of stable models of a recursive logic program can be quite complex. For example, it follows from results of Marek, Nerode, and Remmel (APAL 1992) that there exists finite predicate logic programs and recursive propositional logic programs which have stable models but no hyperarithmetic stable models. In this paper, we shall define several conditions which ensure that a recursive propositional logic program P has a stable model which is of low complexity, that is, a recursive stable model, a polynomial time stable model, or a stable model which lies in a low level of the polynomial time hierarchy.