

The Preservativity Logic

S. Mojtaba Mojtabehi

University of Tehran

Abstract

The (Σ_1) -Preservativity Logic [Iem01, Iem03] is a propositional modal logic with a binary modal operator \triangleright . The intended meaning of $A \triangleright B$ is: "For every Σ_1 -sentence θ , if we have $T \vdash \theta \rightarrow A$ then $T \vdash \theta \rightarrow B$ "; where T is a first-order theory. For classical theories T , this notion is equivalent to the Π_1 -conservativity.

Preservativity Logic is an extension of *Provability Logic* and seems to be the right approach toward provability logic of HA, the intuitionistic counterpart of Peano Arithmetic PA. The known axioms and rules of the provability logic of HA have a transparent formulation in this extension. In this talk, we focus on arithmetical interpretations of preservativity for HA, and we will show how to formulate the Σ_1 -provability logic of HA [AM14] in the preservativity language.

[AM14] M. Ardeshir and S.M. Mojtabehi, *The Σ_1 -Provability Logic of HA*, Arxiv.org (2014), <http://arxiv.org/abs/1409.5699>.

[Iem01] R. Iemhoff, *Provability logic and admissible rules*, Ph.D. thesis, University of Amsterdam, 2001.

[Iem03] R. Iemhoff, *Preservativity Logic. (An analogue of interpretability logic for constructive theories)*, *Mathematical Logic Quarterly* 49 (2003), no. 3, 1-21.