

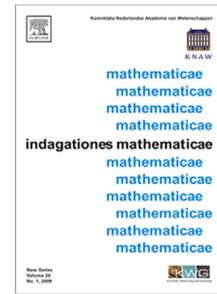
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Subintuitionistic Logics and the Implications they Prove

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Abstract

This is an investigation of the implications of IPC which remain provable when one weakens intuitionistic logic in various ways. The research is concerned with logics with Kripke models as introduced by G. Corsi in 1987, and others like G. Restall, Došen, Visser. This leads to conservatively results for IPC with regard to classes of implications in some of these logics. Moreover, similar results are reached for some weaker subintuitionistic systems with neighbourhood models introduced by the authors in 2016. In addition, the relationship between two types of neighborhood models introduced in that work is clarified. This clarification leads also to modal companions for weaker logics.

Key words: intuitionistic logic, subintuitionistic logic, conservativity, Kripke models, neighbourhood models.

1 Introduction

In this article the logical strength of implication in Brouwer's intuitionism is analyzed. The interpretation of the logical connectives and quantifiers by the BHK-interpretation (see e.g. [14]) leads to intuitionistic propositional logic IPC and first order logic IQC. Here we like to investigate what implications of IPC remain provable when one weakens intuitionistic logic in various ways.

In [4] subintuitionistic logics with Kripke models were introduced by G. Corsi, later also investigated by G. Restall [12] and others [9, 2]. Weaker subintuitionistic logics with neighborhood models made their appearance in [13]. In [6] we showed that IPC is conservative over Corsi's basic system F with respect to so-called basic implications and simple implications. To a certain extent one can say that these implications form the part of IPC that can

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