

# Model Theory of Intuitionistic Bounded Arithmetic with Applications to Independence Results

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First, we develop basic model theory for intuitionistic bounded arithmetic (Kripke models). Then, we use these models to prove some (independence) results for theories like IPV and  $IS_2^1$ . For example, we show that, over BASIC,  $coNP\text{-PIND}$  does not imply (a weak form of)  $NP\text{-PIND}$ . We also show that  $NP\text{-PIND}$  does not prove  $coNP\text{-PIND}$ , unless the Polynomial Hierarchy  $S_2^1$ -provably collapses.