

MR3115993 Alonderis, R. A proof-search
procedure for intuitionistic propositional logic.
Arch. Math. Logic 52 (2013), no. 7-8, 759–778

Danko Ilik

July 8, 2014

The paper presents the formal system ProcI_0 , a refinement of the standard sequent calculus LJ_0^* for intuitionistic propositional logic. The aim of the new calculus is to allow using proof search (i.e. tautology checking) procedures meant for classical propositional logic, LK_0 , to be used when performing proof search (tautology checking) for intuitionistic sequents. This is possible whenever the conclusion of a sequent is a negated formula, thanks to Glivenko’s Theorem, and the gain is in computational complexity, since proof search for classical logic is of a lower complexity class than the one for intuitionistic logic.

ProcI_0 is a sophisticated system allowing “recoverable” formulas to be eliminated from the right-hand side without increase of heights of derivations for invertible rules in comparison to LJ_0^* . A formula is recoverable, when it can be easily reintroduced during proof search based on the information contained in the left-hand side context.