

Extending Gödel logic by an operator adding a constant

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Standard Gödel logic is extended by an operator o , which adds a nonzero constant to the value of the formula. The value of the constant is determined by the interpretation. This is one of the smallest extensions of standard Gödel logic, which is neither propositionally compact nor first order complete.

In contrast to these facts, the axiomatization is astonishingly simple namely the axiomatization is obtained by adding the axioms

$$(oA \rightarrow A) \rightarrow oA$$

$$o(A \rightarrow B) \leftrightarrow (oA \rightarrow oB)$$

to the axioms and rules of standard Gödel logic.

We provide a hypersequent calculus for this logic, which admits cut-elimination