Gentzen-style Axiomatizations for Conservative Extensions of Basic Propositional Logic

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This is a joint work with Mohammad Ardeshir.

Basic Propositional Logic, BPL, is first introduced by A. Visser in [4]. He axiomatized it in natural deduction style. His motivation comes from Modal (Provablity) Logic. The relation of BPL to K4 is like Intuitionistic Propositional Calculus, IPC, to the Modal logic S4. We introduce two Gentzen-style sequent calculus axiomatizations for conservative extensions of Basic propositional logic. Our first axiomatization is an improvement of [2], in the sense that it has a kind of the subformula property and is a slight modification of [3]. In this system the cut rule is eliminated. The second axiomatization is a classical conservative extension of Basic propositional logic. Using these axiomatizations, we prove two interpolation theorems for Basic propositional logic.

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