Hájek's Probability Logic and Its Two-sorted Algebraic Semantics

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Abstract

Petr Hájek together with his co-workers developed a two-tier modal calculus for reasoning about probabilistic uncertainty. The lower syntactical layer is interpreted as a logic for inferring statements about events. Łukasiewicz logic, which is employed on the upper level, makes it possible to express probabilities of formulas directly by truth-degrees of the formulas "probably ϕ". We will mention the original Kripke-style semantics and then we introduce a two-sorted algebraic semantics, which will be further developed in the follow-up talk by V. Marra. Various completeness results (standard, finite) with respect to different models of Hájek's logic will be discussed.