

Imprecise Probabilities on MV-algebras Revisited

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The deep relation between states of an MV-algebra M and betting on the continuous-valued events defined over the maximal spectrum of M is revealed through the generalization of de Finetti theorem to Łukasiewicz logic [3]. The existence of more general betting schemes for the classes of events represented by MV-algebras was investigated in [1], where the authors pursue an algebraic treatment of imprecise probabilities. Informally speaking, an imprecise probability is a non-additive function on M and the main result of [1] is the characterization of coherent imprecise probabilities. The essential tool is the Galois connection between the lower states and the family of compact convex subsets of the state space. In this contribution we will review the existing classes of lower/upper states and discuss some of the important special cases. Namely the case when M is the direct product of finitely-many copies of the standard MV-algebra $[0, 1]$ and the lower state coincides with the Lovász function [2], which is a piecewise linear continuous function whose domains of linearity are the maximal simplices of the canonical triangulation of the n -cube. Further, we study the question of representation of lower states by the Choquet integral with respect to non-additive measures over the maximal spectrum of M .

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