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Precise Propagation of Upper and Lower Probability Bounds in System P

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Abstract

In this paper we consider the inference rules of System P in the framework of coherent imprecise probabilistic assessments. Exploiting our algorithms, we propagate the lower and upper probability bounds associated with the conditional assertions of a given knowledge base, automatically obtaining the precise probability bounds for the derived conclusions of the inference rules. This allows a more flexible and realistic use of System P in default reasoning and provides an exact illustration of the degradation of the inference rules when interpreted in probabilistic terms. We also examine the *disjunctive Weak Rational Monotony* of System P^+ proposed by Adams in his extended probability logic.

For technical reasons, this article is stored as two separate computer files, labelled "Part I" and "Part II", respectively. Please replace the present page by a printout of the "Part II" file.