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**Self-conditional probabilities and probabilistic interpretations of belief functions.** (English)

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Summary: We present an interpretation of belief functions within a pure probabilistic framework, namely as normalized self-conditional expected probabilities, and study their mathematical properties. Interpretations of belief functions appeal to partial knowledge. The self-conditional interpretation does this within the traditional probabilistic framework by considering surplus belief in an event emerging from a future observation, conditional on the event occurring. Dempster's original interpretation, in contrast, involves partial knowledge of a belief state. The modal interpretation, currently gaining popularity, models the probability of a proposition being believed (or proved, or known). The versatility of the belief function formalism is demonstrated by the fact that it accommodates very different intuitions.

**MSC:**

68T37 Reasoning under uncertainty in the context of artificial intelligence

03B48 Probability and inductive logic

60A05 Axioms; other general questions in probability

68T30 Knowledge representation

**Keywords:**

belief functions; self-conditional expected probabilities; Dempster's model; probability of modal propositions

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