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Two-step integral with respect to fuzzy measure. (English) Zbl 0948.28015
Tatra Mt. Math. Publ. 16, No. 2, 359-368 (1999).

In the paper the two-step Choquet integral is introduced. In general, this integral differs from the standard Choquet integral and defines a new type of a functional. The authors prove the representation theorem, showing that if a fuzzy measure M (from the definition of the integral) is additive, then the two-step integral is comonotone and therefore it can be represented by the standard Sugeno integral with respect to an appropriate fuzzy measure. The reduction of the two-step Choquet integral to the single Choquet integral in some other special situations is shown.

Moreover, the two-step integration method based on the Sugeno integral is introduced. The representation theorem, showing that if the fuzzy measure M is a maxitive measure then the two-step Sugeno integral coincides with the standard Sugeno integral with respect to an appropriate fuzzy measure, is proved.

Finally, some other possible generalizations of the two-step integration method are proposed.

Reviewer: [Anna Kolesárová \(Bratislava\)](#)

MSC:

28E10 Fuzzy measure theory

Cited in **6** Documents

Keywords:

fuzzy measure; Choquet integral; Sugeno integral; decomposition of integral; Bayes principle