

# A strong consistency result for fuzzy relative frequencies interpreted as estimator for the fuzzy-valued probability

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## Abstract

The unavoidable imprecision of measurements of continuous physical quantities can be modelled by using the concept of fuzzy numbers and fuzzy vectors. Concerning a quantitative usage of such data the classical concept of relative frequencies for real data has to be extended to so-called fuzzy relative frequencies for fuzzy data, whereby the fuzzy relative frequency of a set is a fuzzy number.

Analogous to A. Dempster's interval-valued probabilities induced by multi-valued mappings fuzzy-valued probabilities induced by fuzzy random vectors are considered and analyzed. It will be shown that fuzzy relative frequencies can be interpreted as strongly consistent estimator for the corresponding fuzzy-valued probability.