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Operations in the Space of Fuzzy Numbers

There are various ways to turn fuzzy-numbers into a metric space, and various ways to define arithmetic operations. Until recently interval arithmetic and the extension principle formed the basis for these, but a new approach (Ma, Kandel and Friedman) looks at fuzzy-numbers as pairs of functions. Since the ultimate goal is to apply this to control theory and modelling problems it is important to have operations and a metric which are both amenable to computation and model the situation. Restricting the fuzzy-numbers to trapezoidal fuzzy-numbers and using a different metric from the one proposed in the paper by Ma et al. offers a possibility which models the situation better than the extension principle but is easier for computation.