Algebraic Equivalences over Fuzzy Quantities

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Abstract: Fuzzy numbers and fuzzy quantities do not generally fulfil some fundamental algebraic properties valid for crisp numbers, as shown e.g. in [1]. But it is possible to avoid this discrepancy if the strict equality between fuzzy quantities is substituted by rather weaker equivalence relations (cf. [5,8,9]) more respecting the natural vagueness of fuzzy phenomena.

The equivalence relations suggested in the referred papers are based on analogous principles, however they are modified for the specific cases of addition and multiplication relations. Here we suggest a generalized equivalence model covering both previous equivalences (additive and multiplicative) as its special cases, and show its applicability to adequate description of certain class of algebraic treatments of fuzzy numbers and fuzzy quantities.