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SERGEI A. ORLOVSKI
Calculus of Decomposable Properties, Fuzzy Sets and Decisions

Allerton Press, Inc., New York 1994.
xiii + 259 pages, 7 figures.

The classical approach to the fuzzy set theoretical concepts is consequently based on the set-theoretic paradigma. It stresses the eternal union of predicate and subset as well as the element-set hierarchy, and the fuzzy set theory generalizes this method by means of its theoretical tools.

The author of the referred book suggests another approach to the fuzzy sets. It respects the linguistic and psychological sources of vagueness and derives the fuzziness from ambiguous properties mutually connected and combined to determine the shape of the resulting fuzzy set. This approach opens a qualitatively new view on the fuzziness and, in spite of the fact that the obtained mathematical constructions are analogous to the classical fuzzy set aparatus, the method allows to derive some new useful results. The general concepts derived by means of the property paradigma are applied to the modelling of several problems related to the decision-making procedures.

After a brief and heuristic introduction to the author's ideas the rest of the book is divided into four chapters. The main ones of them are devoted to the calculus of properties and to the choice of decisions due to fuzzy preferences. Their sections deal with such subjects like decomposable properties and their composition, properties of classes and objects, and to the concepts of relation, correspondence and fuzzy variable based on the analysis of elementary (i. e. not decomposable) properties. Regarding the subject of choice, the relevant chapter deals mainly with the properties of fuzzy preferences, domination of alternatives and multiple fuzzy preferences.

Remaining two chapters illustrate the previous results by means of two specific problems of choice, namely the mathematical programming and the games of strategy. Both of these decision-makings are considered with fuzzy information. In these two chapters such topics like mathematical programming with fuzzy parameters with one or more objectives, guaranteed results and equilibria of fuzzy games, and some others, are investigated.

The book is completed by a list of references containing 131 items, and by the subject index.

The book is written in a lucid and illustrative style fully respecting the mathematical method of presentation. The ideas given by the book are evidently original, and the obtained results are inspirative and informative. It is interesting to see an alternative philosophy of the source of fuzziness as well as the consistency of the derived results with the classical fuzzy set theoretical view.

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