



When planning experiments it is very important to know the amount of information that we obtain from their realization. It is known that a measure of information is entropy. A usual mathematical model of experiment in the classical information theory is a measurable partition. Partitions are standardly defined in the context of classical sets. It has appeared however, that for a solution of real problems are partitions defined by means of the concept of fuzzy sets more appropriate. The book contains a review of results of author related to the study of entropy in the fuzzy case. These results represent fuzzy generalizations of some concepts from the classical probability theory. The entropy of fuzzy partition can be considered as a measure of information of experiment, the results of which are fuzzy events. The concept of entropy of a fuzzy partition is exploited to define the entropy of fuzzy dynamical systems. Subsequently an ergodic theory for these systems is proposed. Presented results include the corresponding results from the classical ergodic theory as particular cases. The publication might be useful for specialists who deal in their research work with similar issues.

Dagmar Markechová

FUZZY PROBABILITY SPACES, FUZZY DYNAMICAL SYSTEMS, AND ENTROPY

Fuzzy modifications of some concepts of classical probability theory, measure theory, and ergodic theory



Dagmar Markechová

Prof. Dagmar Markechová has obtained her PhD degree in Probability Theory and Mathematical Statistics at Comenius University in Bratislava in 1990. Since 1981 up to now she is working as university teacher at the Dept. of Math. of Faculty of Natural Sciences of CPU in Nitra. She is author of over 80 papers and co-author of several textbooks.



978-3-659-46334-1

Fuzzy Sets and Systems. Peter J. Crickmore Ph.D., P.Eng. Centre for Environmental Investigation Inc. ** Finite dimensional smooth linear dynamical system. with x and u representing fuzzy vectors of states and controls and show that these representations are possible. In addition, a fuzzy Kalman filter for each system can be derived under a fairly modest set of assumptions. However, control systems in the fuzzy world are often much less mathematically sophisticated. CEI Inc. Early Fuzzy Control Systems. The first system controlled by fuzzy logic was a small steam engine; the algorithm was due to Mamdani and Assilian at the University of London in 1974*. E.H. Mamdani. * E. H. Mamdani, "Application of the fuzzy operator in mathematics, fuzzy sets (a.k.a. uncertain sets) are somewhat like sets whose elements have degrees of membership. Fuzzy sets were introduced independently by Lotfi A. Zadeh and Dieter Klaua in 1965 as an extension of the classical notion of set. At the same time, Salii (1965) defined a more general kind of structure called an L-relation, which he studied in an abstract algebraic context. Fuzzy relations, which are used now in different areas, such as linguistics (De Cock, Bodenhofer & Kerre 2000)