THE CONCEPT OF FUZZINESS IN THE THEORY OF AUTOMATA

W. Wechler, Department of Mathematics, Technical University of Dresden (D.D.R.)

The great complexity of systems in the real world complicates a description of dynamics in a precise way. In order to overcome this difficulty the concept of fuzziness proposed by Zadeh was introduced in the system theory. The present paper deals with systems which have a finite number of states.

Different kinds of fuzzy dynamics will be considered by means of so-called R-fuzzy automata seen from a general point of view. In the notion of R fuzzy automaton R denotes an arbitrary semiring, which determines the special kind of fuzzy dynamics. A classification of the semirings R will be given such that the behaviour of the appropriate R-fuzzy automaton can be compared to that of a deterministic or stochastic automaton.