

## Preface of the guest editors

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The study of probabilistic models for random events, which are not simultaneously measurable or unsharp, requires new approaches to the modeling of uncertainty. The need for such an alternative theory comes back to the thirties of the twentieth century, since the classical (Kolmogorovian) probability theory could not explain events occurring in quantum physics. Nowadays, there are several scientific schools studying such events. Among utilized models, we can find orthomodular lattices (quantum logics), difference posets (effect algebras), multivalue algebras and fuzzy sets.

This issue contains six papers devoted to topological and algebraic aspects of uncertainty modeling. These papers have been presented at the Ninth International Conference on Fuzzy Set Theory and Applications which was held in Liptovský Ján, Slovak Republic, 4–8 February 2008.

In the first paper “Conditional states and independence in D-posets” by authors Chovanec Ferdinand, Drobná Eva, Kôpka František and Nánásiová Olga (Slovakia)

conditional states on difference posets are introduced as a modification of Rényi’s definition of the conditional probability and utilizing the property of convexity of the space of states. An independence of elements with respect to a conditional state is investigated in D-posets.

The second paper “Properties of max-\*fuzzy relation equations” has been prepared by Drewniak Józef and Matusiewicz Zofia (Poland). In this article authors have extended the result of Zhang et al.(2006), who studied finite fuzzy relation equations with max–min and max–prod composition, such that the max-\*composition is used for wide family of operations\*.

The main result of the third paper “On another view of an inverse of an interval matrix” by Lebedinska Julija (Latvia) is based on Rohn’s results in the field of interval matrixes. The problem of definition and determination of the fuzzy inverse matrix is studied.

The fourth paper “Maps on a quantum logic” by Nánásiová Olga and Valášková Ľubica (Slovakia) deals with functions of two variables on a quantum logic which correspond to measures of intersection, union and symmetric difference of two random events on a probability space.

The fifth paper “Convex combinations of strict t-norms” by Petrík Milan (Czech Republic) is concerned with the class of strict t-norms whose multiplicative generators are determined by the first partial derivative along their zero borders. A subclass of strict t-norms where a counter-example cannot be found has been characterized and the remaining possibilities where such a counter-example could be found have been summarized.

In the last paper “Variable-basis topological systems versus variable-basis topological spaces” by author Solovyov Sergey A. (Latvia), a variable-basis generalization of the notion of topological system of S. Vickers has

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been introduced and functorial relationships between the categories of variable-basis topological systems and variable-basis fuzzy topological spaces in the sense of S.E. Rodabaugh have been considered.

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