Łukasiewicz tribes as probability domains

Roman FRIČ and Martin PAPČO

Slovak Academy of Sciences
and
Catholic University in Ružomberok, Slovakia

Generalized probability on Łukasiewicz tribes has been studied e.g. in [8], [5], [6], [7], [4], [1], [2]. We show (cf. [3]) that (within systems of $[0, 1]$-valued functions) Łukasiewicz tribes are characterized by few natural properties of domains of probability. Further, σ-fields of sets (domains of classical probability) are the "minimal" and measurable $[0, 1]$-valued functions (domains of fuzzy probability) are the "maximal" Łukasiewicz tribes.

References

[1] Bugajski, S.: Statistical maps I. Basic properties. Math. Slovaca *51* (2001), 321–342.

[2] Bugajski, S.: Statistical maps II. Operational random variables. Math. Slovaca *51* (2001), 343–361.

[3] Frič, R. and Papčo, M.: On probability domains II. (Submitted to Internat. J. Theoret. Phys.)

[4] Gudder, S.. Fuzzy probability theory. Demonstratio Math. *31* (1998), 235–254.

[5] Kroupa, T.: Conditional probability on MV-algebras. Fuzzy Sets and Systems **149** (2005), 369–381.

[6] Navara, M.: Probability and conditional probability on tribes of fuzzy sets. In: D. Dubois, E.P. Klement, and R. Mesiar (eds.): Fuzzy sets, Probability, and Statistics – Gaps and bridges. Johannes Kepler University, Linz, Austria, 2007, 84–88.

[7] Navara, M.: Tribes revisited. In: U. Bodenhofer, B. De Baets, E.P. Klement, and S. Saminger-Platz (eds.), 30-th Linz Seminar on Fuzzy Set Theory: The Legacy of 30 Seminars—Where Do We Stand and Where Do We Go? Johannes Kepler University, Linz, Austria, 2009, 81–84.

[8] Riečan, B. and Mundici, D.: Probability on MV-algebras. In: Handbook of Measure Theory, Vol. II (Editor: E. Pap), North-Holland, Amsterdam, 2002, 869–910.