METRIC SPACE WITH DIFFERENT FUZZY COMPATIBILITIES

Pavol Kráľ

Department of Mathematics, Faculty of Natural Sciences
Matej Bel University
974 01 Banská Bystrica, Slovak Republic
kral@fpv.umb.sk

Let a metric space (X, ρ) be given. We can try several attitudes to identify pairs of points at some level. One of them is fuzzy compatibility C studied by Janiš and Tepavčević in [1]. The fuzzy compatibility is a function $C : X^2 \to [0; 1]$ fulfilling properties

$$C(x, x) = 1, C(x, y) = C(y, x)$$

for each $x, y \in X$. They introduced a fuzzy metric $\rho^* : X^2 \to F(R)$ where $F(R)$ is the system of all fuzzy subsets of a real line. They proved that ρ^* has properties similar to those of a metric ρ.

Fuzzy compatibilities in the given metric space can be very different. They can be connected for example with equivalent metrics. In this paper we study the properties of fuzzy sets $\rho^*(a, b)$ for given $a, b \in X$ which are connected with such fuzzy compatibilities.

References

[1] Janiš, V., Tepavčević, A.: *Metric in a space with fuzzy compatibility*, Proceedings of AGOP 2001, Oviedo, 67-70, 2001.

[2] Klement, E.P.,Mesiar, R., Pap, E.: *Triangular norms*, Kluwer Acad. Publ. Dordrecht, 2000.

[3] Král, P., Minarovič, A.: *Some properties of fuzzy quantities generated by a metric in a space with fuzzy compatibility*, FSTA 2002, to appear.