Sarma, I. R.; **Rao, J. M.**; **Rao, S. S.**
Contractions over generalized metric spaces. (English) Zbl 1173.54311
J. Nonlinear Sci. Appl. 2, No. 3, 180-182 (2009).

Summary: A generalized metric space (g.m.s) is defined as a metric space in which the triangle inequality is replaced by the 'quadrilateral inequality', $d(x,y) \leq d(x,a) + d(a,b) + d(b,y)$ for all pairwise distinct points x, y, a, b of X. (X,d) becomes a topological space when we define a subset A of X to be open if to each a in A there corresponds a positive number r_a such that $b \in A$ whenever $d(a,b) < r_a$. Cauchyness and convergence of sequences are defined exactly as in metric spaces and a g.m.s (X,d) is called complete if every Cauchy sequence in (X,d) converges to a point of X. *A. Branciari* [Publ. Math. 57, No. 1–2, 31–37 (2000; Zbl 0963.54031)] has published a paper purporting to generalize Banach's contraction principle in metric spaces to g.m.s. In this paper, we present a correct version and proof of the generalization.

MSC:

54E40 Special maps on metric spaces
54H25 Fixed-point and coincidence theorems (topological aspects)
47H09 Contraction-type mappings, nonexpansive mappings, A-proper mappings, etc.

Keywords:

fixed point; contraction mapping; generalized metric spaces; Banach's contraction mapping principle

Full Text: DOI EuDML Link