Dutta, P. N.; **Choudhury, Binayak S.**

A generalisation of contraction principle in metric spaces. (English) Zbl 1177.54024

Fixed Point Theory Appl. 2008, Article ID 406368, 8 p. (2008).

In this paper, the main result states that a self-mapping $T : X \to X$ defined on a complete metric space (X, d) has a unique fixed point if it satisfies the following inequality

$$\psi(d(Tx, Ty)) \leq \psi(d(x, y)) - \phi(d(x, y)),$$

where $\psi, \phi : [0, \infty) \to [0, \infty)$ are two monotone nondecreasing continuous functions with $\psi(t) = 0 = \phi(t)$ if and only if $t = 0$. When ψ is the identity function on $[0, \infty)$, this reduces to a result of *B. E. Rhoades* [Nonlinear Anal., Theory Methods Appl. 47, No. 4, 2683–2693 (2001; Zbl 1042.47521)]. Moreover, the main result is illustrated by an example.

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MSC:

54H25	Fixed-point and coincidence theorems (topological aspects)
47H10	Fixed-point theorems
47H09	Contraction-type mappings, nonexpansive mappings, A-proper mappings, etc.

Keywords:

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