

Ding, Hui-Sheng; Li, Lu

Coupled fixed point theorems in partially ordered cone metric space. (English) Zbl 1289.54122
Filomat 25, No. 2, 137-149 (2011).

One of the main results of the paper is the following. Let (X, \sqsubseteq, d) be a complete ordered cone metric space in the sense of *L.-G. Huang* and *X. Zhang* [Math. Anal. Appl. 332, No. 2, 1468–1476 (2007; [Zbl 1118.54022](#))] and let $F : X \times X \rightarrow X$ be a continuous mapping. Suppose that: (a) F has the mixed monotone property, i.e., $F(x_1, y_1) \sqsubseteq F(x_2, y_2)$ whenever $x_1 \sqsubseteq x_2$ and $y_2 \sqsubseteq y_1$; (b) there exist $\alpha, \beta, \gamma \geq 0$ with $2\alpha + 3\beta + 3\gamma < 2$ such that $d(F(x, y), F(u, v)) \leq \frac{\alpha}{2}(d(x, u) + d(y, v)) + \frac{\beta}{2}(d(x, F(x, y)) + d(u, F(u, v)) + d(y, v)) + \frac{\gamma}{2}(d(x, F(u, v)) + d(u, F(x, y)) + d(y, v))$ for all $u \sqsubseteq x, y \sqsubseteq v$; (c) there exist $x_0, y_0 \in X$ such that $x_0 \sqsubseteq F(x_0, y_0)$ and $F(y_0, x_0) \sqsubseteq y_0$. The authors prove that under these assumptions, F has a coupled fixed point. Also, a result for a class of quasicontractions is proved. No example is given.

Reviewer: [Zoran Kadelburg](#) (Beograd)

MSC:

[54H25](#) Fixed-point and coincidence theorems (topological aspects)

Cited in **17** Documents

Keywords:

mixed monotone mapping; partially ordered set

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