

A Remark on the Fixed point Theorem of the Expansion Mappings

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Let X be a Complete metric space with distance function d , and T a mapping from X into X . T is said to be a first type of the expansion mapping, if it satisfies the following condition

$$(*) \quad d(Tx, Ty) \geq hd(x, y), \forall x, y \in X, h > 1.$$

Theorem Let (X, d) be a compact space. T is Continuous and T satisfies the condition $(*)$, then the map T has a unique fixed point x^* in X , and for every $x_0 \in X$, $x_n = Tx_{n-1}$ ($n = 1, 2, \dots$). We have $x_n \rightarrow x^*$ as $n \rightarrow \infty$.

Reference

- [1] 王尚志等, 膨胀算子及其不动点定理, 数学进展, Vol. 11, No.2(1982), 149—153.