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FIXED POINT THEOREMS FOR COMMUTING MAPPINGS WITH APPLICATIONS

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Abstract

For normed vector spaces, pairs of mappings which commute at coincidence points are considered. If a specific sequence defined inductively using these mappings alternatively converges, then it is shown that under a very symmetric, generalized and natural contraction condition, the mappings have unique common fixed point. A series of theorems are obtained as various special cases of this result, which yield many of already proved results or even their further generalizations. Applications of the main theorem in establishing the existence and uniqueness of common solution to some dynamic programming functional equations are obtained, which also generalize or extend earlier such applications.

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