

Weak compactness is not equivalent to the fixed point property in c

ROXANA POPESCU

University of Pittsburgh, Pittsburgh, PA
rop42@pitt.edu

ABSTRACT

We show that there exists a non-weakly compact, closed, bounded, convex subset W of the Banach space of convergent sequences $(c, \|\cdot\|_\infty)$ such that every nonexpansive map $T : W \rightarrow W$ has a fixed point. This answers a question left open in the 2003 and 2004 papers of Dowling, Lennard and Turett. It is also the first example of a non-weakly compact, closed, bounded, convex subset W of a Banach space X isomorphic to c_0 , for which W has the fixed point property for nonexpansive mappings.

References

- [1] T. Gallagher, C. Lennard, R. Popescu *Weak compactness is not equivalent to fixed point property in c* , J. Math. Anal. Appl. 431, 2015, pp. 471-481.
- [2] P.N. Dowling, C. Lennard, B. Turett, *Weak compactness is equivalent to the fixed point property in c_0* , Proc. Amer. Math. Soc. 132 (6) 2004, pp. 1659-1666.
- [3] P.N. Dowling, C. Lennard, B. Turett *Characterizations of weakly compact sets and new fixed point free maps in c_0* , Studia Math. 154 (3) 2003, pp. 277-293.