

## THE FIXED POINT PROPERTY OF THE CARTESIAN PRODUCT OF ROBERTS SPACES

NGUYEN HOANG THANH

University of Da Nang, College of Education, Faculty of Mathematics  
459 Ton Duc Thang, Da Nang, Viet Nam  
E-mail: nh.thanh@ud.edu.vn

**Abstract.** We know all Roberts spaces have the fixed point property (see [6]) and it is not certain that the Cartesian product of fixed point spaces is a fixed point space. The aim of this paper is to show that the product of Roberts spaces has the fixed point property. This is an extension of the result in [6].

**Key Words and Phrases:** Linear metric spaces, convex sets, Roberts spaces, the fixed point property.

**2010 Mathematics Subject Classification:** 46A16, 47H10, 47N17.

### REFERENCES

- [1] C. Bessaga, A. Pelczynski, *Selected Topics in Infinite-Dimensional Topology*, Vol. 58, PWN Warszawa, 1975.
- [2] Yu-Qing Chen, *Fixed points for convex continuous mappings in topological vector spaces*, Proc. Amer. Math. Soc., **129**(2000), no. 7, 2157-2162.
- [3] A. Granas, J. Dugundji, *Fixed Point Theory*, Springer, 2003.
- [4] N.J. Kalton, N.T. Peck, *A re-examination of Roberts' example of compact convex sets with no extreme point*, Math. Ann., **253**(1980), 89-101.
- [5] N.J. Kalton, N.T. Peck, J.W. Roberts, *An  $F$ -space Sampler*, London Math. Soc. Lecture Note Series 89, 1984.
- [6] N.T. Nhu, L.H. Tri, *No Roberts space is a counterexample to Schauder's conjecture*, Topology, **33**(1994), 371-378.
- [7] N.T. Nhu, L.H. Tri, *Every needle point space contains a compact convex  $AR$  - set with no extreme point*, Proc. Amer. Math. Soc., **120**(1994), 261 - 265.
- [8] J.W. Roberts, *Pathological compact convex sets in the spaces  $L_p, 0 \leq p < 1$* , The Altgeld Book, University of Illinois, 1976.
- [9] J.W. Roberts, *A compact convex set with no extreme point*, Studia Math., **60**(1977), 255-266.
- [10] J.W. Roberts, *The embedding of compact convex sets in locally convex spaces*, Canad. J. Math., **30**(1978), 449-454.
- [11] S. Rolewicz, *Metric Linear Spaces*, Warszawa, 1972.

*Received: January 20, 2010; Accepted: April 13, 2011.*