

COMMON FIXED POINT THEOREMS VIA MEASURE OF NONCOMPACTNESS

NEDA KHODABAKHSHI* AND S. MANSOUR VAEZPOUR**

* Department of Mathematics and Computer Science,
Amirkabir University of Technology,
Hafez Ave., P.O. Box 15875-4413, Tehran, Iran
E-mail: khodabakhshi@aut.ac.ir
E-mail: vaez@aut.ac.ir
** Corresponding author

Abstract. In this paper, we provide sufficient conditions for the existence of common fixed point for two commuting operators with the technique associated with measure of noncompactness in Banach spaces. Our results generalize Darbo's fixed point theorem and also some fixed point theorems which were recently proved by some authors [2, 13].

Key Words and Phrases: Common fixed point, measure of noncompactness.

2010 Mathematics Subject Classification: 47H08, 47H10.

Acknowledgement. The authors would like to thank the referee for giving useful suggestions and comments for the improvement of this paper.

REFERENCES

- [1] R.P. Agarwal, M. Meehan, D. O'Regan, *Fixed Point Theory and Applications*, Cambridge Univ. Press, Cambridge, 2004.
- [2] A. Aghajani, J. Banaś, N. Sabzali, *Some generalizations of Darbo fixed point theorem and applications*, Bull. Belg. Math. Soc. Simon Stevin., **20**(2013), 345-358.
- [3] A. Aghajani, Y. Jalilian, *Existence and global attractivity of solutions of a nonlinear functional integral equation*, Commun. Nonlinear Sci. Numer. Simul., **15**(2010), 3306-3312.
- [4] J. Banaś, *On measures of noncompactness in Banach spaces*, Comment. Math. Univ. Carolinae., **21**(1980), 131-143.
- [5] J. Banaś, *Measures of noncompactness in the space of continuous tempered functions*, Demonstratio Math., **14**(1981), 127-133.
- [6] J. Banaś, B.C. Dhage, *Global asymptotic stability of solutions of a functional integral equation*, Nonlin. Anal., **69**(2008), 1945-1952.
- [7] J. Banaś, K. Goebel, *Measures of Noncompactness in Banach Spaces*, Lect. Notes Pure Appl. Math., Dekker, New York, **60**(1980).
- [8] J. Banaś, B. Rzepka, *An application of a measure of noncompactness in the study of asymptotic stability*, Appl. Math. Letters., **16**(2003), 1-6.
- [9] G. Darbo, *Punti uniti in trasformazioni a condomino non compatto*, Rend. Sem. Mat. Univ. Padova., **24**(1955), 84-92.
- [10] K. Deimling, *Nonlinear Functional Analysis*, Springer-Verlag, 1984.
- [11] J. Dugungji, A. Granas, *Fixed Point Theory*, Vol. 1, Warszawa, 1982.

- [12] A. Hajji, E. Hanebaly, *Commuting mappings and α -compact type fixed point theorems in locally convex spaces*, Int. Journal of Math., **1**(2007), 661-680.
- [13] A. Hajji, *A generalization of Darbo's fixed point and common solutions of equations in Banach spaces*, Fixed Point Theory Appl., **62**(2013), 1-10.
- [14] X. Hu, J. Yan, *The global attractivity and asymptotic stability of solution of a nonlinear integral equation*, J. Math. Anal. Appl., **321**(2006), 147-156.
- [15] Z. Liu, S. Kang, J. Ume, *Solvability and asymptotic stability of an nonlinear functional-integral equation*, Appl. Math. Lett., **24**(2011), 911-917.
- [16] Y.C. Wong, *Introductory Theory of Topological Vector Spaces*, M. Dekker, 1992.

Received: September 5, 2013; Accepted: January 30, 2014.