

COMMON FIXED POINTS OF BANACH OPERATOR PAIR ON FUZZY NORMED SPACES

ISMAT BEG* AND MUJAHID ABBAS**

*Faculty of Management Sciences
University of Central Punjab, Lahore, Pakistan.
E-mail: ibeg@lums.edu.pk

**Department of Mathematics, and Centre for Advanced Studies in Mathematics
Lahore University of Management Sciences, 54792-Lahore, Pakistan.
E-mail: mujahid@lums.edu.pk

Abstract. We prove the existence of common fixed points of noncommuting mappings on fuzzy normed spaces.

Key Words and Phrases: Fixed point, fuzzy normed space, fuzzy nonexpansive mapping, R -subweakly commuting mappings, Banach operator pair.

2010 Mathematics Subject Classification: 47H10, 47H09, 54H25, 46S40.

Acknowledgements. The present version of the paper owes much to the precise and kind remarks of the learned referee. We also acknowledge with thanks Higher Education Commission of Pakistan research grant: 20-918/R&D/07.

REFERENCES

- [1] H. Adibi, Y.J. Cho, D. O'Regan and R. Saadati, *Common fixed point theorems in \mathcal{L} -fuzzy metric spaces*, Appl. Math. Comp., **182**(2006), 820-828.
- [2] T. Bag and S.K. Samanta, *Finite dimensional fuzzy normed spaces*, J. Fuzzy Math., **11**(2003), no. 3, 687-705.
- [3] T. Bag and S.K. Samanta, *Fixed point theorems on fuzzy normed spaces*, Inf. Sci., **176**(2006), 2910-2931.
- [4] T. Bag and S.K. Samanta, *Fixed point theorems in Felbin's type fuzzy normed spaces*, J. Fuzzy Math., **16**(2008), no. 1, 243-260.
- [5] I. Beg, *Fuzzy ordering and completeness of fuzzy metric spaces*, J. Fuzzy Math., **10**(2002), no. 4, 789-795.
- [6] I. Beg, S. Sedghi and N. Shobe, *Common fixed point of uniformly R -subweakly commuting mappings in fuzzy Banach spaces*, J. Fuzzy Math., **18**(2010), 75-84.
- [7] J. Chen and Z. Li, *Common fixed points for Banach operator pairs in best approximation*, J. Math. Anal. Appl., **336**(2007), 1466-1475.
- [8] Z.K. Deng, *Fuzzy pseudo-metric spaces*, J. Math. Anal. Appl., **86**(1982), 74-95.
- [9] M.S. El Naschie, *On a fuzzy Khler-like manifold which is consistent with two slit experiment*, Int. J. Nonlinear Sciences and Numerical Simulation, **6**(2005), 95-98.
- [10] M.A. Erceg, *Metric spaces in fuzzy set theory*, J. Math. Anal. Appl., **69**(1979), 205-230.
- [11] A. George and P. Veeramani, *On some results in fuzzy metric space*, Fuzzy Sets and Systems, **64**(1994), 395-399.

- [12] A. George and P. Veeramani, *On some results of analysis for fuzzy metric space*, Fuzzy Sets and Systems, **90**(1997), 365-368.
- [13] I. Kramosil and J. Michalek, *Fuzzy metric and statistical metric spaces*, Kybernetika, **11**(1975), 326-334.
- [14] O. Kaleva and S. Seikkala, *On fuzzy metric spaces*, Fuzzy Sets and Systems, **12**(1984), 215-229.
- [15] S. N. Mishra, N. Sharma and S. L. Singh, *Common fixed points of maps in fuzzy metric spaces*, Int. J. Math. Math. Sci., **17**(1994), 253-258.
- [16] S. Pathak and N. Hussain, *Common fixed points for Banach operator pairs with applications*, Nonlinear Anal., **69**(2008), 2788-2802.
- [17] R. Saadati, A. Razani and H. Adibi, *A common fixed point theorem in \mathcal{L} -fuzzy metric spaces*, Chaos, Solutions and Fractals, **33**(2007), 358-363.
- [18] B. Schweizer and A. Sklar, *Statistical metric spaces*, Pacific J. Math., **10**(1960), 313-334.
- [19] S. Sedghi and N. Shobe, *Common fixed point theorems for a class of maps in \mathcal{L} -fuzzy metric spaces*, App. Math. Sci., **1**(2007), 835-842.
- [20] N. Shahzad, *Invariant approximations and R -subweakly commuting maps*, J. Math. Anal. Appl., **257**(2001), 39-45.
- [21] L.A. Zadeh, *Fuzzy sets*, Information and Control, **8**(1965), 338-353.

Received: December 10, 2008; Accepted: June 4, 2009.