

FIXED POINT THEOREMS FOR OCCASIONALLY WEAKLY COMPATIBLE MAPPINGS

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Dedicated to Professor Ioan A. Rus on the occasion of his 70th birthday

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Abstract. We obtain two fixed point theorems for a class of operators called occasionally weakly compatible maps defined on a symmetric space. These results establish two of the most general fixed point theorems for four maps.

Key Words and Phrases: occasionally weakly compatible, fixed point theorem, symmetric space.

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REFERENCES

- [1] M. Aamri and D. El Moutawakil, *Some new common fixed point theorems under strict contractive conditions*, J. Math. Anal. Appl. **270**(2002), 181-188.
- [2] M. A. Al-Thagafi and Naseer Shahzad, *Generalized I-nonexpansive selfmaps and invariant approximations*, submitted.
- [3] S. Banach, *Sur les operations dans les ensembles abstraites et leurs applications*, Fund. Math. **3**(1922), 133-181.
- [4] Peter Z. Daffer and Hideaki Kaneko, *Applications of f-contraction mappings to nonlinear integral equations*, Bull. Inst. Math. Acad. Sinica **22**(1994), 169-174.
- [5] A. Djoudi and L. Nisse, *Greguø type fixed points for weakly compatible maps*, Bull. Belg. Math. Soc. **10**(2003), 369-378.

- [6] K. Jha and R. P. Pant, *Common fixed point theorems by altering distances*, Tamkang Math. J. **35**(2004)109-116.
- [7] G. Jungck, *Commuting mappings and fixed points*, Amer. Math. Monthly **73**(1976), 261-263.
- [8] G. Jungck, *Compatible mappings and common fixed points*, Int. J. Math. & Math. Sci., **9**(1986), 771-779.
- [9] G. Jungck, *Common fixed points for noncontinuous nonself maps on nonmetric spaces*, Far East J. Math. Sci. **4**(1996), 19-215.
- [10] R. Kannan, *Some results on fixed points*, Bull. Calcutta Math. Soc. **60**(1968), 71-76.
- [11] Sanjay Kumar and Renu Chugh, *Common fixed point theorem using minimal commutativity and reciprocal continuity conditions in metric space*, Sci. Math. Japonica **56**(2002), 197-203.
- [12] Donal O'Regan and Naseer Shahzad, *Coincidence points and invariant approximation results for multimaps*, to appear in Acta. Math. Sinica.
- [13] S. Padaliya and R. P. Pant, *Common fixed point theorems for R-weakly commuting mappings of type (A)*, Soochow J. Math. **31**(2005), 155-163.
- [14] B. E. Rhoades, *A comparison of various definitions of contractive mappings*, Trans. Amer. Math. Soc. **26**(1977), 257-290.
- [15] K. P. R. Sastry, S. V. R. Naidu, G. V. R. Babu, and G. A. Naidu, *Generalization of common fixed point theorems for weakly commuting maps by altering distances*, Tamkang J. Math. **31**(2000), 243-250.
- [16] S. Sessa, *On a weak commutativity condition of mappings in fixed point considerations*, Publ. Inst. Math. **32**(1982), 149-153.
- [17] Sushil Sharma and Bhavana Deshpande, *Fixed point theorem for weakly compatible mappings and its application to best approximation theory*, J. Indian Math. Soc. **69**(2002), 161-171.
- [18] S. L. Singh and A. Kumar, *Fixed point theorems for Lipschitz type maps*, Riv. Mat. Univ. Parma **7**(2004), 25-34.
- [19] S. L. Singh and S. N. Mishra, *Remarks on Jachymski's fixed point theorems for compatible maps*, Indian J. Pure Appl. Math. **28**(1997), 611-615.
- [20] S. L. Singh and S. N. Mishra *Remarks on recent fixed point theorems and applications to integral equations*, Demonstratio Math. **34**(2001), 847-857.

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