DATA DEPENDENCE OF THE FIXED POINTS IN A SET WITH TWO METRICS

IOAN A. RUS

Department of Applied Mathematics
Babeş-Bolyai University
Cluj-Napoca 400084, Romania
E-mail: iarus@math.ubbcluj.ro

Abstract. A new variant of Maia fixed point theorem is presented. This variant is useful to study data dependence of the fixed points. Some open problems are presented and some applications to integral equations are given.

Key Words and Phrases: generalized contractions, generalized metric spaces, Maia fixed point theorems, data dependence, well posedness of fixed point problem, limit shadowing property, integral equations.

2000 Mathematics Subject Classification: 47H10, 54H25, 45G10.

References

[1] R.P. Agarwal and D. O'Regan, *Various homotopy results for generalized single valued contractions on Fréchet spaces*, J. Concrete and Appl. Mathematics, **1**(2003), no.2, 101-111.

[2] M. Albu, *A fixed point theorem of Maia-Perov type*, Studia Univ. Babeş-Bolyai, Math., **23**(1978), 76-79.

[3] V.G. Angelov, *Fixed point theorem in uniform spaces and applications*, Czechoslovac Math. J., **37**(1987), 19-33.

[4] D.K. Bayen, *Some remarks on fixed point theorems*, Mathematica, **29**(1987), no.1, 1-5.

[5] V. Berinde, *A fixed point theorem of Maia type in K-metric spaces*, Seminar on Fixed Point Theory, 1991, Babeş-Bolyai Univ., Cluj-Napoca, 7-14.

[6] A. Chiş and R. Precup, *Continuation theory for general contractions in gauge spaces*, Fixed Point Theory and Applications, 2004, No.3, 173-185.

[7] M. Frigon, *Fixed point and continuation results for contractions in metric and gauge spaces*, Fixed Point Theory and its Applications, Banach Center Publications, Warszawa, 2007, 89-114.

[8] N. Gheorghiu, *Fixed point theorems in uniform spaces*, An. Şt. Univ. Al. I. Cuza din Iaşi, **28**(1982), f.1, 17-18.

[9] W.A. Kirk, *Contraction mappings and extensions*, in: Handbook of Metric Fixed Point Theory, Kluwer, Dordrecht, 2001, 1-34.

[10] M.G. Maia, *Un'osservazione sulle contrazioni metriche*, Rend. Sem. Mat. Univ. Padova, **40**(1968), 139-143.

[11] D. O'Regan and R. Precup, *Continuation theory for contraction on spaces with two vector-valued metrics*, Applicable Analysis, **82**(2003), no.2, 131-144.

[12] A.I. Perov and A.V. Kibenko, *On a certain general method for investigation of boundary value problems* (Russian), Izv. Akad. Nauk SSSR, Ser. Mat. **30**(1966), 249-264.

[13] R. Precup, *Continuation results for mappings of contractive type*, Seminar on Fixed Point Theory Cluj-Napoca, **2**(2001), 23-40.

[14] V. Radu, *Ideas and methods in fixed point theory for probabilistic contractions*, Seminar on Fixed Point Theory Cluj-Napoca, **3**(2002), 73-97.

[15] B.E. Rhoades, *A comparison of various definitions of contractive mappings*, Trans. Amer. Math. Soc., **226**(1977), 257-290.

[16] I.A. Rus, *On a fixed point theorem of Maia*, Studia Univ. Babeş-Bolyai, Math., **1**(1977), 40-42.

[17] I.A. Rus, *Generalized Contractions and Applications*, Cluj Univ. Press, Cluj-Napoca, 2001.

[18] I.A. Rus, *Picard operators and applications*, Scientiae Math. Japonicae, **58**(2003), no.1, 191-219.

[19] I.A. Rus, *Metric space with fixed point property with respect to contractions*, Studia Univ. Babeş-Bolyai, Math., **61**(2006), no.3, 115-121.

[20] I.A. Rus, A.S. Mureşan and V. Mureşan, *Weakly Picard operators on a set with two metrics*, Fixed Point Theory, **6**(2005), no.2, 323-331.

[21] I.A. Rus, A. Petruşel and G. Petruşel, *Fixed Point Theory 1950-2000. Romanian Contributions*, House of the Book of Science, Cluj-Napoca, 2002.

[22] I.A. Rus, A. Petruşel and M.A. Şerban, *Weakly Picard operators: equivalent definitions, applications and open problems*, Fixed Point Theory, **7**(2006), no.1, 3-22.

[23] B. Rzepecki, *Remarks on the Banach fixed point principle and its applications*, Rev. Roum. Math. Pures Appl., **27**(1982), 81-93.

[24] E. Schörner, *Ultrametric fixed point theorems and applications*, Fields Inst. Communications, **33**(2003), 353-359.

[25] P.P. Zabreiko, *K-metric and K-normed spaces: survey*, Collect. Math., **48**(1997), 825-859.