

Controlling autonomous scalar discrete dynamical systems generated by non self Lipschitzian functions

VASILE BERINDE^{1,2} and GABRIELLA KOVÁCS¹

ABSTRACT.

We apply fixed point techniques of Krasnoselskij type for stabilizing autonomous scalar discrete dynamical systems in the case of Lipschitzian functions.

Acknowledgements. The research was supported by the Grants PN-II-RU-TE-2011-3-239 and PN-II-ID-PCE-2011-3-0087 of the Romanian Ministry of Education and Research.

REFERENCES

- [1] Bair, J. and Haesbroeck, G., *Monotonous stability for neutral fixed points*, Bull. Belg. Math. Soc., **4** (1997), 639–646
- [2] Berinde, V., *Iterative approximation of fixed points*, Second edition, Springer-Verlag, Berlin, Heidelberg, New York, 2007
- [3] Berinde, V. and Kovács, G., *Stabilizing discrete dynamical systems by monotone Krasnoselskij type iterative schemes*, Creat. Math. Inform., **17** (2008), No. 3, 298–307
- [4] Berinde V. and Păcurar, Mădălina, *Controlling chaotic discrete dynamical systems through fixed point iterative methods*, in PAMM, Special Issue: 79th Annual Meeting of the International Association of Applied Mathematics and Mechanics (GAMM), Bremen 2008, Vol. 8, Issue 1, Pages 10877-10878; DOI: 10.1002/pamm.200810877
- [5] Devaney, R. L., *An Introduction to Chaotic Dynamical Systems*, Second Ed., Addison-Wesley Publ. Comp., 1989
- [6] Hillam, B. P., *A generalization of Krasnoselski's theorem on the real line*, Math. Magazine, **48** (1975), 167–168
- [7] Holmgren, R. A., *A first course in discrete dynamical systems*, Second Ed., Springer-Verlag, Berlin, Heidelberg, New York, 2000
- [8] Huang, W., *Controlling Chaos Through Growth Rate Adjustment*, Discrete Dyn. Nat. Soc., **7** (2002), No. 3, 191–199
- [9] Kovács, Gabriella, *On the convergence of a sequence*, Bul. Ştiinț. Univ. Baia Mare Ser. B Fasc. Mat.-Inform., **8** (1992), 53–62
- [10] Yuan, Z. L., Xu, Z. Y. and Guo, L. X., *Generalized synchronization of two bidirectionally coupled discrete dynamical systems*, Commun. Nonlinear Sci. Numer. Simul., **17** (2012), No. 2, 992–1002
- [11] Wang, L. S. and Xu, Z. B., *Quantitative Studies on Asymptotic Growth Behaviors of Trajectories of Nonlinear Discrete Dynamical Systems*, IEEE Trans. Automatic Control, **59** (2014), No. 7, 1930–1935

¹ DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
NORTH UNIVERSITY CENTER AT BAIA MARE
TECHNICAL UNIVERSITY OF CLUJ-NAPOCA
VICTORIEI 76, 430122 BAIA MARE ROMANIA
E-mail address: vberinde@ubm.ro; kovacsgabriella@yahoo.com

² DEPARTMENT OF MATHEMATICS AND STATISTICS
KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS
DHAHHRAN, SAUDI ARABIA
E-mail address: vasile.berinde@gmail.com