Stabilizing discrete dynamical systems by monotone Krasnoselskij type iterative schemes

VASILE BERINDE AND GABRIELLA KOVÁCS

Abstract.

In this note monotone approximations of fixed points of real Lipschitz functions are produced by employing a variation controlling mechanism and a growth-rate controlling mechanism, both with generalized Krasnoselskij type iterations, and both inspired from discrete dynamical systems.

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] Devaney, R. L., An Introduction to Chaotic Dynamical Systems, Second edition, Addison-Wesley Publ. Comp., 1989
- [4] Hillam, B. P., A generalization of Krasnoselski's theorem on the real line, Math. Magazine 48 (1975), 167-168
- [5] Holmgren, R. A., A first course in discrete dynamical systems, Second edition, Springer-Verlag, Berlin, Heidelberg, New York, 2000
- [6] Huang, W., Controlling Chaos Through Growth Rate Adjustment, Discrete Dynamics in Nature and Society, 7 (3) (2002), 191-199
- [7] Kovács, G., On the convergence of a sequence, Bul. Științ. Univ. Baia Mare, Ser. B, Matematică-Informatică, VIII (1992), 53-62

NORTH UNIVERSITY OF BAIA MARE DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE VICTORIEI 76 430122 BAIA MARE, ROMANIA *E-mail address*: vasile_berinde@yahoo.com *E-mail address*: kovacsgabriella@yahoo.com

Received: 16.09.2008; In revised form: 4.03.2009; Accepted: 12.05.2009.

²⁰⁰⁰ Mathematics Subject Classification. 37C25.

Key words and phrases. Lipschitz continuity, generalized Krasnoselskij type iteration, fixed point attracting from below (from above), discrete dynamical system.