University of Sarajevo
Faculty of Science
Department of Mathematics and Computer Science

SCIENTIFIC COLLOQUIUM

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On the relationship between Lozi maps and max-type difference equations

Abstract

Lozi map was introduced in 1978 by René Lozi while trying to find simple models with complex dynamics. Indeed, such map gave raise to an abundant literature and a huge amount of properties related to its behaviour were studied, for instance, the existence of strange attractors, bassin of attraction, bifurcations... Moreover, Lozi map has applications in a variety of fields, such as control theory, game theory or synchronization theory, among others.

This talk is based on a joint work with Prof. Antonio Linero-Bas. Our aim is to revise a transformation that links generalized Lozi maps, namely,

$$x_{n+1}=\alpha|x_n|+\beta x_n+\gamma x_{n-1}+\delta,$$

where $\alpha,\beta,\gamma,\delta$ are real numbers with $\alpha\neq 0$, with max-type difference equations. In this sense, according to the technique of topological conjugation, we relate the dynamics of a concrete Lozi map with a complete uniparametric family of max-equations, and we apply this fact to investigate the dynamics of two particular families. Moreover, we present some numerical simulations related to the topic and, finally, we propose some open problems that look into the relationship established between generalized Lozi maps and max-equations.

Thursday, May 11, 2023, 1:00 p.m.
Faculty of Science - Department of Mathematics and Computer Science, room 428/IV