Global stability of the 3-dimensional Ricker map

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Consider the differnce equation $x_{n+1} = x_n e^{\alpha - x_{n-d}}$ where α is a positive parameter and d is a positive integer. The case $d = 0$ was introduced by W. E. Ricker in 1954. For the delayed version $d \geq 1$ of the equation S. Levin and R. May conjectured in 1976 that local stability of the nontrivial equilibrium implies its global stability. The conjecture for $d = 1$ was proved by F. Bartha, A. Garab and T. Krisztin in 2013 [1]. In higher dimension the problem is more complex, since a reduction is needed. I will talk about my results on the $d = 2$ case.

[1] F. A. Bartha, A. Garab, T. Krisztin, Local stability implies global stability for the 2-dimensional Ricker map, *J. Differ. Equ. Appl.* **19**(12) (2013), 2043–2078.