Global Attractivity for non Autonomous Difference Equation

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Abstract

Consider the difference equation

$$\vec{x}_{n+1} = f(\vec{x}_n, ..., \vec{x}_{n-k}), \quad n = 0, 1, \ldots,$$

where $k \in \{0, 1, \ldots\}$ and the initial conditions are real vectors. We investigate the asymptotic behavior of the solutions of the considered equation. We give easy-to-check conditions for the global stability and global asymptotic stability of the zero or positive equilibrium of this equation.

Keywords: attractivity, difference equations, discrete dynamical system, global, linear fractional, rational, stability

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