
Stability and bifurcation investigation of discrete-time nonlinear systems by realization theory methods

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Abstract

Realization theory for linear input-output operators and frequency-domain methods for the solvability of Riccati operator equation are used for the stability and bifurcation investigation of nonlinear discrete-time non-autonomous difference equations. The key idea is ([3]) to consider a time-invariant control system (discrete-time Boltzmann transport equation) generated by the shift operator and some control operator in a weighted Sobolev space which has the same stability properties as the given difference equation. As an example we investigate a discrete-time difference equation of the cardiac conduction problem ([1,2]).

References

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