

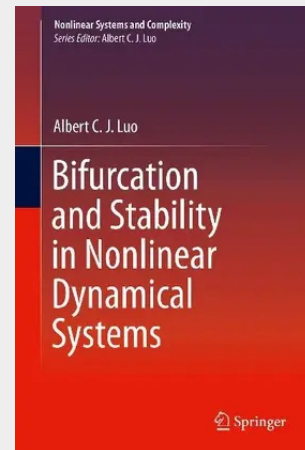
Bifurcation and Stability in Nonlinear Dynamical Systems

This book systematically presents a fundamental theory for the local analysis of bifurcation and stability of equilibria in nonlinear dynamical systems. Until now, one does not have any efficient way to investigate stability and bifurcation of dynamical systems with higher-order singularity equilibria. For instance, infinite-equilibrium dynamical systems have higher-order singularity, which dramatically changes dynamical behaviors and possesses the similar characteristics of discontinuous dynamical systems. The stability and bifurcation of equilibria on the specific eigenvector are presented, and the spiral stability and Hopf bifurcation of equilibria in nonlinear systems are presented through the Fourier series transformation. The bifurcation and stability of higher-order singularity equilibria are presented through the $(2m)$ th and $(2m+1)$ th - degree polynomial systems. From local analysis, dynamics of infinite-equilibrium systems is discussed. The research on infinite-equilibrium systems will bring us to the new era of dynamical systems and control.

- Presents an efficient way to investigate stability and bifurcation of dynamical systems with higher-order singularity equilibria;
- Discusses dynamics of infinite-equilibrium systems;
- Demonstrates higher-order singularity.

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