

Classification of bifurcation in 2-D systems

A selection bifurcations that most commonly occur in practical applications.

CASE I Bifurcations of fixed points

- A) Bifurcations at $\lambda = 0$
 - 1) Saddle-node bifurcation
 - 2) Transcritical bifurcation
 - 3) Pitchfork bifurcation
 - * Supercritical pitchfork bifurcation
 - * Subcritical pitchfork bifurcation
- B) The Hopf bifurcations, bifurcations at $\lambda = \pm i\omega$
 - 1) The supercritical Hopf bifurcation
 - 2) The subcritical Hopf bifurcation

CASE II Global bifurcations of closed orbits

- A) Saddle-node coalescence of cycles (accompanied by the subcritical Hopf)
- B) SNIPER (saddle-node infinite period bifurcation) or SNIC (saddle-node in invariant cycle bifurcation)
- C) Homoclinic bifurcation or saddle-loop bifurcation