

- 2012 Ashwin et al.
  - 1. Bifurcations
  - 2. Noise
  - 3. Rate
- Definition: “A tipping point is a point in a system where a small change in put causes a large change in output
- “BASIC” system
  - $dx/dt = f(x)$  <- State variable
- Goal: Find  $x(t)$ 
  - Qualitative characteristics of solution
  - Long-term behavior
    - $dx/dt = 0$
  - numerical solution
- 1. Bifurcation tipping
  - First method for finding it: tracking radius
  - Second method: Steklov Averages
- Bifurcation diagram of sea ice in the Arctic
- Differential equation with noise to describe arctic sea ice seasonality.
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