

# Lecture: Nonlinear Dynamics and Applications II

Serhiy Yanchuk  
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Dynamical Systems play important role in many fields of applied mathematics and natural sciences. Examples are chemical reactions, planet motions, or neuronal dynamics.

This lecture is part II of the two-part lecture course. It deals with more advanced topics of nonlinear dynamics. In the first part, time-continuous and discrete dynamical systems have been introduced, fixpoints, periodic solutions, 1D and 2D flows and their bifurcations. In this part II the following topics will be discussed:

- bifurcations in discrete dynamical systems;
- global bifurcations;
- deterministic chaos;
- slow-fast (two-scale) dynamics.

## ***Time and Place***

Lecture (by Serhiy Yanchuk):

MA848; Do: 10:00 - 12:00

Tutorial (by Stefan Ruschel and Dmitry Puzyrev)  
(19.04.2016 bis 20.07.2016)

MA848; Do: 12:00 - 14:00

## ***Literature***

- Strogatz "Nonlinear dynamics and chaos, with applications to physics, biology, chemistry and engineering", Perseus Book, 2001.
- S. Wiggins "Introduction to applied nonlinear dynamical systems and chaos", 2003 Springer.
- Ch. Kuehn "Multiple Time Scale Dynamics", 2015 Springer.

