

Delay Equations: Theory and Applications

Students: Master or PhD Students in Mathematics/Physics

SWS: 2 (Block sessions possible)

Teacher: Dr. M. V. Barbarossa (barbarossa@uni-heidelberg.de)

Overview: This seminar presents an introduction to Delay Differential Equations for upper level undergraduates or graduate mathematics students who have a good background in Analysis and Ordinary Differential Equations. We will focus on key tools necessary to understand and analyze mathematical models with delay equations. Among the topics: Well-posedness of systems with delays, stability of equilibria via linearization and Lyapunov functions, Hopf bifurcation, examples from applications in biology.

References

- J. Hale, Theory of Functional Differential Equations, Springer, 1977
- H. Smith. An Introduction to Delay Differential Equations with Applications to the Life Sciences, Springer, 2011
- Y. Kuang. Delay Differential Equations - with Applications in Population Dynamics, Academic Press, 1993
- N. McDonald, Biological Delay Systems: Linear Stability Theory

Registration: Interested students should please send a short email to barbarossa@uni-heidelberg.de by **March 20th, 2018**.