

Seminar of differential equations will continue on **February 25, 2019 at 12pm in lecture room M5.**

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Stability shaped by the noise in difference equations

Abstract:

An active role of noise perturbations in forming stability properties of solutions of difference equations is explored. Some of our models are inspired by mathematical biology where noise enters naturally through the influence of the environment. We discuss how different types of stochastic perturbations change stability properties of the solution of the deterministic counterpart. We also consider a highly nonlinear stochastic differential equation where stability of the equilibrium is induced by the noise term. It is often challenging to retain such stability in a numerical simulation. We solve this issue by designing an adaptive timestepping discretization scheme which faithfully reproduces stability properties of the solution of the original differential equation.