

Stabilization by boundary noise

Stefanie Sonner

The stabilization of parabolic PDEs by multiplicative noise is a well known phenomenon that has been studied extensively over the past decades. However, the stabilizing effect of a noise that acts only on the boundary of the spatial domain had not been investigated so far. As a first model case we consider the Chafee-Infante equation with dynamical boundary conditions and analyze whether a multiplicative Itô noise on the boundary can stabilize the equation. We show that there exists a finite range of noise intensities that lead to stabilization. Our results differ from previous works on stabilization by noise, where the noise acts inside the domain and stabilization typically occurs for an infinite range of noise intensities.

Joint work with Klemens Fellner and Bao Q. Tang (University of Graz, Austria) and Do D. Thuan (Hanoi University of Science and Technology, Vietnam).