Lecture Series

by

Prof. Erika Hausenblas

Prof. Erika Hausenblas, Montanuniversitst Leoben, Austria is visiting the SoM during Feb 8 - 23, 2020. During this visit, she will deliver a series of lectures on

Title: Modelling of biochemical processes with randomness"

Abstract:
Chemical and biochemical reactions can exhibit surprisingly different behaviours from multiple steady-state solutions to oscillatory solutions and chaotic behaviours. Such behaviours have been of great interest to researchers for many decades. The Briggs-Rauscher, Belousov-Zhabotinskii and Bray-Liebhafsky reactions, for which periodic variations in concentrations can be visualized by changes in colour, are experimental examples of oscillating behaviour in chemical systems. The macroscopic system of equations is derived from the microscopic behaviour studying the limit behaviour. Here, the density of the population is modelled by Fick's laws, in which the reactions are viewed as functions of the concentrations of the chemical substances.

In the series of lectures, some systems of stochastic of reaction-diffusion processes will be introduced. Existence and uniqueness of solution will be tackled. Finally, we will present some results related to numerical modelling.