

SLOW-FAST SYSTEMS IN CELL BIOLOGY: SWITCHES AND OSCILLATORS

ILONA KOSIUK

In this talk methods for the mathematical analysis of ODE models arising in cell biology will be discussed. I will focus on mathematical models of NF- κ B signalling pathway.

Our approach relies strongly on novel dynamical systems methods for systems with multiple time scale dynamics, known as geometric singular perturbation theory (GSPT). Interestingly, the models under investigation do not have the standard form and are not covered by the existing theory.

A detailed geometric analysis of models, which exhibit switch-like and oscillatory dynamics, will be presented and discussed in a framework of the extended GSPT.