



Einladung zum
Projektclub

des Interdisziplinären Forschungszentrums für Mathematik
in Naturwissenschaft und Technik (IFM)

Thema: "Systembiologie: Anwendungen und Methoden"
"Systems Biology: Applications and Methods"

am Freitag, 26.10.2012; Mathematik Ost (Emil-Fischer-Straße 40); Seminarraum SE 40

13:00 Uhr - 14:00 Uhr

Prof. Dr. Nicole Radde

Institut für Systemtheorie und Regelungstechnik
Universität Stuttgart

Titel:

Graph-based approaches for the analysis of biological networks
with complex feedback structure.

Abstrakt:

Modeling the dynamics of intracellular regulation networks by systems of ordinary differential equations has become a standard method in systems biology, and it has been shown that the behavior of these networks is often tightly connected to the network topology. We have recently introduced the circuit-breaking algorithm (CBA), a method that uses the network topology to construct a one-dimensional circuit-characteristic of the system. It was shown that this characteristic can be used for an efficient calculation of the system's fixed points. This work was further extended by showing several connections between the circuit-characteristic and the stability of fixed points.

14:15 Uhr – 15:15 Uhr

Prof. Dr. Mustafa Khammash

Department of Biosystems Science and Engineering (D-BSSE)
Swiss Federal Institute of Technology--Zurich (ETHZ)

Titel:

Cyborg Cells: Feedback Control of Gene Expression in the Living Cell.

Abstrakt:

One of the key challenges to the analysis and control of genetic networks is that the cellular environment in which these circuits function is abuzz with random noise. Cellular noise results in random fluctuations and is a key source of variability among genetically identical cell populations. In this talk, we describe novel analytical and experimental work that demonstrates how light can be used in combination with single cell measurement technology to achieve precise and robust set point regulation of gene expression in populations of living cells.

15:30 Uhr - 16:30 Uhr

Prof. Dr. Thomas Dandekar

Lehrstuhl für Bioinformatik
Biozentrum, Universität Würzburg

Titel:

Boolean modelling and semiquantitative models of cellular interactions.

Abstrakt:

Modelling is central to systems biology. However, often kinetic parameters and details of interactions are unknown. Semiquantitative models as well as Boolean models can be a solution in that situation and offer attractive application aspect as well as interpolation challenges. We will discuss some of the involved problems as well as typical application examples for these methods.

Zu diesen Vorträgen lade ich Sie herzlich ein.

Prof. Dr. Uwe Helmke

Vorstand des Interdisziplinären Forschungszentrums
für Mathematik in Naturwissenschaft und Technik (IFM)