

Fakultät für Mathematik und Informatik

In Verbindung mit dem

Verein zur Förderung der Erforschung komplexer Systeme

Einladung zum Interdisziplinären Seminar

**Freitag, 05. Mai 2006, 15 Uhr c.t.
Zuse-Hörsaal im Informatik-Gebäude**

Es spricht

Prof. Dr. Dr. hc. E. D. Gilles

**(Max-Planck-Institut für Dynamik komplexer technischer Systeme in
Magdeburg)**

über

Signal Transduction and Regulation in Bacteria.

To understand both, the complex structure and the behavior of signal transduction and regulation in bacterial cells, an overall holistic approach is required. Due to the multitude of interacting components an understanding of these processes just by reflection is not possible. Here, the aid of mathematical modelling is absolutely essential to confirm the available biological knowledge by system theoretical analysis.

Two examples of a global regulatory system, namely catabolite repression in *E. coli* and redox control in *R. rubrum* are discussed and compared. The regulation of Stress Sigma Factor σ^s in *E. coli* is then dealt with as an example of regulated gene expression combined with proteolysis. Finally, Phototaxis in *Halobacterium salinarum* is considered as a representative of a bacterial signal transduction system. Important questions are related to the modularity and the hierarchical structure of these systems. The goal is to decompose a signalling or regulatory system into components of elementary signal transfer and to discover common features of these systems.

Alle Interessierten sind herzlich eingeladen.

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