



## **Dr. Otto Pulkkinen**

**Theoretische Physik, Universität Köln**

### **Dynamics of gene expression**

Gene expression is the process of producing functional molecules such as proteins from the genetic code stored in the DNA. This process consists of two major steps: a gene is first transcribed into messenger RNA, which is then translated into proteins. Both of these steps involve randomness, and consequently the numbers of messenger RNA transcripts and proteins fluctuate over time. Transcription is regulated by DNA binding proteins called transcription factors. The concentrations of transcription factors also fluctuate, which in turn affects the dynamics of transcription. One particularly interesting scenario is feedback, in which a protein regulates its own transcription rate. An example of such feedback can be found in the lac system in the bacterium *E. coli*.

In this talk, we start with the simple scenarios of gene expression with constant concentrations of transcription factors and then proceed to the interesting effects of feedback.

**Dienstag, 27. Januar 2009, 14 Uhr c.t.**

**Gebäude E2 6, Seminarraum E.04**

**Alle Interessenten sind herzlich eingeladen.**

Die Sprecher des Graduiertenkollegs  
Manfred Lücke und Ludger Santen

**Strukturbildung und Transport  
in komplexen Systemen**