



UNIVERSITÄT
DES
SAARLANDES

Fakultät 7
Physik und
Mechatronik

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“Cellular economy of molecular machines“

**Thursday, January 30th, 2014, 4:15 p.m.
Building C6 4, Lecture Hall II**

The central dogma of molecular biology states that genetic information flows unidirectionally, from DNA to RNA to protein. The steps in processing the genetic information are carried out by specifically dedicated molecular machines (RNA and DNA polymerases, ribosomes) that themselves are either proteins or (in the case of ribosomes) RNA-protein complexes. Thus, the seemingly unidirectional flow of genetic information involves feedback loops for the required machinery. In the talk, I will explore some interesting consequences of these feedbacks. I will address both mechanistic aspects and aspects of the cellular economy of these machines (how many of the machines are found in a cell, how is that number adjusted to growth conditions etc.). Specific topics to be discussed are physical constraints on the maximal rates of RNA synthesis (transcription), the effect of dense RNA polymerase traffic on transcription accuracy, the growth rate dependence of the cellular abundance of these machines and the role of molecular crowding in protein synthesis (translation).

Ludger Santen (57411) takes care of the guest.

Interested people are cordially invited

Coffee at 4:00 p.m. in front of the Lecture Hall

**PHYSIKALISCHES
KOLLOQUIUM**