Physikalisches Kolloquium — Physics Colloquium

Einladung — **Invitation**

Monday, 06 May 2024

BE AWARE - ROOM CHANGE - Lecture Hall O25/H2, at 16:15
Coffee and cookies will be served in front of the lecture hall from 16:00

Understanding transcription: one molecule at a time

Dr. Tineke Lenstra

Netherlands Cancer Institute, Amsterdam, NL

https://www.nki.nl/research/research-groups/tineke-lenstra/

Proper gene regulation is essential for maintaining cellular homeostasis, for responding to environmental stimuli, and for differentiation during development. Misregulation can result in diseases such as cancer. Inside single cells, the transcriptional process is highly dynamic, resulting in heterogeneity in gene expression in a population. In our lab, we aim to understand the mechanisms that regulate transcription dynamics in single cells. We use a range of single-molecule imaging techniques to directly observe the stochastic behavior of regulatory factors and the process of transcription, as these dynamically occur inside living cells. With these powerful tools, we have tested how different mechanisms shape dynamic transcription patterns, including transcription factor binding dynamics, transcription factor clustering, enhancers, chromatin, and DNA supercoiling. To push the field forward, we are also developing novel single-molecule microscopy techniques and kinetic analysis tools. Overall, by visualizing transcription dynamics in single cells, we aim to gain mechanistic insight into eukaryotic gene expression regulation in both health and disease.

Host: Prof. Dr. Christof Gebhardt, Institute of Biophysics

Organisation: Prof. Dr. Jens Michaelis, Institute of Biophysics, jens.michaelis@uni-ulm.de, +49-731-50-23050