Einladung
t zum
Physikalischen Kolloquium

Montag, 28.10.2013
16:15 Uhr in N24/H13

Prof. Dr. Christof Gebhardt
Institut für Biophysik
Universität Ulm

Live cell single molecule fluorescence microscopy

To perform vital cellular functions such as gene expression, replication or repair of DNA, thousands of inherently stochastic biomolecular interactions are precisely orchestrated and organized in space and time. We are interested in understanding these molecular interactions and the mechanisms that control them, to learn more about the physical principles of cellular biology and the bases of disease in case of malfunction.

We developed a novel fluorescence illumination method, reflected light sheet microscopy (RLSM), that enables single molecule imaging deep in the cell, an option previously challenged by out-of-focus fluorescent background. Using the new technique, we follow the operation of individual molecules inside the cell and thus extract quantitative kinetic and structural information that enables us to build models of molecular interactions and cellular mechanisms. As example, we report the observation of different modes of direct and indirect transcription factor binding to DNA and other cofactor molecules. In combination with superresolution (STORM) imaging and molecular counting, we compiled a quantitative map of transcription locations throughout the nucleus that solves a long-lasting debate about the spatial organization of gene transcription.

Ab 15.45 Uhr Kaffee, Tee und Kekse vor dem Hörsaal H13

Organisation: Prof. Jelezko Tel.: 23750
Host: Prof. Michaelis Tel.: 23050, off: 23051