

Prof. Dr. S. Hollands

Prof. Dr. J. Meijer



Sächsische Forschergruppe FOR 877

UNIVERSITÄT LEIPZIG

Fakultät für Physik und Geowissenschaften

Physik-Kolloquium

Freitag, den 11.07.2014, 13.00 Uhr

Prof. W. E. Moerner

Department of Chemistry, Stanford University

Dual Roles for Single Molecules: Light Sources for 3D Nanoscopy and Reporters of Multivariate Dynamics in Solution

Since the first optical detection and spectroscopy of a single molecule in a condensed phase host in 1989, a wealth of new information has been obtained from time-dependent measurements and single-molecule probability distributions. When single-molecule imaging is combined with active control of the emitter concentration, enhanced spatial resolution well beyond the optical diffraction limit can be obtained for a wide array of biophysical structures in cells. Single-molecule emitters also provide precise and accurate 3D position as well as orientation when combined with a double-helix point spread function polarization microscope or with a number of additional new point spread functions. If high-resolution spatial information is not needed, a machine called the Anti-Brownian Electrokinetic trap provides real-time suppression of Brownian motion for single molecules in solution. By extracting multiple parameters from each molecule, this device has been used to explore the detailed dynamics of photosynthetic antenna proteins, multisubunit enzymes, redox enzymes, and even single fluorophores. With advanced analysis of the motion of the molecule in the trap, the diffusion coefficient and electrokinetic mobility can be estimated in real time, providing new variables for single-molecule studies.

Ort: Kleiner Hörsaal, Linnéstraße 5

Alle Teilnehmer sind ab 12.30 Uhr zu Kaffee vor dem Hörsaal eingeladen.