Physikalisches Kolloquium — Physics Colloquium

Einladung — **Invitation**

Monday, 17 June 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

Single-Molecule Sensing on Optoplasmonic Microcavities

Prof. Dr. Frank Vollmer

University of Exeter, Living Systems Institute, UK

https://www.vollmerlab.com

Optical microcavities, particularly Whispering-Gallery Mode (WGM) microcavities, are highly sensitive to environmental changes and are frequently used as biosensors to detect a wide range of biomolecules and nanoparticles. To detect single molecules at the most sensitive level possible, plasmonic nanorods are incorporated to enhance the evanescent fields of WGM microcavities. This advancement in optoplasmonic WGM sensors makes it possible to detect single proteins, conformational changes, and even atomic ions, providing significant contributions to single-molecule sensing. In this talk, I will discuss the exciting research prospects in optoplasmonic WGM sensing of single molecules, including the study of enzyme thermodynamics and kinetics, the sensing of single-molecule absorption via thermo-optoplasmonic sensing, emerging ultra-sensitive single-molecule sensing on WGM microlasers, and the potential applications of WGM optical microcavities in quantum sensing and synthetic biology.

Host: Prof. Dr. Martin Plenio, Institute of Theoretical Physics

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