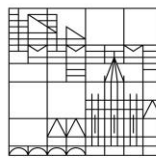


Physikalisches Kolloquium

Universität
Konstanz



Dr. Farbod Alijani

Dept. of Precision and Microsystems Engineering
Technical University Delft

Di 02.07.24

15:15 Uhr

P 603

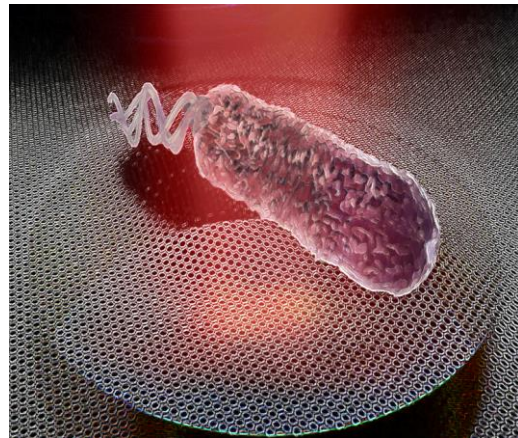
im Anschluss Getränke und Snacks

Probing nanomotion and synchronization of bacterial cells

In this talk, I will first show how by utilizing ultrathin (< 1 nm) graphene drums nanoscale oscillations (nanomotion) of a single bacterium can be measured in its growth environment. By experimenting with a series of bacterial cells and blocking one-by-one different routes of nanomotion, I discuss the nature of these random-like oscillations and elaborate on the role of motility on the observed signals. I will then demonstrate how vibrations of graphene drums can detect antimicrobial resistance at the single-cell level and discuss the prospects of suspended graphene membranes as highly sensitive drug screening devices. Finally, and on a more fundamental level, I show how by devising arrays of microcavities, the motion of singled-out bacteria gets coupled to one another and how synchronous oscillations between coupled bacterial oscillators can be engineered and even potentially controlled.

Image description:

Artist's impression of single bacteria motion detection using graphene drums



Host:
Prof. Elke Scheer

Organisation:
Prof. Clemens Bechinger