TECHNISCHE UNIVERSITÄT CHEMNITZ

Institut für Physik
Physikalisches Kolloquium

Mittwoch, 12.12.2018, um **16:00 Uhr**
Ort: Reichenhainer Str. 90;
Zentrales Hörsaal- und Seminargebäude,
Raum 2/N013

Prof. Dr. Herbert Pfnür

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Plasmons in low dimensions: prospects and challenges

Plasmons in two-dimensional sheets or quasi-one dimensional wires have many intriguing properties. Due to their flat dispersion ($v_G \sim 10^6$ m/s) compared with light, which goes to zero in the long wavelength limit, no polaritons are formed, contrary to surface plasmons. This - sometimes even linear - dispersion conceptually allows directional energy transport with small signal distortions and „true“ nano-electronics by confinement of a plasmonic excitation down to a few nanometers. On the other hand, these short wavelengths make these plasmons susceptible to the environment on the atomic scale.

In this presentation, I will give a brief overview on the experimental and theoretical progress made over the last decade, and will discuss some characteristic examples of 2D and 1D systems. I will show that the understanding of the link between low-dimensional plasmonic excitations and the band structure close to the Fermi level has significantly improved, so that plasmon spectroscopy can be used in simple cases to directly get information about the unoccupied band structure. This close relation allows not only to study in detail the influence of the environment, but also to modify plasmon properties in a controlled way. Their excitation by light and the conversion to an electric signal still remain challenges to be solved.

Alle Zuhörer sind ab 15:45 zu Kaffee und Tee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt:
Prof. Dr. Christoph Tegenkamp, Tel. 0371 531 33103

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