

FAKULTÄT für PHYSIK
LUDWIG-MAXIMILIANS-UNIVERSITÄT
MÜNCHEN/GARCHING

PHYSIK-DEPARTMENT
TECHNISCHE UNIVERSITÄT MÜNCHEN
MÜNCHEN/GARCHING

MLL-KOLLOQUIUM

Donnerstag, 16.04.2015, 16¹⁵ Uhr

Seminarraum 127, TUM, Physik II, Erdgeschoss/Nord
Treffen zum gemeinsamen Kaffee 16 Uhr

Prof. Ulf Kleineberg
(LMU München)

Ultrafast Nanoplasmonics : Achievements and Future Applications

The switching speed of current nanoelectronic CMOS devices with critical dimensions in the sub 20 nm spatial regime is practically limited by the gate capacitance and the operation voltage to ~ 100 GHz frequency and fundamentally limited by shot noise. Using information processing by photons rather than by electrons can push the speed limit from the 100 GHz into the 100 THz regime, however, nanointegration is hampered by the diffraction limit at optical wavelengths to about 250 nm minimum feature sizes, more than an order of magnitude larger than in current nanoelectronics. With the promise of nanoplasmonic devices utilizing surface plasmon polariton waves bound to a metal-dielectric interface and propagating almost at the speed of light ($\sim 0.6 c$), while still being bound to nanoscaled structures, nanoplasmonics is an ideal candidate to combine the advances of nanoelectronics with the advances of optical computing. The talk will review the current status in nanoplasmonics research with an emphasis on ultrafast nanoplasmonic effects on a femtosecond time scale.

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