

PHYSIKALISCHES KOLLOQUIUM

Mittwoch, den 15.06.2011, um 17:15 Uhr
Ort: Reichenhainer Str. 90; Neues Hörsaalgebäude, Raum: 2/N013



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Optical Antennas for superresolution imaging and spectroscopy

The optical near-field region of a radiating body is very rich in its properties with optical density of states, k-vector distributions, field-localization and enhancement, its coherence, and with field gradients that are distinct from far-field radiation.

It is characterized by the interplay of emitter size, intrinsic and extrinsic resonances, and wavelength and its exploration has only begun in recent years.

The unique spatial, spectral, and mode properties allows for a variety of new forms of optical spectroscopy, microscopy, and control of the light-matter interaction. I will discuss examples and applications including optical scanning probe microscopy with nanometer spatial resolution for the investigation of complex materials or chemical nano-analysis; the combination with nonlinear and femtosecond excitation for the study of spatio-temporal dynamics; pulse shaping and coherent control in the near-field; optical antennas and plasmonics for nano-scale signal transduction; unique properties of the thermal near-field; and provide an outlook into new forms of extreme nonlinear optics and enhanced light-matter interaction and coupling.