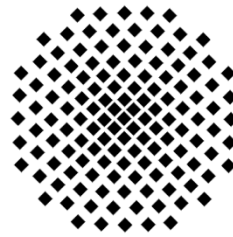


Stuttgarter Physikalisches Kolloquium

Fachbereich Physik, Universität Stuttgart
Max-Planck-Institut für Festkörperforschung
Max-Planck-Institut für Intelligente Systeme

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Light-matter interaction probed at the atomic scale

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Abstract

Light-matter interaction is essential for mechanisms such as luminescence, photosynthesis, and energy harvesting, defining the emission characteristics of molecular systems and governing the conversion of energy between photons and electrons. While these processes are intensively studied and employed, little is known about their dependence on atomic-scale properties since reaching such precision in optics is extremely demanding. This challenge is nowadays overcome thanks to the combination of optical spectroscopy approaches with scanning probe microscopy. In my talk, I will discuss how mapping optical properties of single molecules with nearly atomic precision is enabled by the extreme field enhancement provided by the tip and show its application to induce and probe resonant energy transfer and photochemical reactions with sub-nm precision.