Karlsruher Institut für Technologie

KIT-Fakultät für Physik

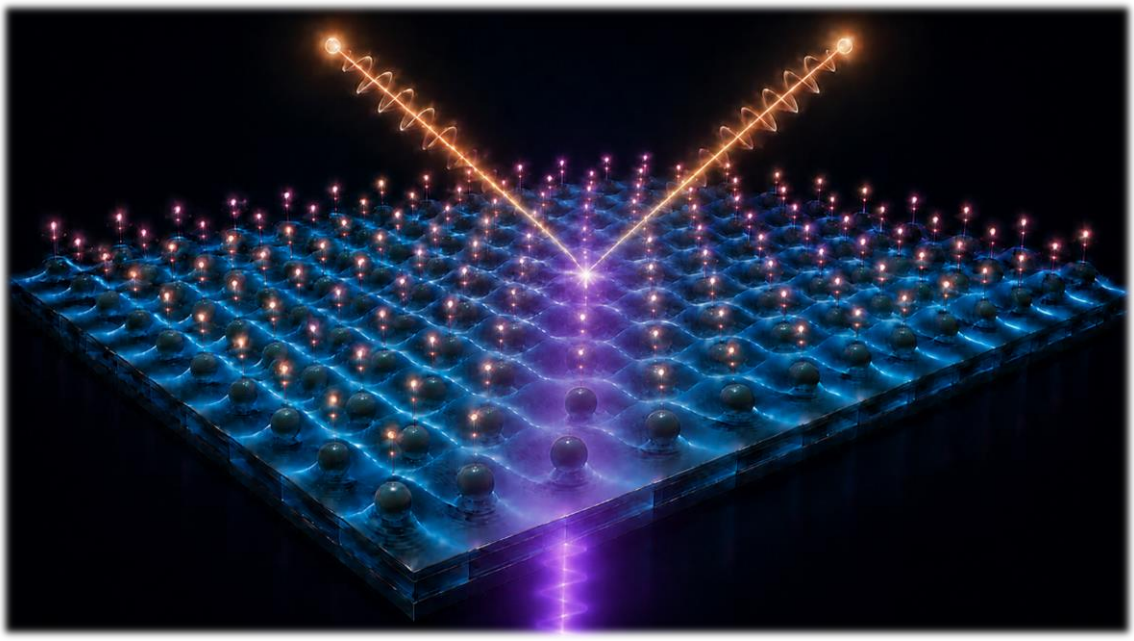
Einladung zum Physikalischen Kolloquium

13.11.2026 Johannes Feist, Universidad Autónoma de Madrid

»Shaping the vacuum:
what nanophotonics can, and cannot, do to matter«

Einführung: C. Rockstuhl

Confining light to nanometric volumes dramatically enhances its interaction with matter, from faster spontaneous emission to hybrid light–matter states (polaritons) that have been proposed to change chemical reactions and material properties. But nanophotonic “cavities” are lossy, open and full of overlapping resonances, and the textbook picture of a photon in a box breaks down. I will discuss how we can still describe such systems with simple, quantum-optics-like models, and how features usually seen as problems, such as losses and interference, become resources for generating quantum light. I will then turn to fundamental limits: why the much-discussed “ultrastrong coupling” between single emitters and photons cannot exist, and why many proposed cavity modifications of ground-state matter properties are, at heart, electrostatics. The resulting picture separates what light can realistically do to matter from what it cannot.



Der Vortrag findet **am Freitag, den 13. November 2026 um 15:45 Uhr im Otto-Lehmann-Hörsaal**, Physik-Flachbau (Geb. 30.22), KIT-Campus Süd statt.

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