



LUDWIG-
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MÜNCHEN

ARNOLD SOMMERFELD
CENTER FOR THEORETICAL PHYSICS



Arnold Sommerfeld Lecture Series

Professor Eugene Demler

ETH Zürich

Sommerfeld Theory Colloquium:

Lighting up superconductivity

Recent experiments suggest the phenomenon of light induced superconductivity above T_c in two different materials: fullerene superconductor K₃C₆₀ and high T_c cuprate YBCO. I will discuss the distinct phenomena taking place in these systems. In K₃C₆₀, the unusual character of electron-phonon interactions results in enhanced BCS pairing through optical driving and the slow relaxation of superconducting correlations after they have been created. In YBCO the light induced state is short lived and its properties can be explained from the perspective of a Floquet material. I will present a general theoretical framework for understanding Floquet materials, in which the pump-induced oscillations of a collective mode lead to the parametric generation of excitation pairs. This can result in features such as photo- induced edges in reflectivity, enhancement of reflectivity, and even light amplification.

Wednesday, April 17, 2024, 16:15 h, Room A348, Theresienstr. 37, LMU