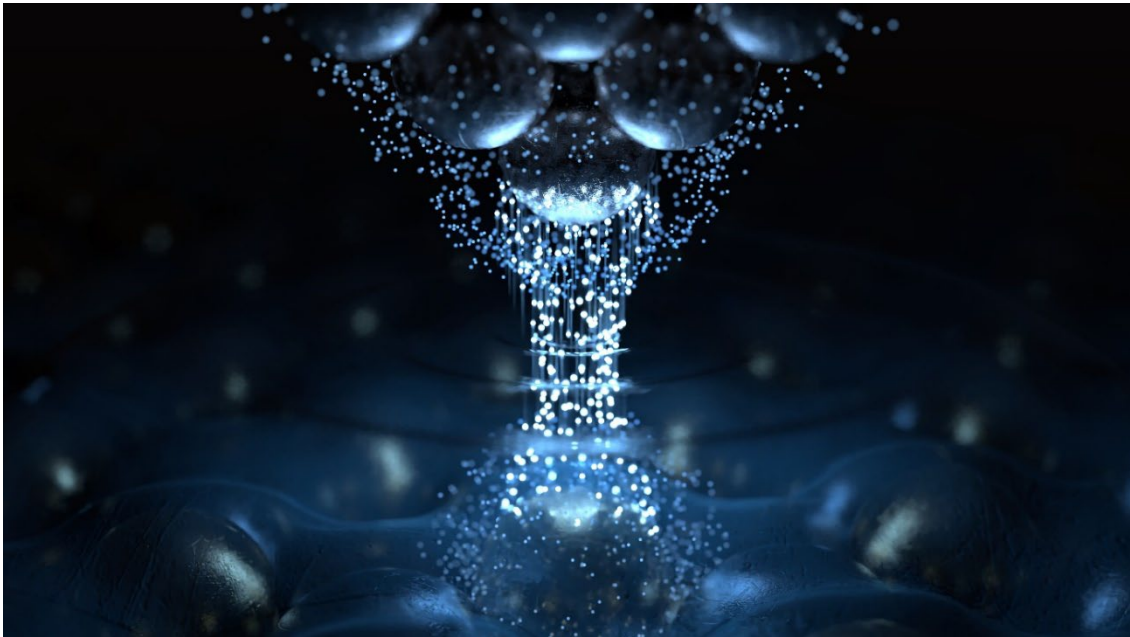




PHYSIKALISCHES KOLLOQUIUM

AM 17. NOVEMBER 2025 UM 16 UHR C.T.
IM GROßEN HÖRSAAL



SCULPTING ELECTRONIC QUANTUM TRAJECTORIES WITH LIGHT

RUPERT HUBER

UNIVERSITÄT REGENSBURG

Lightwave electronics has emerged as a vibrant research field at the interface of electronics and optics. The key idea is to exploit the oscillating carrier field of light as an ultrafast bias to accelerate electrons faster than a cycle of light. As these femto- to attosecond time scales are shorter than typical scattering times of electrons, lightwave-driven electrons can move ballistically even in solids, unleashing a fascinating coherent quantum world. We will discuss prominent examples of lightwave-driven dynamics, ranging from Bloch oscillations via topologically non-trivial electron trajectories to attoclocking of Bloch electrons. We also take slow-motion movies of single molecules and atomic defects and observe the quantum flow of electrons with the first all-optical subcycle microscope reaching atomic resolution. Our results offer a radically new way of watching and controlling elementary dynamics in nature or steer chemical reactions, on their intrinsic spatio-temporal scales.

AKTUELLE INFORMATIONEN FINDEN SIE HIER: WWW.PHYSIK.UNI-FREIBURG.DE

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