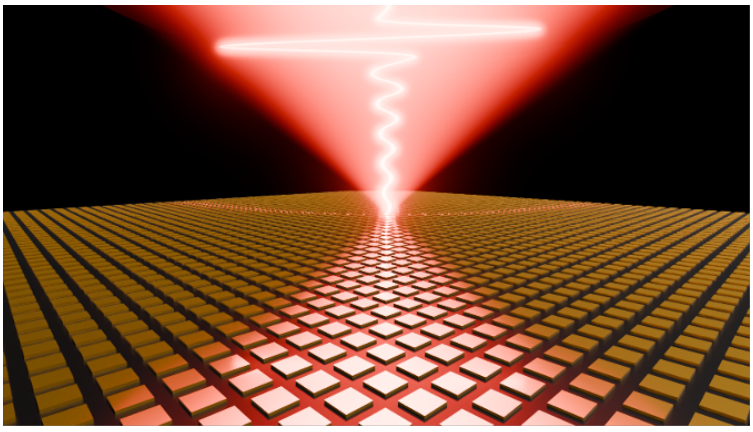
ANNOUNCEMENT - TALK

Title: Surface plasmonic cavities at TeraHertz frequencies: ultrasmall, chiral and more

Abstract:

I will present our ongoing work on developing cavities and resonant metamaterials in the terahertz frequency range, using a surface plasmonic mechanism for light confinement. This approach allows for the confinement of THz photons down to volumes 10^{-8} times smaller than the diffraction limit in free space [1]. In this regime, the cavities reach the ultimate spatial scale allowed by plasmonics, where intriguing effects such as the nonlocality of light-matter interactions emerge. I will further discuss how the broad tunability of surface plasmons through external parameters enables the manipulation of additional degrees of freedom of the electromagnetic field and the functionalization of cavity fields. This includes the engineering of chiral fields [2] and their dynamic modulation in time using multi-cycle THz light. As such, the plasmonic-based metamaterial approach opens a path for synthesizing free-space and cavity light fields at THz frequencies with control over their spatial, temporal, and internal degrees of freedom.



A THz light pulse getting trapped inside an ultrasmall surface plasmonic THz cavity

References: [1] I. Aupiais et al. Nat. Comm. 14, 7645 (2023), [2] I. Aupiais et al. , ACS Photonics 2024, 11, 10, 4184–4192

Date/Time: **TUESDAY, APRIL 1 at 11:00**

Location: **MPSD Building 900, EG 136**

Speaker: **YANNIS LAPLACE** (Laboratoire des solides irradiés, Ecole Polytechnique, Palaiseau, France)