SEMINAIRE ISMO

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Nanometric imaging of ultrashort plasmonic fields in single metallic nanoobjects

Surface plasmons are elementary optical excitations resulting from the collective oscillation of the conduction electrons at metal surfaces. They dictate the optical properties of metallic nanoobjects. Surface plasmons allow confining optical energy at nanometer spatial scales, far beyond the diffraction limit. When the optical energy is provided in the form of few femtosecond laser pulses, this strong confinement in space is accompanied by a strong confinement in time. While such strong spatio-temporal confinement opens up exciting perspectives, measuring the plasmonic fields induced by few-femtosecond laser pulses in space and time is extremely challenging to achieve.

We recently combined PhotoEmission Electron Microscopy (PEEM) with a few-femtosecond laser system to image ultrashort plasmonic fields in metallic nanoobjects with nanometric spatial resolution. After introducing PEEM as a plasmonic imaging tool, I will explain how, by using an interferometer, we could demonstrate that these ultrashort plasmonic fields show different time evolution between single nanoobjects as well as *within* single nanoobjects. I will then discuss how and why the time evolution of the plasmonic fields varies locally. In particular, I will highlight the two main parameters governing the time evolution, namely, the laser excitation used in the setup and the shape of the nanoobject.

Attention ! Jour inhabituel

Vendredi 2 septembre 2016 à 11h

Bât. 210 – Amphi 1 (2ème étage)

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