



## SEMINAIRE ISMO

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### **Quantum plasmonics: tunneling and active control**

Interaction of light with metallic nanoparticles can be greatly enhanced if the incident electromagnetic wave is at resonance with the collective electron excitations known as plasmons. At variance with the classical approach where Maxwell's equations are used to understand the plasmonic response of matter, quantum plasmonics aims at the full or partial quantum description of the interaction between light and matter. Nowadays within time-dependent functional theory (TDDFT) one can compute the full quantum response of nano-objects comprising up to few thousands of electrons that are perturbed by classically described external electric fields.

In my talk I will briefly present our ongoing theoretical work on quantum plasmonics using atomistic TDDFT codes at the department of Applied Physics of Aalto University. Then I will discuss the possibility of using quantum effects, and in particular electron tunneling for the active control of the plasmonic response of metallic nanoobjects to external light. This is the subject of the proposed CNRS project to be developed at ISMO.

**Mardi 27 janvier 2015 à 11h**

**Bât 351 – 2<sup>ème</sup> étage (Bibliothèque)**

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