1125-31-1747 **Habib Ammari**, **Francisco Romero** and **Matias Ruiz*** (matias.ruiz@ens.fr). *Optical detection and heat generation for plasmonic nanoparticles.* Preliminary report.

Plasmon resonant nanoparticles have unique capabilities of enhancing the brightness and directivity of light, confining strong electromagnetic fields, and out-coupling of light into advantageous directions, when illuminated at the right frequency. In the past years, the field of plasmonics has witnessed a great deal of attention because of their increasing number of applications; among them, their use as labels in molecular biology and in thermo-therapy as nanometric heat-generators that can be activated remotely by external electromagnetic fields. It is, therefore, important to have efficient mechanisms for imaging plasmonic nanoparticles and understand the role of geometry and materials properties in the production of heat. This talk aims to give answers to the former. Thus, the objective is twofold: (i) To analytically investigate the far field behavior when a plasmonic nanoparticle, immerse in a random media, is illuminated with an incident wave at the plasmonic resonance, in order to construct a robust imaging functional; (ii) To derive an asymptotic formula for the temperature in the border of plasmonic nanoparticles of arbitrary shape. (Received September 19, 2016)