

## Patrick Ferrand

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**Objet:** Séminaire "Optique et Applications" | JEUDI 27 Mars | Philippe Lalanne | Interactions électromagnétiques entre des nano-objets et des surfaces métalliques

\*\*\* ATTENTION ! DORENAVANT LES SEMINAIRES AURONT LIEU LE JEUDI \*\*\*\*  
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ANNONCE DE SEMINAIRE  
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Jeudi 27 Mars 2008, amphi Rouard, bâtiment Fresnel, DU St Jérôme, accueil et discussion dès 13:30 autour d'un café, puis à 14:00:

"Interactions électromagnétiques entre des nano-objets et des surfaces métalliques"

par Philippe Lalanne  
Laboratoire Charles Fabry de l'Institut d'Optique, Orsay

Abstract :

The seminar concerns the electromagnetic waves that build the interaction between nano-objects on the metal surface. We show that two different waves are involved : the surface plasmon polariton (SPP) mode of the flat interface and a quasi-cylindrical wave (CW) that creeps along the surface.

This statement is supported by computational results and near-field measurement data.

We believe that it is important to have in mind the two-waves picture to understand many phenomena on metallic surfaces and this at different frequencies. This statement will be supported by analyzing the electromagnetic interaction between nearby slit doublets or the extraordinary optical transmission through arrays of subwavelength holes.

In general the SPP-mode and the CW are equally involved at visible frequencies, but at longer wavelengths like in the thermal infrared, the CW contribution largely dominates. Since the two waves are excited with approximately the same initial phase and intensity and since they propagate with the similar phase velocity, it is not surprising that some important phenomena encountered at visible frequencies with SPP modes also occur at much longer wavelengths with CW.

Le séminaire sera donné en Français.

Venez nombreux !

Anne Sentenac, Patrick Ferrand (Institut Fresnel) Caroline Champenois (PIIM)  
<http://www.fresnel.fr/animation-scientifique/index.php>