

DIRECTION DES SCIENCES DE LA MATIERE,  
INSTITUT RAYONNEMENT MATIÈRE DE SACLAY

SERVICE DE PHYSIQUE ET DE CHIMIE DES SURFACES ET DES INTERFACES

# SEMINAIRE \*

Jeudi 17 decembre 2009 à 11h00

Bâtiment 466, salle 111 - CEA Saclay, 91191, Gif sur Yvette

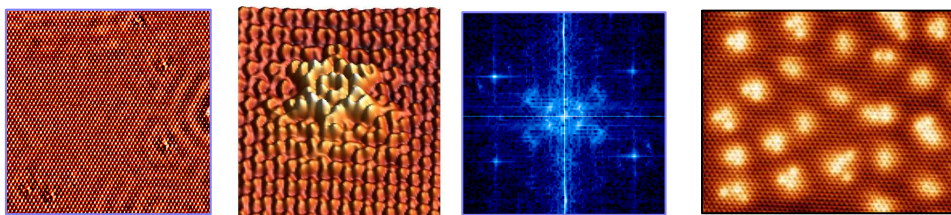
## **A phenomenological approach of joint density of states for the determination of band structure studied by Fourier Transform Scanning Tunneling Microscopy**

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*Invité par Patrick Soukiassian*

The interaction of a 2D electron gas with defect surfaces generates standing waves pattern which can be directly imaged by Scanning Tunneling Microscopy. Sprunger et al first showed the possibility of using STM, to image the surface Fermi contour of a metal surface directly by performing the power spectrum of a topographic image of a complex “electron sea” pattern. He opened a new STM approach called Fourier Transform Scanning Tunneling Microscopy. We will show that the power spectrum features can easily be deduced in a first approximation on the basis of the joint density of state (JDOS), which can be evaluated by a simple geometrical construction. Starting from simple isotropic Fermi contours provided by Shockley states in metal, we will illustrate the possibilities of this approach and show how the JDOS is a probe of the contour topology for more complex systems such as high Tc Supraconductor, semi-metal, and more recently graphene which provides interesting topological singularities.



**\* SERA PRECEDE D'UNE PAUSE-CAFE A PARTIR DE 10H30**

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