

CEA - Saclay 91191 Gif-sur-yvette Cedex
Service de Physique de l'Etat Condensé
SÉMINAIRE

Mercredi 19 mai 11h15

Orme des Merisiers SPEC Salle Itzykson, Bât.774

**GIANT TUNNEL ELECTRORESISTANCE AND ELECTRICAL CONTROL
OF SPIN POLARIZATION WITH FERROELECTRIC TUNNEL BARRIERS**

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At room temperature, we use piezoresponse force microscopy to show robust ferroelectricity in BaTiO₃ ultra-thin films, and conductive-tip atomic force microscopy to demonstrate the resistive readout of the polarization state via its influence on the tunnel current [1]. This giant electroresistance nondestructive readout paves the way towards ferroelectric memories with simplified architectures, higher densities and faster operation. Additionally, ferroelectric tunnel junctions with ferromagnetic electrodes were built to demonstrate local, large and non-volatile control of carrier spin polarization by switching ferroelectric polarization [2]. Our results represent a giant interfacial type of magnetoelectric coupling and suggest a new low-power approach for spin-based information control.

[1] V. Garcia et al., Nature 460, 81 (2009)

[2] V. Garcia et al., Science 327, 1106 (2010)

Une pause café sera servie à 11h00.

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