

DIRECTION DES SCIENCES DE LA MATIERE,
DEPARTEMENT DE RECHERCHE SUR L'ETAT CONDENSE,
LES ATOMES ET LES MOLECULES,
SERVICE DE PHYSIQUE ET DE CHIMIE DES SURFACES ET DES INTERFACES

SEMINAIRE *

Vendredi 20 Octobre 2006 à 11h00

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

ENTANGLEMENT IN SPIN-ORBITAL SUPEREXCHANGE MODELS

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Invité par M.C. Desjonquères

Abstract:

The superexchange interactions in Mott insulators are responsible not only for magnetic exchange constants, but also for the distribution of spectral weight in optical excitations. While in many cases the mean field approach gives already satisfactory explanation of the trends observed in experiments [1], we show that large composite spin-orbital fluctuations due to quantum entanglement of spin and orbital variables in the superexchange may destroy this "classical" picture, leading to an apparent violation of the classical Goodenough-Kanamori rules [2]. In such cases mean field decoupling of spin and orbital operators cannot be used, and spin exchange interactions fluctuate over positive and negative values.

[1] A.M. Oleś, P. Horsch, G. Khaliullin, L.F. Feiner, Phys. Rev. B **72**, 214431 (2005).}

[2] A.M. Oleś, P. Horsch, L.F. Feiner, G. Khaliullin, Phys. Rev. Lett. **96**, 147205 (2006)..

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