

MAR06-2005-002148

Abstract for an Invited Paper
for the MAR06 Meeting of
the American Physical Society

Polarized Neutron Diffraction to discover symmetry breaking in pseudogap region of Y(123)-Cuprate

PHIIPPE BOURGES, Laboratoire Léon Brillouin, CEA-Saclay

One of the leading issues in high- T_C superconductors is the origin of the pseudogap phase in underdoped cuprates. Using polarized elastic neutron diffraction, we identify a novel magnetic order in the $\text{YBa}_2\text{Cu}_3\text{O}_{6+x}$ system*. The observed magnetic order preserves translational symmetry as proposed for orbital moments in the circulating current theory of the pseudogap state (see C.M. Varma, at <http://fr.arxiv.org/abs/cond-mat/0507214>). To date, it is the first direct evidence of an hidden order parameter characterizing the pseudogap phase in high- T_C cuprates.

* B. Fauqué, Y. Sidis, V. Hinkov, S. Pailhès, C.T. Lin, X. Chaud and P. Bourges, at <http://fr.arxiv.org/abs/cond-mat/0509210>.