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Magnetic field effects on spin and charge ordering in La2-xSrxCuO4 superconductors and possible implications for Fermi surface reconstruction

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In this contribution, the spin and charge "stripe"ordering tendencies observed by neutron and x-ray diffraction in La-based cuprate superconductors [1,2] will be discussed with emphasis on magnetic field effects on these correlations [3,4]. In particular, we will relate our new diffraction results [4] with evidence for hole-pockets arising from ARPES experiments conducted at the SIS beamline at SLS [5] and –more generally –will discuss possible implications for the interpretation of high-field quantum oscillation experiments and evidence for Fermi surface reconstruction in cuprates.

[1] J. M. Tranquada et al, Nature 375, 561 (1995); M. v. Zimmermann, Europhys. Lett. 41, 629 (1998)
[2] M. Fujita et al, Phys. Rev B 70, 104517 (2004)
[3] B. Lake et al, Nature 415, 299 (2002); J. Chang et al, Phys. Rev. B 78, 104525 (2008)
[4] N. B. Christensen et al, to be published
[5] J. Chang et al, New J. Physics 10, 103016 (2008); E. Razzoli et al, New J. Physics 12, 125003 (2010)

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