

# Collective spin excitations in the singlet-correlated band model: A comparison with resonant inelastic x-ray scattering

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## Abstract

We analyse the spin excitations near the optimal doping of superconducting layered cuprates taking into account both the local and the itinerant spin components self-consistently. The obtained expression allows us to reproduce well the basic features of the resonant inelastic x-ray scattering and neutron scattering data experiments using a reasonable set of tight-binding parameters corresponding to the angle-resolved photoemission spectroscopy data. We also find that the spin excitation branch along the  $(0,0) - (0,\pi)$  symmetry direction in the first Brillouin zone shows a splitting at  $T < T_c$ . Possible experiments for verification of that prediction are briefly discussed. © 2013 IOP Publishing Ltd.

<http://dx.doi.org/10.1088/0953-8984/25/34/345701>

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