Contribution ID: 27 Type: Poster

## Persistent high-energy spin excitations in RIXS spectra of optimally doped Bi-2212

Tuesday, 24 July 2012 20:00 (2 hours)

M. Guarise, B. Dalla Piazza, H. Ronnow, H. Berger, M. Grioni Institute of Condensed Matter Physics, EPFL, CH-1015 Lausanne (Switzerland)

We have exploited high-resolution resonant inelastic x-ray scattering (RIXS) at the Cu L3 edge to measure the full spectrum of spin excitations in Bi-2212. We find that the magnon dispersion and spectral line shape of the insulating Y-substituted parent compound are very similar to those of the AFM insulator Sr2CuO2Cl2 [1]. Namely, we observe a dispersion along the magnetic zone boundary, indicative of interactions beyond nearest-neighbors. We also find that clear signatures of spin waves persist in superconducting underdoped and even optimally doped Bi-2212 samples, but develop a remarkable anisotropy. Along the nodal direction the magnon peaks are well-defined and follow the dispersion of the parent insulator. By contrast, only a broad quasielastic tail is seen in the anti-nodal direction. These results suggest a similar anisotropy of the coherence length of the paramagnons.

[1] M. Guarise et al., Phys. Rev. Lett. 105, 157006 (2010)

Primary author: GRIONI, Marco (ICMP-EPFL)

Presenter: GRIONI, Marco (ICMP-EPFL)

Session Classification: Poster Session 2

Track Classification: High-Tc Cuprates