

Abstract Submitted
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Two-peak structure in the K-edge RIXS spectra of a spatially frustrated Heisenberg antiferromagnet¹ TRINANJAN DATTA, Georgia Regents University, CHENG LUO, DAO-XIN YAO, State Key Laboratory of Optoelectronic Materials and Technologies, School of Physics and Engineering, Sun Yat-sen University — Quantum fluctuations due to spatial anisotropy and strong magnetic frustration lead to the formation of a two-peak structure in the K-edge bimagnon RIXS intensity spectra of a J_x - J_y - J_2 Heisenberg model on a square lattice. We compute the RIXS intensity, including up to first order $1/S$ spin wave expansion correction, using the Bethe-Salpeter equation within the ladder approximation scheme. The two-peak feature occurs in both the antiferromagnetic phase and the collinear antiferromagnetic phase. A knowledge of the peak splitting energy from both magnetically ordered regime can provide experimentalists with an alternative means to measure and study the effects of local microscopic exchange constants.

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