

Abstract Submitted
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Magnons dispersion and anisotropies in $\text{SrCu}_2(\text{BO}_3)_2$ OLIVIER CEPAS, LPTMC, Universite Paris 6, Y. F. CHENG, P.W. LEUNG, HKUST, T. ZIMAN, Institut Laue Langevin — We study the dispersion of the lowest excited states in the 2d Shastry-Sutherland system, $\text{SrCu}_2(\text{BO}_3)_2$, including all relevant Dzyaloshinskii-Moriya interactions. We can reduce the complexity of the general Hamiltonian to a new simpler model at zero-field that is obtained by transformations of the spin operators. The resulting Hamiltonian is studied by means of exact numerical diagonalization on a 32-site cluster and the couplings are extracted. The Dzyaloshinskii-Moriya interactions affect the dispersion of the magnons (triplet states) to linear-order because they partially lift the frustration of the lattice. We argue that earlier perturbative techniques have overestimated the dispersion and missed the dominant interactions responsible for the dispersion.

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