

Abstract Submitted
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Anomalous renormalization of excitation spectra of the triangular-lattice antiferromagnet¹ JOHN FJAERESTAD, University of Queensland, WEIHONG ZHENG, University of New South Wales, RAJIV SINGH, University of California, Davis, ROSS MCKENZIE, University of Queensland, RADU COLDEA, University of Oxford — We use series expansions to calculate the excitation spectra of the spin-1/2 triangular-lattice Heisenberg antiferromagnet above the 3-sublattice ordered phase. We find that the spectra are renormalized downwards with respect to linear spin-wave theory. This is in sharp contrast to the square-lattice antiferromagnet, where the spectral frequencies are renormalized upwards due to quantum fluctuations. The triangular-lattice spectra show sharp downward renormalization at special wavevectors, which (a) can be interpreted as evidence of high-energy spinons and (b) provides an explanation for rapid loss of antiferromagnetic correlations with temperature, consistent with earlier high-temperature series expansion studies.

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