Abstract Submitted
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Field-induced dynamical properties of the XXZ model on a honeycomb lattice[1] PAVEL MAKSIMOV, ALEXANDER CHERNYSHEV, Univ of California - Irvine — We present a comprehensive $1/S$ study of the field-induced dynamical properties of the nearest-neighbor XXZ antiferromagnet on a honeycomb lattice using the formalism of the nonlinear spin-wave theory developed for this model. External magnetic field controls spin frustration in the system and induces non-collinearity of the spin structure, which is essential for the two-magnon decay processes. Our results include an intriguing field-evolution of the regions of the Brillouin zone where decays of spin excitations are prominent, a thorough analysis of the singularities in the magnon spectra due to coupling to the two-magnon continuum, the asymptotic behavior of the decay rates near high-symmetry points, and inelastic neutron-scattering spin-spin structure factor obtained in the leading $1/S$ order.

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