

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Stability and magnetization curve of spin-nematic phase slightly below saturation field HIROAKI UEDA, Toyama Prefectural University, KEISUKE TOTSUKA, Yukawa Institute for Theoretical Physics — We discuss the magnetization process slightly below the saturation field in frustrated magnets. A condensation of bound magnons on the spin-polarized state induces either a spin nematic phase or a state with phase separation. The (effective) interaction between the bound magnon pairs not only is crucial to the stability of the nematic phase, but also determines the slope of the magnetization curve near saturation. We generally derive the expression of this interaction by using the perturbative scattering theory. By applying the method to coupled zigzag chains LiCuVO₄, we find the positive pair-pair interaction implying the stability of the spin nematic phase. We also point out that the magnetization curve of LiCuVO₄ is almost vertical (i.e. very large dM/dH) near the saturation exhibiting one-dimensional feature despite non-negligible interchain couplings.

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Date submitted: 02 Nov 2015

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