

Abstract Submitted
for the MAR17 Meeting of
The American Physical Society

Field-induced decays in XXZ triangular-lattice antiferromagnets¹

PAVEL MAKSIMOV, Univ of California - Irvine, MIKE ZHITOMIRSKY, CEA, INAC-PHELIQS, F-38000 Grenoble, France, ALEXANDER CHERNYSHEV, Univ of California - Irvine — We investigate field-induced transformations in the dynamical response of the XXZ model on the triangular lattice that are associated with the anharmonic magnon coupling and decay phenomena. Detailed theoretical predictions are made for a close physical realization of the spin- $\frac{1}{2}$ XXZ model, $\text{Ba}_3\text{CoSb}_2\text{O}_9$. We demonstrate that dramatic modifications in magnon spectrum must occur in low out-of-plane fields that are easily achievable for this material. The hallmark of the effect is a coexistence of the clearly distinct well-defined magnon excitations with significantly broadened ones in different regions of the \mathbf{k} - ω space. The field-induced decays are generic for this class of models and become more prominent at larger anisotropies and in higher fields.

¹Supported by the U.S. Department of Energy, Office of Science, Basic Energy Sciences under Award No. DE-FG02-04ER46174

Pavel Maksimov
Univ of California - Irvine

Date submitted: 03 Nov 2016

Electronic form version 1.4