

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Dynamical

structure factor of the triangular-lattice antiferromagnet¹ ALEXANDER CHERNYSHEV, UC Irvine, MARTIN MOURIGAL, WESLEY FUHRMAN, Johns Hopkins, MICHAEL ZHITOMIRSKY, CEA, Grenoble — We have elucidated the role of magnon interaction and spontaneous decays in the spin dynamics of the triangular-lattice Heisenberg antiferromagnet by calculating its dynamical structure factor within the spin-wave theory. Explicit theoretical results for neutron-scattering intensity will be shown for spins $S = 1/2$ and $S = 3/2$. The dynamical structure factor exhibits unconventional features such as quasiparticle peaks broadened by decays, non-Lorentzian lineshapes, and significant spectral weight redistribution to the two-magnon continuum. This rich excitation spectrum illustrates the complexity of the triangular-lattice antiferromagnet and provides distinctive qualitative and quantitative fingerprints for experimental observation of decay-induced magnon dynamics.

¹Supported by the DoE.

Alexander Chernyshev
UC Irvine

Date submitted: 10 Nov 2013

Electronic form version 1.4