

Abstract Submitted  
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**Magnon lifetime in the easy-plane antiferromagnets**<sup>1</sup> ALEXANDER CHERNYSHEV, University of California, Irvine, MICHAEL ZHITOMIRSKY, CEA, Grenoble — Considering a prototypical 2D easy-plane antiferromagnet on a square lattice in which gapped excitations coexist with acoustic spin waves, we find that random disorder induces a relaxation of the gapped magnon with the rate that greatly exceed the effect of conventional magnon-magnon scattering. Anomalous disorder-induced  $T$ -dependence of the energy gap of the optical magnon and of the scattering rate of the acoustic magnon are also discussed. These can be readily probed by the high-resolution neutron-resonance spin-echo technique. Implications for other systems are discussed and comparison with the available experimental data is presented.

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