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Lifetime of gapped excitations in antiferromagnets[1] SASHA CHERNYSHEV, UC Irvine, MICHAEL ZHITOMIRSKY, CEA Grenoble — We show that local modulations of magnetic couplings may have a profound effect on the temperature-dependence of the relaxation rate of gapped excitations in a class of antiferromagnets in which gapless modes are also present. Considering a prototypical 2D XY antiferromagnet with random disorder we find that the disorder-induced relaxation rate of the gapped mode should greatly exceed the effect of conventional magnon-magnon scattering, which becomes negligible at low temperatures. Our results compare favorably with the available experimental data. Generalizations to the other systems are discussed.

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