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Magnetism in atomically thin quasi two-dimensional materials: Renormalized spin wave theory ZHENGLU LI, TING CAO, STEVEN G. LOUIE, Department of Physics, University of California at Berkeley and Materials Sciences Division, Lawrence Berkeley National Laboratory — In this work, we apply renormalized spin wave theory to the magnetic behavior of atomically thin two-dimensional crystals. We find that magnon-magnon interaction plays an important role in renormalizing the magnetic transition temperature, and the magnetic behavior is largely dependent on the magnetic anisotropy and the thickness of the crystal in the two-dimensional limit. Our method is applicable to general magnetic crystals with input spin interaction parameters mapped out from either ab initio calculations or extracted from experiments. This work was supported by the U.S. Department of Energy, Office of Science, Basic Energy Sciences, Materials Sciences and Engineering Division, and by the National Science Foundation. Computational resources have been provided by NERSC and XSEDE.

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