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Scalar Chiral order on Kagome Antiferromagnet $Nd_3Sb_3Mg_2O_14$[1] ALLEN SCHEIE, Johns Hopkins University, MARISA SANDERS, JASON KRIZAN, Princeton University, AKITO SAKAI, YOSUKE MATSUMOTO, University of Tokyo, YIMING QIU, National Institute of Standards and Technology Center for Neutron Research, ANDREW CHRISTIANSON, Oak Ridge National Lab Spallation Neutron Source, SATORU NAKATSUJI, University of Tokyo, BOB CAVA, Princeton University, COLLIN BROHOLM, Johns Hopkins University —
We report the magnetic structure of rare earth kagome compound $Nd_3Sb_3Mg_2O_14$. Thermodynamic measurements show a Curie-Weiss temperature of CW = 0.12 K, a Nd^{3+} spin-1/2 Kramers doublet ground state, and a second-order phase transition at $T_N = 0.56(2)$ K. Neutron scattering reveals noncoplanar scalar chiral k = 0 long-range magnetic order with an ordered moment of $1.79(5)\mu_B$. This order includes a canted ferromagnetic component perpendicular to the kagome planes, which we have confirmed through low T magnetization measurements. We also report the crystal field levels of $Nd_3Sb_3Mg_2O_14$ and infer the ground state doublet wave function.

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