Scalar Chiral order on Kagome Antiferromagnet \( \text{Nd}_3\text{Sb}_3\text{Mg}_2\text{O}_{14} \)^1

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We report the magnetic structure of rare earth kagome compound \( \text{Nd}_3\text{Sb}_3\text{Mg}_2\text{O}_{14} \). Thermodynamic measurements show a Curie-Weiss temperature of \( CW = 0.12 \, \text{K} \), a \( \text{Nd}^{3+} \) spin-1/2 Kramers doublet ground state, and a second-order phase transition at \( T_N = 0.56(2) \, \text{K} \). 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 \( \text{Nd}_3\text{Sb}_3\text{Mg}_2\text{O}_{14} \) and infer the ground state doublet wave function.

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