Abstract Submitted
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Spin dynamics of the triangular lattice antiferromagnet α-$SrCr_2O_4$[1] M. MOURIGAL, J.-J. WEN, Y. WAN, S. KOOHPAYEH, R. VALDÉS AGUILAR, N.P. ARMITAGE, O. TCHERNYSHOV, C.L. BROHOLM, Johns Hopkins, S. DUTTON, R.J. CAVA, Princeton, T. BIROL, H. DAS, C.J. FENNIE, Cornell, L. LIN, J.-M. LIU, Nanjing University, M.B. STONE, W. TIAN, Oak Ridge National Laboratory — We study the spin dynamics of the layered $S = 3/2$ triangular lattice antiferromagnet α-$SrCr_2O_4$ by means of inelastic neutron scattering on powder and single-crystal specimen. While the incommensurate long-range order observed below T_N=43K resembles the usual 120°-structure predicted for the perfect triangular lattice antiferromagnet, a spin-wave theory fit to the entire single-crystal dataset reveals strongly distorted exchange interactions. The extreme sensitivity of direct-exchange interactions to the small static Cr^{3+}-Cr^{3+} distance variations reported by neutron diffraction, is quantitatively confirmed by *ab-initio* calculations that corroborate the spin-wave theory results.

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