

Abstract Submitted
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Magnetic ordering in SrEr₂O₄ and SrHo₂O₄ O.A. PETRENKO, T.J. HAYES, O. YOUNG, G. BALAKRISHNAN, University of Warwick, UK, L.C. CHAPON, A. WILDES, ILL, Grenoble, France, P. MANUEL, ISIS, RAL, UK, P.P. DEEN, ESS, Lund, Sweden — Single crystal neutron diffraction reveals two distinct components to the magnetic ordering in geometrically frustrated compounds SrEr₂O₄ and SrHo₂O₄. One component, a long-range ordered $\mathbf{k} = 0$ structure, is associated with the appearance of resolution limited Bragg peaks below the ordering temperature. Another component is a quasi 1D short-range structure which manifests itself by the presence of a strong diffuse scattering signal forming *planes* in reciprocal space. On cooling from higher temperatures down to 0.06 K, the partially ordered component develops gradually and does not undergo a pronounced phase transition. The magnetic moments in the long-range structure are pointing along the [001] axes in both compounds. In the short-range structure (which is incommensurate in SrEr₂O₄ and $\mathbf{k} \approx 1/2$ in SrHo₂O₄) the moments are predominantly pointing along the [001] and [010] axes in these two compounds respectively. The unusual coexistence of two magnetic structures is probed using XYZ-polarised neutron scattering techniques [1,2]. [1] T.J. Hayes *et al.*, to appear in Phys. Rev. B (2011). [2] O. Young *et al.*, in preparation (2011).

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