

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Complex ferrimagnetic state induced by zigzag oxygen-vacancy stripes in  $\text{Sr}_3\text{YCo}_4\text{O}_{10.72}$**  D.D. KHALYAVIN, L.C. CHAPON, ISIS facility, Rutherford Appleton Laboratory, E. SUARD, Institut Laue-Langevin, J.E. PARKER, S.P. THOMPSON, Diamond Light Source, A.A. YAREMCHENKO, V.V. KHARTON, University of Aveiro — The nature of high temperature ferromagnetic behaviour in  $\text{Sr}_3\text{YCo}_4\text{O}_{10+\delta}$  perovskite has been studied by neutron powder diffraction supplemented with synchrotron X-ray diffraction measurements. The present analysis of the magnetic structure takes into account the complex superstructure formed by oxygen vacancy ordering. These vacancies create zigzag strips in the oxygen-deficient  $\text{CoO}_{4+\delta}$  layers providing three distinct coordinations for Co ions. The values of the ordered moments were found to be essentially different for the distinct coordinated units and clearly correlate with the coordination number. The symmetry of the superstructure in conjunction with strong antiferromagnetic interactions between neighbour spins results in a net moment whose origin has been the subject of considerable debates.

Dmitry Khalyavin  
ISIS facility, Rutherford Appleton Laboratory

Date submitted: 19 Nov 2010

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