

Abstract Submitted  
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**Detection of the Spin Reorientation and Glassy Dynamics in  $\text{La}_{1.55}\text{Sr}_{0.45}\text{NiO}_4$**  SEAN GIBLIN, ISIS, Rutherford Appleton Lab, PAUL FREEMAN, ILL, France, DHARMALINGHAM PRABHAKARAN, ANDREW BOOTHROYD, University of Oxford, UK — The magnetism of charge stripe ordered  $\text{La}_{1.55}\text{Sr}_{0.45}\text{NiO}_4$  was studied by the combined techniques of neutron diffraction, muon spin relaxation and mass susceptibility. Magnetic ordering was observed at a lower temperature by muon relaxation than neutron diffraction, indicating a glassy transition to the ordered phase, in agreement with the susceptibility. Neutron diffraction determined a second magnetic transition that is observed by all techniques, to be a spin reorientation. On cooling below  $T_{\text{SR}} = 42$  K the spins re-orientate from lying  $33.7 \pm 0.6^\circ$  away from the stripe direction at 70 K to  $57.4 \pm 0.4^\circ$  at 10 K. The magnetic order was observed by neutron diffraction to be of both anisotropic 3D and 2D (without any correlation on the  $c$  axis) character. Muon relaxation confirmed this to be consistent with a single magnetically ordered spin stripe phase. The muon site associated with the spin stripe indicated critical behavior expected from a two dimensional magnetically ordered state, whereas the site associated with the charge stripe showed three dimensional critical behavior indicating spin frustration at the charge stripe.

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