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Moment configuration of SrLaFeO₄ at low temperatures A.M. ALS-MADI, The Hashemite University, Jordan, P. PICCOLI, A.J. SCHULTZ, Argonne National Laboratory, M. TORIKACHVILI, San Diego State University, S. ADAK, K. KOTHAPALLI, F. NASREEN, H. NAKOTTE, New Mexico State University — We determined the configuration of the Fe³⁺ moments in SrLaFeO₄ by single-crystal neutron diffraction at low temperatures. Previous magnetic and neutron-diffraction studies provided evidence that this compound exhibits antiferromagnetic order at room temperature. The magnetic peaks could be indexed using an orthorhombic structure of Cmca symmetry with two propagation vectors $q_1 = (1/2, 1/2, 0)$ and $q_2 = (-1/2, 1/2, 0)$, representing the two possible domains[1]. Irregularities in some of the magnetic intensities provided evidence for a second magnetic transition or domain repopulation effects at ~ 30 K. We performed additional in-depth neutron-diffraction studies at 15, 65, and 150 K, using the SCD diffractometer at the Los Alamos Neutron Science Center. Using a theoretical form factor for Fe³⁺ and assuming collinear moments, we were able to fit the observed magnetic intensities to magnetic models at all three temperatures. Our data are indicative of moment rotation rather than domain repopulation effects at ~ 30 K. At 15 K, we find evidence that the moments point along the [100] direction, while the magnetic moments are rotated by $\sim 25^\circ$ from the [100] direction at 65 and 150 K. [1] M. H. Jung et al., J. Appl. Phys. 79 10A926 (2005)

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