Neutrons Scattering Study of Magnetic Correlations in Y$_{0.7}$La$_{0.3}$VO$_3$.

SUNG CHANG, NIST Center for Neutron Research, JIAQIANG YAN, Ames Laboratory, ROBERT MCQUEENEY, Iowa State University — RVO$_3$ ($R =$ rare earth) perovskite vanadites exhibit multiple orbital and spin orderings and provide a unique opportunity to study the spin-orbital-lattice coupling of $\pi$-bonding $t$ electrons. The nature of the orbital order in these vanadites has been a matter of significant controversy, particularly with respect to whether the different orbital-ordered phases of YVO$_3$ and LaVO$_3$ are best described by a novel orbital-Peierls model or more traditional Jahn-Teller interactions. Here we report on a neutron scattering study of the magnetic correlations in Y$_{0.7}$La$_{0.3}$VO$_3$, which may be expected to depend sensitively on the orbital degrees of freedom. The results are discussed in terms of the interplay between magnetism and orbital order.

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