Abstract Submitted
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Magnetism in *Ln*MnSbO (*Ln* = La or Ce)[1] QIANG ZHANG, Iowa State University, NAVEEN KUMAR CHOGONDAHALLI M., Jlich Centre for Neutron Science, KEVIN DENNIS, ALAN GOLDMAN, DAVID VAKNIN, Iowa State University — Neutron diffraction of polycrystalline (PND) *Ln*MnSbO (*Ln* = La or Ce) reveals differences between the magnetic ground state of the two compounds due to the strong Ce-Mn coupling compared to La-Mn. The two compounds adopt the *P4/nmm* space group down to 1.5 K and whereas magnetization measurements do not show any anomaly at high temperatures, PND reveals a C-type antiferromagnetic (AFM) order below T_N = 255 K for LaMnSbO and 240 K for CeMnSbO. While the magnetic structure of LaMnSbO is preserved to base temperature, a sharp transition at T_{SR} = 5 K in CeMnSbO due to a spin-reorientation (SR) transition of the Mn^{2+} from pointing along the *c*-axis to the *ab*-plane is found. The SR transition in CeMnSbO is accompanied by a simultaneous long-range AFM ordering of the Ce moments. This indicates that the Mn SR transition is driven by the Ce-Mn coupling similar to recent observation in the isostructural CeMnAsO. The ordered moments are found to be somewhat smaller than those expected for Mn^{2+} (S = 5/2) in insulators, but large enough to suggest that these compounds belong to the class of local-moment antiferromagnets. The lower T_N found in this compound compared to the As-based counterpart (T_N = 347K for CeMnAsO) indicates that the Mn-*Pn* (*Pn* = As or Sb) hybridization that mediates the exchange Mn-Mn coupling is weaker for the Sb-based compounds.

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