Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Neutron scattering study of magnetic structure in triangle spin tube $CsCrF_4$ MASATO HAGIHALA, ISSP, Univ. of Tokyo, MAXIM AVDEEV, Bragg Institute, ANSTO, HIROTAKA MANAKA, Kagoshima Univ., TAKATSUGU MASUDA, ISSP, Univ. of Tokyo — Triangle spin tube viewed from tube direction is topologically equivalent to kagom lattice. The rung (J_1) and inter-tube (J_2) interactions on triangle spin tube correspond respectively to the next nearest neighbor and the nearest neighbor interactions on kagom lattice. In the case of $J_1 > 0$ (Antiferromagnetic) and $J_1 >> |J_2|$, the ground state is $q = 0, 120°$ structure with $J_2 > 0$ or Cuboc state that represented multi-q ($q = 2\pi(1/2\ 0)$ and two symmetric-equivalent vectors) with $J_2 < 0$ [1]. $CsCrF_4$ is a perfect triangle spin tube material with antiferromagnetic intra-tube and rung interactions [2]. Neutron diffraction measurement revealed magnetic long-range order at $T = 1.5$ K. Contrary to the expectation, the magnetic structure was determined $q = 2\pi(1/2\ 0\ 1/2)$, 120° structure by Rietveld refinement. We also confirmed that this structure was stabilized by Dzyaloshinskii -Moriya interaction and small anisotropy that obeyed the three-fold symmetry at Cr sites by calculation. [1] H. Ishikawa et al., JPSJ 83, 043703 (2014). [2] H. Manaka et al., JPSJ 78, 093701 (2009).

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Date submitted: 06 Nov 2015 Electronic form version 1.4