

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Ferromagnetic correlations in $\text{Yb}_2\text{Ti}_2\text{O}_7$ as revealed by small angle neutron scattering techniques CONNOR BUHARIWALLA, QIANLI MA, McMaster University, LISA DEBEER-SCHMITT, Oak Ridge National Lab, HANNA DABKOWSKA, Brockhouse Institute for Materials Research, BRUCE GAULIN, McMaster University — We report low temperature SANS measurements on frustrated $S_{eff}=1/2$ XY pyrochlore magnet $\text{Yb}_2\text{Ti}_2\text{O}_7$ [1]. The ground state of this material has been proposed as a realization of a quantum spin ice; however, the low temperature phase behaviour has been complicated by sample dependencies believed to be related to weak “stuffing” [2]. Our SANS study focuses on the low Q structure of elastic “rods” of magnetic scattering which extend from $Q=0$ along the 111 direction. Using a single crystal sample, we characterize the low Q ($<0.2\text{\AA}^{-1}$) temperature dependence of this structured diffuse scattering intensity to $T=30\text{mK}$, passing through the enigmatic heat capacity anomaly near $T_c=200\text{mK}$. The temperature dependence of this diffuse scattering near $Q=0$ is largely consistent with that measured previously near 111 [3]. [1] K.A. Ross et al., Phys. Rev. X 1, 021002 (2011) [2] K.A. Ross et al., Phys. Rev. B 86, 174424 (2012) [3] K.A. Ross et al., Phys. Rev. B 84, 174442 (2011)

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Date submitted: 06 Nov 2015

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