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Neutron Scattering Studies of the Random Field Domain State in $CsCo_{0.83}Mg_{0.17}Br_3$ JOHN-PAUL CASTELLAN, McMaster University, Canada, B.D. GAULIN, McMaster University, Canada, W.J.L. BUYERS, NPMR, NRC, Chalk River Laboratories, Chalk River, Canada, J. VAN DUIJN — We have extended previous neutron scattering measurements on $CsCo_{0.83}Mg_{0.17}Br_3$[1], a dilute stacked triangular lattice Ising antiferromagnet. Pure $CsCoBr_3$ exhibits three magnetic phase transitions[2]. At T_{n1}=28.3 K a 3 sublattice Neel state forms, in which two sublattices are ordered up and down, while the third remains disordered. This disordered sublattice itself orders below $T_{n2} \sim 16K$, forming ferrimagnetic sheets which stack antiferromagnetically. The non-magnetic dopants induce a random field domain state at T_{n1} in $CsCo_{0.83}Mg_{0.17}Br_3$, as the magnetic vacancies couple to the disordered sublattice as a random field. We resent new high resolution results showing the evolution of this random field state in both zero magnetic field and for the case where a magnetic field is applied along the Ising moment direction, the c-axis. [1] J. van Duijn et al. Phys. Rev. Lett. 92, 077202 (2004) [2] M. Mao et al. Phys. Rev. B 66, 184432 (2002)

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