Cluster Heat Bath Monte Carlo study of a quasi one-dimensional Ising antiferromagnet on a stacked triangular lattice E. MELOCHE, M. L. PLUMER, Department of Physics and Physical Oceanography, Memorial University of Newfoundland, St Johns, Newfoundland, Canada A1B 3X7 — The results of extensive Monte Carlo simulations of the critical behavior of an Ising model on a stacked triangular lattice with anisotropic exchange coupling are discussed. We consider a system where the inter-plane coupling is ten times stronger than the nearest-neighbor antiferromagnetic in-plane interaction and also discuss the effects of a weaker ferromagnetic next-nearest-neighbor in-plane interaction. This work is motivated by recent experimental results on $CsCoBr_3$ which showed that the critical exponents associated with the upper magnetic phase transition are consistent with tricritical mean-field behavior.[1] The Histogram Monte Carlo simulations are carried out using the Cluster Heat Bath method[2] which improves the slow relaxation in these systems and finite-size scaling analysis is used to extract estimates for the critical exponents. Our results for the critical exponents are in agreement with previous Monte Carlo work on a similar model with isotropic exchange couplings and are consistent with XY universality. [1] Ming Mao, B. D. Gaulin, R. B. Rogge, and Z. Tun, Phys. Rev. B **66**, 184432 (2002). [2] F. Matsubara, A. Sato, O. Koseki, and T. Shirakura, Phys. Rev. Lett. **78**, 3237 (1997).

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