SP (N) Treatment of Frustrated Spin Dimer Systems in Magnetic Field MARIANNA MALTSEVA, REBECCA FLINT, PIERS COLEMAN, Rutgers University — We present a Schwinger boson treatment of a frustrated bilayer dimer spin system using a reformulation of the SP (N) approach to frustrated spin systems. Unlike previous SP (N) approaches[1], our starting model is composed uniquely of SP (N) spin generators, which permits a more symmetric treatment of antiferromagnetic and ferromagnetic bonds. We apply our methods to model the spin condensation process that occurs in $BaCuSi_2O_6$. One of the issues of particular interest is the dependence of the interlayer order-from-disorder effects[4] on the applied magnetic field, and the interesting possibility that these couplings vanish at the critical field[2,3]. [1] S. Sachdev, N. Read, International Journal of Modern Physics B 5, 219 (1991). [2] S. E. Sebastian, N. Harrison, C. D. Batista, L. Balicas, M. Jaime, P. A. Sharma, N. Kawashima, I. R. Fisher, Nature 441, pp 617-620 (2006). [3] C. D. Batista, J. Schmalian, N. Kawashima, S. E. Sebastian, N. Harrison, M. Jaime, I. R. Fisher, cond-mat/0608703. [4] M. Maltseva, P. Coleman, Phys. Rev. B 72, 174415-9 (2005).

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