Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Evolution of the single-hole spectral function across a quantum phase transition in the anisotropic-triangular-lattice antiferromagnet SO TAKEI, CHUNG-HOU CHUNG[1], YONG BAEK KIM[2], University of Toronto — We study the evolution of the single-hole spectral function when the ground state of the anisotropic-triangular-lattice antiferromagnet changes from the incommensurate magnetically-ordered phase to the spin-liquid state. In order to describe both of the ground states on equal footing, we use the large-N approach where the transition between these two phases can be obtained by controlling the quantum fluctuations via an 'effective' spin magnitude. Adding a hole into these ground states is described by a t-J type model in the slave-fermion representation. Implications of our results to possible future ARPES experiments on insulating frustrated magnets, especially Cs_2CuCl_4, are discussed.

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Date submitted: 02 Dec 2004 Electronic form version 1.4