

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Predictions for the ARPES spectral function of kagome antiferromagnetic insulators¹ SUMIRAN PUJARI, Cornell University, MICHAEL J. LAWLER, Binghamton University, Cornell University — There are now a number of spin liquid candidate materials possibly with exotic spin-1/2 “spinon” excitations. Motivated by these discoveries, we consider the scaling properties of the hole spectral function for the frustrated Kagome Heisenberg antiferromagnet assuming Dirac Spin Liquid(DSL) ground state proposed for Herbertsmithite [2]. We predict a sublinear in energy power law dependence of the ARPES spectral function at certain wave vectors. Using Renormalization group techniques, we show how (gauge) fluctuations of the DSL mean field give an anomalous exponent to spinons[2] and no anomalous exponent to holons thereby leading to the sublinear power law. If this behavior is observed in experiments, they would provide strong evidence for the existence of spinons in highly frustrated magnets.²

¹S.P. gratefully acknowledges support from NSF grant DMR-1005466

²Y. Ran et al, Phys. Rev. Lett. 98, 117205 (2007)

Sumiran Pujari
Cornell University

Date submitted: 29 Dec 2010

Electronic form version 1.4