Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Symmetry breaking Schwinger Boson Mean Field Theory solutions on Kagome[1] SHIVAM GHOSH, CHRISTOPHER L. HENLEY, LASSP, Cornell University — Schwinger Boson Mean Field theory (SBMFT) is a powerful technique for describing both quantum disordered and symmetry broken phases of Heisenberg spins as a function of spin length $\kappa = 2S$. Previous applications of SBMFT have been to study *symmetric* SL's which preserve lattice and time reversal symmetries (TRS). The *assumption* of a symmetric ground state reduces the number of mean field variables simplifying search for SL saddle points. We go beyond the manifold of *symmetric* SL's on the kagome lattice and using an optimization [2] technique search for solutions that may *spontaneously* break lattice and TRS. An exhaustive search for saddle points on a 4×4 lattice shows that the lowest energy solutions have zero flux ($[0hex]$) through hexagons in agreement with the Greedy Boson theorem [3] However, amongst the manifold of $[0hex]$ solutions we find a state *lower* in energy than Sachdev's uniform $Q_1 = -Q_2$ state, extending up to $\kappa = 0.3$, which *spontaneously* breaks lattice symmetry and differs from uniform solution in flux patterns through length eight loops . We also characterize other (higher in energy) *chiral* saddle points

[1]NSF DMR 1005466
[2]G.Misguich, PRB 86, 245132 (2012)
[3]O. Tchernyshyov et al. EPL, 73, 278 (2006)

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Date submitted: 14 Nov 2013 Electronic form version 1.4