Abstract Submitted
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Numerical evidence for a chiral spin liquid in the XXZ model on the kagome lattice in a magnetic field[1] HITESH CHANGLANI, KRISHNA KUMAR, BRYAN CLARK, EDUARDO FRADKIN, University of Illinois Urbana Champaign — Frustrated spin systems in two dimensions provide a fertile ground for discovering exotic states of matter, often with topologically non-trivial properties. In this work, we investigate the possible existence of a chiral spin liquid state in the spin 1/2 XXZ model on the frustrated kagome lattice in the presence of a magnetic field. This model is equivalent to a hard-core bosonic one with density-density interactions at finite filling fraction. Motivated by previous field theoretic predictions utilizing a Chern-Simons theory adapted for this lattice [1,2], we focus our attention to understanding the XY limit for the 2/3 magnetization plateau (equivalent to a system of hard-core bosons at 1/6 filling with weak nearest-neighbor repulsive interactions). Performing exact or accurate numerical computations, and based on energetics and construction of minimally entangled states and associated modular matrices, we provide evidence for such a spin liquid. We study the nature of this phase and examine its stability to additional interactions. [1] K. Kumar, K. Sun, and E. Fradkin, Phys. Rev. B 90, 174409 (2014) [2] K. Kumar, K. Sun, and E. Fradkin, Phys. Rev. B 92, 094433 (2015)

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