Fractional charge separation in the hard-core Bose Hubbard Model on the Kagome Lattice XUE FENG ZHANG, SEBASTIAN EGGERT, University of Kaiserslautern — We consider the hard core Bose Hubbard Model on a Kagome lattice with fixed (open) boundary conditions on two edges. We find that the fixed boundary conditions lift the degeneracy and freeze the system at 1/3 and 2/3 filling at small hopping. At larger hopping strengths, fractional charges spontaneously separate and are free to move to the edges of the system, which leads to a novel compressible phase with solid order. The compressibility is due to excitations on the edge which display a chrial symmetry breaking that is reminiscent of the quantum Hall effect. Large scale Monte Carlo simulations confirm the analytical calculations.

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