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Equation of State for Quantum Hall Bosons in an Optical Lattice ELIOT KAPIT, ERICH MUELLER, Cornell University — Using exact diagonalization and averaging over twisted boundary conditions, we calculate the finite temperature equation of state for a system of lattice bosons with hard core repulsion in an artificial magnetic field, and plot the resulting density profiles for trapped gases. We explore the temperature dependance of the fractional quantum Hall density plateaus, and give concrete bounds on the temperatures needed to see signatures of this physics in density profiles. Additionally, we explore the role of longer range hopping terms (cf. PRL 105, 215303).

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