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Role of the continuum states in the thermodynamics of the $\nu = 1/3$ fractional quantum Hall effect PETER RAUM, VITO SCAROLA, Virginia Tech — The high energy excitations of fractional quantum Hall states dictate thermodynamics at experimentally accessible temperatures. We construct a microscopic formalism for the thermodynamics of the $\nu = 1/3$ Laughlin state as generated by a hard core repulsive model. We use exact diagonalization of the hardcore repulsive model for small system sizes to gather statistics for the excitations. These results are extrapolated to the thermodynamic limit using an ansatz partition function that captures the ground state, low-energy excitations, and high energy continuum states. The continuum states are found to play an important role at low temperatures, even below the characteristic gap.

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