

Abstract Submitted
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7/3 fractional quantum Hall effect: topology, trion excitations and edge states AJIT C. BALRAM, YING-HAI WU, Pennsylvania State University, G.J. SREEJITH, NORDITA, ARKADIUSZ WÓJS, Wrocław University of Technology, J.K. JAIN, Pennsylvania State University — Exact diagonalization studies on finite systems show that the quasihole and quasiparticle excitations in the 7/3 fractional quantum Hall (FQH) state are qualitatively distinct from those of the 1/3 state, suggesting the possibility of different topological origins for the two states. We perform composite-fermion diagonalization on larger systems and also evaluate the entanglement spectrum, which shows that in spite of these strong finite size deviations, the 7/3 and 1/3 FQH states have the same topological structure in the thermodynamic limit. Nonetheless, there are substantial non-topological differences between the two, arising from the stronger residual interaction between composite fermions at 7/3. In particular, we show that the lowest energy charged excitations of the 7/3 state are complex trions of composite fermions, which have a much larger size than the charged excitations at 1/3. We discuss many observable consequences of our results.

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