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Numerical test of bosonization of the 1/3 FQHE edge SHIVAKUMAR JOLAD, CHIA-CHEN CHANG, JAINENDRA JAIN, Pennsylvania State University, University Park, PA-16802 — We report on numerical tests of Wen's conjecture expressing the fermionic field operator in terms of the bosonic edge excitations for the edge of the 1/3 FQHE state. Our studies extend the previous work of Palacios and MacDonald [1], wherein they identify the boson excitations to Stone operators [2], to larger systems and obtain more accurate thermodynamic limits for various matrix elements for the hard-core interaction. We also study the excitations using the Coulomb ground state, available for up to 9 electrons. A combination of exact diagonalization and Monte Carlo method is used to study systems containing up to 40 particles. The results are in agreement with those in Ref. [1] for small systems, but offer insight into the detailed approach to the thermodynamic limit and the effect of interaction on the results.

[1] J. J. Palacios and A.H. MacDonald, PRL 76, 119 (1996).
[2] M. Stone, PRB 42, 8399 (1990)

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