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Numerical and analytical tests of topological nature of fractional quantum Hall edge SHIVAKUMAR JOLAD, SREEJITH GANESH JAYA, The Pennsylvania State University, University Park, PA-16802, DIPTIMAN SEN, Indian Institute of Science, Bangalore-560012, India, JAINENDRA JAIN, The Pennsylvania State University, University Park, PA-16802 — We obtain the thermodynamic dispersions for the elementary single boson excitations at filling factors $\nu = 1/3$ and $\nu = 2/5$ using the accurate framework of composite fermion diagonalization. At $\nu = 2/5$ we also consider excitations in which composite fermions change their Λ level index, which can sometimes be important even at low temperatures. In addition, we show how non-Fermi liquid behavior arises from projecting the electron creation operator into the low energy subspace of composite fermion edge states. Our study allows a microscopic evaluation of the edge spectral function, and an investigation of the regime of validity of the linear approximation of the chiral Luttinger liquid description of the FQHE edge. Possible experimental signatures of the “edge roton minimum” are investigated.

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