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The Real-Space Entanglement Spectra of Fractional Quantum Hall States A. CHANDRAN, Princeton University, PARSA BONDERSON, Microsoft Research, Station Q, NICOLAS REGNAULT, Laboratoire Pierre Aigrain, ENS and CNRS, ANDREI BERNEVIG, Princeton University — We investigate the entanglement spectra arising from a sharp real-space cut on the topologically ordered fractional quantum hall (FQH) ground states. We find that the counting of the real-space entanglement spectra (the number of edge excitations of the liquid) is identical to the number of bulk quasihole excitations, in accordance with the bulk-boundary correspondence. The spectra of cuts with two edges display the shape and counting of counter-propagating non-interacting modes as well. Initial estimates of the topological entanglement entropy seem to be in agreement with theory. The real-space entanglement spectra also allows us to distinguish between particle-hole conjugate states, providing us with a new probe to interacting edge modes.

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