Bulk-edge correspondence and entanglement spectra of quantum Hall trial wave functions JEROME DUBAIL, NICHOLAS READ, Yale University, EDWARD REZAYI, California State University — We construct edge states wave functions for quantum Hall trial states built out of conformal blocks (e.g. Laughlin, Moore-Read or Read-Rezayi wave functions). We then compute the overlaps between these edge states in the thermodynamic limit. The result is that the Hilbert space of the edge theory is isomorphic to the one of the conformal field theory (CFT) which defines the quantum Hall state. This is a microscopic derivation of the bulk/edge correspondence for trial states given by conformal blocks. Our result definitely rules out the use of non-unitary theories for the construction of quantum Hall states. We obtain this result by analysing the quantum Hall droplet in the thermodynamic limit, under the assumption that all correlations are short-range inside the droplet. We argue that one is then left with a CFT in the domain outside the droplet, with a perturbed conformal boundary condition along the edge. We show that the entanglement spectra of these states can be tackled analytically with the same techniques.

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