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Benchmarking MPS for fractional quantum Hall states NICOLAS REGNAULT, Ecole Normale Supérieure-CNRS / Princeton University, BENOIT ESTIENNE, LPTHE, UPMC Université Paris 06, ZLATKO PAPIĆ, B. ANDREI BERNEVIG, Princeton University — We discuss the numerical aspects of the Matrix Product State (MPS) representation for a large series of Fractional Quantum Hall states. We benchmark the MPS for several model states such as the Read-Rezayi series using both overlap, energies, densities and pair correlation functions. We discuss how accurate this description is depending on the geometry (sphere, disk or cylinder). As an application, we use the MPS to compute the size of the quasiholes for the Read-Rezayi series.

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