Studying topological order in quantum Hall states using entanglement entropy calculations. MASUD HAQUE, MPI-PKS Dresden, Germany, OLEKSANDR ZOZULYA, KARELJAN SCHOUTENS, University of Amsterdam, The Netherlands, ED REZAYI, California State Univ, Los Angeles, NICOLAS REGNAULT, Ecole Normale Superieure, Paris, France — We present calculations of the entanglement entropy in fractional quantum Hall (FQH) states. Calculating the entanglement entropy between spatially separated regions allows us to probe the topological order in Laughlin and Moore-Read states. The entanglement entropy is also found to be a sensitive indicator of quantum phase transitions between FQH and non-FQH states.

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Date submitted: 29 Nov 2007   Electronic form version 1.4