Topological Entanglement Entropy of Realistic Quantum Hall States BARRY FRIEDMAN, Department of Physics, Sam Houston State University, GREG LEVINE, Department of Physics and Astronomy, Hofstra University — The entanglement entropy for the incompressible states of a realistic quantum Hall system was studied by direct diagonalization for square clusters with periodic boundary conditions. The subdominant term to the area law, the topological entanglement entropy, was extracted for filling factors 1/3 and 5/2. The result for filling factor 1/3 is consistent with the topological entanglement entropy for the Laughlin wave function while the 5/2 filling factor exhibits a topological entanglement entropy consistent with the Moore-Read wave function. Preliminary results for the topological entanglement entropy for other incompressible states in the second Landau level will be discussed.

Barry Friedman
Department of Physics, Sam Houston State University