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Measurement induced topological entanglement transition in a free fermion model

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Quantum measurements have been recently exploited as a tool to induce e phase transition between volume- and area-law scaling of entanglement entropy. For free fermions, the transition occurs between sub-volume (logarithmic) and area-law scaling. Here we present a free fermion model where two sets of non-commuting measurements induce a transition between area-law entanglement scaling phases of distinct topological order. We find numerically that, in the presence of unitary dynamics, the two topological phases are separated by a sub-volume scaling region and that the transition universality class differs from that of interactive models with projective measurements. We further show that the different phases are qualitatively captured by an analytically tractable non-Hermitian Hamiltonian model obtained via partial post-selection.

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