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**Quantum noise and entanglement generated by a local quantum quench** BENJAMIN HSU, EYTAN GROSFELD, EDUARDO FRADKIN, University of Illinois Urbana Champaign — We examine the growth of entanglement under a quantum quench at point contacts of simple fractional quantum Hall fluids and its relation with the measurement of local observables. Recently Klich and Levitov proposed that the noise generated from a local quantum quench provides a measure of the entanglement entropy. Their methods were specific to non-interacting electrons and the generalization to interacting systems was left as an open question. In this work, we generalize their result to the Laughlin states. We investigate the noise generated in the current along the edge of a fractional quantum Hall state at filling factors  $\nu = 1/m$ , when a quantum point contact, initially closed, is fully opened at some initial time  $t_0 = 0$ . We find that local quenching in these systems gives time dependent correlation functions that have universal behavior on sufficiently long time and length scales. We calculate the noise and full counting statistics for  $\nu = 1/m$  and find that in general, the entanglement entropy and noise generated are unrelated quantities. We also discuss a generalization of this problem to the critical quantum Ising spin chain.

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