

Abstract Submitted  
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**Quantum quench with hard wall boundary conditions**<sup>1</sup> GARRY GOLDSTEIN, NATAN ANDREI, Rutgers University — In this work we present analysis of a quench for the Lieb Liniger gas contained in a large box with hard wall boundary conditions. We study the time average of local correlation functions. We show that both the quench action logic and the GGE are applicable. We show that the time average of the system corresponds to an eigenstate of the Lieb Liniger Hamiltonian. We show that this eigenstate is related to an eigenstate of a Lieb Liniger Hamiltonian with periodic boundary conditions on an interval of twice the length and with twice as many particles (a doubled system). We further show that local operators with support far away from the boundaries of the hard wall Lieb Liniger gas have the same expectation values as corresponding operators for the doubled system. We present an example of a quench where the Lieb Liniger gas is initially confined in several traps and then released into a bigger container, an approximate description of the Newton cradle experiment.

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