Entanglement dynamics after a quantum quench in the O(N) model[1] YONAH LEMONIK, ADITI MITRA, New York University — The entanglement properties of quenched quantum systems is an active area of study, however results in dimensions other than $d = 1$ are generally lacking. We remedy this by investigating the entanglement properties after a critical quench in the bosonic O(N) model in $d = 3$, comparing our results to the free massless theory. We find that the evolution of the entanglement entropy for the free and interacting systems is nearly identical, as expected from a "quasi-particle" picture. However, the low-lying entanglement spectrum is controlled by the different non-equilibrium critical exponents of these two systems. Therefore we demonstrate that these critical exponents can be extracted by studying purely the entanglement in the system.

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