

Abstract Submitted  
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**Entanglement Entropy and Mutual Information of Circular Entangling Surfaces in 2+1d Quantum Lifshitz Model**<sup>1</sup> TIANCI ZHOU, XIAO CHEN, EDUARDO FRADKIN, Univ of Illinois - Urbana — We investigate the entanglement entropy (EE) of circular entangling surfaces in the 2+1d quantum Lifshitz model, where the spatially conformal invariant ground state is a Rokhsar-Kivelson state with Gibbs weight of 2d free Boson. We use cut-off independent mutual information regulator[1] to define and calculate the subleading correction in the EE. The subtlety due to the Boson compactification in the replica trick is carefully taken care of. Our results show that for circular entangling surface, the subleading term is a constant on both the sphere of arbitrary radius and infinite plane. For the latter case, it parallels the constancy of disk EE in 2+1d conformal field theory, despite the lack of full space time conformal invariance. In the end, we present the mutual information of two disjoint disks and compare its scaling function in the small parameter regime (radii much smaller than their separation) with Cardy's general CFT results [2]. 1. H. Casini, M. Huerta, R. Myers, A. Yale, arXiv: 1506.06195 (2015). 2. J. Cardy, J. Phys. A: Math. Theor. 46, 285402 (2013)

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