## Titel: Area laws for the entanglement entropy

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Abstract:

This is a presentation of results obtained in my MSc thesis.

We study the asymptotic large-scale behaviour of the bipartite ground state entanglement entropy within the Luttinger-Sy model. We first introduce the Luttinger-Sy model, a onedimensional model with randomness governed by a Poisson random measure, whose atoms divide the positive real line into intervals. The Laplacian acts on each of these intervals with Dirichlet boundary conditions. We describe properties the ground state of the model and verify that the corresponding entanglement entropy depends only on a single interval. Therefore it remains bounded in the infinite-volume limit. Finally, we consider a discrete version of the model with on-site particle-particle interactions and also show the boundedness of the entanglement entropy in this case.