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Title: Stability of the enhanced area law of the entanglement entropy

Abstract:

We consider a multi-dimensional continuum Schrödinger operator which is given by a perturbation of the negative Laplacian by a compactly supported potential. We establish both an upper bound and a lower bound on the bipartite entanglement entropy of the ground state of the corresponding quasi-free Fermi gas. The bounds prove that the scaling behaviour of the entanglement entropy remains a logarithmically enhanced area law as in the unperturbed case of the free Fermi gas. The central idea for the upper bound is to use a limiting absorption principle for such kinds of Schrödinger operators. This is joint work with Ruth Schulte.