

Abstract Submitted
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Scattering approach to the entanglement entropy area law for fermions¹ GREGORY LEVINE, Hofstra University — The entanglement entropy (EE) of a critical fermion system coupled to another system by a “weak link” is studied perturbatively in the weak link amplitude, w . In this model, EE arises from s -wave scattering connecting the two subsystems and is computed from perturbative corrections to the subsystem correlation function. The first non-vanishing contribution to the EE, appearing at $O(w^2)$, may be evaluated analytically and is shown to diverge as $w^2 \ln^2 L$, where L is the linear subsystem size. A generalized version of this model containing many independent weak links is discussed in connection with the entropy area law for fermions.

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