Abstract Submitted
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Finite size scaling of entanglement entropy at the Anderson transition with interactions AN ZHAO, The University of Hong Kong — We study the entanglement entropy(EE) of disordered one-dimensional spinless fermions with attractive interactions. With intensive numerical calculation of the EE using the density matrix renormalization group method, we find clear signatures of the transition between the localized and delocalized phase. In the delocalized phase, the fluctuations of the EE becomes minimum and independent of the system size. Meanwhile the EE's logarithmic scaling behavior is found to recover to that of a clean system. We present a general scheme of finite size scaling of the EE at the critical regime of the Anderson transition, from which we extract the critical parameters of the transition with good accuracy, including the critical exponent, critical point and a power-law divergent localization length.

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