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Spectral function of spinless fermions on a one-dimensional lattice
RODRIGO PEREIRA, KITP, STEVEN WHITE, UC Irvine, IAN AFFLECK, University of British Columbia — We study the spectral function of spinless fermions for an integrable lattice model away from half-filling. The sharp features of the spectral function at arbitrary momentum are argued to be power law singularities analogous to the x-ray edge singularity. Besides the singularity at the energy of the single-particle excitation, we find that at low fillings the spectral function can exhibit a second divergence associated with the formation of a p-wave antibound state. The predictions from the effective field theory are compared with numerical results from the time-dependent density matrix renormalization group.

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