

Abstract Submitted  
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**Low-energy spectral weights of the 1D Hubbard chain** STEFAN SOEFFING, Dept. of Physics and Research Center OPTIMAS, Univ. of Kaiserslautern, Germany, IMKE SCHNEIDER, Univ. of Dresden, Germany, ALEXANDER STRUCK, SEBASTIAN EGGERT, Dept. of Physics and Research Center OPTIMAS, Univ. of Kaiserslautern, Germany — We investigate the low-energy spectral weights of the 1D Hubbard chain by means of Density Matrix Renormalization Group (DMRG) calculations in comparison with Bosonization results. We identify the bosonic excitations of the underlying Luttinger liquid and analyze their evolution upon increasing the interaction strength in terms of their density of states (DOS). Comparing analytical and numerical results we point out the competition of spin/charge degrees of freedom vs. non-interacting spin up and down particles, which here become important due to the lattice nature of the model and higher order operators. Furthermore, we discuss the spatially resolved (local) DOS that can be calculated analytically by a recursive formula vs. numerically using DMRG.

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