

Abstract Submitted
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On the validity of the Luttinger liquid description of the Holstein model DAVID K. CAMPBELL, KA-MING TAM, Boston University, SHAN-WEN TSAI, University of California, Riverside, ANTONIO H. CASTRO NETO, Boston University — We show that the scaling relations between various correlation functions of the Luttinger liquid are not valid for the Holstein model with the system size attainable by reliable numerical calculations. Hence, the recent controversy about the existence and the proposed nature of the metallic phase of the zero- temperature half-filled one-dimensional Holstein model is reexamined without using the scaling relations of the Luttinger liquid. The competition between the singlet pairing and the charge ordering are determined by the Monte Carlo calculation.

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