

Abstract Submitted
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Correlation functions of nonlinear Luttinger liquids as Fredholm determinants YINBIN MA, ADILET IMAMBEKOV, Rice University — One dimensional quantum liquids are often described within an effective linear hydrodynamic approach known as Luttinger liquid theory. As the principal simplification, a generic spectrum of the constituent particles is replaced by a linear one, which leads to a linear hydrodynamic theory. It has been shown recently [1] that the nonlinearity of the generic spectrum leads to a significant modification of the dynamic response functions. Their description can be achieved within the universal framework of nonlinear Luttinger liquid theory. We show here that correlation functions within such approach can be expressed as Fredholm determinants, and evaluate them in low energy regions for arbitrary interaction strength and small temperatures.

[1] “Universal theory of nonlinear Luttinger liquids,” A. Imambekov and L.I. Glazman, *Science* 323, 228 (2009)

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