

Workshop on Integrability



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Absence of string excitations in the low-T spectrum of the quantum transfer matrix of the XXZ chain

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The eigenvalues of the quantum transfer matrix (QTM) of the XXZ spin-1/2 chain in the Trotter limit are parameterized by solutions of non-linear integral equations (NLIEs). We analyze these equations in the low-temperature limit for the model in the antiferromagnetic massless regime at finite magnetic field. To leading order in T the solutions of the NLIEs are determined by the dressed energy, which, in turns, is the solution of a linear Fredholm integral equation of the second kind. A rigorous characterization of the properties of the dressed energy in different regions of the complex plane, in conjunction with a thorough study of the subsidiary conditions that determine the excitation parameters in the solutions of the NLIEs, allows us to show that the excited states of the QTM are all of particle-hole type and that there are no string excitation in the low-T limit, as long as the magnetic field is kept finite.

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Track Classification: Participants Talks: Abstracts of Participants Talks