

Time-dependent correlation functions of q-deformed Bose gas and Fisher zeros

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We find relation of time-dependent correlation function of q-deformed Bose gas with partition function depending on complex temperature [1]. Therefore, it is concluded that zeros of correlation function of q-deformed Bose gas are related with the Fisher zeros of partition function [2]. The complex temperature is caused by evolution of the system and q-deformation.

It is worth noting that the experimental observation of the Fisher zeros is not a simple problem because of difficulties with realization of a many-body system with complex parameters. The time-dependent correlation functions are experimentally observable quantities. So, the obtained relation opens new possibility to observe the Fisher zeros at the experiment.

The q-deformed algebra is associated with the deformed algebra leading to the minimal length [3]. Therefore the obtained result is also useful for studies of the Bose gas in quantum space.

References

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