

Correlation aspects of interacting quantum systems in one dimension

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In this work we inspect different correlation aspects of interacting quantum systems in one dimension. We will address the Lieb-Liniger model and focus on its one-body correlation function and try to understand its important excitations. We also talk about the single impurity immersed in a free Fermi gas and its correlation features. Adding a trap breaks the system's integrability, which can be restored in the infinite coupling limit, where the hard-core bosons regime is achieved.