Dynamical correlation functions of the 1D Bose gas (Lieb Liniger model) JEAN-SEBASTIEN CAUX, PASQUALE CALABRESE, Universiteit van Amsterdam — The momentum- and frequency-dependent correlation functions (one-body and density-density) of the one-dimensional interacting Bose gas (Lieb-Liniger model) are obtained for any value (repulsive or attractive) of the interaction parameter. In the repulsive regime, we use the Algebraic Bethe Ansatz and the ABACUS method to reconstruct the correlators to high accuracy for systems with finite but large numbers of particles. For attractive interactions, the correlations are computed analytically. Our results are discussed, with particular emphasis on their applications to quasi-one-dimensional atomic gases.

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