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Universal high frequency high momentum behavior of dynamic structure factor in one dimensional interacting boson gas¹ RAN QI, MICHAEL PUSTILNIK, SHINA TAN, School of Physics, Georgia Institute of Technology — We study the short-distance and short-time structure of density-density correlation in one dimensional repulsively interacting boson gas. A compact universal formula is obtained for the high frequency high momentum asymptotic behavior of dynamic structure factor. We observe non-monotonous behavior in the dependence of DSF on interacting strength and qualitative change in the singular behavior in different region of q^2/ω . Possible experimental applications are discussed.

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