Contribution ID : **22** Type : **not specified**

Quantum corrections to the Classical Statistical Approximation for the longitudinally expanding scalar field

Thursday, 28 June 2018 16:00 (30)

Quantum corrections to the Classical Statistical Approximation (CSA) are calculated within the Keldysh-Schwinger technique for the longitudinally expanding homogeneous scalar field. Influence of these corrections to the evolution of the trace of the energy-momentum tensor is considered in details. It is shown that quantum corrections modify the equation of state in the intermediate quasistationary regime formed during expansion of the matter. This effect can contribute to the problem of hydrodynamic simulations applicability for the description of the initial stages of ultrarelativistic heavy-ion collisions.

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Session Classification : Parallel