

XXV International Baldin Seminar on High Energy Physics Problems "Relativistic Nuclear Physics and Quantum Chromodynamics"



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Description of charged particle dependence on transverse momentum with Tsallis-like distribution

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Recently, a large amount of experimental data has been collected in high energy physics for studying the properties of matter formed in ultrarelativistic heavy-ion collisions. The main interest is to study the phase diagram and localize phase transitions. In this work we measured the thermodynamic properties of the system produced in such collisions. These parameters were obtained from the transverse momentum distributions of final particles based on several theoretical models. Additionally, experimental data were compared with Monte Carlo model simulations. We used the well-known hydrodynamic Blast-Wave approach based on Boltzmann statistics. Results obtained in this comparison are in agreement with published results. Further, we used a new approach based on q-dual statistics, which can provide more information about the system, in particular its chemical potential and measure the difference of the produced system from the equilibrium. We observe that the kinetic freeze-out parameters depend on collision centrality and energy. The temperature in the q-dual statistics deviates from the behavior observed in the model with classical Boltzmann statistics.

Primary authors: APARIN, Alexey (Joint Institute for Nuclear Research); NEDOREZOV, Egor (JINR); PARVAN, Alexandru (JINR and IFIN-HH)

Presenter: NEDOREZOV, Egor (JINR)

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