

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



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on High Energy Physics Problems
Relativistic Nuclear Physics & Quantum Chromodynamics

September 18 - 23, 2023, Dubna, Russia

Contribution ID: 89

Type: **not specified**

Open and hidden strangeness with kaons and ϕ -mesons in Bjorken energy density approach for central A+A collisions from SPS to LHC

Friday, 22 September 2023 10:00 (20 minutes)

We present in this talk our estimates of contributions by kaons ($K^+ + K^-$, $(K^*(892))^0$) and ϕ -mesons to the Bjorken energy density relevant to the interaction region formed in the very central (0-5%) A+A collisions. We use the available published data on the identified particle densities at midrapidity and on the mean transverse momenta, obtained in Au+Au, Pb+Pb and Xe+Xe collisions in a broad range of energies (from SPS to the LHC). Particles like K-mesons containing single s-quark and strange-neutral ϕ -mesons (a system of $s\bar{s}$ quarks), are of specific interest both from the experimental and theoretical points of view, because they might have different production mechanisms and sensitivity to the properties of the QGP-medium formed in heavy-ion collisions. Our results show that the behavior of the excitation functions of Bjorken energy density obtained for ϕ -mesons is different from kaons. We compare also these results with the previously obtained ones for pions and protons and discuss briefly and qualitatively with in the current phenomenological approaches like thermal and coalescence models of particle production.

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Session Classification: Parallel: Relativistic heavy ion collisions