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Study of mean transverse momentum scaling with m/nq in relativistic heavy-ion collisions

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Heavy-ion collisions at relativistic energies offer an unique opportunity to investigate the properties of highly excited dense nuclear matter in the laboratory. The transverse momentum distributions of identified hadrons contain information about the collective expansion of the nuclear matter created in these collisions. In this work, a study of the average transverse momentum <pT> of bulk and strange hadrons (K^0_S, , -, $^-$, -$^+$, ϕ, $^-$, and -$^+$) as a function of system centrality and reduced hadron mass in Au-Au collisions at RHIC-BES energies (7.7 - 39 GeV) is presented. For the peripheral events, there is an approximate scaling of average p_T with the reduced hadron mass, i.e., mass divided by the number of quark constituents (m/n_q). The scaling is broken in central Au-Au collisions, where <p_T> is higher for baryons than that for mesons, although they increase linearly with m/nq. These results will be compared with AMPT simulations, based on different hypotheses related to the evolution of the system formed in these collisions.

Author: RISTEA, Oana (University of Bucharest, Faculty of Physics)

Co-authors: JIPA, Alexandru (University of Bucharest, Faculty of Physics); RISTEA, Catalin-Lucian (Institute of Space Science (RO)); DEARA, Diana (University of Bucharest, Faculty of Physics); CALIN, Marius (University of Bucharest, Faculty of Physics); ESANU, Tiberiu (National Institute of Nuclear Physics and Engineering Horia Hulubei, Magurele)

Presenter: RISTEA, Oana (University of Bucharest, Faculty of Physics)