Contribution ID : **107** Type : **Oral talk**

Describing ϕ meson production in small collision systems with nuclear modified parton distribution functions

Friday, 2 December 2022 18:00 (15)

The deconfined state of strongly interacting quarks and gluons, quark-gluon plasma, may be formed in relativistic ion collisions at sufficient temperature and energy density. The signatures of quark-gluon plasma formation were observed in heavy-ion collisions by studying ϕ meson production. In small-collision systems, such as p+Al, p+Au, d+Au, and ^{3}He+Au, the volume and lifetime of the produced medium might be insufficient for observation of quark-gluon plasma effects. However various physics mechanisms reflecting initial state of the collision, cold nuclear matter effects, may lead to a collective-like behaviour in small-collision systems without quark-gluon plasma formation. The nuclear modified parton distribution functions are considered to be an underlying physics mechanism of cold nuclear matter effects. This talk presents the comparison of ϕ meson production in p+Al, p+Au, d+Au, and ^{3}He+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV at midrapidity ($|\eta| < 0.35$), measured by PHENIX, to PYTHIA calculations with nuclear modified parton distribution functions EPPS16 and nCTEQ15. It has been shown that ϕ meson production in $p/d/^3$He+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV might be driven by mechanisms additional to nuclear modification of parton distributions.

Primary author(s) : Mrs. MITRANKOVA, Mariia (Peter the Great St.Petersburg Polytechnic University)

Co-author(s) : Mr. BANNIKOV, Egor (Peter the Great St.Petersburg Polytechnic University (SPbPU)); Prof. BERDNIKOV, Yaroslav (Peter the Great St.Petersburg Polytechnic University); Dr. BERDNIKOV, Alexander (Peter the Great St.Petersburg Polytechnic University); Dr. KOTOV, Dmitry (Peter the Great St.Petersburg Polytechnic University); Mr. MITRANKOV, Iurii (Peter the Great St.Petersburg Polytechnic University); Ms. LARIONOVA, Daria (Peter the Great St.Petersburg Polytechnic University)

Presenter(s) : Mrs. MITRANKOVA, Mariia (Peter the Great St.Petersburg Polytechnic University)

Session Classification : Heavy Ion Physics

Track Classification : Heavy ion physics