LXXI International conference "NUCLEUS –2021. Nuclear physics and elementary particle physics. Nuclear physics technologies"

Contribution ID: **179** Type: **Oral report**

Production of K*(892)0 mesons in small collision systems at PHENIX experiment

Tuesday, 21 September 2021 16:15 (25 minutes)

The investigation of nuclear matter effects in relativistic ion collisions, especially quark-gluon plasma (QGP) ones, is one of the main goals of PHENIX experiment [1]. To study the dynamics of collisions at high energies, strange hadron production is considered as a significant tool. Due to its strange quark content, the K^{*0} meson is a good probe for the investigation of such QGP effects as strangeness enhancement and flavor dependence of partonic energy loss [2]. New results of the PHENIX experiment on hadron production and elliptic flow in small collision systems suggested the possibility of QGP formation in such systems [3]. Thus, the measurement of K^{*0} mesons production in small collision systems allows to investigate aspects of QGP formation depending on the collision system size. We have performed analyses of K^{*0} meson production in wide set of small systems such as p+Al, p+Au, and ^{3}He+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV.

In this talk, we present invariant transverse momentum (p_T) spectra and nuclear modification factors (R_{AB}) of K^{*0} meson as a function of p_T measured in p+Al and p/^{3}He+Au collisions at $\sqrt{s_{NN}}$ = 200 GeV. Nuclear modification factors of K*0 meson in p+Al and p/d/^{3}He+Au collisions are in a good agreement at p_T < 2 GeV/c whereas at intermediate-pT range (2 GeV/c < p_T < 5 GeV/c) a hint of ordering is observed. R_{AB} values for K^{*0}, φ, and π^0 mesons fall on the same curve in all centrality bins in favor of strangeness enhancement effect absence.

1. K. Adcox et al., Nucl. Phys. A **757**, 184-283 (2005)
2. V.P. Kondratev and G.A. Feofilov, Elementary Particle and Nuclear Physics **42**, 6 (2005)
3. A. Accardi et al., Phys. Lett. B **586**, 244-253 (2004)

Primary author: BORISOV, Vladislav (Peter the Great St.Petersburg Polytechnic University (SPbPU))

Co-authors: Prof. BERDNIKOV, Yaroslav (Peter the Great St.Petersburg Polytechnic University (SPbPU)); BERDNIKOV, Aleksandr (Peter the Great St.Petersburg Polytechnic University (SPbPU)); KOTOV, Dmitry (Peter the Great St.Petersburg Polytechnic University (SPbPU)); MITRANKOV, Iurii (Peter the Great St.Petersburg Polytechnic University (SPbPU))

Presenter: BORISOV, Vladislav (Peter the Great St.Petersburg Polytechnic University (SPbPU))

Session Classification: Section 4. Relativistic nuclear physics, elementary particle physics and high-energy physics

Track Classification: Section 4. Relativistic nuclear physics, elementary particle physics and high-energy physics.