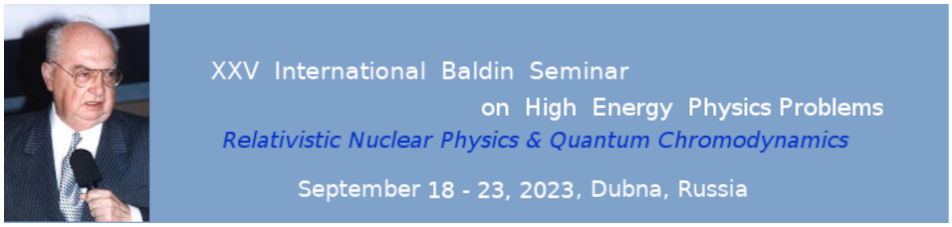

Contribution ID: **87** Type: **not specified**

Hadron elliptic flow measurements at PHENIX

Thursday, 21 September 2023 09:20 (20 minutes)

One of the main goals of the Relativistic Heavy-Ion Collider is to investigate the properties of quark-gluon plasma (QGP). Azimuthal anisotropy of hadrons produced in relativistic collisions is considered as a good tool to study QGP's properties. It can be characterized using Fourier coefficients, where the second coefficient is the elliptic flow (v_2). Thus, hadron elliptic flow measurements allow to study the collective behavior of nuclear matter and gain insights into the QGP's properties.

This talk will present recent measurements of hadron elliptic flow as a function of transverse momentum (p_T), centrality, and particle species performed by the PHENIX collaboration. The v_2 values for ^{0} have been measured in Cu+Au collisions at 200 GeV and have been scaled with the participant eccentricity and the cube root of participant-nucleons number. It was found that scaled v_2 values are consistent within the uncertainties with those in Au+Au collisions, which demonstrates the independence of elliptic flow from collision system size. At high $p_T > 5$ GeV/c the elliptic flow for ^{0} has nonzero values. It can be characterized using QGP model predictions assuming the energy loss of partons. The elliptic flow for charged particles has been measured by using three combinations of two-particle correlations in small collision systems (p/d/^{3}He+Au) at 200 GeV. Obtained values are consistent with previous results measured using the event plane method. This fact indicates the robustness of the measurement against the detector's effects. Recently obtained elliptic flow for J/Psi in Au+Au collisions at 200 GeV is consistent with zero, which agrees with v_2 for J/Psi at the STAR, but does not agree with the ALICE measurement at 5.02 TeV. It seems that quark coalescence is the dominant mechanism for the development of v_2 for J/Psi.

Primary author: Mr BANNIKOV, Egor (Peter the Great St.Petersburg Polytechnic University)

Co-authors: Dr BERDNIKOV, Alexander (Peter the Great St.Petersburg Polytechnic University (SPbPU)); Prof. BERDNIKOV, Yaroslav (Peter the Great St.Petersburg Polytechnic University (SPbPU)); Dr KOTOV, Dmitry (Peter the Great St.Petersburg Polytechnic University (SPbPU)); Ms LARIONOVA, Daria (Peter the Great St.Petersburg Polytechnic University (SPbPU)); Dr MITRANKOV, Iurii (Peter the Great St.Petersburg Polytechnic University (SPbPU)); Dr MITRANKOVA, Maria (Peter the Great St.Petersburg Polytechnic University (SPbPU)); Mr SELEZENEV, Artem (Peter the Great St.Petersburg Polytechnic University (SPbPU))

Presenter: Mr BANNIKOV, Egor (Peter the Great St.Petersburg Polytechnic University)

Session Classification: Parallel: Relativistic heavy ion collisions