Energy dependence of triangular flow for identified hadrons in Au+Au collisions at $\sqrt{s_{NN}} = 14.5 - 62.4$ GeV from the STAR experiment

Author: Alexey Povarov (for the STAR Collaboration)
National Research Nuclear University MEPhI, Moscow, Russia

Heavy-ion collisions create matter which is characterized by high temperature and energy density, called Quark-Gluon Plasma (QGP). One of the methods for studying the transport properties and equation of state of the created matter is the measurement of azimuthal anisotropy of particles using the Fourier expansion of the azimuthal angle with respect to the event plane. The second order Fourier coefficient v_2 is called elliptic flow and is sensitive to the pressure gradients arising in the region of overlapping nuclei. The third order coefficient v_3 (triangular flow) is sensitive to the fluctuations of nucleons in the initial state of colliding nuclei and therefore v_3 weakly depends on the collision centrality. Theoretical studies show that v_3 is more sensitive to viscous effects than v_2, making triangular flow an ideal harmonic for studying the viscosity.

This work is devoted to the study of triangular flow in a wide energy range of Au+Au collisions from the STAR experiment at RHIC ($\sqrt{s_{NN}}$ = 14.5, 19.6, 27, 39, 62.4 GeV). New measurements of triangular flow will be presented as a function of particle transverse momenta (p_T) and collision energy. Physics implications will be discussed.