Global spin polarization of Λ hyperons in Fixed Target Au+Au collisions at RHIC-STAR

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Abstract

In non-central heavy ion collisions, large angular momentum is generated, leading to the creation of significant vorticity and subsequent spin polarization of particles with finite spin. The global polarization of Λ hyperons (P_Λ) measured along the direction of global angular momentum can serve as an effective probe of vorticity as well as spin degrees of freedom. Recently, global Λ polarization has been measured over a wide collision energy range. The Fixed-Target program at the STAR experiment at RHIC provides a unique opportunity to study P_Λ in regions of high baryon density, where P_Λ is sensitive to equation of state of nuclear medium.

In this poster, we report the measurements of global Λ polarization, at $\sqrt{s_{NN}} = 3.0, 3.2, 3.5, 3.9, 4.5, 5.2$ and 6.2 GeV in Fixed-Target Au+Au collisions. The dependence on collision energy, centrality, rapidity and transverse momentum of the measured P_Λ will be discussed.