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Rescattering effect on the measurement of K* spin alignment in heavy-ion collisions with UrQMD

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In non-central relativistic heavy ion collisions, the created matter possesses a large initial orbital angular momentum. Particles produced in the collisions could be polarized globally in the direction of the orbital angular momentum due to spin-orbit coupling. The measurement of vector mesons K*and ϕ can provide information of the large vorticity of the hot, dense medium created in non-central heavy-ion collisions. Due to short lifetime of K* which is comparable to the time between chemical freeze-out and kinetic freeze-out, the reconstructed K*suffers from the rescattering effect (A K* can not be reconstructed experimentally via the invariant mass method if the K*decays in the medium and one or more daughters is scattered in the medium). Because of the anisotropy of the medium in coordination space, the rescattering effect on K* could depend on $cos\theta^*$ thus result in non-uniform $cos\theta^*$ distribution for reconstructed K*. It could be a very important background for the study of global polarization via the K* spin alignment measurements in non-central heavy-ion collisions.*

In this talk, we will present the study of measurement of K*spin alignment in heavy-ion collisions using the UrQMD model. We use the history file to identify K* decays and select the reconstructable K*. The cos$cos\theta^*$ distribution is studied and the spin alignment parameter rho_00 is exacted and plot against transverse moment and centrality.*

Abstract Type

Poster

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