

Local spin polarization in a blast wave model with dissipative corrections

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We employ a relativistic kinetic theory model based on the GLW(de Groot - van Leeuwen - van Weert) formalism of the spin hydrodynamics with the Frenkel condition to study the local spin polarization of Λ hyperons. We calculate the Pauli-Lubanski pseudovector with the dissipative correction to the extended phase-space distribution function, obtained within a relaxation-time approximation. This framework naturally incorporates a thermal shear term coupled to thermal vorticity and the derivative of thermal vorticity. We apply our model within a single freezeout thermal blast wave scenario which is qualitatively consistent with experimental observations. We find that the dissipative correction leads to significant local spin polarization for the Λ hyperons which allows us to extract a spin relaxation time by comparing the magnitude of calculated spin polarization with the experimental results.

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