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Particle polarization in heavy-ion collisions at moderately relativistic energies

Friday, 27 August 2021 11:00 (30 minutes)

Predictions for the global Λ polarization in Au+Au collisions in current and upcoming experiments at moderately relativistic energies, $2.4 \leq \sqrt{s_{NN}} \leq 12$ GeV, are made. The simulations were performed within the model of the three-fluid dynamics with three different equations of state. It is predicted that the global polarization increases with the collision energy decrease. At $\sqrt{s_{NN}} \approx 3$ GeV this increase slows down or even a maximum is reached, depending on the centrality. Expansion of the rapidity window, in which the polarization is measured, results in the global polarization increase. This indirectly indicates that the global polarization is larger outside the midrapidity region than that in the midrapidity. Possibility of measuring the polarization of hyperons at moderately relativistic collision energies, which are and will be available at various laboratories, are analyzed. Whereas the collision dynamics becomes less equilibrium with the collision energy decrease, all presently available approaches to the particle polarization are based on the assumption of thermal equilibrium. Therefore, the problem of thermalization in nuclear collisions is analyzed. It is found that the equilibrium is achieved at the freeze-out stage, only this equilibration takes longer at moderately relativistic energies.

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

Yes

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