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Global and local Λ polarization from 27 to 200 GeV from a 3D viscous hydrodynamic model

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Global, pT-integrated polarization of Lambda hyperons in heavy-ion collisions is described well in hydrodynamic and transport models. However, a proper description of the azimuthal angle dependence of Lambda polarization remains a puzzle. Recently introduced spin-shear coupling improves the agreement with the experiment, which is still far from being satisfactory.

In this contribution, we present both the global and local Lambda polarization in Au+Au collisions at $\sqrt{s} = 200$ and 27 GeV computed using a 3+1-dimensional viscous hydrodynamic model (vHLL) with 3D Monte Carlo Glauber and SMASH initial states. We discuss the initial state dependence of the local polarization and conclude which one works better for both the global and local polarization measured at $\sqrt{s} = 200$ and 27 GeV. We also provide predictions for the polarization signal in asymmetric Pb+W, Pb+Ti and Pb+C collisions in a proposed fixed-target experiment at LHC at $\sqrt{s} = 72$ GeV.

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