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Lambda production and polarization studies

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Content

The system created in semi-central heavy ion collisions behaves like a fluid with a large orbital angular momenta, resulting in a great vorticity. Due the spin-orbit coupling we expect that particles produced in such collisions, acquire polarization in the direction of the orbital angular momenta of the system, and that the induced polarization be the same for particles and antiparticles. However the STAR Beam Energy Scan (BES) that measured the hyperon global polarization as a function of the energy of the collision, found that the polarization increases as the energy of the collision decreases, but is larger for the Lambdabar. This behavior has been associated to different characteristics of the system like the magnetic field. Recently our group has studied this difference considering that in semi-central collisions, two regions with different density are created: the core with high density and the corona with less density. It was shown that when both ratios, the number of Lambdabars to the number of Lambdas from the corona, are smaller than one, the Lambdabar polarization increases despite its intrinsic polarization is smaller than the Lambda intrinsic polarization.

In this work we present how to test this idea in the MPD. We show preliminary results of the required variables to measure hyperon global polarization.

Area of contribution

Experiment: data analysis

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