Contribution ID: 326

Type: Oral

Global polarization of hyperons in Au+Au collisions at BES-II energies by the STAR experiment

Sunday 6 July 2025 13:50 (20 minutes)

In non-central collisions, a large orbital angular momentum is deposited into the system, generating vorticity that aligns hyperon spins through spin-vorticity coupling.

A newly collected dataset of Au+Au collisions at $\sqrt{s_{\text{NN}}}$ = 7.7, 9.2, 11.5, 14.6, 17.3, 19.6, and 27 GeV from the second phase of the RHIC Beam Energy Scan (BES-II), obtained with upgraded detector systems, provides a unique opportunity to measure the global polarization of $\Lambda(\bar{\Lambda})$, Ξ^{\pm} and Ω^{\pm} hyperons with unprecedented precision at these energies. These results provide new insights into the polarization mechanism and vorticity fields in heavy-ion collisions as well as additional constraints on the properties and dynamics of the hot and dense matter created in these collisions.

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Session Classification: 4. Relativistic nuclear physics, high-energy and elementary particle physics

Track Classification: Section 4. Relativistic nuclear physics, high-energy and elementary particle physics.