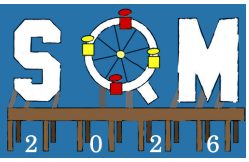
The 22nd International Conference on
Strangeness in Quark Matter
22-27 March, 2026, Los Angeles, CA



Contribution ID: **3** Type: **Poster Presentation**

Centrality Dependence of Global and Azimuthal of Λ Hyperon Polarization In heavy-ion collisions

Tuesday, 24 March 2026 18:29 (1 minute)

We employ a (3+1)-dimensional hydrodynamic framework to investigate the polarization of Λ hyperons in heavy-ion collisions at $\sqrt{s_{nn}}$ = 200 GeV. Our findings reveal a pronounced sensitivity to the choice of initial-state modeling and the viscous properties of the quark–gluon plasma. The model successfully reproduces key hadronic flow measurements and forecasts non-trivial azimuthal modulation patterns in the longitudinal polarization. We introduce novel relations linking polarization observables with anisotropic flow coefficients, which open up promising avenues for future experimental validation. Additionally, a comparative study across different collision system sizes demonstrates behavior consistent with a vorticity-driven polarization mechanism, offering stringent constraints on the interplay between QGP hydrodynamics and spin-polarization effects.

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Session Classification: Poster Session