



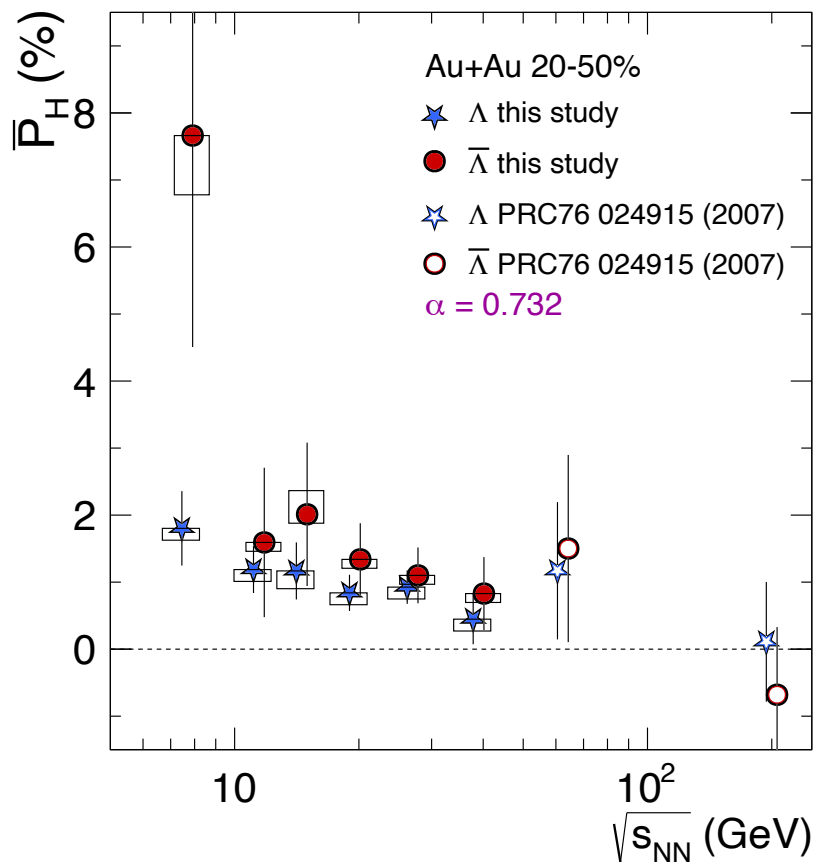
Measurements of Global Polarization of $\Lambda/\bar{\Lambda}$ in Isobar Collisions at 200 GeV from STAR



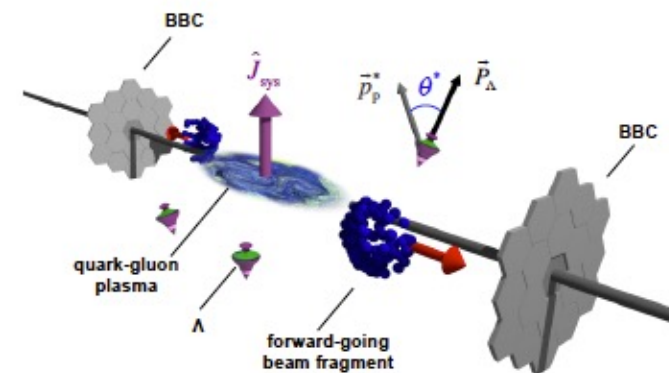
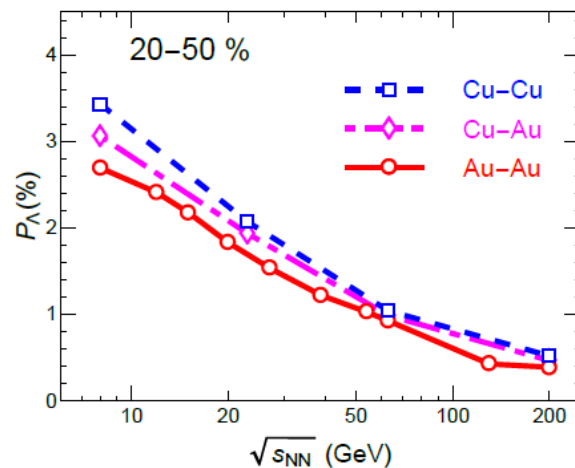
Xingrui Gou(苟兴瑞)(xgou@rcf.rhic.bnl.gov), for the STAR Collaboration

Institute of Frontier and interdisciplinary science, Shandong University(山东大学), Qingdao, Shandong

STAR, Nature 548, 62-65



Shuzhe Shi, Kangle Li, Jinfeng Liao
PLB 788(2019) 409413



$$P_{\Lambda} = \frac{8}{\pi} \frac{1}{\alpha_{\Lambda} A_0} \frac{\langle \sin(\Psi_1 - \phi_p^*) \rangle}{Res(\Psi_1)}$$

$$\alpha_{\Lambda} = -\alpha_{\bar{\Lambda}} = 0.732 \pm 0.014$$

- STAR has observed the energy dependence of global polarization in Au+Au collision.
- Global polarization difference from different magnetic field in Zr+Zr and Ru+Ru?
- System size dependence of global polarization?

Supported in part by the

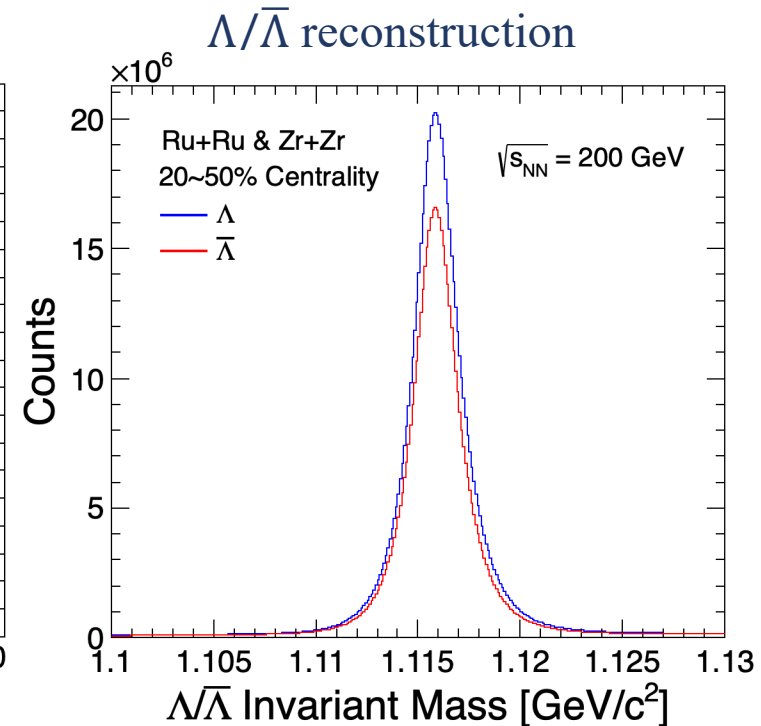
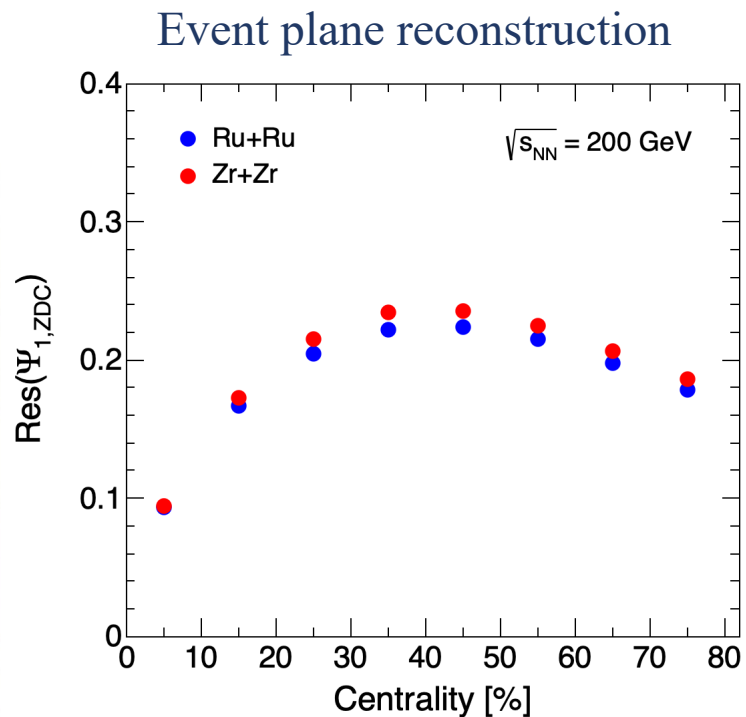
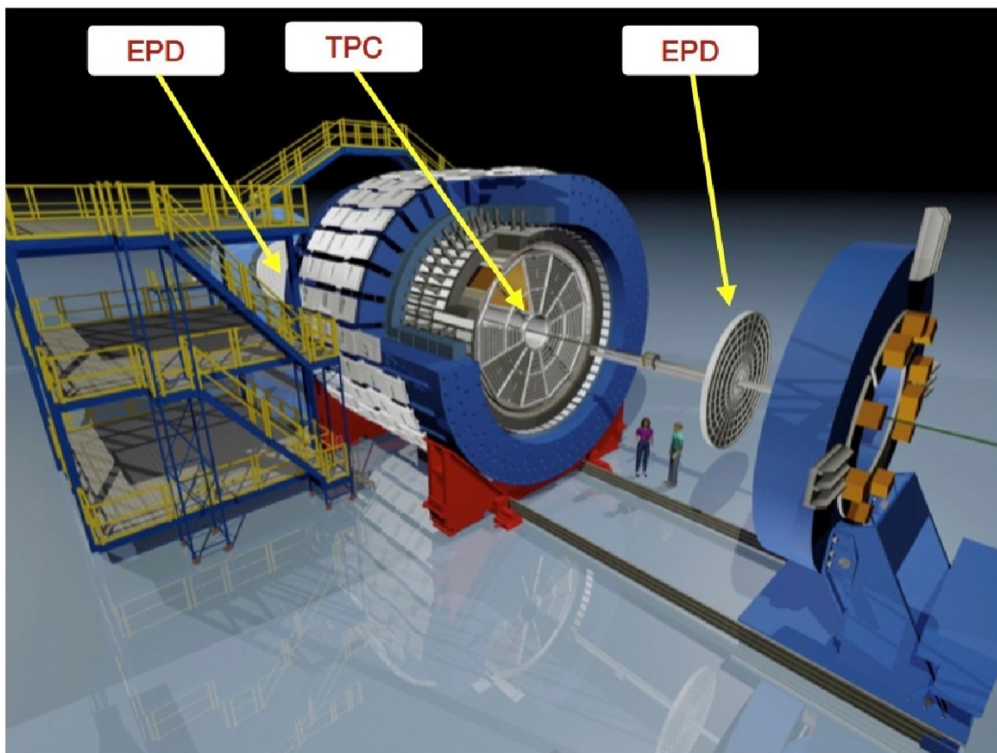


The STAR Collaboration

<https://drupal.star.bnl.gov/STAR/presentations>



STAR detector and $\Lambda/\bar{\Lambda}$ reconstruction



Time Projection Chamber:

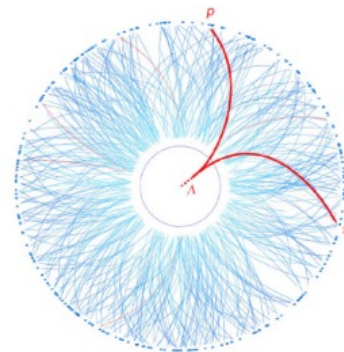
- $|\eta| < 1$, full azimuth momentum
- PID via energy loss

Time Of Flight:

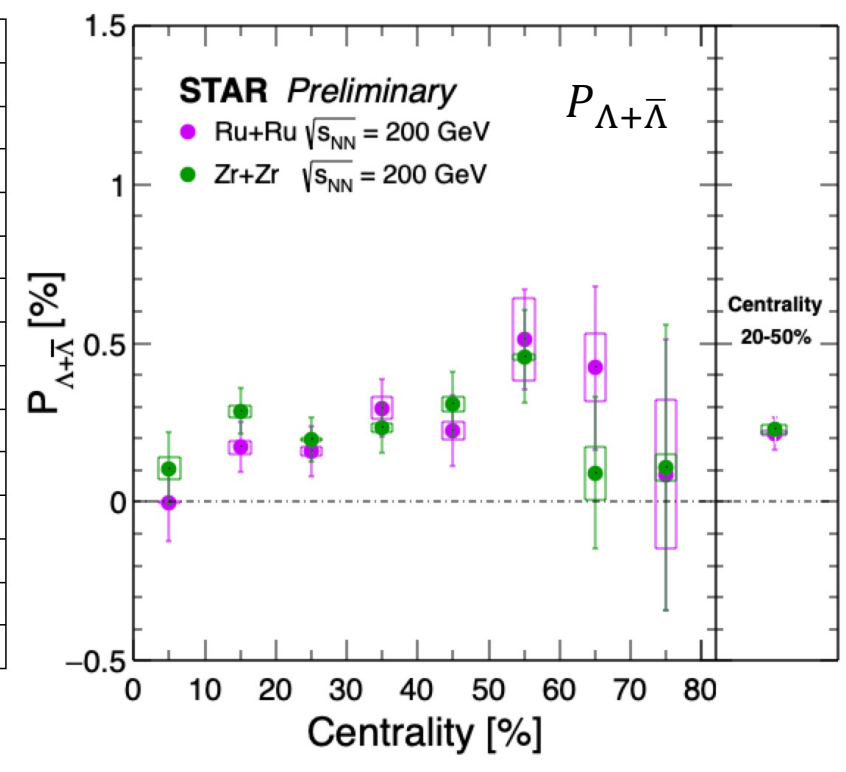
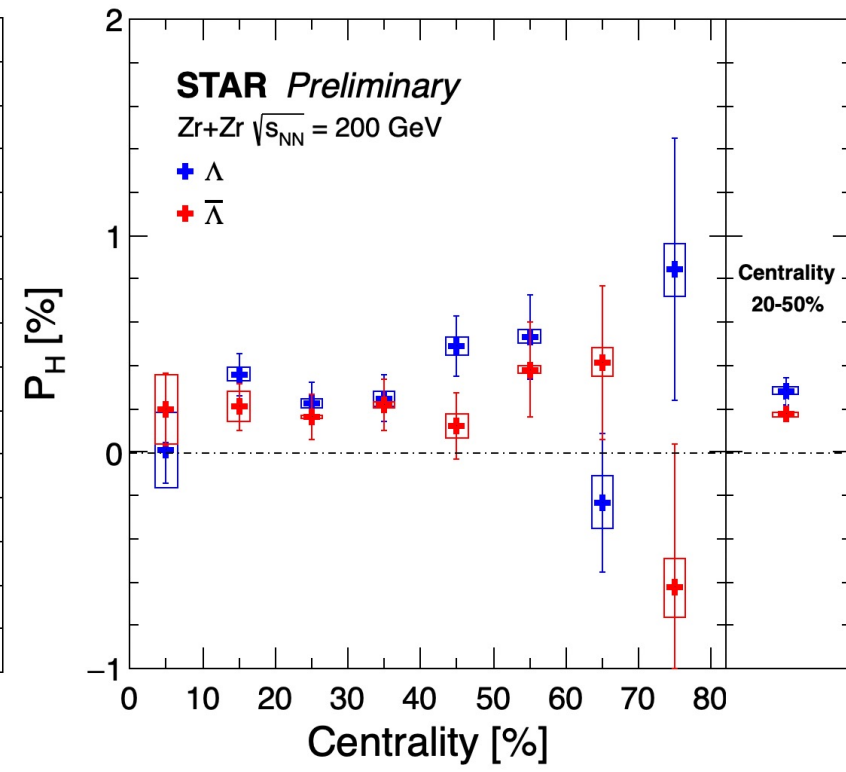
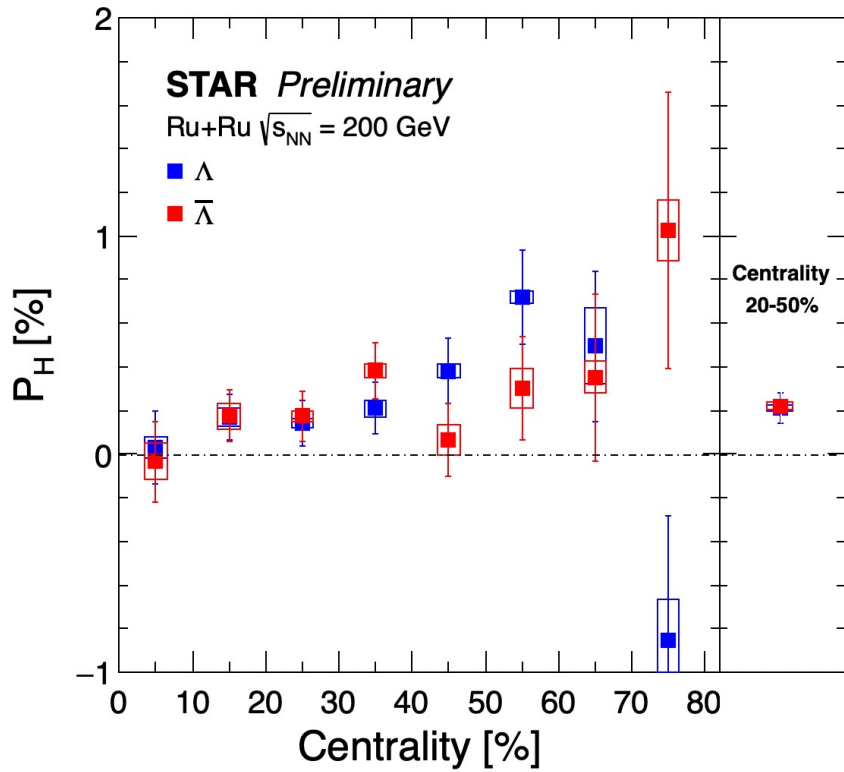
- $|\eta| < 0.9$, full azimuth
- PID via particle velocity

Zero Degree Calorimeters

- Event plane reconstruction

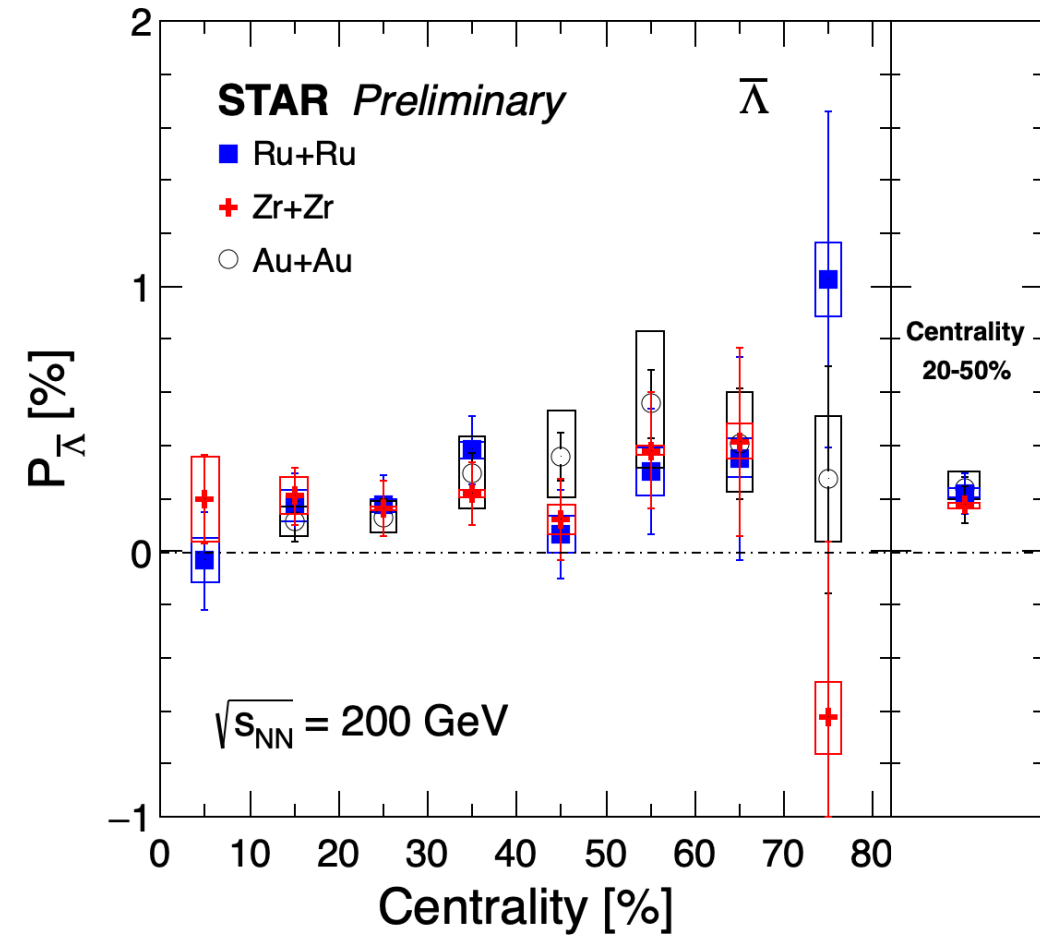
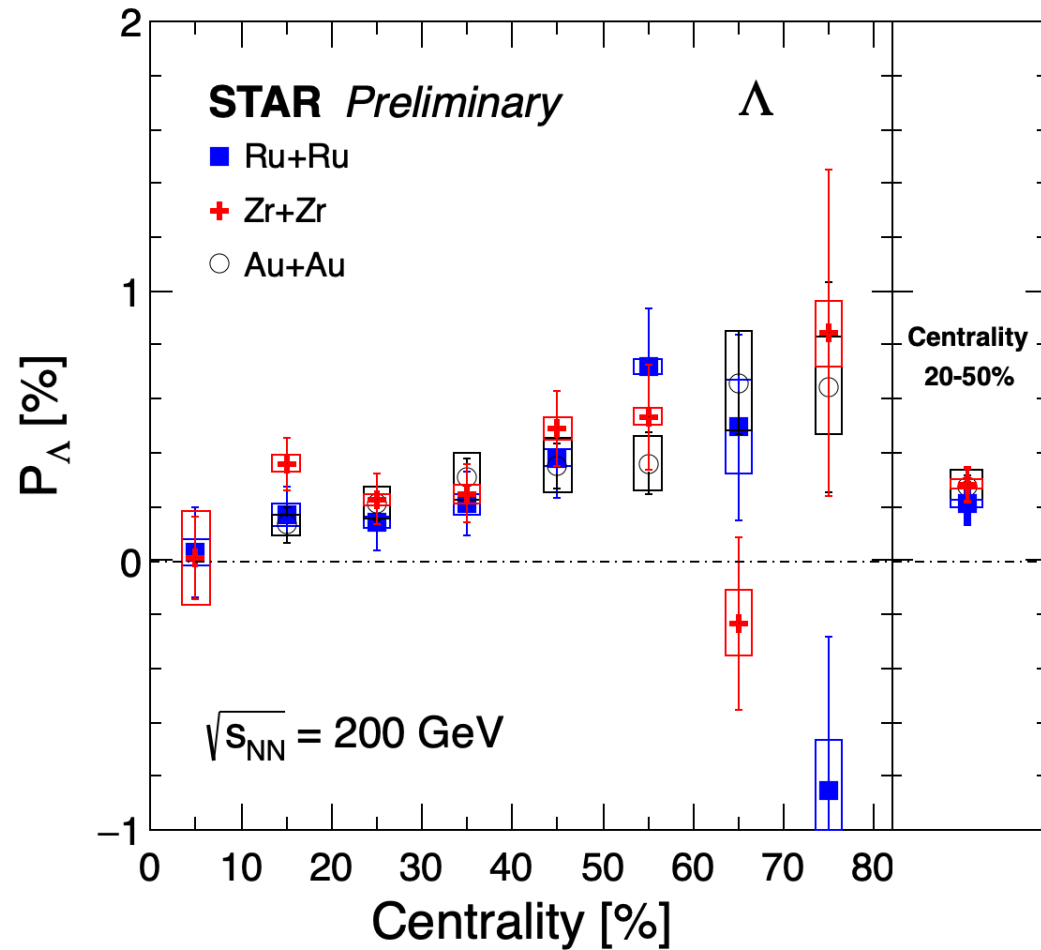


- $\Lambda/\bar{\Lambda}$ reconstructed with TPC tracks
- $\Lambda \rightarrow p + \pi^-$
- $\bar{\Lambda} \rightarrow \bar{p} + \pi^+$



- Significant global polarization observed, P_{Λ} and $P_{\bar{\Lambda}}$ increase with centrality.
- No significant difference between P_{Λ} and $P_{\bar{\Lambda}}$ in Ru+Ru and Zr+Zr collisions.
- Global polarization of $\Lambda + \bar{\Lambda}$ are consistent between Ru+Ru and Zr+Zr collisions.

Global polarization in Isobar and Au+Au



- Global polarization of Λ and $\bar{\Lambda}$ are consistent between Isobar and Au+Au collision systems, no collision system dependence is observed.

- First measurements of $\Lambda/\bar{\Lambda}$ global polarization in Ru+Ru and Zr+Zr collisions at $\sqrt{s_{NN}} = 200$ GeV.
 - P_{Λ} and $P_{\bar{\Lambda}}$ are consistent with each other.
 - P_{Λ} and $P_{\bar{\Lambda}}$ are consistent between Ru+Ru and Zr+Zr collisions.
 - P_{Λ} and $P_{\bar{\Lambda}}$ in Isobar collision are consistent with Au+Au collisions, no collision system dependence is observed.

