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

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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?

$P_{\Lambda} = \frac{8}{\pi \alpha_{\Lambda}} \frac{1}{A_0} \frac{\langle \sin(\Psi_1 - \phi_{\bar{p}}) \rangle}{\text{Res}(\Psi_1)}$

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

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**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

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**Event plane reconstruction**

**$\Lambda/\bar{\Lambda}$ reconstruction**

- $\Lambda/\bar{\Lambda}$ reconstructed with TPC tracks
- $\Lambda \rightarrow p + \pi^-$
- $\bar{\Lambda} \rightarrow \bar{p} + \pi^+$
Global polarization of $\Lambda$ and $\bar{\Lambda}$ in Ru+Ru and Zr+Zr collisions at 200 GeV

- Significant global polarization observed, $P_\Lambda$ and $P_{\bar{\Lambda}}$ increase with centrality.
- No significant difference between $P_\Lambda$ 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 of $\Lambda$ 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.

- $P_\Lambda$ and $P_{\bar{\Lambda}}$ are consistent with each other.
- $P_\Lambda$ and $P_{\bar{\Lambda}}$ are consistent between Ru+Ru and Zr+Zr collisions.
- $P_\Lambda$ and $P_{\bar{\Lambda}}$ in Isobar collision are consistent with Au+Au collisions, no collision system dependence is observed.