

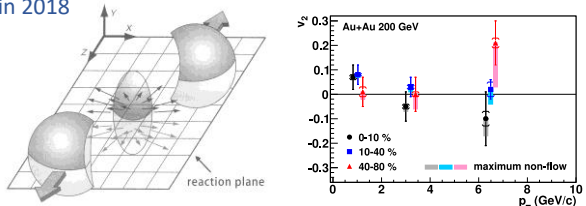
Abstract

Quarkonia, bound states of heavy-flavor quark-antiquark pairs, are unique probes of the hot and dense matter produced in relativistic heavy-ion collisions. The observed suppression of J/ψ production in nucleus-nucleus collisions at RHIC is considered to be a strong experimental evidence of creation of quark-gluon plasma. However, in order to correctly interpret those results, various hot and cold nuclear effects need to be distinguished. Results on elliptic flow (v_2) of the J/ψ mesons provide important information on the interaction of the heavy quarks with the QGP as well as on mechanism of the quarkonia production in the presence of the deconfined partonic phase. Measurements of J/ψ v_2 in different collision systems and energies provide unique and important insight into the properties of the created medium.

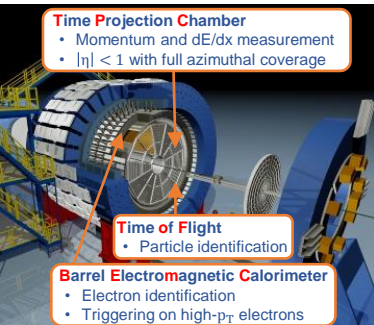
Motivation

QGP is expected to develop flow during partonic phase

- Previous STAR results consistent with J/ψ attaining no flow, however with large uncertainties [1]
- Large data set of Zr+Zr and Ru+Ru collisions collected by STAR in 2018

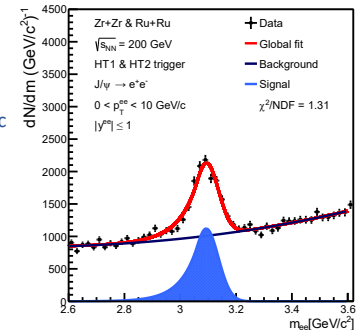


STAR experiment



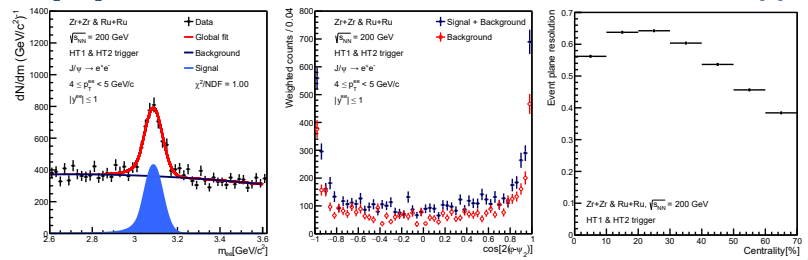
Dataset and event selections

- Zr+Zr and Ru+Ru at 200 GeV
- BEMC High Tower triggers
- J/ψ candidates:
 - Leading $e^+ p_T > 3.5$ or 4.3 GeV/c
 - Subleading $e^+ p_T > 0.8$ GeV/c
 - $|\eta_{e^\pm}| \leq 1$
- Event plane (ψ):
 - TPC event plane method [2]
 - $0.2 < \text{track } p_T < 2$ GeV/c
 - $|\eta_{\text{track}}| \leq 1$
- Rectentering and shifting



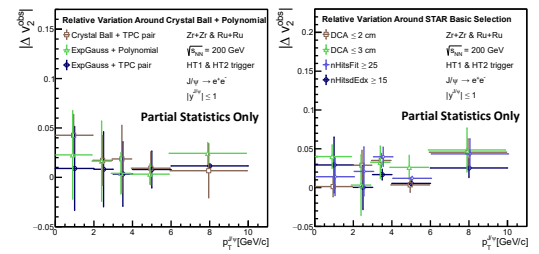
J/ψ v_2 determination

- $v_2^{\text{obs}} = \frac{\sum_i \cos[2(\phi - \psi_2)]_{\text{sig+bkg},i} - \sum_j \cos[2(\phi - \psi_2)]_{\text{bkg},j}}{N_{J/\psi}}$ • ψ_2 is second order event plane
- $v_2 = v_2^{\text{obs.}} / \text{event plane resolution}$ • Event plane resolution based on the sub-event method [2]



Systematic uncertainties

- Signal extraction: using different signal and background functions
- TPC tracking: varying track quality cuts



Summary and Outlook

- J/ψ v_2 in isobaric collisions will provide information on QGP properties
- Analysis procedure is presented
- Minimum-bias dataset is also analyzed to provide better precision at lower p_T
- Stay tuned for the physics results

References

1. L. A. et al. (STAR Collaboration), Phys. Rev. Lett., **111**, 052301 (2013)
2. A. M. Poskanzer and S. A. Voloshin, Phys. Rev. C, **58**, 1671 (1998)