Abstract Submitted
for the DNP17 Meeting of
The American Physical Society

Chiral magnetic effect search in p+Au, d+Au and Au+Au collisions at RHIC JIE ZHAO, Purdue University, STAR COLLABORATION — The chiral magnetic effect (CME) is a fundamental property of QCD. A major background source for CME measurements is the intrinsic particle correlations (such as resonances/jets decay) coupled with the azimuthal elliptical anisotropy v_2. In heavy-ion collisions, the magnetic field direction and event plane azimuthal angle Ψ_2 are correlated, thus the CME and the v_2-induced background are entangled. In small system p+Au and d+Au collisions, the Ψ_2 is mostly due to geometry fluctuations, and thus magnetic field direction and Ψ_2 are uncorrelated. The correlation measurements in small system collisions with respect to Ψ_2 are only sensitive to v_2-induced background while any CME is averaged to zero. In this talk, we will present the STAR measurements of two-particle correlations with respect to Ψ_2 in p+Au, d+Au and Au+Au collisions at $\sqrt{s_{\rm NN}} = 200$ GeV. These results are analyzed as a function of particle multiplicity to shed light on the background contaminations of the CME measurements in heavy-ion collisions. We will also report results from a new analysis approach as a function of the particle pair invariant mass in order to suppress non-CME related physics backgrounds.

Jie Zhao
Purdue University

Date submitted: 30 Jun 2017 Electronic form version 1.4