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Exploring Chiral Magnetic Wave in Relativistic Heavy Ion Collisions

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Chiral Magnetic Wave (CMW), induces electric quadrupole moment in quark-gluon plasma produced in heavy-ion collisions, which removes degeneracy between elliptic flow of positively and negatively charged particles [1]. The charge-dependent elliptic flow as a function of the charge asymmetry (A_{ch}) serves as an important tool for study of CMW. We performed this study on 13.5 million Au+Au collisions at $\sqrt{s_{NN}} = 200$ GeV simulated events using a multiphase transport (AMPT) model with string melting. We have also generated AMPT events with externally injected quadrupole moment.

We use Event Shape Engineering (ESE) technique to study dependence of slope of $\Delta v_2(A_{ch})$ with average v_2 and to extract the CMW fraction in generated samples of events. In addition, we will also report the differential three particle correlator, which may further help in elucidating experimental observations of CMW.

References

[1] Phys. Rev. Lett. 107, 052303 (2011)

Session

Heavy Ions and QCD

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