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Anomalous transport model study of chiral magnetic effects in heavy ion collisions

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Using an anomalous transport model for massless quarks, we study the effect of magnetic field on the elliptic flows of quarks and antiquarks in relativistic heavy ion collisions. With initial conditions from a blast wave model and assuming that the strong magnetic field produced in non-central heavy ion collisions can last for a sufficiently long time, we obtain a substantial electric quadrupole moment in the transverse plane of a heavy ion collision, which subsequently leads to an appreciable splitting between the elliptic flows of quarks and antiquarks as expected from the chiral magnetic wave and observed in experiments at the Relativistic Heavy Ion Collider (RHIC).

Summary

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