

## Effects of quark gluon plasma droplet evolution on charge separation in small collision systems

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In relativistic high-energy heavy-ion collisions, the chiral magnetic effect (CME) could produce a charge separation in quark gluon plasma (QGP) and remain in the final hadron system during evolution, observed as the correlator  $\gamma$ . However, in collisions, the background effect makes a significant contribution. Therefore, we propose to study the contribution of CME to through collisions.

We investigated the property of electromagnetic fields generated in polarized proton collisions. We found that the orientation of fields exhibit a significant dependence on the polarization direction of the protons. And the azimuthal correlation between and reaction plane is obviously.

We also studied the initial charge separation surviving to the final hadron system in high energy small collision system. Our calculations indicate that, with given initial charge separation, the effects of parton level evolution and hadron level evolution weaken the charge separation indeed, but there are still enough signals that could survive to the final hadron system. Furthermore, we found that, the contribution of background to  $\gamma$  is negligible in small collision systems.

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