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## Probing the chiral magnetic wave in pPb and PbPb collisions at root S-NN=5.02 TeV using charge-dependent azimuthal anisotropies

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Group Author(s): [CMS Collaboration](#)  
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PHYSICAL REVIEW C  
 Volume: 100 Issue: 6  
 Article Number: 064908  
 DOI: 10.1103/PhysRevC.100.064908  
 Published: DEC 18 2019  
 Document Type: Article  
[View Journal Impact](#)

### Abstract

Charge-dependent anisotropy Fourier coefficients ( $v(n)$ ) of particle azimuthal distributions are measured in pPb and PbPb collisions at root S-NN = 5.02 TeV with the CMS detector at the LHC. The normalized difference in the second-order anisotropy coefficients ( $v(2)$ ) between positively and negatively charged particles is found to depend linearly on the observed event charge asymmetry with comparable slopes for both pPb and PbPb collisions over a wide range of charged particle multiplicity. In PbPb, the third-order anisotropy coefficient  $v(3)$  shows a similar linear dependence with the same slope as seen for  $v(2)$ . The observed similarities between the  $v(2)$  slopes for pPb and PbPb, as well as the similar slopes for  $v(2)$  and  $v(3)$  in PbPb, are compatible with expectations based on local charge conservation in the decay of clusters or resonances, and constitute a challenge to the hypothesis that, at LHC energies, the observed charge asymmetry dependence of  $v(2)$  in heavy ion collisions arises from a chiral magnetic wave.

### Keywords

KeyWords Plus: [SIDE ANGULAR-CORRELATIONS](#); [LONG-RANGE](#); [PARITY VIOLATION](#); [EVENT](#)

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