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## Observation of Charge-Dependent Azimuthal Correlations in p-Pb Collisions and Its Implication for the Search for the Chiral Magnetic Effect

(Article) [\(Open Access\)](#)Khachatryan, V.<sup>aip</sup>, Sirunyan, A.M.<sup>a</sup>, Tumasyan, A.<sup>a</sup>, Adam, W.<sup>b</sup>, Asilar, E.<sup>b</sup>, Bergauer, T.<sup>b</sup>, Brandstetter, J.<sup>b</sup>, Brondolin, E.<sup>b</sup>, Dragicevic, M.<sup>b</sup>, Erö, J.<sup>b</sup>, Flechl, M.<sup>b</sup>, Friedl, M.<sup>b</sup>, Frühwirth, R.<sup>bq</sup>, Ghete, V.M.<sup>b</sup>, Hartl, C.<sup>b</sup>, Hörmann, N.<sup>b</sup>, Hrubec, J.<sup>b</sup>, Jeitler, M.<sup>bq</sup>, König, A.<sup>b</sup>, Krätschmer, I.<sup>b</sup>, Liko, D.<sup>b</sup>, Matsushita, T.<sup>b</sup>,[View additional authors](#) [v](#)<sup>a</sup>Yerevan Physics Institute, Yerevan, Armenia<sup>b</sup>Institut für Hochenergiephysik, Wien, Austria<sup>c</sup>Institute for Nuclear Problems, Minsk, Belarus[View additional affiliations](#) [v](#)

### Abstract

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Charge-dependent azimuthal particle correlations with respect to the second-order event plane in p-Pb and PbPb collisions at a nucleon-nucleon center-of-mass energy of 5.02 TeV have been studied with the CMS experiment at the LHC. The measurement is performed with a three-particle correlation technique, using two particles with the same or opposite charge within the pseudorapidity range  $|\eta| < 2.4$ , and a third particle measured in the hadron forward calorimeters ( $4.4 < \eta < 5$ ). The observed differences between the same and opposite sign correlations, as functions of multiplicity and  $\eta$  gap between the two charged particles, are of similar magnitude in p-Pb and PbPb collisions at the same multiplicities. These results pose a challenge for the interpretation of charge-dependent azimuthal correlations in heavy ion collisions in terms of the chiral magnetic effect. © 2017 CERN, for the CMS Collaboration. Published by the American Physical Society under the terms of the "http://creativecommons.org/licenses/by/3.0/" Creative Commons Attribution 3.0 License. Further distribution of this work must maintain attribution to the author(s) and the published article's title, journal citation, and DOI.

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Compendex keywords

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