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Two-particle azimuthal correlations in events with large rapidity gaps in pPb collisions recorded by CMS at 8.16 TeV

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We present a new study of two-particle correlations as extracted with the CMS experiment in 8.16 TeV proton-lead (pPb) events with large rapidity gaps in the proton going region. Recent comparisons of the cross sections of such events measured in CMS as a function of the rapidity gaps (i.e., regions devoid of any particle activity) with several generators suggest that such events have contributions from electromagnetic, diffractive, and nondiffractive processes. Such interactions provide unique initial conditions with multiplicity lower than in proton-proton and pPb systems but comparable with γ -proton, electron-electron, and electron-proton systems. Two-particle and single-particle Fourier coefficients $V_{n\Delta}$ ($n=2,3$) and $v_2 = \sqrt{V_{n\Delta}}$, respectively, of the azimuthal distributions of charged particles are presented. The Fourier coefficients are presented in ranges of event multiplicity and particle transverse momentum, and are compared to Monte-Carlo simulations.

Category

Experiment

Collaboration (if applicable)

CMS

Primary author: LEON COELLO, Moises David (Universidad de Sonora (MX))

Presenter: LEON COELLO, Moises David (Universidad de Sonora (MX))

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