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Elliptic Flow of Charm and Strange Hadrons in High-Multiplicity p plus Pb Collisions at $\sqrt{s_{NN}}=8.16$ TeV

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Group Author(s): CMS Collaboration

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PHYSICAL REVIEW LETTERS

Volume: 121 Issue: 8

Article Number: 082301

DOI: 10.1103/PhysRevLett.121.082301

Published: AUG 21 2018

Document Type: Article

[View Journal Impact](#)

Abstract

The elliptic azimuthal anisotropy coefficient (v_2) is measured for charm (D -0) and strange (K -S(0), Λ , Ξ (-), and Ω (-)) hadrons, using a data sample of p + Pb collisions collected by the CMS experiment, at a nucleon-nucleon center-of-mass energy of $\sqrt{s_{NN}}=8.16$ TeV. A significant positive v_2 signal from long-range azimuthal correlations is observed for all particle species in high-multiplicity p + Pb collisions. The measurement represents the first observation of possible long-range collectivity for open heavy flavor hadrons in small systems. The results suggest that charm quarks have a smaller v_2 than the lighter quarks, probably reflecting a weaker collective behavior. This effect is not seen in the larger PbPb collision system at $\sqrt{s_{NN}}=5.02$ TeV, also presented.

Keywords

KeyWords Plus: RELATIVISTIC NUCLEAR COLLISIONS; RANGE ANGULAR-CORRELATIONS; LONG-RANGE; 2-PARTICLE CORRELATIONS; ROOT-S(NN)=5.02 TEV; COLLECTIVE FLOW; SIDE; PPB; LHC; EVENT

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