

Abstract Submitted  
for the APR20 Meeting of  
The American Physical Society

**Collectivity of heavy flavor hadrons in pp and pPb collisions at LHC energy** YOUSEN ZHANG, Rice Univ, CMS COLLABORATION — Measurements of long-range, collective azimuthal correlations involving heavy-flavor quarks provide a powerful tool for unraveling the origin of the collectivity observed in small collision systems. In particular, these measurements are sensitive to the early stages of the collisions. As compared to light quarks, heavy flavor (charm and bottom) quarks can only be produced at initial stages via hard process, and evolve with the whole system, thus they are rare probes to explore the initial conditions of the collisions. Based on long-range, two-particle correlations, recent measurements by CMS showed large azimuthal anisotropy signals for charm hadrons, including prompt  $D^0$  and  $J/\psi$  particles, in high multiplicity pPb collisions, while for non-prompt  $D^0$  mesons from b hadron decay, a flavor hierarchy is indicated between  $p_T$  2 – 5 GeV. To further explore the system size dependence of collectivity for charm hadrons in small systems, elliptic azimuthal anisotropy ( $v_2$ ) of prompt  $D^0$  meson in 8.16 TeV pPb and 13 TeV pp collisions are presented as a function of multiplicity over wide rapidity ( $|y| < 1$ ) ranges. The results provide key insights to the heavy quark collectivity developed in pp and pPb systems.

Yousen Zhang  
Rice Univ

Date submitted: 06 Jan 2020

Electronic form version 1.4