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System size scan of D meson RAA and v_2 using PbPb, XeXe, ArAr, and OO collisions

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Experimental measurements indicate no suppression (e.g. $R_{pPb} \sim 1$) but a surprisingly large D meson v_2 was measured in pPb collisions. In order to understand these results we use Trento+v-USPhydro+DAB-MOD to make predictions and propose a system size scan at the LHC involving $^{208}\text{PbPb}$, $^{129}\text{XeXe}$, $^{40}\text{ArAr}$, and ^{16}OO collisions. We find that the nuclear modification factor approaches unity as the system size is decreased, but nonetheless, in the 0–10% most central collisions $v_2\{2\}$ is roughly equivalent regardless of system size. These results arise from a rather non-trivial interplay between the shrinking path length and the enhancement of eccentricities in small systems at high multiplicity. Finally, we also find a surprising sensitivity of D mesons $v_2\{2\}$ in 0–10% at $p_T = 2\text{--}5$ GeV to the slight deformation of ^{129}Xe recently found at LHC.

Collaboration (if applicable)

Track

Heavy Flavor and Quarkonia

Contribution type

Contributed Talk

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