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## Longitudinal dependence of B and D mesons and heavy flavor leptons observables in relativistic heavy ion collisions

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It is largely acknowledged that heavy flavor probes are sensitive to the properties of the quark gluon plasma and as such they are often considered an important tool for the plasma tomography studies. In the past several years there has been an astounding amount of work aimed at understanding the heavy quarks coupling with the medium. Nevertheless, the longitudinal dependence of common observables have not yet been thoroughly explored. Forward rapidity observables can provide further insight on the dynamics of the medium due to the interplay between the medium size directly affecting the path length of the heavy quark probes, and the differences in the production spectra. In this work we investigate the nuclear modification factor  $R_{AA}$  and flow coefficients  $v_n$  of B and D mesons, as well as heavy flavor leptons, in the rapidity range  $-4.0 < y < 4.0$ . We use relativistic Langevin equation with gluon radiation coupled with the CLVisc (3+1)D viscous hydrodynamics medium background for AuAu at  $\sqrt{s_{NN}} = 200$  GeV, and PbPb at  $\sqrt{s_{NN}} = 2.76$  TeV and  $\sqrt{s_{NN}} = 5.02$  TeV collisions. Comparison with current data is shown for mid-rapidity observables as well as forward rapidity muons. We provide predictions for different rapidity ranges for B and D mesons observables.

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