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Heavy quark energy loss and longitudinal dependent final states in $\sqrt{s_{NN}} = 5.02$ TeV PbPb collisions

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Heavy flavor R_{AA} and $v_n\{m\}$ have been previously calculated in an event-by-event framework at mid-rapidity [1,2]. Those results showed that exploring new observables in the heavy flavor sector can lead to further constraints on the properties of the QGP. Furthermore, longitudinal dependence of the heavy flavor observables has not yet been explored. In this work we expand the previous framework to a (3+1)D smooth viscous hydrodynamic medium background. We obtain D^0 meson nuclear modification factor and elliptic flow predictions for rapidity bins in the range $-4.8 \leq \eta \leq 4.8$ for $\sqrt{s_{NN}} = 5.02$ TeV PbPb collisions. We also study the effects of energy loss fluctuations on the v_n cumulants using event-by-event hydrodynamics.

[1] Caio A. G. Prado, Jacquelyn Noronha-Hostler, Roland Katz, Jorge Noronha, Marcelo G. Munhoz, Alexandre A. P. Suaide, Nuclear Physics **A967** (2017), 664-667 [arXiv:1704.04654].

[2] Caio A. G. Prado, Jacquelyn Noronha-Hostler, Roland Katz, Jorge Noronha, Marcelo G. Munhoz, Alexandre A. P. Suaide, accepted in Phys. Rev. C [arXiv:1611.02965].

Content type

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Centralised submission by Collaboration

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