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Heavy flavor electron R_{AA} and v_2 in event-by-event viscous relativistic hydrodynamics

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Recently it has been shown that event-by-event fluctuations are necessary to resolve the long-standing v_2 to R_{AA} puzzle for jets. Also, jets in relativistic hydrodynamics can also affect soft physics observables. It is then natural to investigate the effects of full event-by-event fluctuating hydrodynamic backgrounds on the nuclear suppression factor and the elliptic flow of heavy flavor mesons and non-photonic electrons as well. Using the event-by-event 2D+1 viscous hydrodynamic code v-USPhydro, the local hydrodynamical temperature and flow profiles are computed taking into account viscous corrections. Heavy quarks propagate in the medium following strong coupling energy loss calculations on top of the evolving space-time energy density distributions. This is performed until the freeze-out temperature is reached and hadronization takes place. The resulting D^0 and non-photonic electron yield, computed event-by-event, are compared with recent experimental data for R_{AA} and v_2 from the STAR, PHENIX, and ALICE collaborations. We also present predictions for the higher order Fourier harmonic coefficients $v_3(p_T)$ and $v_4(p_T)$ of non-photonic electrons at RHIC's $\sqrt{s} = 200$ GeV/n collisions and LHC's $\sqrt{s} = 2.76$ TeV/n collisions.

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On behalf of collaboration:

None

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