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Predictions for bottomonia suppression in 5.023 TeV Pb-Pb collisions

We compute the suppression of the bottomonia states $\Upsilon(1S)$, $\Upsilon(2S)$, $\Upsilon(3S)$, $\chi_b(1P)$, $\chi_b(2P)$, and $\chi_b(3P)$ states in LHC $\sqrt{s_{NN}} = 5.023$ TeV Pb-Pb collisions. For the background evolution we use 3+1d anisotropic hydrodynamics with conditions extrapolated from $\sqrt{s_{NN}} = 2.76$ TeV and self-consistently compute bottomonia decay rates including non-equilibrium corrections to the interaction potential. For our final results, we take predictions made for R_{AA} as function of centrality, rapidity, and p_T for the $\Upsilon(1S)$ and $\Upsilon(2S)$ states including feed down effects and compare against recently announced ALICE and CMS experimental data. In order to assess the dependence on some of the model assumptions, we vary the shear viscosity to entropy density ratio, $4\pi\eta/s \in \{1, 2, 3\}$, and the initial momentum-space anisotropy parameter, $\xi_0 \in \{0, 10, 50\}$, while holding the total light hadron multiplicity fixed.

Preferred Track

Quarkonia

Collaboration

Not applicable

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