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## Bottomonium suppression and elliptic flow from real-time quantum evolution

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We compute the suppression and elliptic flow of bottomonium using real-time solutions to the Schroedinger equation with a realistic in-medium complex-valued potential. To model the initial production, we assume that, in the limit of heavy quark masses, the wave-function can be described by a lattice-smeared (Gaussian) Dirac delta wave-function. The resulting final-state quantum-mechanical overlaps provide the survival probability of all bottomonium eigenstates. Our results are in good agreement with available data for  $R_{AA}$  as a function of  $N_{\text{part}}$  and  $p_T$  collected at  $\sqrt{s_{\text{NN}}} = 5.02$  TeV. In the case of  $v_2$  for the various states, we find that the path-length dependence of  $\Upsilon(1s)$  suppression results in quite small  $v_2$  for  $\Upsilon(1s)$ . Our prediction for the integrated elliptic flow for  $\Upsilon(1s)$  in the 10-90\% centrality class is  $v_2[\Upsilon(1s)] = 0.0026 \pm 0.0007$ . We additionally find that, due to their increased suppression, excited bottomonium states have a larger elliptic flow and we make predictions for  $v_2[\Upsilon(2s)]$  and  $v_2[\Upsilon(3s)]$  as a function of centrality and transverse momentum. Similar to prior studies, we find that it is possible for bottomonium states to have negative  $v_2$  at low transverse momentum.

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