

Understanding sequential quarkonium suppression with $\Upsilon(nS)$ measurements in pp, pPb and PbPb collisions at $\sqrt{s_{\text{NN}}} = 5.02$ TeV

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The production cross sections of the $\Upsilon(1S)$, $\Upsilon(2S)$, and $\Upsilon(3S)$ states were measured separately using the CMS experimental apparatus, in pp, pPb, and PbPb collisions at 5.02 TeV. New results on the production of the three upsilon states in pPb are reported, including cross sections as a function of transverse momentum (p_T) and rapidity (y). The data show a stronger suppression of the excited states (2S and 3S) as compared to the ground state (1S). The event activity dependence of the forward-backward ratio of all three upsilon states is also reported. Final results on the differential production cross section and nuclear modification factor of upsilon mesons in PbPb collisions at 5.02 TeV, as a function of centrality, p_T and y , show similar suppression pattern, more pronounced than in pPb data. A strong suppression is observed in PbPb collisions, by up to a factor of 2 and 10 for the $\Upsilon(1S)$ and $\Upsilon(2S)$ respectively. The $\Upsilon(3S)$ was not observed in PbPb collisions, being suppressed by more than a factor 14 at the 95% confidence level.

Summary

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