

Statistical approach for the calculation for upper limit of $\Upsilon(3S)$ yield

The Compact Muon Solenoid (CMS) observed the strong suppression of excited bottomonia states $\Upsilon(2S)$ and $\Upsilon(3S)$ in PbPb collisions at $\sqrt{s_{NN}} = 5.02$ TeV. The analysis was done by comparing the excited state yield to the ground state yield, and then comparing the results in PbPb and pp. For $\Upsilon(2S)$ state of the 0-5% centrality and $\Upsilon(3S)$ states of minimum bias collisions, the yields were statistically consistent to zero, which leaves the possibility of complete dissociation of loosely bound states by the Quark Gluon Plasma. Therefore the upper limits of the yields are extracted in 68% and 95% confidence level using Feldman-Cousins method. The kinematic range of Υ states covered in this analysis is $|y| < 2.4$ for rapidity $0 < p_T < 30$ GeV/c for transverse momentum.

Preferred Track

Quarkonia

Collaboration

CMS

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