Paper (4)

Title:

Measurement of the $B^{\pm}$ Meson Nuclear Modification Factor in Pb-Pb Collisions at $\sqrt{s_{NN}} = 5.02\ TeV$

Journal:

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Abstract:

The differential production cross sections of $B^{\pm}$ mesons are measured via the exclusive decay channels $B^{\pm} \rightarrow J/\psi K^{\pm} \rightarrow \mu + \mu^{-} K^{\pm}$ as a function of transverse momentum in pp and Pb-Pb collisions at a center-of-mass energy $\sqrt{s_{NN}} = 5.02\ TeV$ per nucleon pair with the CMS detector at the LHC. The pp(Pb- Pb)data set used for this analysis corresponds to an integrated luminosity of 28.0 pb^{-1} (351 μb^{-1}). The measurement is performed in the $B^{\pm}$ meson transverse momentum range of 7 to 50 GeV/c, in the rapidity interval $|y| < 2.4$. In this kinematic range, a strong suppression of the production cross section by about a factor of 2 is observed in the Pb-Pb system in comparison to the expectation from pp reference data. These results are found to be roughly compatible with theoretical calculations incorporating beauty quark diffusion and energy loss in a quark-gluon plasma.