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Volume 78, Issue 6, 1 June 2018, Article number 509Measurement of prompt and nonprompt charmonium suppression in PbPb collisions at 5.02 TeV (Article) [\(Open Access\)](#)Sirunyan, A.M.^a, Tumasyan, A.^a, Adam, W.^b, Ambrogio, F.^b, Asilar, E.^b, Bergauer, T.^b, Brandstetter, J.^b, Brondolin, E.^b, Dragicevic, M.^b, Erö, J.^b, Del Valle, A.E.^b, Flechl, M.^b, Friedl, M.^b, Frühwirth, R.^b, Ghete, V.M.^b, Grossmann, J.^b, Hrubec, J.^b, Jeitler, M.^b, König, A.^b, Krammer, N.^b, Krätschmer, I.^b, Liko, D.^b,View additional authors [v](#)^aYerevan Physics Institute, Yerevan, Armenia^bInstitut für Hochenergiephysik, Wien, Austria^cInstitute for Nuclear Problems, Minsk, BelarusView additional affiliations [v](#)

Abstract

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The nuclear modification factors of J/ψ and $\psi(2S)$ mesons are measured in PbPb collisions at a centre-of-mass energy per nucleon pair of $\sqrt{s_{NN}}=5.02\text{TeV}$. The analysis is based on PbPb and p p data samples collected by CMS at the LHC in 2015, corresponding to integrated luminosities of $464\mu\text{b}^{-1}$ and 28pb^{-1} , respectively. The measurements are performed in the dimuon rapidity range of $|y| < 2.4$ as a function of centrality, rapidity, and transverse momentum (p_T) from $p_T=3\text{ GeV}/c$ in the most forward region and up to $50\text{GeV}/c$. Both prompt and nonprompt (coming from b hadron decays) J/ψ mesons are observed to be increasingly suppressed with centrality, with a magnitude similar to the one observed at $\sqrt{s_{NN}}=2.76\text{TeV}$ for the two J/ψ meson components. No dependence on rapidity is observed for either prompt or nonprompt J/ψ mesons. An indication of a lower prompt J/ψ meson suppression at $p_T > 25\text{ GeV}/c$ is seen with respect to that observed at intermediate p_T . The prompt $\psi(2S)$ meson yield is found to be more suppressed than that of the prompt J/ψ mesons in the entire p_T range. © 2018, CERN for the benefit of the CMS collaboration.

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Topic: collisions | production | nuclear modification

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