# Measurement of prompt psi(2S) production cross sections in proton-lead and proton-proton collisions at root s(NN)=5.02 TeV

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## Abstract

Measurements of prompt psi(2S) meson production cross sections in proton-lead (pPb) and proton-proton (pp) collisions at a nucleon-nucleon center-of-mass energy of root s(NN) = 5.02 TeV are reported. The results are based on pPb and pp data collected by the CMS experiment at the LHC, corresponding to integrated luminosities of 34.6 nb(-1) and 28.0 pb(-1), respectively. The nuclear modification factor R-pPb is measured for prompt psi(2S) in the transverse momentum range 4 < p(T) < 30 GeV/c and the center-of-mass rapidity range -2.4 < y(CM) < 1.93. The results on psi(2S) R-pPb are compared to the corresponding modification factor for prompt J/psi mesons. The results point to different nuclear effects at play in the production of the excited charmonium state compared to the ground state, in the region of backward rapidity and for PT < 10 GeV/c. (C) 2019 The Author. Published by Elsevier B.V.

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