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Type: **Experimental**

Forward rapidity $\psi(2S)$ production in pp, p-Pb and Pb-Pb collisions with ALICE at the LHC

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The ALICE Collaboration has studied the inclusive $\psi(2S)$ production in pp, p-Pb and Pb-Pb collisions at the CERN LHC. The $\psi(2S)$ is detected through its decay to muon pairs, using the Forward Dimuon Spectrometer, which covers the rapidity range $2.5 < y_{lab} < 4$. The $\psi(2S)$ production cross sections in pp collisions will be presented, both integrated and differential in rapidity and in transverse momentum. In p-Pb collisions, $\psi(2S)$ results will be compared to the J/ψ ones by means of the production cross sections ratio studied as a function of the transverse momentum and event activity. The $\psi(2S)$ nuclear modification factor, R_{pA} , will also be presented. The results show a larger $\psi(2S)$ suppression compared to the one observed for the J/ψ and are not described by theoretical models including cold nuclear matter effects as nuclear shadowing and energy loss. Finally, preliminary results on $\psi(2S)$ production in Pb-Pb collisions will be shown in two p_T ranges as a function of centrality. Also in this case, the $\psi(2S)$ production will be compared to the J/ψ one and to the corresponding pp results.

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