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Inclusive production of $\Upsilon(1S, 2S, 3S)$ mesons in proton-proton collisions

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Prompt production of $\Upsilon(1S, 2S, 3S)$ mesons in proton-proton collisions at the LHC within NRQCD k_t -factorization approach [1] will be discussed. Different unintegrated gluon distribution functions are used. We include both direct color-singlet production $gg \rightarrow \Upsilon(1S)g$ as well as feed-down from $\chi_b \rightarrow \Upsilon(1S)\gamma$ and $Upsilon(2S) \rightarrow \Upsilon(1S)X$. We calculate also the ratio of the cross sections for $\chi_b(2)\chi_b(1)$ and the corresponding results will be presented. We will compare our results for Υ production with the CMS experimental data [2] for different intervals of rapidity. Differential distributions in rapidity and transverse momentum of Υ states are calculated and compared to experimental data of the CMS [2] and LHCb [3] collaborations. We will present also results for different values of collision energy.

[1] A. Cisek and A. Szczurek, a paper in preparation.

[2] CMS Collaboration, Phys. Lett. **B743**, (2015) 383.

[3] LHCb Collaboration, JHEP 11 (2015) 103.

Collaboration

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