

Quarkonia and open heavy flavor production in pA collisions

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We present LHCb results on production of quarkonia and of open-heavy-flavour hadrons in proton-lead collisions, using data collected at $\sqrt{s_{NN}} = 5$ and 8.16 TeV. Measurements are performed in the forward pseudorapidity region ($2 < \eta < 5$), covering both forward (pPb configuration) and backward (PbP configuration) rapidities. Measurements for charmonium states include prompt and from-b-decay components which are disentangled; the large increase of the data sample, with respect to the 5 TeV sample collected in 2013, allows a remarkable improvement in the accuracy of the studies of nuclear matter effects. A rich set of open charm mesons and baryons is also observed with abundant statistics and, thanks to LHCb's forward acceptance, studied down to zero pT. Beauty hadrons, with signal counts up to a few thousands in the fully reconstructed decays in the pPb data samples, are also shown. Comparisons between theory predictions and data regarding the nuclear modification factors, forward-to-backward production ratios and baryon-to-meson ratios are made. The impact of the results, in particular on the improvement of nuclear PDF and parton saturation, are discussed. The open charm production in fixed-target collisions of LHCb is also presented, which provides crucial constraints on intrinsic charm and nuclear parton distribution functions at moderate and large Bjorken x .

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