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Charm and quarkonium production in collider and fixed-target mode at LHCb

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Quarkonium production in hadronic collisions is a key observable for studying the interaction of heavy quarks with the nuclear medium. While quarkonium states can dissociate and recombine in nucleus-nucleus collisions, their production in smaller systems may be influenced by a combination of initial- and final-state effects such as shadowing and co-mover breakup. Thanks to excellent vertexing performance that allows separation of prompt and b-hadron decay components, the LHCb collaboration has performed precise measurements of J/ψ, ψ(2S), Υ(nS), and χ_c production. LHCb can explore a wide range of environments: apart from high-statistics pp and pPb datasets at the TeV energy range, the new gas injection system has permitted to acquire a variety of proton-nucleus and nucleus-nucleus systems in fixed-target configuration at energy scale of ~ 100. Also, with the upgraded LHCb detector for LHC Run 3, more central PbPb collisions can be studied compared to Run 2, enabling studies in regions where the influence of the hot nuclear medium is significantly stronger. This talk will present recent studies of quarkonium production with the LHCb detector.

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