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Latest results probing nuclear matter at LHCb

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Fully instrumented in the forward acceptance, LHCb provides the unique capabilities to study nuclear environment using open and hidden heavy flavor production in the forward region. In this talk, we present the recent LHCb measurements of open charm hadron production in pPb collisions at $\sqrt{s_{NN}}=8.16$ TeV, event-activity dependent $\chi_{c1}(3872)$ production in pp collisions at $\sqrt{s}=8$ TeV, and coherent Jpsi production in ultra-peripheral PbPb collisions at $\sqrt{s_{NN}}=5$ TeV. The open charm production is measured down to zero pT, which strongly constrains the nuclear parton densities at low Bjorken- $x \sim 10^{-5}$, where parton saturation may happen. UPC Jpsi produced from the interaction of a dense electromagnetic field with the Pb nucleus allows to study the nuclear PDF in a clean environment. Measurement of $\chi_{c1}(3872)$ production in correlation with the event activity helps to understand its internal structure and bound state dissociation through interaction with collision final states. LHCb results in fixed-target collisions and prospects for Run3 are also presented.

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Track Classification: Structure Functions and Parton Densities