Beitrag ID: **74** Typ: **Talk**

Probing the initial state of nuclear collisions using isolated prompt photons with ALICE

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Hadronic collisions produce prompt photons that are characterized by a large transverse momentum and absence of event activity in their vicinity. Photons are a robust probe of cold nuclear matter effects in small and large collision systems because they do not interact strongly and are thus insensitive to medium-induced final-state effects. Prompt photon production is dominated by the Compton process ($g\mathrm{q} \rightarrow \mathrm{q}\gamma$), making it sensitive to the gluon parton distribution function (PDF), and provides a test of high momentum pQCD calculations. Recent experimental results indicate the need for corrections beyond NLO to describe their production accurately. This talk presents the measurement of isolated prompt photon production in pp and p-Pb collisions at $\sqrt{s_{\mathrm{NN}}} = 8$ TeV, measured by ALICE. The isolation method is applied to suppresses the background photons produced in the fragmentation process and electromagnetic decays. The production cross sections in both systems will be presented and compared with NLO calculations using recent (n)PDFs and fragmentation functions. In addition, the nuclear modification factor R_{pA} is measured, quantifying possible modifications of the parton distributions inside the nucleus. This is the first time the isolated prompt photon R_{pA} has been measured for low transverse momenta of $p_{\mathrm{T}} < 20$ GeV/c - a regime in which a sizeable suppression is predicted by theoretical calculations.

Experiment/Theory

ALICE

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