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Isolated photon-hadron production in high energy pp and pA collisions at RHIC and LHC.

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This talk is based on "Benić, Garcia-Montero, Perkov: Phys. Rev. D 105, 114052 (2022)". In it we compute the isolated photon production in association with a charged hadron at mid rapidity in pp and pA collisions. Our approach is grounded in the Color Glass Condensate (CGC) framework of high energy QCD with the addition of the Sudakov resummation of soft gluon emissions. The observables of interest (angular distributions and out-of-plane transverse momentum distributions) are computed in the leading order qg→qγ channel and compared with the recent data from RHIC and LHC. We find that, while the CGC computation alone results in too narrow distributions, with the help of the Sudakov effect, we can get a satisfactory description of the data. With this as a benchmark, we provide predictions for the magnitude of the nuclear effect brought by the phenomena of gluon saturation in the CGC.

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