

PROBING NUCLEAR PDF AND GLUON SATURATION AT THE LHC WITH FORWARD DIRECT PHOTONS

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In relativistic nuclear collisions some of the more important aspects to be addressed are the effects of the nuclear PDF and the gluon saturation. In the LHC the best way to address these questions is by means of pA collisions and in particular through the measurement of direct photon production in the forward direction. In order to achieve this measurement a new forward calorimeter (FoCal) is proposed as an upgrade to the ALICE experiment. The proposed detector will cover the range $3.5 < \eta < 5$, probing the gluon distributions at $x \sim 10^{-5}$ and $Q \sim p_T > 4$ GeV. We will discuss performance studies and demonstrate that extremely high-granularity calorimetry is required for such measurement. We will also present few results from R&D for this project.