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## FoCal - a high granularity electromagnetic calorimeter for forward direct photon measurements as an upgrade of ALICE

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We report on the new design of a forward electromagnetic calorimeter (FoCal) to be placed in the pseudorapidity region of  $2.5 < \eta < 4.5$ , which is under consideration as an upgrade of the ALICE experiment at the CERN-LHC. The physics goals of including the calorimeter in the forward direction are to study outstanding fundamental QCD problems at low Bjorken- $x$  values, such as parton distributions in the nuclei, to test pQCD predictions, and to probe high temperature and high density matter in greater detail. As a very promising probe we intend to study direct photons and correlations involving photons, pions, and jets over a broad range rapidity in p-p, p-Pb and Pb-Pb collisions at the highest LHC energies. For these measurements, the detector needs to be capable of measuring photons of energies up to several 100 GeV and be able to discriminate them from neutral pions. This will require a detector of unprecedented granularity. The detector design consists of silicon sensor layers interleaved with layers of tungsten absorber. The use of both conventional silicon sensors and of monolithic pixels is investigated. We will discuss the detector requirements and design options and will present results of Monte-Carlo simulations and test measurements with detector prototypes.

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