

A Forward Calorimeter (FoCal) as upgrade for the ALICE Experiment at CERN

As an upgrade of the ALICE experiment at the CERN-LHC, we would like to build and install a Forward Electromagnetic Calorimeter (FoCal) to be placed in the pseudorapidity region of $2.5 < \eta < 4.5$, at the position of the existing Photon Multiplicity Detector (PMD). The basic motivation of including the calorimeter in the forward direction is to study outstanding fundamental QCD problems at low Bjorken- x values, such as parton distributions in the nuclei, test of pQCD predictions and to probe high temperature and high density matter in greater detail. A comprehensive measurement of p-p, p-Pb and Pb-Pb collisions at the highest LHC energies will be required. For these measurements, the detector needs to be capable of measuring photons for energies up to at least $E \sim 200$ GeV/c. It should allow discrimination of direct photons from neutral pions in a large momentum range and should also provide reasonable jet energy measurements. At present, two possible designs are being considered based on silicon-tungsten calorimetry. We will present physics motivation of this project, measurement items, conceptual detector candidates, and basic performance for the measurements in this poster presentation.

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