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FoCal in ALICE

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The new forward calorimeter, FoCal, extends the ALICE physics programme with the capability, unique at the LHC, of investigating gluon parton distribution functions (PDFs) down to Bjorken-x of ˜10ˆ-6. In this kinematic range, the gluon distributions are expected to behave non-linearly.

FoCal is a high-granularity forward calorimeter to be installed as an ALICE upgrade subsystem during the LHC Long Shutdown 3 and take data during the LHC Run 4. It consists of a compact silicon-tungsten sampling electromagnetic calorimeter (FoCal-E) with pad and pixel readout layers to achieve high spatial and energy resolutions and a hadron calorimeter based on copper capillary tubes read out using scintillator fibres (FoCal-H).

FoCal is optimized for reconstructing direct photons, however, other measurements are foreseen as well. Focal will be able to measure the photo-production cross sections of vector mesons in a wide energy range in photon-proton and photon-lead collisions.

In this presentation we will discuss projected detector performance studies for the main physics observables foreseen to be made with the data expected to be recorded during Run-4 with a focus on the photo-production measurements in p-Pb and Pb-Pb ultra-peripheral collisions.

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