

A Forward Calorimeter Upgrade in LHC-ALICE

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In high-energy heavy-ion collisions at the Relativistic Heavy Ion Collider (RHIC) and at the Large Hadron Collider (LHC) strongly interacting matter is produced in which quarks and gluons are deconfined. The ALICE experiment studies the properties of this so-called Quark-Gluon Plasma at the LHC. However, there are still many unanswered questions with regards to the initial state of these heavy ion collisions. Measurements in the forward region at high energy such as at the LHC are expected to access the initial state more clearly, e.g. addressing gluon saturation such as the Color Glass Condensate (CGC).

There is an upgrade plan to implement a Forward Calorimeter in the ALICE experiment at the LHC, covering $3.3 < \eta < 5.3$. FoCal is composed of an electro-magnetic calorimeter (FoCal-E), which will be used for the measurement of direct photons and π^0 , while a hadron calorimeter (FoCal-H), will be used for jet measurements in the forward region. In addition, FoCal-E consists of a low granularity layer (LGL) for the measurement of photon energy and a high granularity layer (HGL) with pixel readout for a precise hit position measurement. In this presentation, we will discuss the physics motivations of FoCal and the current status of the FoCal research and development. We will also show recent results of the physics and detector simulations on the FoCal performance.

Relevant topics

hardware and future projects

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