

10th International Conference on Hard and Electromagnetic Probes of High-Energy Nuclear Collisions



Contribution ID: 218

Type: Poster

Development of Si-W Calorimeter for the ALICE FoCal upgrade

The LHC-ALICE experiment is considering to install a Forward Calorimeter (FoCal) during LS3 in 2025-2026 at the LHC. The FoCal is a sampling calorimeter composed of an electromagnetic calorimeter (FoCal-E) and a hadronic calorimeter (FoCal-H) covering forward pseudo-rapidity of $3.2 \leq \eta \leq 5.8$.

The FoCal-E consists of 20 alternating layers of tungsten absorber plates and two types of silicon layers, which are low granularity readout layers with silicon pad (PAD) for the measurement of photon energy and high granularity readout layers with Monolithic Active Pixel Sensors (PIXEL) to distinguish between direct photons and decay photons.

With the measurement of direct photons at forward pseudo-rapidities, we expect to clarify the gluon saturation effects and the formation of a Color Glass Condensate (CGC) at small- $x \approx 10^{-5}$, and provide a further key to understand the early thermalization of the Quark Gluon Plasma (QGP).

We have constructed a prototype calorimeter consisting of 20 layers of tungsten and silicon pad sensors. We evaluated the performance of this prototype using positron and hadron beams at CERN PS and SPS in 2018, and compared it with the simulation results. In this poster presentation, we will present those results with the test beam, particularly focusing on the comparison between simulation and data. We will also discuss the future plan of hardware development.

Collaboration (if applicable)

ALICE

Track

New Experimental Developments

Contribution type

Poster

Primary author: CHIBA, Shunya

Presenter: CHIBA, Shunya

Track Classification: New Experimental Developments