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Reading out a hadronic calorimeter: testing a readout system for the ALICE FoCal-H

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One of the major upgrades to ALICE for LHC Run 4 is the Forward Calorimeter (FoCal). This calorimeter comprises two sections, an Electromagnetic Calorimeter (FoCal-E) and a Hadronic Calorimeter (FoCal-H). Among the physics goals for FoCal is the study of physics at low- x , a regime in which one expects to see signals related to the gluon density in the initial nucleons which form the initial state for the ultra-relativistic collisions ALICE measures. In this poster, I will present results from the first two prototypes of FoCal-H. These prototypes were constructed of copper capillary tubes containing scintillating optical fibers. The scintillation photons produced in the fibers are read out by $6 \times 6 \text{ mm}^2$ Silicon photomultipliers (SiPM). The primary focus of this poster is the performance of the readout and control electronics used for the SiPM. To date, we have tested two commercially available systems from CAEN (A1702 and DT5202) and a system based on VMM ASICs coupled to a CERN SRS module. I will discuss both the results we have obtained to date and our planned path forward to the final detector which will be installed in ALICE in 2028.

Field of study

Quantum Physics

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Session Classification: Poster session: Enjoy the posters!!!