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Engineering Prototypes of the CALICE Hadron Calorimeters - EUDET Modules

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Please give a brief summary of your poster

A new prototype of a tile hadron calorimeter (HCAL) for the International Linear Collider detector is currently being developed within the CALICE collaboration. The aim is to improve the energy resolution by measuring details of the shower development and combining them with the data of the tracking chamber (particle flow). The prototype is based on scintillating tiles that are read out by novel Silicon-Photomultiplier. This new prototype will take into account all design aspects that are demanded by the intended operation at the ILC. It will contain about 2200 detector channels. We also outline plans for the construction of a hadronic calorimeter with digital readout based on gaseous active layers and with a granularity of 1x1cm^2.

The main focus of this contribution will be the mechanical and electrical integration of the front-end electronics into the calorimeter absorber structure maintaining a high-density calorimeter. Integration aspects and scalability to a ILC detector will be discussed.

For the analogue calorimeter the proposal of an integrated light-calibration system for calibration and gain monitoring will be presented, addressing temperature and bias dependence of the Silicon Photomultiplier gains. This is the first calorimeter design which makes full use of the high integration potential of the novel photo-sensor technology.

Primary author: Prof. WARD, David (University of Cambridge)

Presenter: Prof. WARD, David (University of Cambridge)

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