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Highly granular hadronic calorimeter with scintillating glass tiles: R&D overview and highlights

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A new hadronic calorimeter (HCAL) with scintillating glass tiles has been designed for future lepton collider experiments (e.g. the Circular Electron Positron Collider). Using a sampling structure (similar to the CALICE AHCAL technology), the new HCAL design aims for better handron and jet performance, with a higher sampling fraction by using glass instead of plastic scintillator.

Full simulation studies were done on jet performance of Higgs hadronic decays using a Particle-Flow Algorithm (PFA) named "Arbor". The HCAL design was optimised in terms of longitudinal depth, transverse granularity, glass density and effective light yield.

Hardware activities focus on measurements of glass tiles developed within the Glass Scintillator Collaboration. First batches of cm-scale glass tiles were tested with beam particles at CERN and DESY. In the contribution highlights of R&D activities will be presented, including performance studies, design optimisations and latest beamtest results.

Alternate track

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Yes

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