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FCAL Collaboration: progress report on forward calorimeters for future electron-positron collider experiments

Wednesday 17 March 2021 11:00 (30 minutes)

FCAL performs R&D for highly compact electromagnetic calorimeters foreseen to instrument the very forward region of a detector at future e^+e^- colliders. Two special calorimeters are foreseen, the Luminosity Calorimeter (LumiCal) and the Beam Calorimeter (BeamCal), for a precise and fast, potentially bunch-by-bunch, luminosity measurement. During the last years FCAL has studied finely-segmented silicon-tungsten or GaAs-tungsten sandwich calorimeters. The segmentation and sampling were optimised using Monte Carlo simulations and requirements on the performance defined. Prototypes of fully assembled detector planes and calorimeter prototypes, readout by dedicated FE electronics, are studied in test beams and found to match the requirements in terms of position and energy resolution and compactness. This talk covers the results obtained from several test beam studies on the performance of a partly instrumented calorimeter, the measurement of the Moliere radius, electron/photon discrimination and backscattering. Preliminary results from a recent test beam measurement, using for the first time the new developed FLAME readout, will be presented.

Time Zone

Europe/Africa/Middle East

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