



Contribution ID: 126

Type: Oral presentation (by invitation only)

R&D for lumionometers at e+e- colliders

Wednesday 1 June 2022 14:44 (22 minutes)

A design is presented for the instrumentation of the very forward region in future detectors at e+e- collider to perform a fast estimate and precise measurement of the luminosity, to improve the hermeticity and mask the central tracking detectors from backscattered particles. Two compact calorimeters are foreseen, LumiCal and BeamCal. Both are designed as sandwich calorimeters with very thin sensor planes to keep the Molière radius small, facilitating such the measurement of electron showers in the presence of background. Silicon sensor prototypes and dedicated FE ASICs have been developed and produced. In recent beam tests, a multi-plane compact prototype was equipped with thin sensor planes, installed in 1 mm gaps between tungsten plates of one radiation length thickness, and fully assembled with readout electronics. The latest status of the calorimeter prototype development will be presented, including selected performance results, obtained in a 5 GeV electron beam at DESY, and compared the expected performance obtained from simulation.

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Session Classification: PE&D

Track Classification: PE&D