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Recent results on calorimetry for future e+e- colliders

Thursday 28 November 2019 17:00 (20 minutes)

We present optimisation studies for detectors being designed for future e^+e^- colliders such as CLIC and FCC-ee, using particle-flow calorimetry. Surrounding a large silicon tracker volume, a very fine-grained ECAL is envisaged, with 40 silicon-tungsten layers and a lateral segmentation of 5×5 mm^2. Beyond the ECAL, a steel-scintillator HCAL is foreseen, with 60 layers (for CLIC) or 44 layers (for FCC-ee) and scintillator tiles, coupled to SiPMs, with lateral dimensions of 30×30 mm^2.

In this talk, new results on jet energy and angular resolution in light flavour di-jet events for the two detector models are shown. A detailed study on the separation power between di-jet masses of W and Z hadronic decays is described, which demonstrates the capability of these detectors to measure heavy resonance masses in hadronic decay channels. Also, an investigation of the ECAL performance for different sampling options is presented as part of the optimization process of the detector at FCC-ee. The newly developed software chain based on the DD4Hep detector description toolkit is used for the studies, together with the PANDORA particle flow algorithms.

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