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Simulation of the performances of a highly-granular Silicon-Tungsten electromagnetic calorimeter

The optimisation of the calorimeters for Future Higgs factory experiments is a central task in evaluating their performance and cost. A reliable simulation of the calorimeters, based on realistic assumptions, if possible based on existing devices, is critical. Beyond the GEANT4 description, which provides the energy deposited in the sensitive medium (here silicon), a realistic simulation must include a proper modelling of the charge generation and collection and of their electronics treatment, a step dubbed digitisation. We describe in this contribution the digitization, its key criteria, their adjustment on the current CALICE SiW ECAL prototype and its possible future iterations. The effect of some non-uniformities of the prototype (e.g. masked cells, threshold adjustment, various sensor thicknesses) on the energy resolution and electromagnetic shower description are discussed.

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