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Efficient Iterative Calibration on the Grid using iLCDirac

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Software tools for detector optimization studies for future experiments need to be efficient and reliable. One important ingredient of the detector design optimization concerns the calorimeter system. Every change of the calorimeter configuration requires a new set of overall calibration parameters which in its turn requires a new calorimeter calibration to be done. An efficient way to perform calorimeter calibration is therefore essential in any detector optimization tool set.

In this contribution, we present the implementation of a calibration system in iLCDirac, which is an extension of the DIRAC grid interware. Our approach provides more direct control over the grid resources to reduce overhead of file download and job initialisation, and provides more flexibility during the calibration process. The service controls the whole chain of a calibration procedure, collects results from finished iterations and redistributes new input parameters among worker nodes. A dedicated agent monitors the health of running jobs and resubmits them if needed. Each calibration has an up-to-date backup which can be used for recovery in case of any disruption in the operation of the service.

As a use case, we will present a study of optimization of the calorimetry system of the CLD detector concept for FCC-ee, which has been adopted from the CLICdet detector model. The detector has been simulated with the DD4hep package and calorimetry performance have been studied with the particle flow package PandoraPFA.

Consider for promotion

No

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