

Geant4 Muon Digitization in the ATHENA Framework

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The Muon Digitization is the simulation of the Raw Data Objects (RDO), or the electronic output, of the Muon Spectrometer. It has been recently completely re-written to run within the Athena framework and to interface with the Geant4 Muon Spectrometer detector simulation.

The digitization process consists of two steps: in the first step, the output of the detector simulation, henceforth referred to as Muon Hits, is converted to muon digits, i.e., intermediate objects that can be fed into the reconstruction. In the second step, the muon digits are converted into RDO, the transient representation of raw the data byte stream.

We will describe the detailed implementation of the first step of the muon digitization, where the detector simulation output is “digitized” into muon digits. We will describe the fundamentals of the Muon Digitization algorithms, outlining the global structure of the Muon Digitization, with some emphasis on the simulation of piled-up events. We will also describe the details of the digitization validation against the Monte Carlo information.

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