

GNN for hadronic flow calibration in ATLAS

mardi 27 septembre 2022 16:10 (20 minutes)

Hadronic jets are essential components of analysis at the LHC. Not only their Energy and mass needs to be precisely measured, their internal structure is also essential in order to distinguish signal jets from the common QCD initiated background jets. However jet constituents representing the energy flow inside jets do not have 1-to-1 correspondence with hadrons generated in simulations. In order to calibrate these constituents we consider them as nodes in a graph build from the jets they belong. We apply GNN techniques to derive a calibration for each of the nodes (constituents) using graph (jets) level constraints. The presentation will details the methods, difficulties and status of this on-going work.

These details can include the GNN architecture, custom workflow (based on uproot, awkward, tensorflow/keras) and optimization approaches.

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Classification de Session: Tuesday afternoon

Classification de thématique: 1 ML for object identification and reconstruction