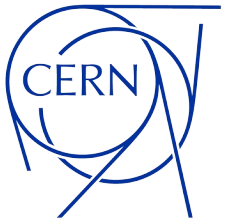
ML4EP Update

Peter McKeown

CERN, EP-SFT

ML4EP Meeting

16.05.2024



ATLAS Fast Sim

- So far: familiarizing with ATLAS software and working through existing fast sim pipelines:
  - Voxelisation procedure
  - Conversion of trained onnx model into param file (for use in ATHENA)
- In regular contact with Florian from ATLAS group
  - Already studied higher granularity scoring for his QT
  - Agreed to start with a single particle type and eta slice: photons, eta=0.20 for prototyping- final data quality checks underway

- Next steps:
  - Familiarisation with validation pipeline
  - Take steps to try out CaloDiT on this prototype dataset

Future Colliders/ Generic R&D

- Preparing some ‘infrastructure’
  - Branch of the ‘DDML’ library (pending code clean-up)

- Ultimate goal: want to use a parallel readout geometry for our cylindrical mesh models in realistic dd4hep detector geometries
  - Need to adapt what was there in the library- designed for direct placement of hits onto dd4hep rec surfaces
  - For now, using a ‘fully active’ calorimeter system- only possible to use either fully fast or fully G4 simulation
  - Have been in contact with Andre (need to follow up with Markus) about feasibility of parallel world in dd4hep

- Now possible to run inference (with dummy VAE) in barrel/endcap of CLD ECAL
  - Validation with a correctly trained model for summer student