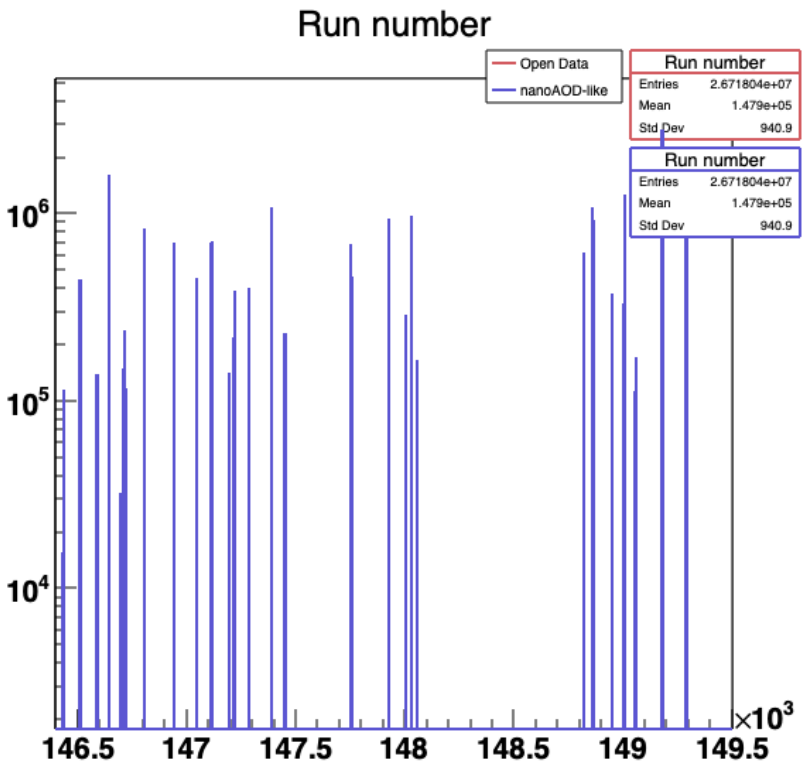
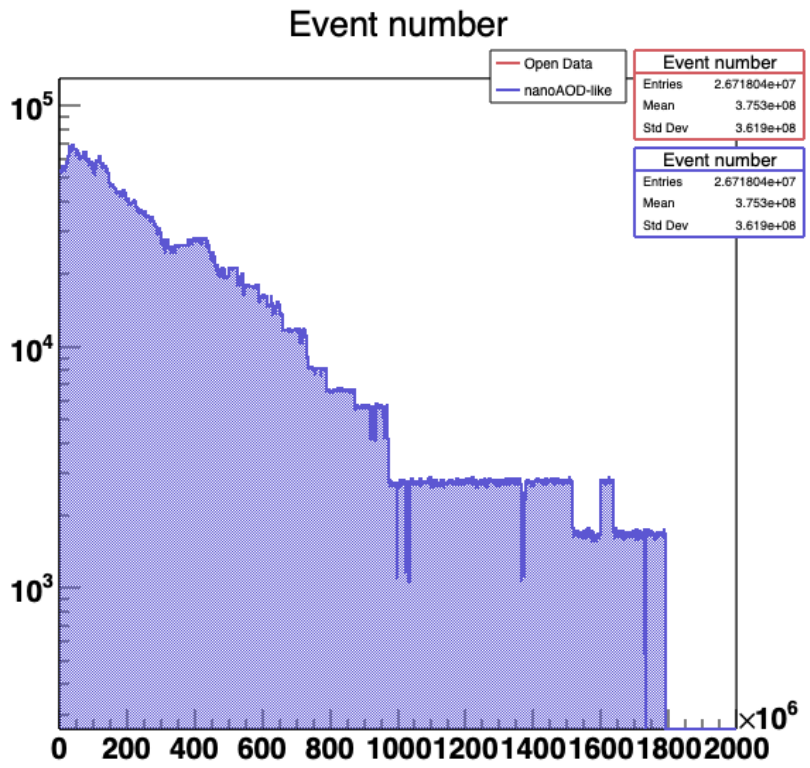
Introduction

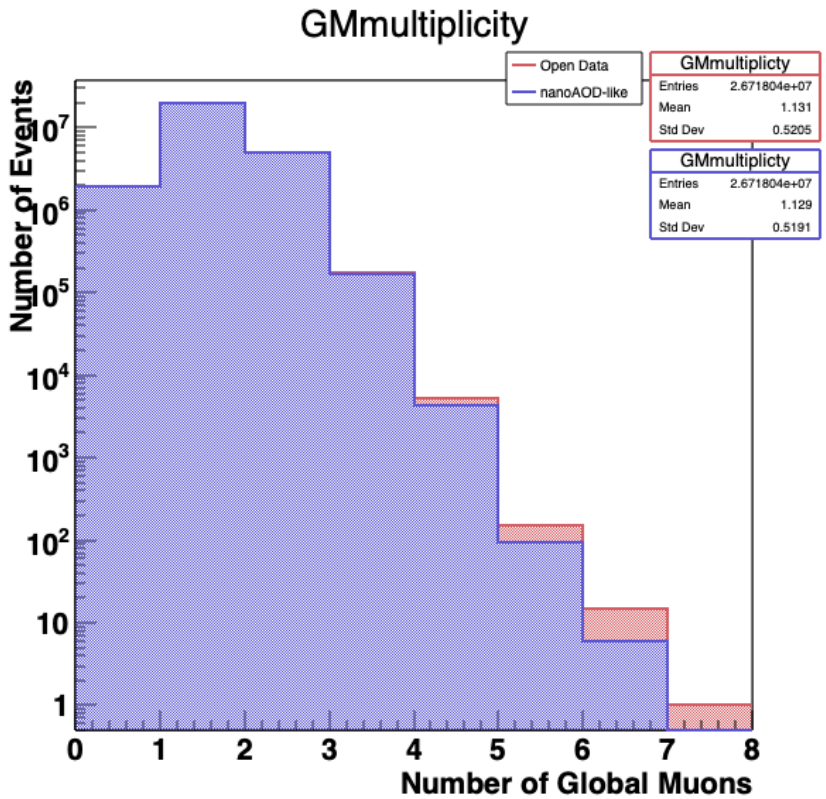
- Reproducing Open Data validation plots using nanoAOD-like ntuple.
- Dataset: 2010 Mu Dataset
- Open Data example: Dimuon Spectrum 2010 (http://opendata.cern.ch/record/560)

Run Number and Event Number

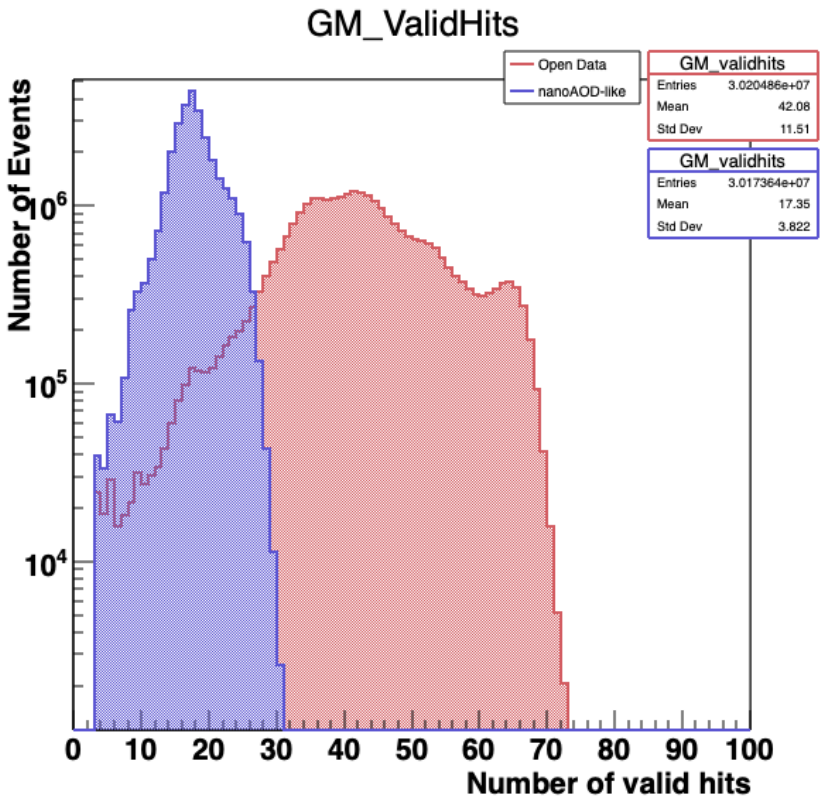


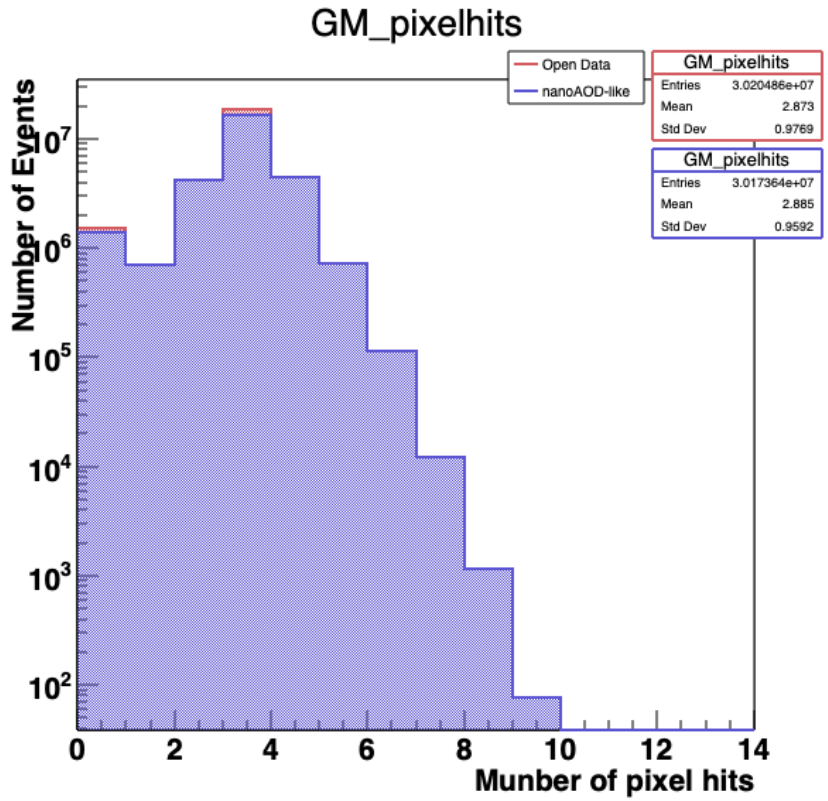


Global Muon Multiplicity

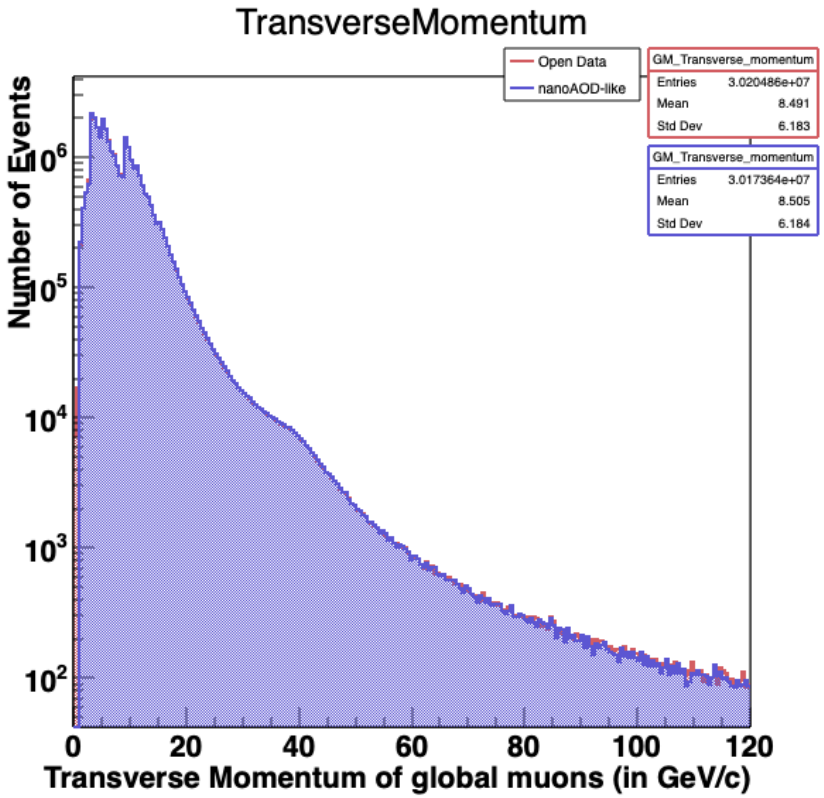


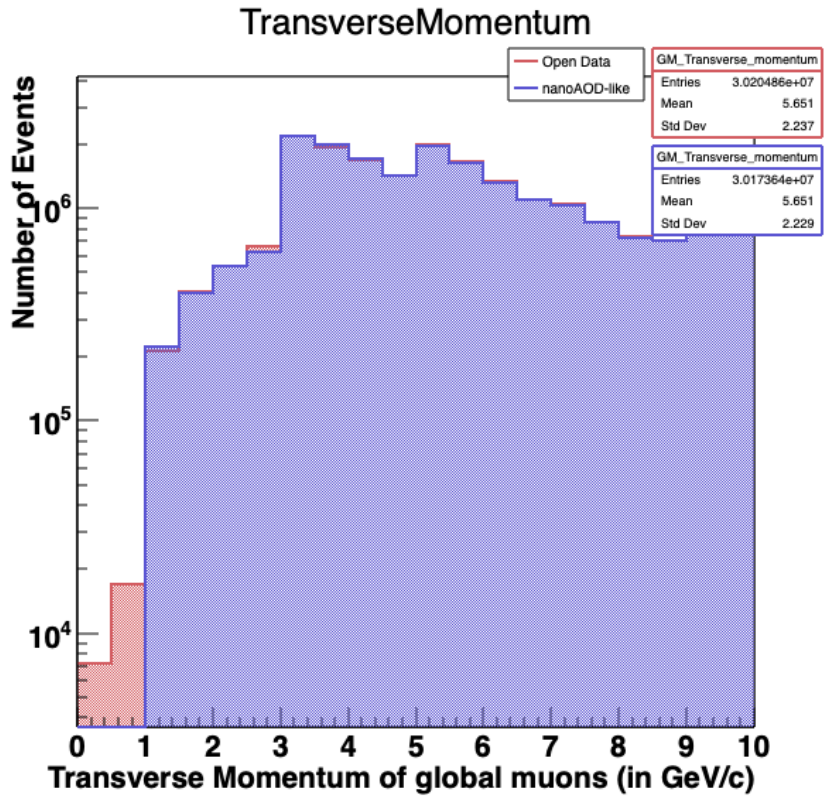
Number of valid hits and pixel hits





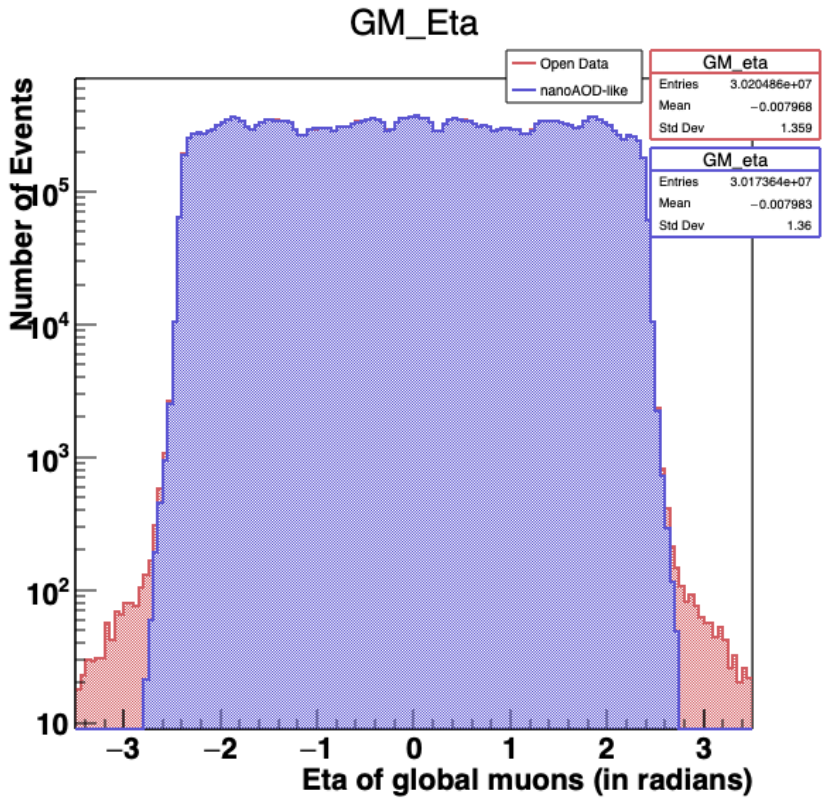
Muon Transverse Momentum





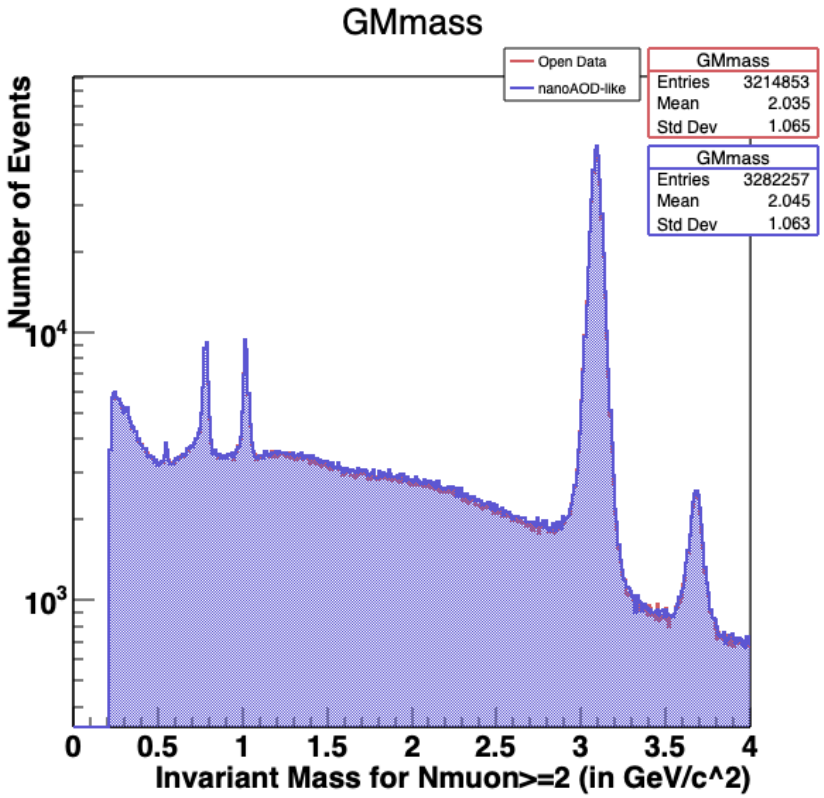
Open Data	nanoAOD-like
~ 31000 more global muons	
~ 24000 global muons with $p_{\mathrm{T}} < 1\,\mathrm{GeV}$	no global muons with $p_{\mathrm{T}} < 1\,\mathrm{GeV}$
uses global muon p_{T}	uses tracker muon p_{T}

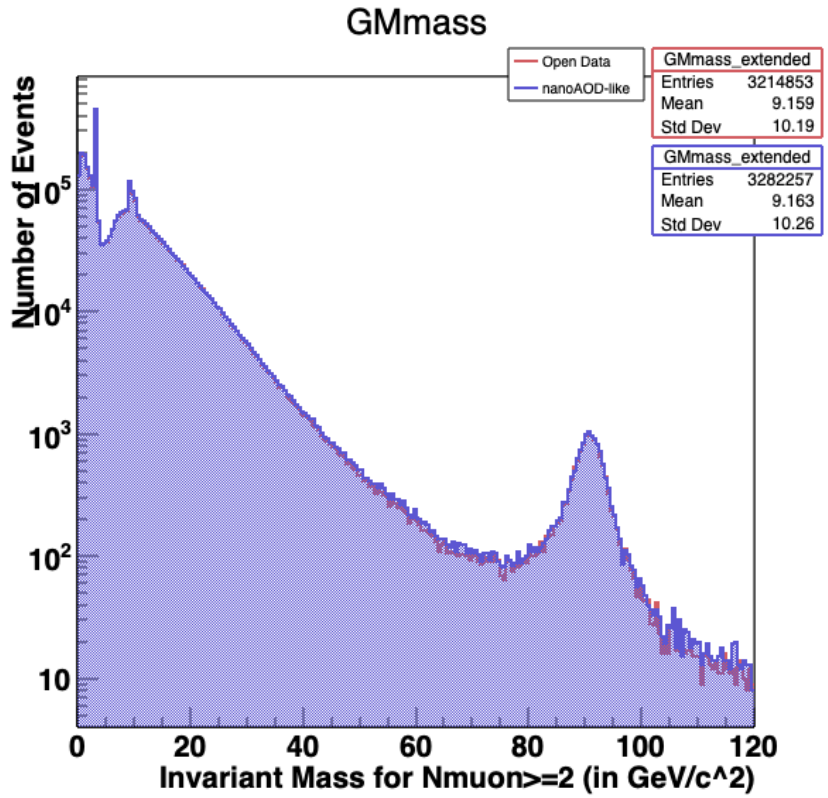
Muon Pseudorapidity



- Open Data has ~ 31000 more global muons ($\sim 1‰$).
- Open Data: ~ 3000 more muons at $|\eta| > 2.5$.
- low p_{T} and high η accounts for difference of ~ 24000 to ~ 27000 global muons.

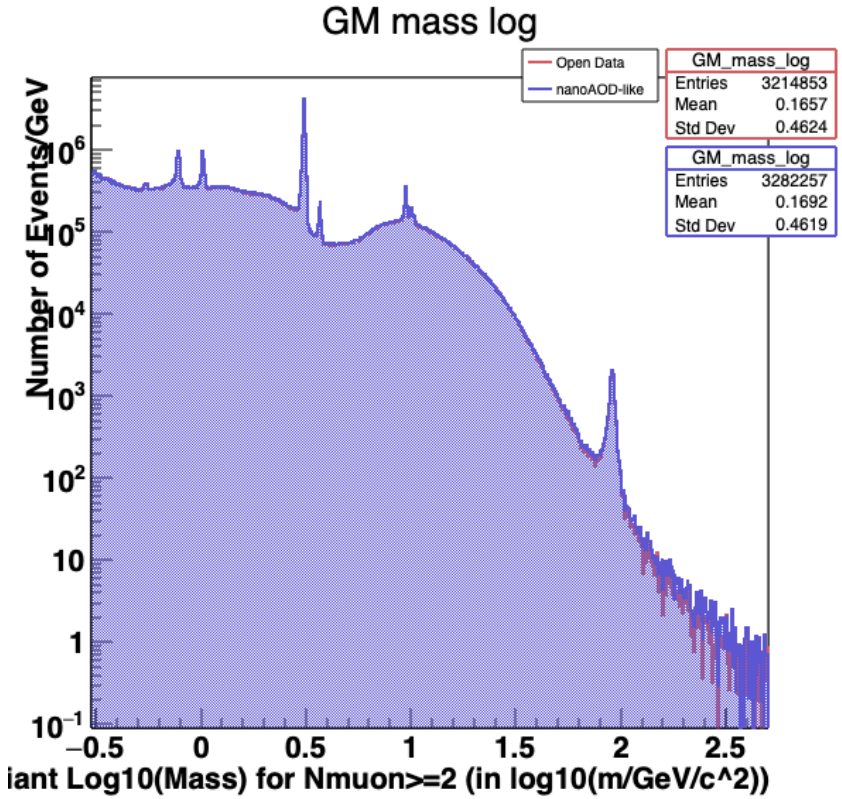
Dimuon Invariant Mass





- number of valid hits ≥ 12.
- number of pixel hits ≥ 2.
- normalized $\chi^2 < 4$ (not yet implemented in nanoAOD-like).

Dimuon Invariant Mass



- number of valid hits ≥ 12.
- number of pixel hits ≥ 2.
- normalized $\chi^2 < 4$ (not yet implemented in nanoAOD-like).

Summary

- nanoAOD-like ntuple global muons seem to have cuts on low p_{T} and high η that are not present in the Open Data validation plots.
- nanoAOD-like ntuple only uses information from tracker to calculate momenta.
- Could try adding global muon momenta and χ^2 cuts to exactly reproduce distributions from Open Data plots.