Performance of Standalone Muons in Run 3

Analysis Meeting
16/07/24
Celine Stauch

Introduction

- Investigating the reconstruction efficiency and resolution of Standalone muons in Run 3 (QT study)
- Standalone muons are used in various identification WP
- Important to investigate performance to use muon tracks covering full geometrical acceptance of the Muon Spectrometer

- Presented at last Muon Efficiency and WP meeting: First Preliminary Plots and current issues

Datasets and Muon selection

- The following ntuples are used for Data 23 and mc23c:

Tag&Probe: "rucio
list-datasets-rse
CERN-PROD_PERF-
MUONS | grep
67.37.0_athena24.0.16
| grep data23 | grep
Main | grep EXT0"

Tag&Probe: "rucio
list-datasets-rse
CERN-PROD_PERF-
MUONS | grep 67.37.0
| grep 24.0.16_bugfix |
grep EXT0" **Mom**

- Use MuonTPPostprocessing HighEta
- Matching is performed selecting muons with $|\eta| > 2.5$ and nprecisionLayers > 2
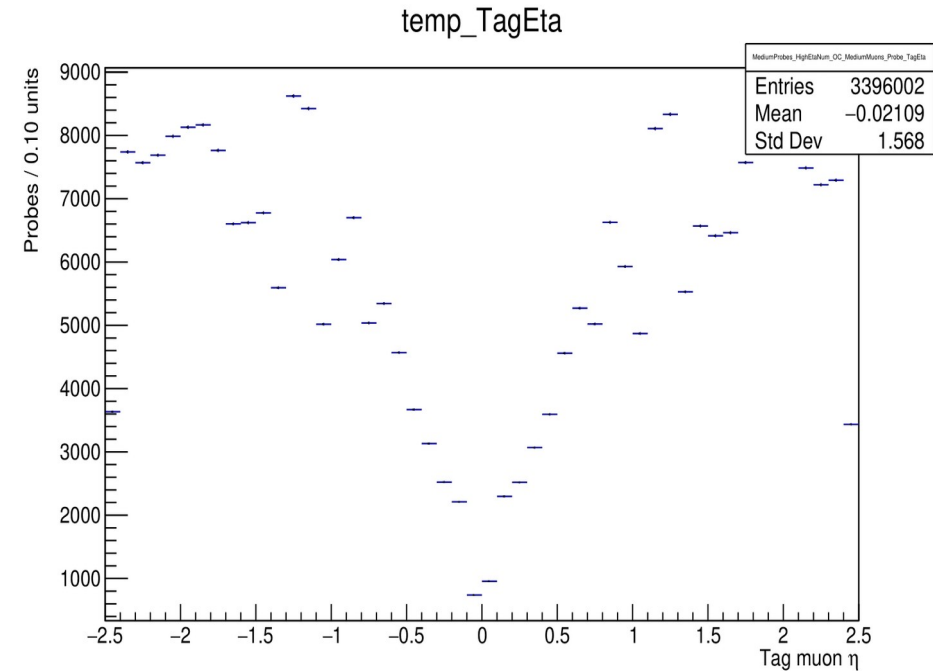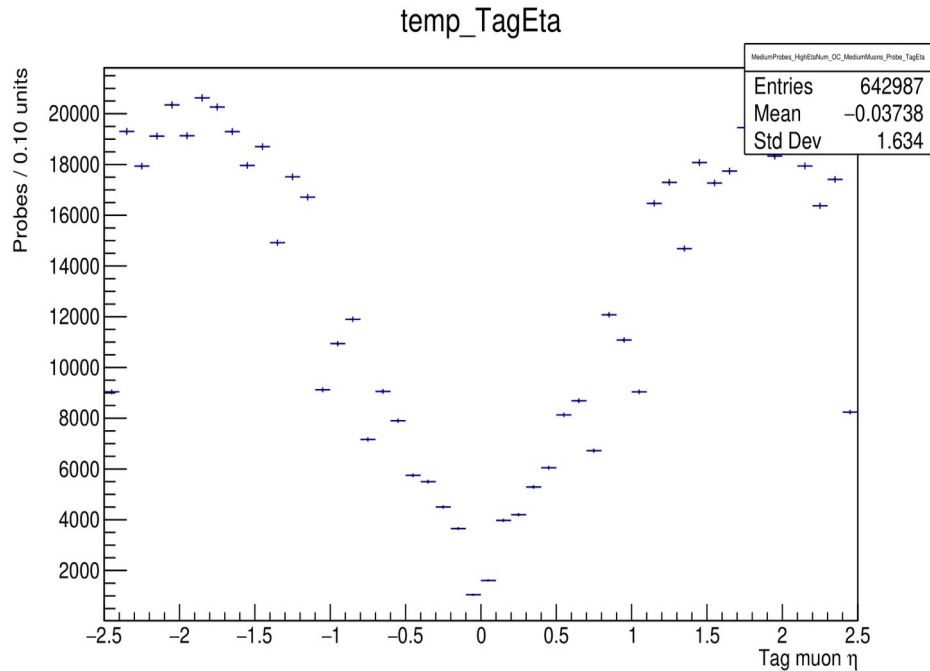
Plots

- Check the validity of the plots looking at the distributions in root files

- Calculate the Efficiency using: $\dfrac{N_{\mu,Data}}{N_{\mu,MC}}$

- Checking a couple of bins $\rightarrow$ Efficiency should not be zero

Current Issues

- SubmittoBatch.py Command is failing due to disk quota on afs

     -> cannot get any more disk space on afs

     -> condor submission for eos not supported

     -> using /tmp/ folder as WorkDir jobs don´t start at all

- Current work-around: run a small set of ntuple files at a time locally on eos

     -> Very time consuming, one job takes up to 10 hours

- GeneratePlots.py is supposed to produce Efficiency Plots for a few variables but No data points in plots

> Distributions in root files look fine
> Currently using: Signal: MC23c Zmumu, Ztautau
>   Background: MC23c Wjets
>   Data: Data 23 F and G Main

Currently looking at the configuration file and the distributions to investigate this Behavior
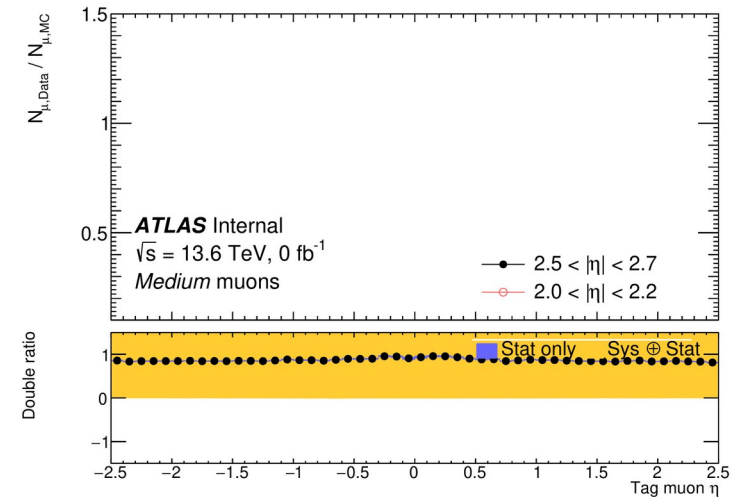
Updates

- Stelios is checking the condor submission

- Efficiency not included in ntuples

- Check distributions in muonxAOD → leading muon $|\eta| > 2.5$