Progress update on tracking efficiencies

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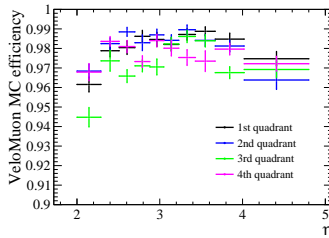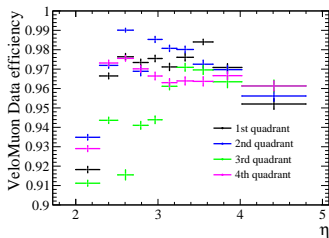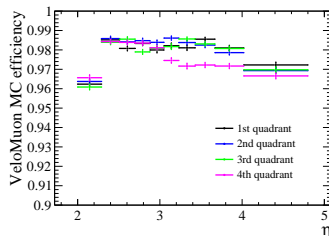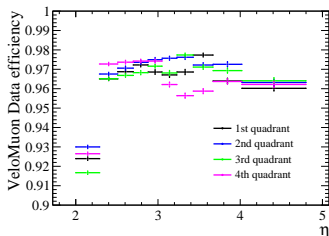
Current progress

Current progress on tracking efficiencies:

- Recap from last time:
    - Tracking efficiencies produced for blocks 1, 5, 6, 7, 8
    - Only 1D binning in p and η for now

- What's new today?
    - MC for 2024 block 2 and *pp* ref run produced
    - AP over block 2, *pp* ref and 2025 pre-TS data/MC done
    - Tracking efficiencies in 1D produced for these datasets
    - Comparison between block 1a and block 1b MC ready
    - Prepare to present results in WP4
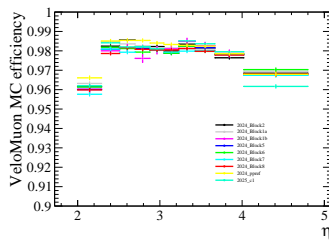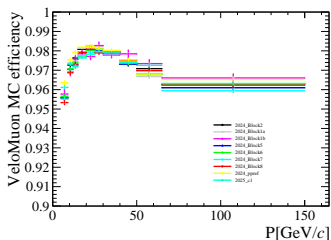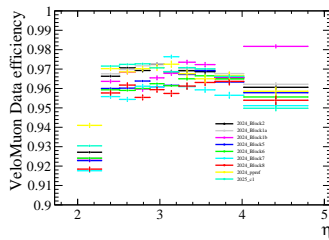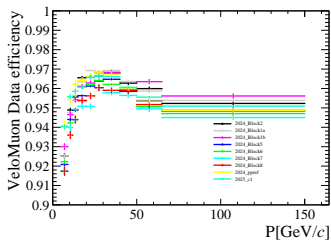
Block 1a vs 1b

Block 1a (fills 9982–10012, top) vs 1b (fills 10017–10056, bottom)

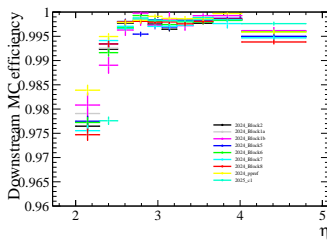SciFi T2L0Q0M1H0 FE was excluded on 17th August

Efficiency comparisons

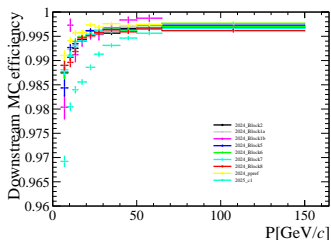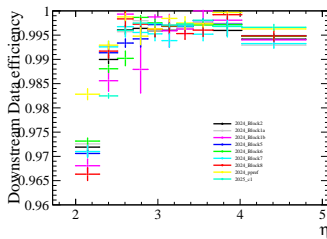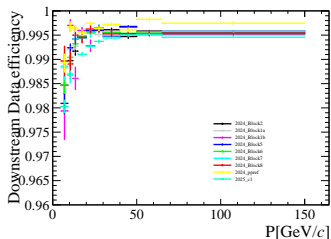## Comparison of tracking efficiencies in all data blocks

VeloMuon track efficiencies
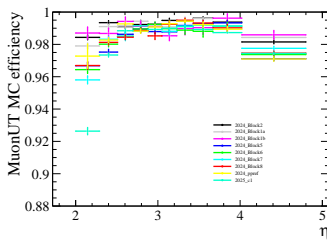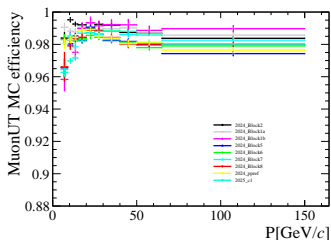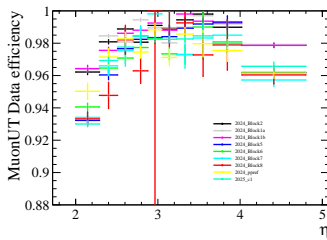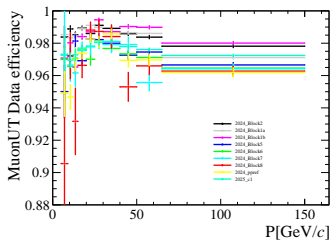
Efficiency comparisons

Comparison of tracking efficiencies in all data blocks

Downstream track efficiencies
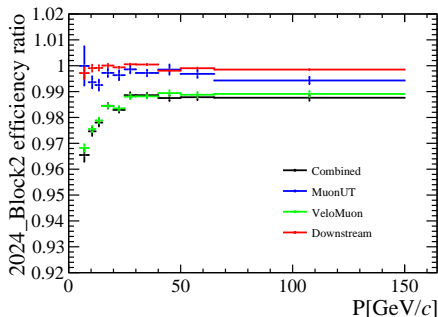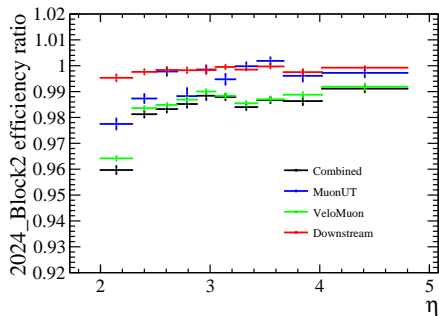
Efficiency comparisons

Comparison of tracking efficiencies in all data blocks

MuonUT track efficiencies

Tracking efficiency data/MC ratio

Data/MC ratio

Data/MC ratio for Combined/MuonUT track efficiencies block 2

Tracking efficiency data/MC ratio

Data/MC ratio

Data/MC ratio for Combined/MuonUT track efficiencies block 1a

Tracking efficiency data/MC ratio

Data/MC ratio

Data/MC ratio for Combined/MuonUT track efficiencies block 1b
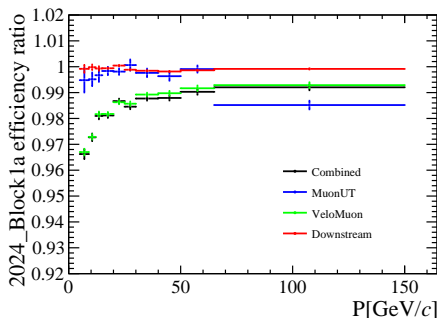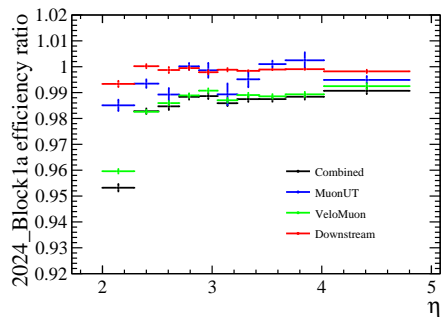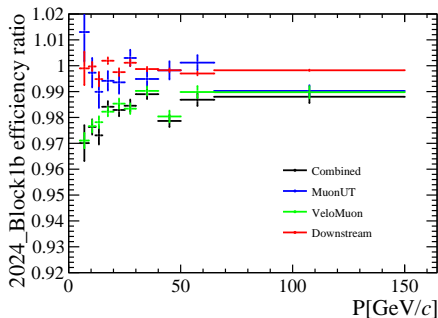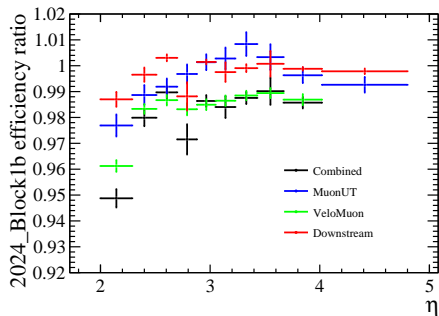
Tracking efficiency data/MC ratio

Data/MC ratio

Data/MC ratio for Combined/MuonUT track efficiencies block 5

Tracking efficiency data/MC ratio

Data/MC ratio

Data/MC ratio for Combined/MuonUT track efficiencies block 6
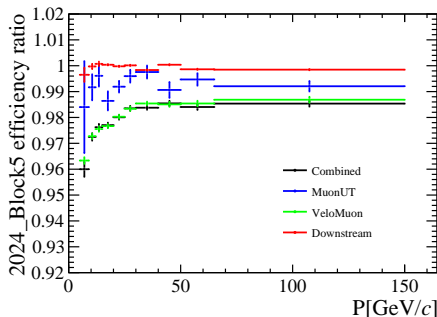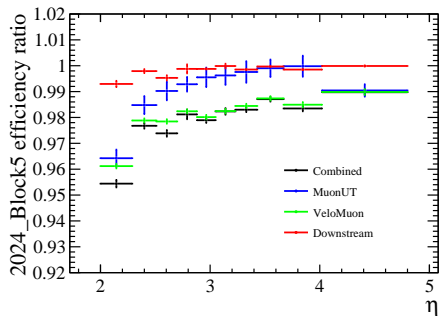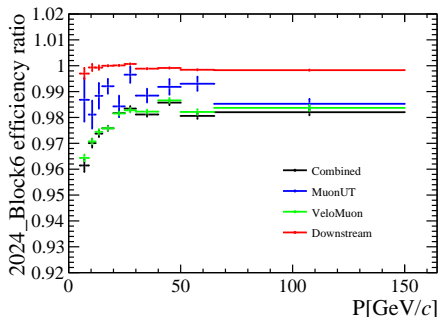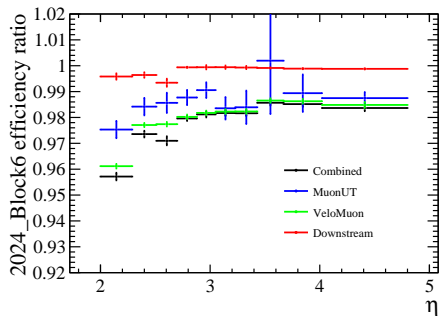
Tracking efficiency data/MC ratio

Data/MC ratio

Data/MC ratio for Combined/MuonUT track efficiencies block 7
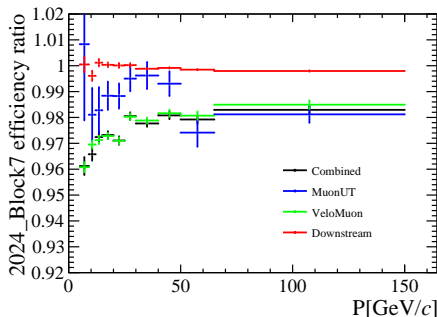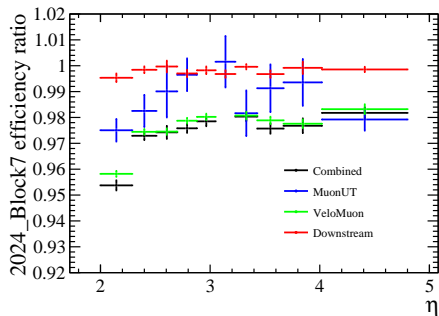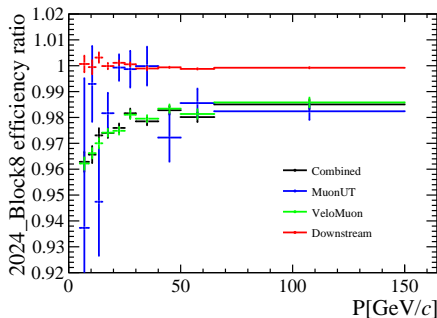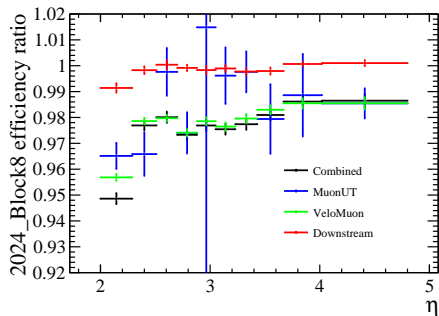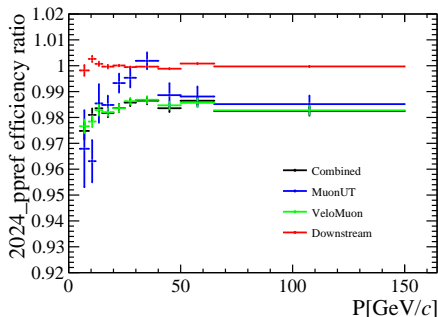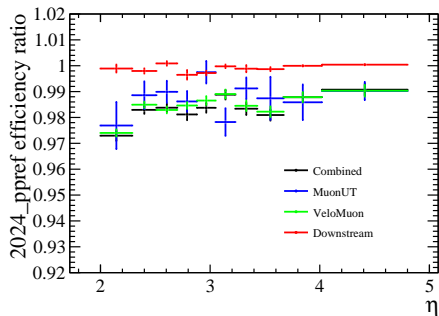
Tracking efficiency data/MC ratio

Data/MC ratio

Data/MC ratio for Combined/MuonUT track efficiencies block 8
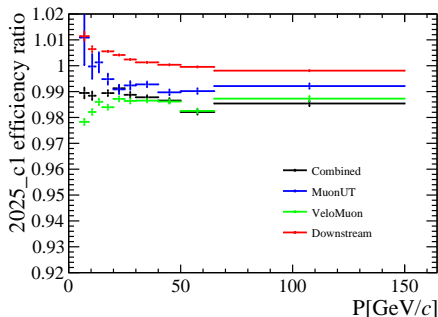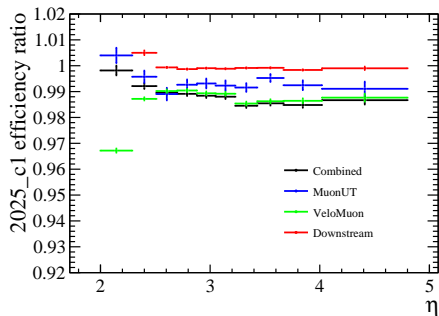
Tracking efficiency data/MC ratio

Data/MC ratio

Data/MC ratio for Combined/MuonUT track efficiencies *pp* ref run

Tracking efficiency data/MC ratio

Data/MC ratio

Data/MC ratio for Combined/MuonUT track efficiencies 2025 pre-TS

Summary and next steps

1. I think we can release a preliminary set of tracking efficiencies to the collaboration
   - 2024 blocks 2, 1 (maybe 1a and 1b), 5, 6, 7, 8
   - 2024 *pp* ref
   - 2025 pre-TS
   - 2025 post-TS with pre-TS MC?

2. Next steps:
   - Show the current results to WP4
   - If no issues are raised, request larger MC samples with PPG permission
   - Set up 2D binning scheme and run all fits
   - Reweight `nFTClusters` using work by Maurice