Status

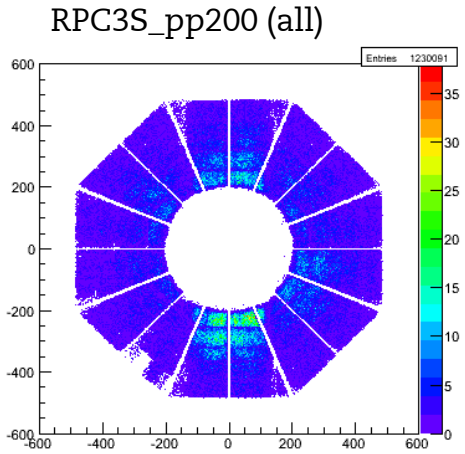
- Change in definition of Rpc efficiency:
  - # of Rpc hits / # of μ tracks → (# of μ tracks w/ RpcDCA < 15) / # of μ tracks

    (*updated definition is same to the definition of loss of μ tracks after MuID steel absorbers so far)
  - Regards Rpc fired properly if the condition RpcDCA < 15 is satisfied
  - Divide geometrical acceptance into 3 in η, 16 in φ
- Progress so far:
  - Studied RpcDCA distribution in η to set proper domain
  - Still writing the codes to calculate efficiency

Change in definition

- 1st goal: Get total single μ reconstruction efficiency (ε_{total})
  - $\varepsilon_{total} = \varepsilon_{MuTR} \times \varepsilon_{MuID} \times \varepsilon'_{Rpc}$
  - ε'_{Rpc} (relative, by pDSTs) = ε_{Rpc} (absolute, by Hodoscope) × F (MC)
  - F: fraction factor (indicate amount of fakes/loss by charged hadrons or low p μ)
- ε'_{Rpc}: (# of μ tracks w/ RpcDCA < 15) / # of μ tracks
  - Both of them must satisfy basic cuts:
    - Evt_bbcZ < 30 (cm)
    - p > 5 (GeV) (*before: 3)
    - DG0 < 30 (cm)
    - DDG0 < 10 (Deg)
    - lastGap = 4
    - *triggerbit = SG1_MuIDLL1 (NOT applied so far, but plan to use)*
  - used data set: pp200GeV official pDSTs, waiting for pp510GeV production
    - Using this set to develop codes: not so many SG1_MuIDLL1 triggered events in pp200GeV

Change in definition

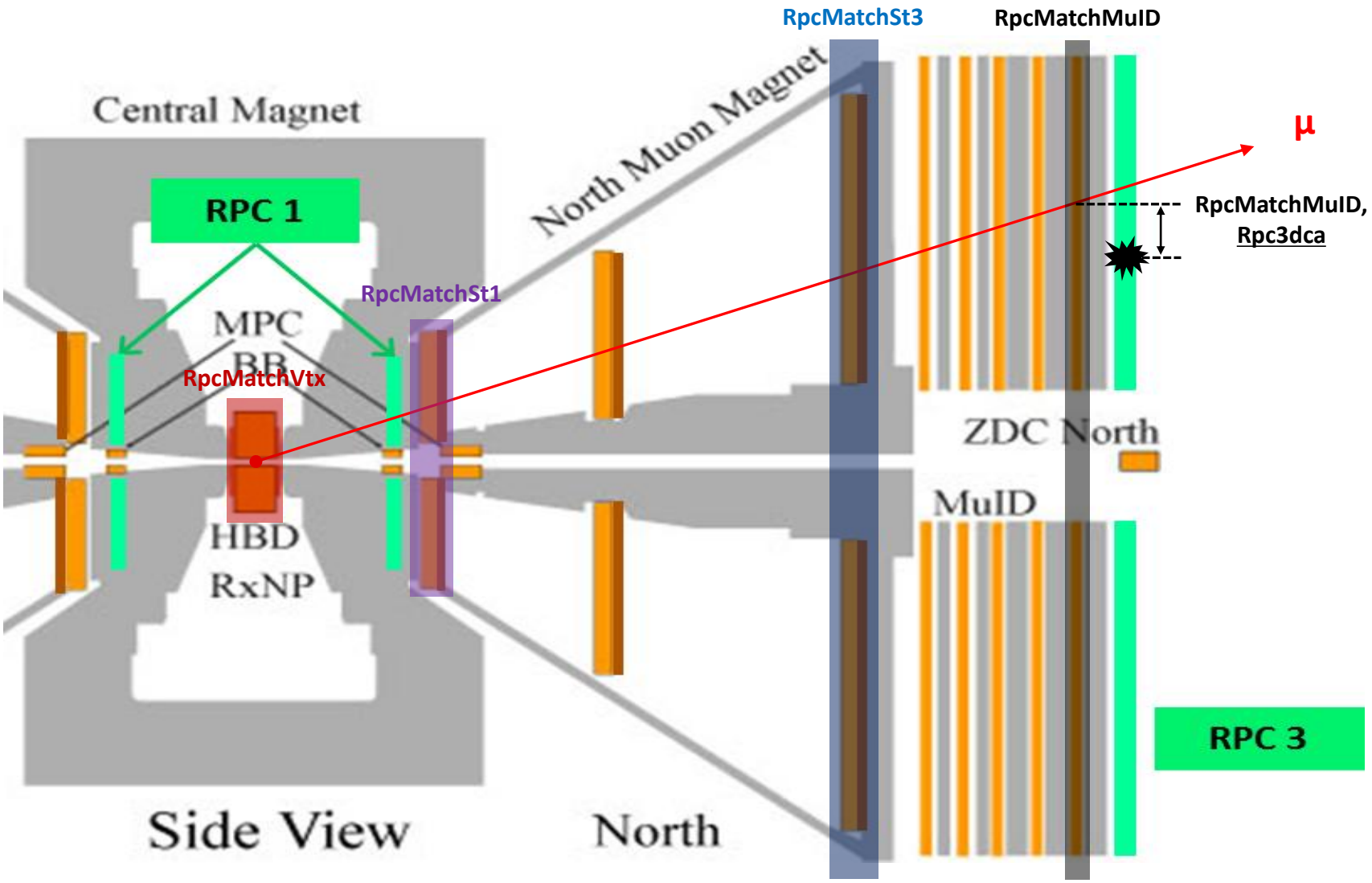


- Weak points in new definition:
  - Doesn't consider dead space for each Rpc station
  - Doesn't consider timing distribution of Rpc

    (roughly checked: it looks most of hits related to collsion after basic cuts)
- RpcDCAs:
  - Four type of RpcDCAs available for each Rpc station:
    - RpcMatchVtx
    - RpcatchSt1 (MuTR's St1)
    - RpcMatchSt3
    - RpcMatchMuID
  - Used first two (Vtx and St1) to deal Rpc1, while the latter two used for the Rpc3

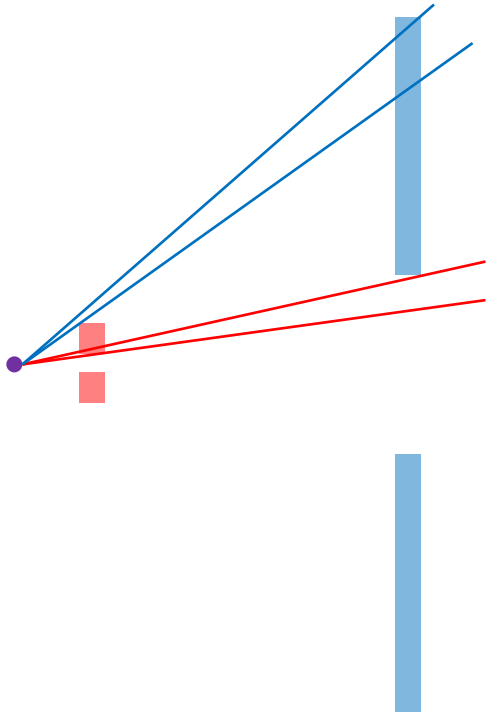
    (However, all of DCAs have to be used after all)

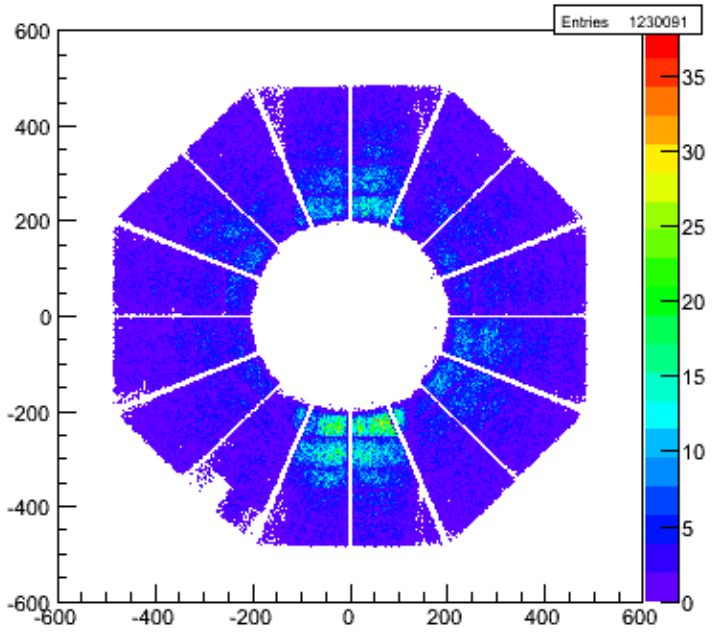
Change in definition



Change in definition

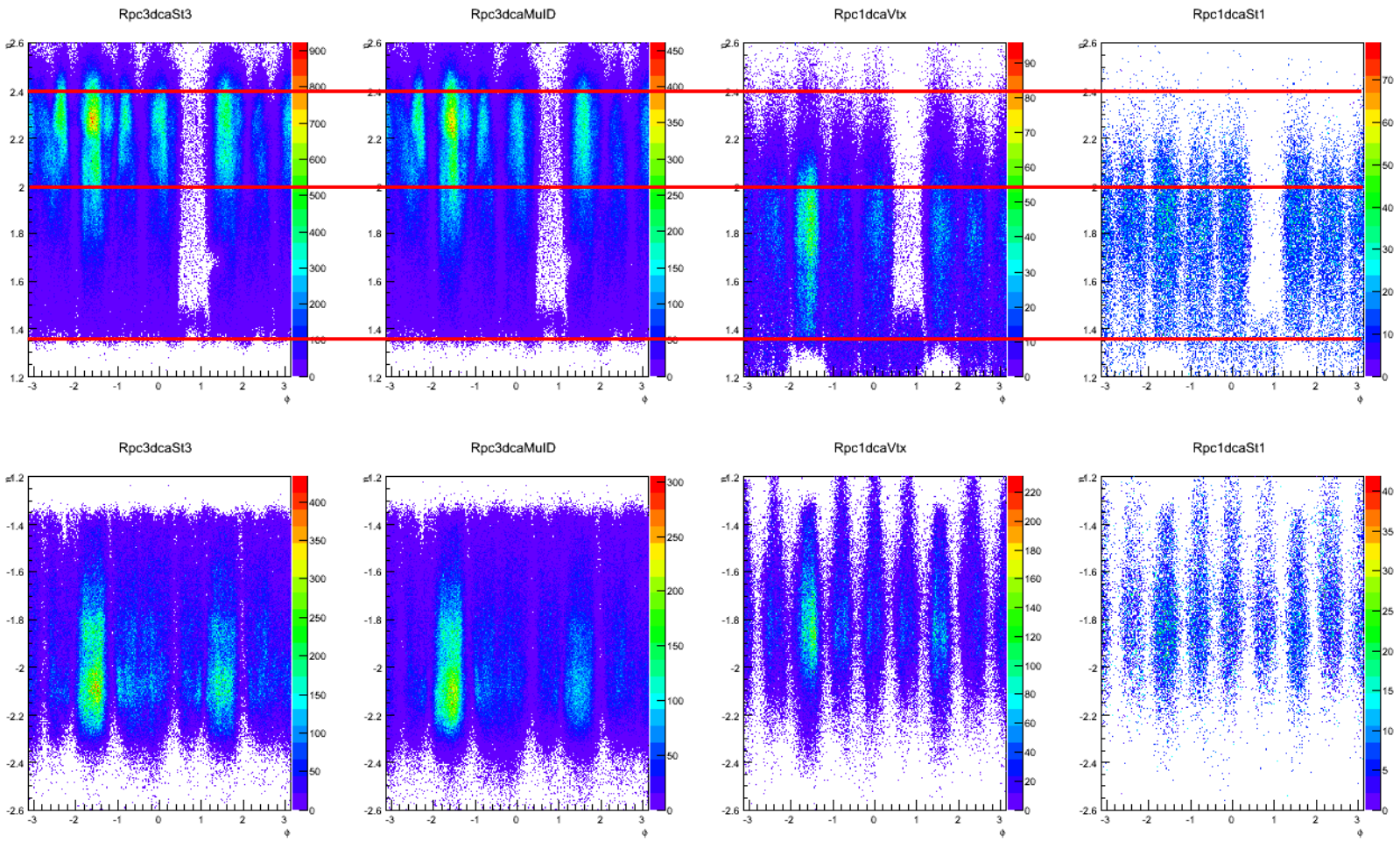
- Geometrical acceptance sort: 3 in η, 16 in φ
  - in η: divide into Rpc1 only, Overlap, and Rpc3 only
  - in φ: with respect to Rpc3s' HO structure: a segment corresponds to 22.5°





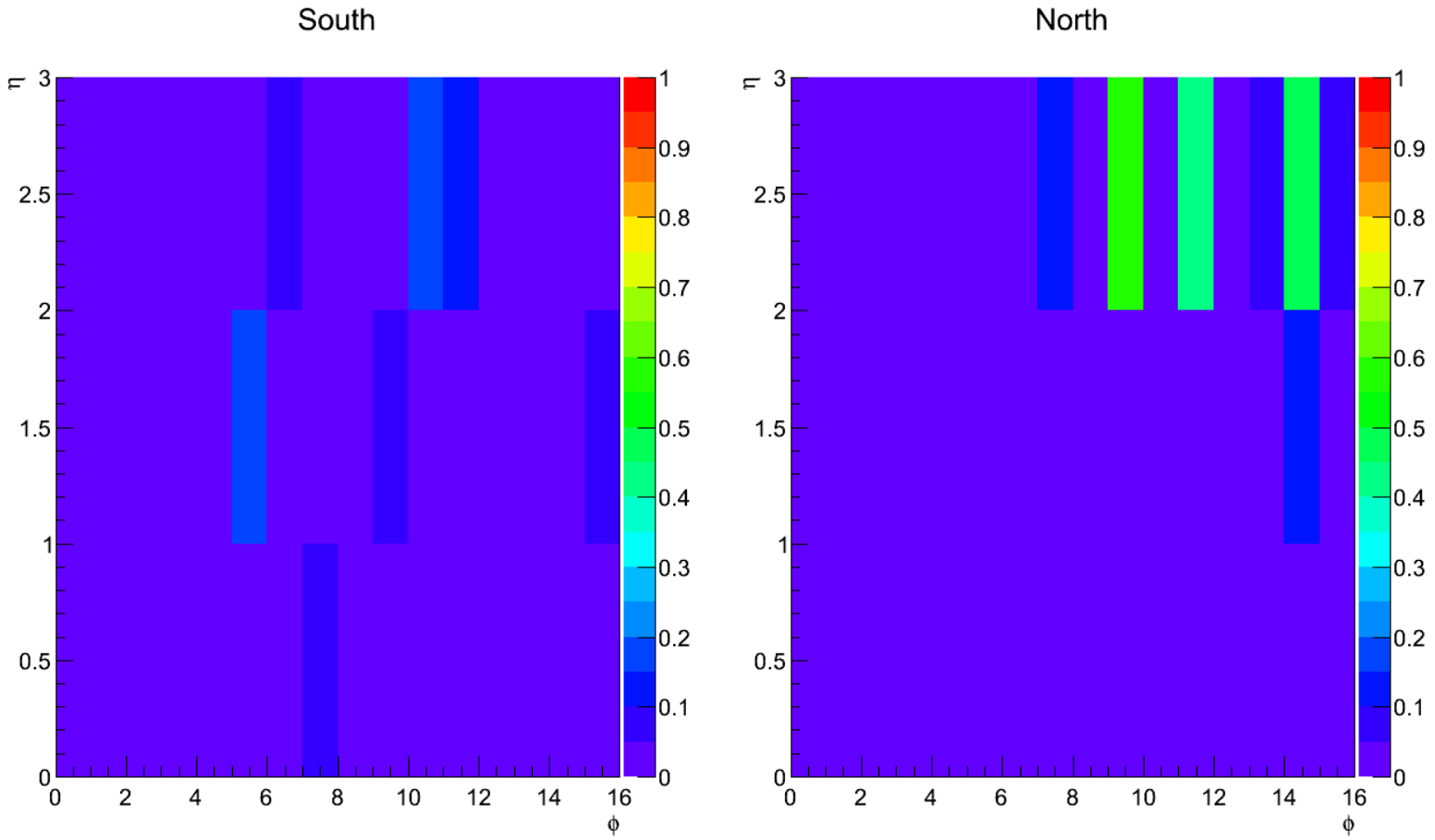
Progress

- RpcDCA distribution in η/φ plane (RpcDCA < 15, pp200GeV official)



Progress

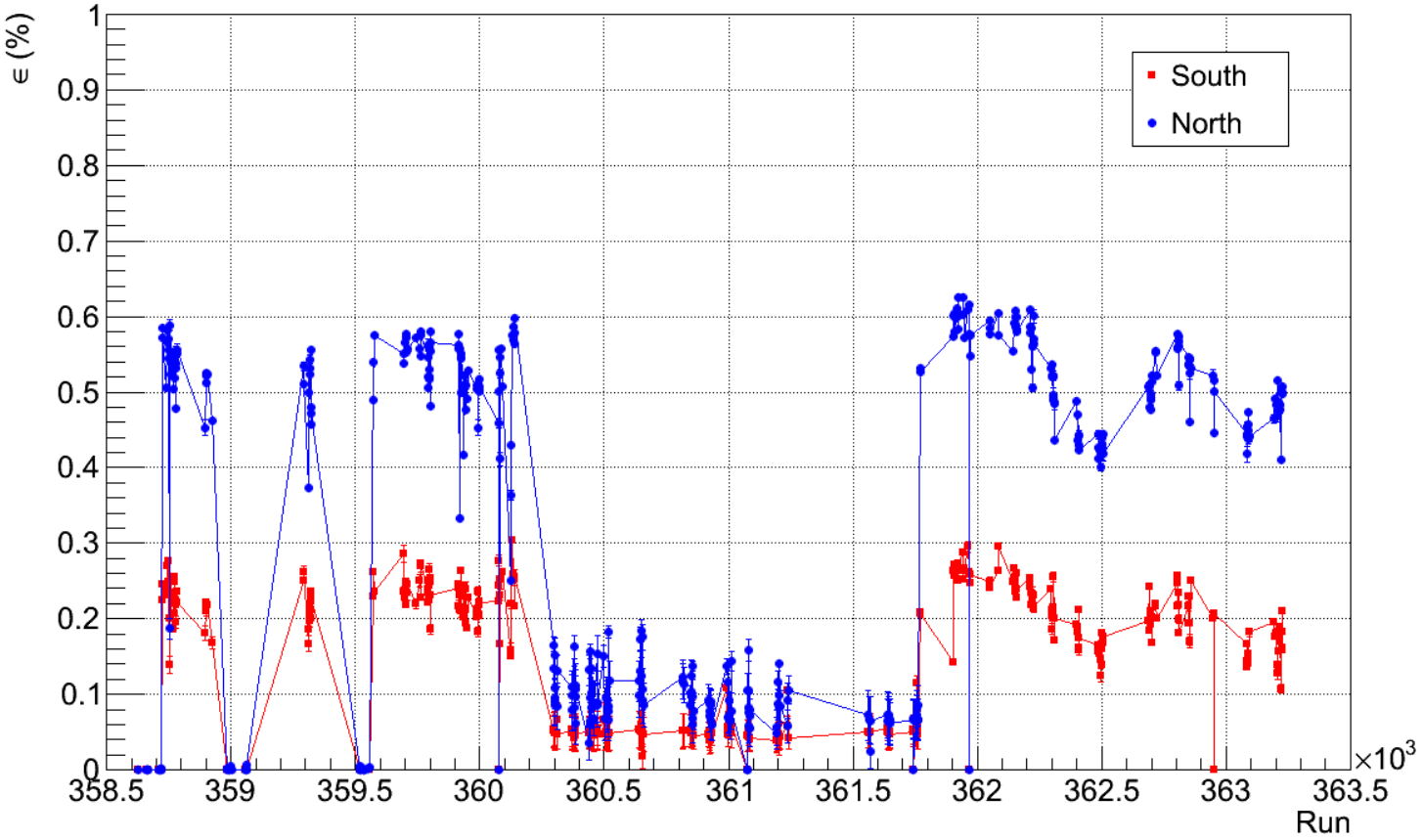
- Got first results of Weighted Mean Efficiency



for all available pp200GeV Runs (414 runs)

Progress

- Got first results of Weighted Mean Efficiency



a single efficiency point calculated from 3 × 16 segments

Summary and To do

- Change in definition of Rpc efficiency:
  - Don’t consider Rpc3’s geometry anymore
  - Divide geometrical acceptance into 3 × 16 segments
- To do:
  - Complete the code, cross-check calculation method’s reliability
  - Use pp510GeV set as soon as it is available
  - Check results when SG1_MuIDLL1 trigger is applied

Backup

- Evt_bbcZ: BBC vertex z position from the PHGlobal node
- lastGap: last hit position of the reconstructed μ track in MuID
- DG0:

  MuTr track, MuID road matching parameter which give the **difference** between the extrapolated track and the road at the MUID Gap0
- DDG0:

  MuTr track, MUID road matching parameter which give the **slope difference** between the extrapolated track and the road at the MUID Gap0
- **RpcDCA:**

  transverse distance between the muon tracks' position projected to the RPC3 z position and the closest RPC hit cluster in cm