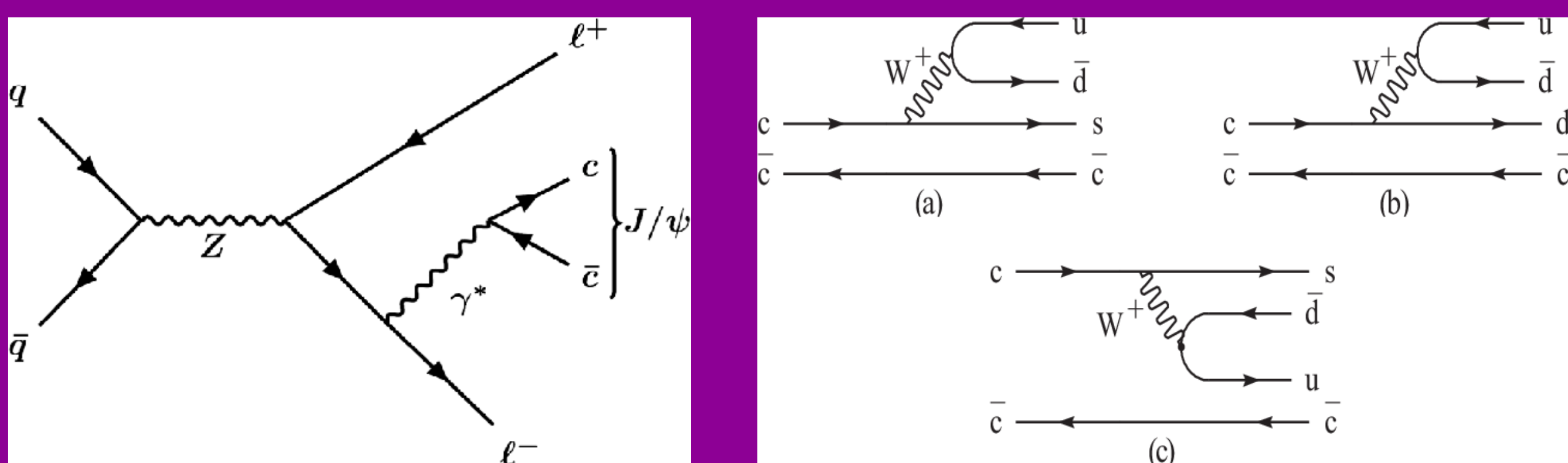


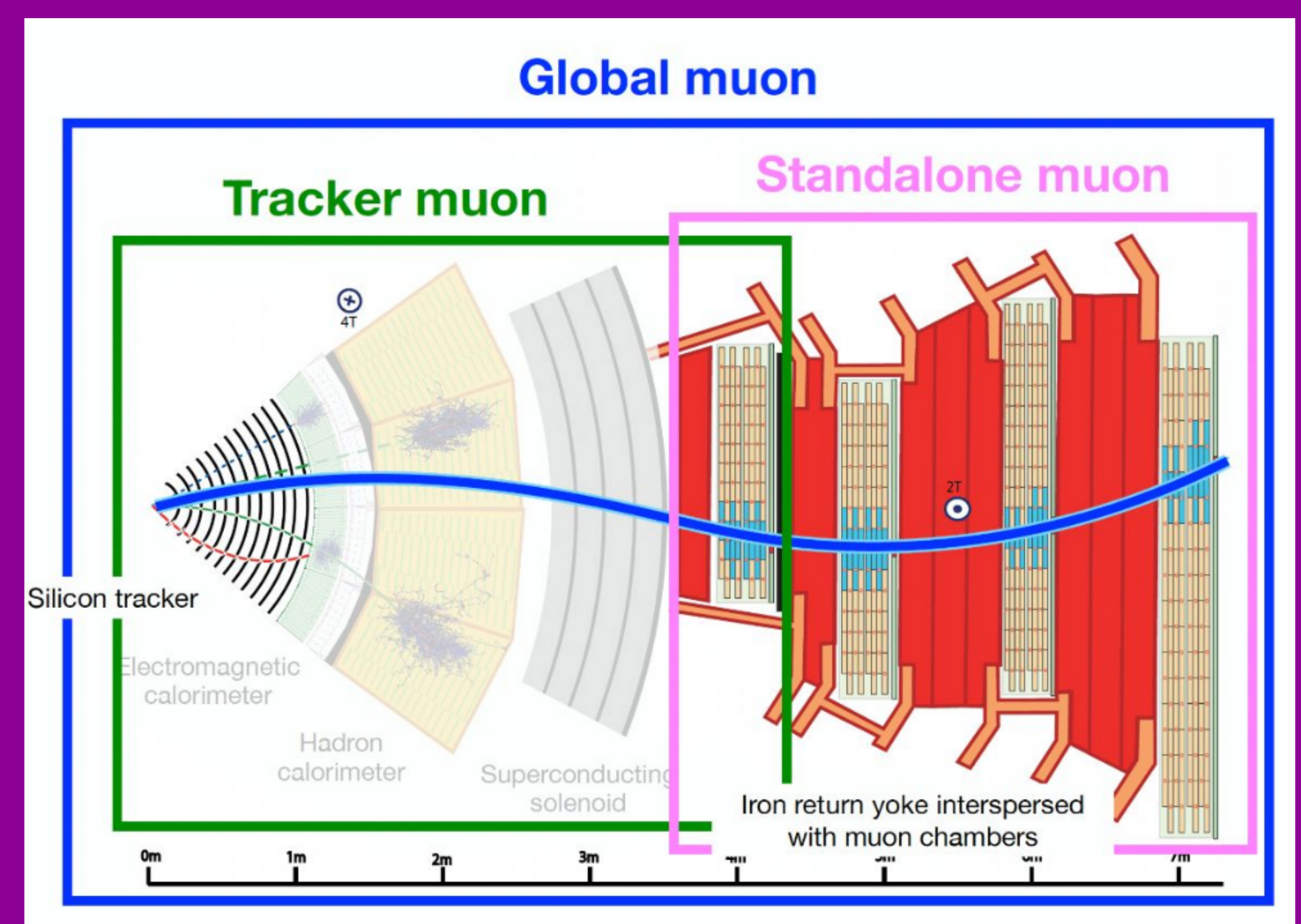
Assessing and optimizing muon reconstruction within LHC's CMS detector Phase 2 update

Joseph Touzet master internship
Supervised by Florian Damas and Matthew Nguyen

1. Collisions

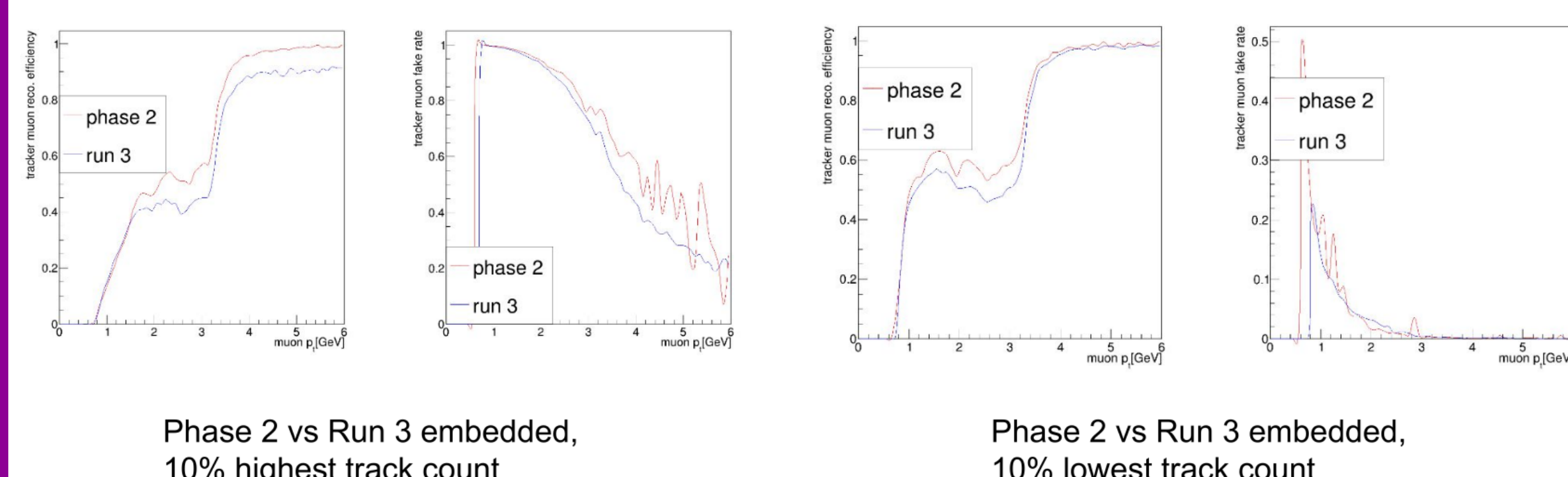


2. Detecting muons

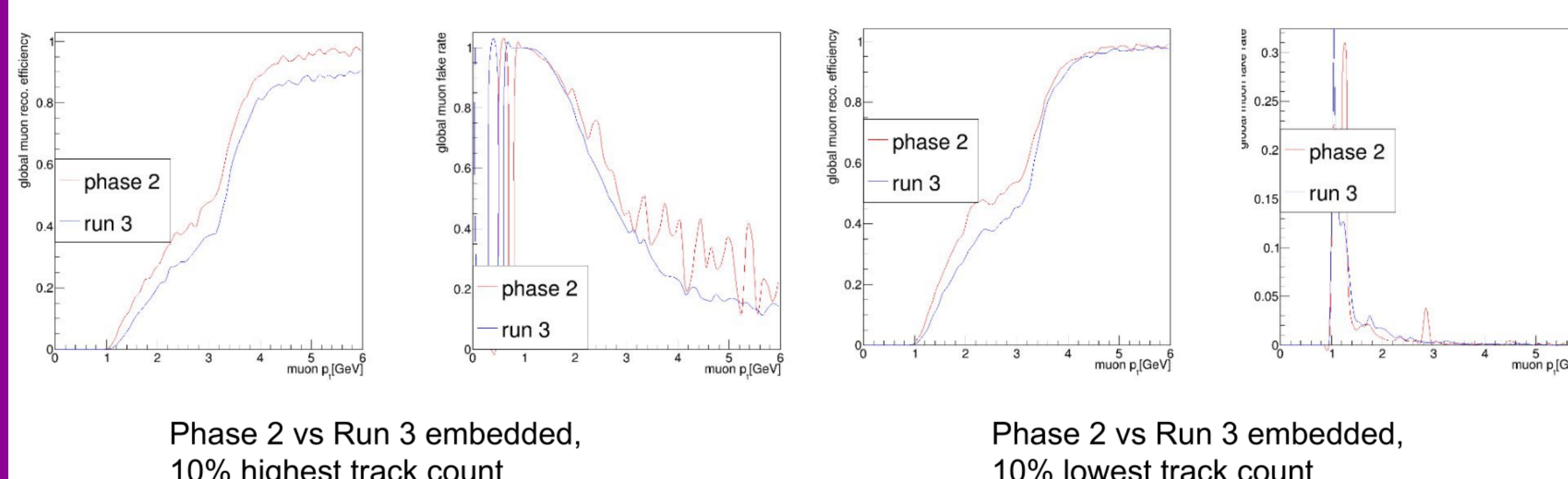


3. Phase 2 vs Run 3

Phase 2 improvement over Run 3 for Pb-Pb collision: tracker muons



Phase 2 improvement over Run 3 for Pb-Pb collision: global muons



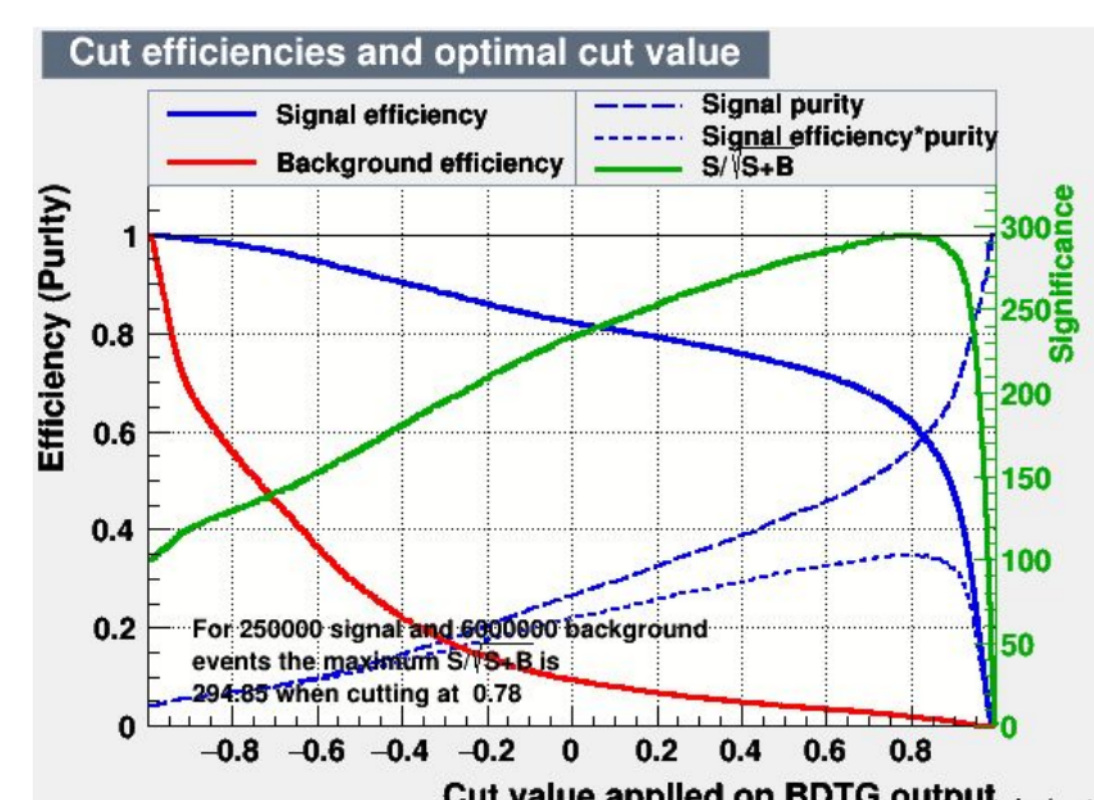
4. Optimizing selection

Improving the fake rate of GEM muons: TMVA Results

Variables used for classification:

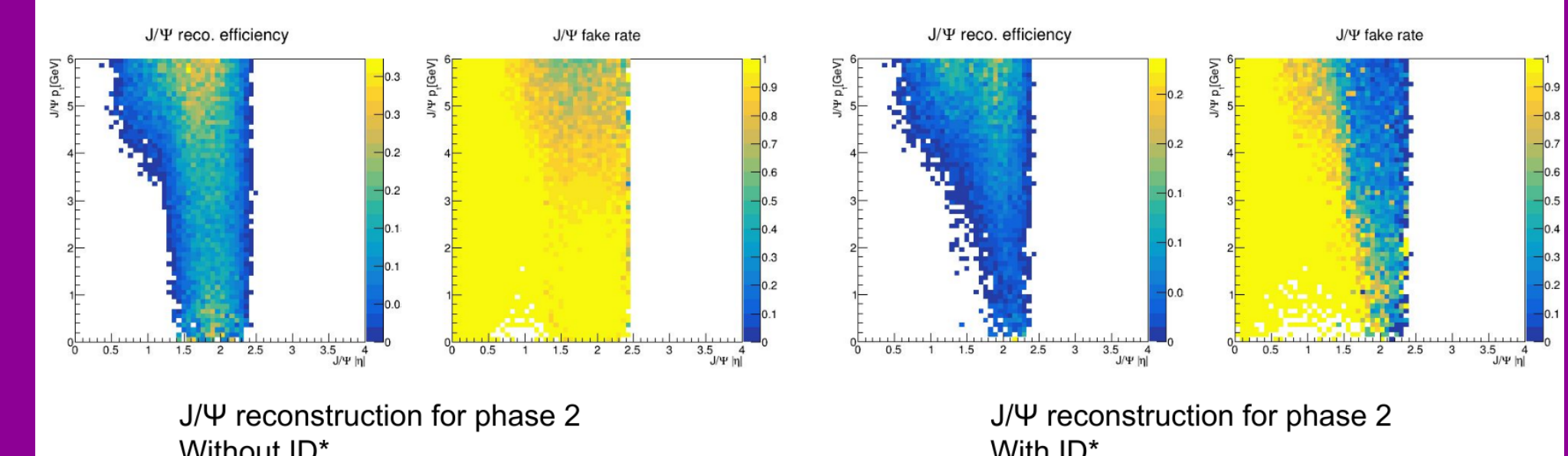
- Reco_mu_nMuValHits*
- Reco_mu_nTrkHits
- Reco_mu_nPixValHits
- Reco_mu_localChi2
- Reco_mu_pt
- Reco_mu_eta
- Reco_mu_dxy
- Reco_mu_dz
- nPV
- Reco_mu_nMatches*

*not well defined as they don't included data from GEM for now

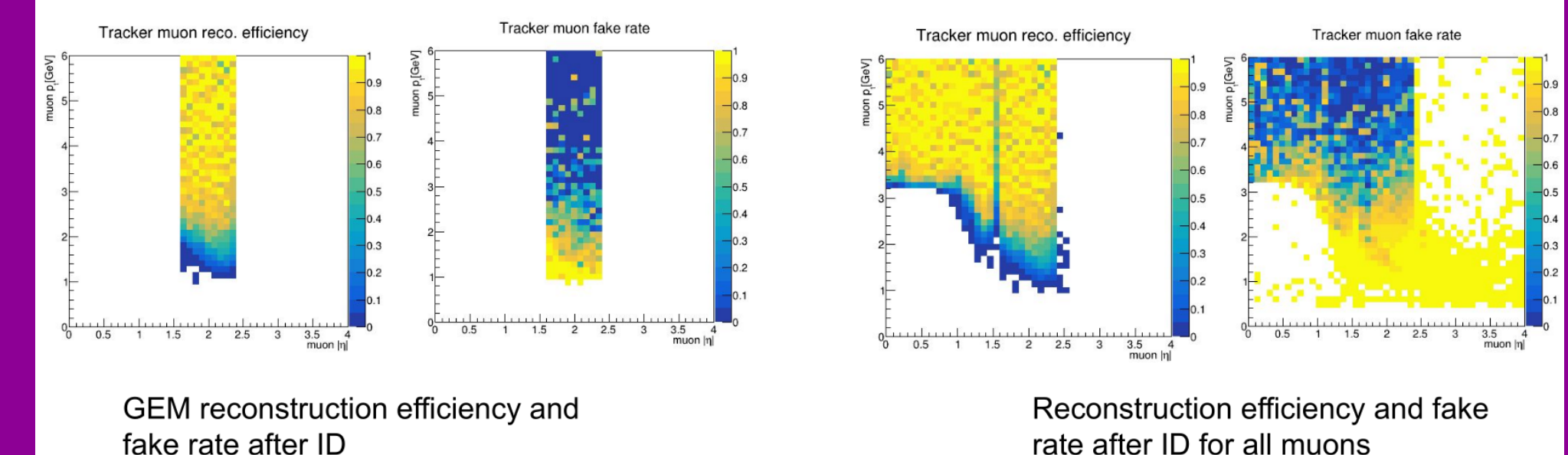


5. Improvements

Improving the fake rate of GEM muons: J/Ψ reconstruction improvements



Improving the fake rate of GEM muons: Muon reconstruction improvements



Improving the fake rate of GEM muons: J/Ψ reconstruction improvements

