

Offline Electron Reconstruction Validation

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July 17, 2017



INTRODUCTION

- ▶ Ongoing studies¹ in HLT examine the resolution of RecHits used in GSF Tracking
- ▶ In those studies, the resolution is computed by measuring the distance between the RecHits and the extrapolated paths from ECAL super-clusters (SCs).
- ▶ For offline reconstruction, we compute residuals by comparing the position of RecHits and associated SimHits.
- ▶ Knowing these resolutions is important in choosing the size of search windows in the k

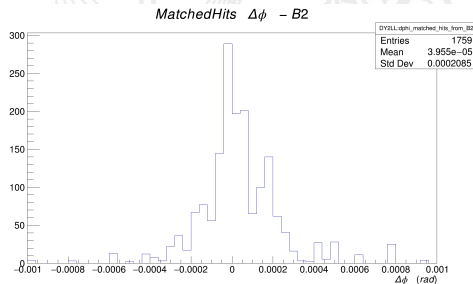
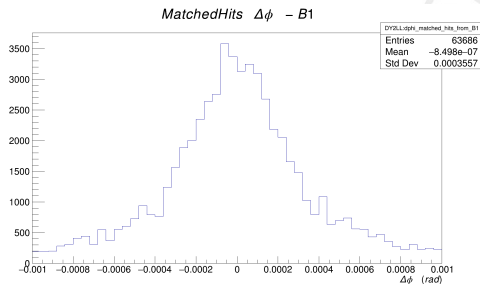
¹https://indico.cern.ch/event/613833/contributions/2646392/attachments/1486134/2307836/EGMHLT_PixelMatching_Jun30.pdf

INTRODUCTION

- ▶ We use Rafael Lopes de Sa's analysis setup² that is derived from the standard offline tracking reconstruction tool TrackingNtuple from Validation/RecoTrack.
- ▶ Source dataset:
`/DYJetsToLL_M-50_TuneCUETP8M1_13TeV-madgraphMLM-pythia8/
PhaseIFall16DR-FlatPU28to62HcalNZSRAW_81X_upgrade2017_realistic_v26-v1/
GEN-SIM-RAW`
- ▶ Using Release CMSSW_8_1_0
- ▶ Figures in this talk use 10829 events (could be re-run with more)

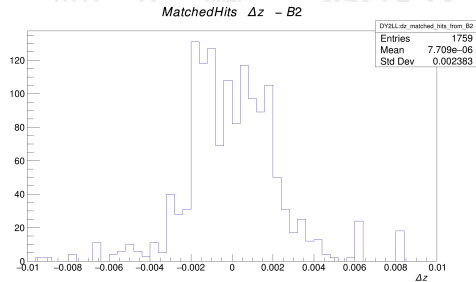
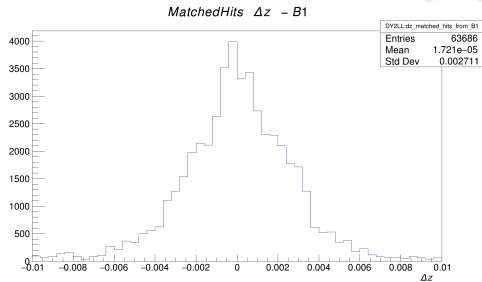
²<https://github.com/rafaellopesdesa/cmssw/tree/ValidationGsfTracks81X>

HIT RESOLUTION - $\Delta\phi$



$\Delta\phi$ between RecHits and SimHits for innermost hits in seeds where that hit is in BPIX Layer 1/2.

HIT RESOLUTION - Δz



Δz between RecHits and SimHits for innermost hits in seeds where that hit is in BPIX Layer 1/2.

CONCLUSIONS

- ▶ Code for this analysis is here:

https://git.fangmeier.tech/caleb/EGamma_ElectronTrackingValidation

- ▶ What specific figures/measurements are of interest to experts?