



Status of tracking reconstruction in ILC

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ILD Analysis/Software Meeting 05.04.2017

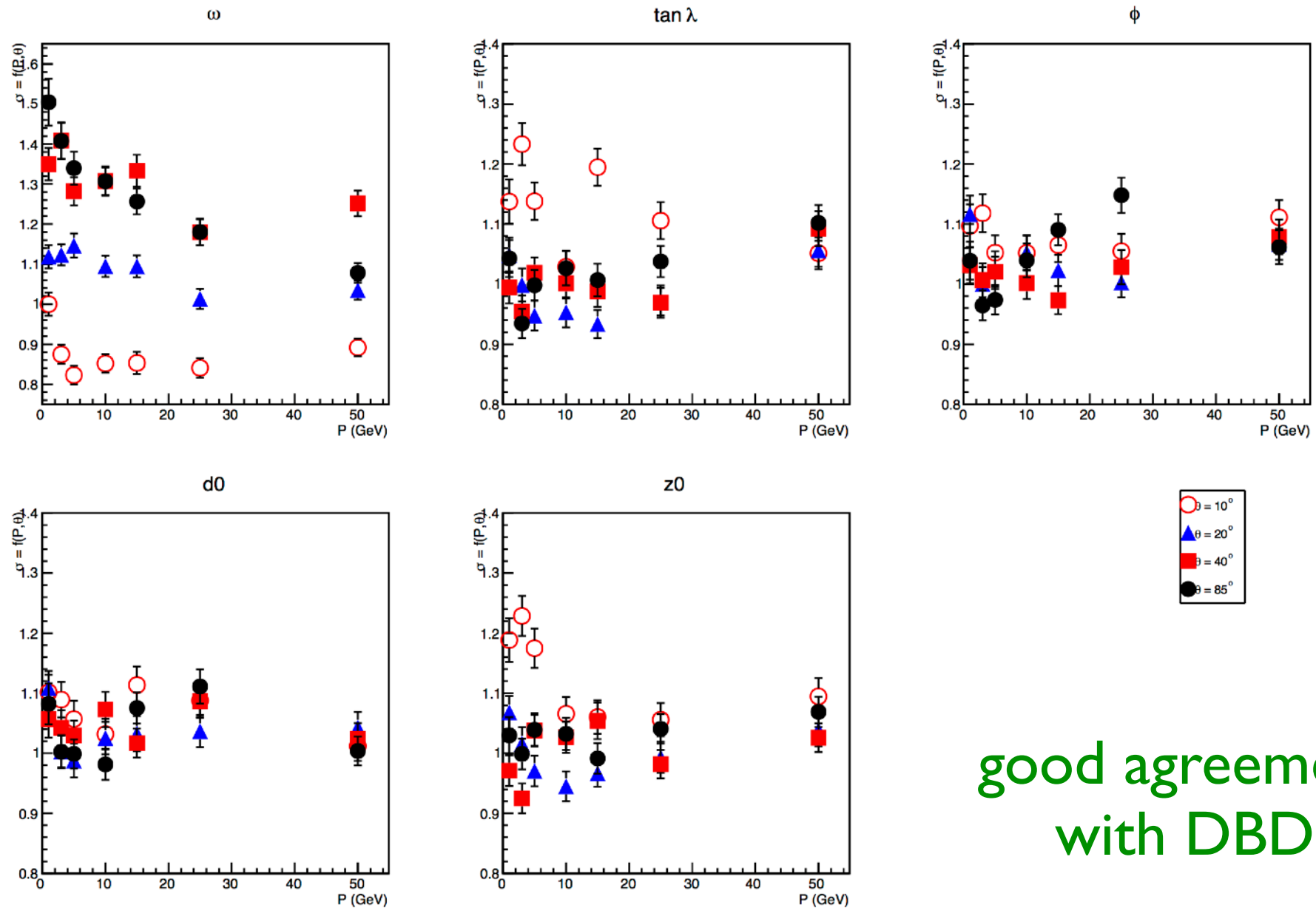


Tracking performance

- To qualify the tracking performance:
 - checked by MC truth with simple muon particle gun
 - compared to reference(v01-17-10) at track finding/
fitting level before PFO with ttbar
 - compared to reference(v01-16-02) at final
reconstruction from PFO with Zuds (Plots from Lan)
- Current conclusion:
 - resolution are as good as v01-16-02 for D0 Impact
parameter and Momentum
 - tracking efficiency as good as DBD-tracking
 - the same number of charge tracks has been achieved
in the final reconstruction PFOs

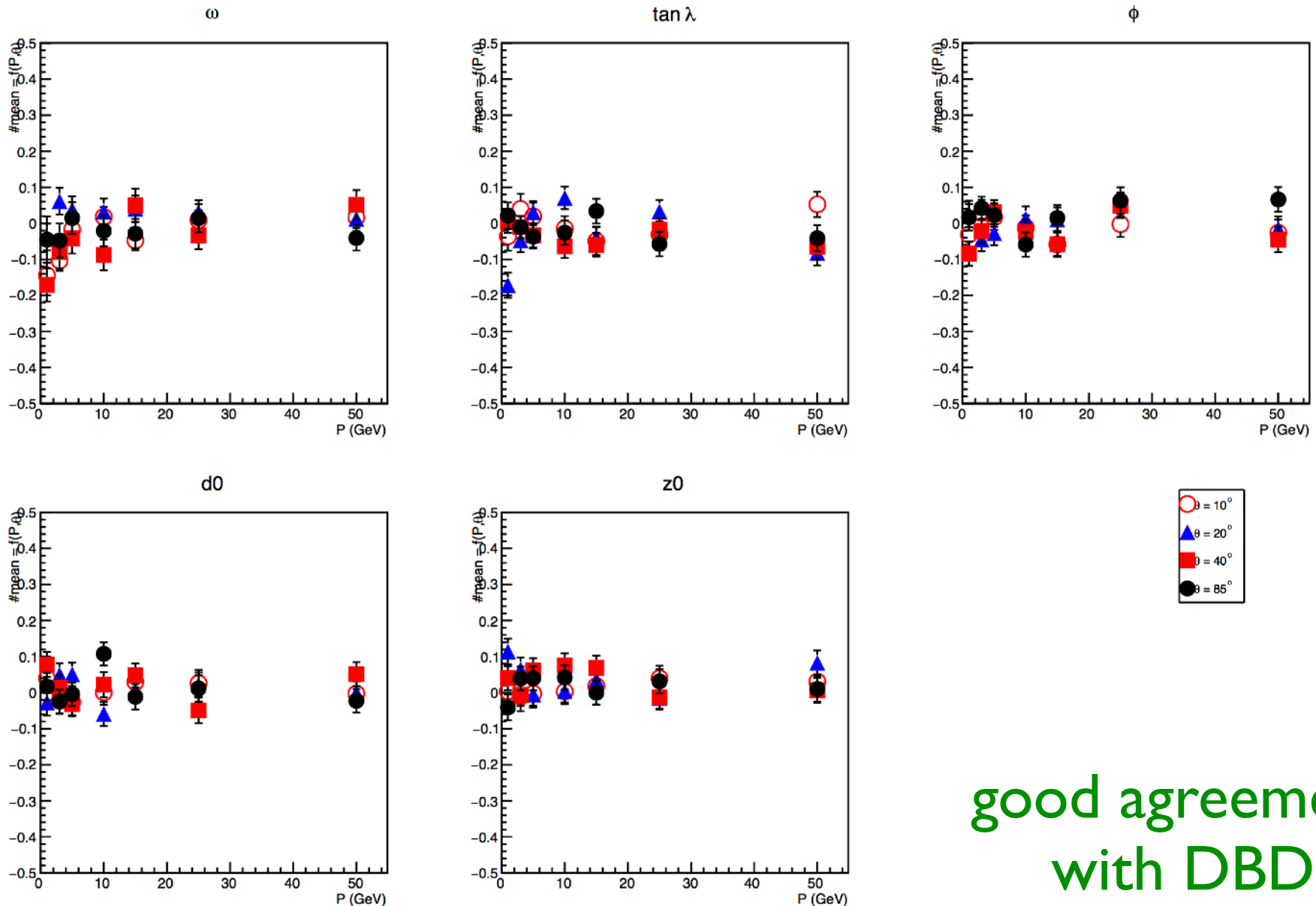
compare with MC truth
directly with simple
muon particle gun

Pull distributions (Sigma)



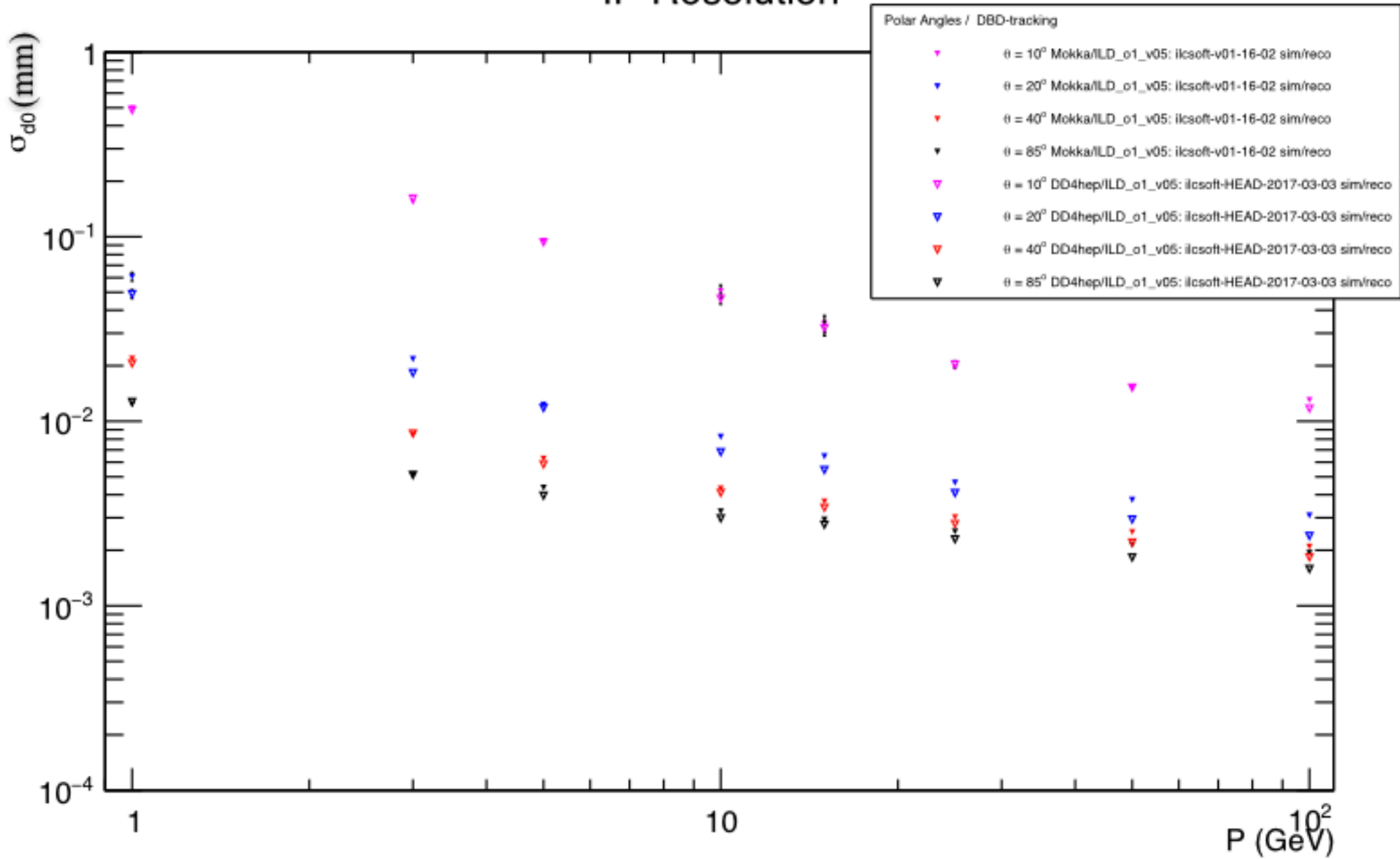
good agreement
with DBD

Pull distributions (mean)



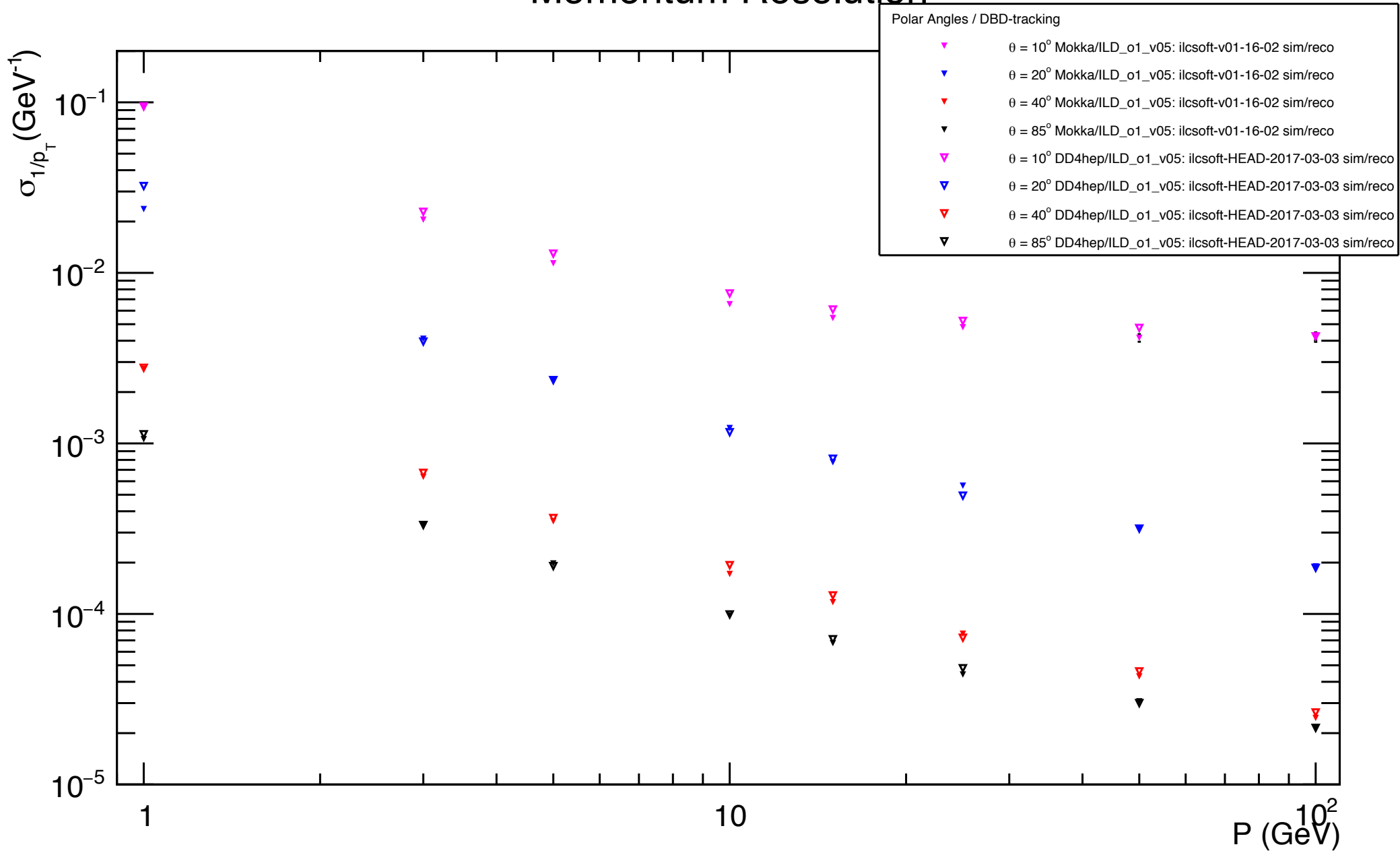
good agreement
with DBD

IP Resolution



compatible results

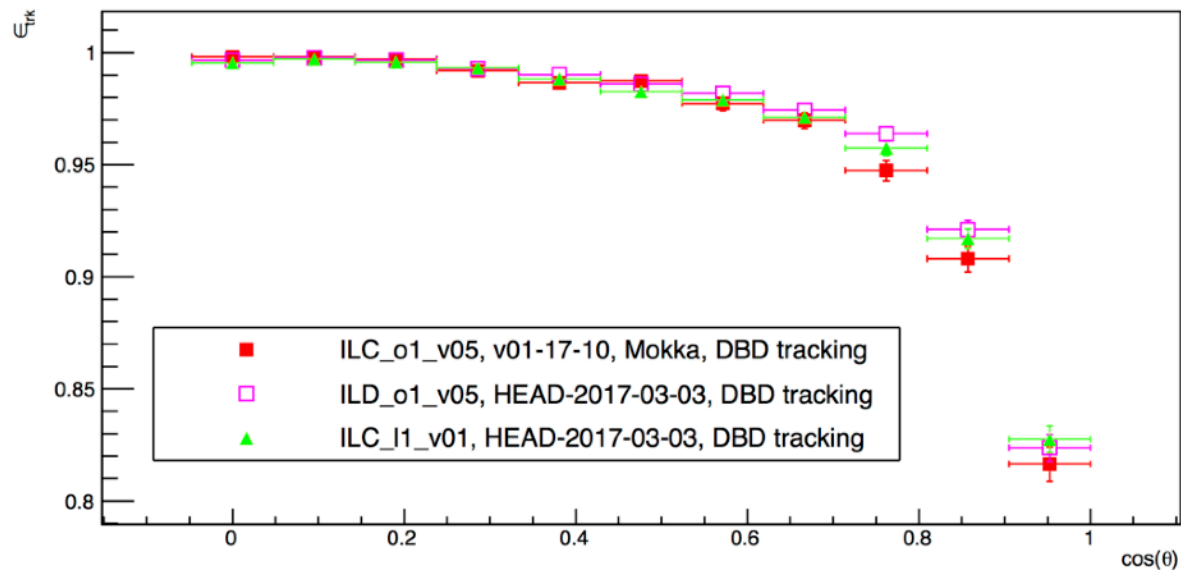
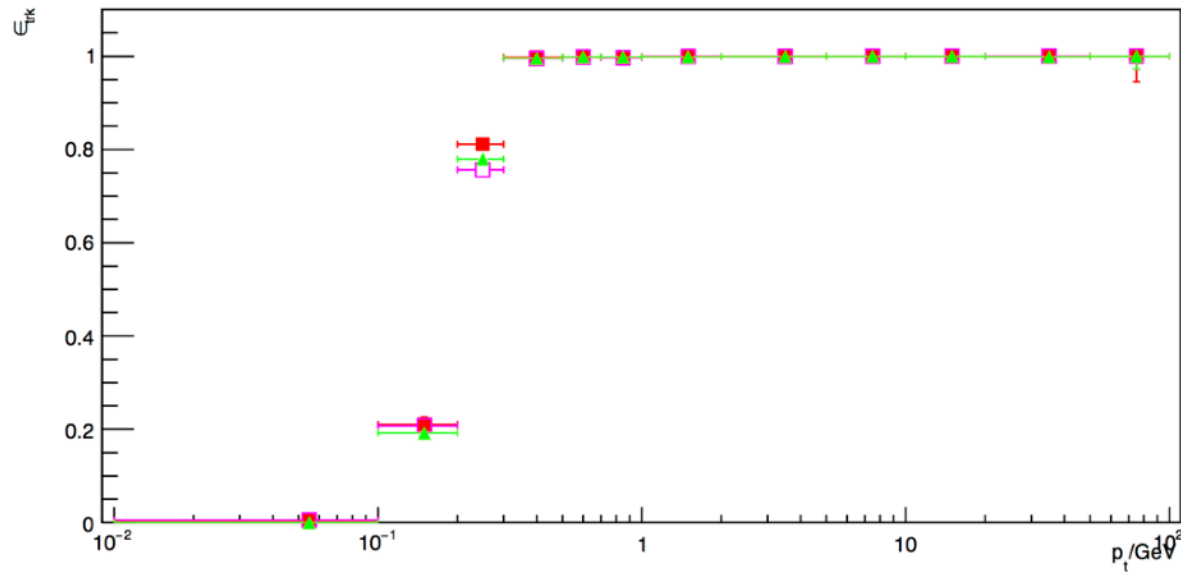
Momentum Resolution



compatible results

compare with $t\bar{t}$
at track finding/fitting
level before PFO

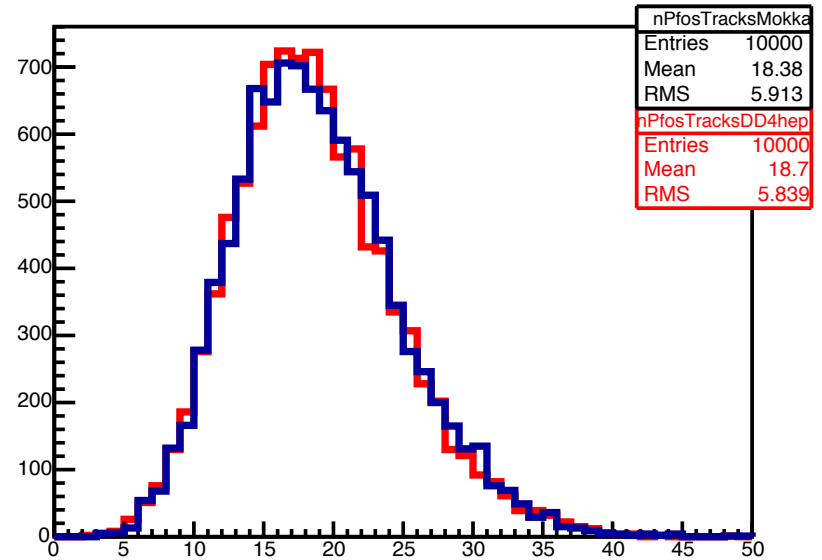
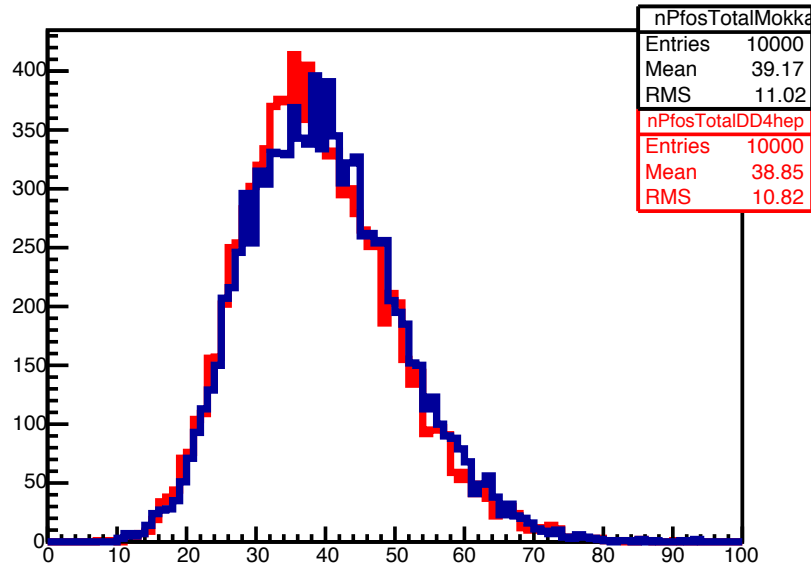
Tracking efficiency



- ttbar / DBD style tracking reco
- preliminary w/o pair background overlay
- good agreement between HEAD-2017-03-03 and ilcsoft v01-17-10

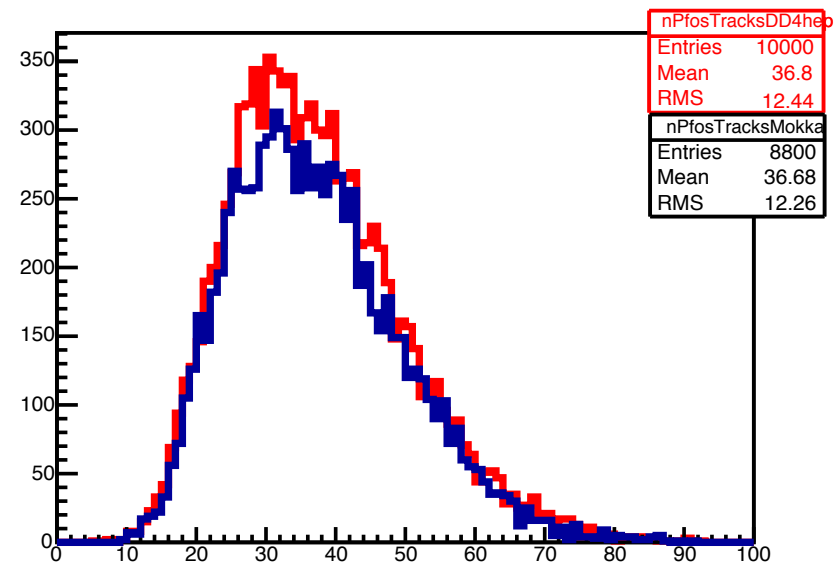
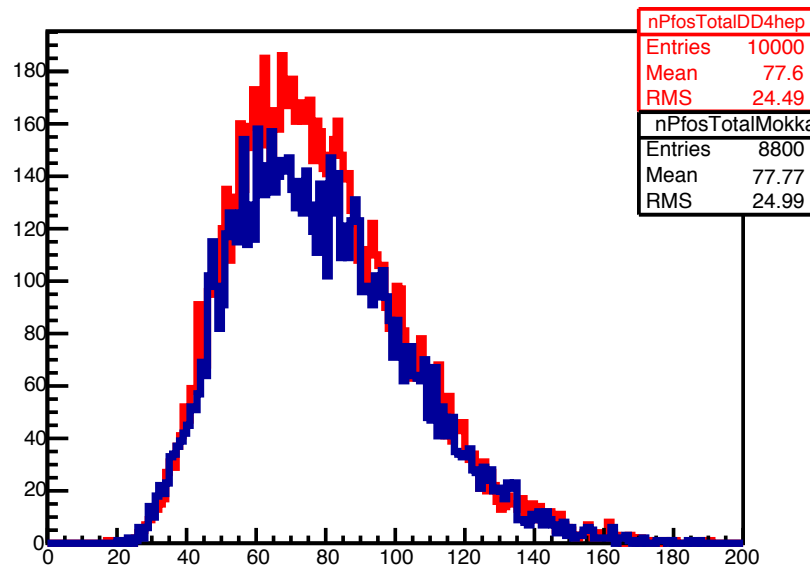
compare with Zuds
at final reconstruction

Comparison at PFO level 91GeV



91GeV Zuds	nPFOs total	nPFOs charge track
Mokka/Geant4	39.17	18.38
DD4hep/Geant4	38.85	18.70

Comparison at PFO level 500GeV



500 GeV Zuds	nPFOs total	nPFOs charge track
Mokka/Geant4	77.77	36.68
DD4hep/Geant4	77.60	36.80

Comparison at PFO level

- Identical 91/500 GeV Zuds samples
- Validate DD4hep/ddsim with Mokka reference
- Two system with independent random number
- In average for the final reconstruction with high statistic
 - Both show the same number of total PFOs
 - Both show the same number of charge tracks

Summary

- Many steps have been checked and compared from MC truth, track finding/fitting, to the final pattern recognition PFO.
- The tracking performance are as good as the reference for the current ongoing development.
- These tracking performance will be monitored for any update during software development and release.