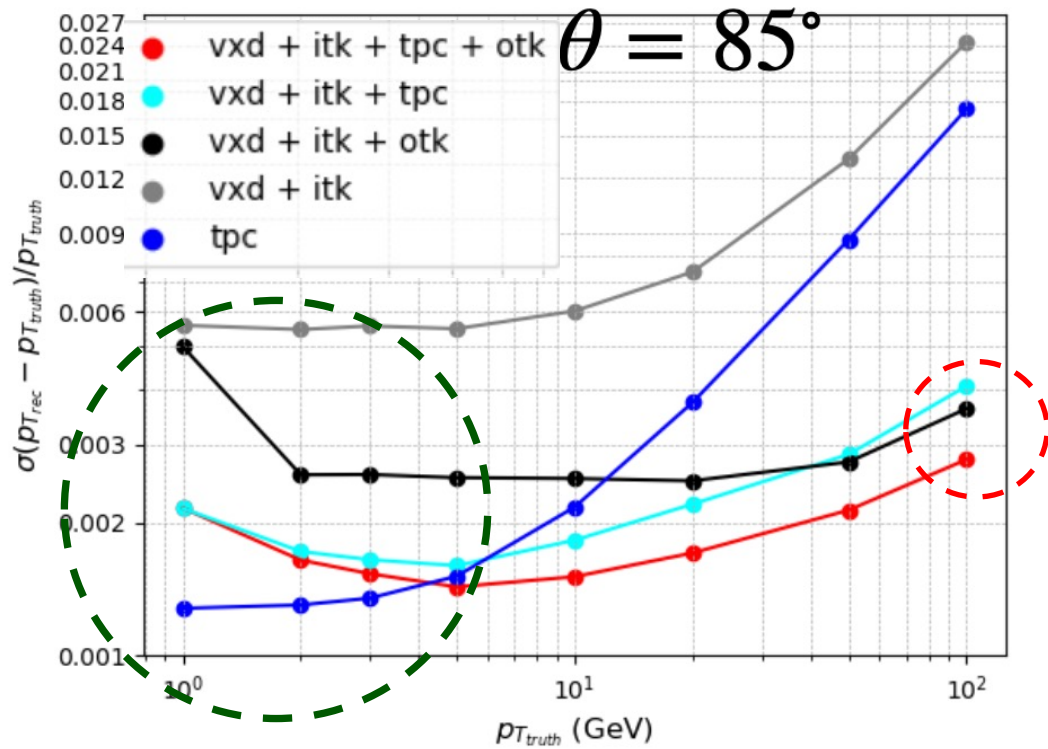


Performance studies

- Two task forces created, regular meetings/discussions with software team
 - Tracking/PID contact: Chenguang Zhang
 - Jets/Clusters contact: Kaili Zhang
- Main efforts on objects performance studies in close interaction with software/detector groups

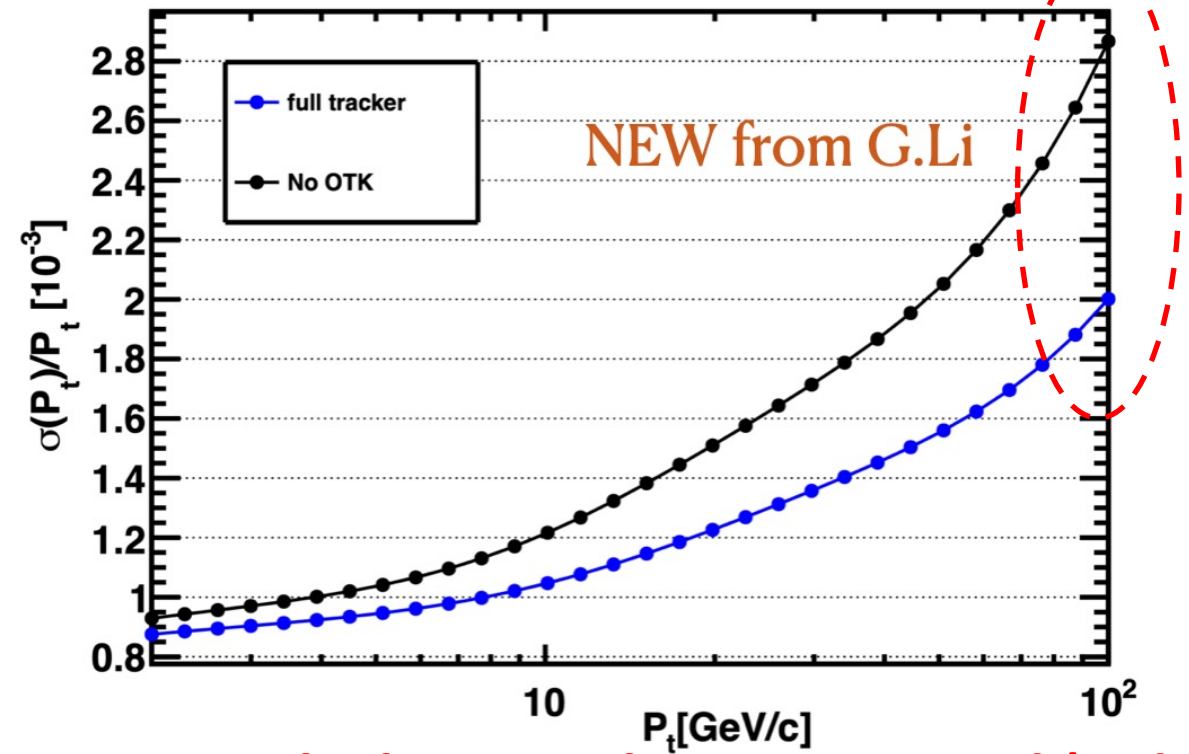
- Full simulation



Tracking at low pT to be improved

- Fast simulation

$\theta = 85^\circ$



OTK impact on high pT resolution corrected (reduced)

■ PID performance:

- Comparison with NIMA paper (CDR tpc PID, ideal case) -> differences to be understood
 - Actions/plans discussed with software group

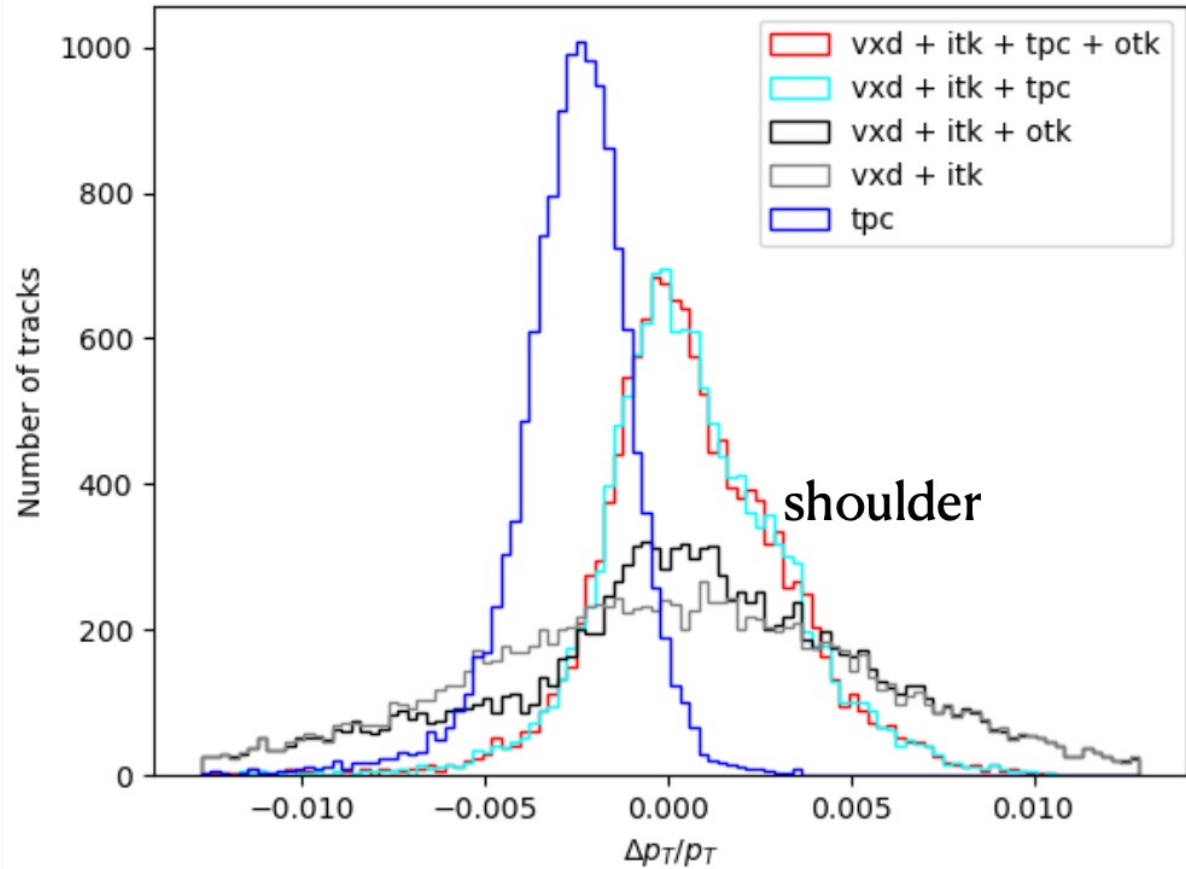
■ Jets/clusters

- Working on differential jet/photon resolution/eff. etc

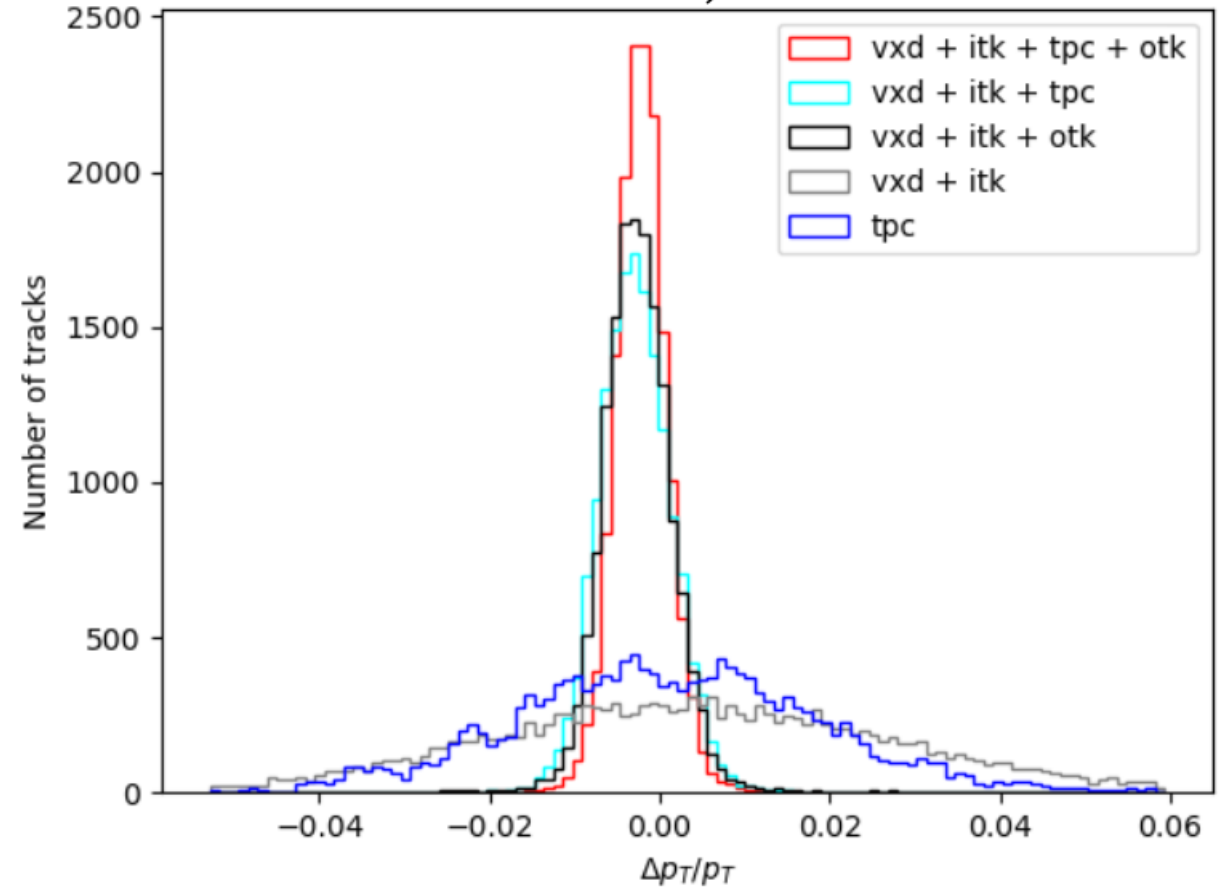
Backup

Tracking resolution

1GeV, 85°



100GeV, 85°



Comments/Recommendations on Performance

- The planned list of channels looks a bit too high for a few months of work, better to focus on demonstrating that the reference detector reaches adequate performance for physics
 - Select fewer channels, aimed at demonstrating that the reference detector reaches adequate performance for physics. Include some simple topology (e.g. $Z \rightarrow \mu\mu$). Encompass H, Z, W and top physics.
 - Foresee in the TDR results and figures about performance on basic objects (leptons, photons, jets) as a function of energy and polar angle
 - A measurement of V_{cs} during the WW run is probably a more relevant benchmark than V_{cb} ;
 - The channel to be used for the electroweak mixing angle measurement should be clarified

Plans:

Priority: working closely with software team for the development and performance studies of basic objects

H→ss/cc/sb				
H→inv				
Vcb				
W fusion Xsec				
α_s				
CKM angle $\gamma-2\beta$				
Weak mixing angle				
Higgs recoil				
H→bb, gg				
H→ $\mu\mu$				
H→ $\gamma\gamma$				
W mass & width				
Top mass & width				
Bs→ $\nu\nu\phi$				
Bc→ $\tau\nu$				
B ₀ → $2\pi^0$				
H→LLP				
H→aa→4 γ				
	Process @ c.m.e	Domain	Relevant Det. Performance	
Z→ $\mu\mu$	Z@ 91.2 GeV	Z	lepton ID, tracking	
H→ $\gamma\gamma$	qqH	Higgs	photon ID, EM resolution	
Higgs recoil	$\ell\ell H$	Higgs	Lepton ID, track dP/P	
H→ss	vvH @ 240 GeV	Higgs	PID, Vertexing, PFA + JOI	
H→inv	qqH	Higgs/NP	PFA, MET	
Vcs/Vcb	WW→ $\ell\nu qq$ @ 240/160 GeV	Flavor	PFA, JOI + PID (lepton, tau)	
H→LLP	$\ell\ell H$	NP	TPC, TOF, calo, muon detectors	
H→ $\mu\mu$	qqH	Higgs	lepton ID, tracking, OTK	
Top mass & width	Threshold scan @ 360 GeV	EW	Beam energy	
Weak mixing angle	Z→bb @ 91.2 GeV	EW	JOI	