Status of Performance

- Tracking
  - Thanks to SW group, the shift of momentum now fixed (with refined magnet field map)
  - Issue of tracking resolution at low pT understood, being fixed by SW group
- Vertexing
  - ACTS package of vertexing fit integrated in CEPCSW, preliminary results look good
  - Study ongoing for physics events and building secondary vertex
- Jet Performance
  - Working on performance evaluation: differential JER/JES/JAR/JAS, BMR
    - Latest development of CyberPFA (can reach ~3.8% BMR) now integrated in the CEPCSW release (tdr24.12.0 last mid-night).
  - **Next priority for SW group**: Geometry/Digi/Reconstruction of Endcap Calo
- PID
  - Now working on PID performance in physics processes, while dN/dX algorithm optimization ongoing
- Shanzhen and Xuhao working on evaluation of the impact from different ECAL granularity, PID: lamda_c -> p K pi , boosted tau

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Backup

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→mumu). 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→μμ
H→γγ
W mass & width
Top mass & width
Bs→$\nu\nu\phi$
Bc→$\tau\nu$
B0→2π^0
H→LLP
H→aa→4γ

	Process @ c.m.e	Domain	Relevant Det. Performance
Z→μμ	Z@ 91.2 GeV	Z	lepton ID, tracking
H→γγ	qqH	Higgs	photon ID, EM resolution
Higgs recoil	$\ell\ell$H	Higgs	Lepton ID, track dP/P
H→ss	ννH @ 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→μμ	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