General information

- Reminder: timeline for CEPC Detector Ref-TDR
  - October 21-23, 2024: First IDRC Review Meeting
    - First rehearsal on Oct. 8: link
    - Second rehearsal on Oct. 17: link
  - By the end of 2024: Ref-TDR draft ready
  - Early 2025: International Review
  - Mid-2025: Release of the Ref-TDR
- From rehearsal, we were requested to add more BSM benchmarks
  - Long Lived Particles, to motivate muon detector
    - H->LLP, smuon searches
  - MET related process
    - We have already H->inv
  - Could also add H->aa->4γ: to quantify separation power and resolution of Ecal
- More comments/suggestions are welcome

General information

- Current computing time for Sim+Digi+Tracking+Reco in V240901
  - still missing digi+reco of endcap calo
  - ~1 minute/event, for vvH(gg)
  - at least 200 events/job is OK
    - speed and memory seems manageable
    - **1 million events feasible with 1000 CPUs in a single day**
    - will test 4jets events
- Objects performance studies and physics analyses are encouraged
  - Tracking of full acceptance available
  - Analyses can begin with barrel region selection
  - Recipes for PID and Jets will be provided
- Two task forces created, please join the studies
  - Tracking/PID: contact Chenguang Zhang
  - Jets/Clusters: contact Zebing Wang/Kaili Zhang

Tracking/PID performance studies

- **Differential tracking efficiency/resolution**
  - Tracking efficiency/resolution vs pT and/or cosθ
    - @different level: Vertex+ITK+TPC+OTK, Vertex+ITK, TPC only, etc.
  - Tracking angular resolutions vs pT and/or cosθ
  - detector design requirements: pT>~100MeV, $|\cos(\theta)|<0.99$, δ(pT)~0.1% in barrel
- **Differential resolution of track impact parameters**
  - dx, dy, dz, $\delta(d0/z0)$ vs pT, etc.
  - detector design requirements: in the barrel δ(d0/z0)~3 micro meter at 20 GeV
- **Differential PID capability: eff, mis-ID rates, purity**
  - 1d/2d distributions on eff/mis-ID vs. pT/cosθ
  - and for different particles (π,k,p,e,μ)
  - with/without TOF
  - relative resolution of dE/dX
  - detector design requirements:
    - eff*purity>90% for all charged Kaon with E>2GeV(@Z pole).
    - ~relative resolution of dE/dX (or dN/dx) be better than 3%.
    - ToF of 50ps
    - efficiency >99% for 3-prong tau
- **vvH(μμ)**: H invariant mass resolutions in barrel and endcap
- **Z(μμ)H**: recoil mass resolutions in barrel and endcap

Jet/Clusters performance studies

- **Differential efficiency, and energy/angular resolution for photon, neutron, charge hadrons**
  - detector design requirements:
    - EM resolution: 3%/√E⊗0.5% (Ref:JHEP12(2022)135)
    - Had resolution: 50%/√E⊗2% (Ref:CDR baseline performance)
- **Differential efficiency and energy/angular resolution for jet**
  - and for different jet reconstruction algorithms
- **H->diphoton** mass resolutions for barrel and endcap
- π^0 eff and resolution vs. pT/cosθ
- **dijet** resolution for different flavors, versus pT/cosθ