Simulation Tasks for
Dual Readout + Wire Chamber Concept

Objective:

1, to demonstrate there is no show stopper of using Dual Readout + Wire Chamber Concept

2, to estimate the benchmark performance

3, if applicable, converge to an reasonable & optimized geometry

Questions to be/could be answered at three different stages:

1, Before any simulation

2, Simulation Level

3, Reconstruction-Analysis Level

1, Before Any Simulation: // Could start Now

1, Power consumption,

2, Radiation Tolerance,

3, Rate Acceptance,

4, Homogeneity & Stability,

5, Intrinsic Performance at single particle/object level with Test beam/existing reference,

6, Dual Readout: SiPM at 2 Tesla B-Field;

7, Noise Rate.

Wire Chamber: Working Gas Optimization & More detailed description of the dEdx performance at CEPC geometry

2, Simulation: Hit Level

1, Hit Map at different sub-detector

2, Intrinsic Performance at Single Particle & Jets

Sigma, Mean Vs Single Particle

Invariant Mass distribution for vvH, H->gg event

3, Dynamic Range for Single Object: Photon & Jets

4, Leakage analysis to determine the Calorimeter thickness

5, Local Geometry optimization: fiber density

6, Lepton id/Particle id at single Particle

3, Reconstruction - Analysis level

1, Separation performance

2, Lepton/Particle identification at Physics events

3, EW/Higgs benchmark analysis

Timeline is essential.

Remark:

1, Geometry Wise, I hope we can conclude the geometry setup for Calo longitudinal segmentation & ECAL/PS.