CDR: Geometry, Software & Performance

Section 1: Physics Requirement

- Physics at CEPC & CEPC Collision environment // Sub-detector technologies should be feasible - within power, robust, stability, requirements - at CEPC collision environment -> to be addressed at Sub-Detector Sections
- Detector Performance Requirement
    - Solid Angle Coverage
    - High Efficiency/Precision Track, Photon Reconstruction in jet environment
    - Lepton ID
    - PiD (Pi-Kaon)
    - JER
    - B, C-tagging
- Detector Systematic/Monitoring Requirement
    - Energy & Luminosity measurement
    - Alignment – Calibration
    - Stability: Mechanic and Response

Section 2: Detector Geometry and Description // To address the requirements mentioned above

- Geometry Description
- Implementation into Geant 4 & Validation (Detector Display and Event Displays)

Section 3: Software & Simulation

- Data Format
- Tracking
- PFA
- Flavor Tagging
- Deep Learning
- Typical performances: sim/reco 1 events

Section 4: Physics Performance (Object + Benchmark Physics Signal Plots)

- Track
    - Efficiency
    - Resolution (D0, Z0, Omega, Phi & Theta)
    - Wrong Sign Probabilities
    - Kshort, J/psi Mass Peak
- Cluster
    - Energy Response, Collection efficiency & Resolution
    - Separation
    - Pi0 Mass Peak
- Lepton,
    - Single Particle Performance
    - Higgs Recoil Mass Spectrum
    - Higgs->muon Mass Spectrum

- Kaon,
  - Pi-K Separation power
  - Benchmark Physics & Requirements
- Photon,
  - Single Particle Performance
  - Higgs -> Diphoton Mass Spectrum
- Jets,
  - Higgs->gluon Mass Spectrum
- Heavy Flavor,
  - Higgs->bb, cc, gg, likelihood template distributions
- Tau,
  - Higgs->Tautau Pull Spectrum

Section 5: Conclusion

- Prepared for Higgs
- Basic performances -> refer to Higgs Physics Analysis section…
- Key questions to be addressed (i.e, Systematic control for EW) in the future

//Remarks
Not well prepared yet
Studies ready