Minutes of CEPC CRD Meeting

New Multiplicinary Building 229, 2020-12-22

Meeting indico link: indico.ihep.ac.cn/event/13446/

Attendee: Jianchun Wang, Gang Li, Mingyi Dong, Yong Liu, Guang Zhao, Linghui Wu,

Yao Zhang, Shengsen Sun, Manqi Ruan, Weidong Li, Xin Shi, Baohua Qi, Dan Yu, Hongbo Zhu

# Meeting discussion:

1. **HTS magnet between Ecal&Hcal - Manqi**

p8: provide detailed definitions on the axis etc to reduce confusion

p12: double check the 10% degrading requiring 5-10% , mark the 160mm -> 70 mm

p8: can we trust the work on the figure, use two different points to cross-check his work.

Q: can we understand the twist

A: second shower, possible gap between ECal and HCal,

Q: can we explore more detail about the features.

Label the two "kinks", mark that we've noticed, and investigate further.

1. **PID with Drift Chamber**

Q: for the tau physics, pushing to 40GeV will be very hard for the detector design.

Need to focus on the most important parts.

Weidong: need to be driven by the physics.

Jianchun: show the momentum spectrum of the K/pi particles in the B to K pi mode.

Manqi: place the physics requirement to the first place.

Hardware - Mingyi: (1/4) 5p +/- 2

* Use JUNO 1GHz sampling electronics to investigate the rising edge for the cluster counting

Cluster counting: Linghui (1/4)

* Sampling rate in the framework to get the PID performance
* Optimize the sampling rate with software

Tracking: Yao (1/4)

* Condense the result to be 1/4 of the results

Physics/tracking performance: Xin & Gang (1/4)

* Momentum Reso vs. the following
  + Layout (layers , R, position)
  + Material budget
  + Trend and Requirement
* Number of hits for dE/dx (dN/dx)
* Consider the end-cap later

JC: show the base results as soon as possible

Weidong: need to define the critical points

JC:

1. drop the pattern recognition, utilize the tracking from silicon
2. no use for the stereo layer
3. the drift chamber's main purpose is PID

HB: Last slides indicate the main points

WD: bunch spacing for the dead time

MY: Z bunching spacing, BESIII 4k max, need to consider the bunch crossing

Linghui will report on behalf of the whole team. 25' + 10'

1. **A perpendicular crystal bar Ecal - Yong**

p9:

* Shengsen: use stand alone existing software to evaluate the granularity effect
* WD: ghost hit worry, utilize the tool to eliminate. State it's the PFA calo

p10:

- Particle flow

JC: Software coverage, save the technical info into the backup slides.

Add introduction slides and overview what was achieved before.  
  
﻿Hadron Energy Resolution: Crystal ECAL vs SiW ECAL - Baohua Qi

p3: consider the different resolution of the Ecal and Hcal

# Actions

1. Potential report for CEPC days, pending agreement at the CEPC PhysDet plenary meeting this Wednesday.
   1. HTS magnets – Manqi: 15’ + 5’
   2. Silicon + Drift chamber – Linghui : 25’ + 5’
      1. Hardware (Mingyi) 5 pages
      2. Cluster counting (Linghui) 5 pages
      3. Tracking software in CEPCSW (Yao) 5 pages
      4. Physics/tracking performance (Xin) 5 pages
   3. Perpendicular crystal bar ECal - Yong: 20’ + 5’ ?