

Minutes: CEPC Reference Detector TDR Meeting in Aug 27, 2024

Meeting agenda and minutes

- indico page: <https://indico.ihep.ac.cn/event/23338/>
- Participants Present in the meeting room (M.B. 122):
 - Weidong Li, Boping Chen, Bo Liu, Shengsen Sun, Linghui Wu, Gang Li, Mingyi Dong, Zheng Wang, Sen Qian, Zhijun Liang, Yifang Wang, Feipeng Ning, Miao He, Yong Liu, Zhaoru Zhang, Jianchun Wang, Manqi Ruan, Joao Guimaraes da Costa, Yiming Li, Qi Yan, Wei Wei, Fei Li, Haoyu Shi, Quan Ji, Huirong Qi, Mingshui Chen, Xinchou Lou
- Online at ZOOM:
 - Fangyi Guo, Guang Zhao, Haijun Yang, Hengne Li, Hou Suen, Jinfei Wu, Jingzhou Zhao, Jinyu Fu, Jun Guo, Weizheng Song, XiaoLong Wang, Xiaolu Ji, Yang Zhang, Zhan Li, Ling Zhao

Overview: Jianchun Wang

- ECAL and HCAL are split and Sen Qian lead HCAL group
- Move MDI to the first talk in the future

MDI: Haoyu Shi

- Yifang: bunch spacing for Z need to double check with accelerator group
- Yifang: need to make sure background estimation is checked by Haoyu, so everything is consistent.

Vertex: Zhijun Liang

- Yifang: for stitching, what can be shown at IDRC review?
 - Zhijun: dummy chip with test results

Tracker: Qi Yan

- Mechanics leader is changed to Quan Ji
- Jianchun: need to demonstrate feasibility of using silicon strip design ASAP.
 - Yifang: need to give answer in 2 weeks, leaving enough time for internal approval before review
- Jianchun: give up using silicon detector for dE/dx study, because current design is too thin for dE/dx
 - Xinchou: agree. make it long term R&D
- Joao: current endcap design has no room for cables
 - Yifang: Quan Ji will help to improve it and give a sketch in 2-3 weeks

TPC: Huirong Qi

- Yifang: for TPC assembly, why firstly seal connection? suggest to firstly assemble chips and seal connection afterword.
- Xinchou: need to know TPC test beam plan and expected results, which will need to be shown at EU strategy

- Huirong: will have beam test by end of Sep.
- Jianchun: **every group should think about important technical challenges and related solutions and working plan, listed as a table. Jianchun needs this table.**

ECAL: Yong Liu

- Yifang: need to give answer for ECAL resolution before IDRC review

HCAL: Sen Qian

- Sen: add other institutes to join in
 - Yifang: welcome them, but Glass collaboration should be independent with CEPC cooperation.
- Yifang: ECAL and HCAL should use same SiPM, and need to assign a responsible person for SiPM. Please make decision very soon.
- Yifang: regarding plan of HCAL simulation, come up with more precise simulation plan next time so that we understand it clearly

Muon: Xiaolong Wang

- Xinchou: regarding track reconstruction and LLP study, should firstly identify whether it's worth for TDR short timeline, or treat it as long term plan.
- Jianchun: LLP study can be researched, but don't consider it as main study for TDR.
- Yifang:
 - based on comments, continue quantify simulation to decide number of layers
 - clarify parameters of electronics, measuring time or position, precision, dynamic region, etc., which can reflect final cost. Have effective communication with electronics group to make sure final design is optimized.

Magnet: Feipeng Ning

- Yifang: add one sentence to P7: We also welcome foreign collaborators to participate in China.

Electronics: Wei Wei

- Yifang: regarding space request for experimental hall, continue optimization, don't simply copy from CMS, because CEPC has higher integration.
- Xinchou: actively participate in DRD1, understanding most advanced technologies.

DAQ: Fei Li

- Yifang: regarding speakers for DAQ session in CEPC workshop, try to contact DAQ experts in IDRC committee to get some suggestions.

Software: Weidong Li

- Yifang:
 - make sure all TDR design is included in software, digitization is included, performance of full

detector can be shown at IDRC review.

- **All detector groups should use official software for performance study, and results should be combined with previous detector, instead of standalone study.**
- Key items are tracker pT resolution, calorimeter energy resolution, time resolution for OTK, and dE/dx for TPC. Make sure they are addressed.

Mechanics: Quan Ji

- Yifang: report summary of Luoyang Mechanics workshop at CEPC Day

Performance: Manqi Ruan

- WP for flavor physics is ongoing
- Henan new physics workshop by end of this month
- Xinchou: for full simulation, start to plan generating samples for validating.