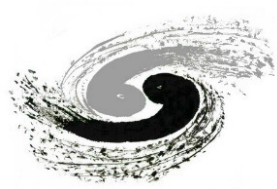


# CEPC Ref-TDR ECAL updates

Yong Liu (IHEP)

September 3, 2024



# Latest updates

- CEPC ECAL Weekly Meeting on TDR
  - Indico on Aug. 30, 2024: <https://indico.ihep.ac.cn/event/23207/>
  - Online note: <https://note.ihep.ac.cn/cTyoJQbeT3WDTfY6mm2LZw>
- Updated agenda
  - *Part 1* on updates/status: electronics, mechanics, software, backgrounds, etc.
  - *Part 2* on Ref-TDR documenting: contributions and updates

## Electronics, mechanics, physics and software: Updates and Planning

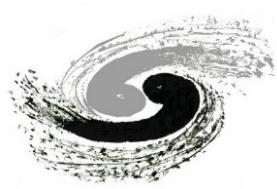
Conveners: Jinfan Chang (高能所), Manqi Ruan (IHEP), Shaojing 侯少静 (高能所), Sheng-Sen Sun (Institute of High Energy Physics)

2:05 PM	<b>Calorimeter electronics</b>	🕒 10m
Speakers: Jinfan Chang (高能所), Wei WEI (高能所), Xiongbo 严雄波 YAN Xiongbo (高能所)		
2:15 PM	<b>Calorimeter layout and mechanics</b> ¶	🕒 15m
Speakers: Haijun Yang (Shanghai Jiao Tong University), Quan Ji, Shaojing 侯少静 (高能所), Sheng-Sen Sun (Institute of High Energy Physics), UNKNOWN 张俊嵩, Weizheng Song (Institution of High Energy Physics), 亚田 裴 (高能所), 伯祥 俞 (高能所)		
2:30 PM	<b>Calorimeter software</b>	🕒 10m
Speakers: Dejing Du (IHEP), Fangyi Guo, Hengne Li (South China Normal University), Ji-Yuan Chen (SJTU), Sheng-Sen Sun (Institute of High Energy Physics), Weizheng Song (Institution of High Energy Physics), 洪滨 刁 (中国科学技术大学)		
2:40 PM	<b>Beam-Induced Backgrounds</b>	🕒 10m
Speakers: Fangyi Guo, Sheng-Sen Sun (Institute of High Energy Physics), Weizheng Song (Institution of High Energy Physics)		

## CEPC Reference Detector TDR: Document preparations for the Chapter 6 (ECAL)

Convener: Dr Yong Liu (Institute of High Energy Physics)

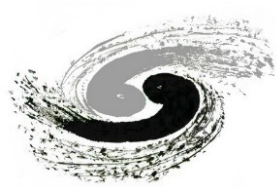
3:00 PM	<b>General updates</b>	🕒 3m
Speaker: Dr Yong Liu (Institute of High Energy Physics)		
3:03 PM	<b>ECAL requirements</b>	🕒 3m
Speakers: Haijun Yang (Shanghai Jiao Tong University), Jianbei Liu (University of Science and Technology of China), Manqi Ruan (IHEP), Dr Yong Liu (Institute of High Energy Physics)		
3:06 PM	<b>Survey of ECAL technical options: SiW-ECAL, ScW-ECAL, crystal</b>	🕒 3m
Speakers: Haijun Yang (Shanghai Jiao Tong University), Huaqiao ZHANG (IHEP), Jianbei Liu (University of Science and Technology of China), Dr Yong Liu (Institute of High Energy Physics), Yunlong Zhang (University of Science and Technology of China)		
3:09 PM	<b>Technical challenges: beam backgrounds, radiation damages, calibrations</b>	🕒 3m
Speakers: Baohua Qi (IHEP), Fangyi Guo, Weizheng Song (Institution of High Energy Physics), Zhiyu Zhao (TDLU/SJTU)		
3:12 PM	<b>Crystal ECAL R&amp;D activities and highlights: addressing critical issues</b>	🕒 3m
Speakers: Baohua Qi (IHEP), Dejing Du (IHEP), Fangyi Guo, Huaqiao ZHANG (IHEP), Ji-Yuan Chen (SJTU), Dr Yong Liu (Institute of High Energy Physics), Zhiyu Zhao (TDLU/SJTU)		
3:18 PM	<b>Mechanics and Cooling</b>	🕒 3m
Speaker: Shaojing 侯少静 (高能所)		
3:21 PM	<b>Electronics</b>	🕒 3m
Speaker: Jinfan Chang (高能所)		
3:24 PM	<b>Software and physics performance</b>	🕒 3m
Speakers: Fangyi Guo, Sheng-Sen Sun (Institute of High Energy Physics), Weizheng Song (Institution of High Energy Physics), Yang Zhang		



# Latest Status

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- Electronics
  - Ongoing: estimate of the number of cables (signals, power, optical fibres)
- Mechanics and cooling: planning
  - Endcap mechanics: a more detailed engineering design
  - Module assembly: detailed design of assembly procedures
  - Carbon fiber: production feasibility and cost estimate per unit area -> market survey and site visits
  - Inter-connections between ECAL and HCAL (both barrel and endcaps)
  - Cooling FEA simulation: temperature gradient distribution (static), stability (dynamic)
- Software: planning
  - Updated geometry of endcap modules in CEPCSW
  - Scan sensitive material (in X0): angular distribution in barrel-endcap regions



# Latest Status

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- Beam induced backgrounds
  - Rate estimate and TID: ongoing for the 50MW running (both Higgs Z-pole)
    - Backgrounds with *single beam* and *pair production*
    - Ongoing crosschecks on the generators and background simulation
    - New results expected within this week
  - (Reminder) Existing results with 30MW at Higgs (pair production only)