



Toward a TPC for CEPC TDR

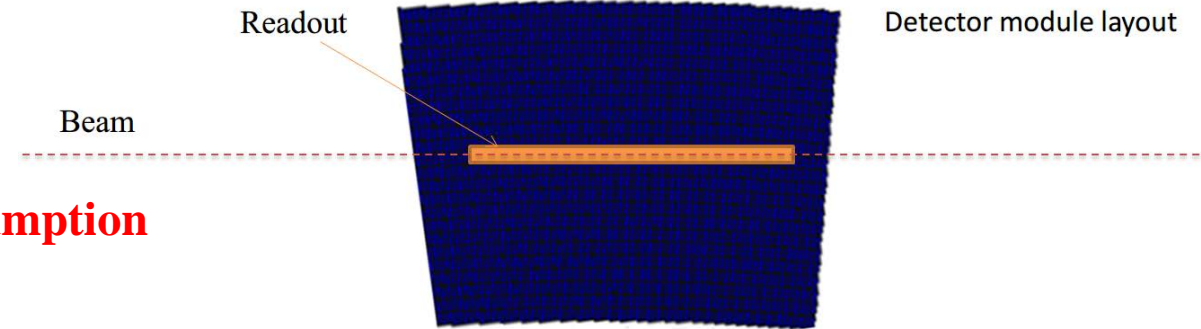
- Beam test at DESY

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Weekly meeting of CEPC TPC Group, June 19, 2024

Some critical simulation and validation

- Pixelated readout TPC can be as a **realistic and promised** track detector in CEPC TDR, some key issues will be simulated and validated.
 - Material budget at endcap/barrel
 - Occupancy and hit density
 - **Improved $dE/dx+dN/dx$**
 - Ion backflow suppression
 - **Reasonable channels and power consumption**
 - Running at 2 Tesla
 - Beamstrahlung and distortion
 - **Cost estimation**
- LCTPC (Lepton Collider Time Projection Chamber) collaboration will continue to push this technology to e^+e^- collider.



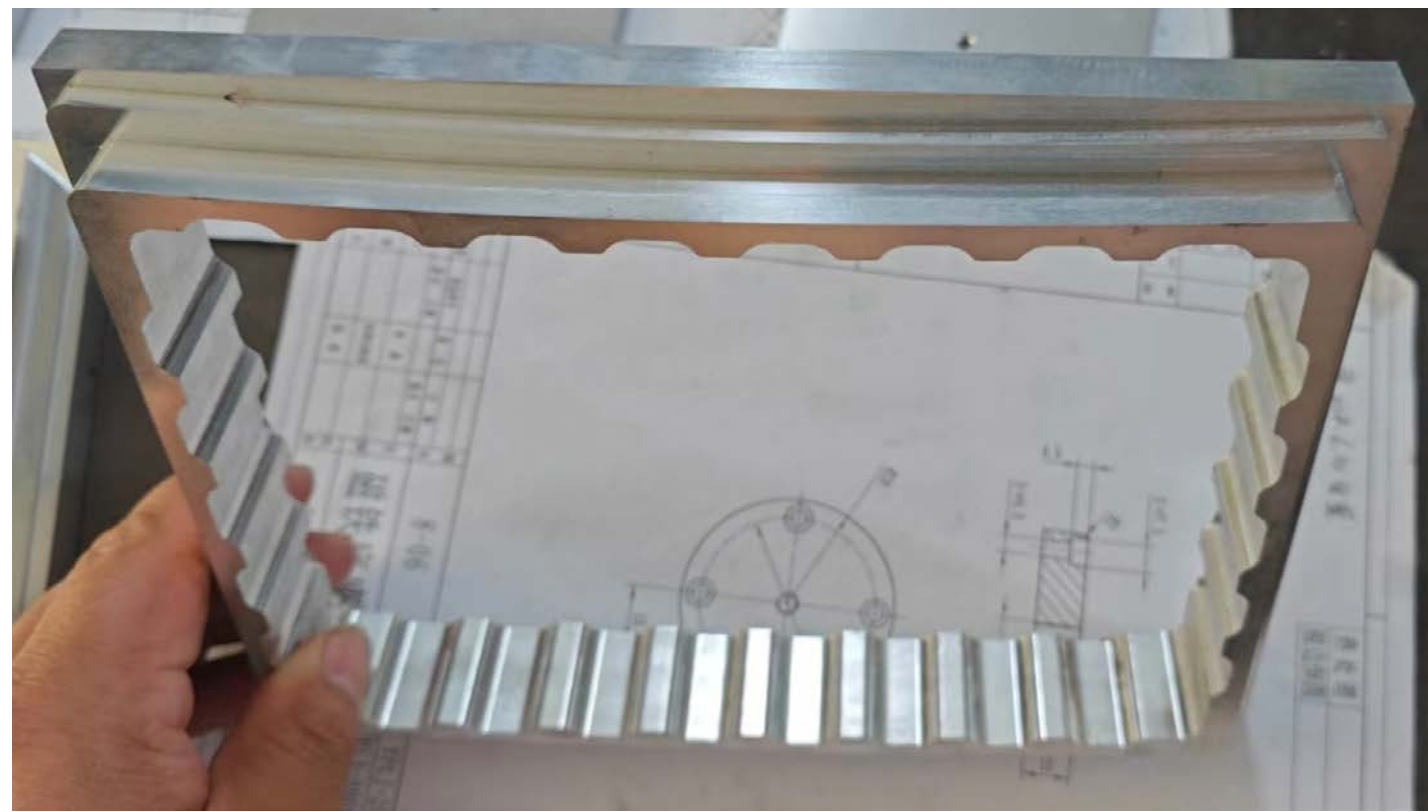
Progress on the PCB design

- PCB material : TG230 (耐温230摄氏度)
 - Processing will be done and will arrive in the end this week.



Module of the beam test

- Four Aluminum backframes have been processed.
 - Machining contract has been signed and two backframe will be done.



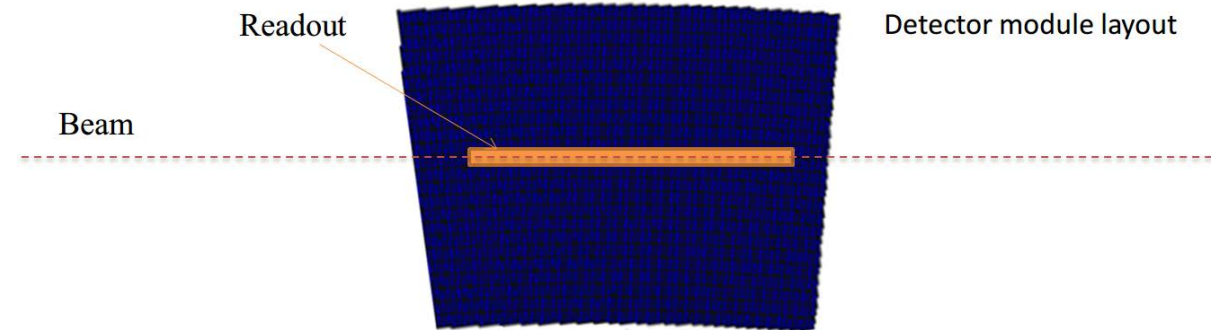
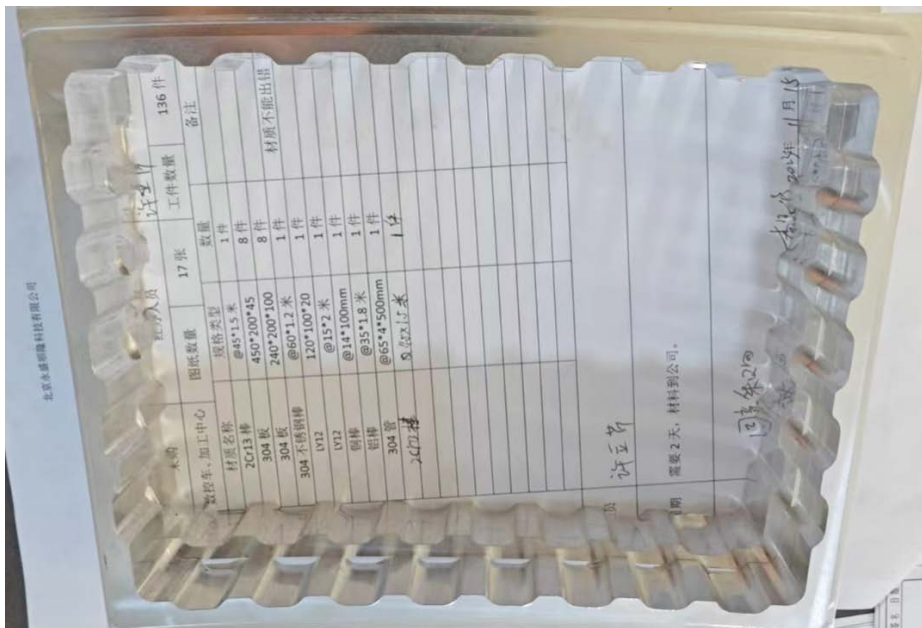
材料：6061-T651，无磁高强度铝合金材料

技术要求：

1. 高强度密封支撑件设计按照需求老师的需求，外形尺寸 220mm × 175mm，加工所有表面和孔，留出 0.8mm 额外材料进行热处理。
2. 200±5℃,保温 6 小时以上，取出空冷完成热时效处理
3. 精加工到位，加工精度 0.05mm。
4. 表面导电阳极氧。
5. 销钉孔位采用负公差加工，加工精度小于 0.050mm。
6. 密封 O 圈采用硅氟橡胶材质，完成预安装调试。

Some questions: DAQ for beam position

- Goal: Determine the position of the beam relative to the detector active area as quickly as possible when the beam test will be going.
 - Option #1:
 - Fast feedback of the beam localization **in online mode**.
 - For example: size of data volume? Number of triggers?
 - Option #2:
 - Continuous analysis of acquired data **in offline mode**.



Many thanks!