# Summary of last LumiCal meeting

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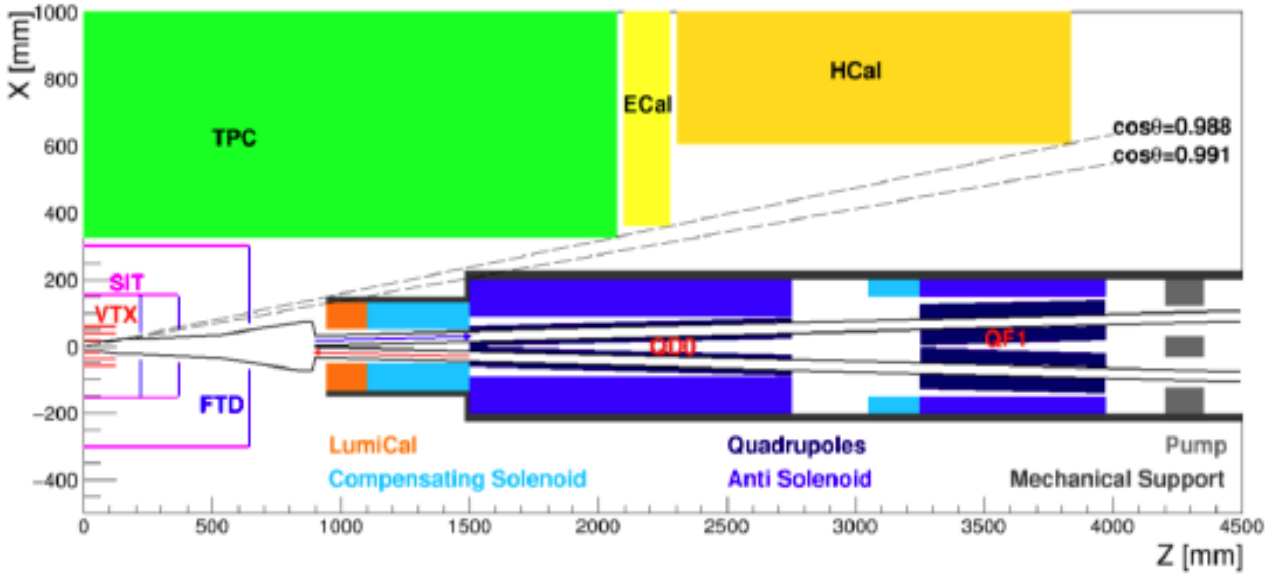
# Outline

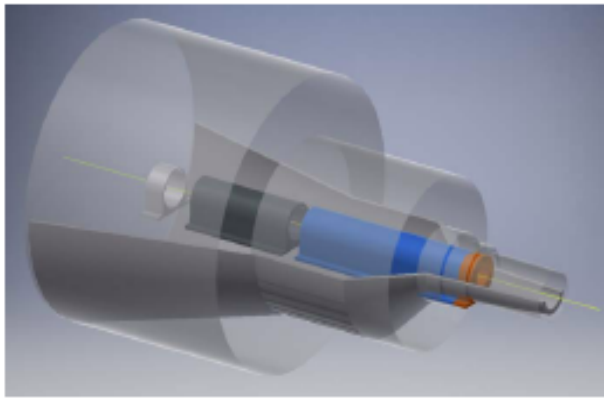
- May 19th, http://indico.ihep.ac.cn/event/6989/, six participants
- Suen Hou presented a nice talk
  - Extrapolate the LEP LumiCal to the geometry of CEPC
  - Suggest test-beam assembly, to interpret the leakage of shower and impact to tracking volume.
- Some further related works and discussions after the meeting
  - Simulation of the leakage
  - Presently focus on Higgs/Z?

# LumiCal parameters

From Suen

| IP to Lumi Cal | Front .95 m? | Back 1.11 m |
|---|---|---|
| Beam pipe | 23 mm | 26 mm |
| $\theta_{inner}$ | 24.2 mRad | 23.4 mRad |
| Acos(.992) = 126.6 mRad | 120 mm | 140 mm |

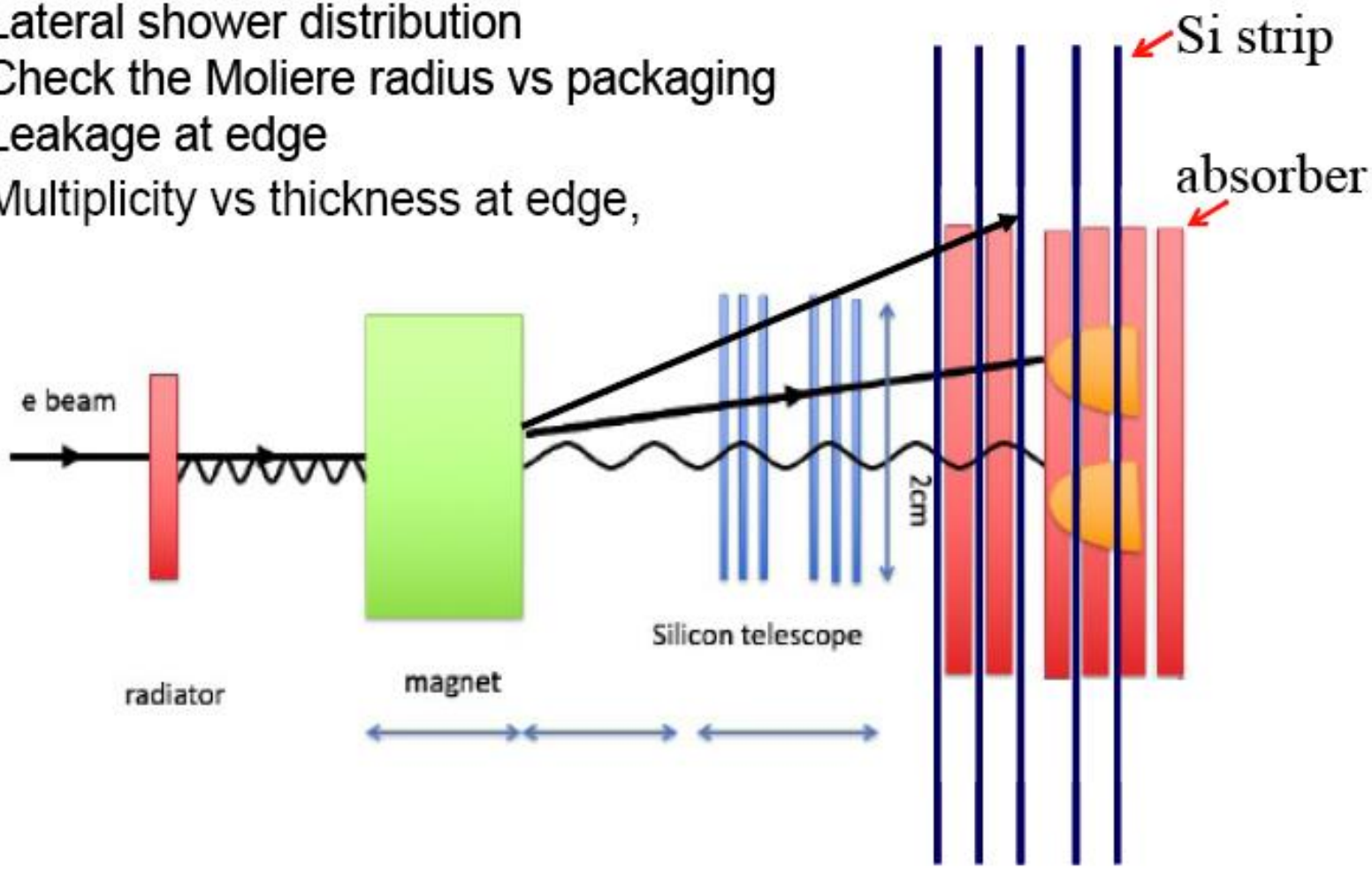



# Testbeam for Si-W calorimeter

From Suen

Si layer (fine pitch) wider than Tungsten absorber as calibration data set to design/GEANT

1. Lateral shower distribution
2. Check the Moliere radius vs packaging
3. Leakage at edge
4. Multiplicity vs thickness at edge,



# Summary

From Suen

- CEPC LumiCal θmin compatible to OPAL
  Z=1 m ➔ geometry scaling by 2.5 to OPAL
  smaller Si pads,
  finer construction precision ~ 2μm
- LumiCal is within TPC Z coverage
  shower at edge leaks ➔ suppressed by compactness
- Test beam setup for EM shower lateral and leakage

From Liu

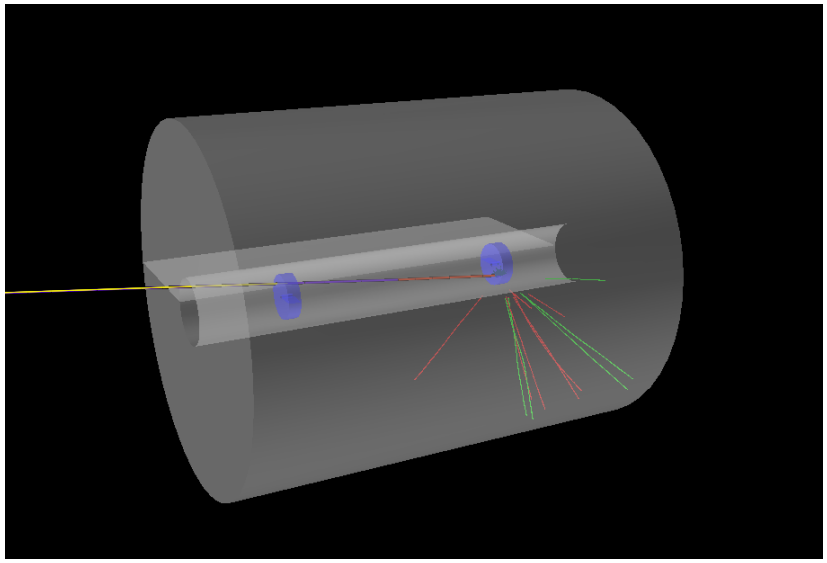
# 10000 Event

**Lumical polar angle: (17.4,104) mrad**

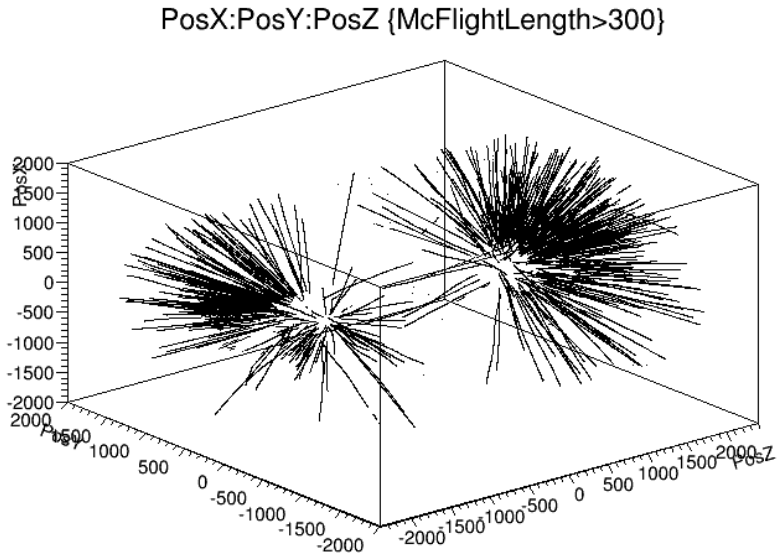
**Event generate:$\boldsymbol{\theta} \in (\mathbf{90}, \mathbf{110})\boldsymbol{mrad} \sim \mathbf{0.5}\boldsymbol{nb}$ ~10events per second on suppose of $L = 2.0\text{x}10^{34} cm^{-2} s^{-1} = 20\ \text{nb}^{-1} s^{-1}$)**

**11.6 leakage tracks (130.56 hits) in TPC per event in average.**

## Single Event

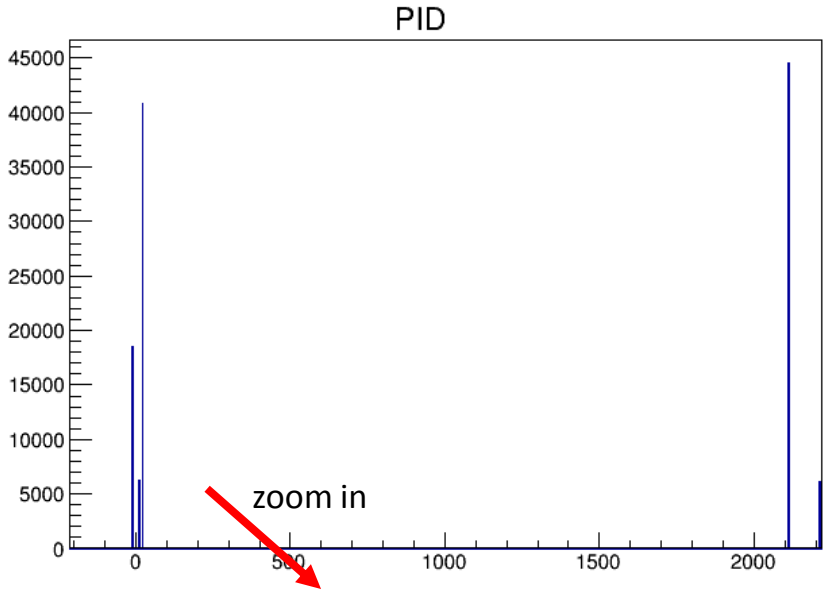


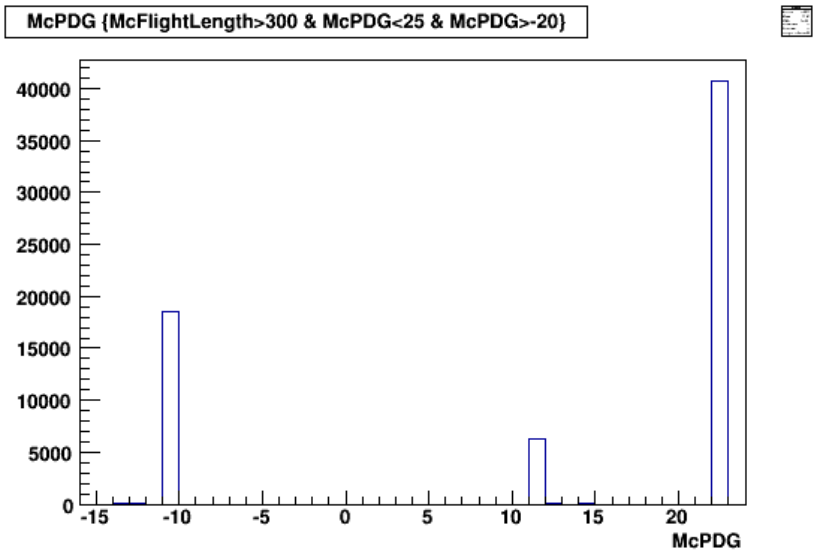
## Hit map in TPC



PID of leakage tracks

- $e^-(11)$
- $e^+$ (-11)
- $\mu^-$ (13)
- $\gamma$ (22)
- $\pi^\pm$ (211)
- $n$ (2112)
- $p^+$ (2212)



# Momentum distribution of leakage tracks