中央研究院物理研究所
INSTITUTE OF PHYSICS, ACADEMIA SINICA

Status report

2025/04/23

ZDC Internal

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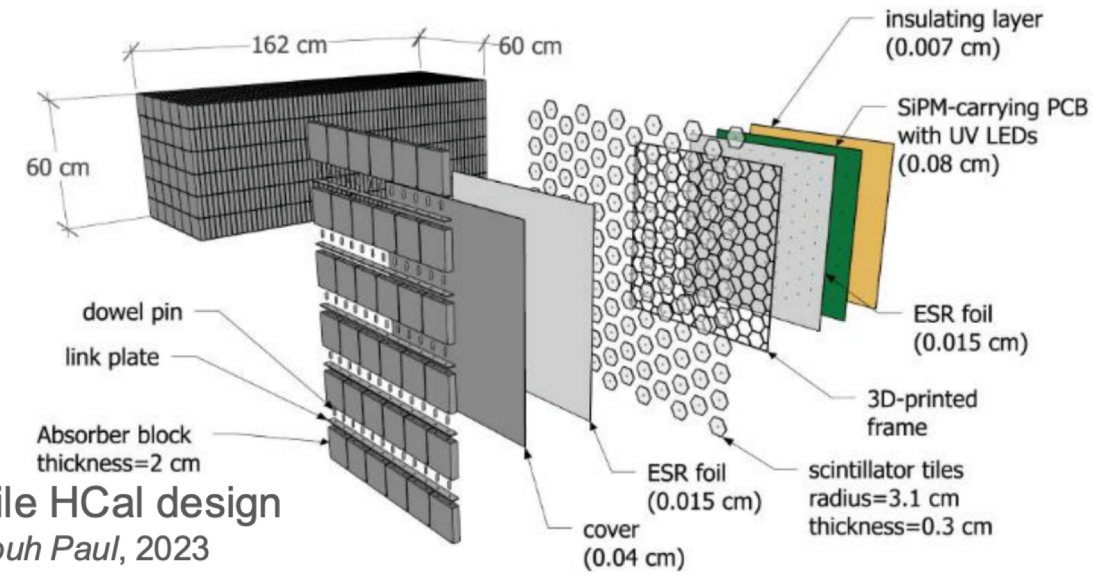
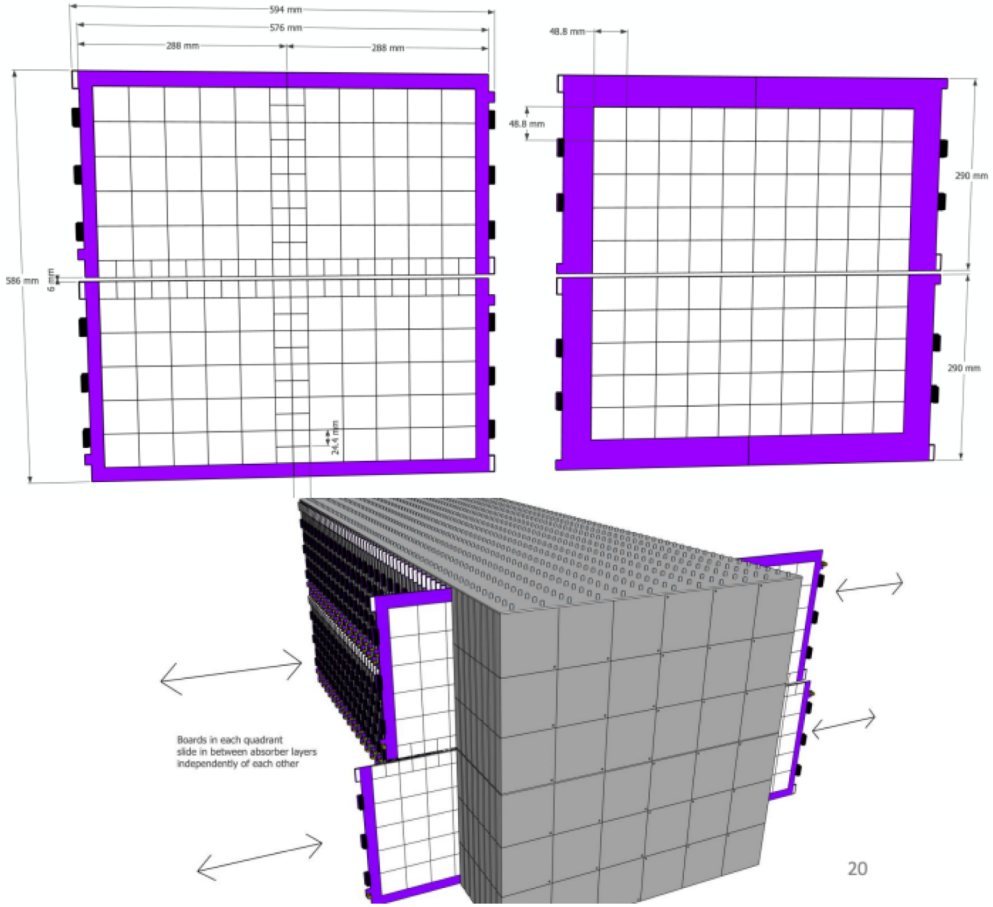
Overview

- Goal: Make a cell ID grid for HCAL
- This week: Try to understand the HCAL design and related to the histogram from G4 simulation

Introduction



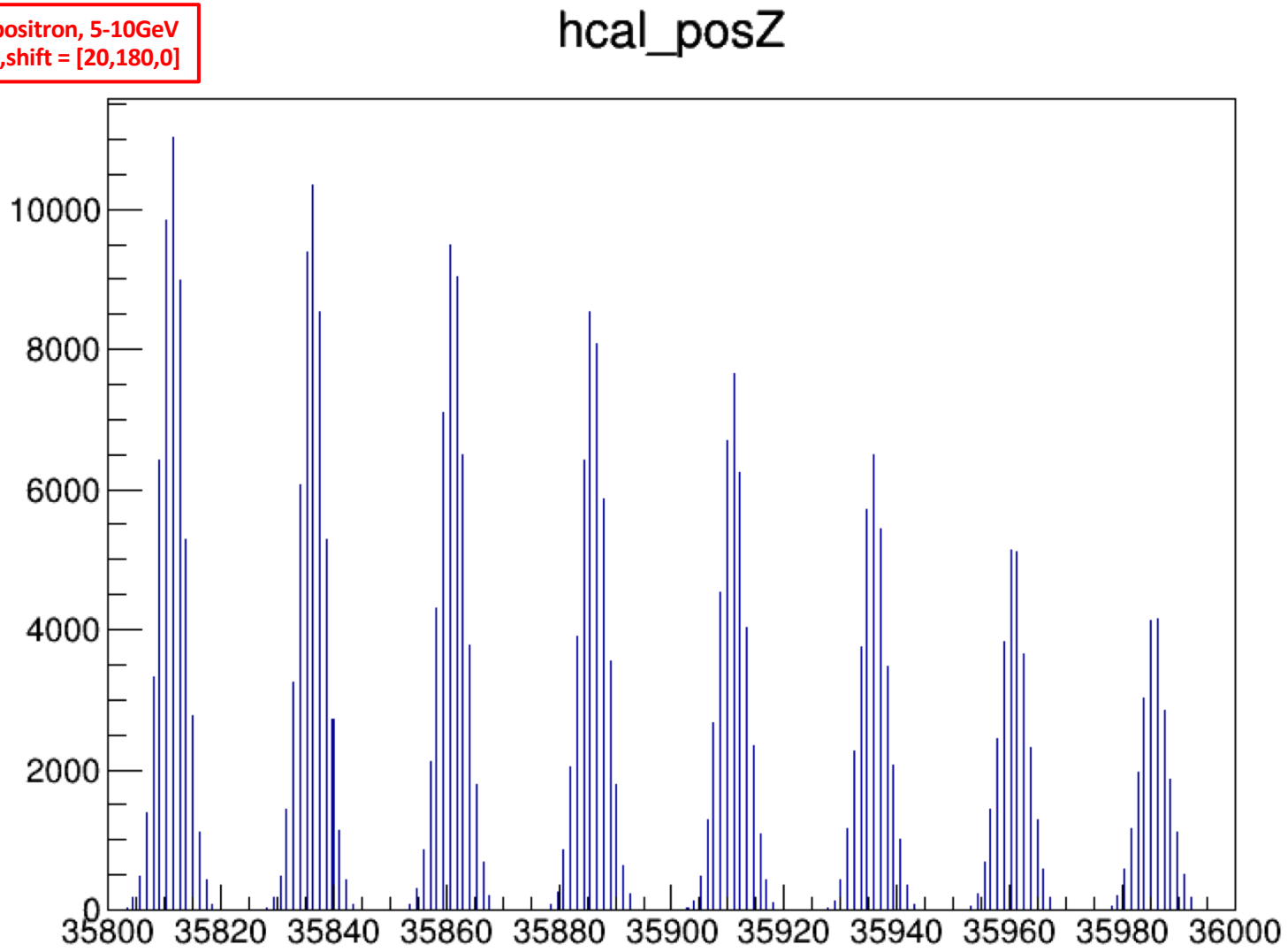
SiPM on tile HCal design
source: *Sebouh Paul*, 2023



- The prototype of ZDC HCAL has been introduced here
- Details (thickness) matched the .xml file we have

Hit distribution in HCAL z-direction

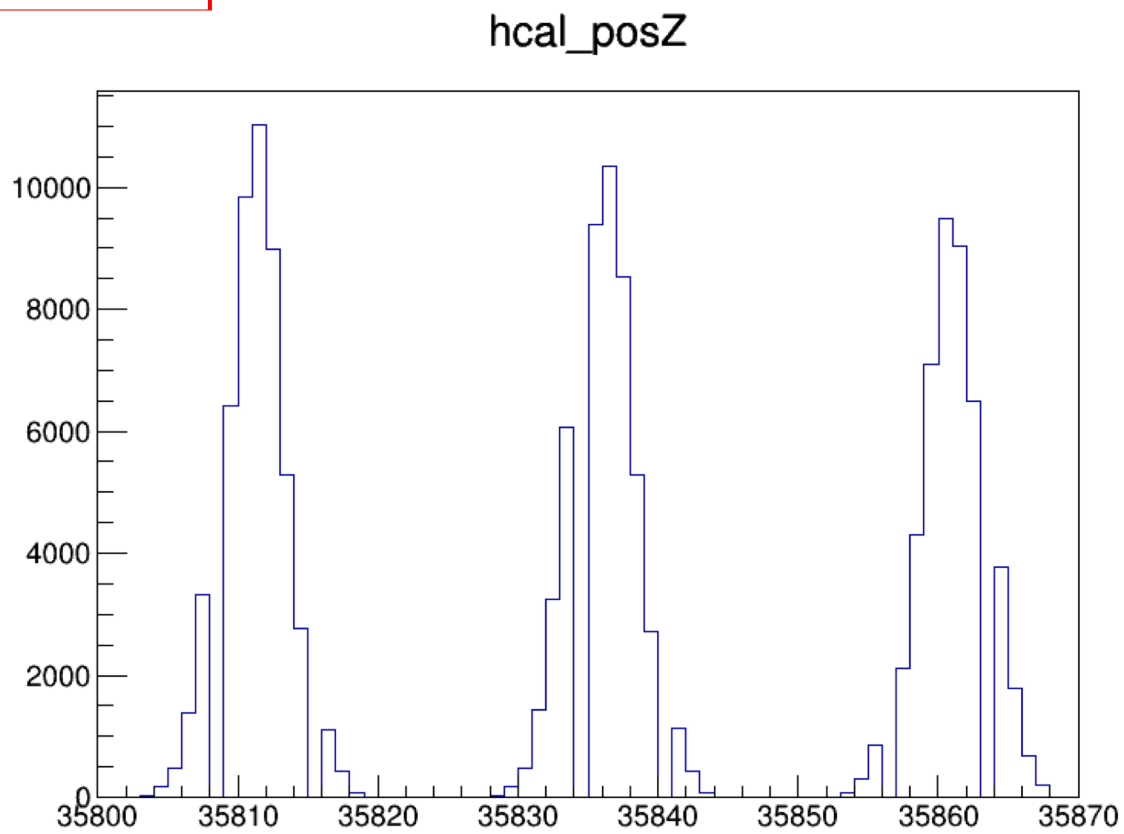
5k positron, 5-10GeV
θ,ϕ,shift = [20,180,0]

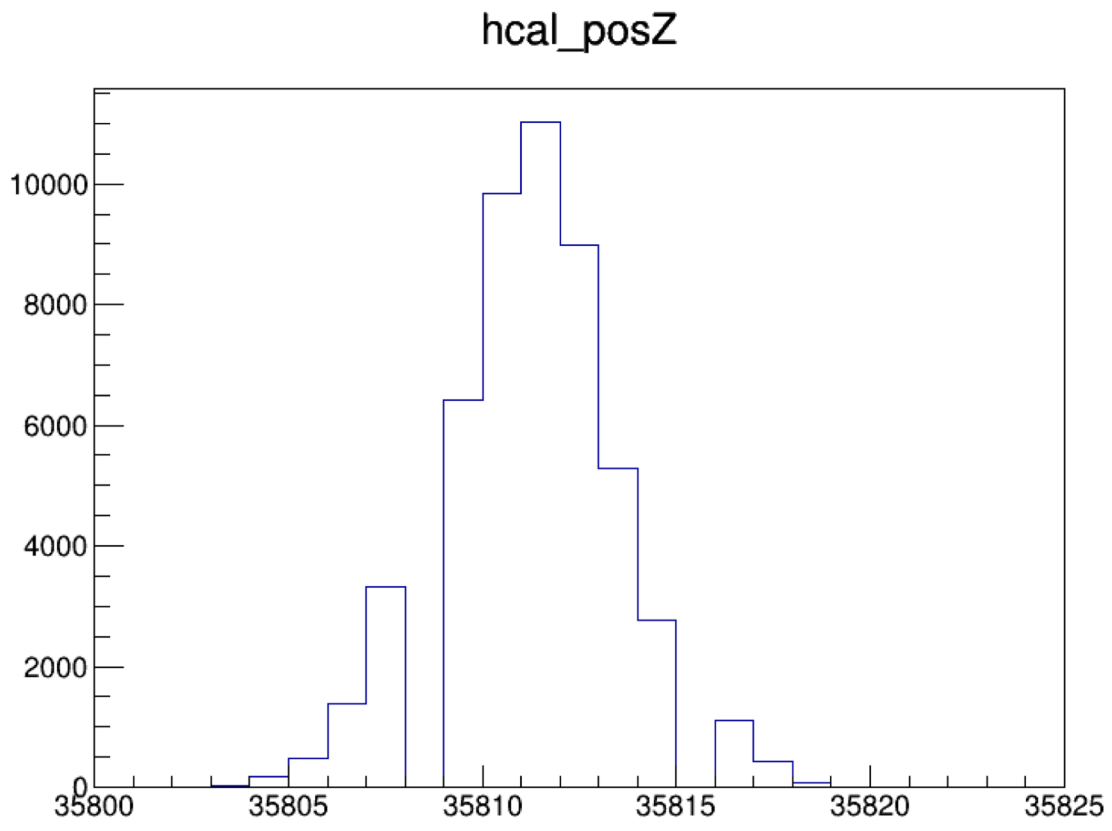


- First we have to figure out how to extract data from single layer in z direction

Hit distribution in HCAL z-direction

5k positron, 5-10GeV
θ,ϕ,shift = [20,180,0]

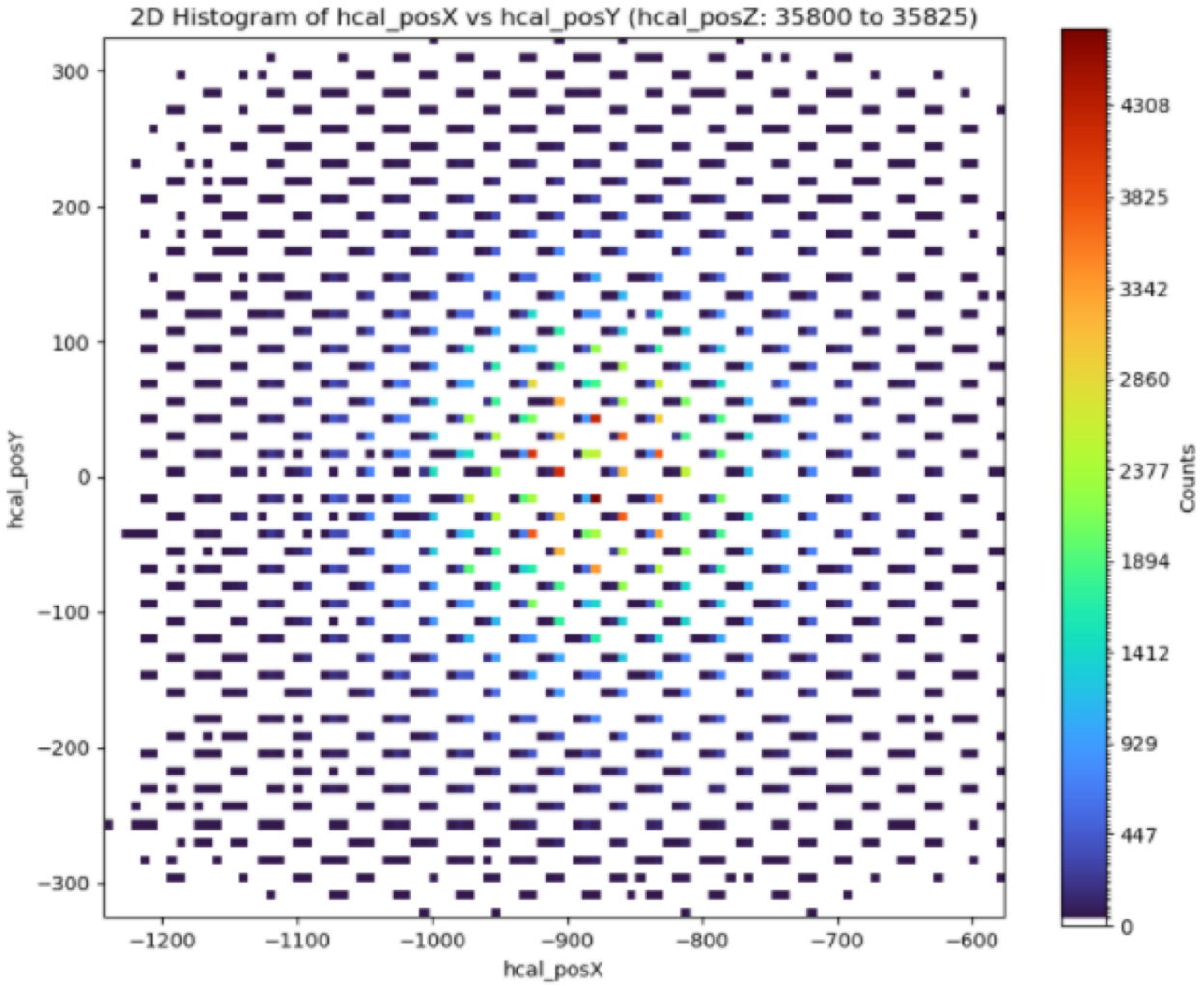


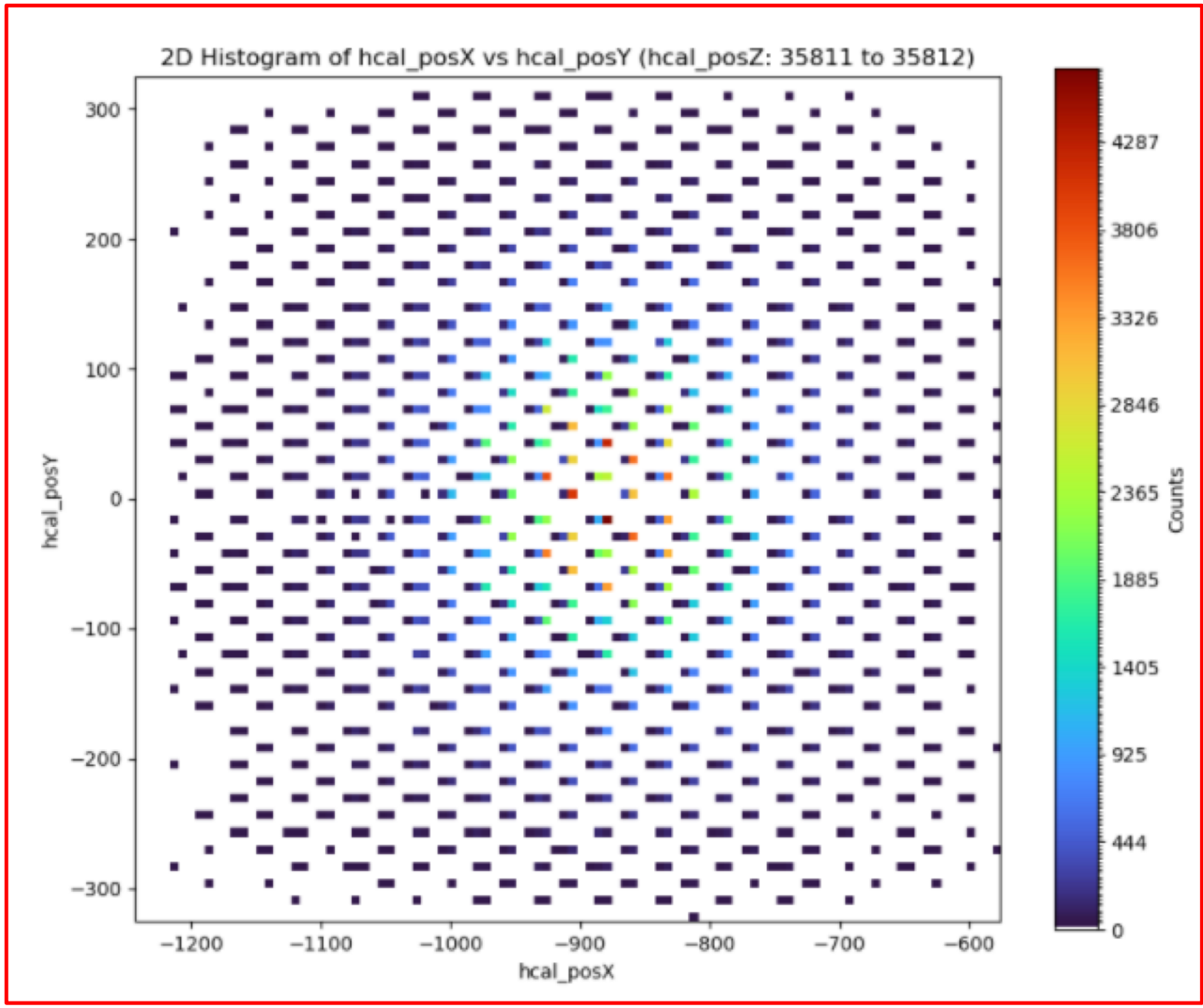


- Looks like the first layer is located at: 35803 – 35819 [mm]

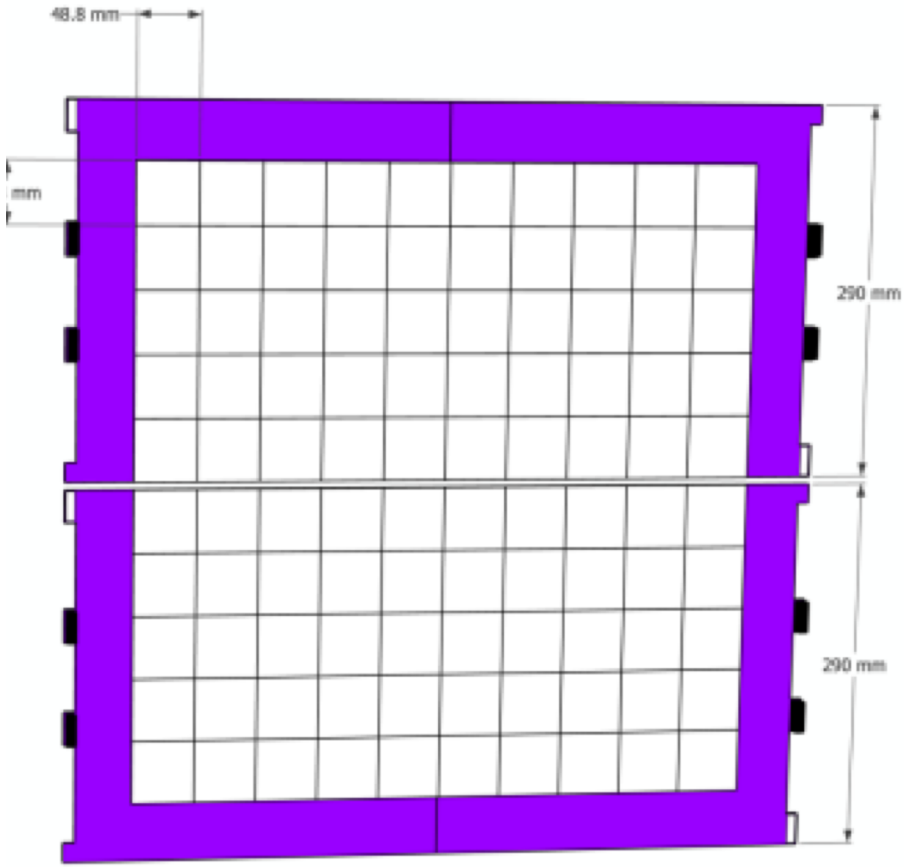
Hit distribution in HCAL XY-plane

5k positron, 5-10GeV
θ,ϕ,shift = [20,180,0]

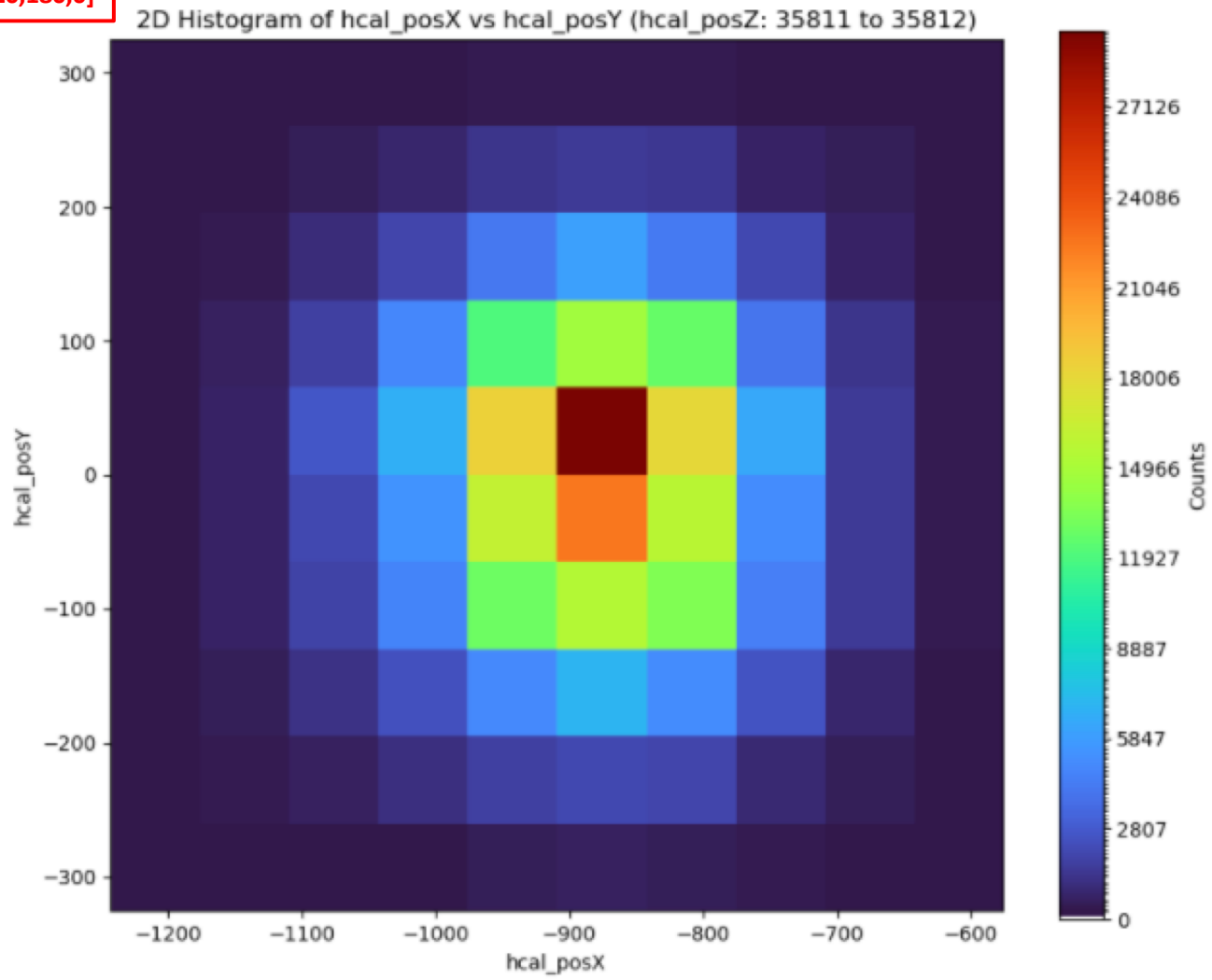




Hit distribution in HCAL XY-plane (rebin)



5k positron, 5-10GeV
θ,ϕ,shift = [20,180,0]

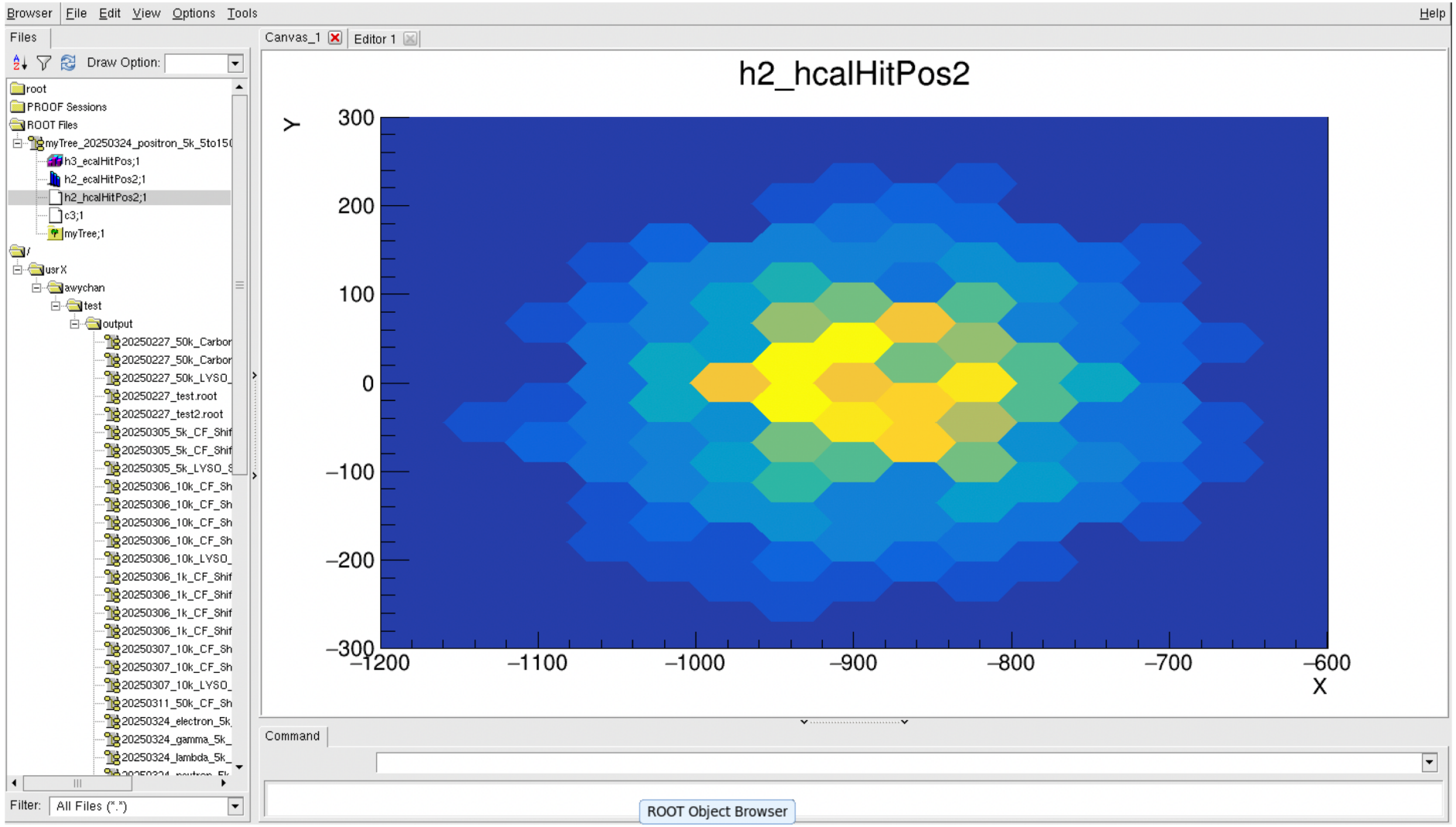


- Rebin to match the PCB grid in the prototype

Summary

- We set up the grid as a 2D histogram.
- Next step:
  1. Label the grid and get it back into the ROOT file
  2. Read the energy per cell
  3. Form a matrix for ML input

Backup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usrX
awychan
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output
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