



Status of Full IDEEA description integration

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IDEA simulation meeting

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Status of Idea standalone description

★The goal:

Is to integrate the geant 4 simulation code of the drift chamber and the dual readout calorimeter in a standalone framework.

★The status of the work:

📍The full geometry for the calorimeter is implemented in the standalone framework (with the drift chamber).

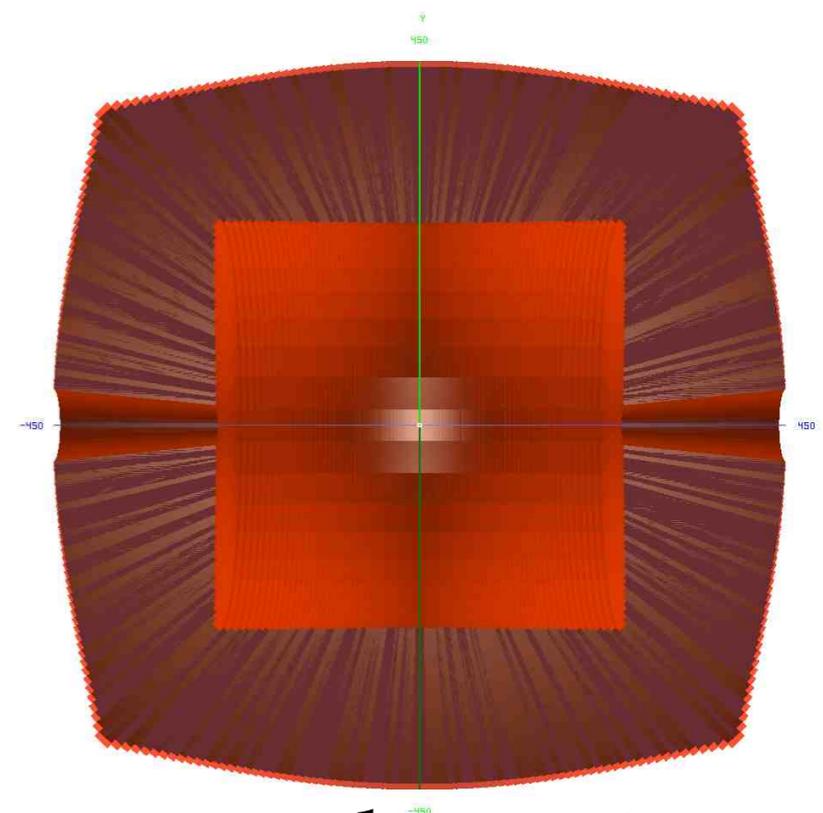
<https://github.com/welmeten/DriftChamberPLUSVertex/tree/master>

📍The Calorimeter step/ hit creation has been implemented in the integrated framework.

The Geometry of the calorimeter

★ Geometry adapted to the IDEA drift chamber volume.

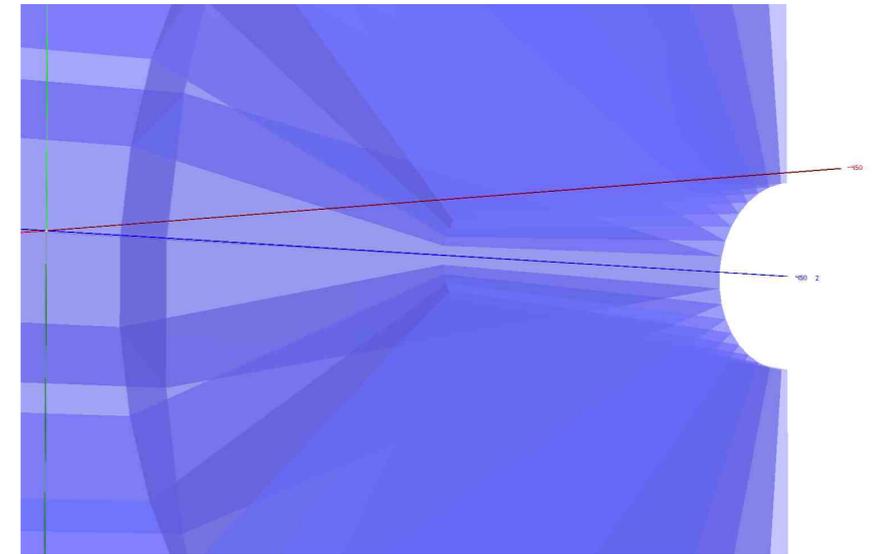
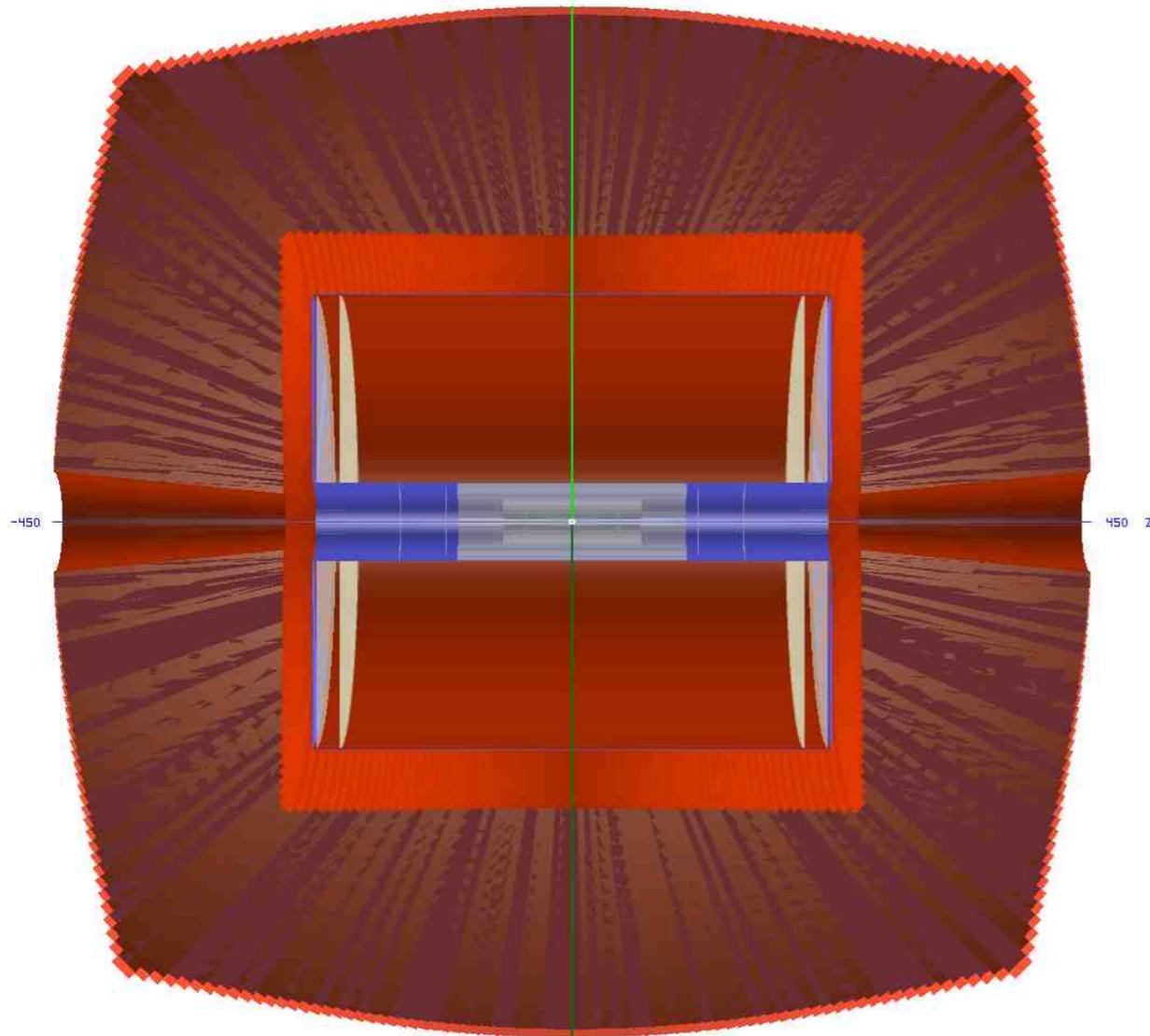
- Towers are G4Trap() physical volumes with slightly different shapes changing with θ .
- Fibers are 1mm diameter G4Tubs(), 0.5 mm of absorber material (copper) between two adjacent fibers is considered.
- Barrel Inner length: 5m - Outer diameter: 9 m @ 90°.
- 2 m long copper based towers: $\sim 8.2 \lambda$
- 36 rotation around z axis
- Number of Towers in the barrel: $40 \times 2 \times 36 = 2880$
- Number of Towers in per endcap: $35 \times 36 = 1260$



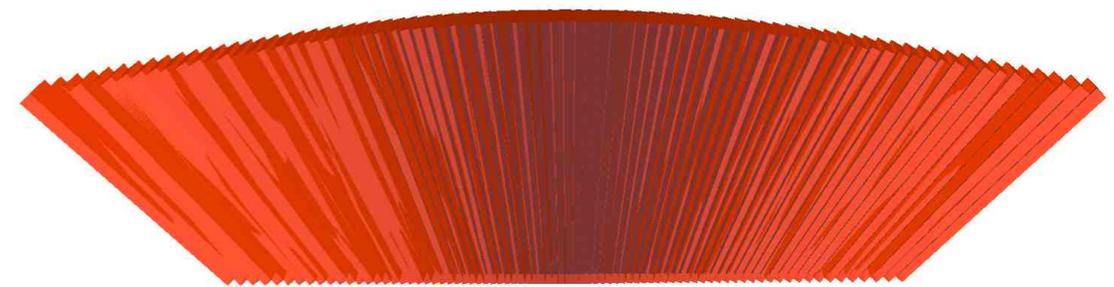
Calorimeter mother volume

The Geometry of the calorimeter

(calorimeter+Drift chamber)



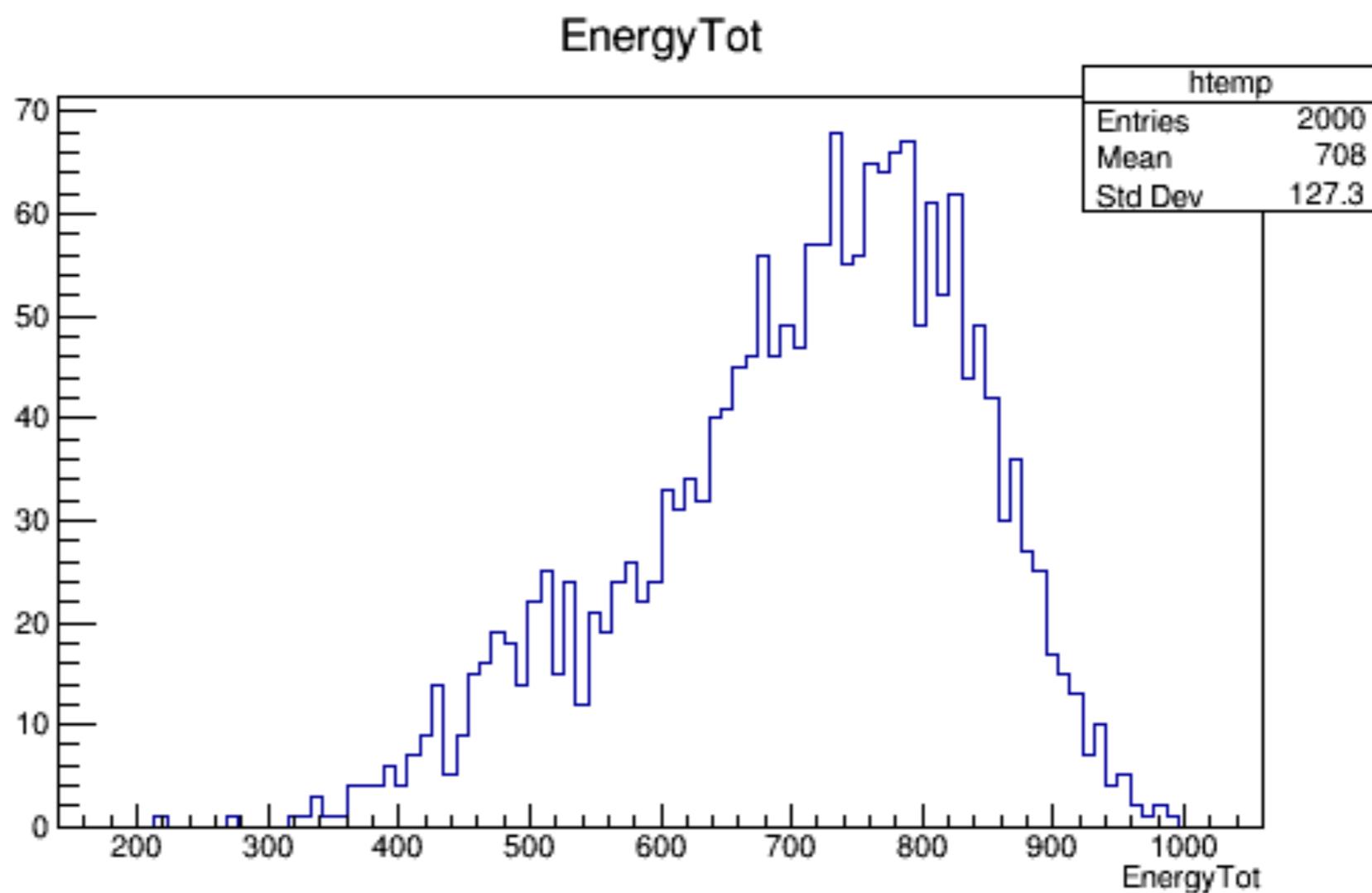
Phi volume (Endcap)



Phi volume (barrel)

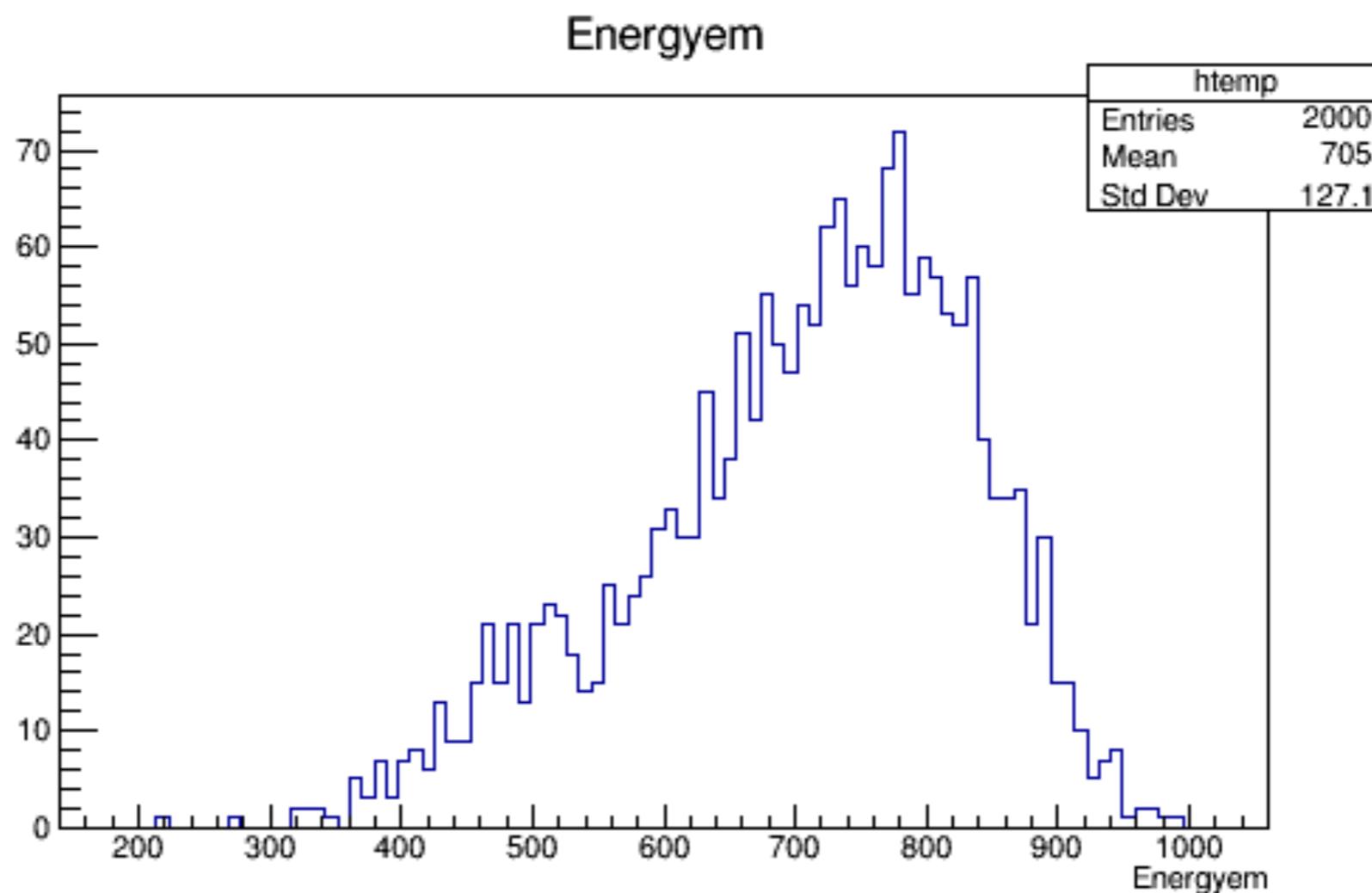
Calorimeter Step/ hit creation

Total energy deposited in calorimeter from Monte Carlo truth. Every step inside the calorimeter I add up the energy deposited. This does not include invisible energy.



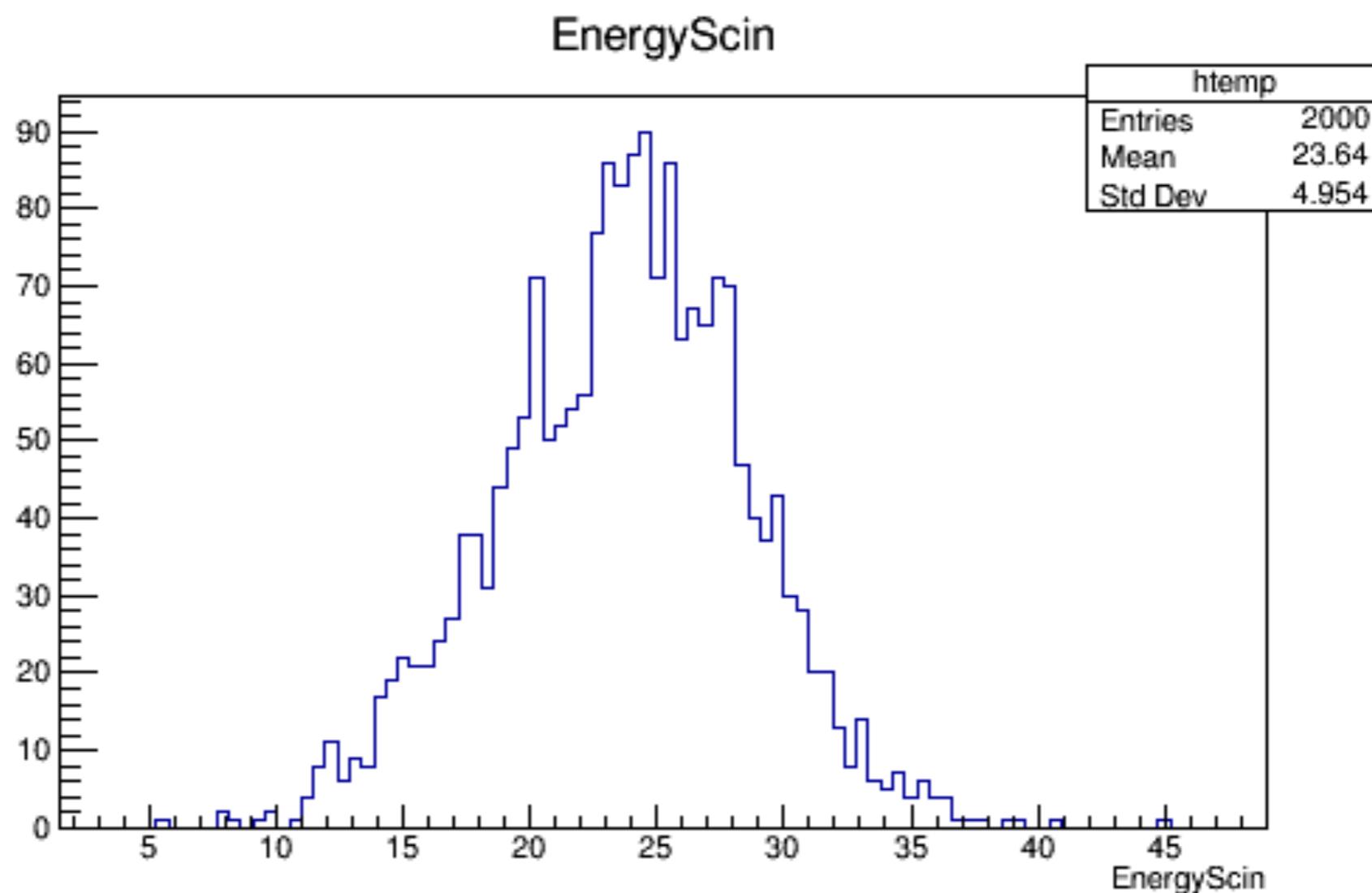
Calorimeter Step/ hit creation

Energy deposited by the electromagnetic component in the calorimeter from Monte Carlo truth. For electrons/positrons it is very close to EnergyTot.



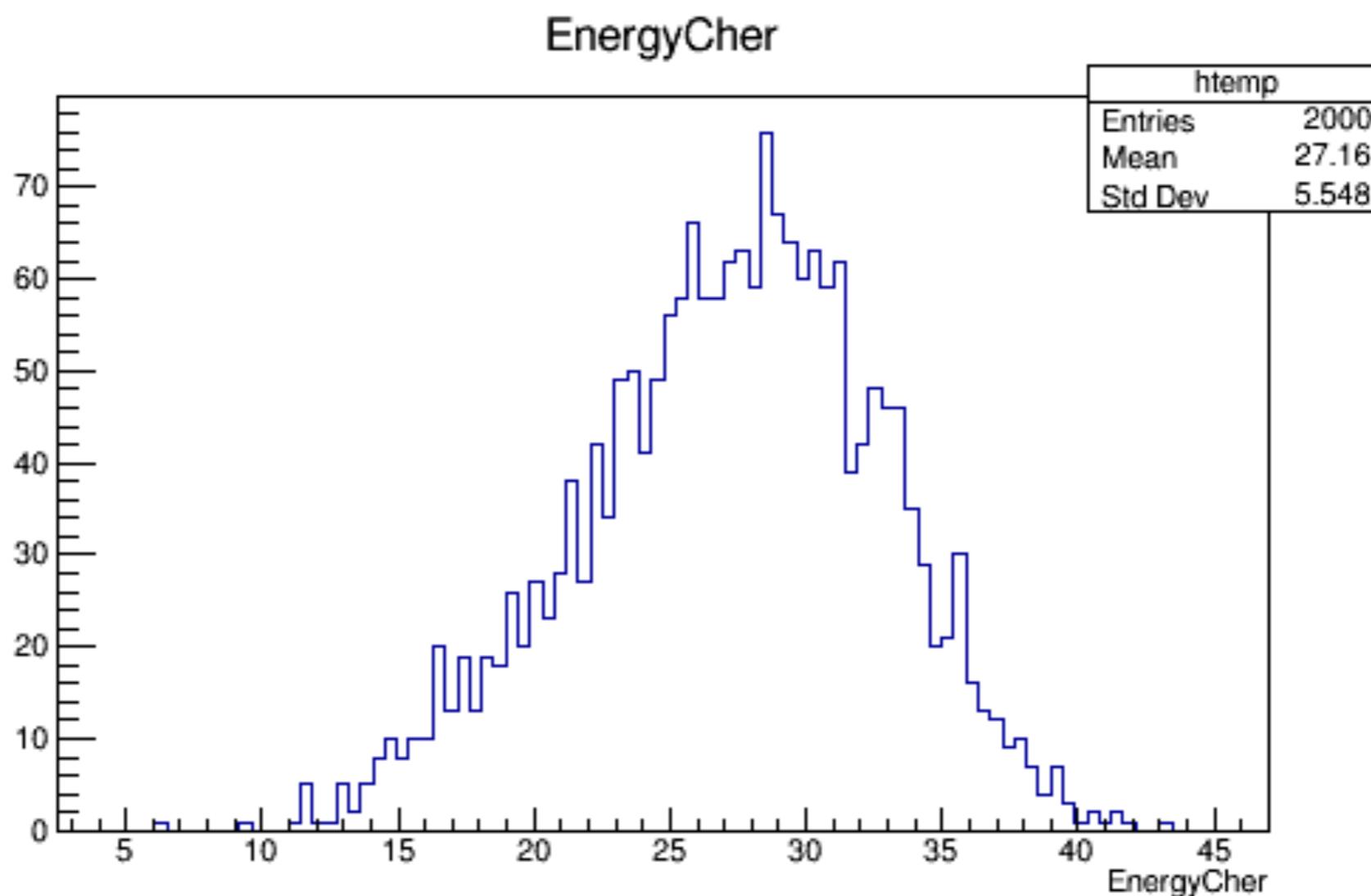
Calorimeter Step/ hit creation

Energy deposited in Scin fibers (not Birk corrected!), this is not a signal and is used only to estimate the sampling fraction of scintillating fibers.



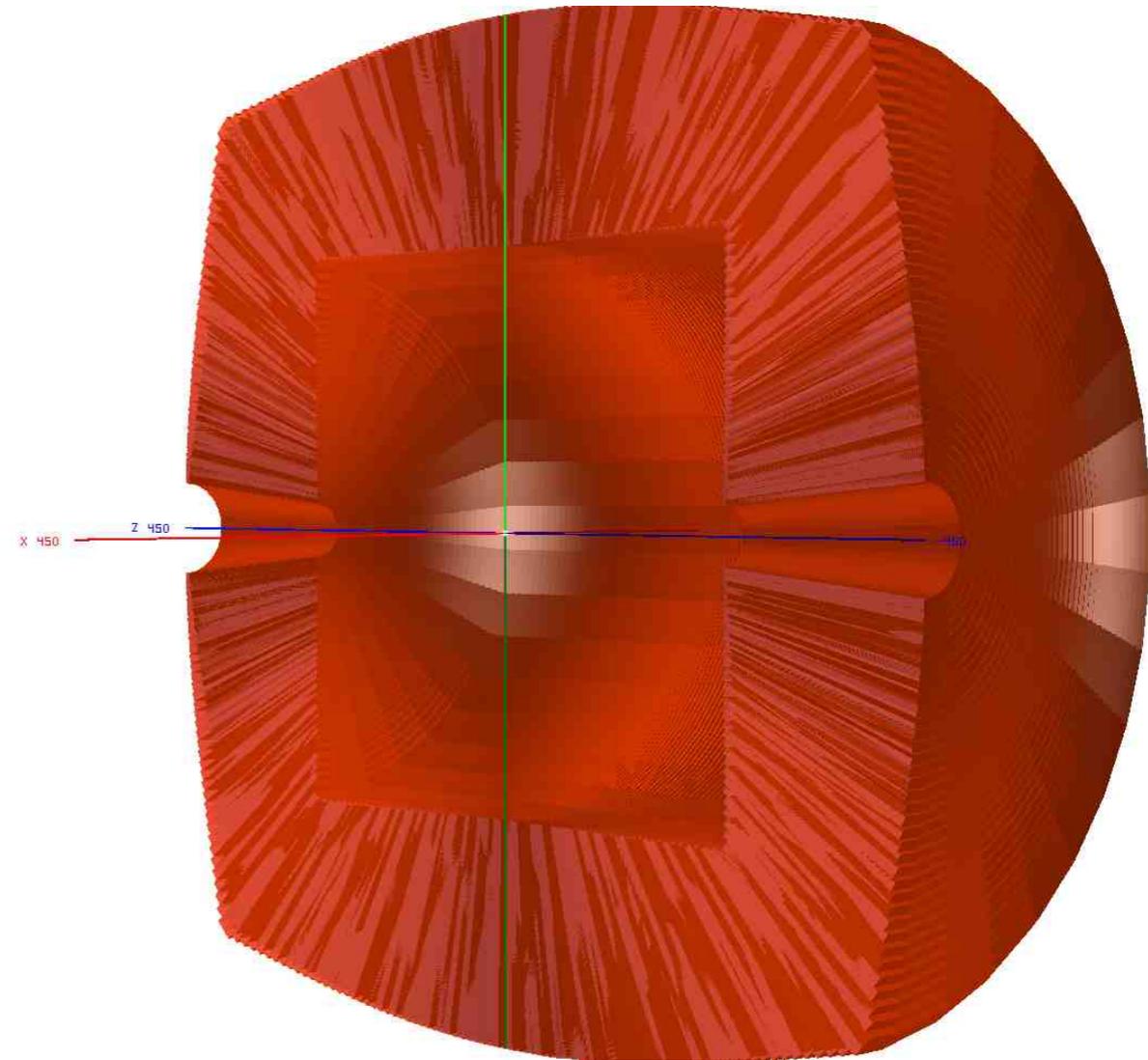
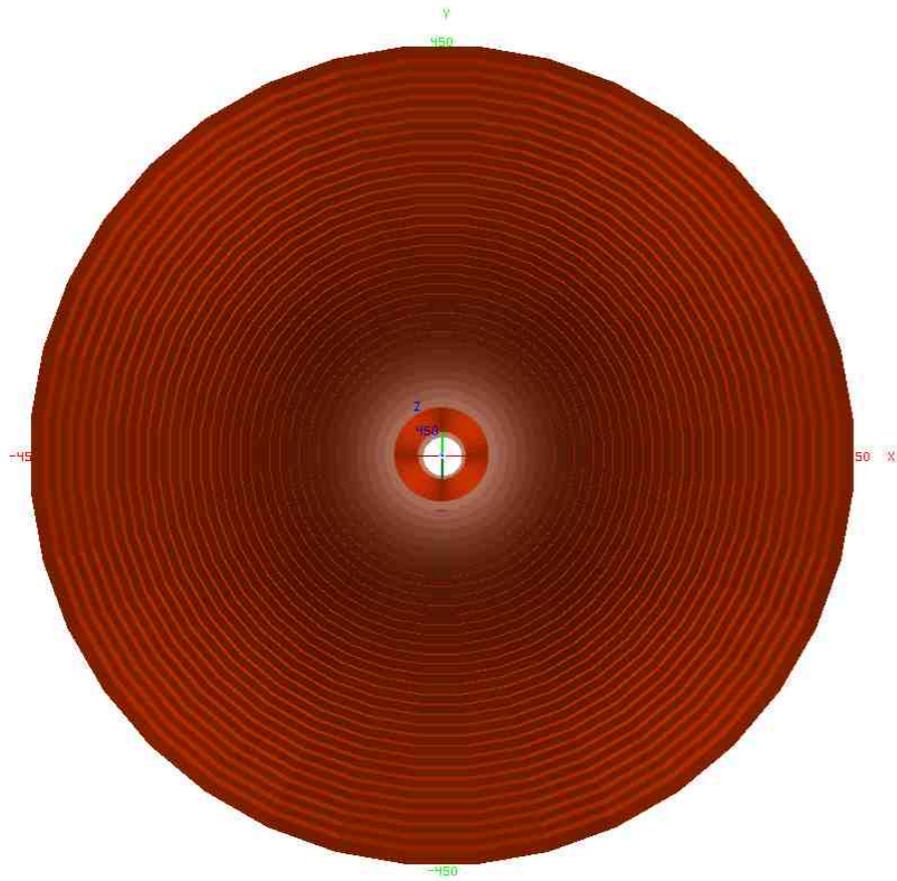
Calorimeter Step/ hit creation

Energy deposited in Cher fibers, this is not a signal and is used only to estimate the sampling fraction of clear fibers.



Backup

Different view from the geometry of the calorimeter



The standalone description

(calorimeter+Drift chamber)

