

# SIMULATION RESULTS OF A CAPILLARY TUBE, DUAL-READOUT CALORIMETER

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on behalf of the IDEA Dual-Readout Group



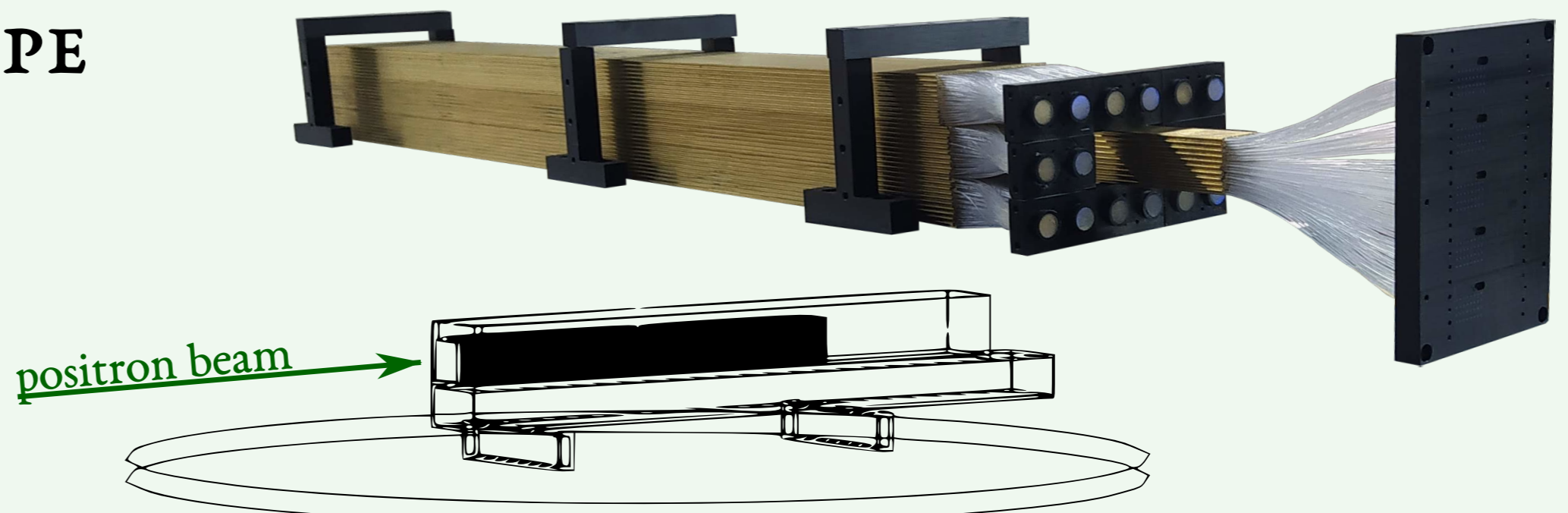
## ELECTROMAGNETIC-SIZED PROTOTYPE

Test beam prototype:

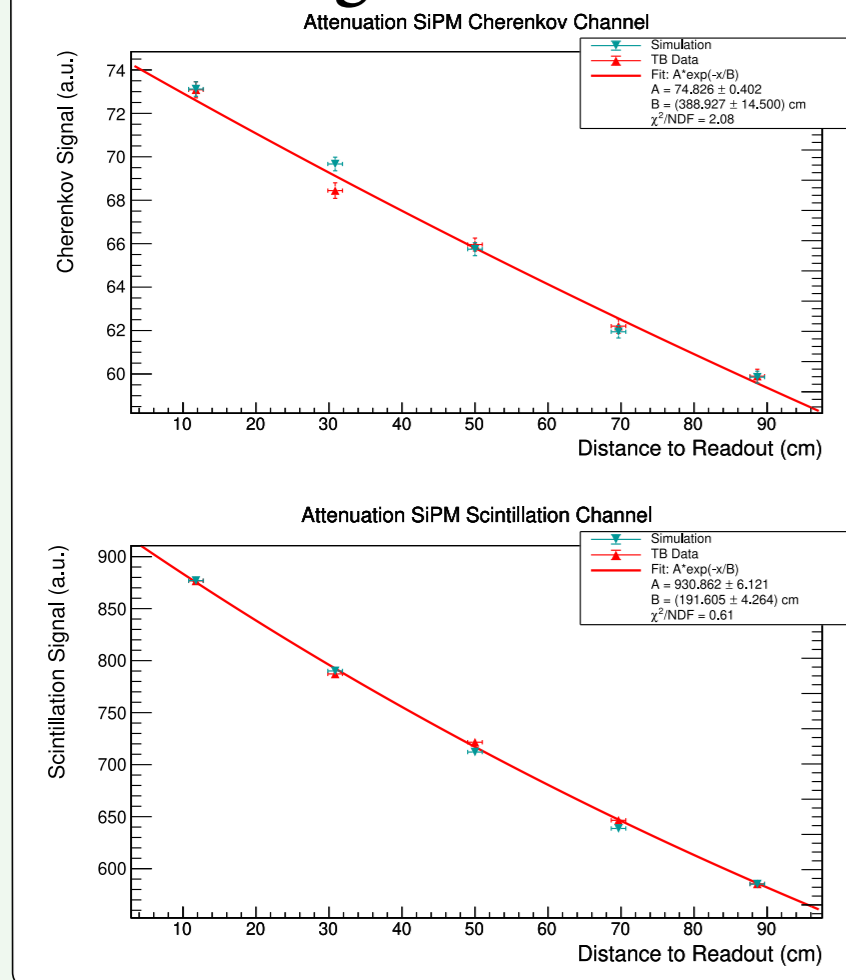
- $10 \times 10 \times 100 \text{ cm}^3$
- $60 \times 48$  tubes ( $r_{\text{outer}} = 1 \text{ mm}$ ,  $r_{\text{inner}} = 0.5 \text{ mm}$ )
- $\sim 95 \%$  containment for EM shower
- Exposed to positron beams ( $10 - 120 \text{ GeV}$ ) at SPS

Simulation:

- Geometry recreated in Geant4
- Comparison with TB data
  - Validation
  - New Features

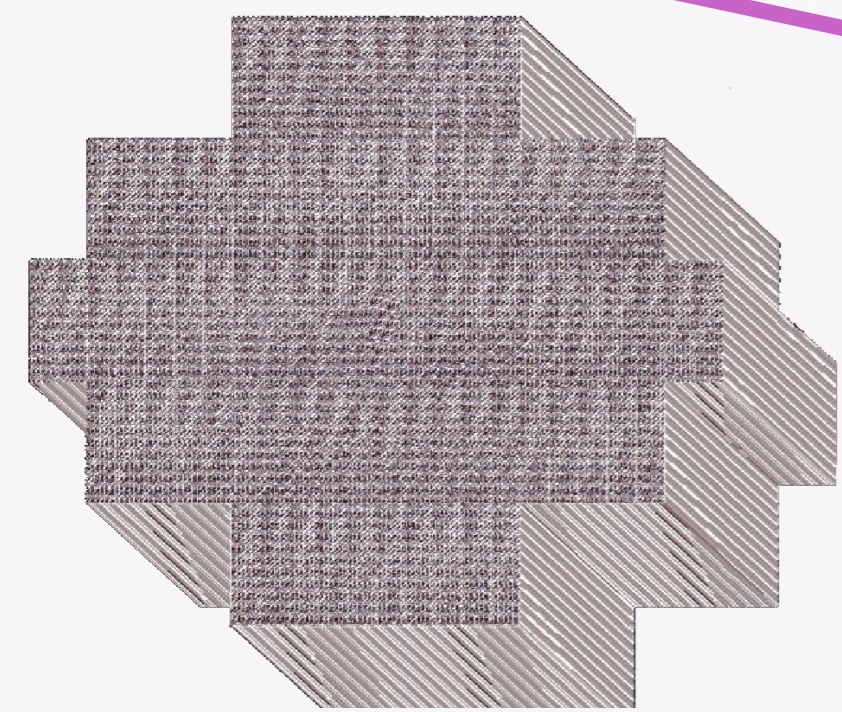
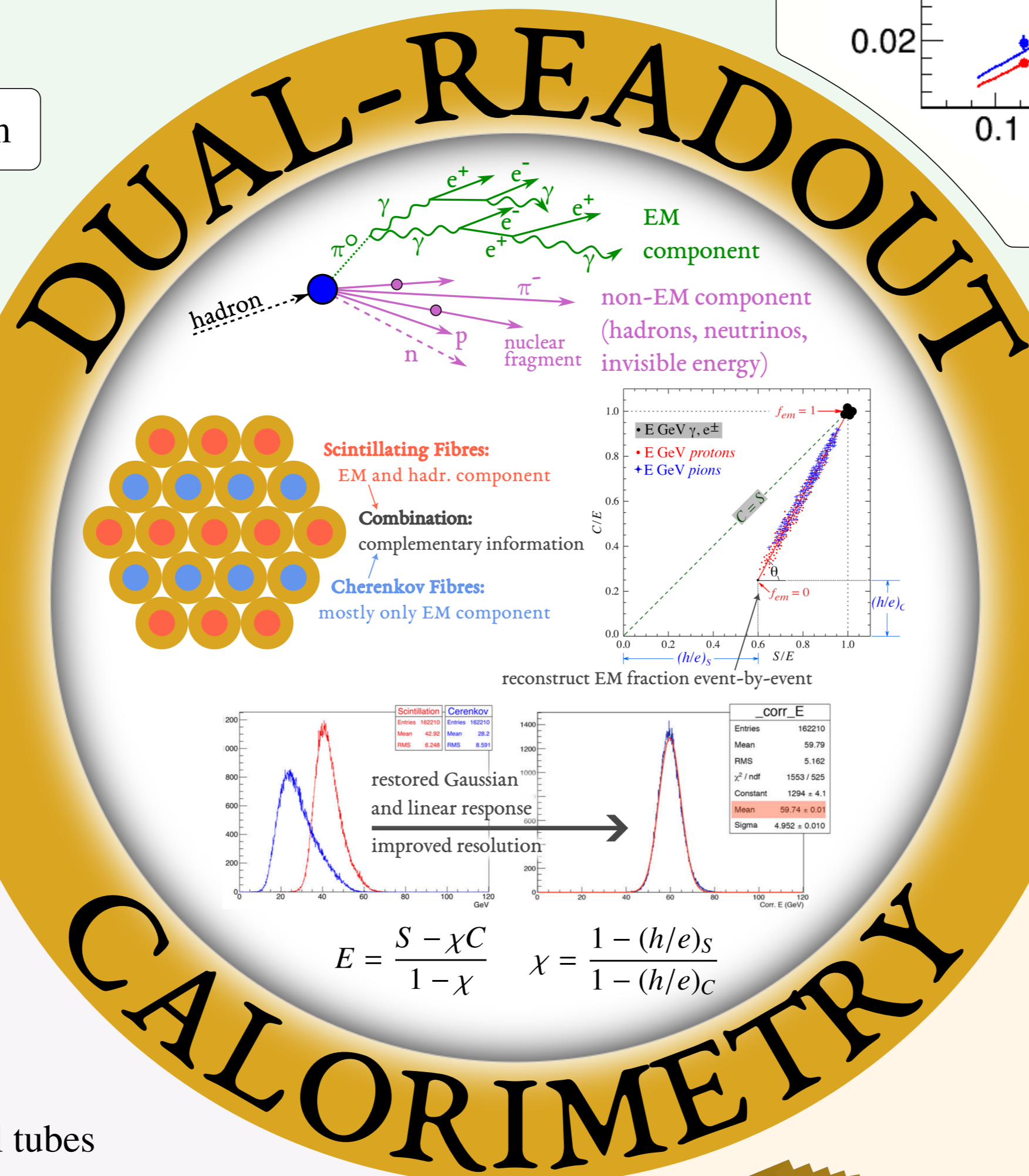
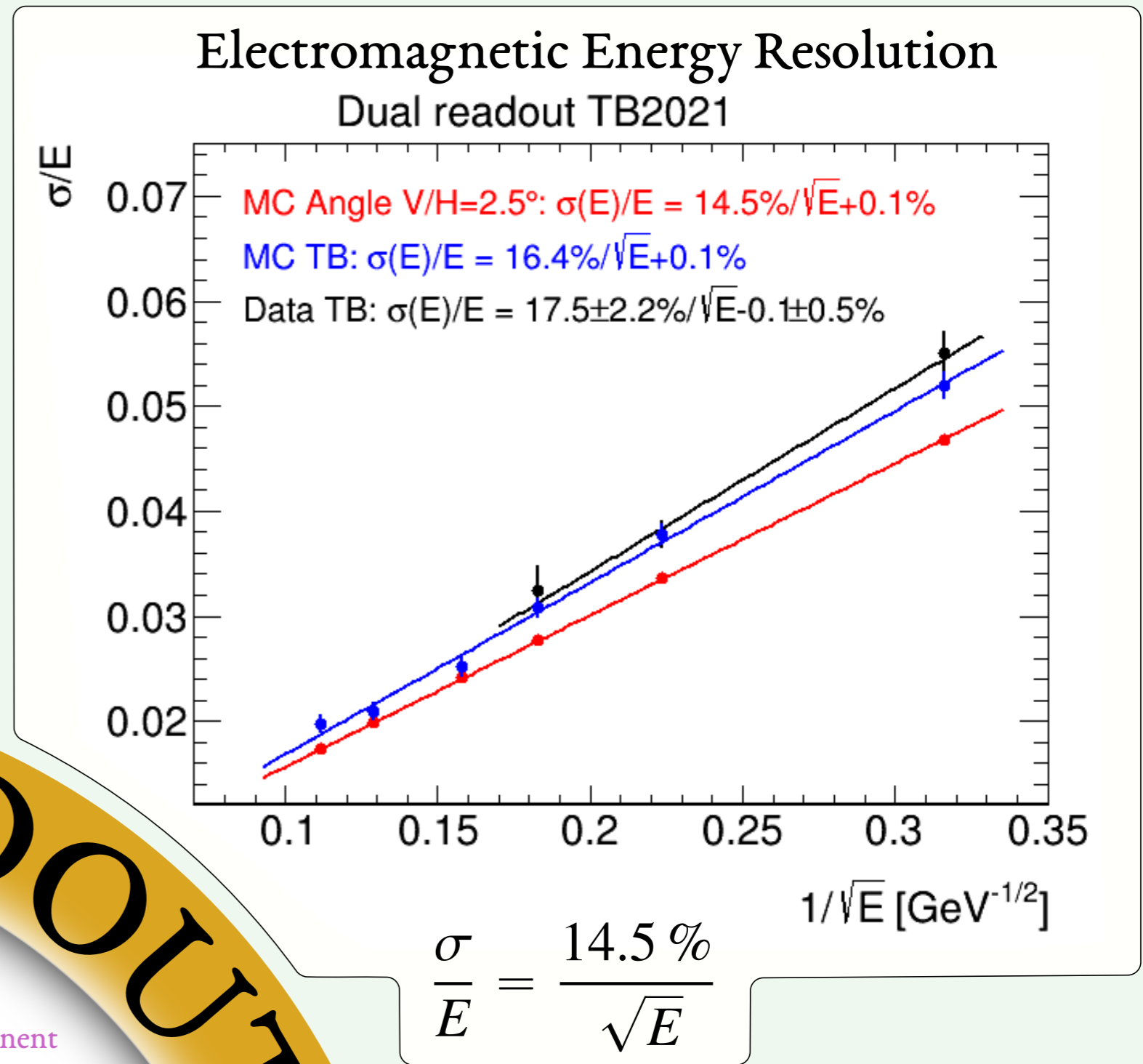
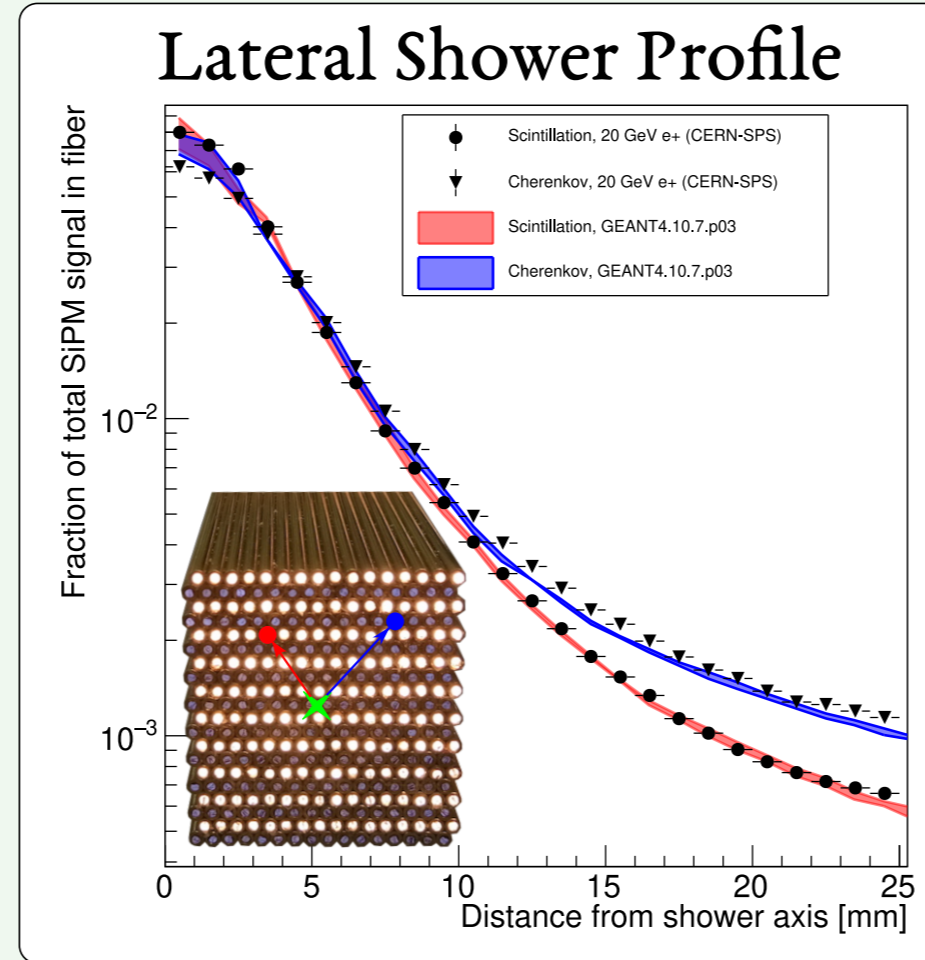


### Fibre Light Attenuation



C: 388.9 cm

S: 191.6 cm

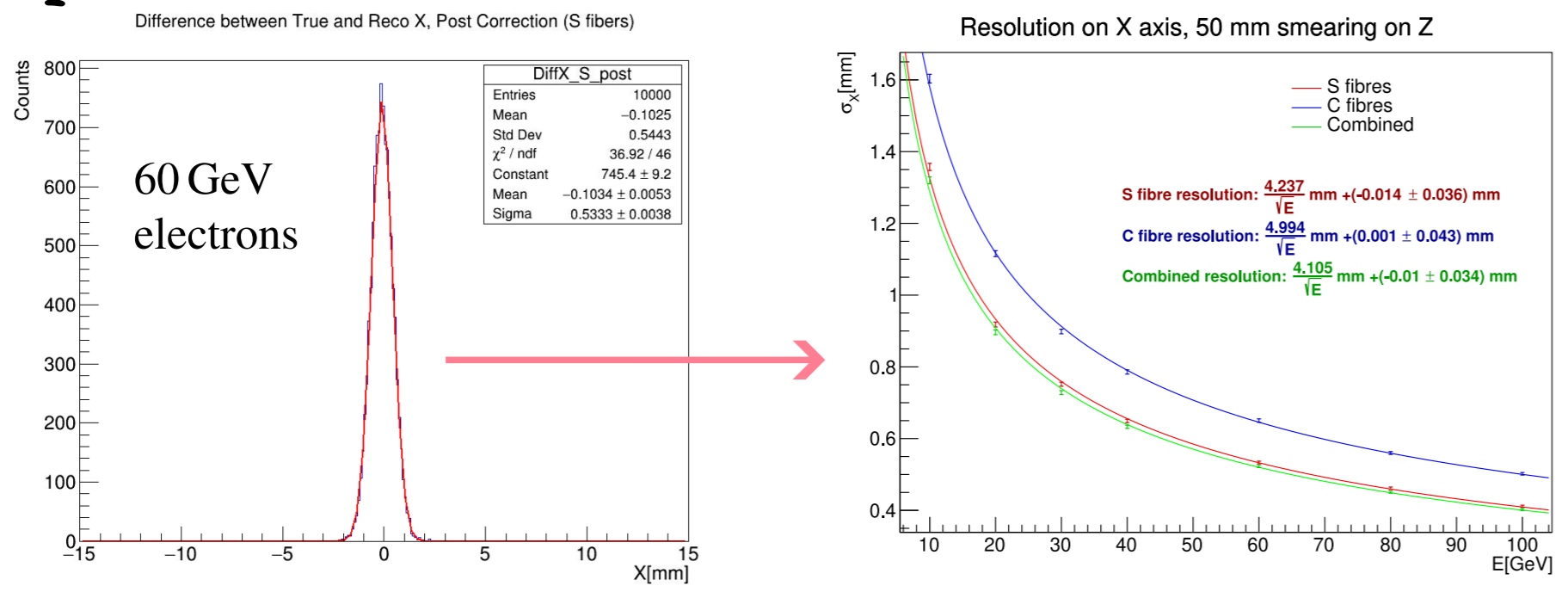


## HADRONIC PROTOTYPE

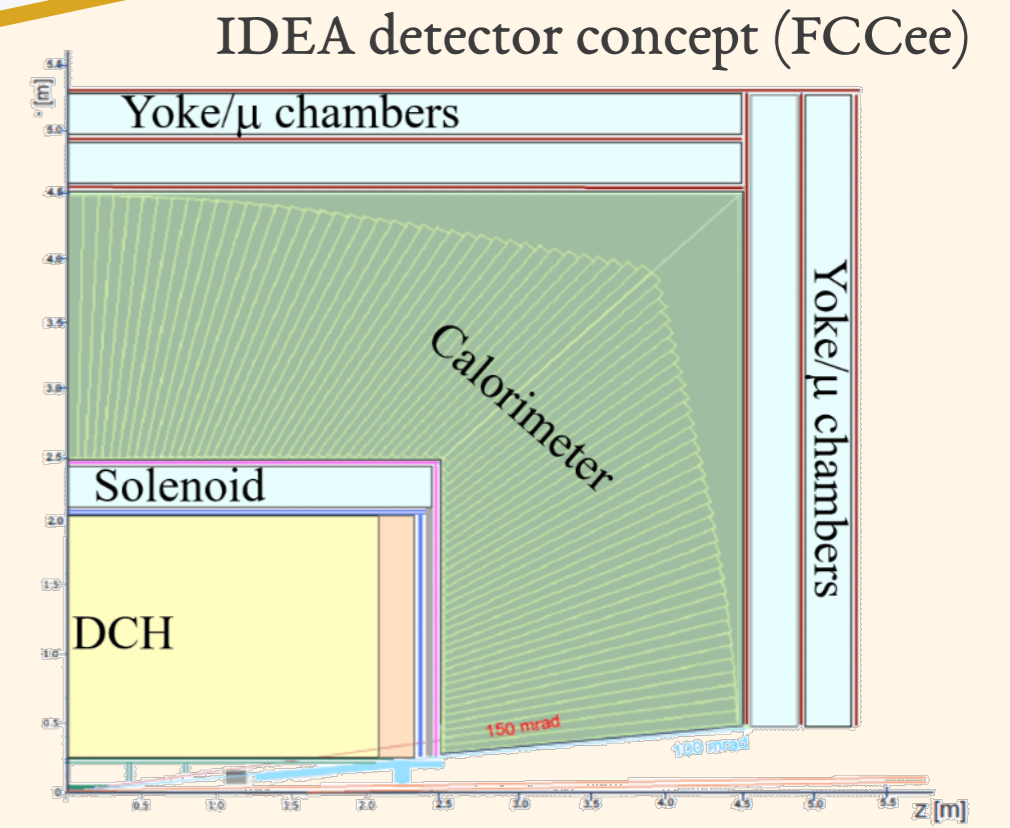
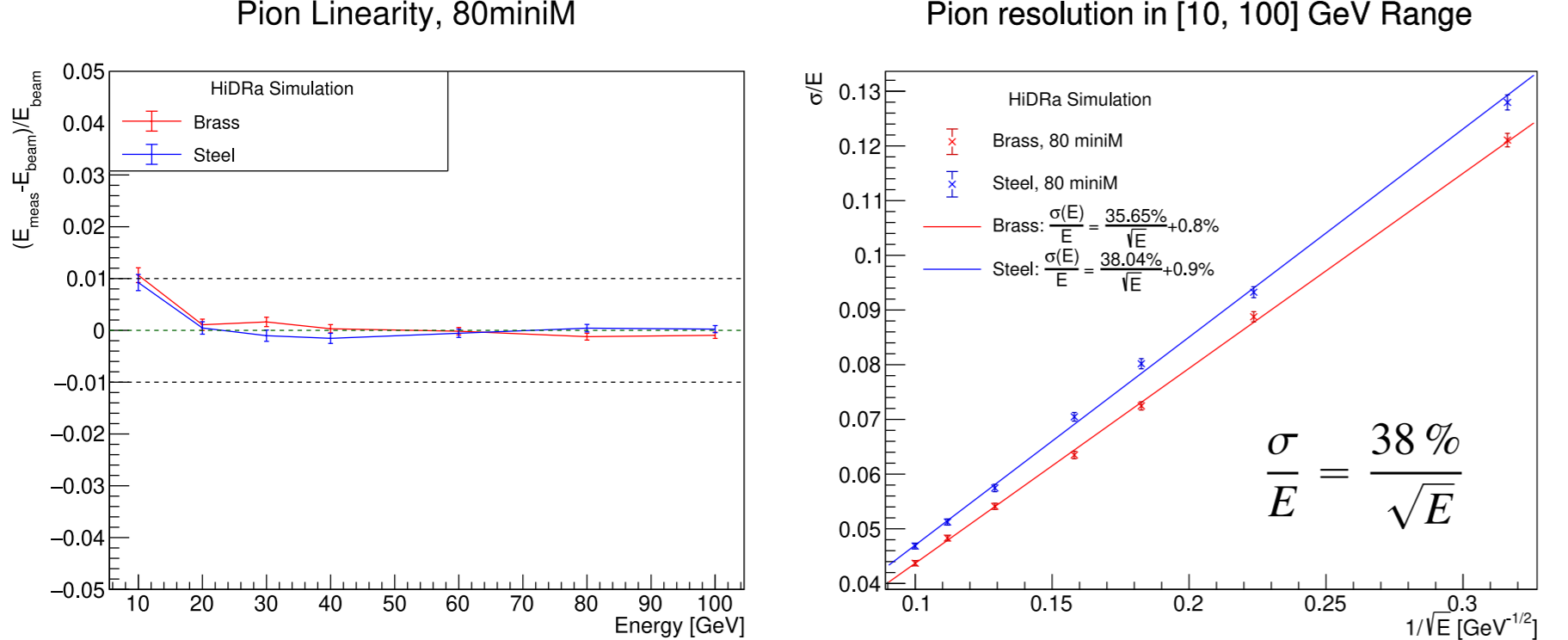
"HiDRa":

- Currently under construction
- $65 \times 65 \times 250 \text{ cm}^3$ ,  $\sim 80\text{k}$  stainless steel tubes
- Improved fibre attenuation lengths
- Simulation based on EM prototype available

### Spatial Resolution

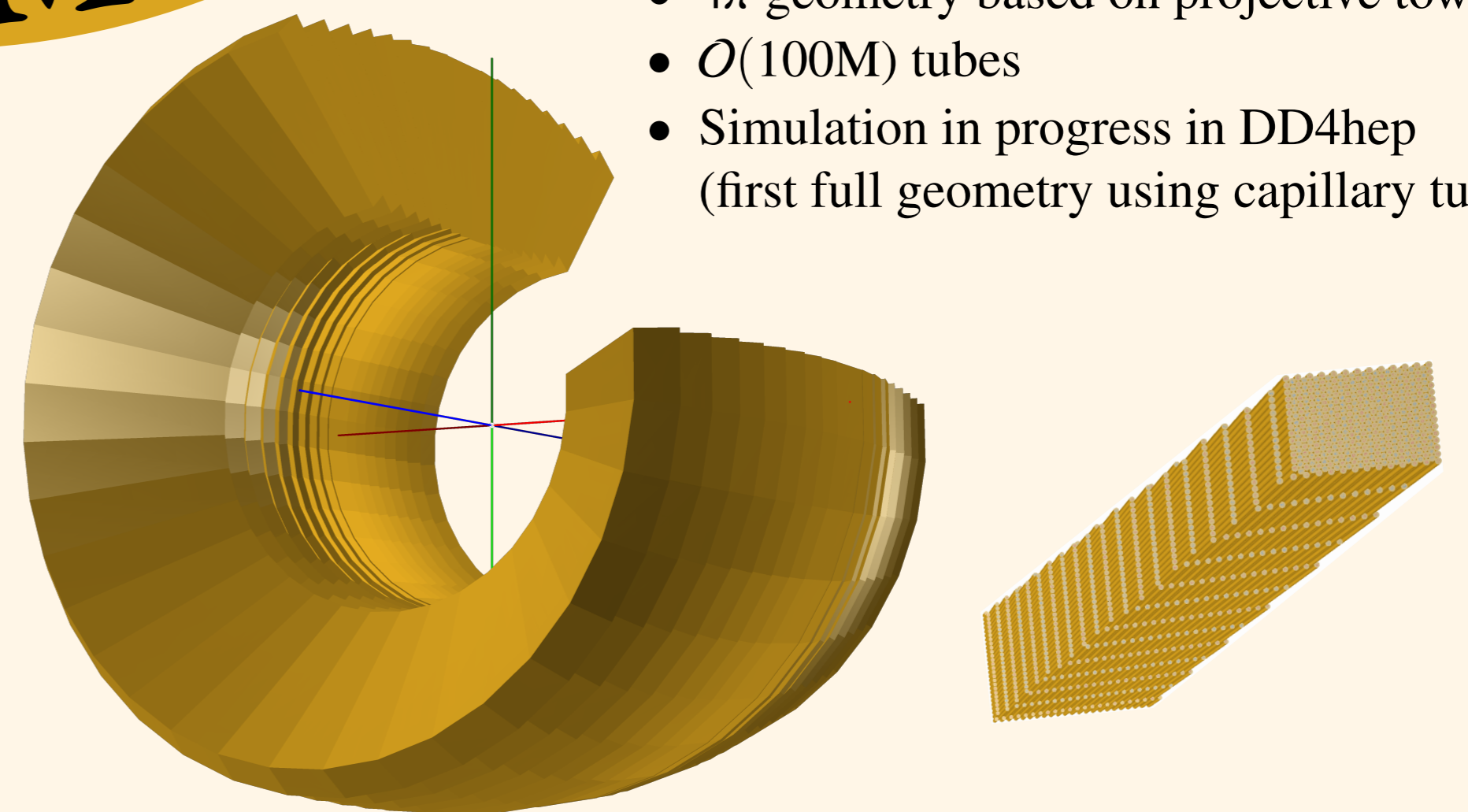


### Hadronic Performance

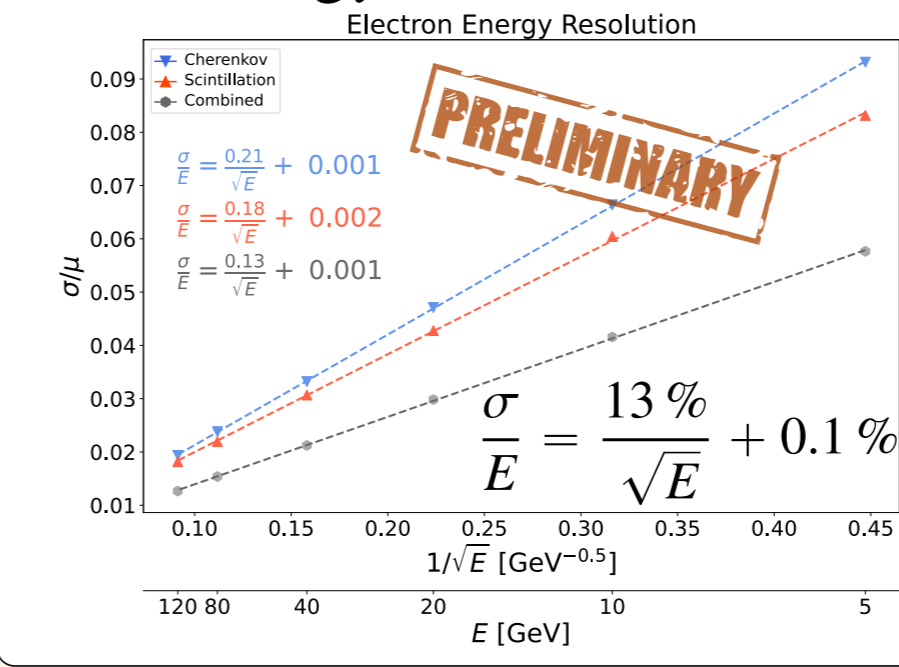


## FULL DETECTOR

- $4\pi$  geometry based on projective towers
- $O(100\text{M})$  tubes
- Simulation in progress in DD4hep (first full geometry using capillary tubes)



### EM Energy Resolution



### Had. Energy Resolution

