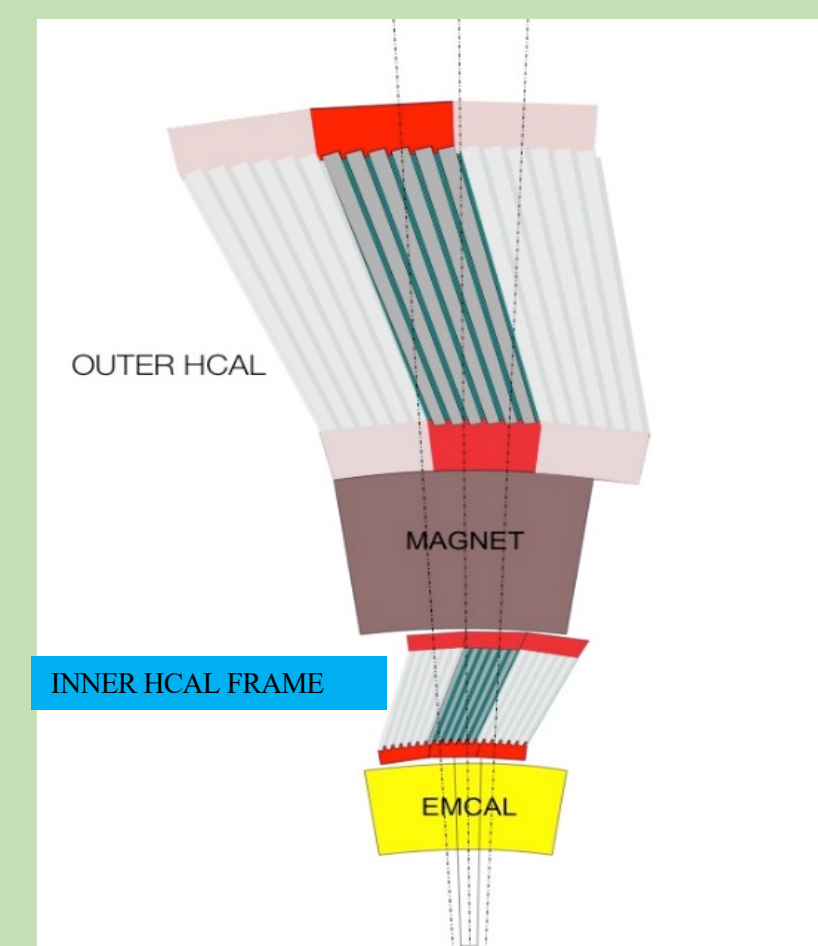


## sPHENIX Hadronic Calorimeter System

- Essential for Jet Physics Program.
- 32 Sectors.
- 48 tower per sectors.
- 5 scintillator tiles per tower.
- 1536 readout towers (7680 SiPM's).
- 7,680 tiles sandwiched between steel absorber.

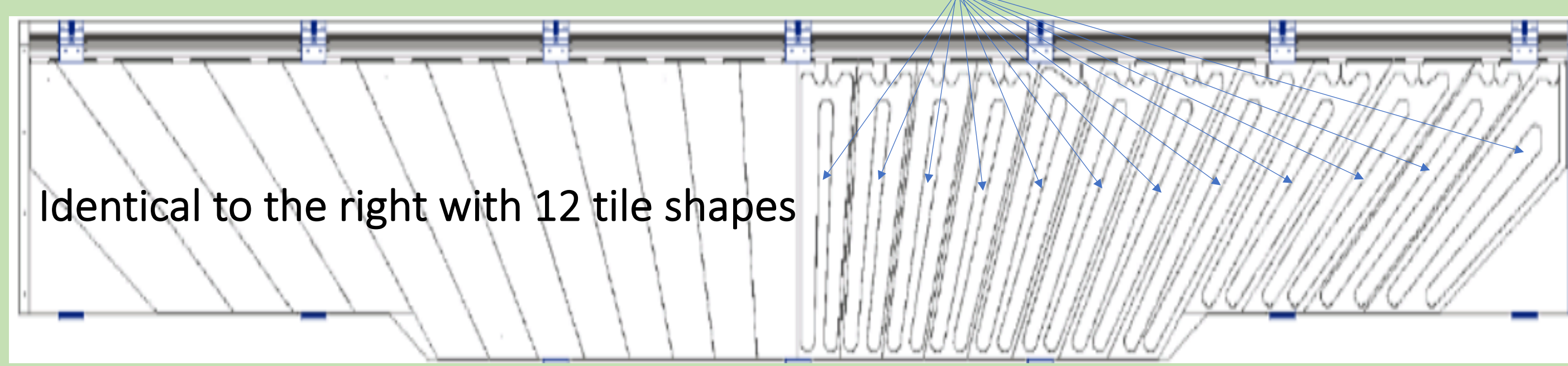


Two sectors of steel absorber plates

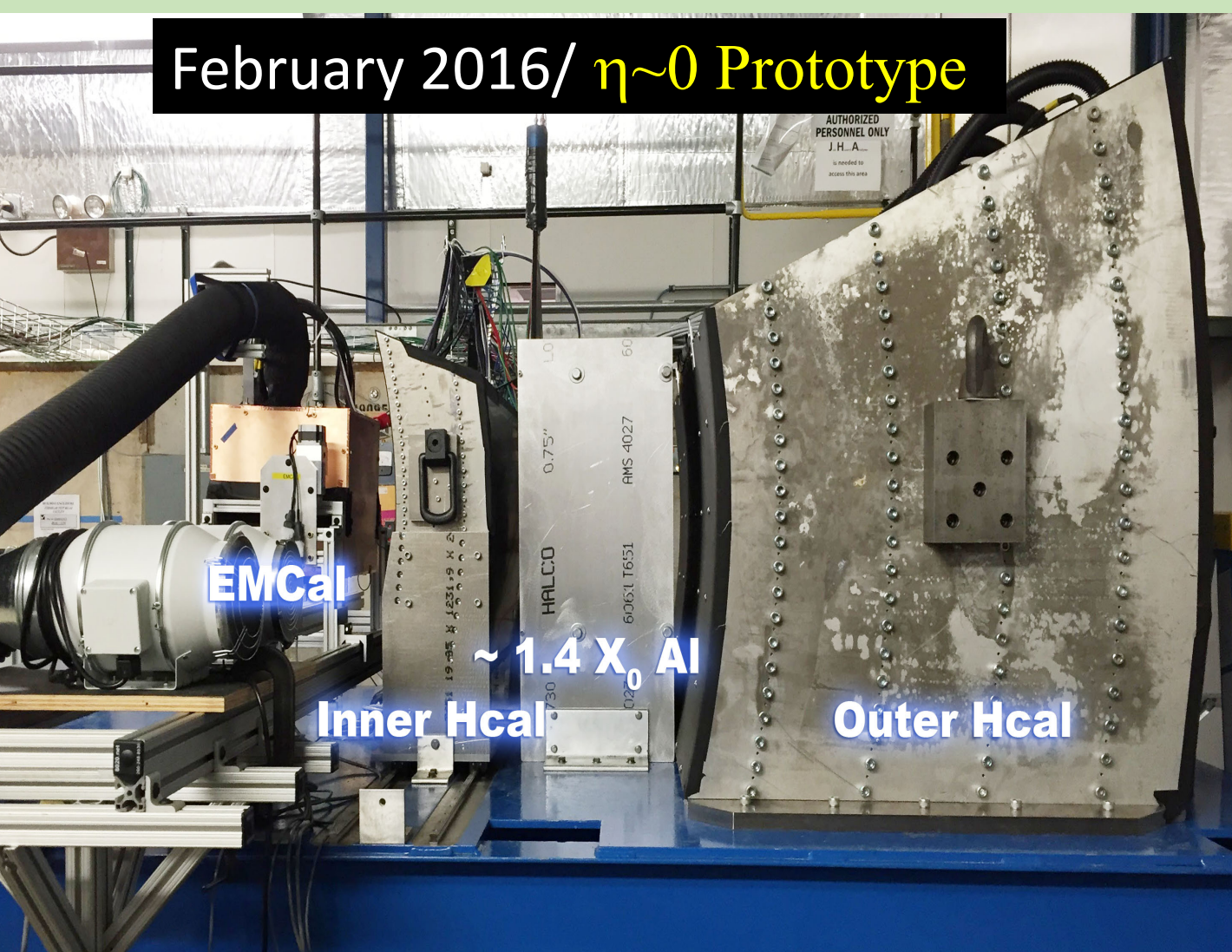
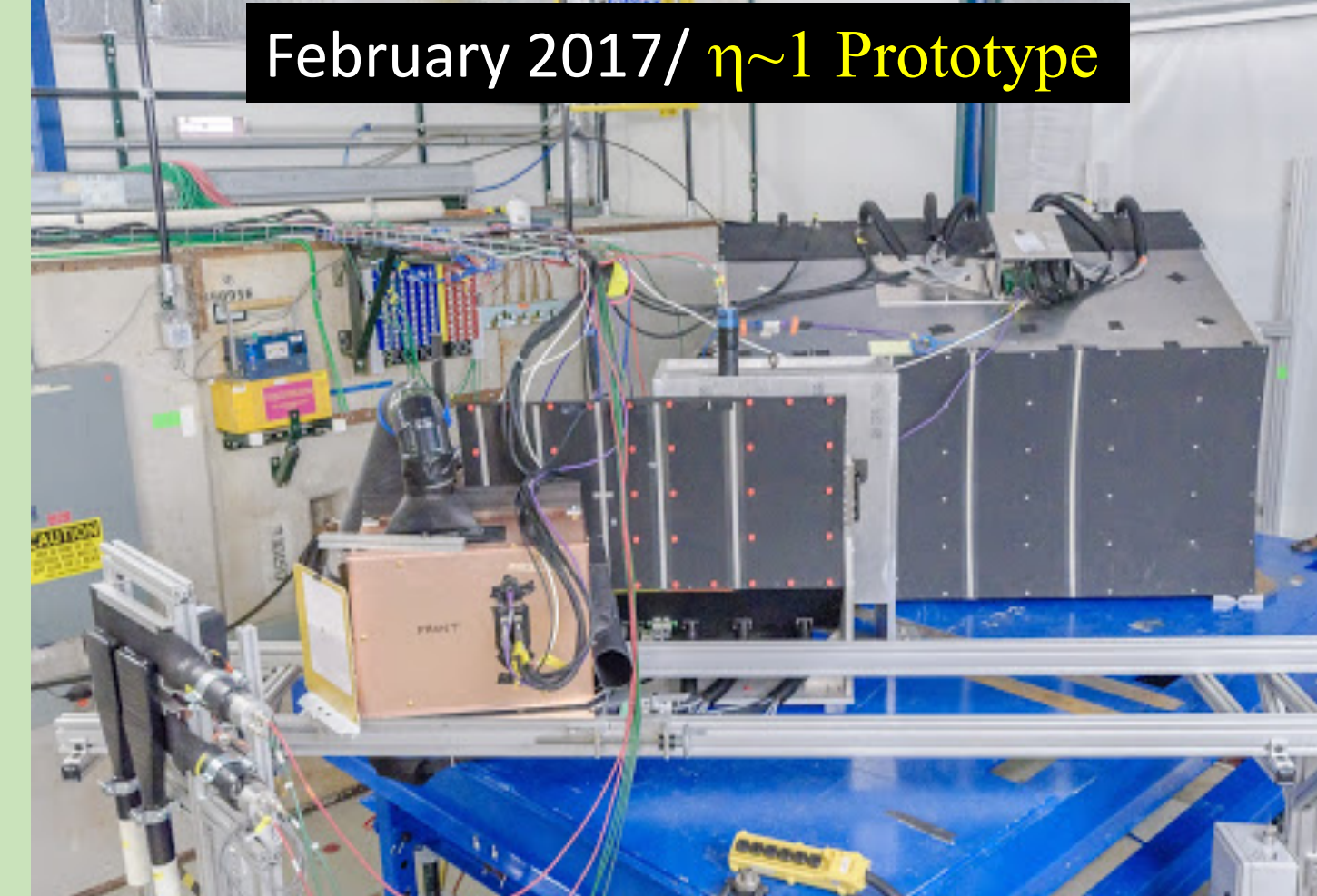
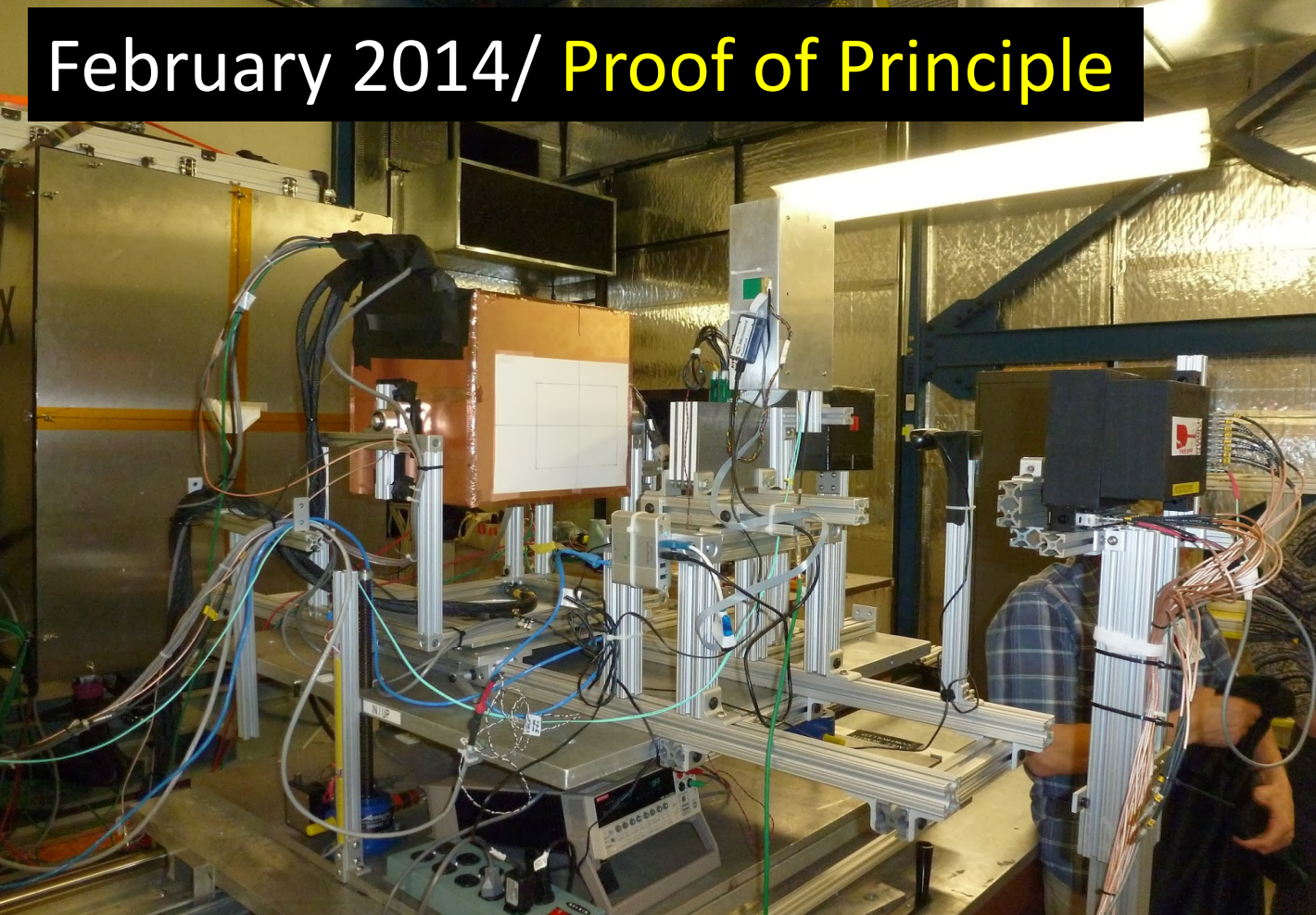


- Each sector has 10 rows with >8mm gap between steel absorber.
- 24 tiles per row.
- 240 tiles in each sector.

12 different tiles shapes per row (covering different pseudo rapidity)

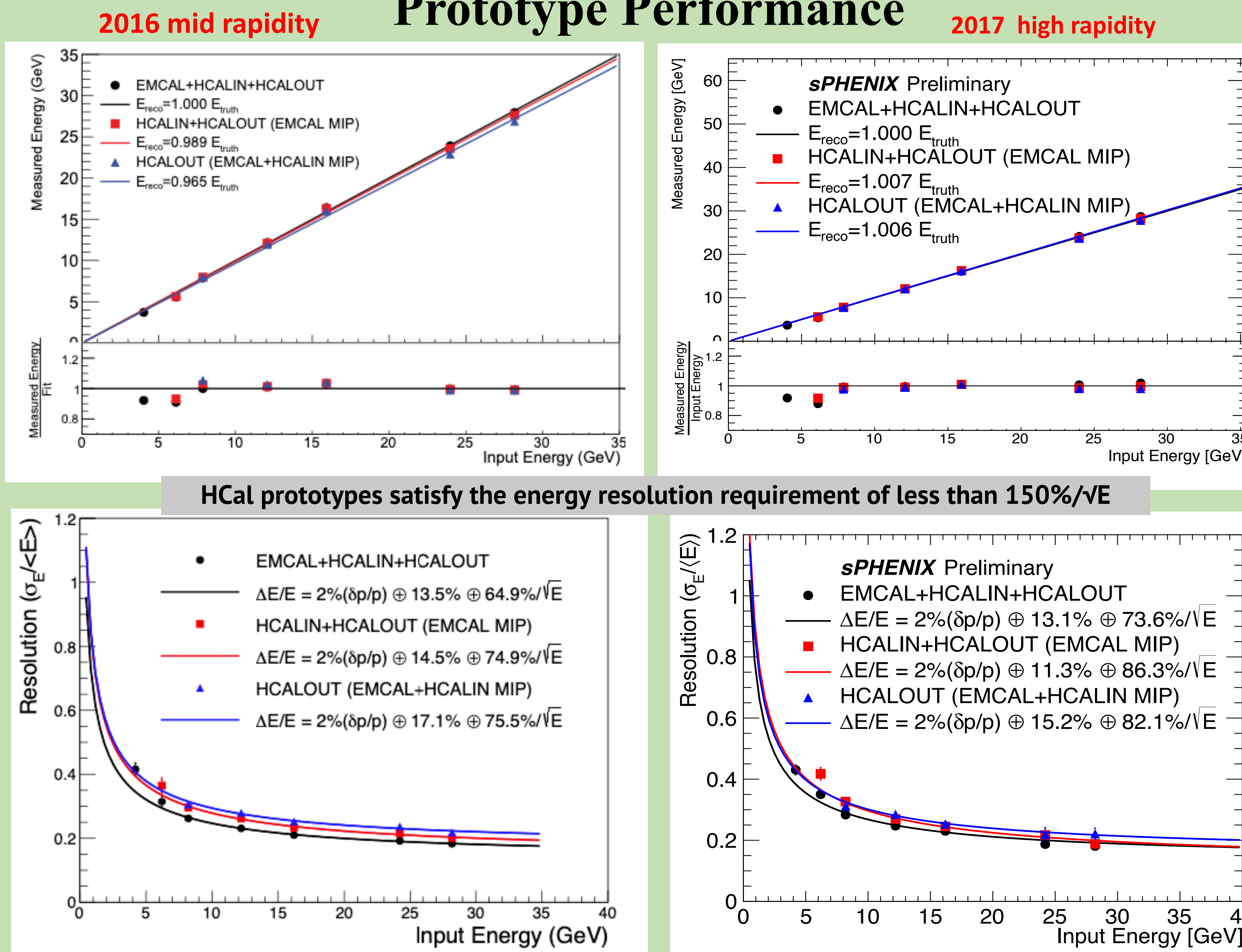


## Calorimeter Beam Tests (T-1044 at Fermi LAB)

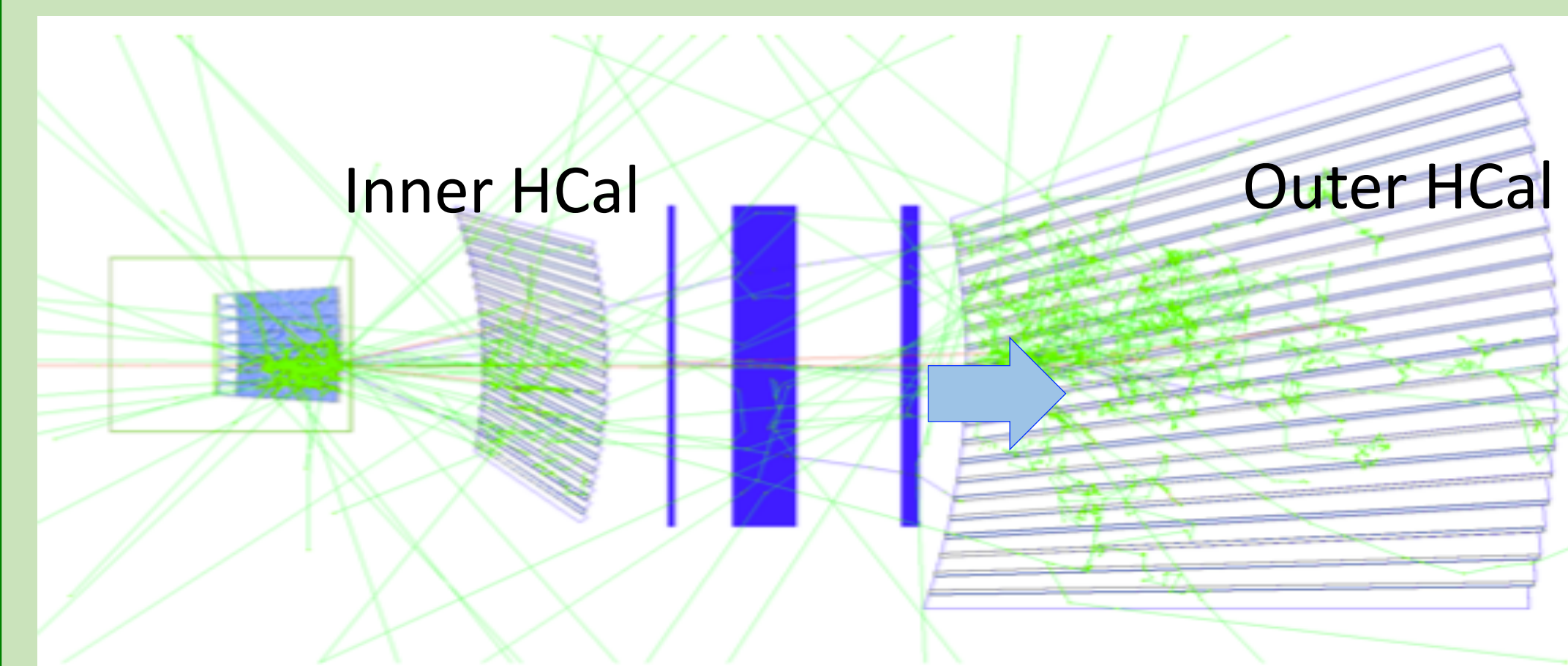


Additional beam test was carried out in February-March 2018 with inner HCal un-instrumented.

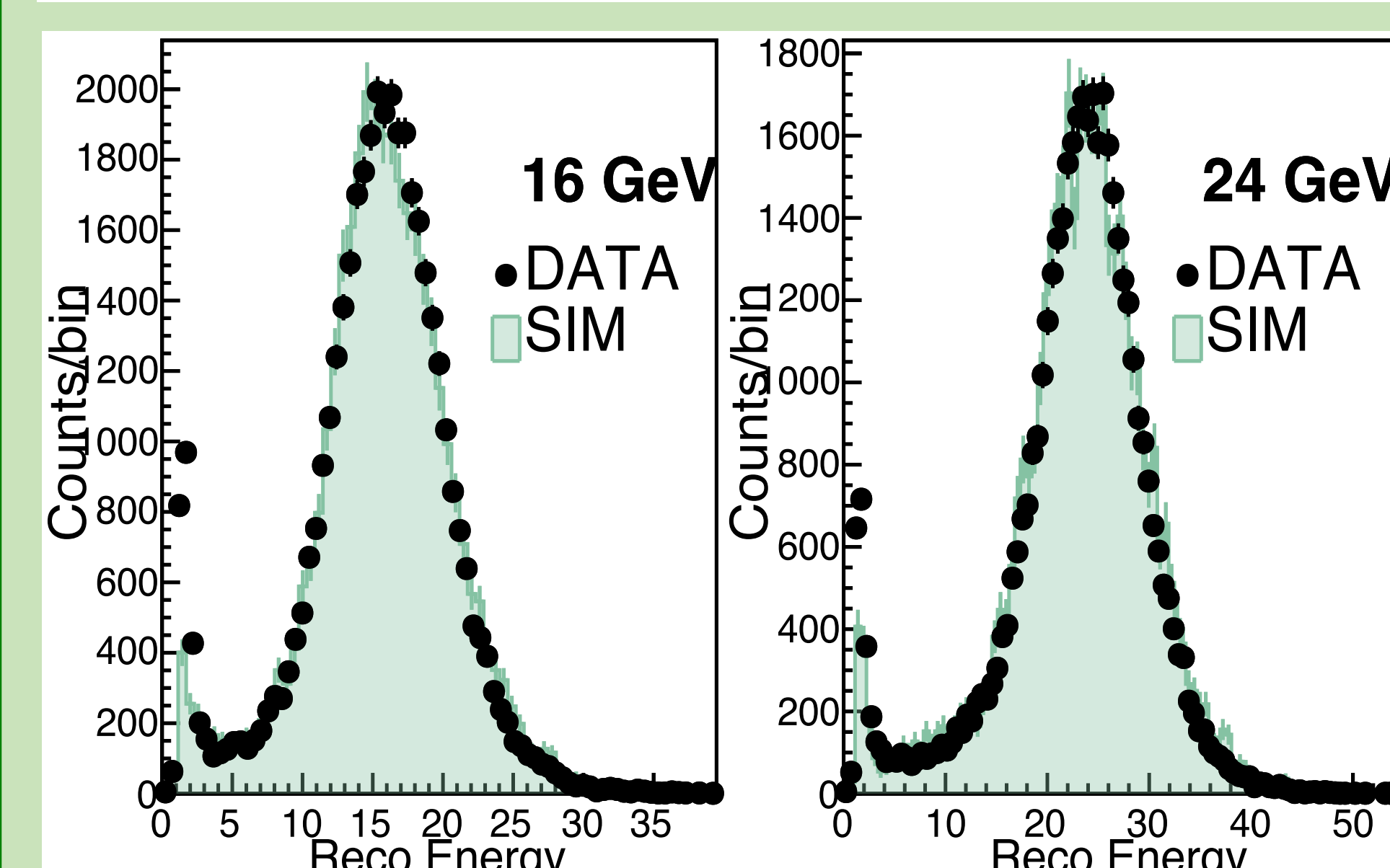
## Prototype Performance



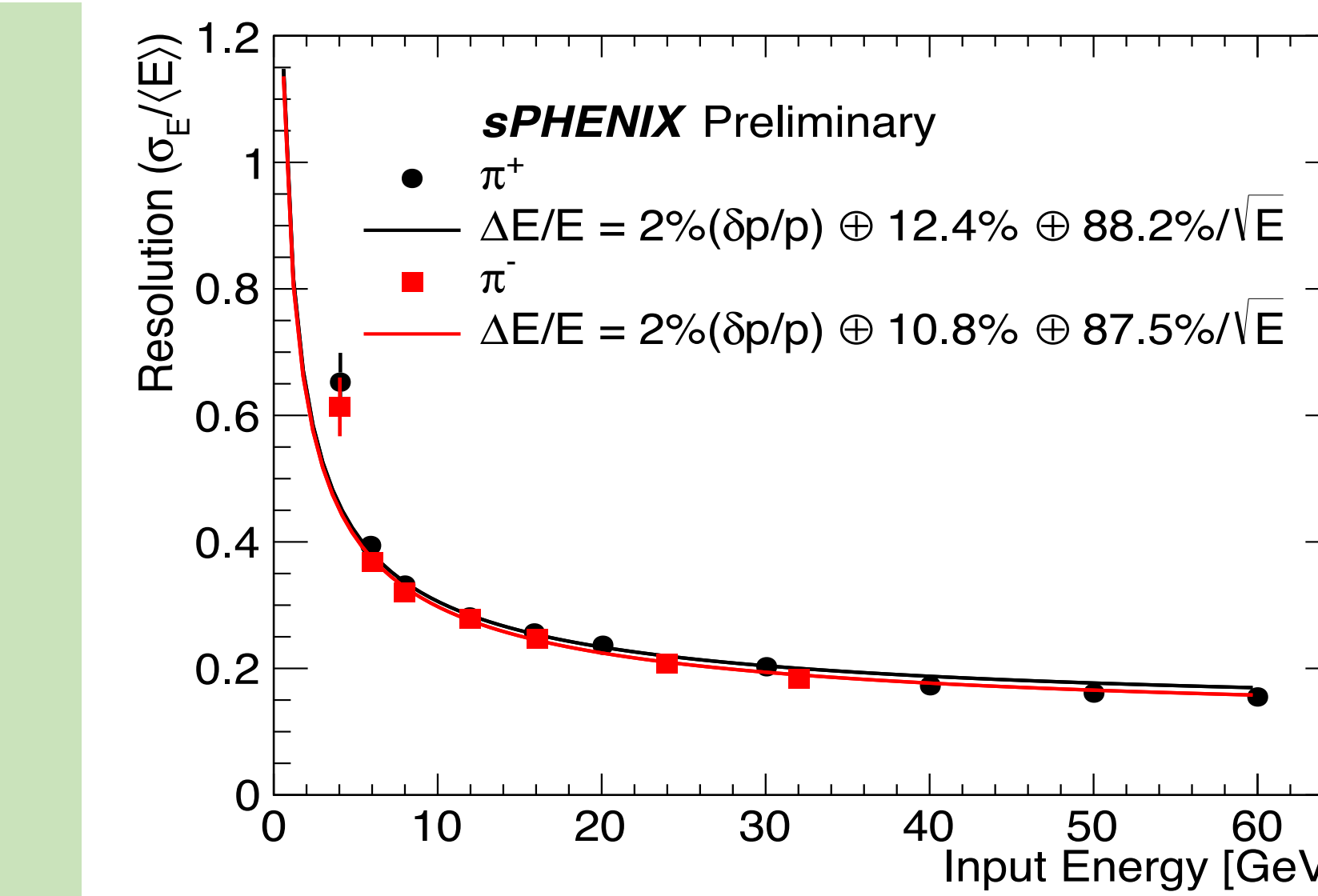
## GEANT4 Simulation



Side view of a 32 GeV  $\pi$  shower as simulated in the EMCal and HCal prototype. The inner HCal is the tilted plates in the middle while the outer HCal tilted plates on the right side.

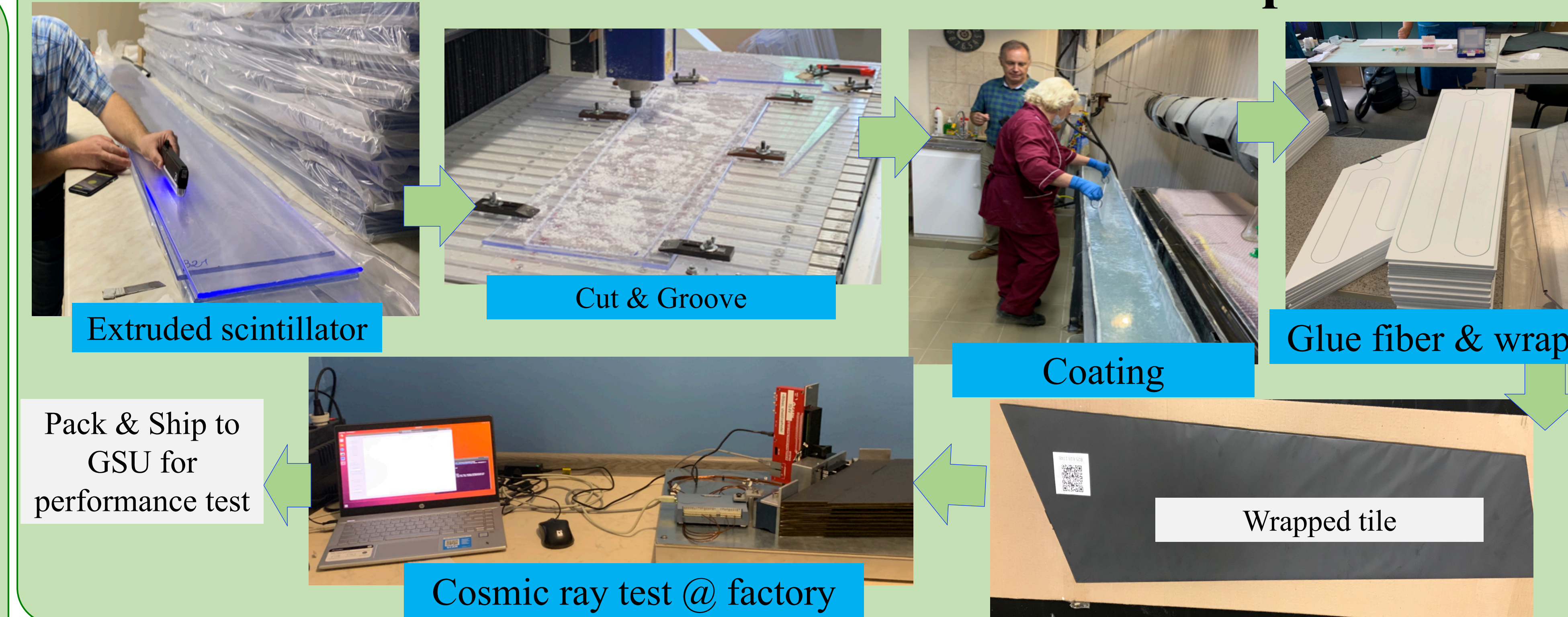


Consistent with GEANT4 simulations

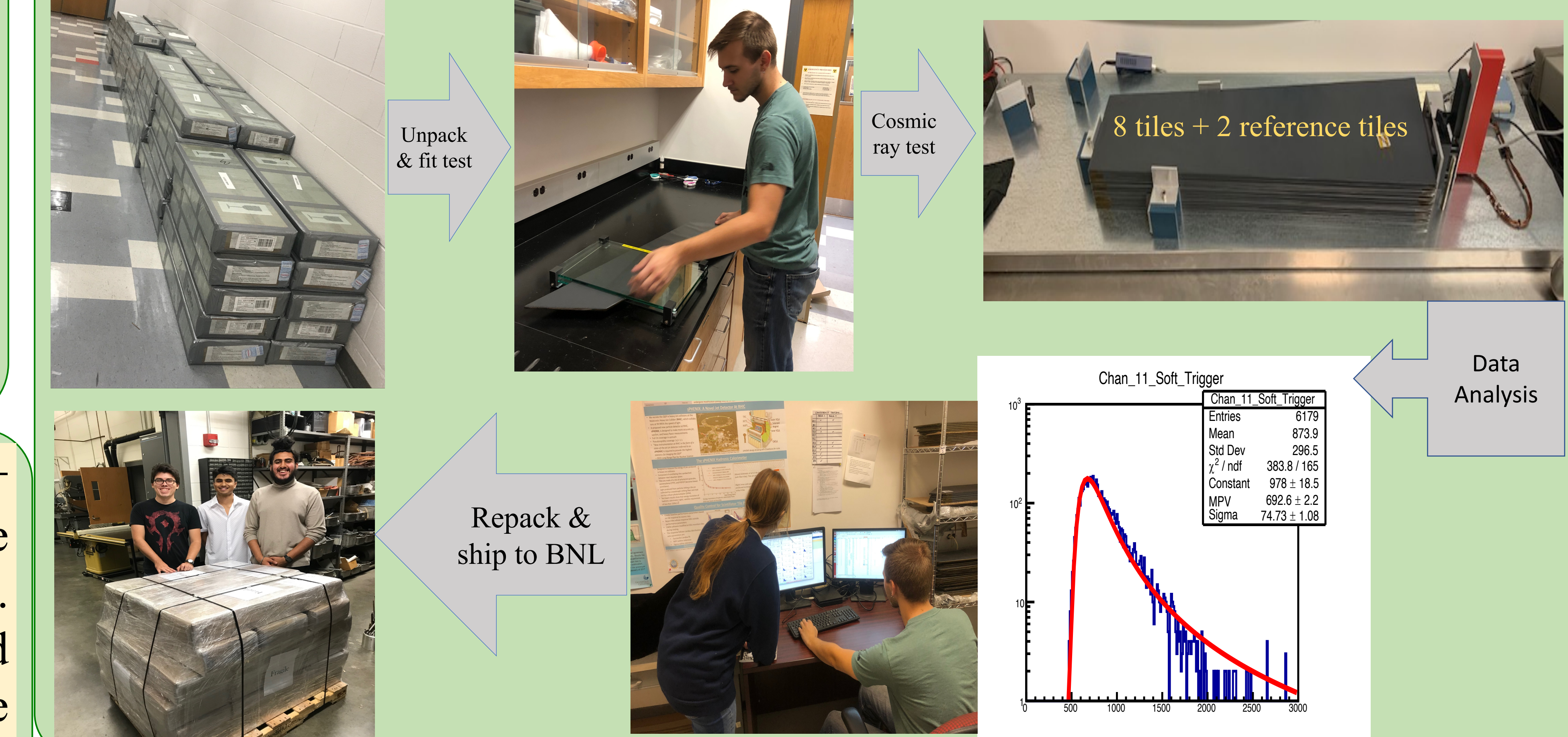


Response consistent for both positive and negative pions.

## Scintillator Tile Production at Uniplast



## Scintillator Tile Performance Test at GSU



## Summary & Outlook

- Multiple beam tests successfully demonstrated the performance of calorimeter system within sPHENIX specifications.
- Test procedure to check tile performance is established at GSU before sending scintillator tiles to BNL.
- Sectors assembly with calorimetric towers each having five tiles of same shape and similar performance (PR) grouped together in azimuth is already started in BNL.
- sPHENIX will start to take data at RHIC in 2023.