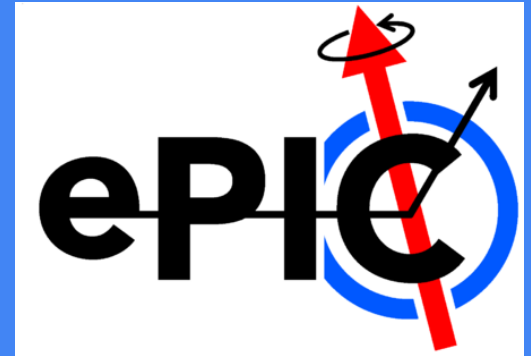
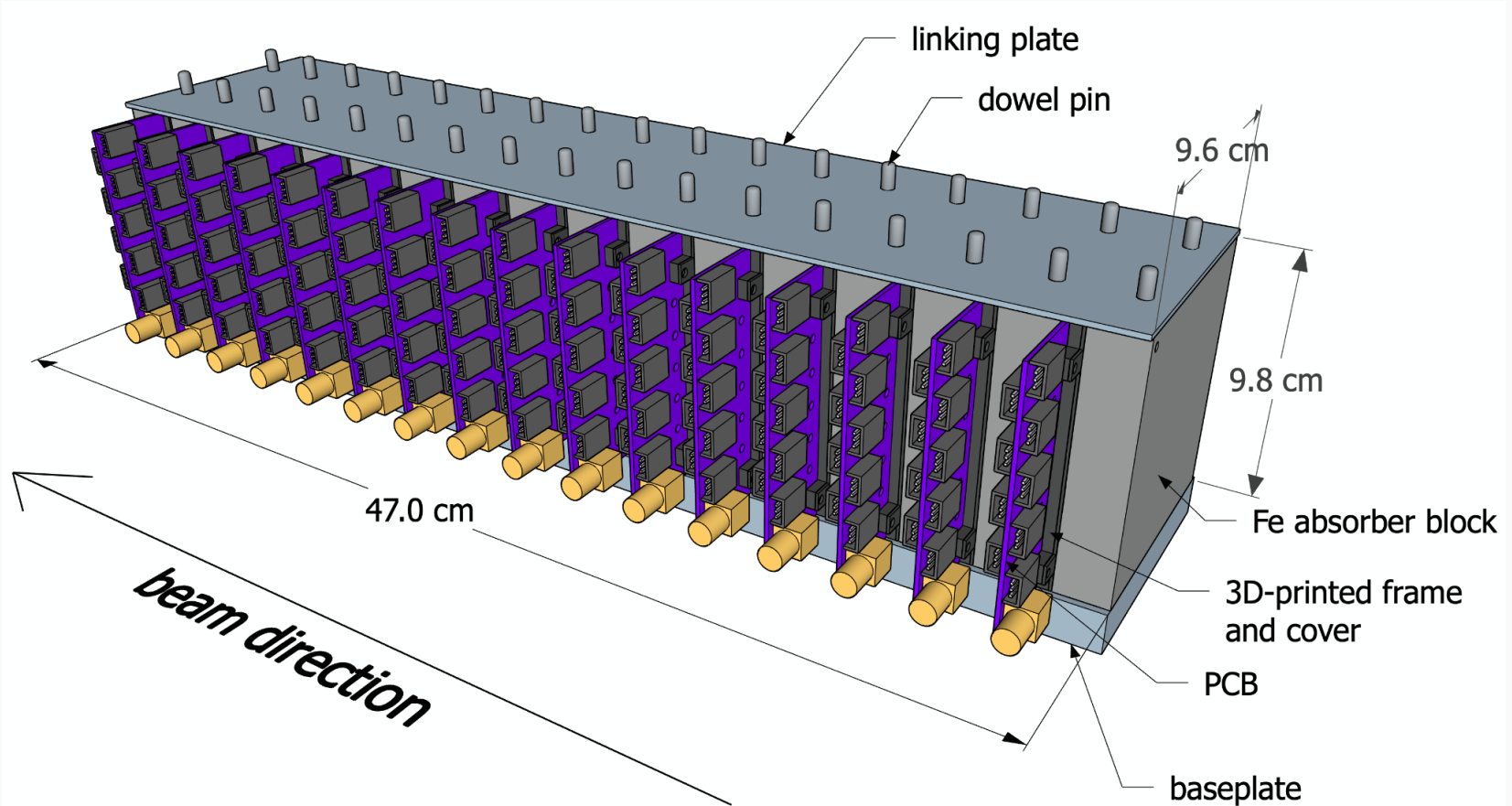


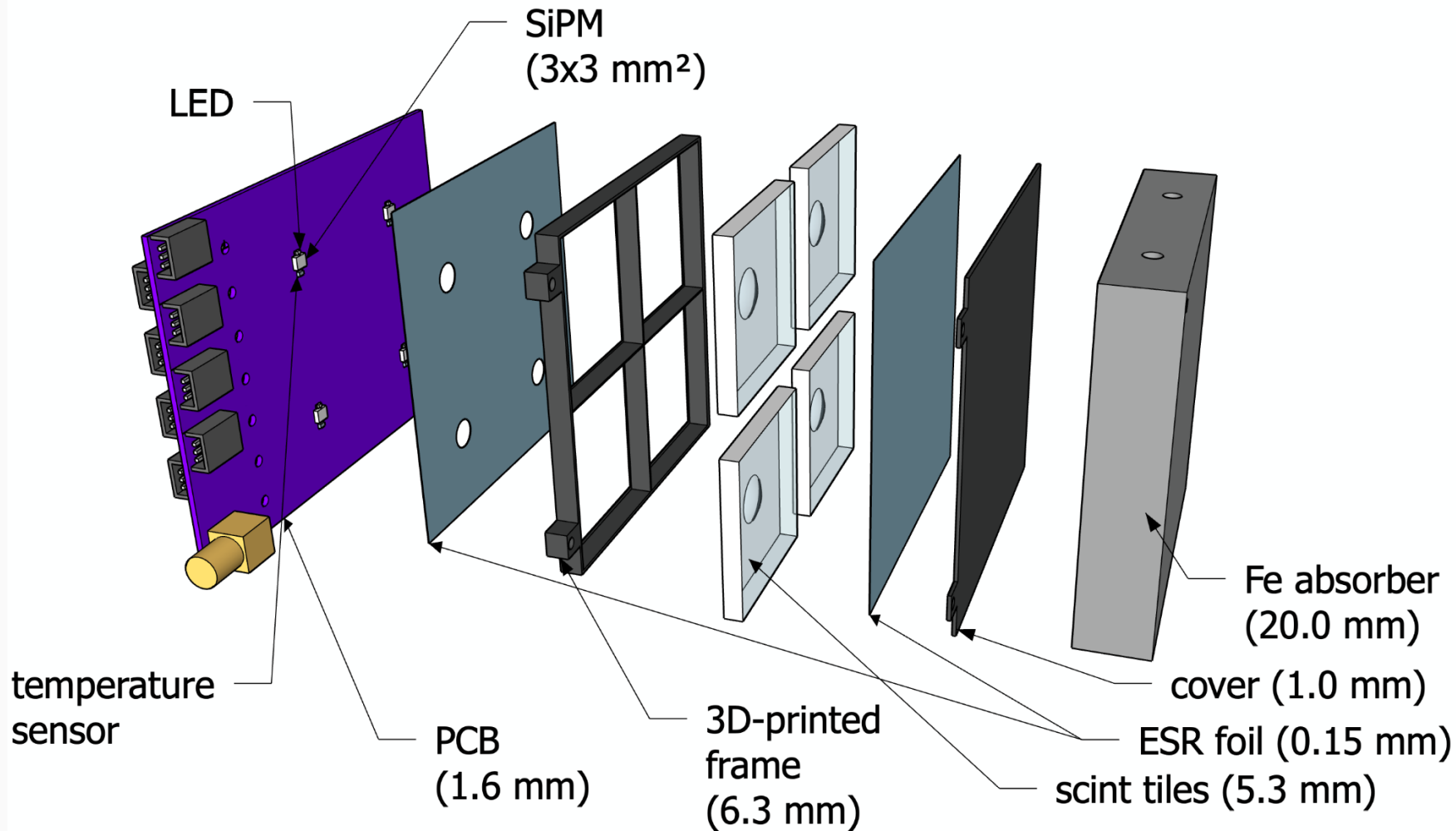
# Construction of the First Calorimeter Insert Prototype

Peter Carney



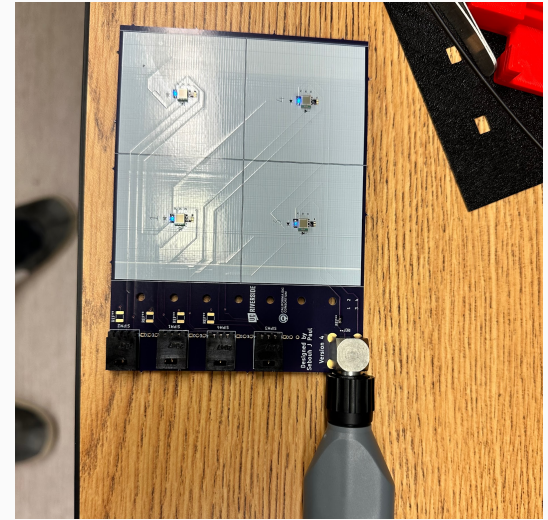
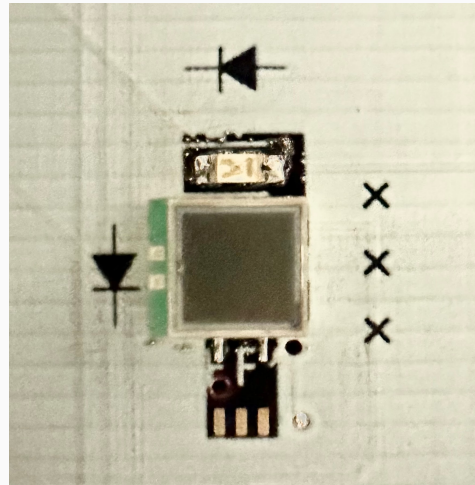
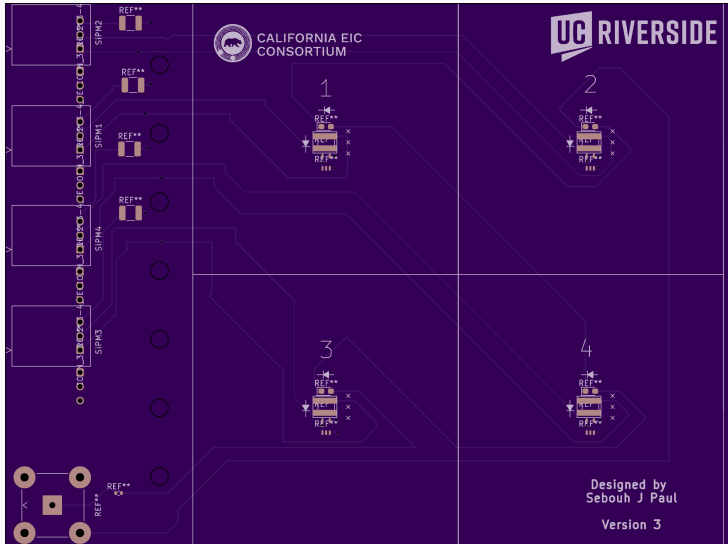
# Overview of Calorimeter and Board Structure



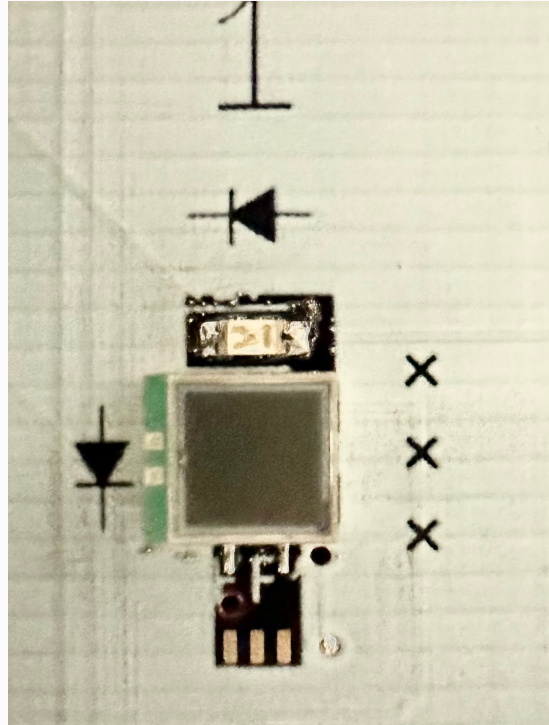
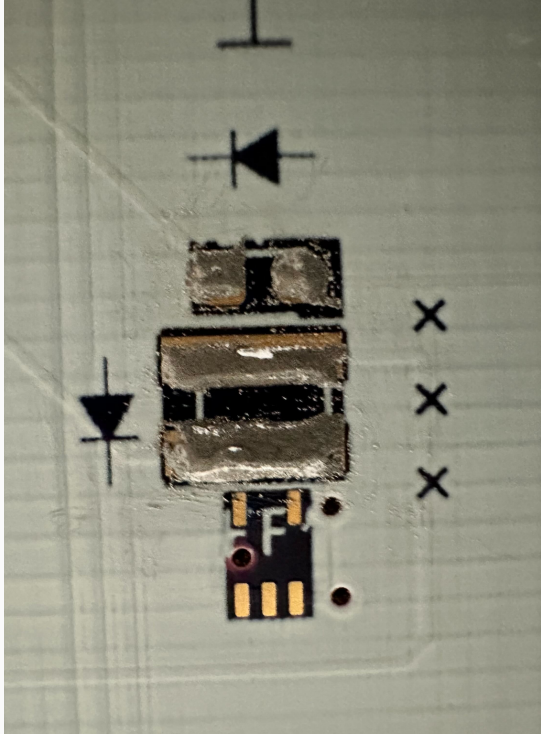


# Phase 1: Soldering Components onto PCBs

- Silicon Photomultipliers SiPM soldered onto PCB with soldering paste.
- LEDs used for testing.

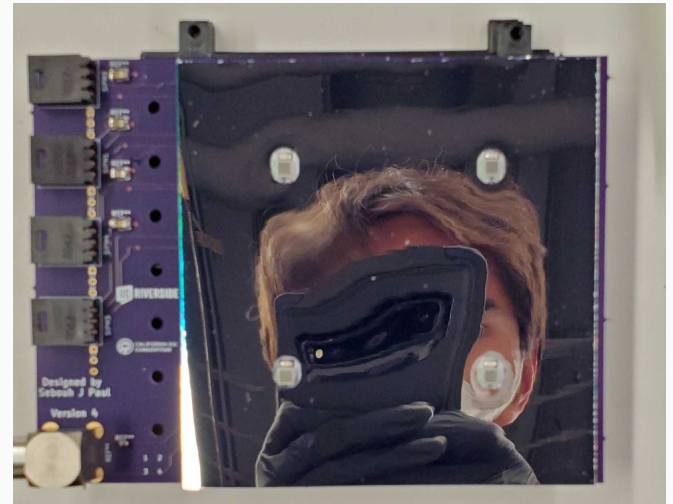
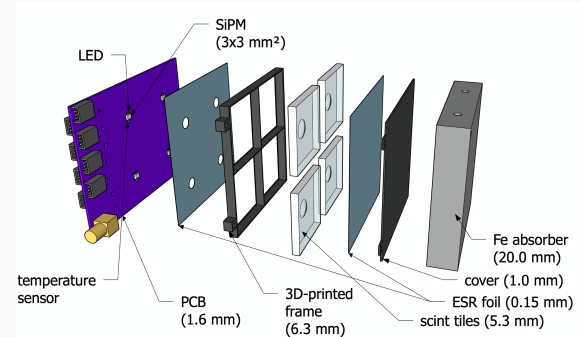


# Phase 1 Continued: Soldering onto PCBs



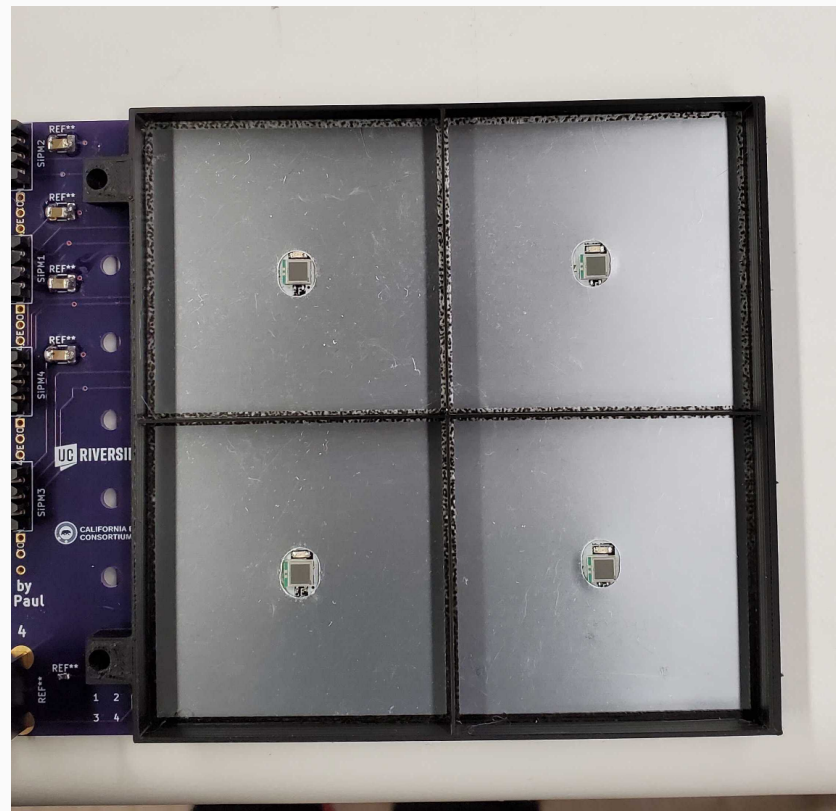
## Phase 2: Foils

- Foils placed above and below Scintillating tiles.
- Optimal for reflecting photons
- Helps with gain, and uniformity of cells. Doesn't matter where the particle hits in the tile, it will pick up any place on the tile evenly.
- Further Testing for uniformity in cells used with radioactive source.



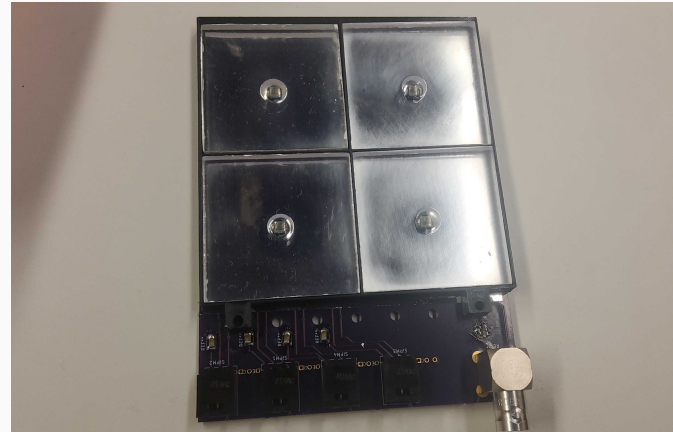
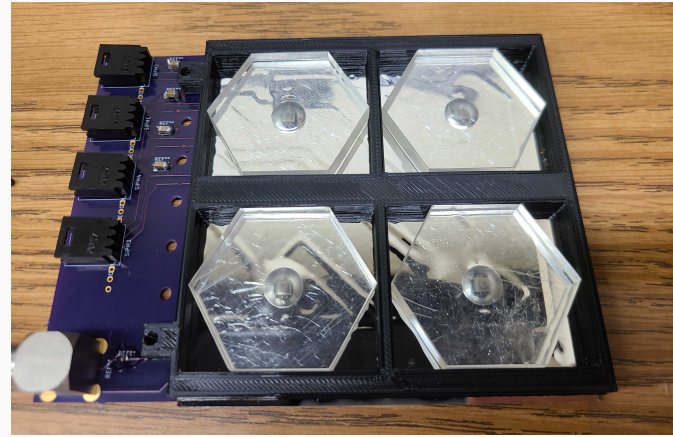
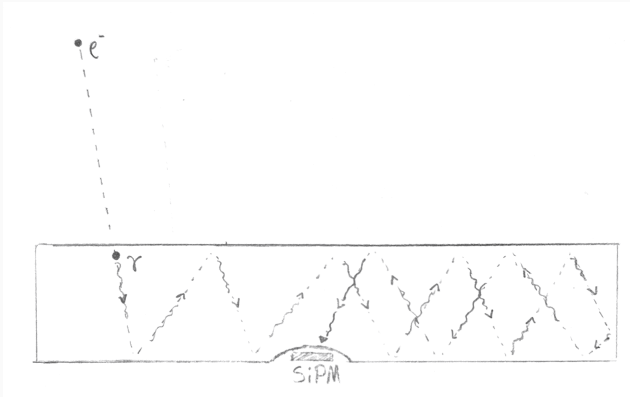
## Phase 3: Frames

- Frames are 6.3mm thick. Fit tightly around cell.
- Used from preventing light leaks from one cell to another.



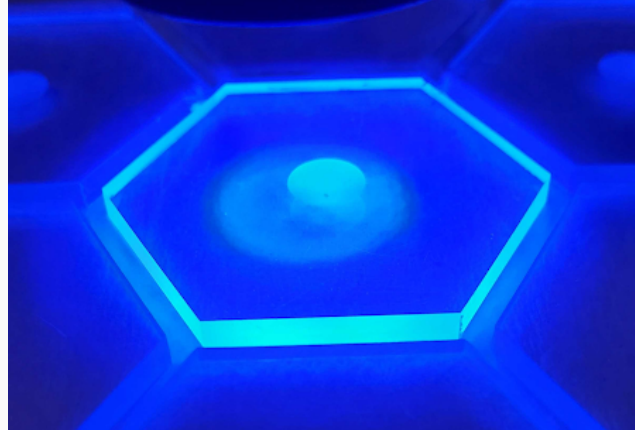
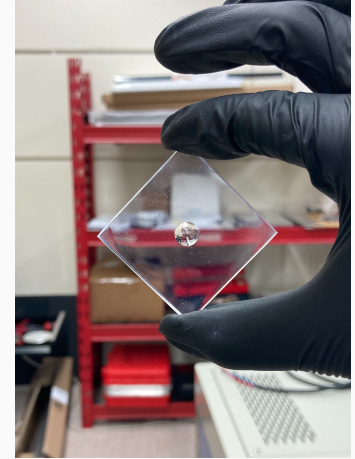
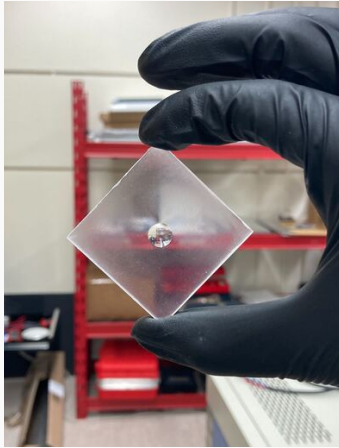
# Phase 4: Scintillating Tiles

- Each tile undergoes thorough polishing process.
- Tile emits photons from upon high energy particle contact.
- Light is reflected and focused into SiPM.

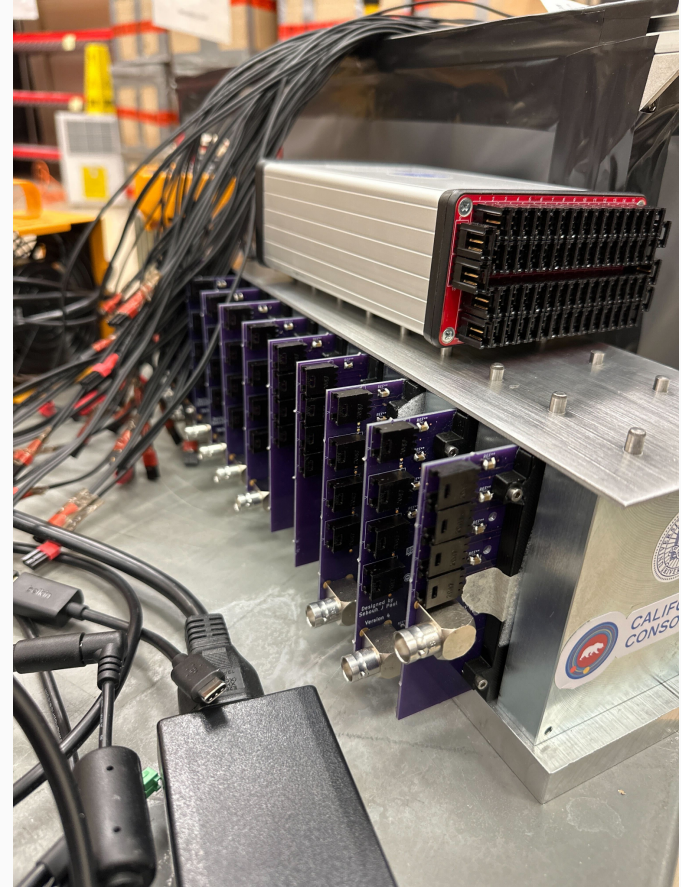




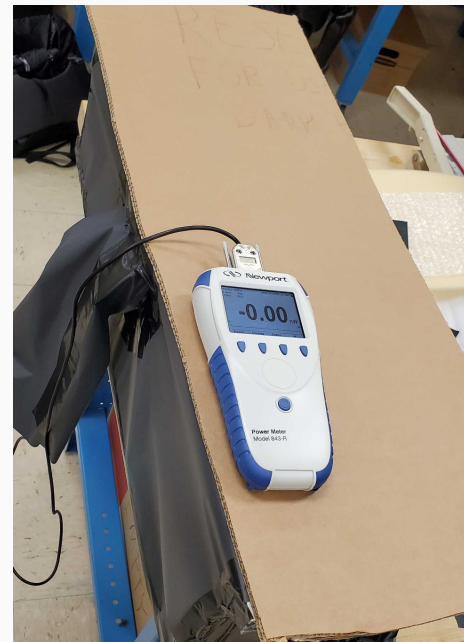
# Polishing Tiles



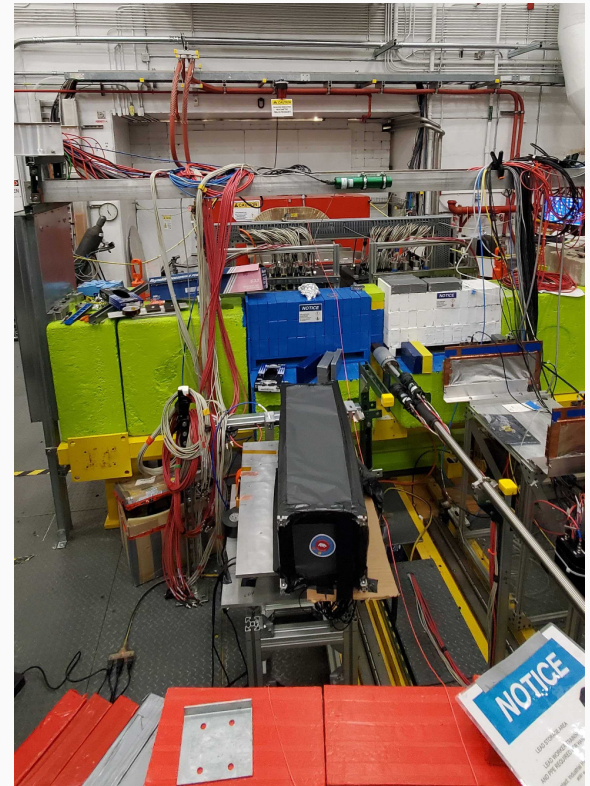
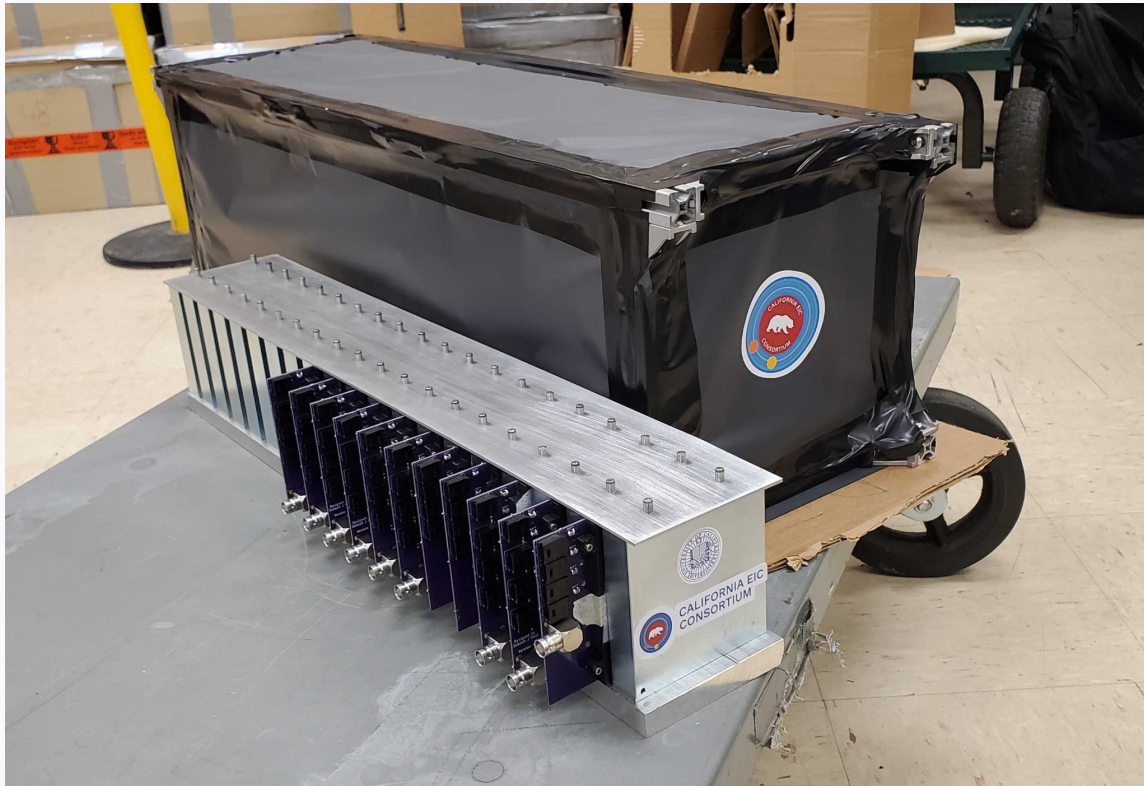
## Phase 5: Cables



# Building the Dark Box



# Completed Calorimeter Insert Prototype



## Future Steps

- Test Different configurations of designs... hexagonal PCB's.
- Add more PCB layers to Calorimeter prototype.
- Test prototype at Fermilab and Brookhaven

