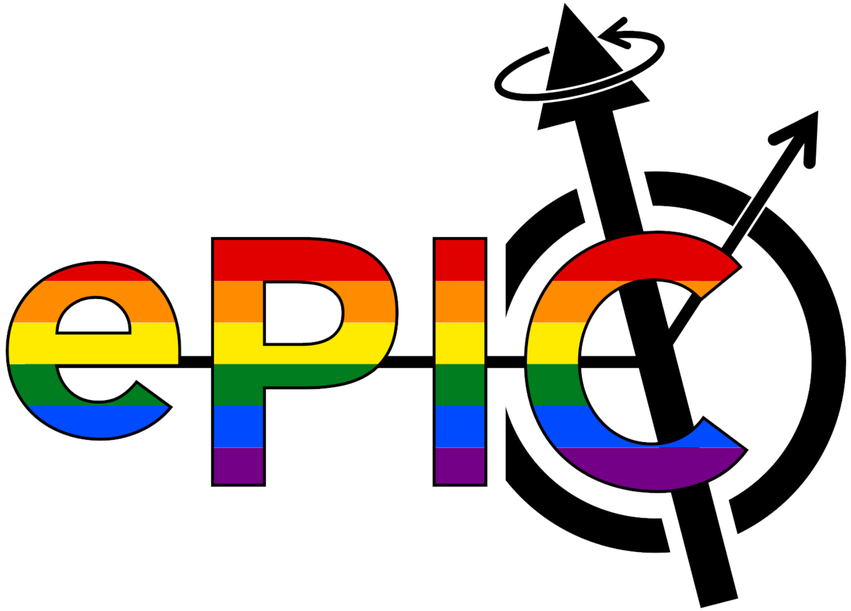
Yale ePIC LFHCal Cohort Update

Joint LFHCal & Insert Meeting



Fernando Antonio Flor
Yale University

February 7th, 2024

with

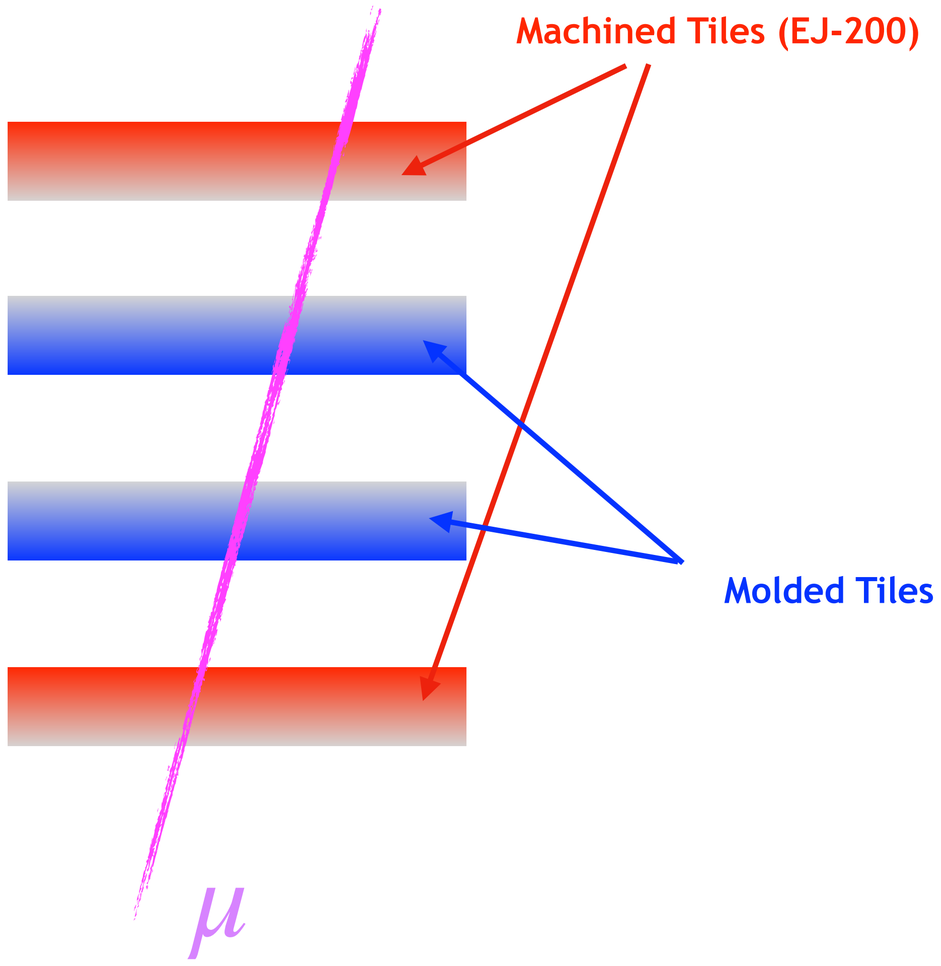
Elisa Kim, Ananya Rai, Iris Ponce Pinto,
Friederike Bock, Prakhar Garg and Helen Caines

U.S. DEPARTMENT OF ENERGY | Office of Science

Wright Laboratory

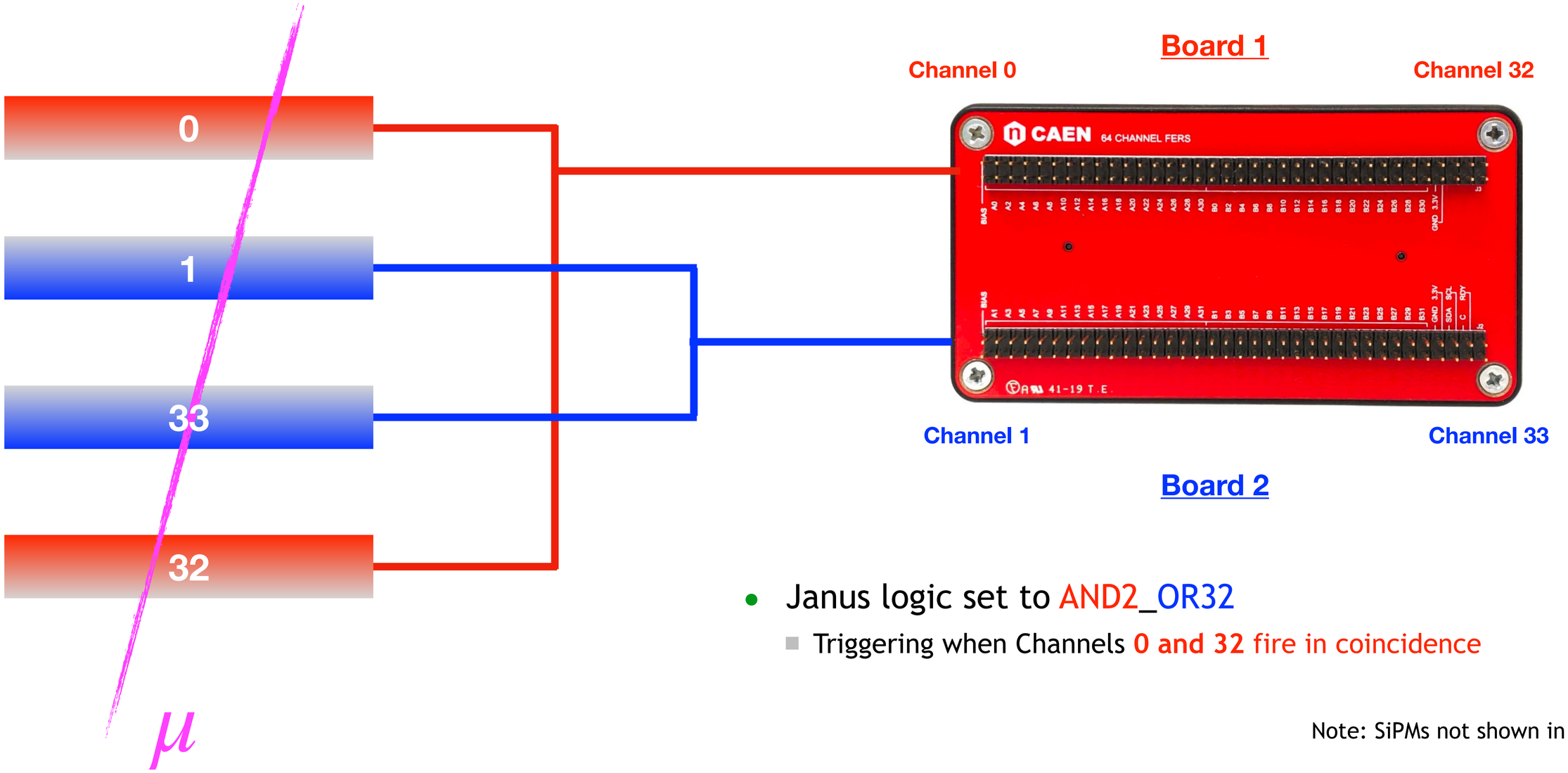
Fermilab Molded Tiles QA

- After ePIC Collaboration, received 4 batches of several Injection Molded Tiles
  - Two Batches of Small Dimple Tiles
    - “Good”
    - “Flawed”
  - Two Batches of Small Dimple Tiles
    - “Good”
    - “Flawed”
- Ran ~24Hr Cosmics in a sandwiched fashion, with the Injection Molded Tiles being sandwich stuffing
  - **Using four S1416-1315 SiPMs at 45V (never moved)**
  - Two sets of two runs for each Dimple Sized Injection Tile
  - Machined Tiles (EJ-200) **used in every run** in respective positions (Top and bottom)
- Saw consistent peak shifting
  - Will do additional sets of runs w/ boards and logic swapped



Note: SiPMs not shown in cartoon

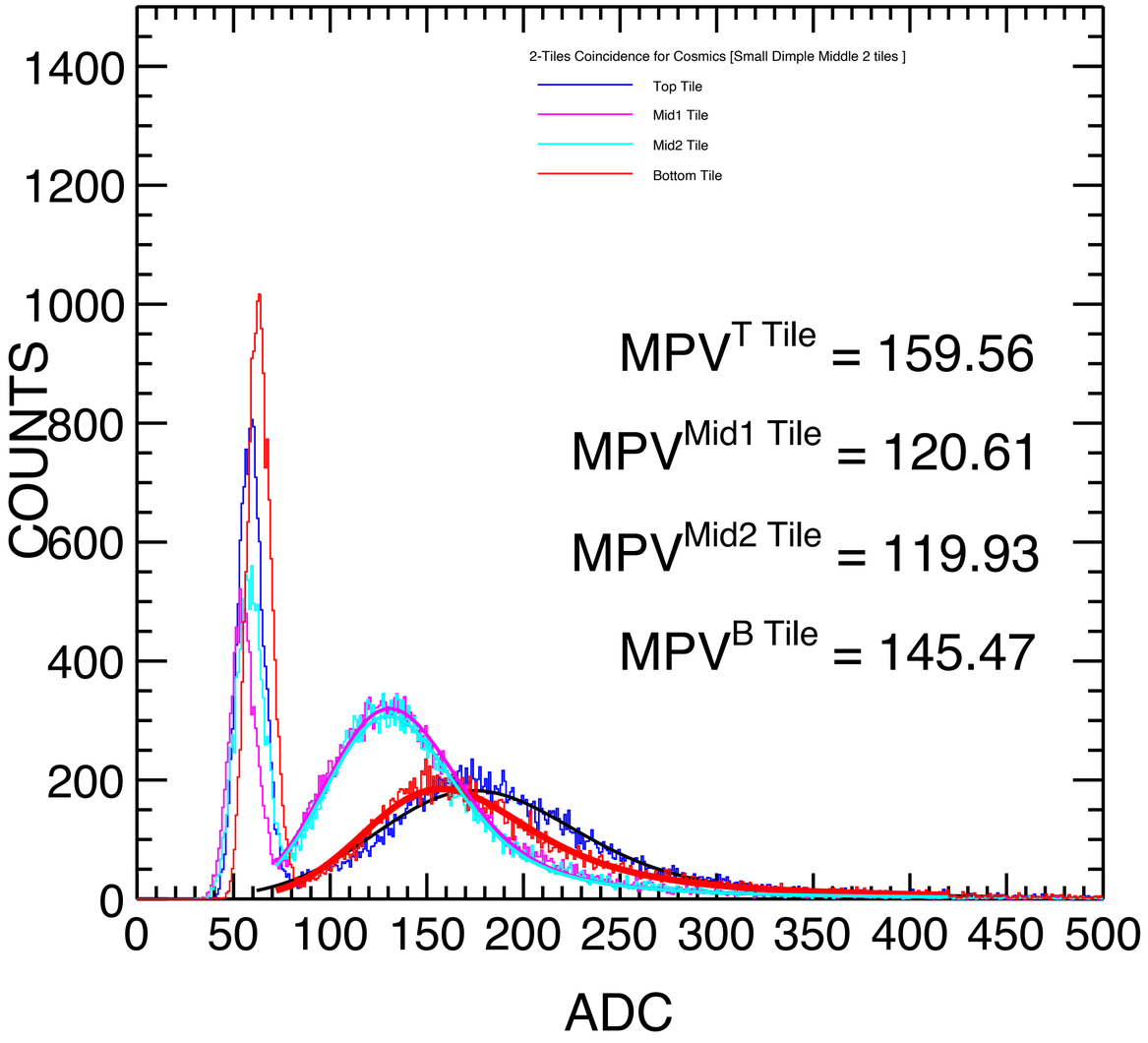
Runs Setup (SiPMs not shown)

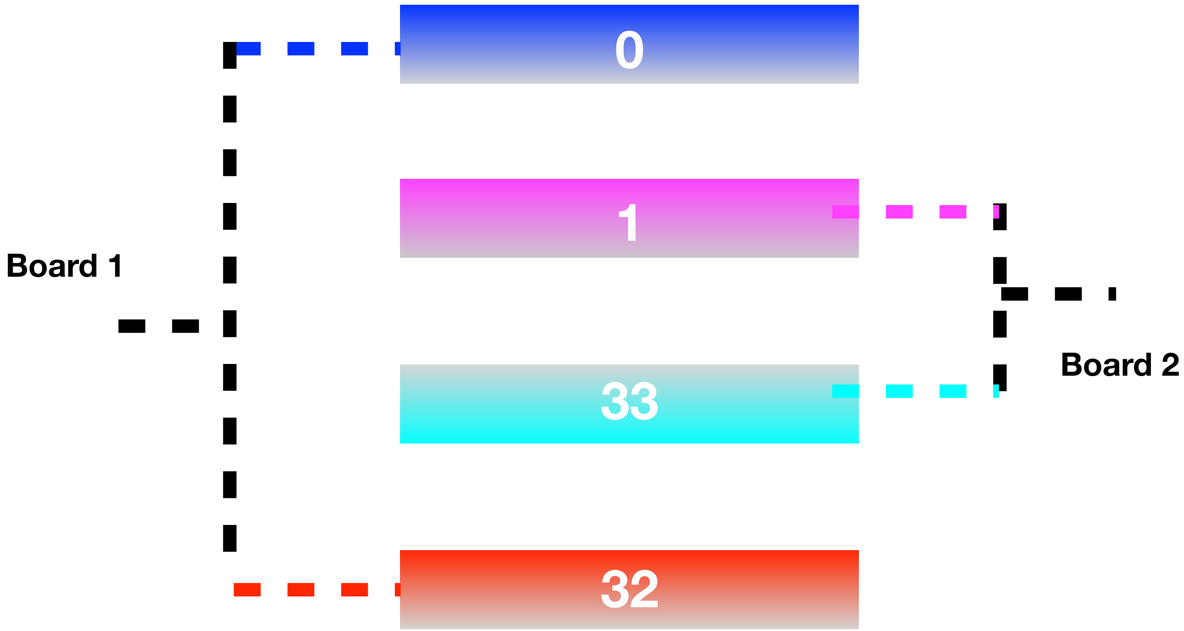


- Janus logic set to AND2_OR32
  - Triggering when Channels **0 and 32** fire in coincidence

Note: SiPMs not shown in cartoon

Fermilab Molded Tiles QA (Set 1: Small Dimple)

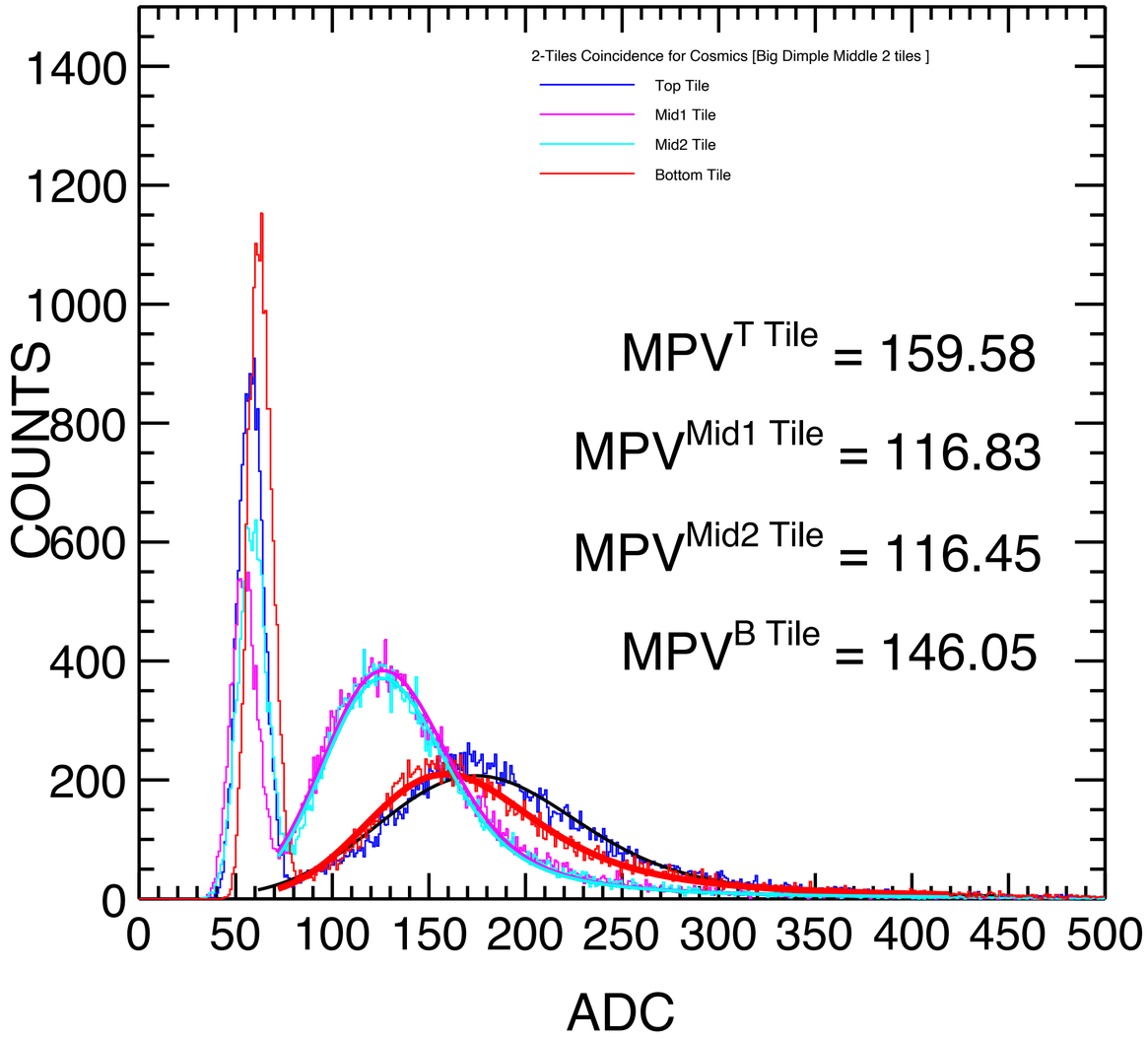


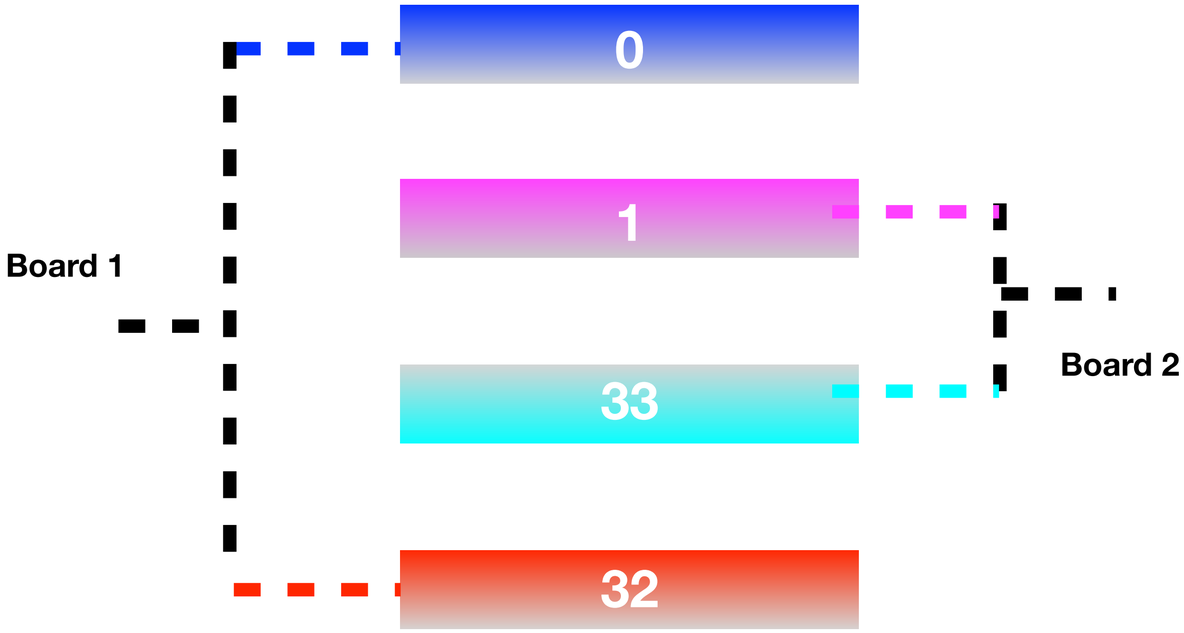


- Note: Top Middle SiPM had a High Gain ADC-to-PE conversion factor of ~ 86.25

Note: SiPMs not shown in cartoon

Fermilab Molded Tiles QA (Set 1: Big Dimple)

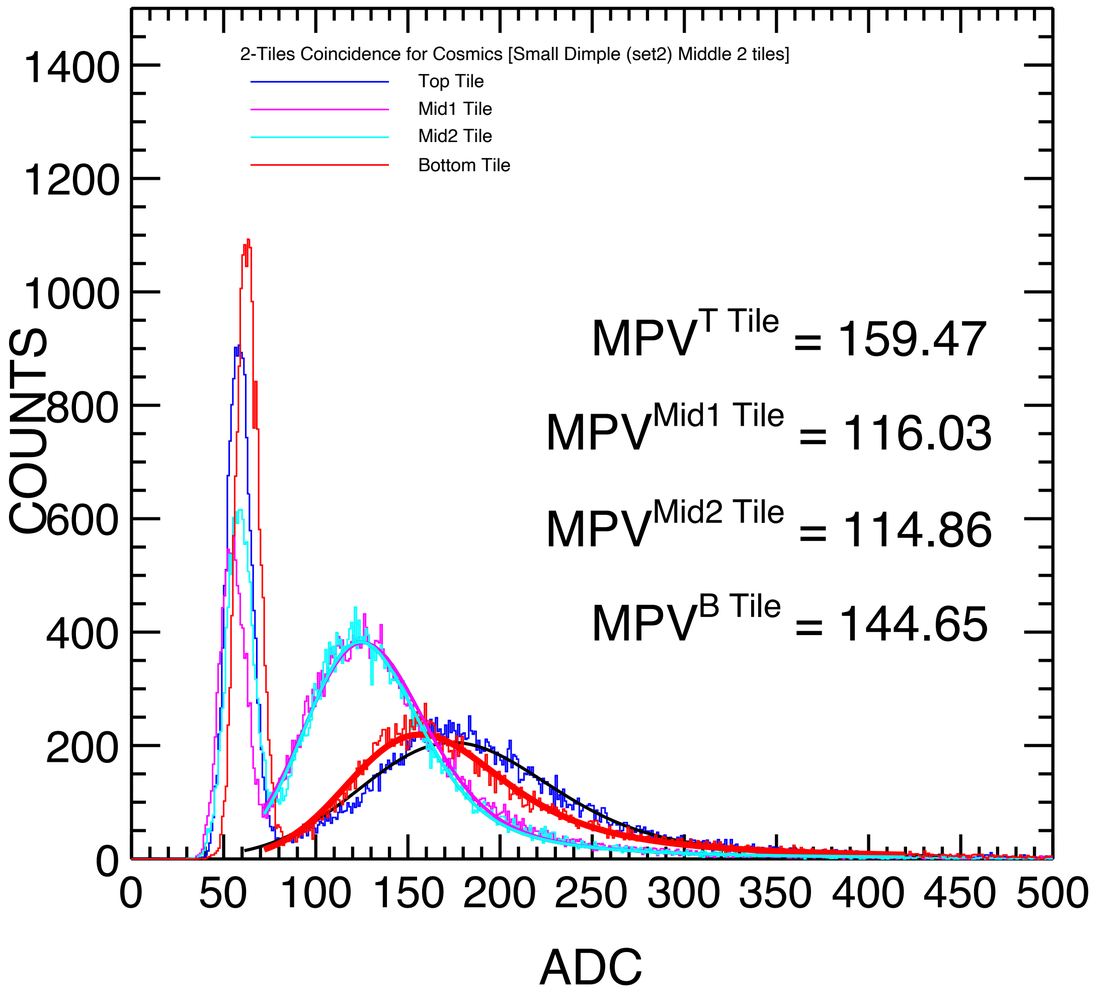


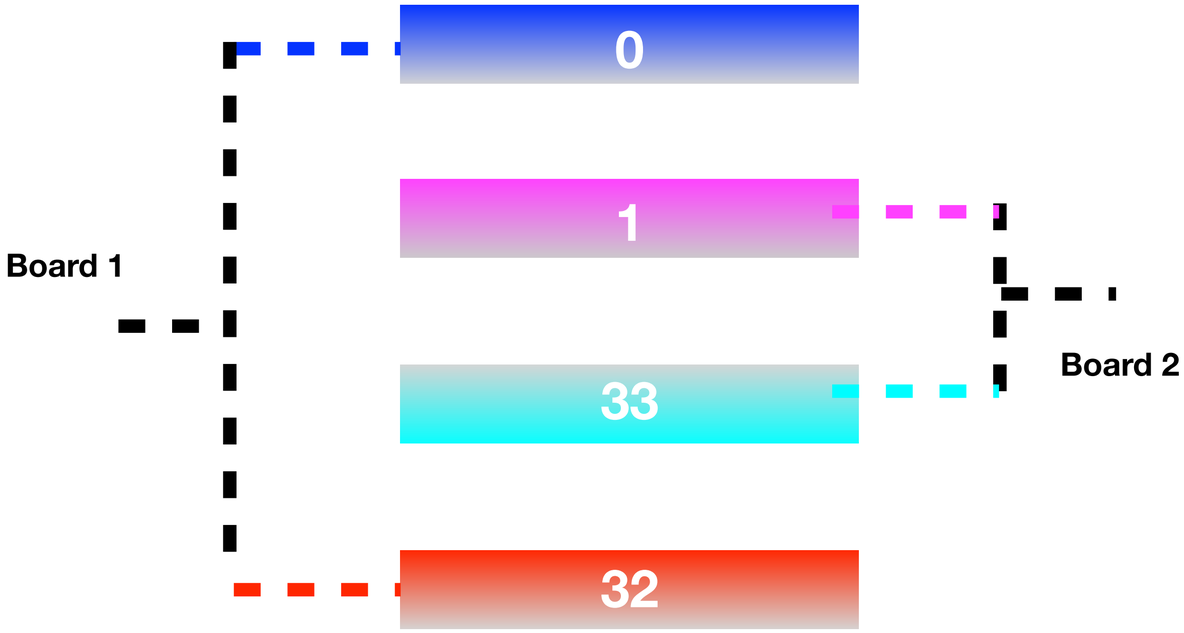


- Note: Top Middle SiPM had a High Gain ADC-to-PE conversion factor of ~ 86.25

Note: SiPMs not shown in cartoon

Fermilab Molded Tiles QA (Set 2: Small Dimple)

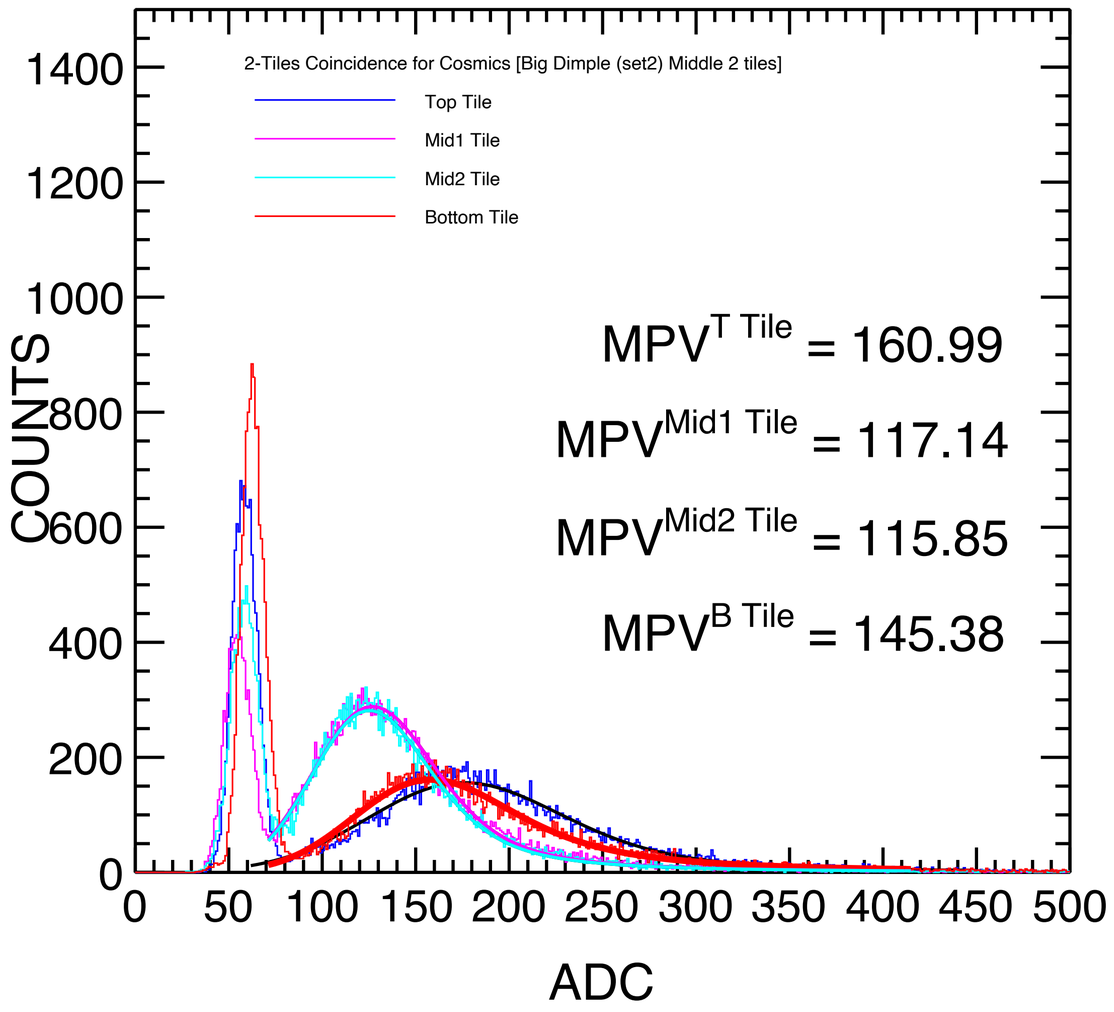


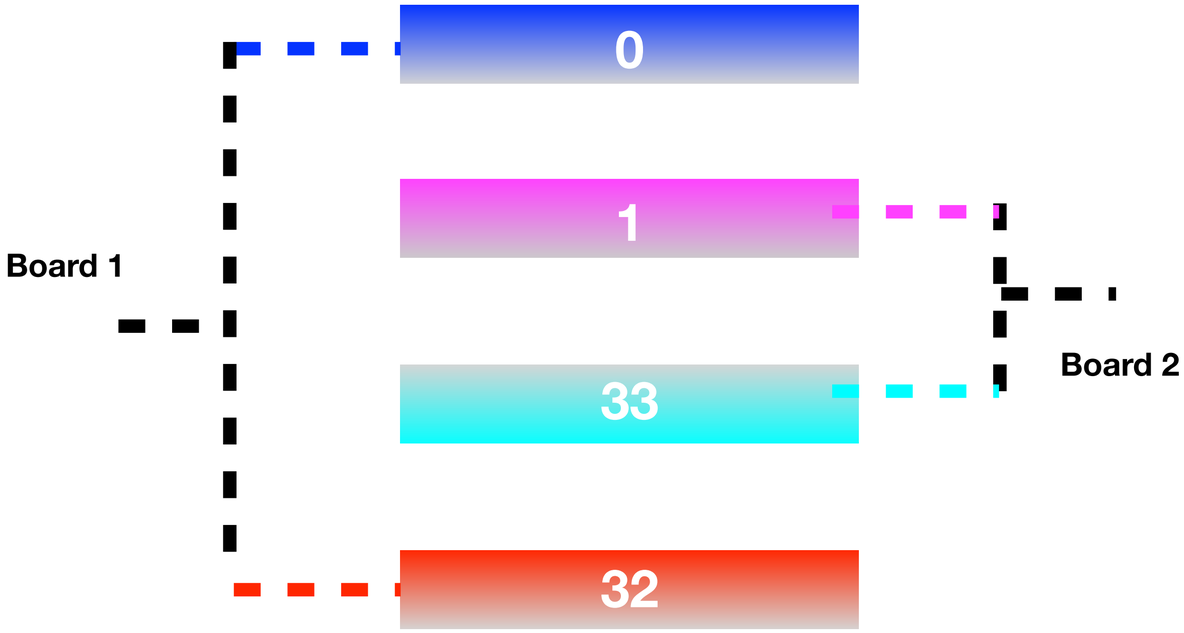


- Note: Top Middle SiPM had a High Gain ADC-to-PE conversion factor of ~ 86.25

Note: SiPMs not shown in cartoon

Fermilab Molded Tiles QA (Set 2: Big Dimple)





- Note: Top Middle SiPM had a High Gain ADC-to-PE conversion factor of ~ 86.25

Note: SiPMs not shown in cartoon

CAVALRY

High Gain PE Spectra for S1416-1315(3)