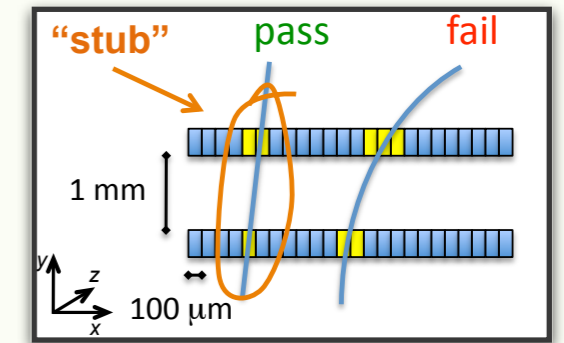
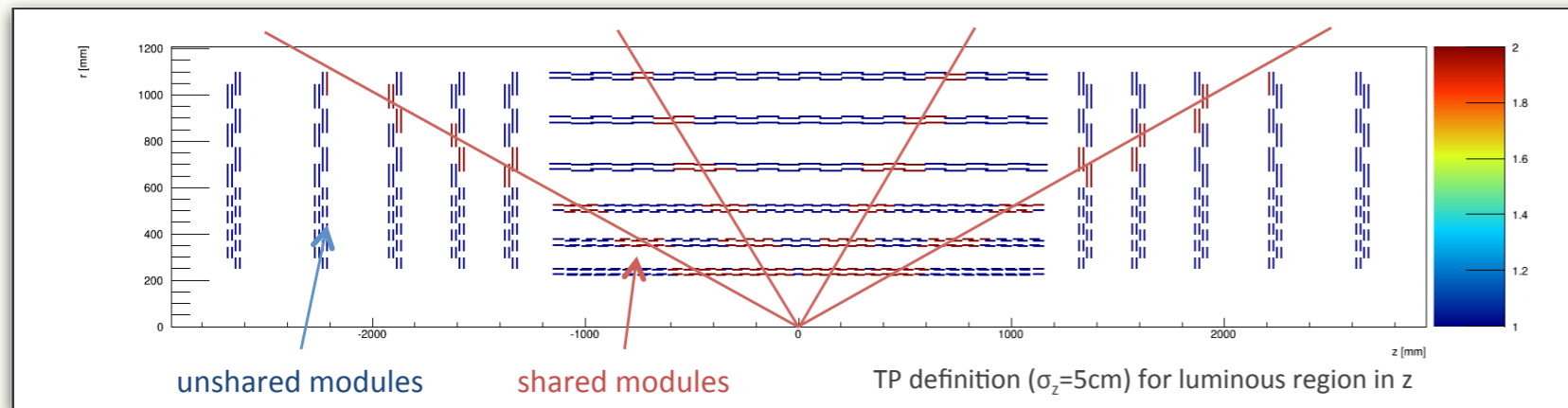
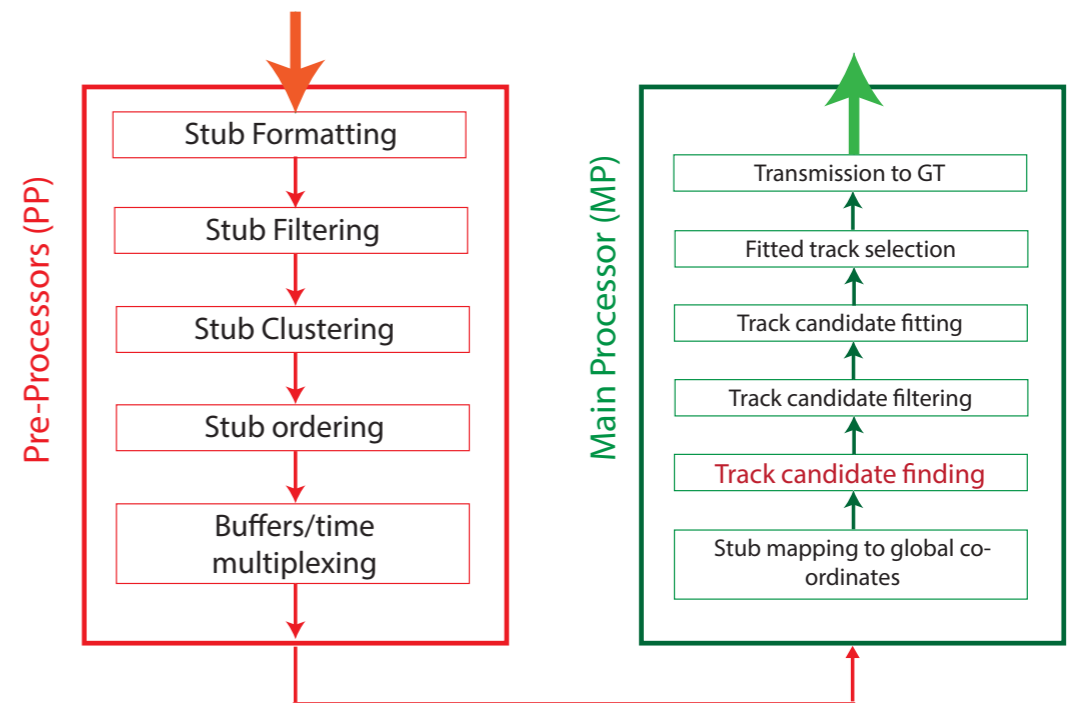
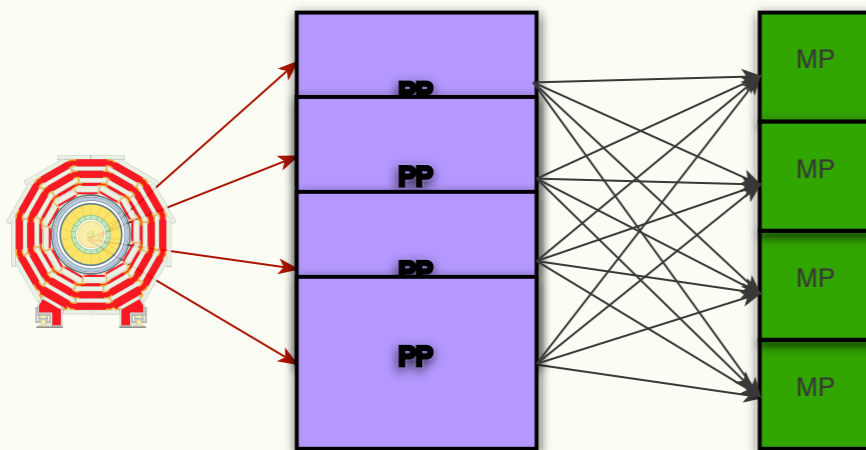


# A TRACK FINDING ALGORITHM FOR A TIME MULTIPLEXED L1 TRACK TRIGGER FOR THE PHASE II CMS EXPERIMENT

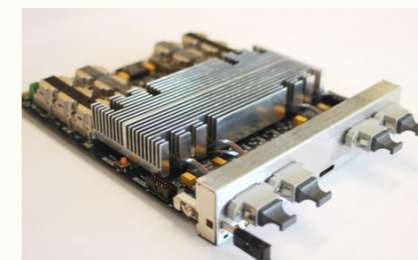


## CMS Phase II Tracker



## Time Multiplexed Trigger Concept

- All data in a single node
- Two Processing Layers (Pre & Main Processors)
- Stub Data ordered before processing
- Concept Architecture based on MP7 board (FPGA Virtex 7)



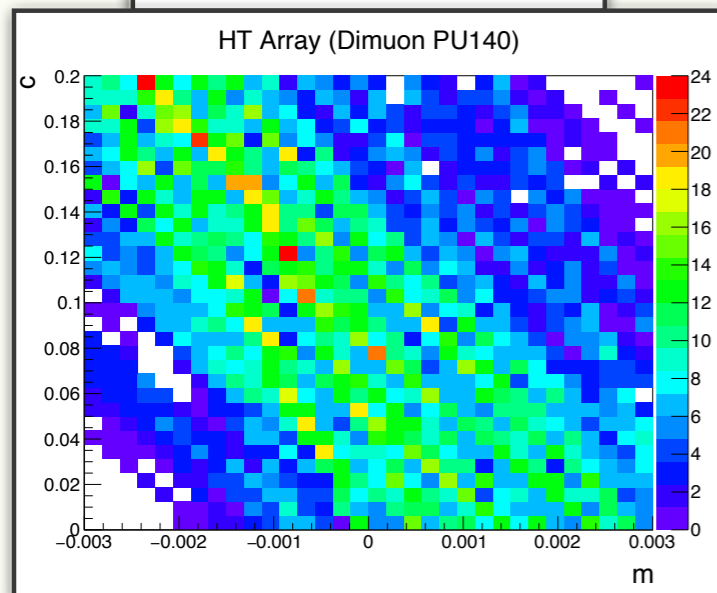
# A TRACK FINDING ALGORITHM FOR A TIME MULTIPLEXED L1 TRACK TRIGGER FOR THE PHASE II CMS EXPERIMENT

## Track Finding based on the Hough Transform Method



Davide Cieri

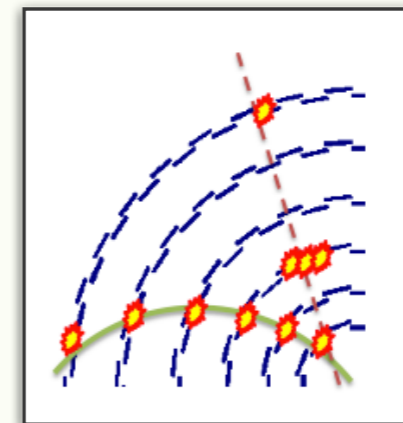
$$\phi(r) = \pm \frac{cB}{2p_t} r + \beta$$



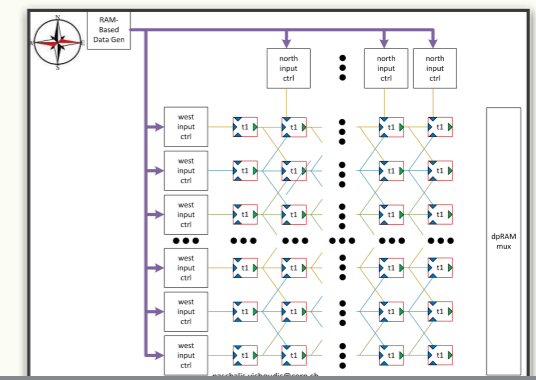
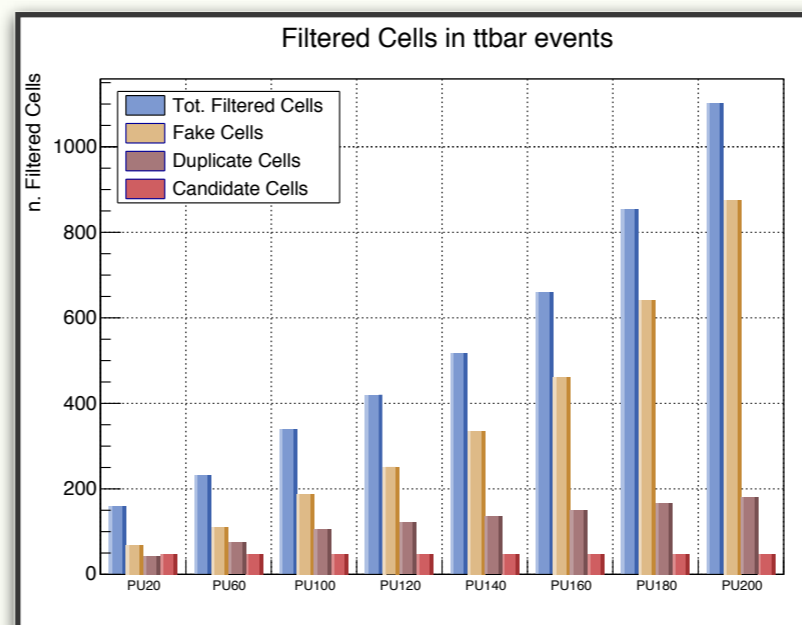
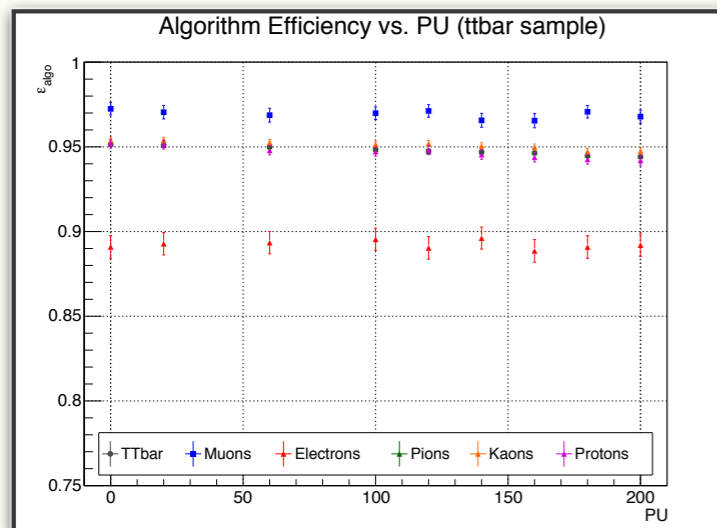
**HT Basics**

Straight lines considered in terms of slope-intercept parameter (m,c)

Point (x, y)  $\rightarrow$  Line (m,c)  
Line (x, y)  $\rightarrow$  Point (m,c)



Track Candidates selected requiring hits in 5+ layers



Firmware Implementation