

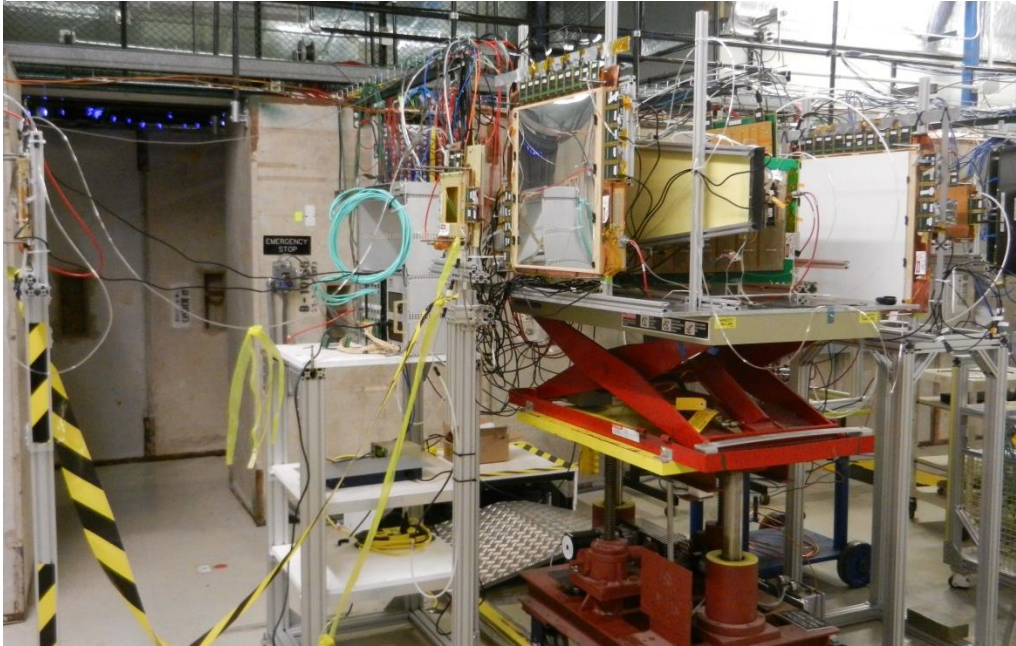
**SBS Back Trackers GEMs on MT6 2B @ Fermilab Test Beam Facility (FTBF)**

***2-22 October 2013***

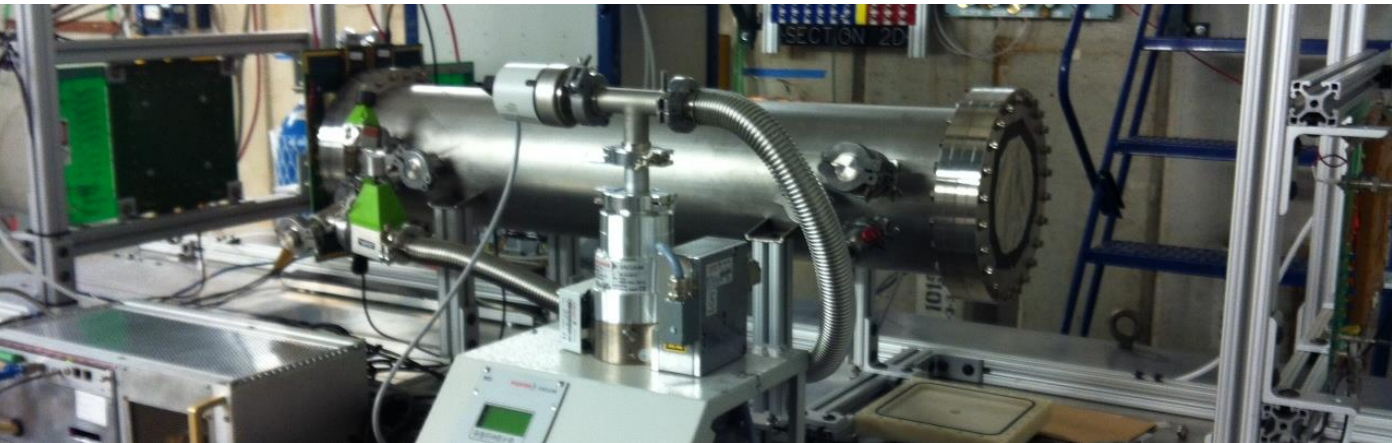
**Kondo Gnanvo**

# Test Beam T-1037 @ Fermilab: R&D on GEM for EIC Tracking and PID detectors

*Uva & Florida tech: Large Size GEM for forward tracking*



*Stony Brook Univ: GEM-RICH setup*



10/15/2013

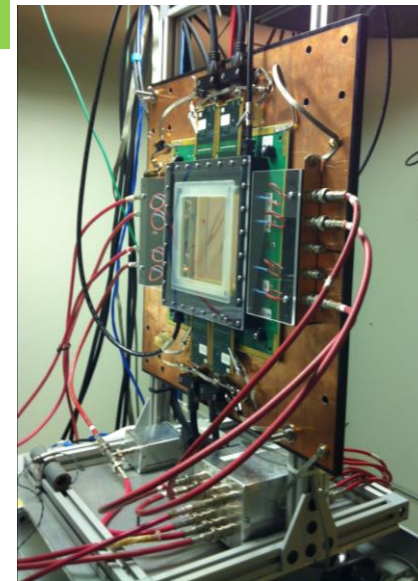
SBS Weekly Meeting

*Yale Univ: 3D-Coordinate GEM setup*

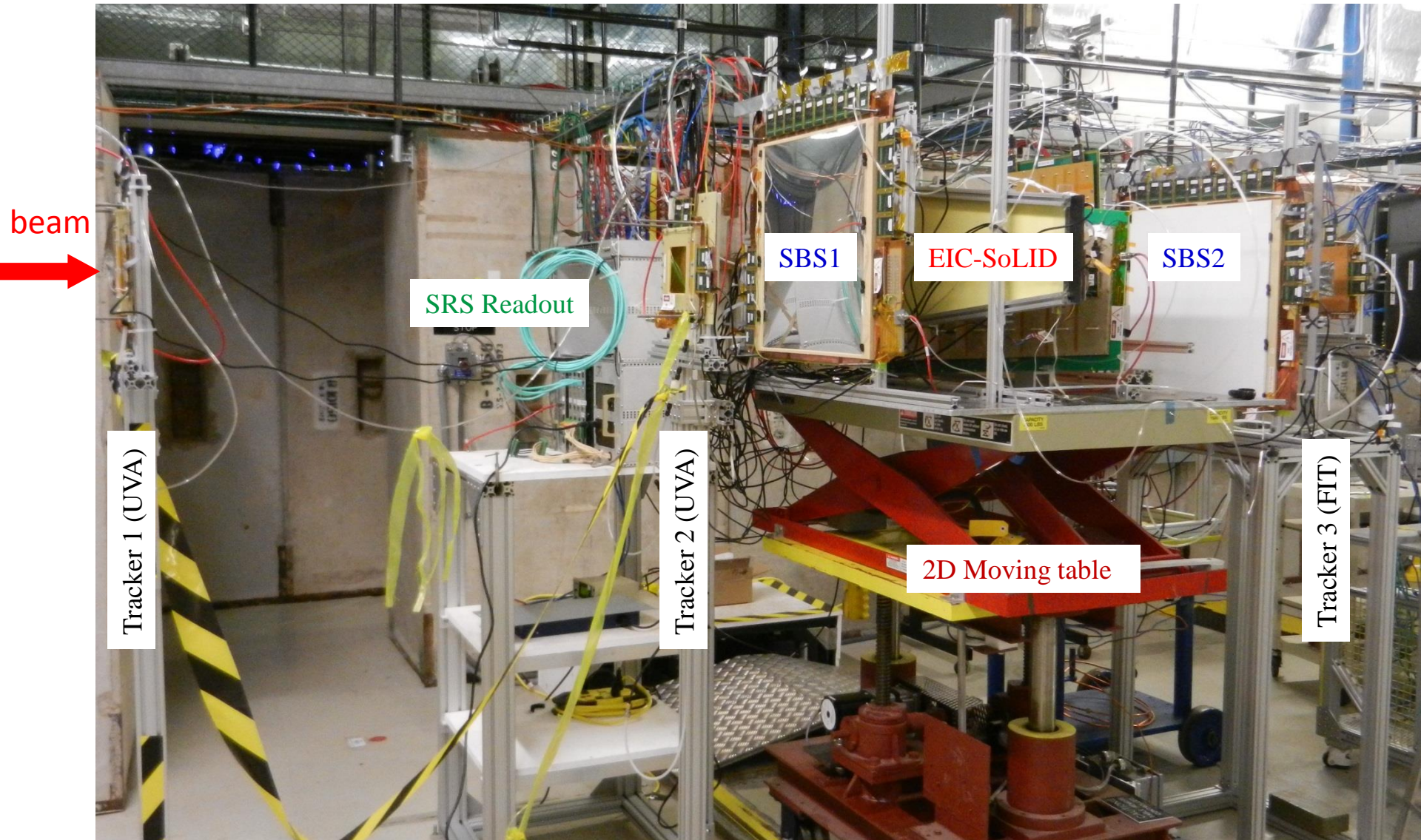


T-1037 is funded by the Site-neutral R&D Program administered @ BNL

*BNL: Mini drift GEM*

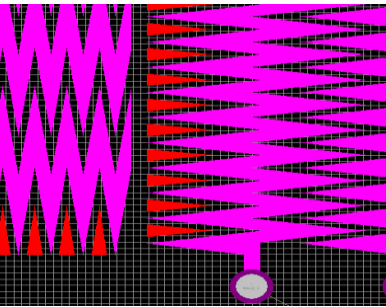


# Large Size GEM Setup in MT6 2B @ FTBF: Univ. of Virginia & Florida Tech

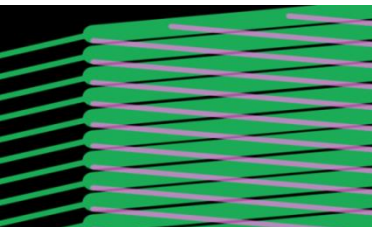


# Large Size GEM Setup in MT6 2B @ FTBF: Univ. of Virginia & Florida Tech

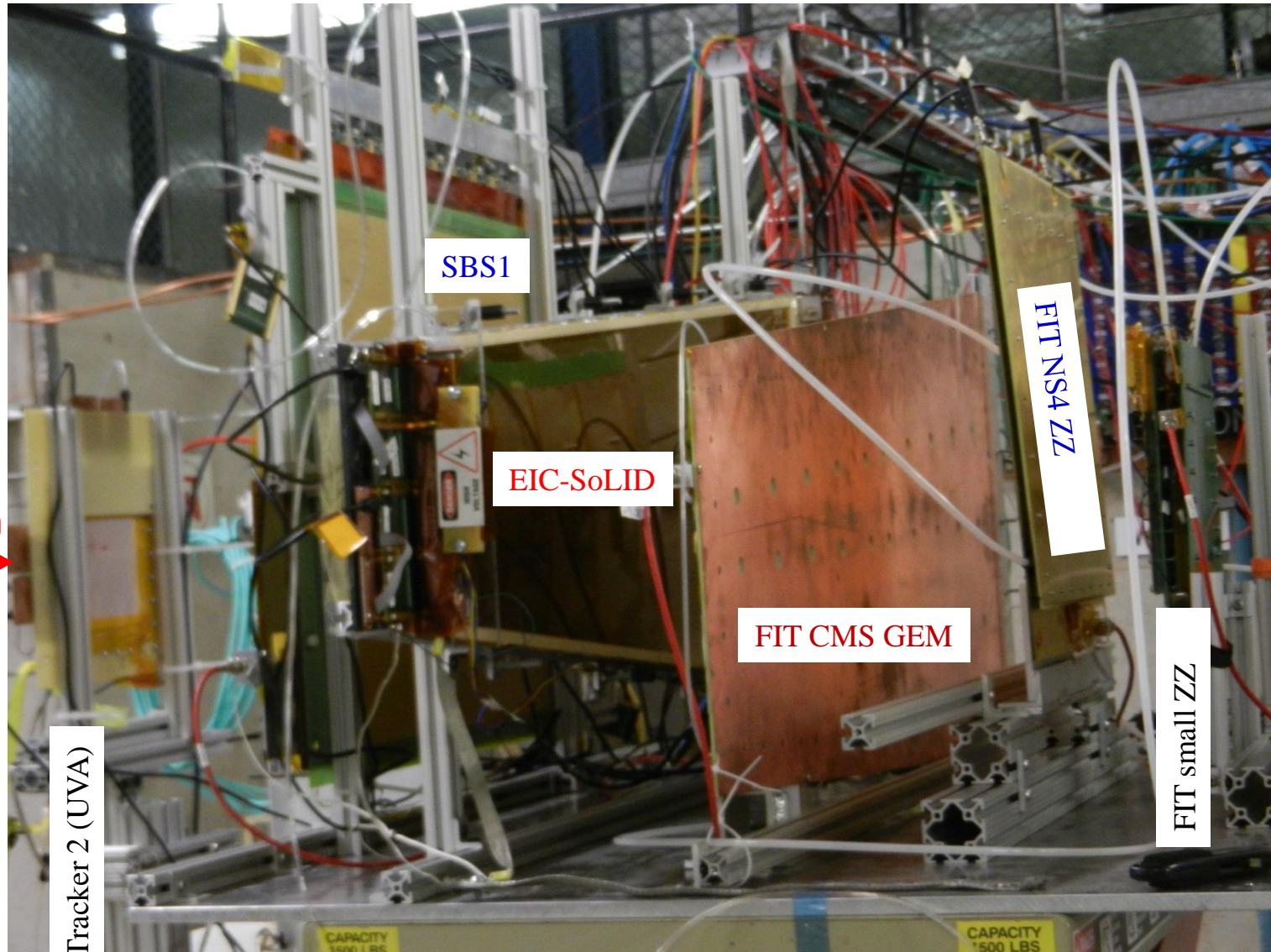
ZZ = 1D zigzag strip readout @ Florida Tech (FIT)



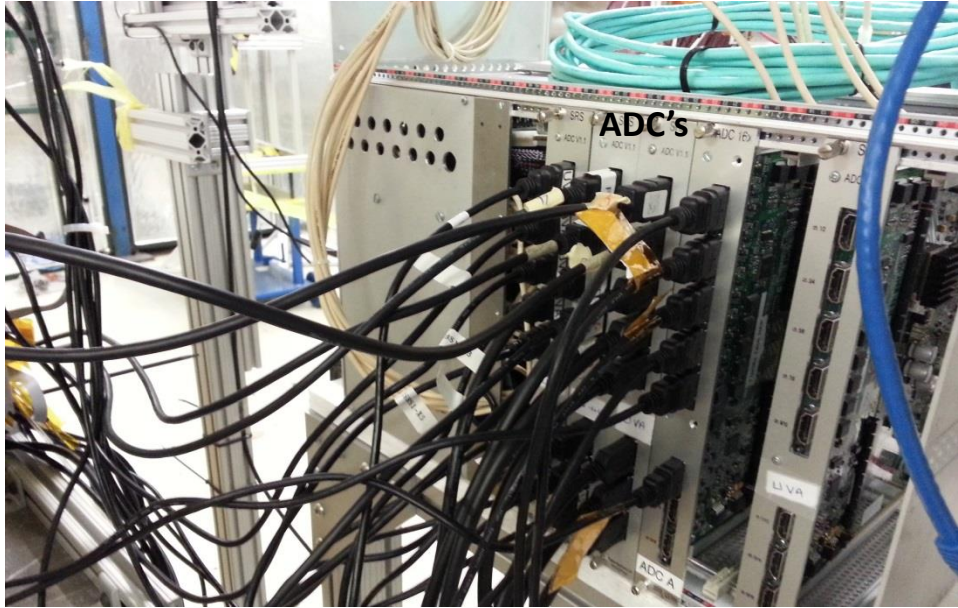
beam  
→



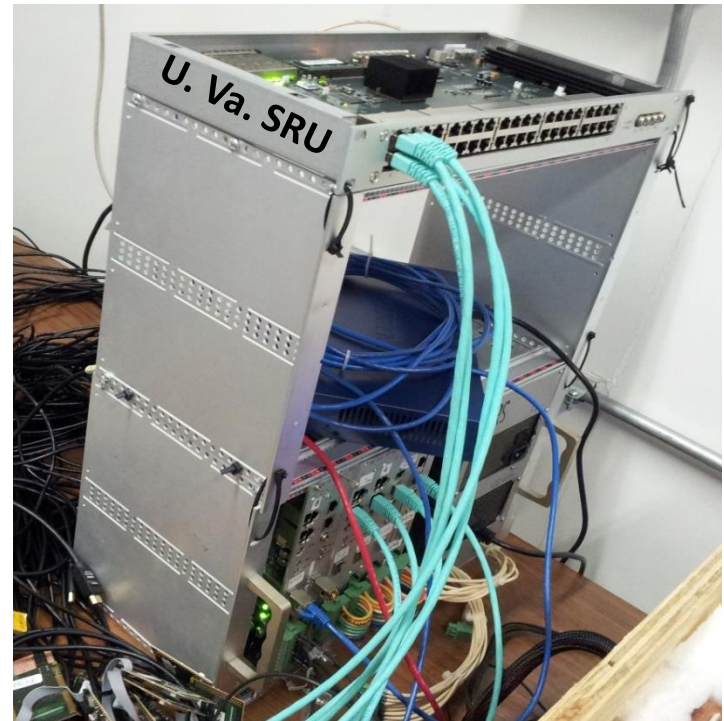
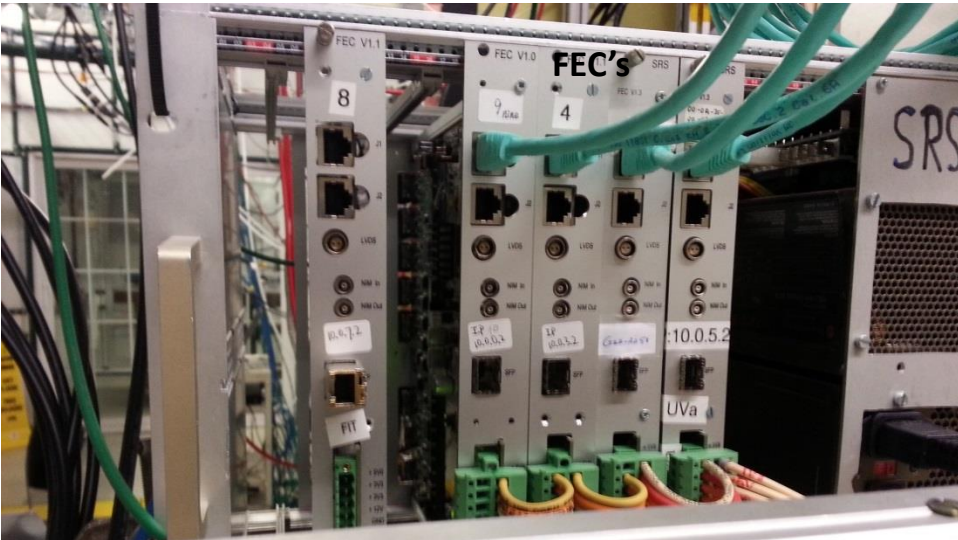
2D stereo angle readout  
Uva EIC-SoLID GEM



# SRS + SRU Readout using DATE @ FTBF

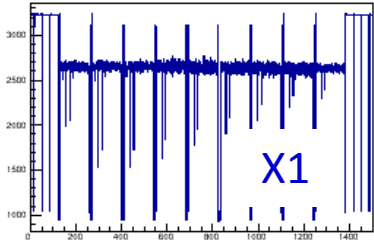


- 64 APV's read out by SRS
- Acquiring data from FECs with an SRU
- Current DAQ rate is  $\sim 150$  Hz
- Using 6-9 25ns time slices for digitization
- Beam structure: 4s spills, 1min rep. time, 10 - 20k particles/spill
- Trigger: coincidence of 3 scintillators upstream and downstream of our setup

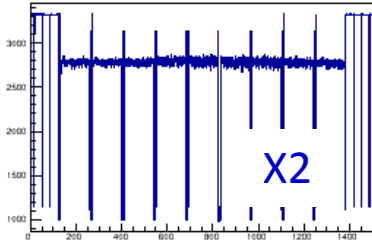


# Recorded hit in SBS1

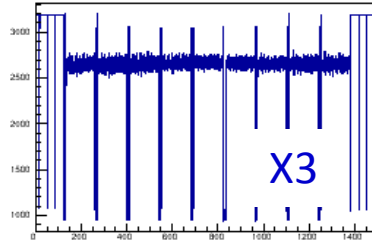
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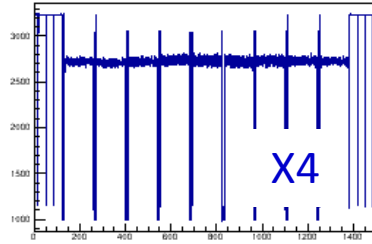
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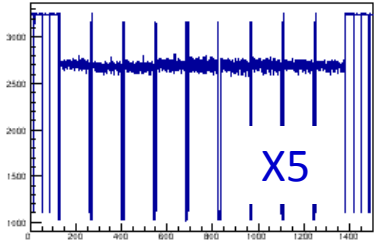
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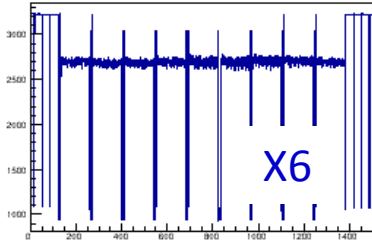
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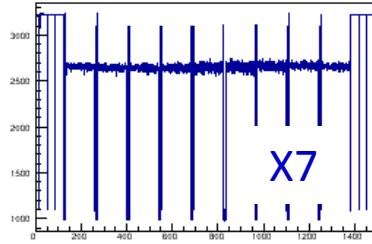
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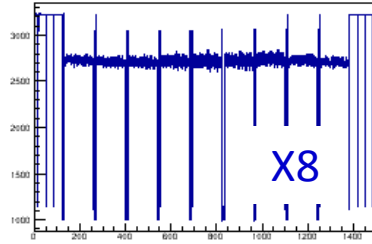
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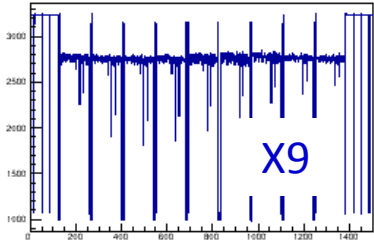
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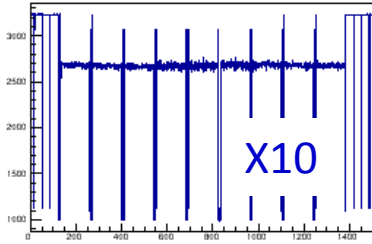
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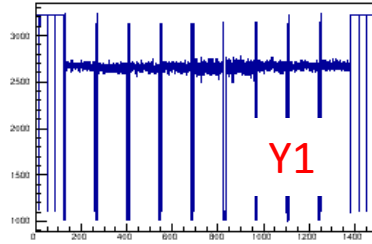
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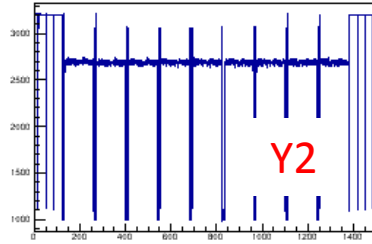
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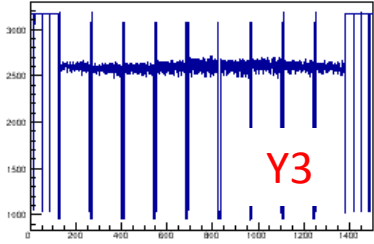
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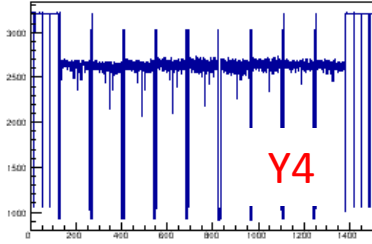
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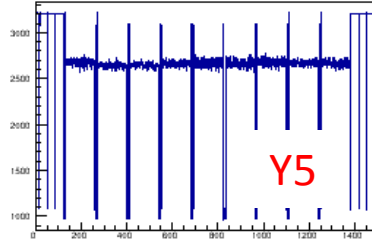
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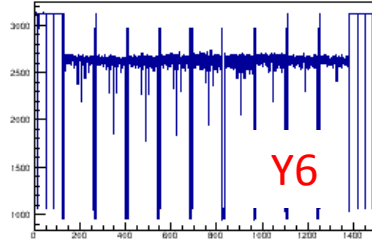
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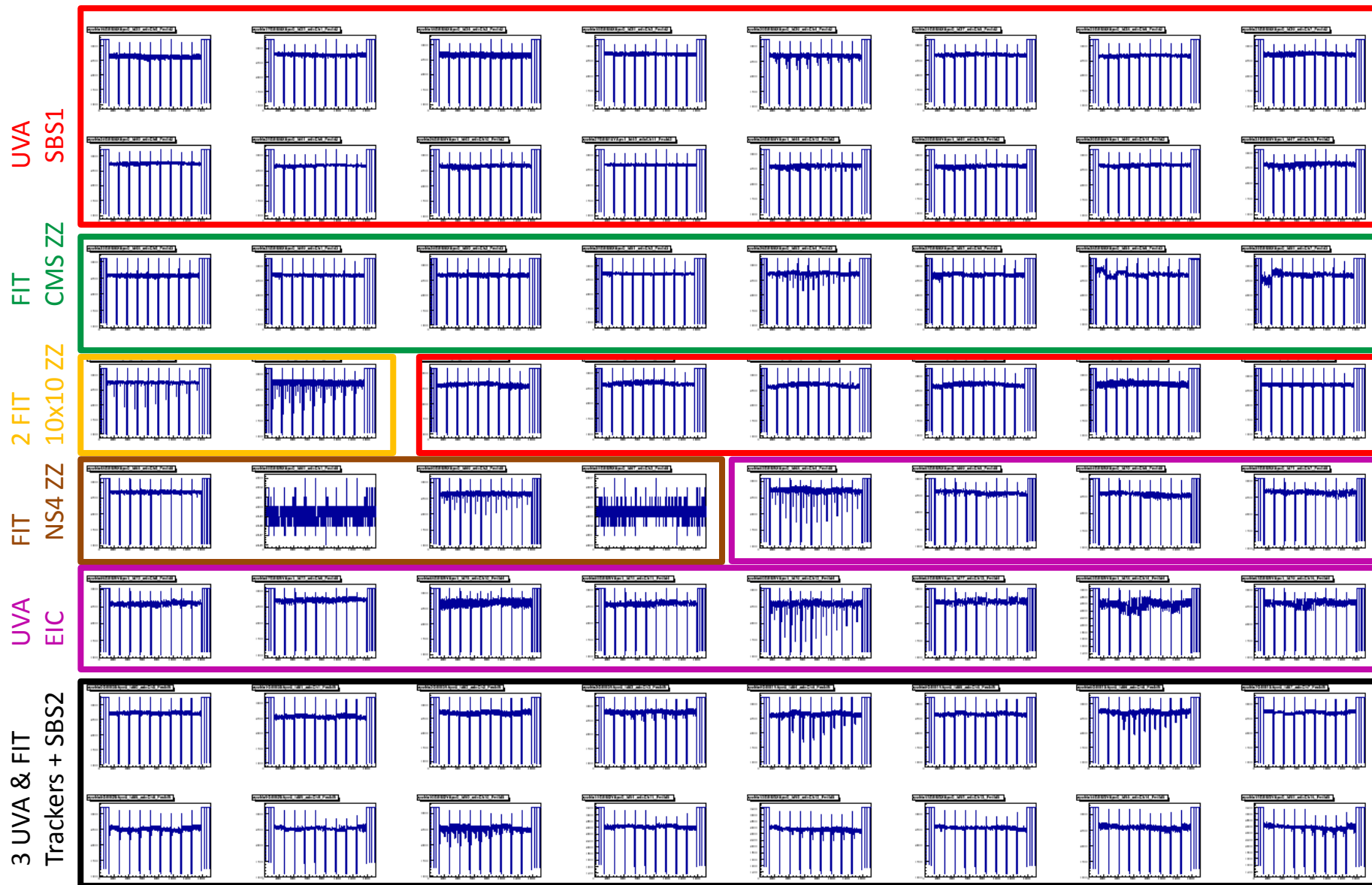
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# Event with hit recorded in the 10 GEMs and 64 apv25s of the setup



## So far

- Combined runs with Florida Tech
- 91 runs → 400 GB of data
- HV scan from 3.8kV to 4.2kV 50 V steps (SBS1, SBS2, EIC-SoLID)
- Position scan of 24 points on SBS1 and EIC-SoLID Chambers



# Test beam Cr



# Summary & To do list

- Test beam T-1037 @ Fermilab MT6 has been very successful so far
  - 400 Gb data collected over 100 runs for resolution, gain uniformity studies
- SBS GEM I and II as well as EIC-SoLID GEM (tested for the first time) are working fine
- SRS system + SRU readout 64 APV25 used for the DAQ.
  - SRU used for the first time in test beam to readout more than 1 FEC

## To do list

- More tuning of the SRS scheduled this week
  - Test the system with 3 apv windows
  - Rate limitation in actual beam condition
- Study the chamber response to high intensity beam (gain stability) to stud