MNV102: Intro to Test Beam

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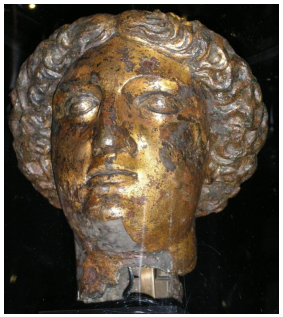
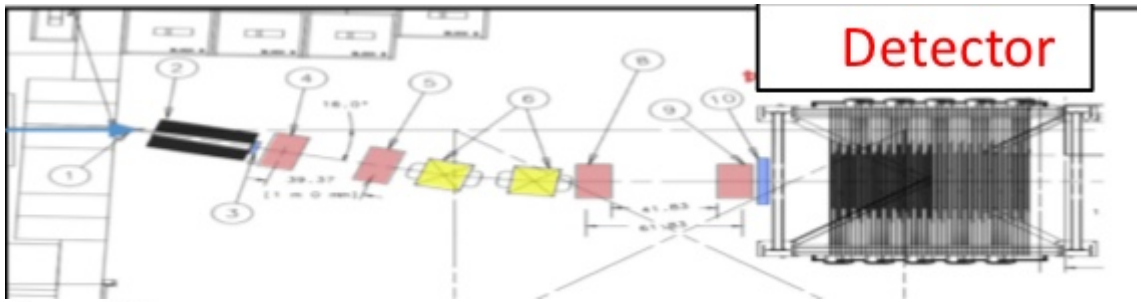
Test Beam Calibrations session
5 December 2011

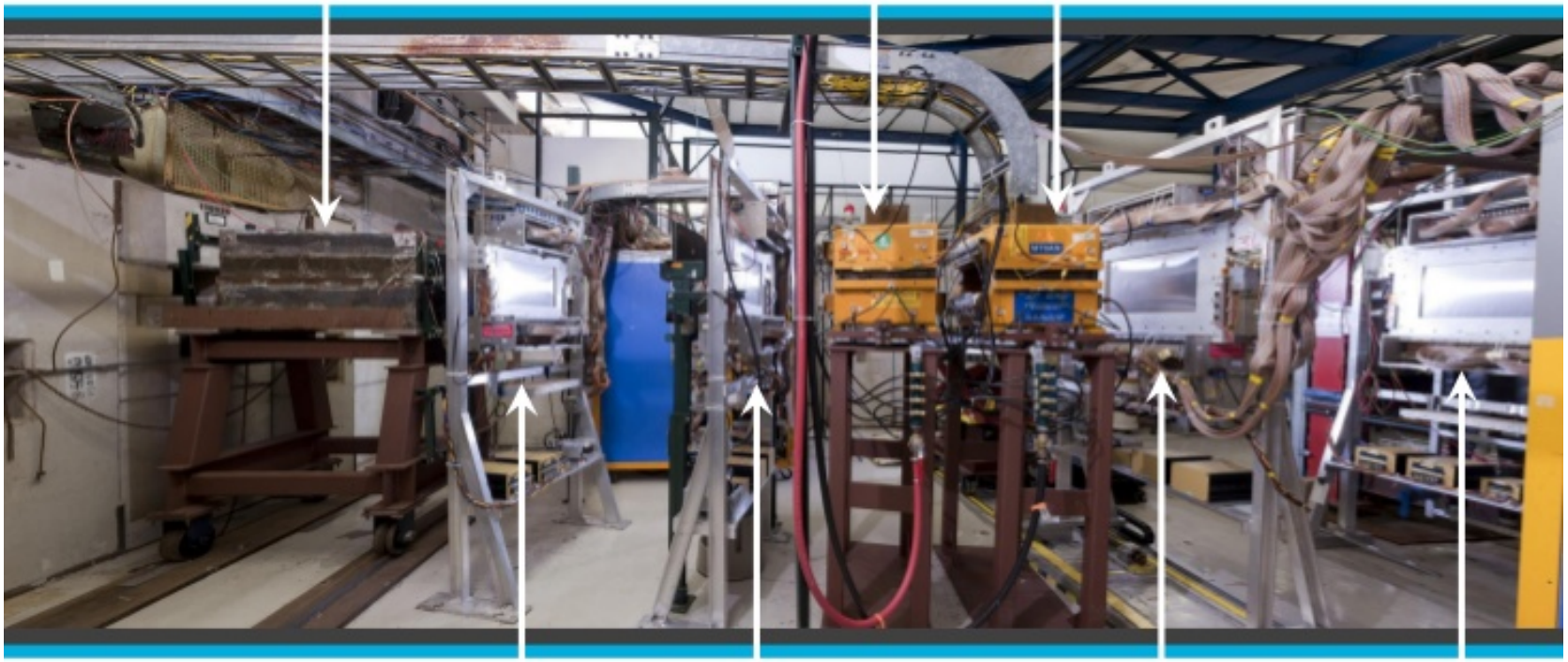


Purpose of this talk

- Explain basics of test beam layout and geometry
- Outline key differences between test beam and full Minerva calibrations
- To be discussed today:
  - Beamline reconstruction & Magnetic field
  - Attenuation validation
  - Track-based alignment and strip-to-strip
  - Timing
  - MEU tuning
  - Temperature dependence

Beamline layout





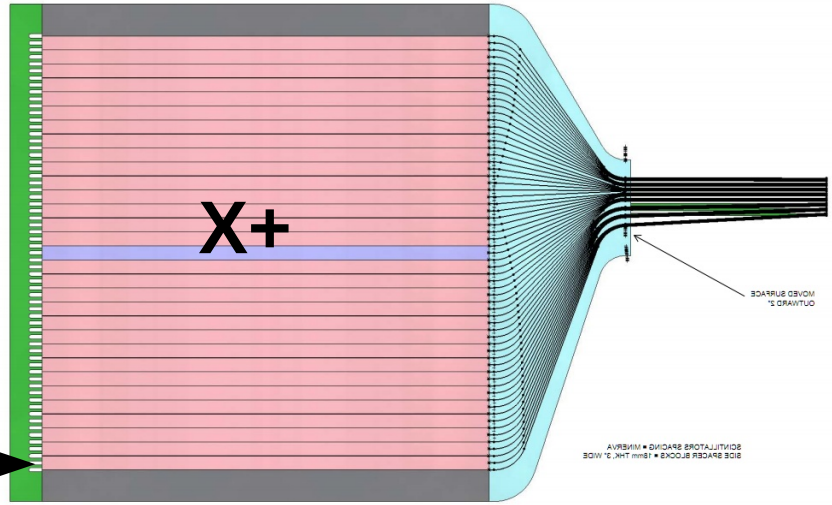
Detector

- Really two different detectors
  - 20ECAL20HCAL (June 8-28, 2010)
  - 20TRAK20ECAL (June 29-July 19, 2010)
- 40 modules, 1 plane each, 63 strips
- Planes are rectangular, all strips 1.07m
- X strips are horizontal, U and V still -/+ 60 deg from X
- 1 PMT and 1 FEB per 1 plane

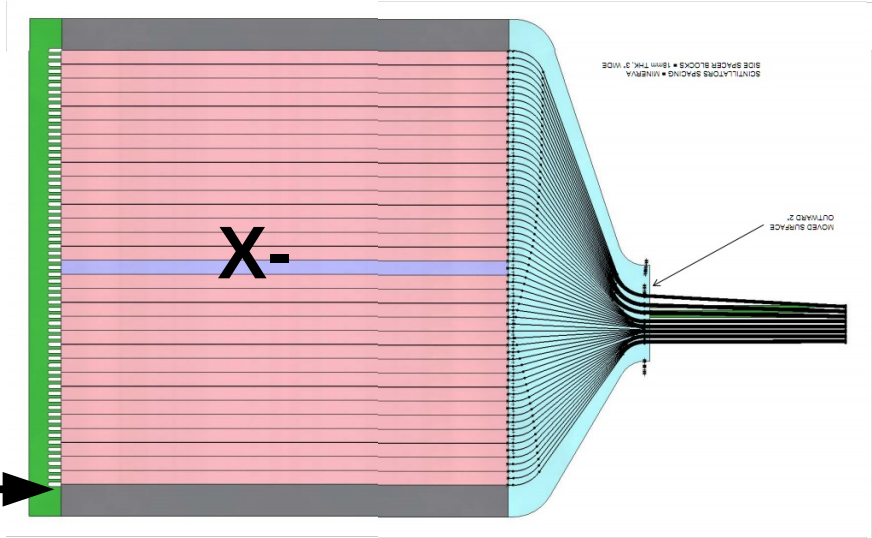
Important differences

- Only two constructed planes
  - Rotated to form 8 possible planes
- Readout from both sides
- Corners of detector do not have instrumented planes in all three views
  - There are normally-incident, 1-view tracks
- Strip numbering, construction to detector strip map, strip triangle direction = headaches

MTest X Modules – East Readout



Detector Strip 1
Constructed/Mapper Strip 63



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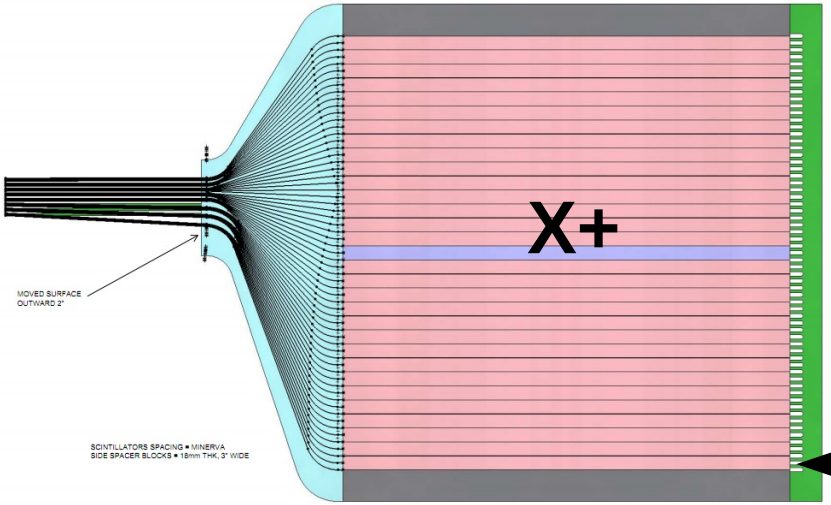
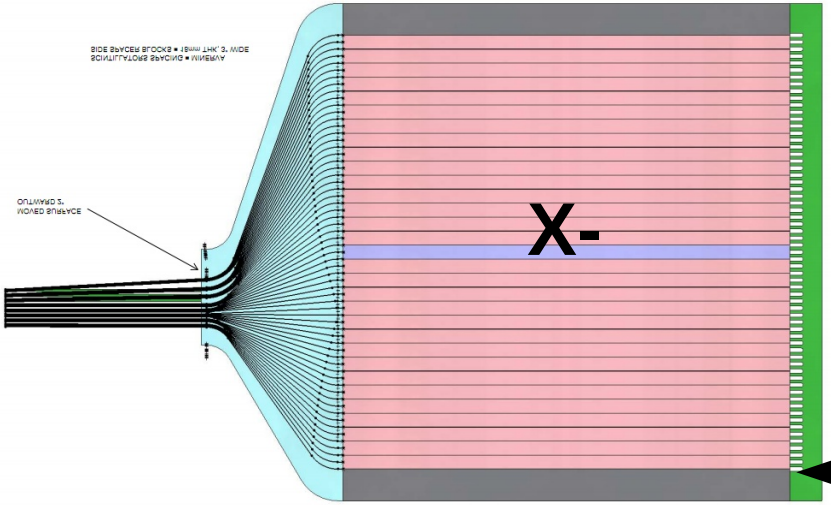
MTest X Modules – West Readout



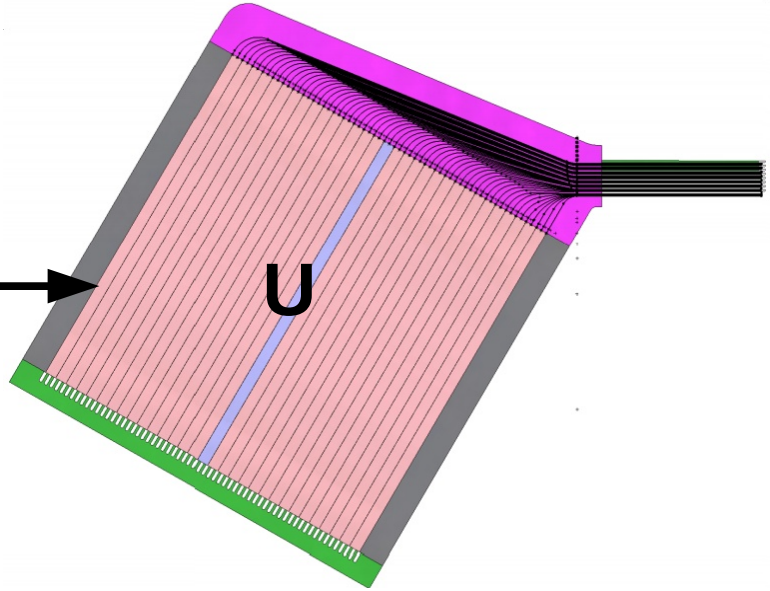
Detector Strip 1
Constructed/Mapper Strip 63



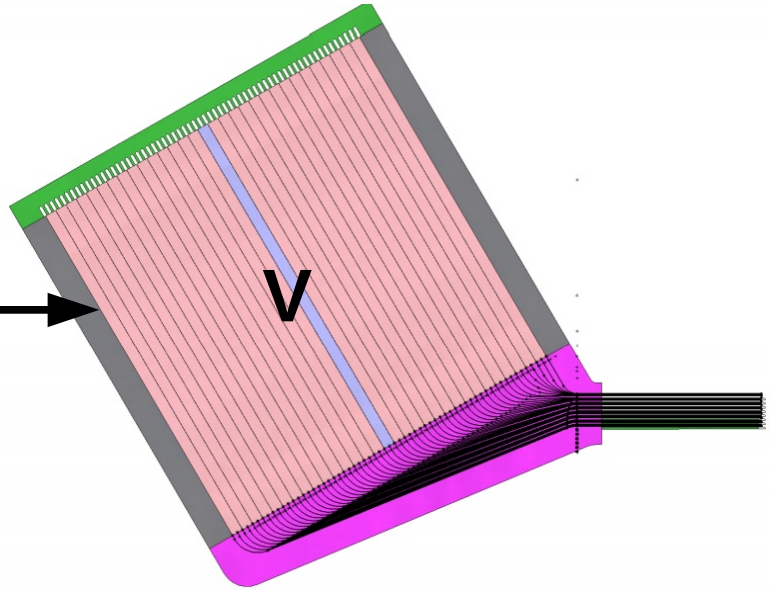
Detector Strip 1
Constructed/Mapper Strip 1

MTest U&V Modules – East Readout

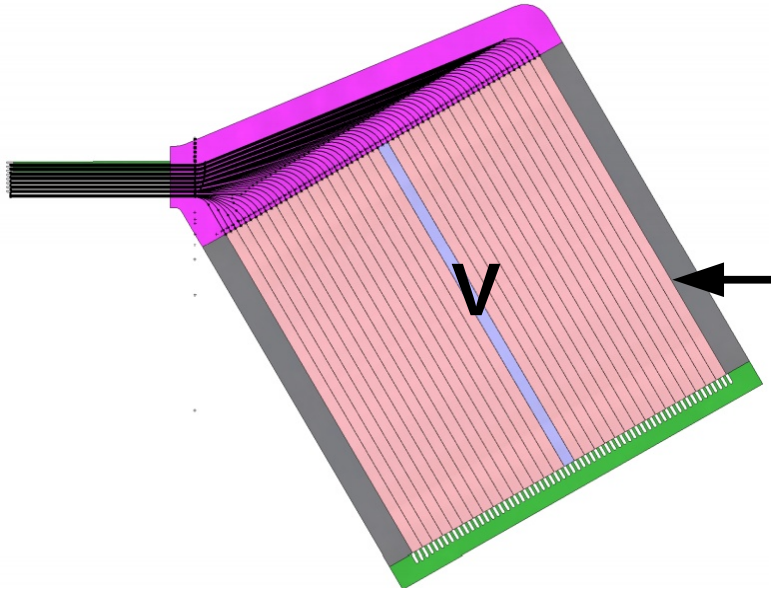
Detector Strip 63
Constructed/Mapper Strip 63



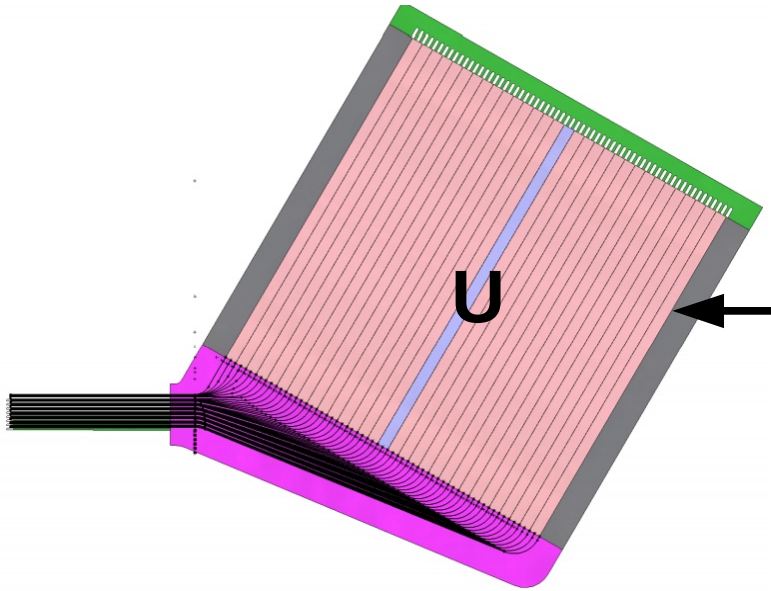
Detector Strip 1
Constructed/Mapper Strip 63



MTest U&V Modules – West Readout



Detector Strip 63
Constructed/Mapper Strip 63



Detector Strip 1
Constructed/Mapper Strip 63

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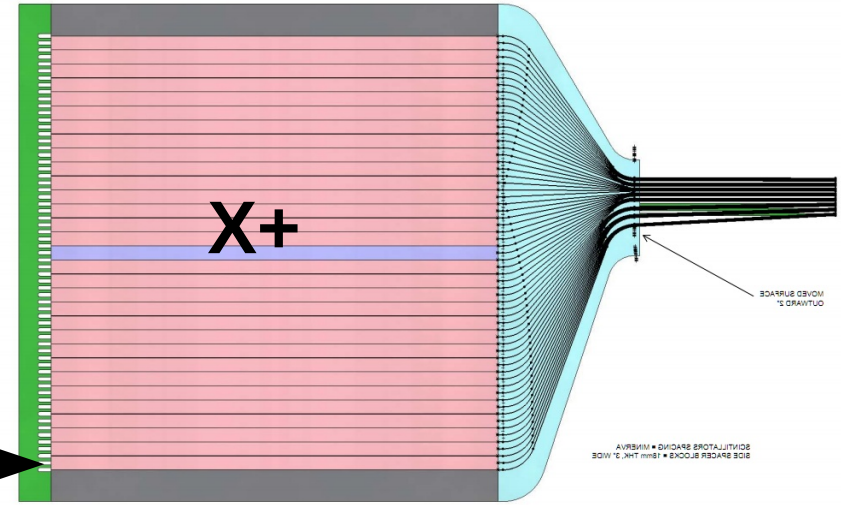

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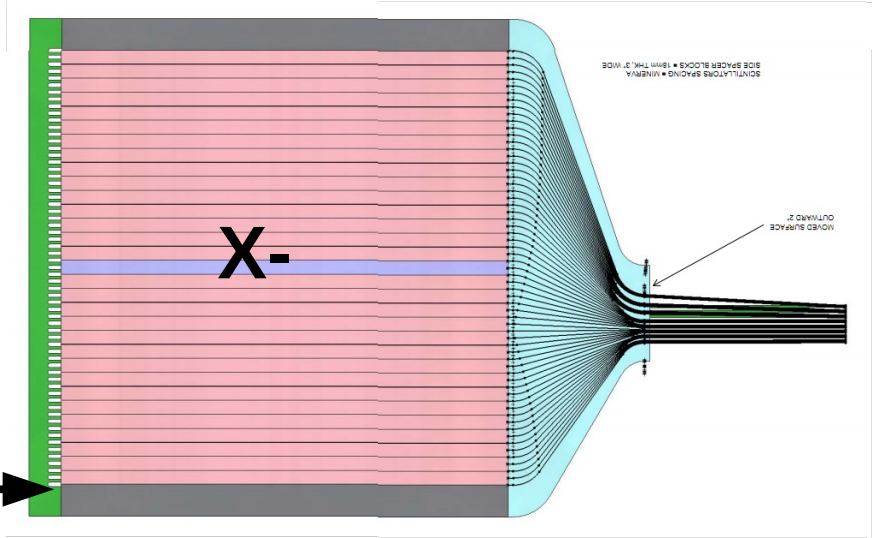

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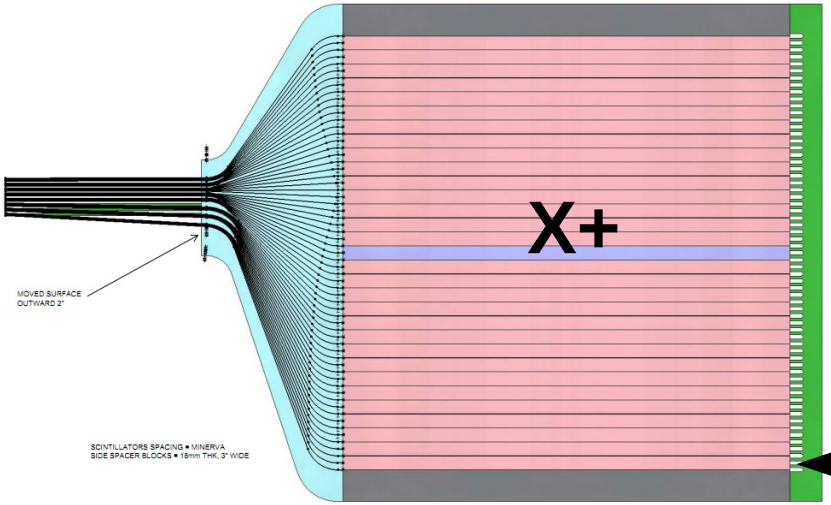

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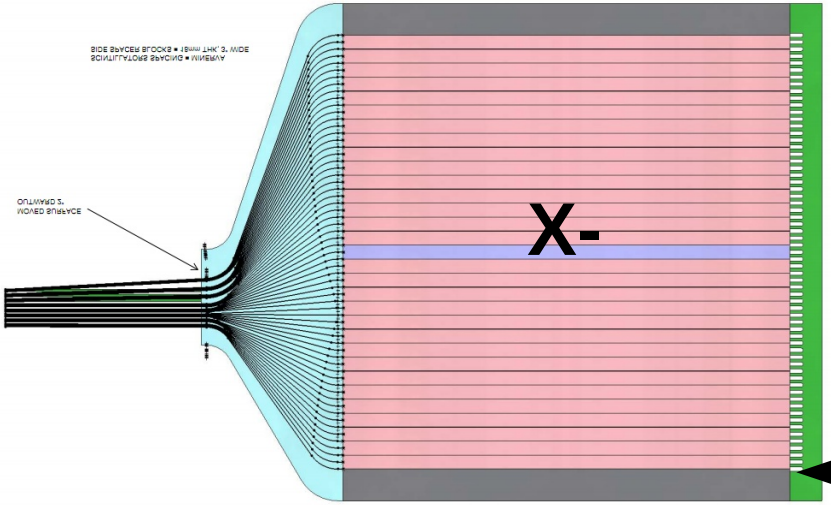
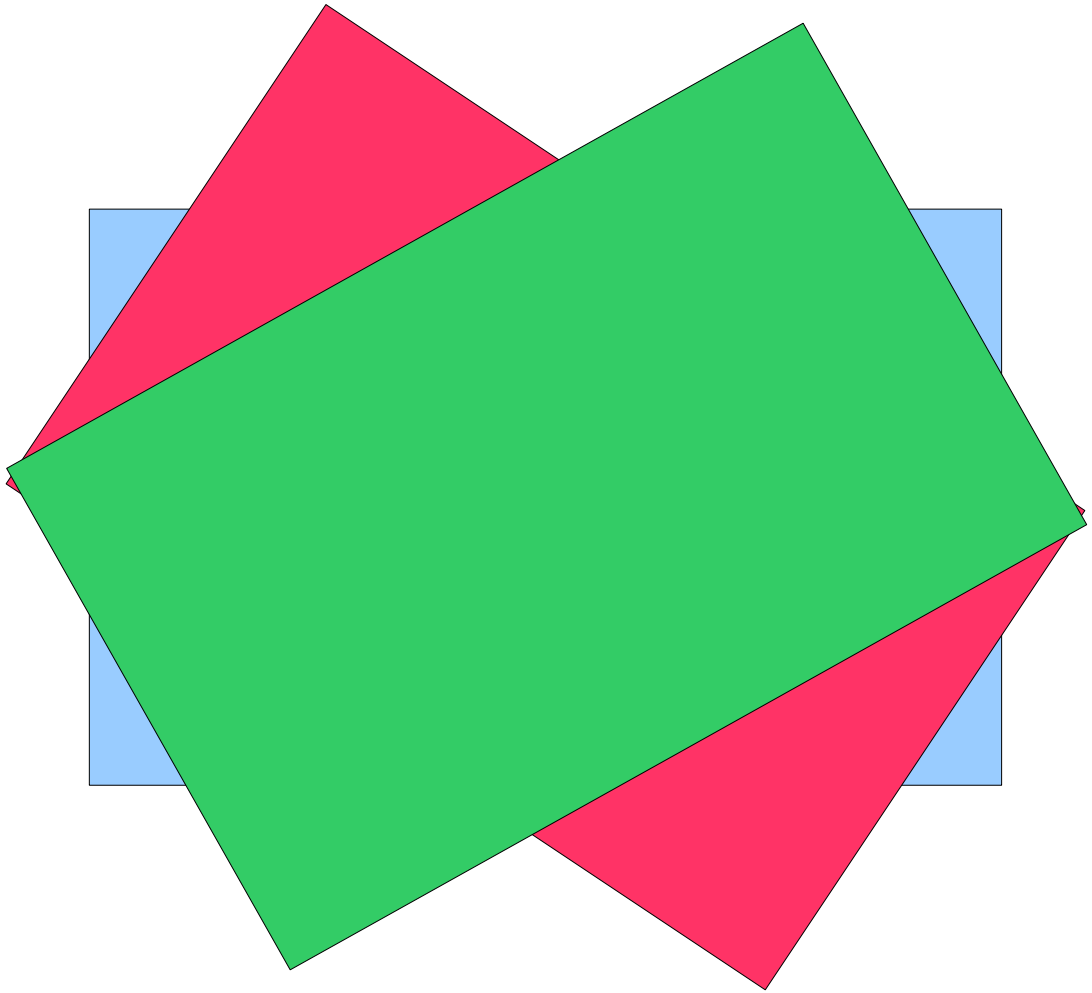


Detector Strip 1
Constructed/Mapper Strip 1

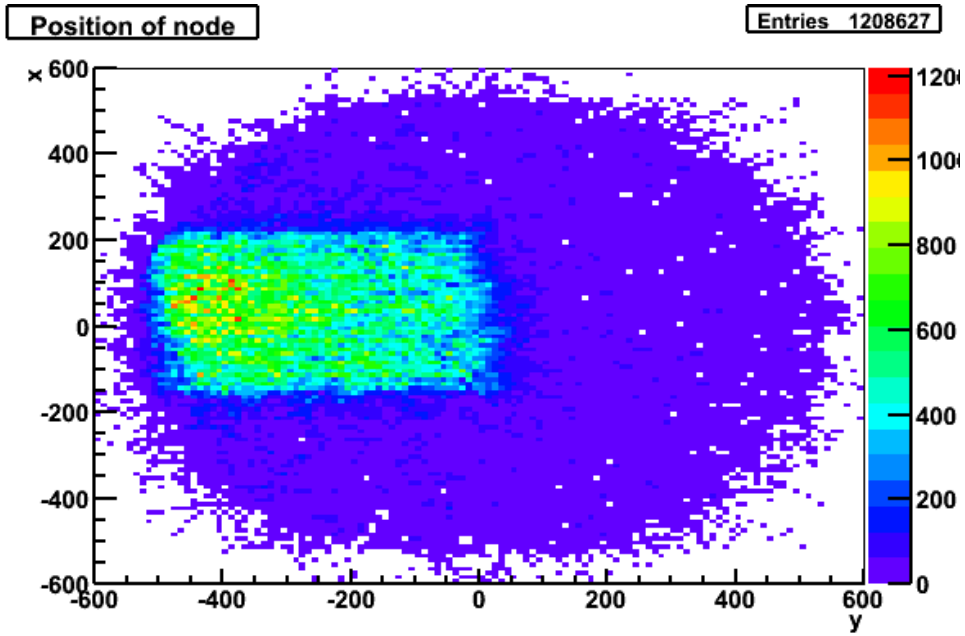
Rotated planes

- Rectangular planes with 60 degree rotations
- For muon runs, aggressive options for TrackAddClusters

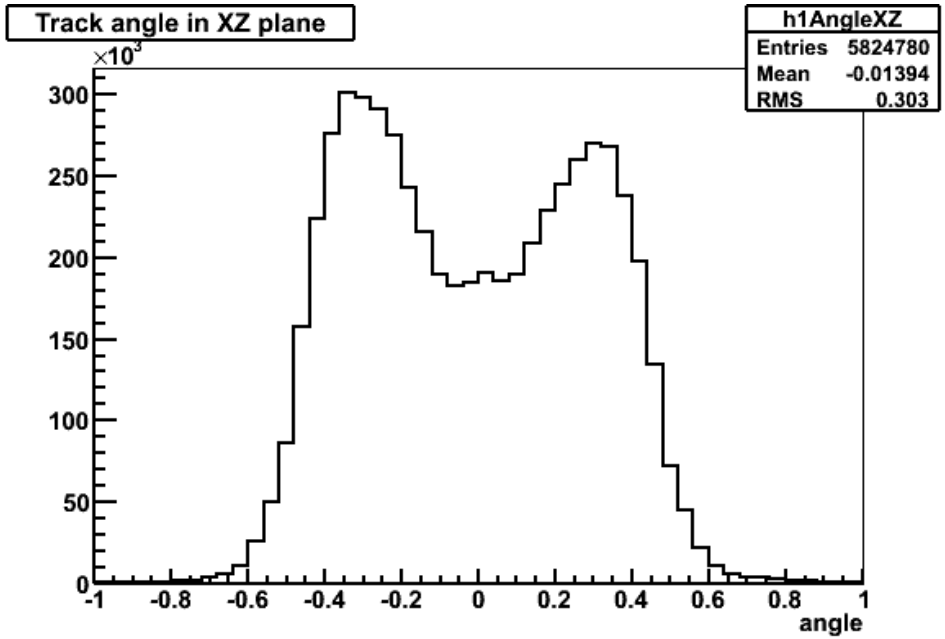


What's a rock muon?

- Beam muons and Cosmic muons



Beam muon spot



Cosmic vertical angle

Differences with cosmics

- Go both ways
  - Determining direction from XZ angle for timing calibration
- Correcting for normal incidence for alignment