Muon Tracking FEE Cost Reduction Efforts

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PHENIX DC Meeting

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Original Cost Estimates

Item	New Estimate (k$)	Old Estimate (k$)
Labor	**2150.0**	**243.5**
Cathode Electronics	1564.0	1864.5
Anode Electronics	718.0	100.0
Mechanical	700.0	0.0
FEE Subtotal	**2982.0**	**1964.5**
LV Power	25.0	-
ARC Infrastructure	10.0	-
T&FC	207.0	-
Ancillary	100.0	-
Online Subtotal	**342.0**	**1458.0**
Total	**5474.0**	**3666.0**

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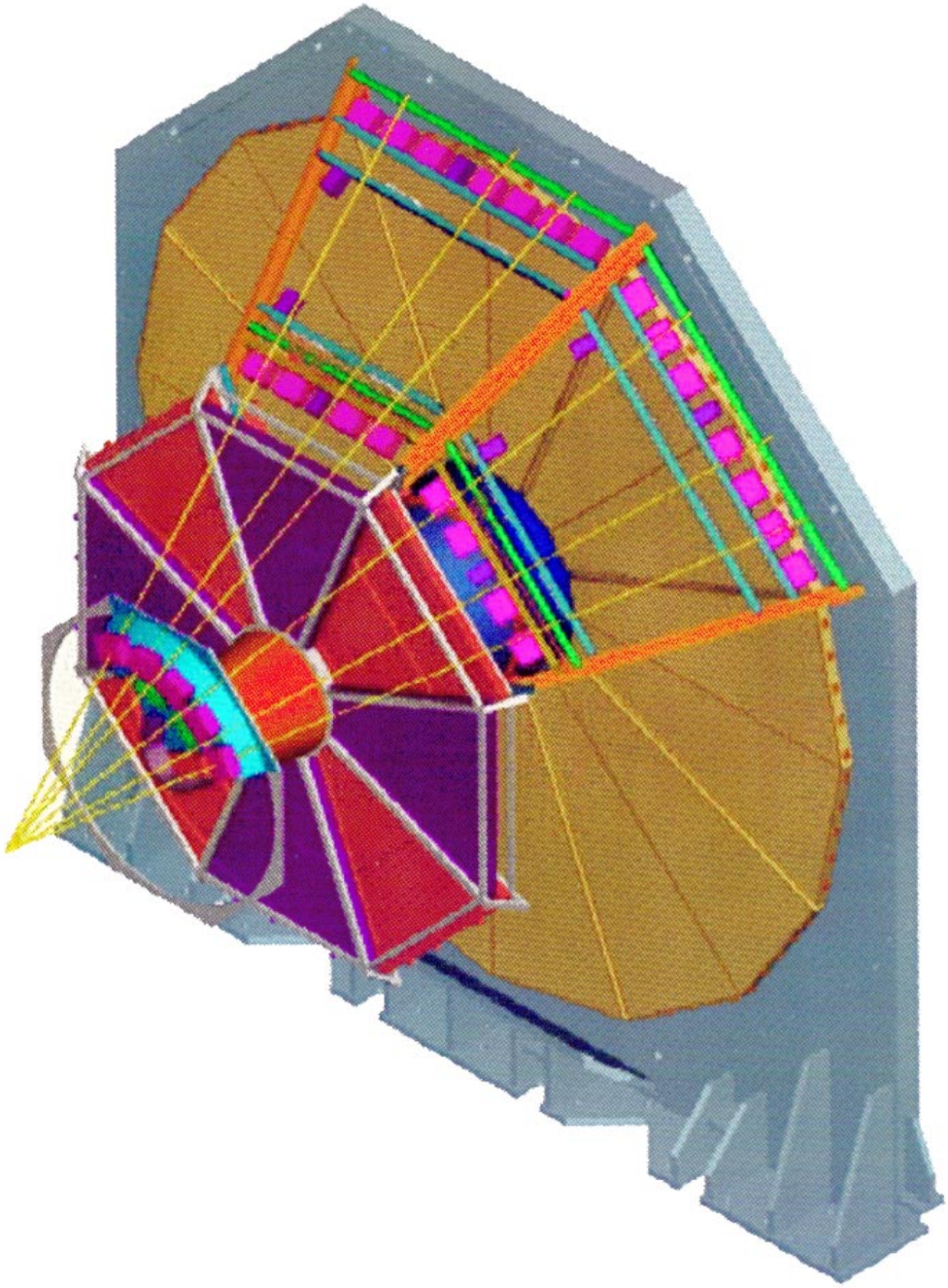
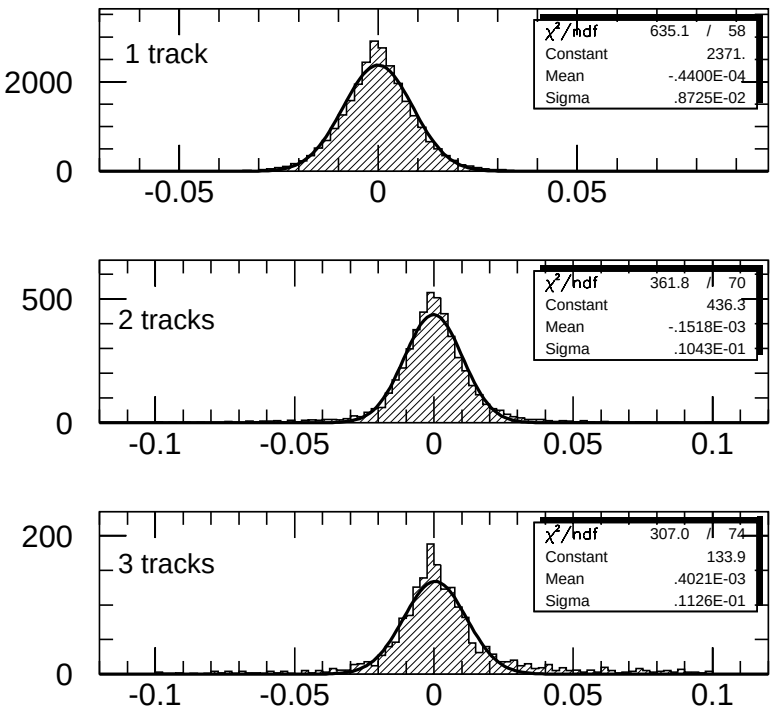
µTr FEE Mechanics



Latest Efforts

	MuTr FEE Budget	AEE/RIKEN FUNDS (for FEE)
At CDR		
Full System	5474.0	3666.0
Scrubbnig the Files		
Reduction in FEE Mechanics	-64.4	
Changes from Eliminating 1 Gap at Station 3		
FEE	-341.0	
Mechanics		253.0
DCM's		90.0
Move Detector PCB's to FEE & Mechanics Savings		
PCB's		968.0
Mechanics (Estimate)		600.0
New Totals	**5068.6**	**5577.0**
Contingency	**1520.6**	

Position Resolutions

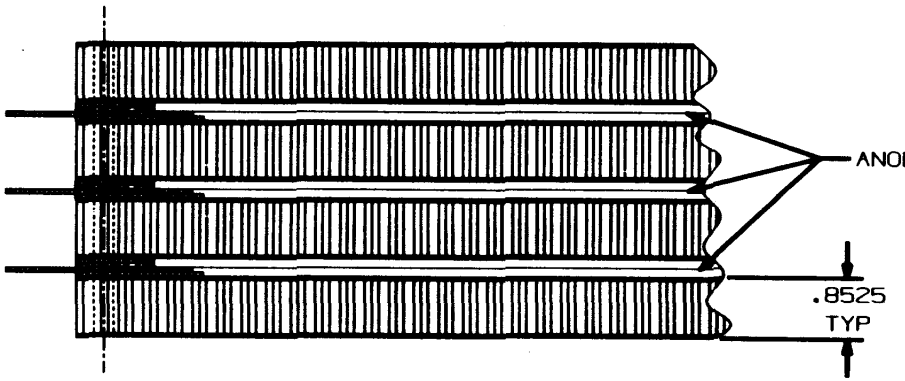


- Resolution when:
  - NTRACKS have contributed to cluster
  - NTRACKS can be fit (cluster is resolvable)
  - Can determine that NTRACKS contributed to cluster

⇒ If you can determine the number of tracks contributing and cluster is wide enough, resolution is maintained.

⇒ Want to maintain cathode-anode-cathode read out for maximum information about number of tracks in clusters

Station 3 Planes



TRACKING STATION THREE, ANODE WIRE READOUT SIDE, TYPICAL CONSTRUCTION CROSS-SECTION

ALL DIMENSIONS ARE IN INCHES

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STATION 3 NORTH CROSS-SECTION

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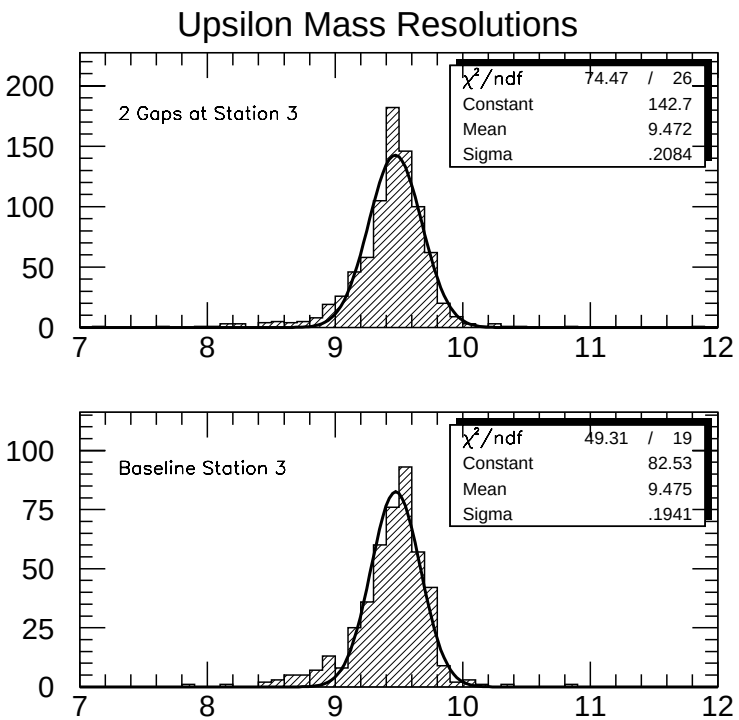
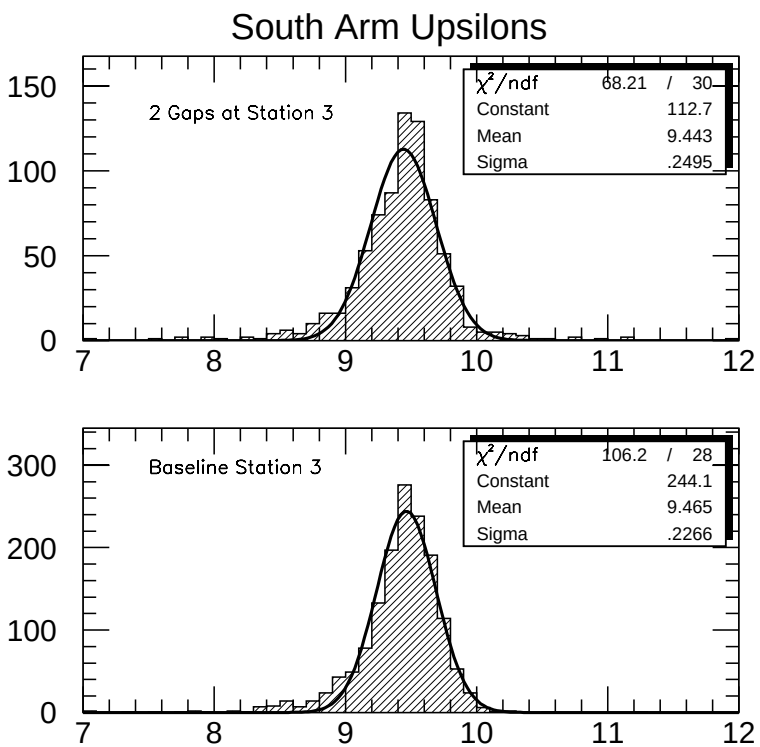
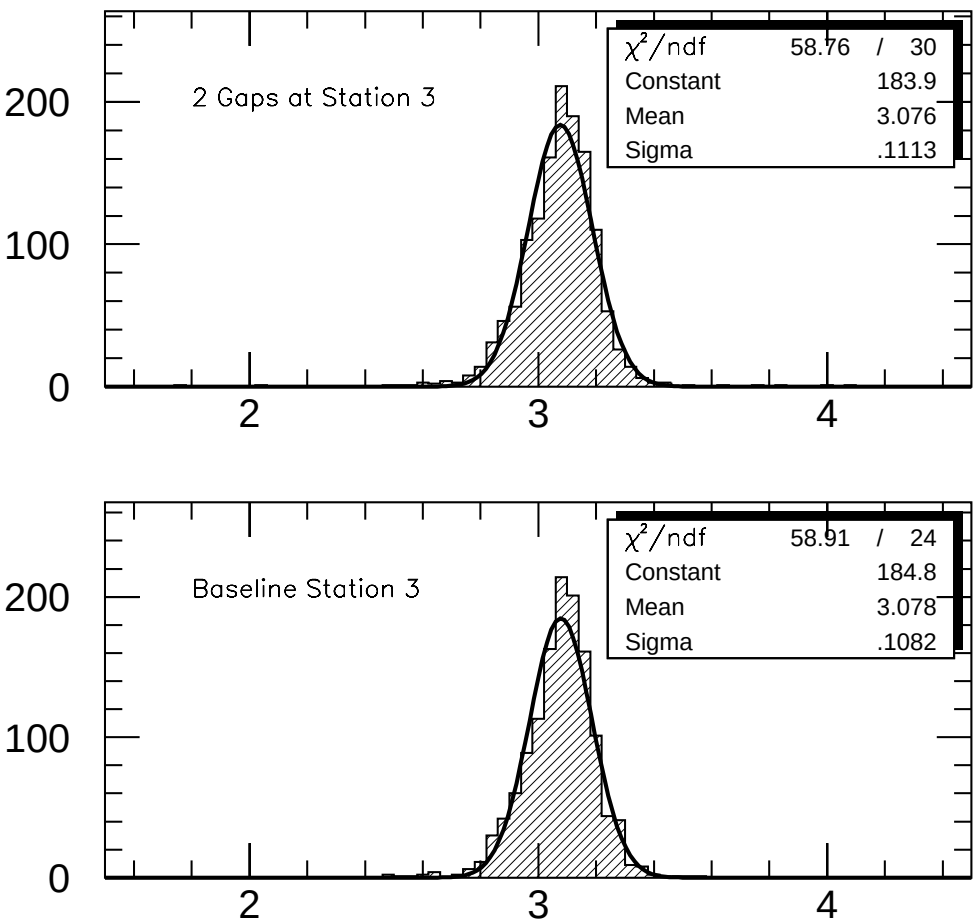
Upsilon Mass Resolutions

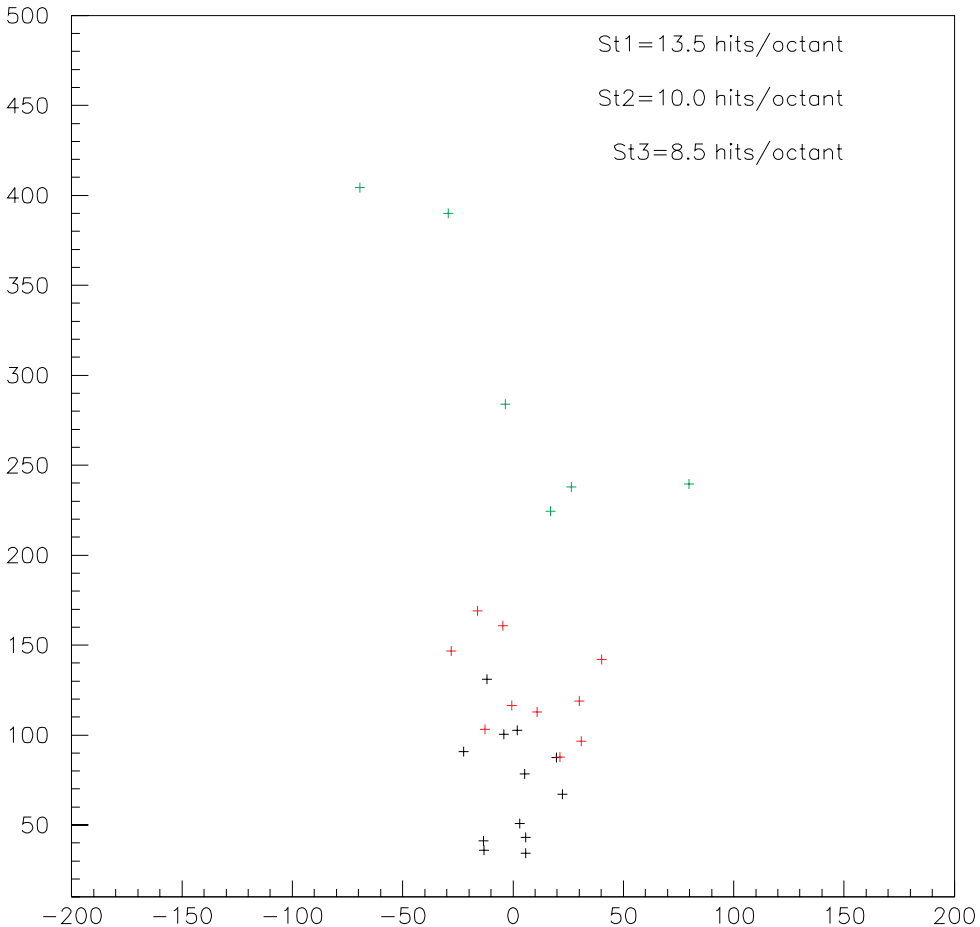




ϕ Mass Resolutions



Hit Distributions

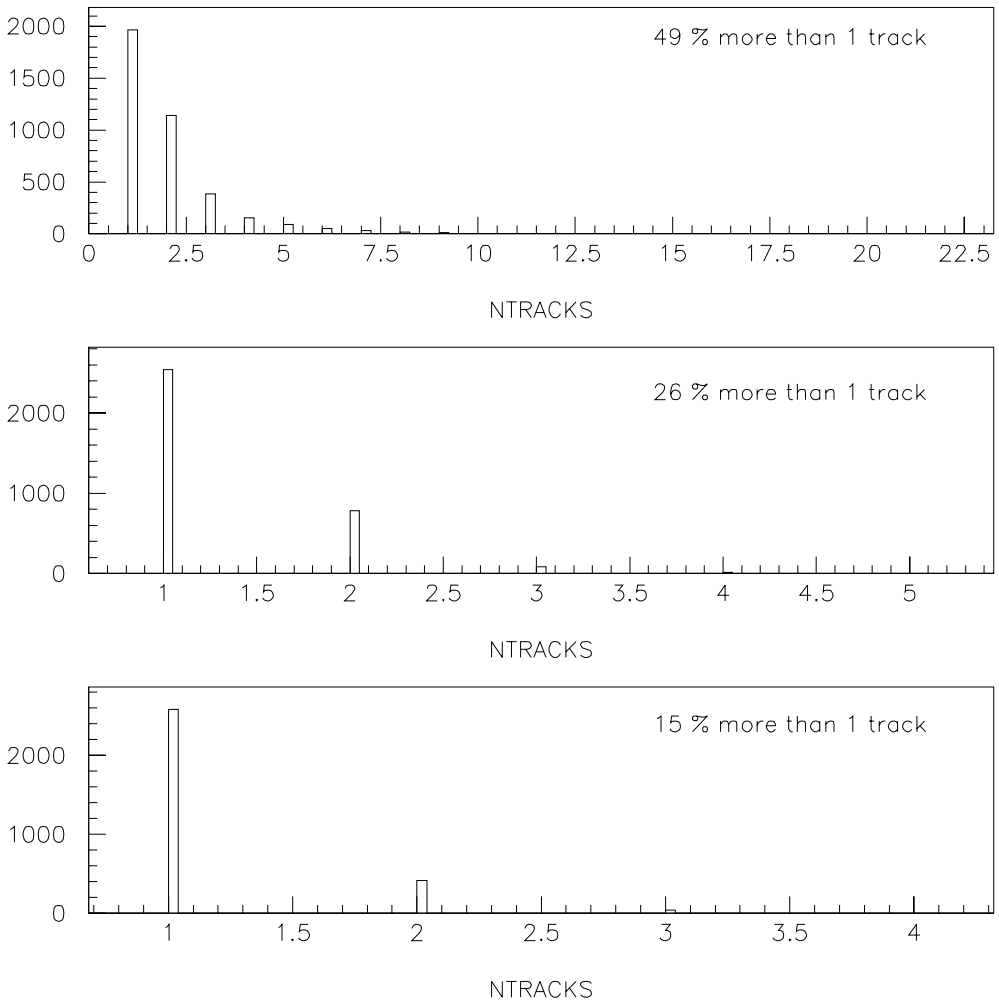


Central Au-Au Event

Hits in an octant at the three stations

Note: relative hit occupancy is much smaller in Station 3

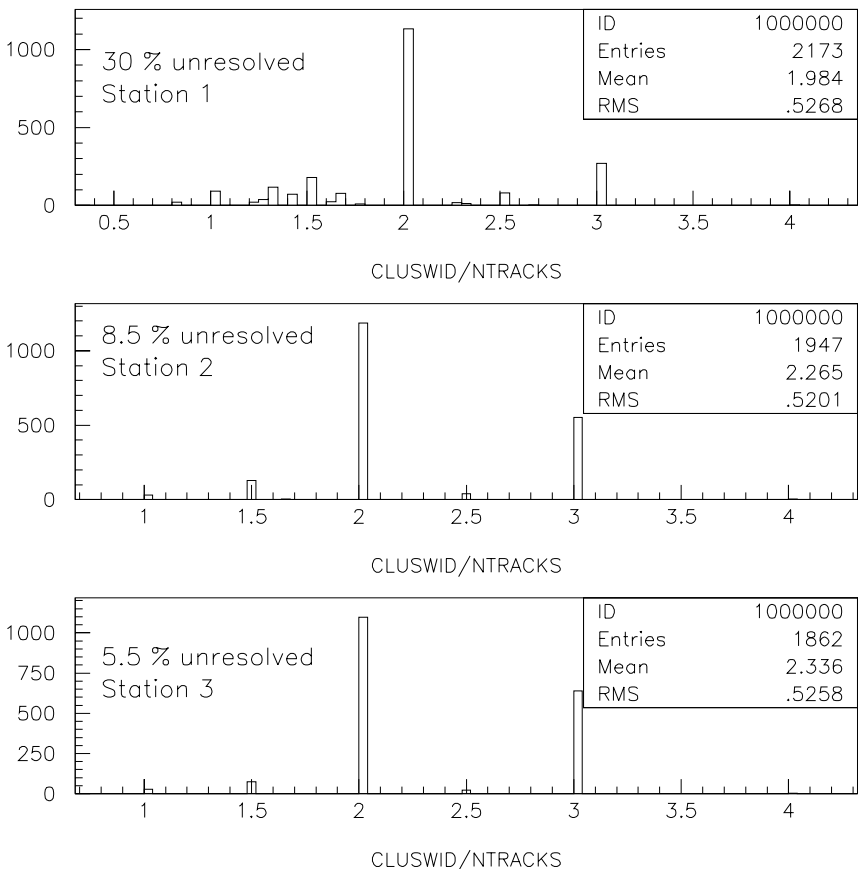
Number of Tracks in Strip Cluster



Central Au-Au Events

Note relative occupancy problems at three stations. Station 3 should have least pattern recognition difficulties.

Unresolvable Multi-Track Clusters

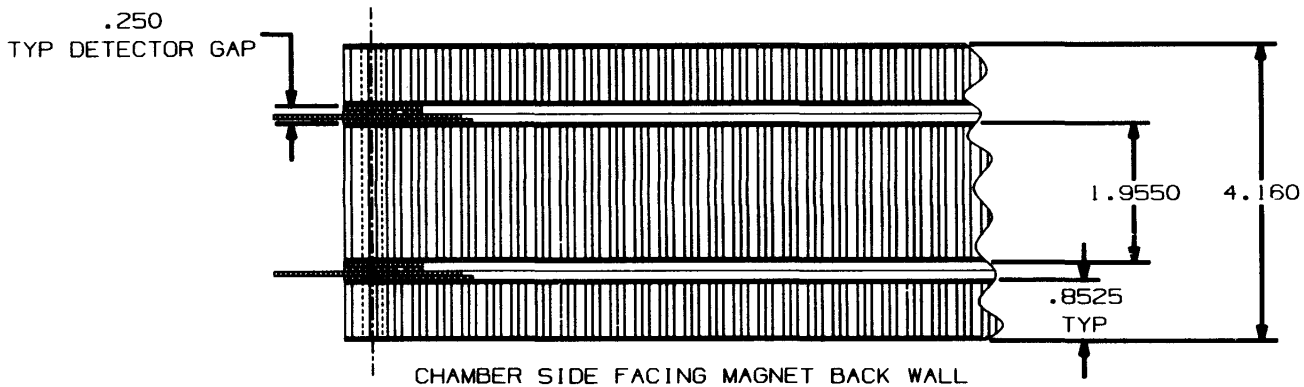


Central Au-Au Events

These clusters are too narrow to fit the number of tracks which contributed to the cluster.

Note: The occurance of multiple tracks can likely be determined from cathode-anode-cathode intersections, but the resolution will be degraded.

Descoped Station 3 Planes



TRACKING STATION THREE, ANODE WIRE READOUT SIDE, TYPICAL CONSTRUCTION CROSS-SECTION

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STATION 3 NORTH CROSS-SECTION

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Schedule for FEE Production

ID	Task Name
1	pCDR
2	CDR
3	PDR
4	FDR
5	Integ/Install Complete
6	**Detail Design**
7	Design & Board Layout
8	Prototyping
9	Final Modifications
10	Anode ASIC Go/No-go
11	Submit CPA for prod. run
12	Pkgd. prod. CPA delivery
13	Fab/Acc/Assy/Intg/Inst. plans
14	Fab+Test
15	Integ/Install