



Field On Scattering

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Introduction



- Data Selection
 - Moved selections from slow stage 1 to fast stage 2
 - Code to generate data selection histograms
 - Monte Carlo data currently in production



Rearrangement of data selections



Selection cu

- Stage 1 Cuts
 - Require exactly 1 TOF1 space point
 - Require exactly 1 TOF0 space point
 - Require exactly 1 track in Upstream Tracker
 - Upstream tracker Chi2/dof<10
 - Upstream tracker max radius < 150mm
 - Diffuser max radius < 100mm
 - TOF01 consistent with Muon Peak
 - Extrapolated TOF01 consistent with muon hypothesis
 - Successfully extrude track from Upstream tracker back to TOF0
- Stage 2 Cuts
 - Fiducial cut require the track from the upstream tracker, when projected downstream to be within 140mm radius at station 5 of downstream tracker
 - Select narrow range of muon momentum to allow study of scattering as a function of momentum

Selection Cuts

- Stage 1 Cuts
 - Require exactly 1 track in Upstream Tracker
- Stage 2 Cuts
 - Require exactly 1 TOF1 space point
 - Require exactly 1 TOF0 space point
 - Upstream tracker Chi2/dof<10
 - Upstream tracker max radius < 150mm
 - Diffuser max radius < 90mm
 - TOF01 consistent with Muon Peak
 - Extrapolated TOF01 consistent with muon hypothesis
 - Successfully extrude track from Upstream tracker back to TOF0
 - Fiducial cut require the track from the upstream tracker, when projected downstream to be within 140mm radius at station 5 of downstream tracker
 - Select narrow range of muon momentum to allow study of scattering as a function of momentum



Field on data runs for analysis



Data runs with LiH Absorber from Step 4 User Cycle 2016/03

140MeV/c	172MeV/c	200MeV/c	240MeV/c
8445	8448	8450	8451
8446	8449	8554	8456
8447	8453	8455	8460
8452	8458	8459	8461
8457	8464	8463	8462
8465	8469	8468	8467
8466			
8470			
8471			

Data runs no Absorber from Step 4 User Cycle 2016/03

140MeV/c	172MeV/c	200MeV/c	240MeV/c
8363	8364	8366	8367
8372	8365	8368	8370
8378	8373	8369	8377
	8376	8374	
		8375	



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TOFO space points

Criteria: Require 1 TOF0 space Point





No Cuts 3-240 3-172 3-200 2400 20000 1000 Entries 284809 Entries 1948 Entries 9768 Intries 1688 2300 Mean 0.928 Mean RMS Mean 1800 dean 18000 0.4508 RMS RMS RMS 2000 1400F 16000 8000 Absorber 1800 14000 1600 1200 1400 12000F 6000 1000 1200 10000 800 1000E 8000 4000 800 600E 6000 600Ē 400F 4000-2000 400 200 2000 200 0 0 1 2 3 4 5 6 7 8 9 10 Number of SP 0 1 2 3 4 5 6 7 8 9 10 0 1 2 3 4 5 6 7 8 9 10 0 1 2 3 4 5 6 7 8 9 10 Number of SP Number of SP Number of SP c10 events Entries Entries 26 Entries 940 U 0.7619 fean Mean RMS Mean Moan 1200 0.45 RMS RMS 35 No Absorber 250 120 1000 30E 100 200F 25 800 80 150 20 600 60 15 100 400 40 10 200 50 0 1 2 3 4 5 6 7 8 9 10 Number of SP ուկուսիուլիսովուսիուլիու ահատհատհատհատհատհատ ուկուսիսովուսիսովուսիու ° C 2 3 4 5 6 7 8 9 10 Number of SP 6 2 3 4 5 6 7 8 9 10 Number of SP 1 2 3 4 5 6 7 8 9 10 Number of SP 1

TOF1 space points

Criteria: Require 1 TOF1 space Point



Upstream tracker Chi²/degrees of freedom





Criteria: Upstream tracker Chi²/dof<10



Upstream tracker maximum radius





Criteria: Upstream tracker maximum radius<150mm



Diffuser maximum radius





Criteria: Diffuser maximum radius<90mm







Criteria: TOF01 time consistent with Muon Peak



Extrapolated TOF01 time





Criteria: Extrapolated TOF01 time consistent with Muon Peak



Extrapolate upstream track to TOF0





Criteria: Successfully Extrapolate upstream track to TOF0



Maximum fiducial radius





Criteria: Maximum fiducial radius < 140mm



Momentum at absorber





Criteria: Select 4MeV/c momentum window for scattering analysis



Rearrangement of data selections



Absorber















Summary



- Monte Carlo in Production
- Very Low number of events for analysis, particularly at 240MeV/c with no absorber present
 - Look for further runs to add to those currently identified
 - Investigate if the 140MeV/c data is suitable for analysis