

# MOM Report:

## Data Collection for March 14th to 24th

Ryan Bayes

University of Glasgow

March 22, 2016

# Timeline of Collection

Monday, 14th March	<ul style="list-style-type: none"><li>● Training</li><li>● ISIS off 17:00 - 24:00</li></ul>
Tuesday, 15th March	<ul style="list-style-type: none"><li>● DAQ test 9:00 - 14:00</li></ul>
Wednesday, 16th March	<ul style="list-style-type: none"><li>● Controlled access for maintenance 08:00-09:10.</li></ul>
Thursday, 17th March	<ul style="list-style-type: none"><li>● Errors on SSU noted at 08:40.</li><li>● Intervention required: 13:02-15:15</li></ul>
Friday, 18th March	<ul style="list-style-type: none"><li>● Training: 10:30 - 13:30</li></ul>
Saturday, 19th March	<ul style="list-style-type: none"><li>● ISIS down: 16:00 - 23:00</li></ul>
Sunday, 20th March	<ul style="list-style-type: none"><li>● ISIS down: 10:45 - 13:34</li><li>● Multiple CEs to diagnose SSD compressor malfunction</li></ul>
Monday, 21st March	<ul style="list-style-type: none"><li>● Addressed the SSD compressor: 08:00-12:23</li></ul>

# Comments on Operation

## Staffing

- Attempted to add contingency to the schedule
  - ▶ Could not fill night shifts for this week
  - ▶ Did manage to fill Thursday, 24 March for 24 hours.
- Had a sick shifter on 17th and 18th of March
  - ▶ Had to beg for cover from Durga and Chris Rogers
  - ▶ Need to implement reserve shifters.

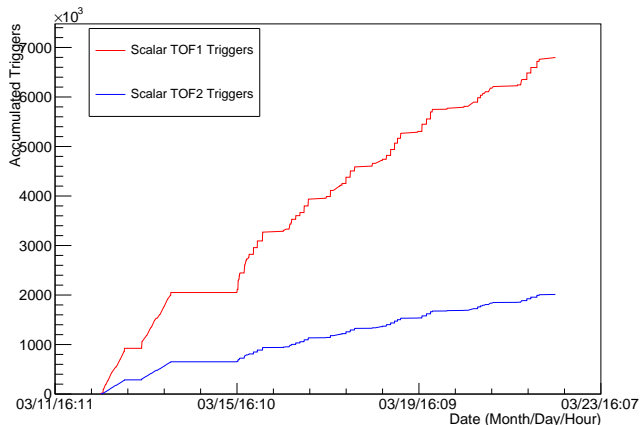
## Since 13th March Up to this morning at 10 am

- We have had 4 days of data collection
- We have had 3 days, 19 hours of physics data collection
- We have had 2 days, 12 hours of down time
- Our potential up time was 6 days, 12 hours.

## Expert Cover

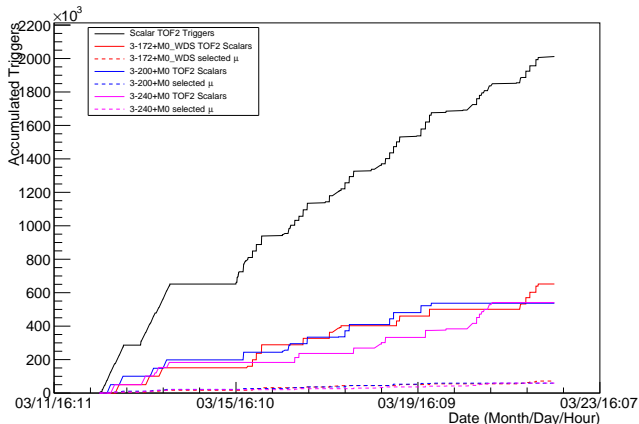
- Excellent for this data collection period.

# Summary of Data Collected



- Down time is clearly visible.
- It is important to separate collect events by beam line optics.

# Summary of Data Collected



- Down time is clearly visible.
- It is important to separate collect events by beam line optics.
- Analysis accepts  $\approx 10\%$  of scalar triggers.

# Number of Good Events Identified in LiH and Data Rates

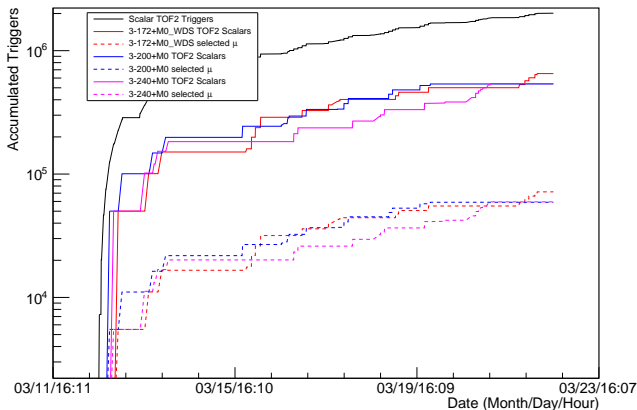
## Data from 13 March to 20 March

	172 MeV/c	200 MeV/c	240 MeV/c
raw TOF2	1676239	1793787	1326861
raw TOF2	500113	534916	541189
anal. TOF1	1144551	1430652	901000
anal. TOF2	155745	211351	169201
Selected	55030	73142	52949
Collection Time	89664.56 s	91526.1 s	91526.1 s
Rate of Selected $\mu$	0.61 s <sup>-1</sup>	0.80 s <sup>-1</sup>	0.48 s <sup>-1</sup>
Time to Target	20.3 hrs	9.3 hrs	26.9 hrs

## Update:

- We have now completed data collection for 172 MeV/c data.

# Projecting to completion of data collection



- Need **7 5** shifts to collect the requested data.
- We have  $\approx$ **8 6** shifts remaining.
- We have been running at 60% capacity.
- Priority on collecting 200 MeV/c data

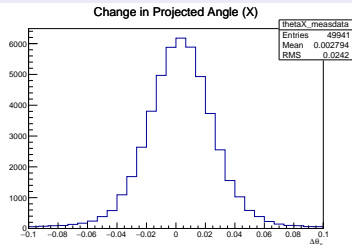
## Simple Event selection criteria for existing data

Selection	Description
TOF2 trigger	At least two raw TOF slab hits exist and at least one in each TOF plane.
TOF timing selection	Select muons from run: $TOF0 \rightarrow 1 \in \{27, 28.5\}$ ns for 240 MeV/c pion beams; $TOF0 \rightarrow 1 \in \{27, 42\}$ ns for muon beams.
Upstream, Downstream matching.	There is a track in both the upstream and downstream tracker.
Fiducial selection	For upstream tracks $\sqrt{x^2 + y^2} < 300$ mm, $\sqrt{x'^2 + y'^2} < 0.035$

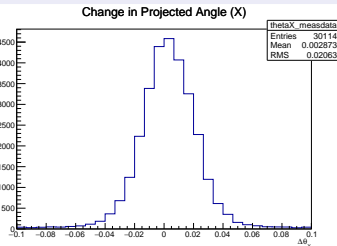


# Preliminary Scatter Distributions

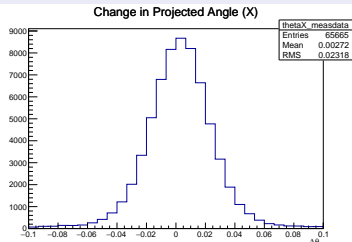
## 172 MeV $\theta_x$ distribution



## 240 MeV $\theta_x$ distribution



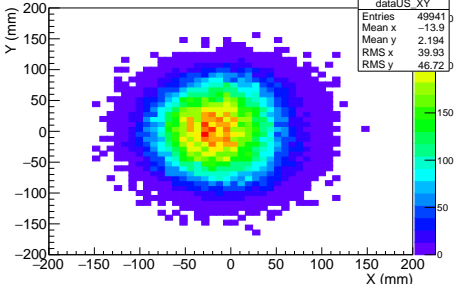
## 200 MeV $\theta_x$ distribution



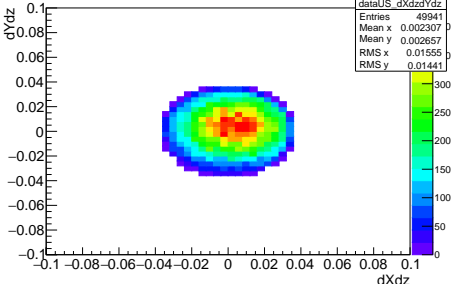
- No treatment correcting for bias due to beam positioning has been applied
- Analysis done with a combination of MAUS v2.0.0 and v2.1.0
- Geometry has not been updated with new PID detector positions.

# Beam Distributions for 172 MeV/c Beam

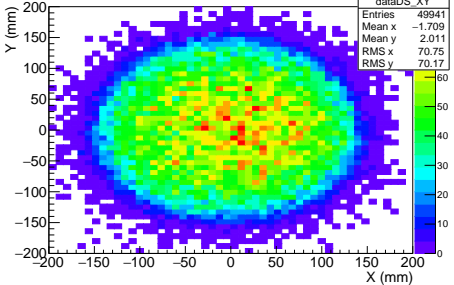
Upstream, Data



Upstream, Data



Downstream, Data



Downstream, Data

