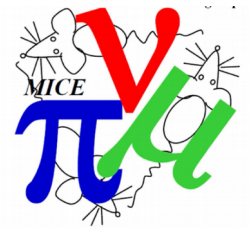
System performance paper

P. Franchini



MICE Analysis workshop
September, 12 2019

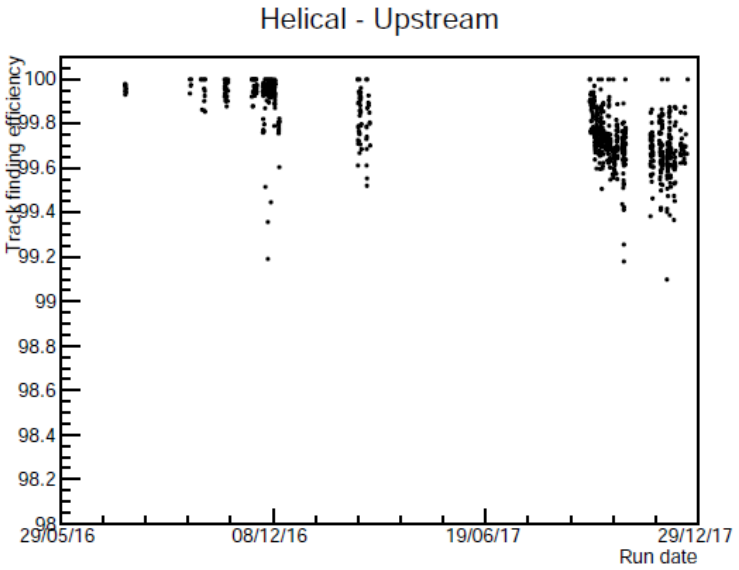
Current status

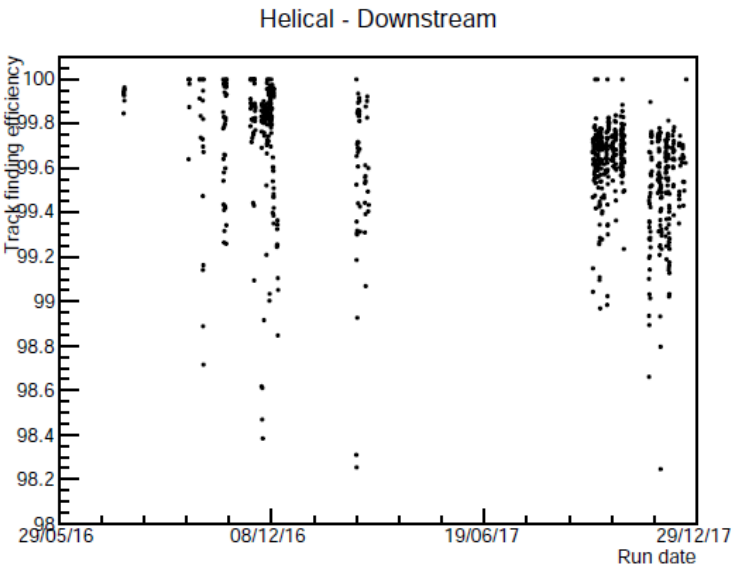
- Text down to ~27 pages
- Focusing on plots that require major work:
  - **TOF**: stability plot (time resolution vs runs)
  - **Ckov**: activation curves
  - **Tracker**: reconstruction bias/resolution and time evolution of the track finding efficiency

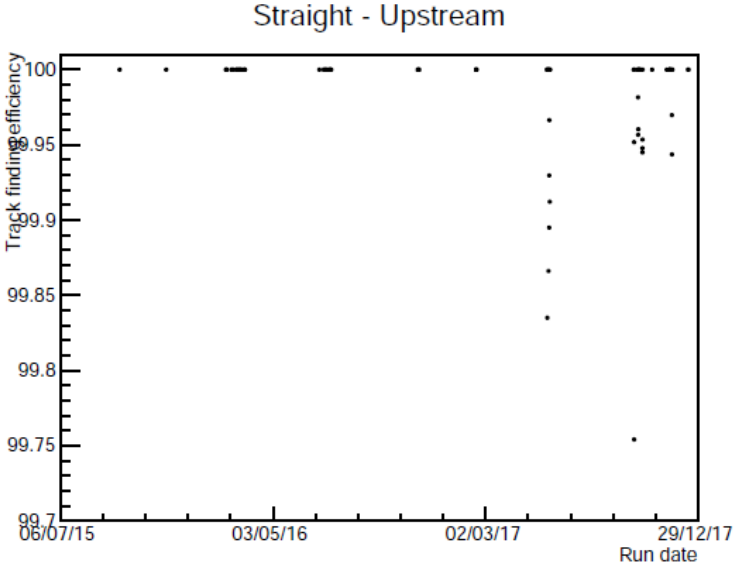
Tracker

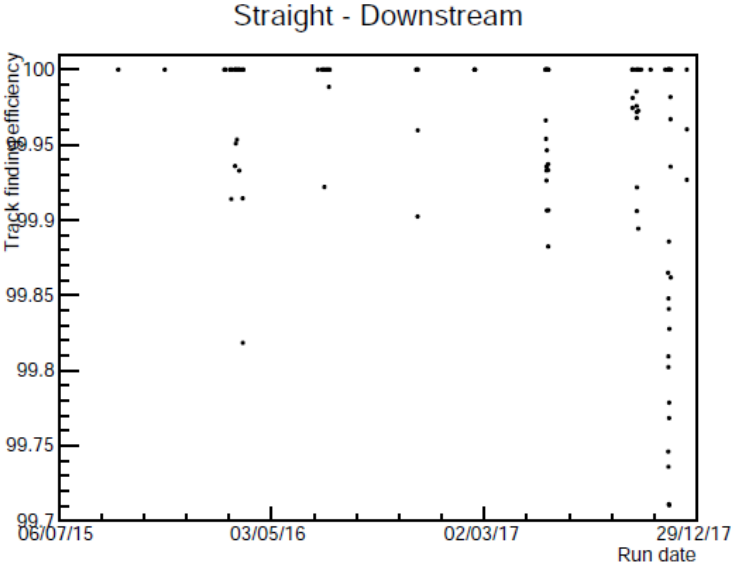
- Evolution in time of the track finding efficiency
  - Fiducial cut < 150mm
  - 1 space point/plane

Tracker


Helical - Upstream
Track finding efficiency
100
99.8
99.6
99.4
99.2
99
98.8
98.6
98.4
98.2
98
29/05/16
08/12/16
19/06/17
29/12/17
Run date


Helical - Downstream
Track finding efficiency
100
99.8
99.6
99.4
99.2
99
98.8
98.6
98.4
98.2
98
29/05/16
08/12/16
19/06/17
29/12/17
Run date


Straight - Upstream
Track finding efficiency
100
99.95
99.9
99.85
99.8
99.75
99.7
06/07/15
03/05/16
02/03/17
29/12/17
Run date


Straight - Downstream
Track finding efficiency
100
99.95
99.9
99.85
99.8
99.75
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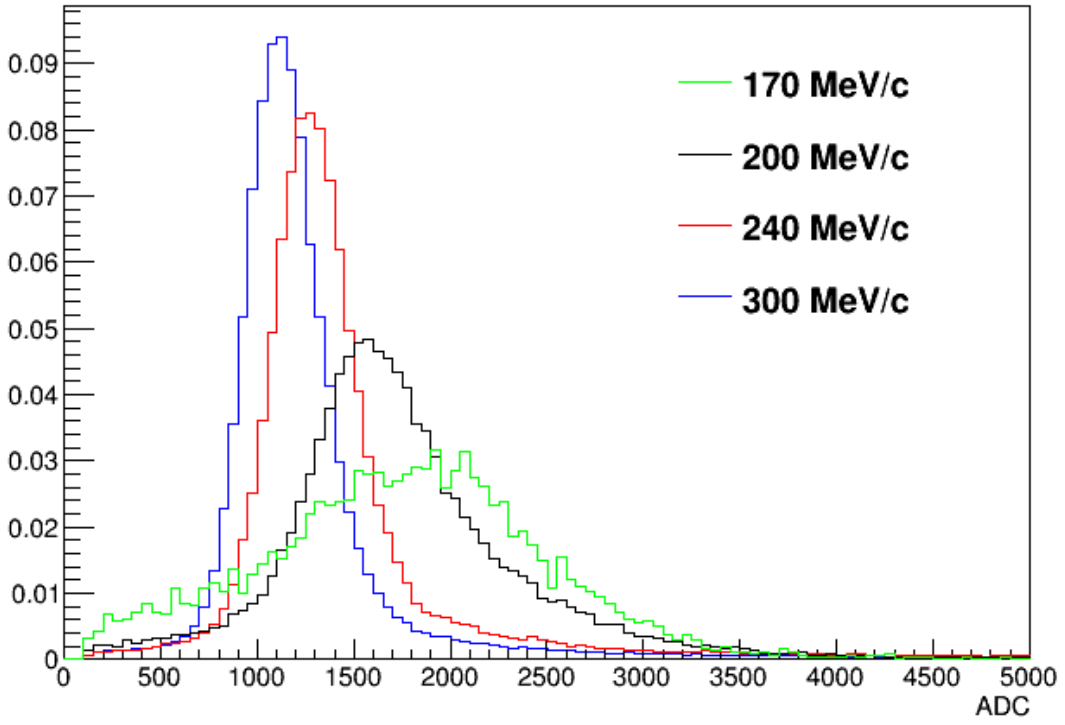
06/07/15
03/05/16
02/03/17
29/12/17
Run date

Tracker

- 100% efficiency for the straight tracks with reasonable selection → remove this plot
- Binning for the helical efficiency

KL

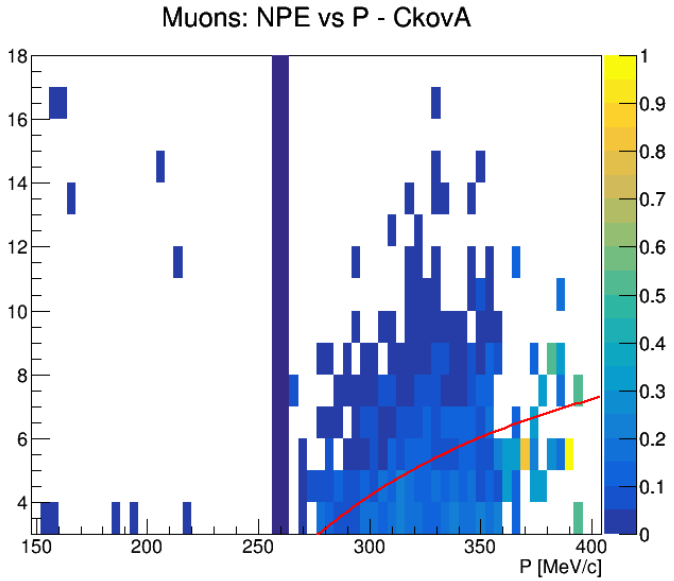
- Mariyan struggling with **pions** @ 140 MeV/c to produce a decent histogram for the ADC response
- Keep only 140/200/240 MeV/c

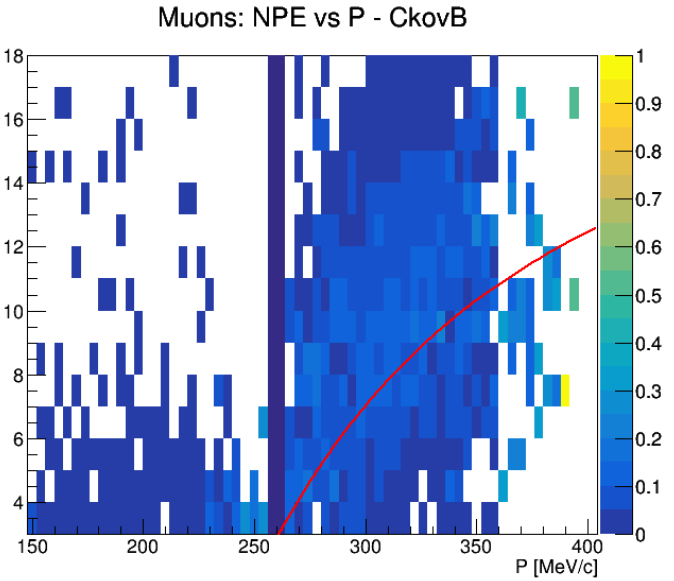


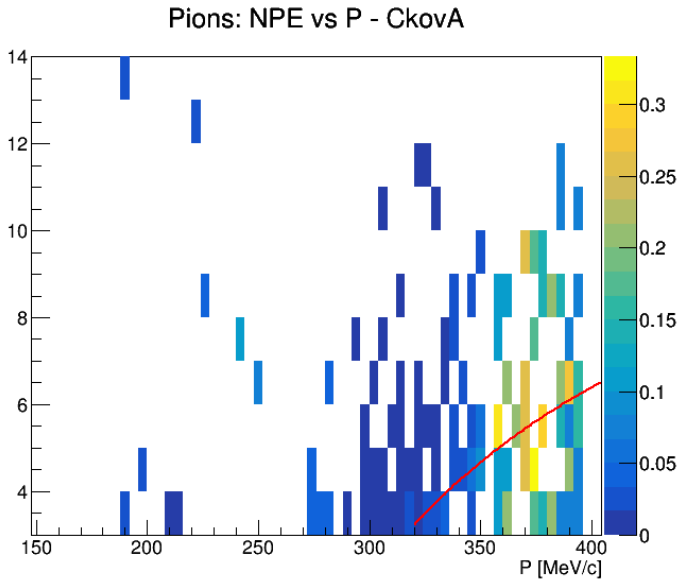
Ckov

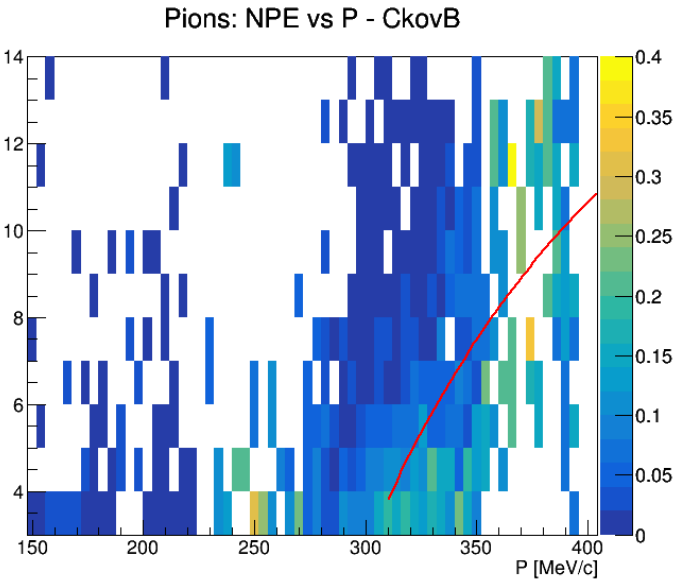
- PID selection based on TOF01
- 1 single space point in TOF0/TOF1
- NPE(CkovB) > NPE(CkovA)

Ckov

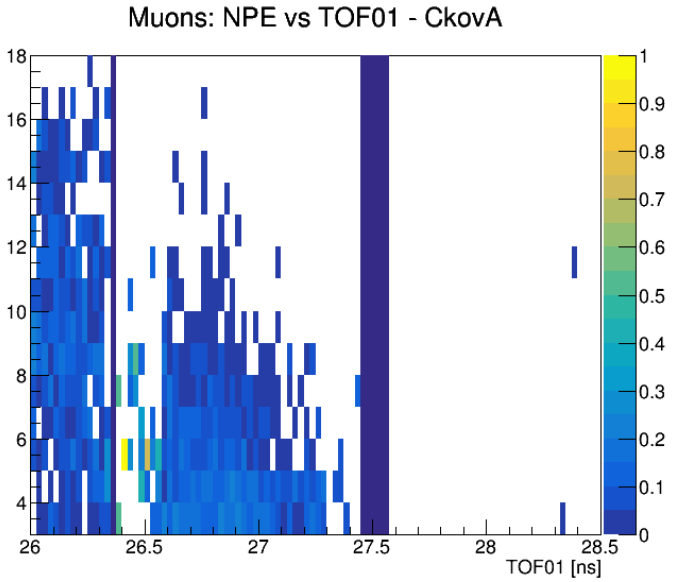

Muons: NPE vs P - CkovA
P [MeV/c]

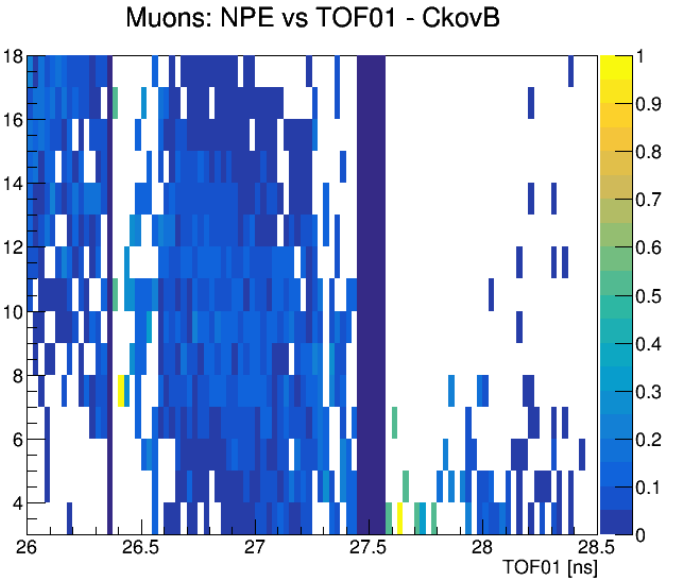

Muons: NPE vs P - CkovB
P [MeV/c]

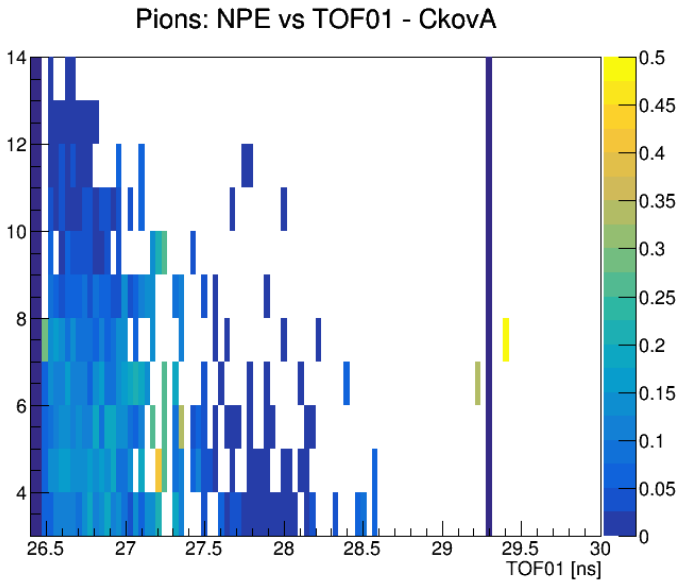

Pions: NPE vs P - CkovA
P [MeV/c]

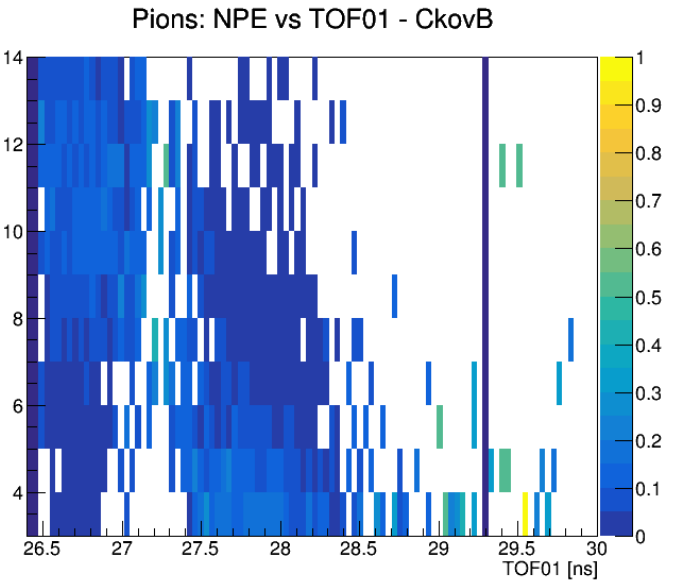

Pions: NPE vs P - CkovB
P [MeV/c]

Ckov


Muons: NPE vs TOF01 - CkovA
TOF01 [ns]

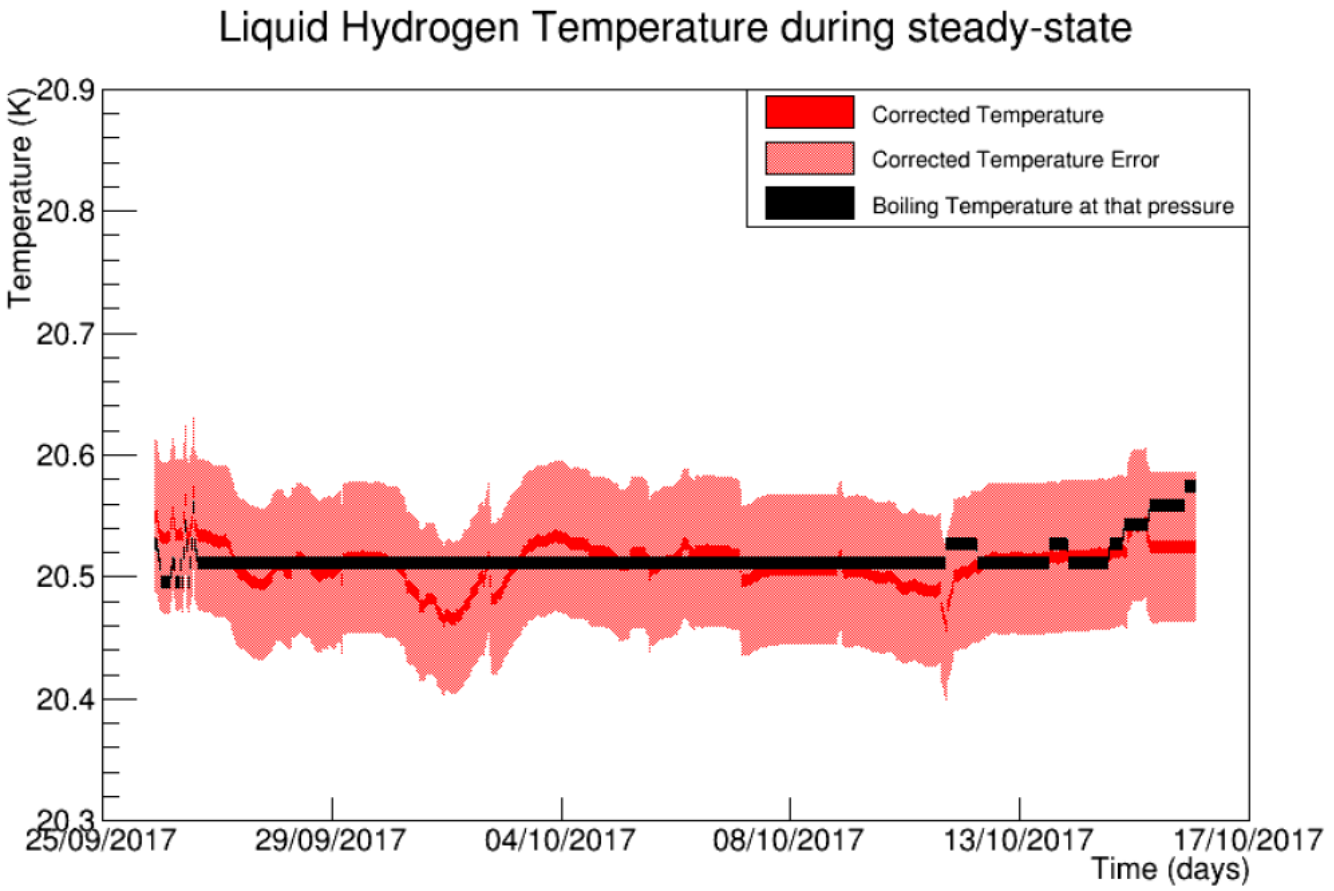

Muons: NPE vs TOF01 - CkovB
TOF01 [ns]


Pions: NPE vs TOF01 - CkovA
TOF01 [ns]


Pions: NPE vs TOF01 - CkovB
TOF01 [ns]

LH2 absorber

- Craig: corrected the plot considering the non-linearity of the sensors



Conclusions

- Ken is reading the text
- Could not get anything good out of the Tracker resolution/bias code for the MC
- I have the code for the TOF resolution