

G4Beamline Studies of MICE Stage I

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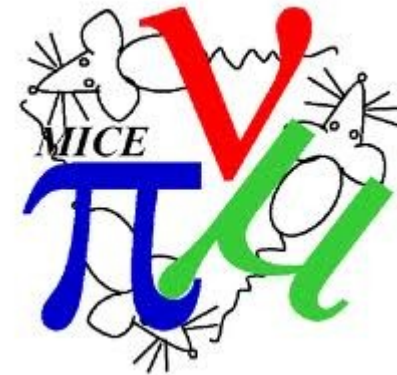


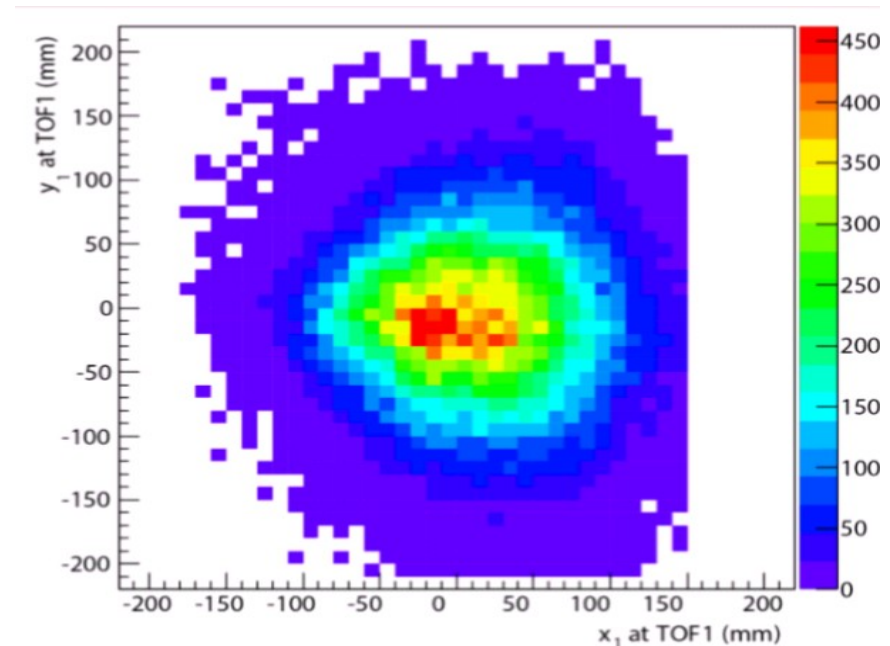
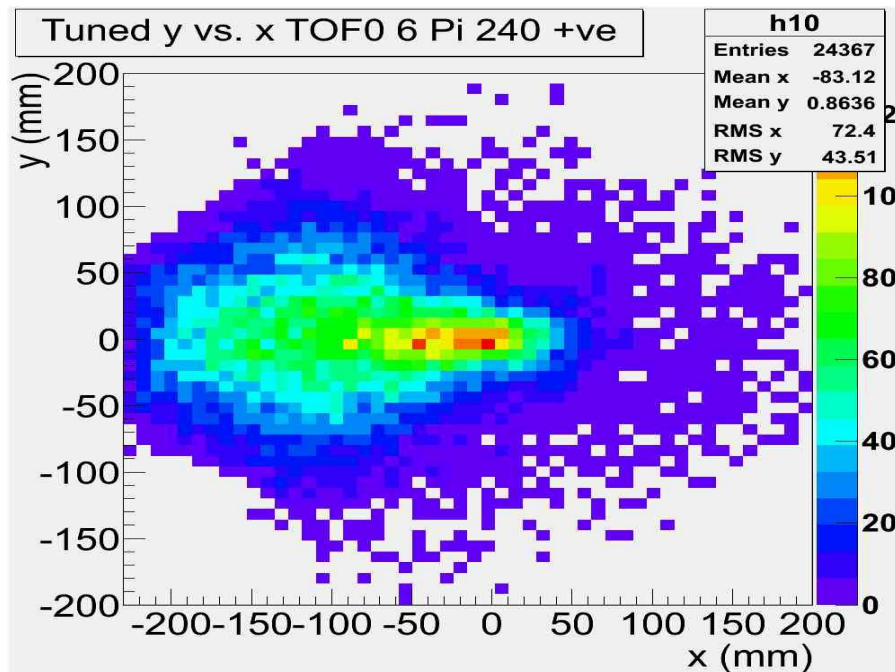
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Asymmetries in MICE Stage I Beamline

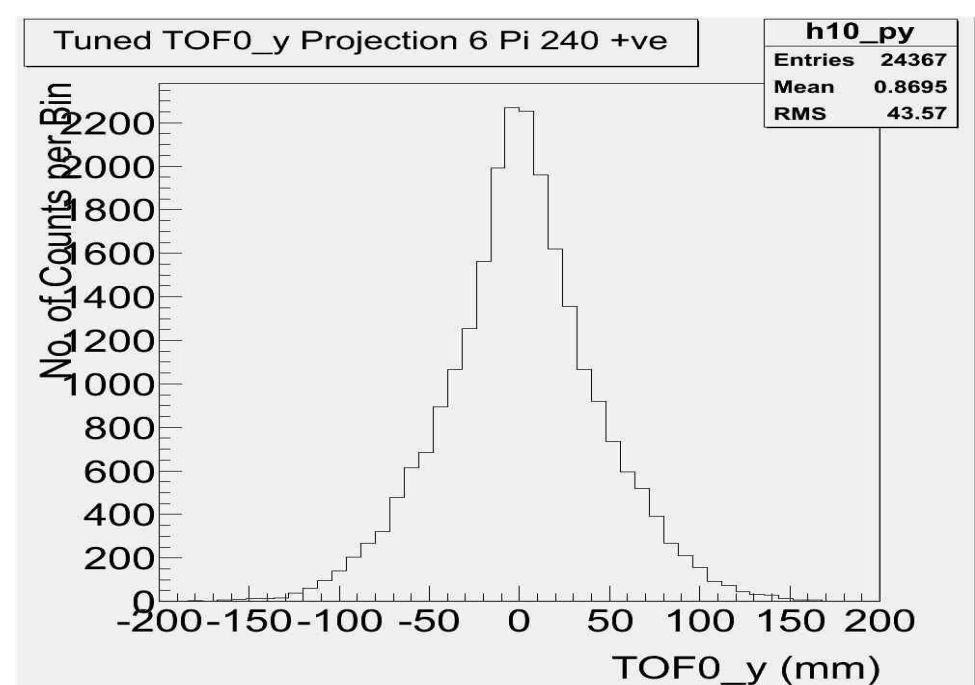
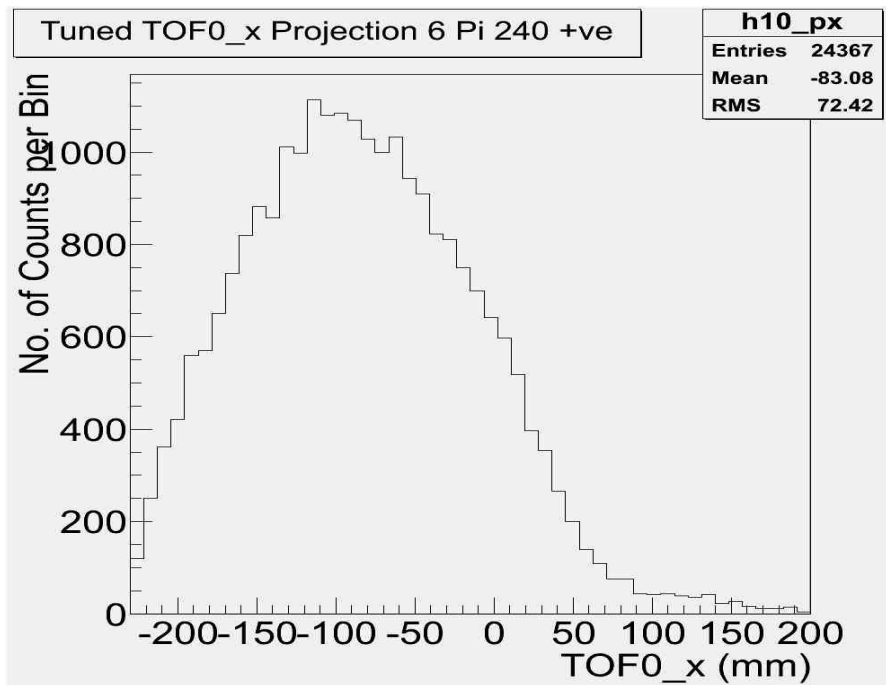
- CM34 – Tour of the MICE Step I Emittance Paper
- Profile of transverse distributions measured at TOF0 & TOF1 “pointy” in data
- Profile symmetric in G4BL simulations
- Launchpad version of G4BL

- Simulation of 6 Pi 240 MeV/c configuration for +ve beam
- Placement of objects along beamline follows Table 3, arXiv:1203.4089v2
- Model uses stage I currents, as given by Mark Rayner's thesis
- Plot on left with G4BL dipole field tuning enabled, plot on right data from step 1 run
- Simulation shows shadow of a quadrupole
- The data was generated with the trigger condition that particles must pass through TOF1



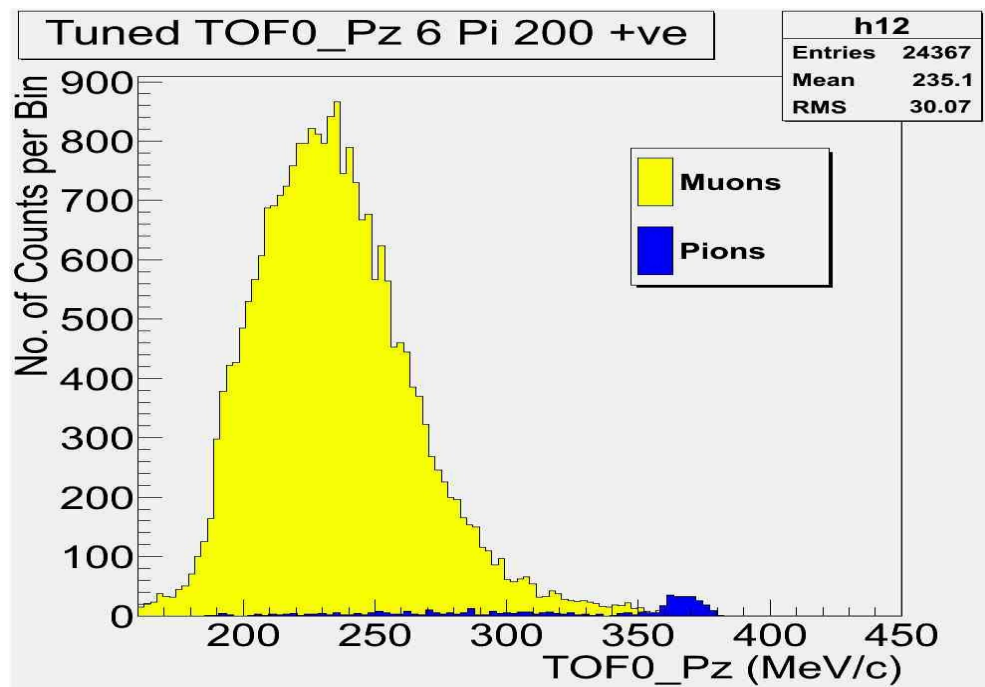
X & Y Projection Plots

- X & Y projection profiles for the 6 Pi 240 MeV/c +ve beam at TOF0
- Profile centred around 0 for Y projection but slightly skewed in the -ve direction for X projection



Pz Distribution

- Histograms of the longitudinal momentum profile of the beam at TOF0



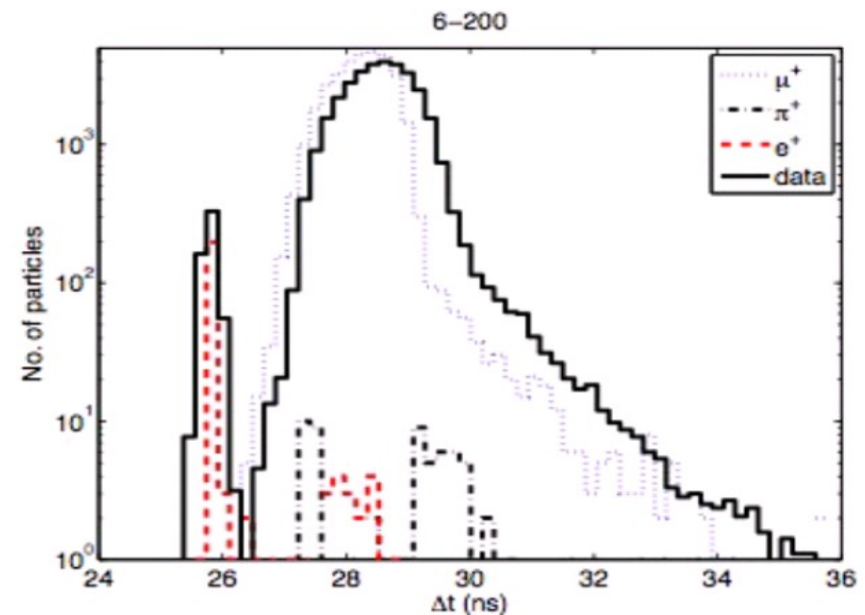
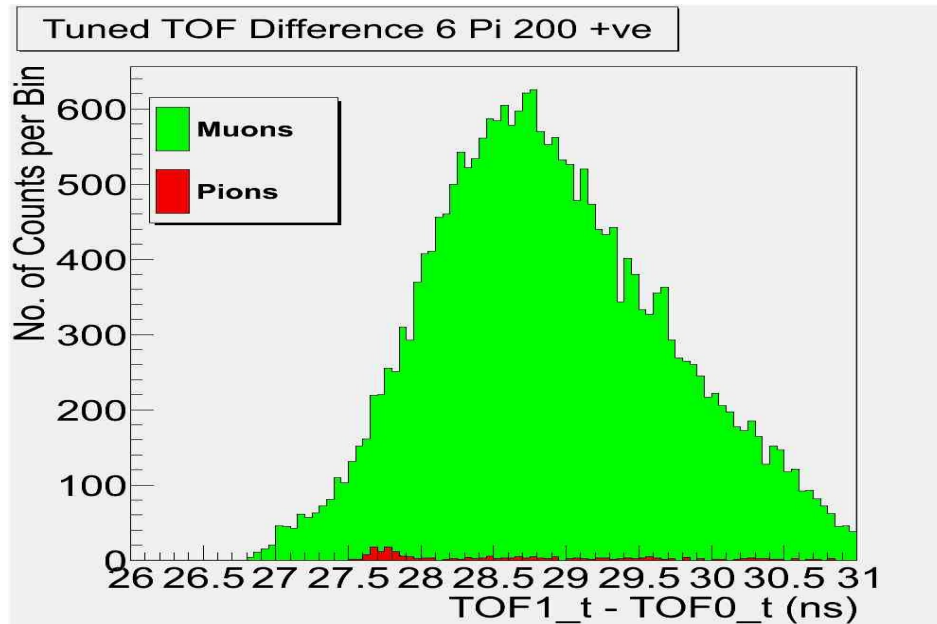
- Tuned 240 MeV/c +ve : No. of muons = 24367, No. of pions = 448

Time of Flight

- The plots on slide 10 & 11 were filled with the value t_{Diff} .

$$t_{Diff} = TOF1t - TOF0t$$

- Where $TOF1t$ is the time in ns of the hit at $TOF1$, similar for $TOF0t$.



- Calculation of the time of flight between $TOF0$ and $TOF1$

CM35 Orestano PID Paper

Pion Contamination

	% Contamination at TOF0	% Contamination at KL
Tuned 6 Pi 240 MeV/c +ve	1.84	0.65

Conclusions

- Suggestion that scraping on quadrupole may be responsible for asymmetry in beamline – to be confirmed
- Possibility for future investigation of pion contamination at Cherenkov 1 and KL