Imperial College London

Beam Paper Update

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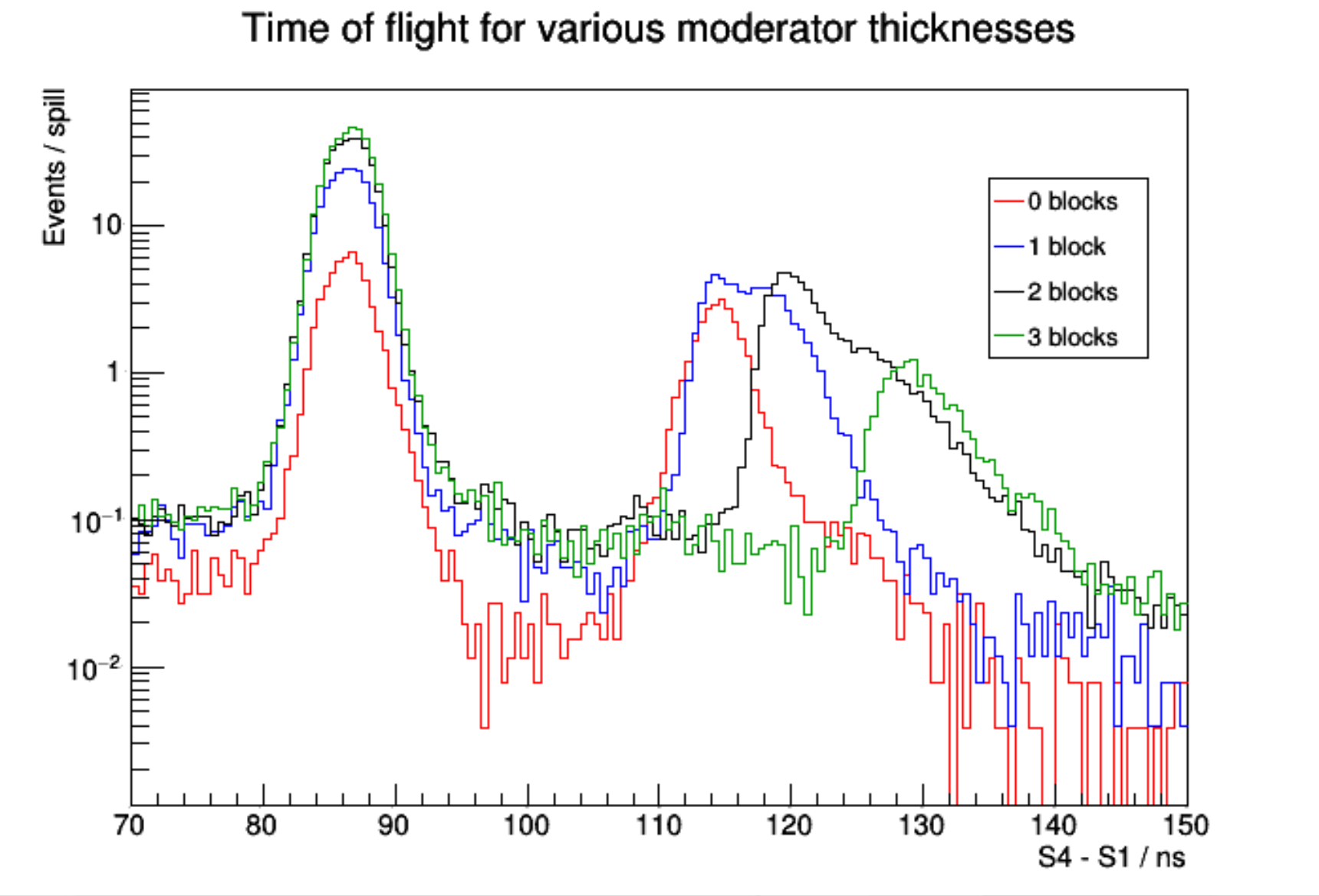
HPTPC Analysis Meeting 08/02/19

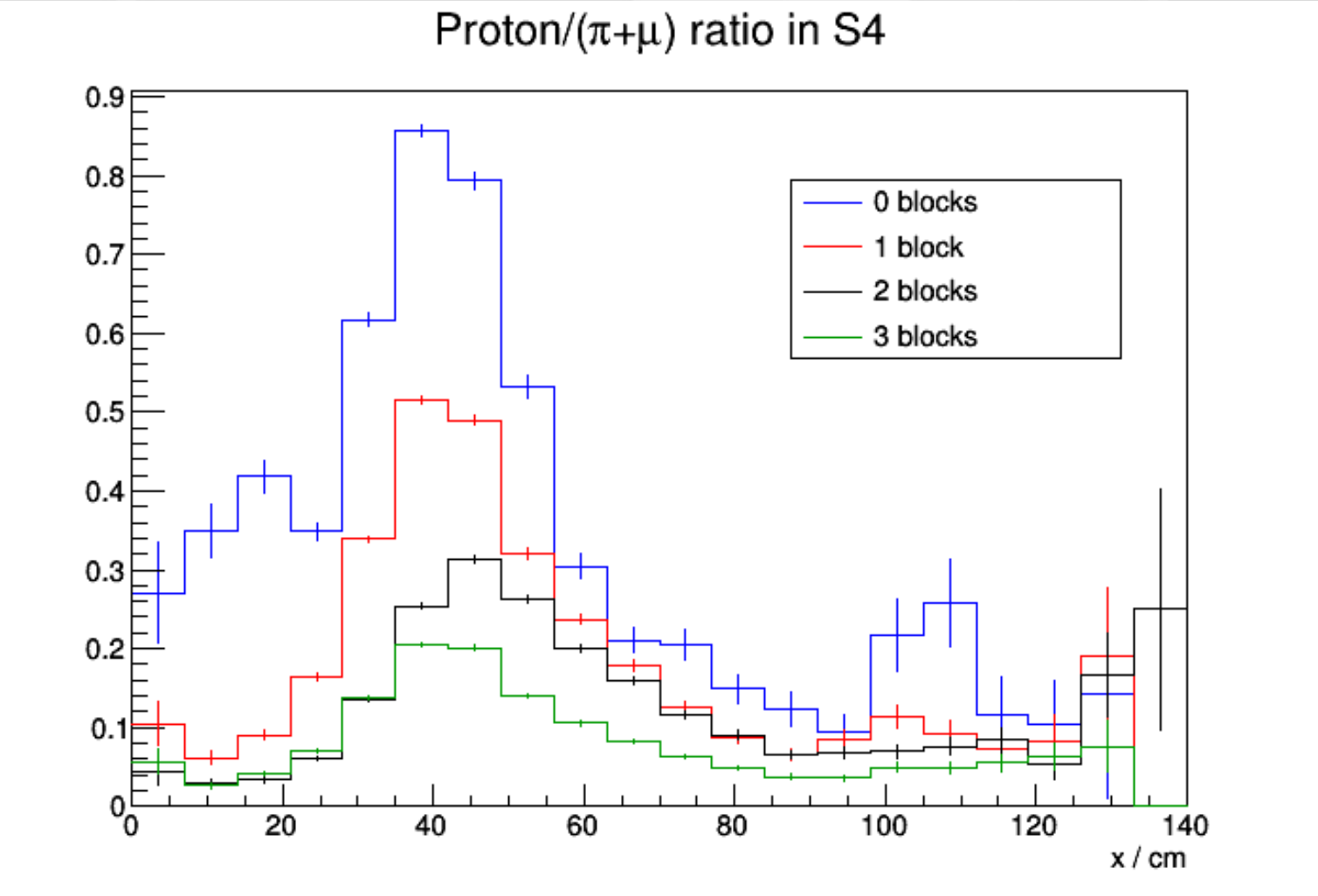
Paper Plan: Figures of Merit

- ToF measurement (including momentum measurement)
- Flux measurement (including proton:pion ratio measurement)
- In each case
  - S3/S4
  - Varying moderator blocks
  - (And varying particle type for the flux measurement)

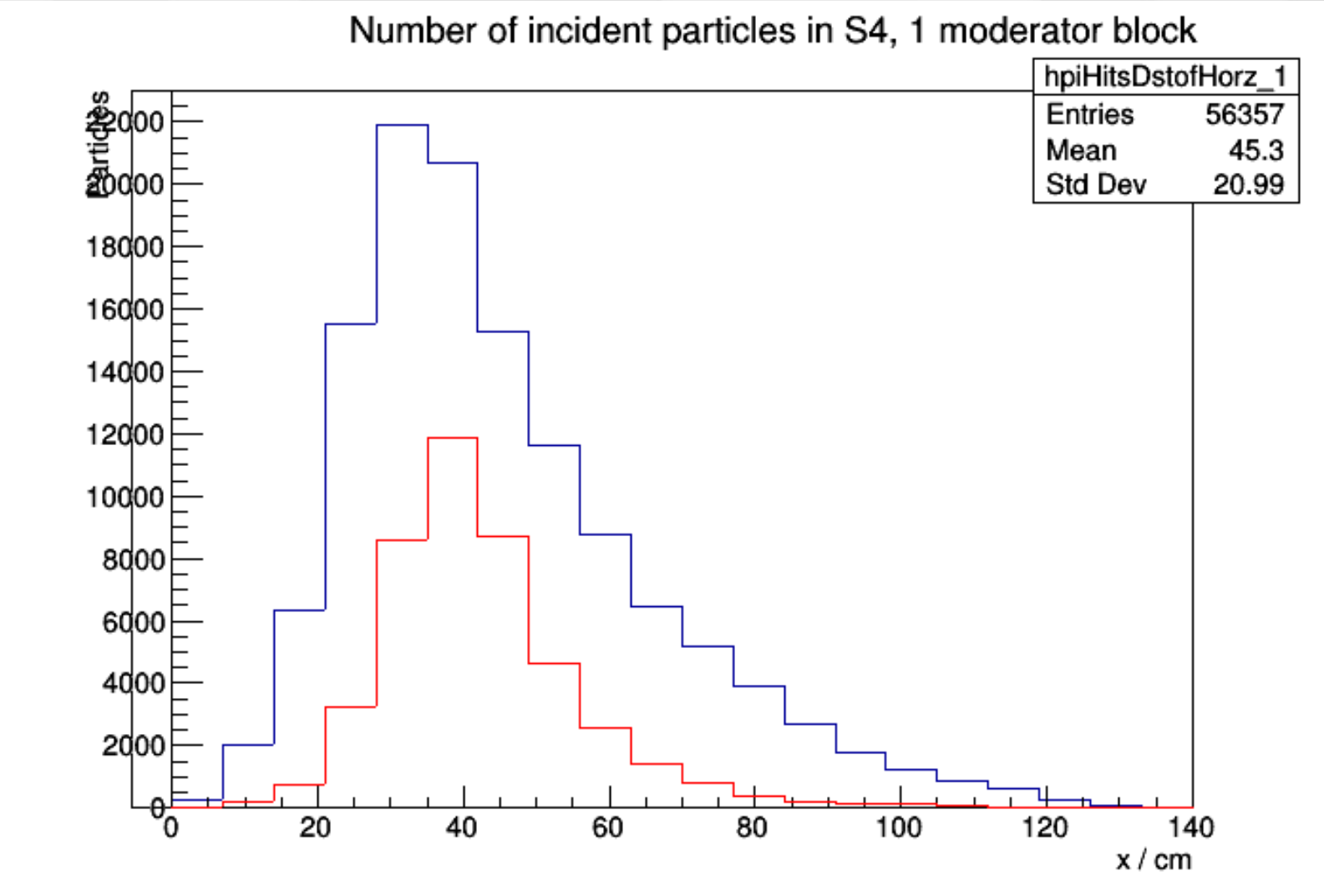
S4


Time of flight for various moderator thicknesses
Events / spill
10
1
10^{-1}
10^{-2}
70
80
90
100
110
120
130
140
150
S4 - S1 / ns
0 blocks
1 block
2 blocks
3 blocks

Proton/MIP peak, S4

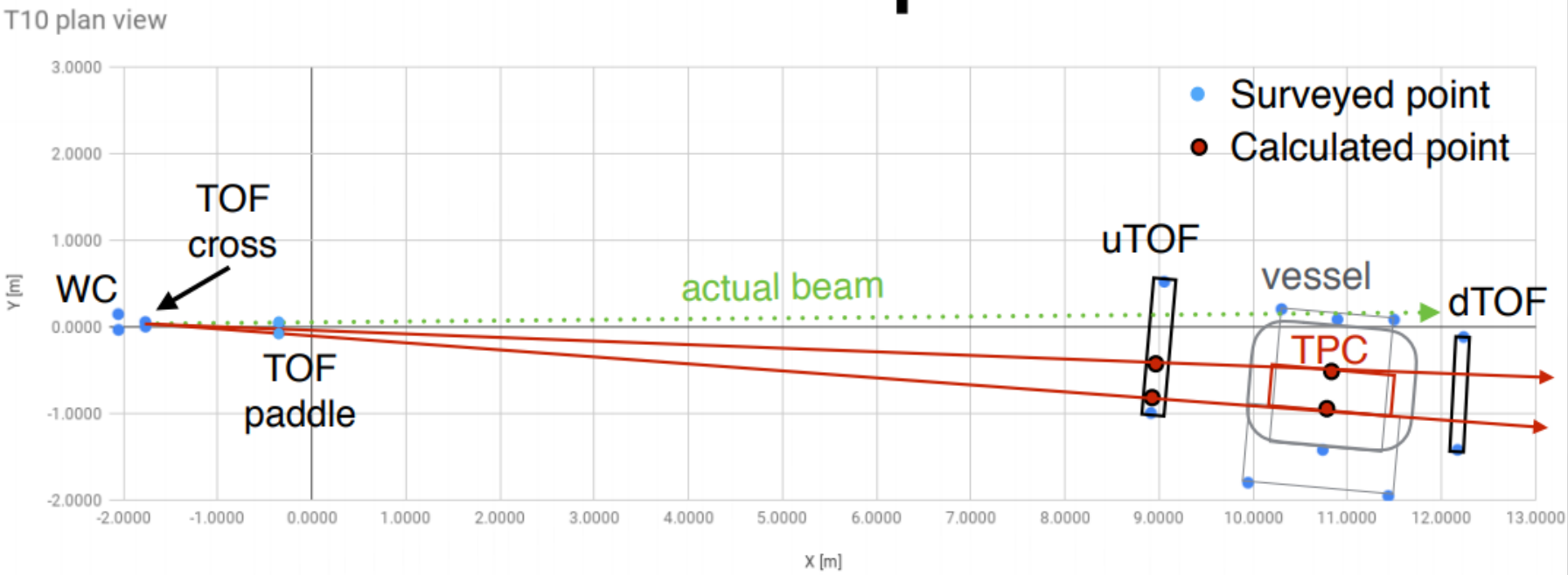


S4 Flux plot



Key:
Red = Protons
Blue = MIPs

HPTPC T10 positions



	angle from nominal beam	angle from actual beam
beam	0.5°	-
TPC center	3.4°	3.9°
TPC edge 1	2.3°	2.8°
TPC edge 2	4.4°	4.9°

Discussion

- Peak in flux (and also proton pion ratio) in S4 is not on the nominal beam axis as expected
  - We currently think this is a geometric effect of requiring coincidence with S1,S2
- For the flux measurement, should we ignore the requirement on S1,S2 in coincidence with S4?

- ToF plots looking ok – however what about electrons?