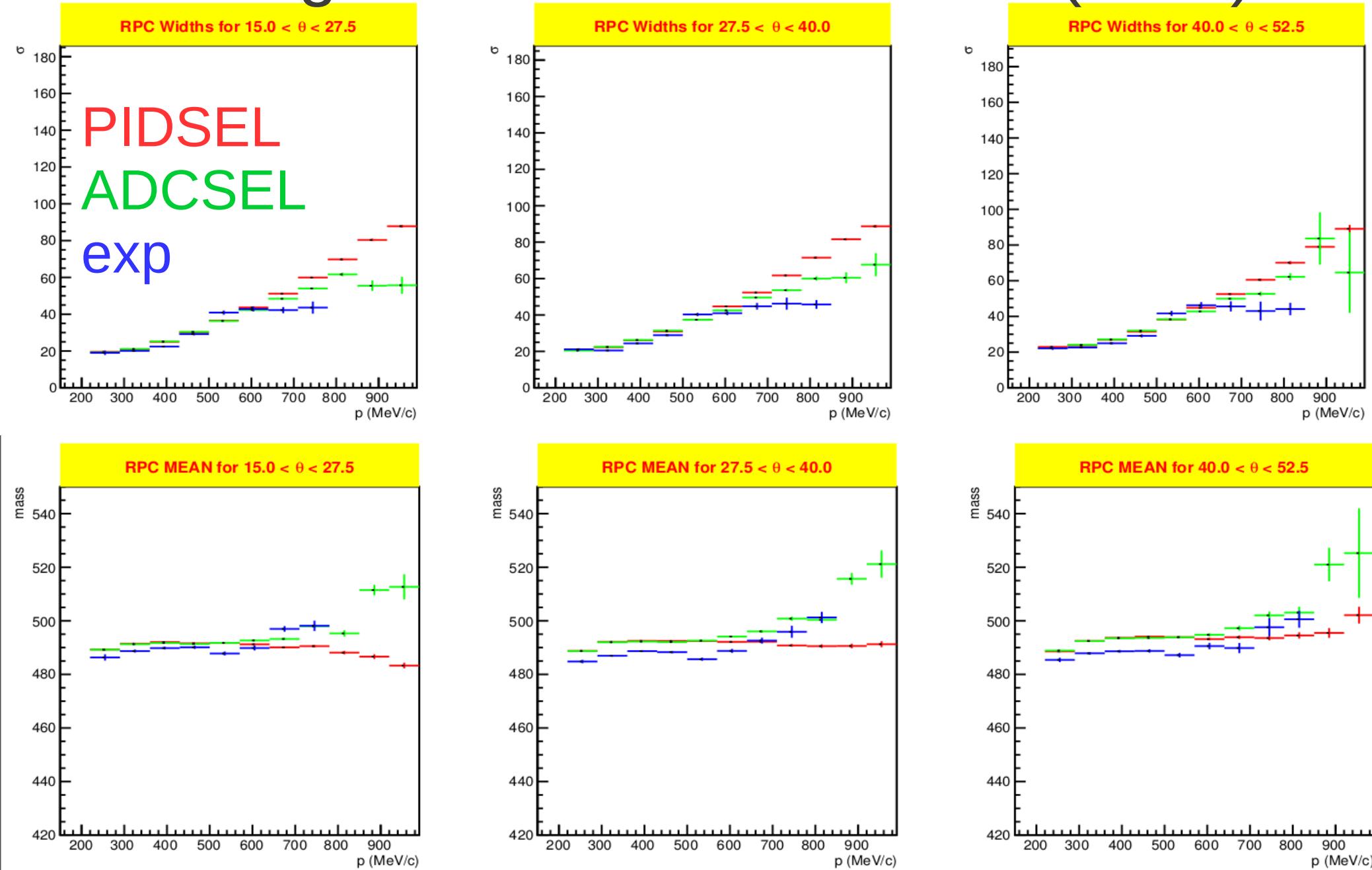


# Checking MC vs Data

- Re-checked MC vs Data for:
  - PIDSEL → only PID used for K selection
  - ADCSEL → only TcutG (same as exp data) used
- Compatibility checked for
  - WIDTH (exp vs MC)
  - MEAN (exp vs MC)

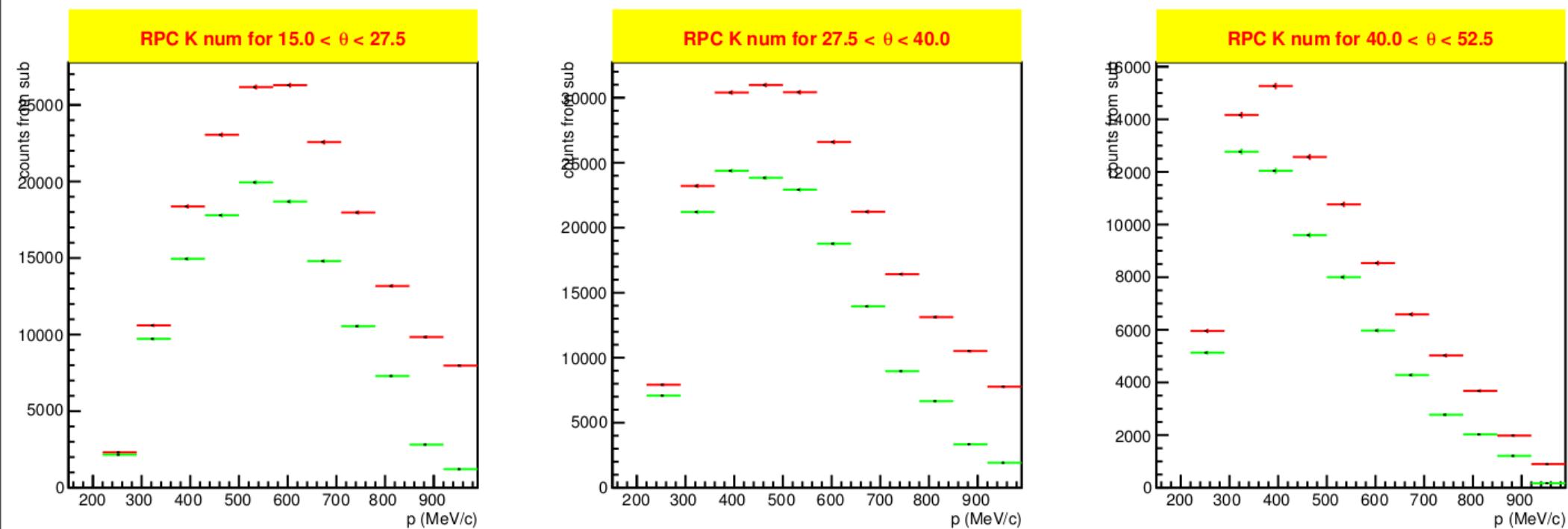
Exp fits are done without limits from MC just to see trends

# Checking $\sigma$ & mean from MC: C(RPC) K<sup>+</sup>

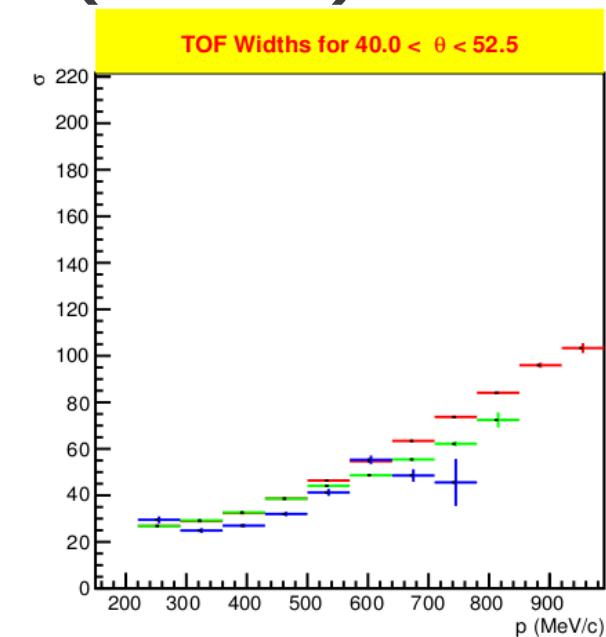
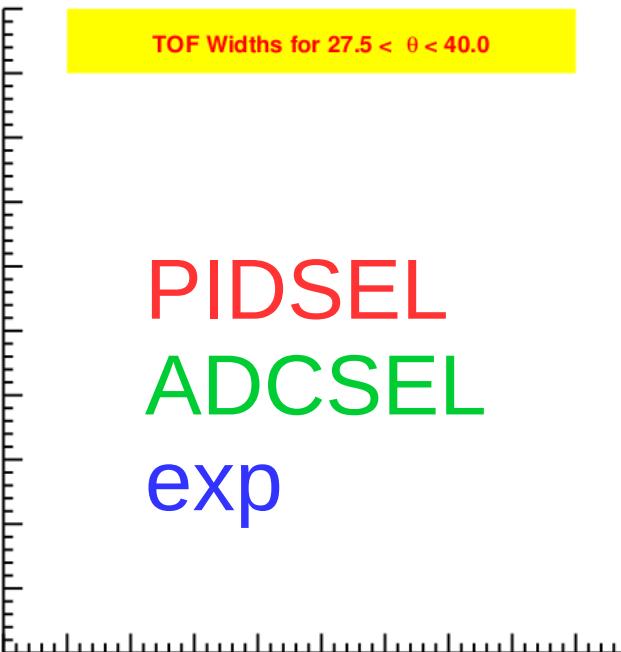
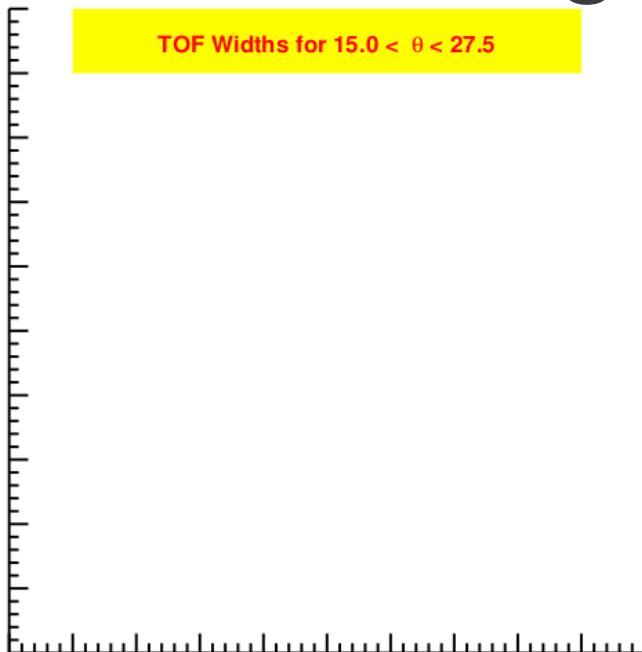


# Checking K num from MC: C(RPC) K<sup>+</sup>

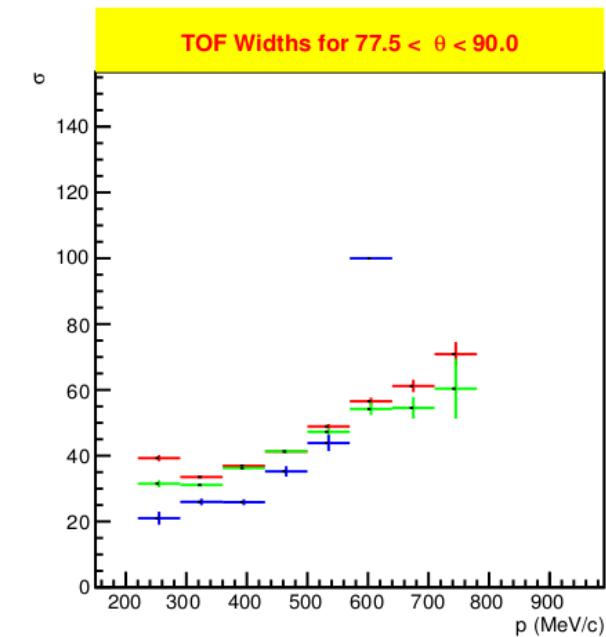
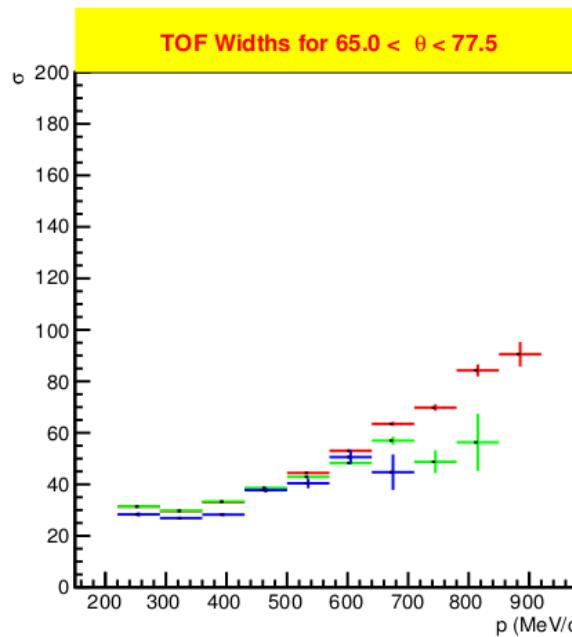
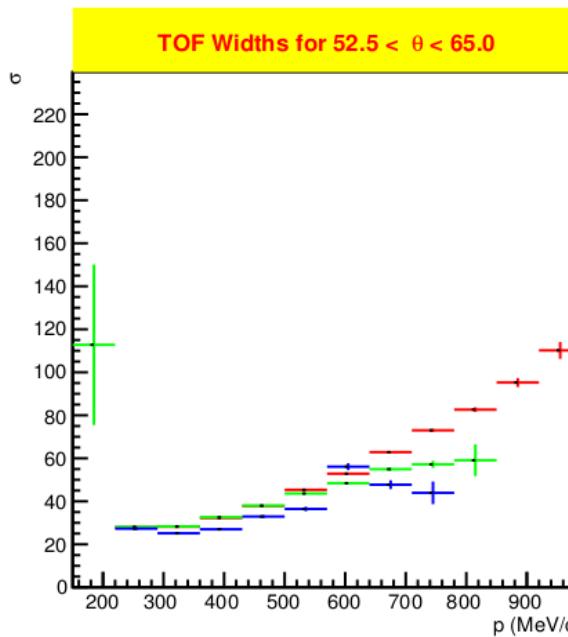
PIDSEL  
ADCSEL



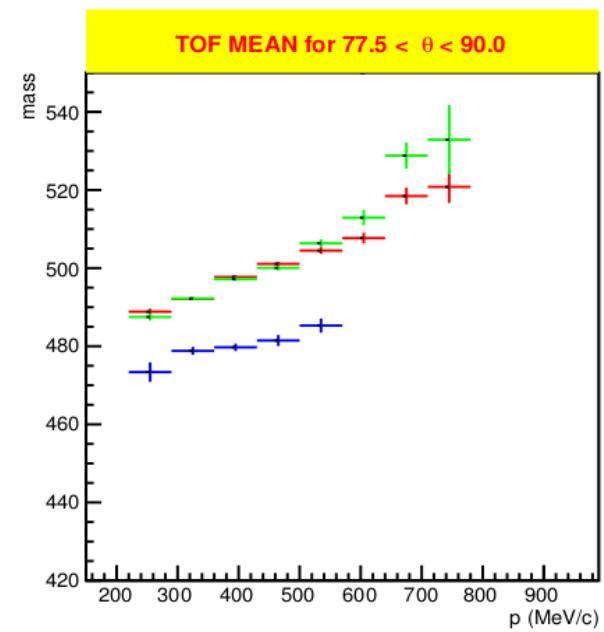
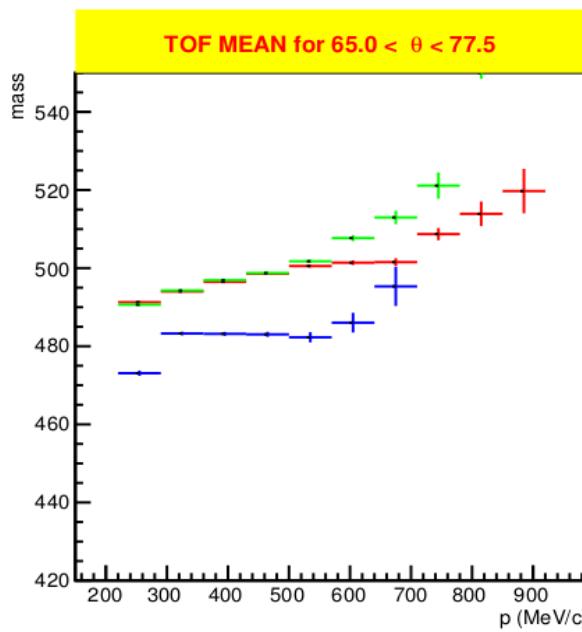
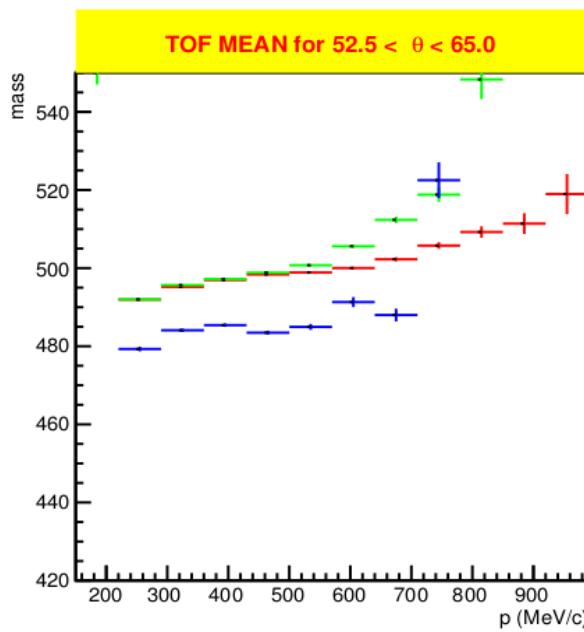
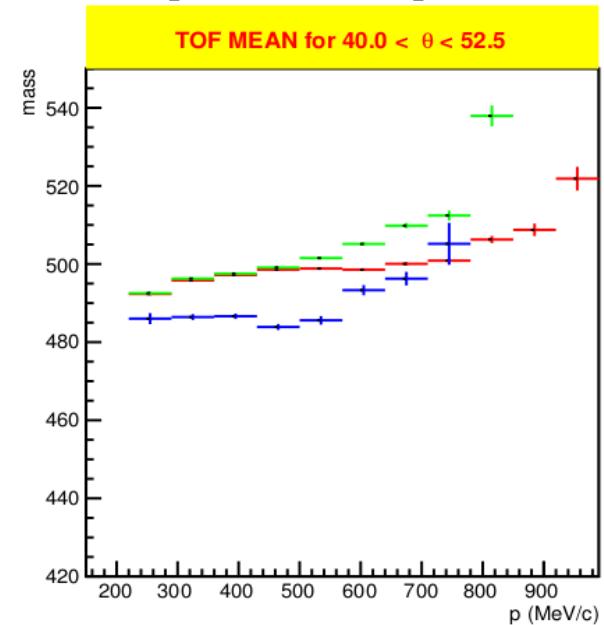
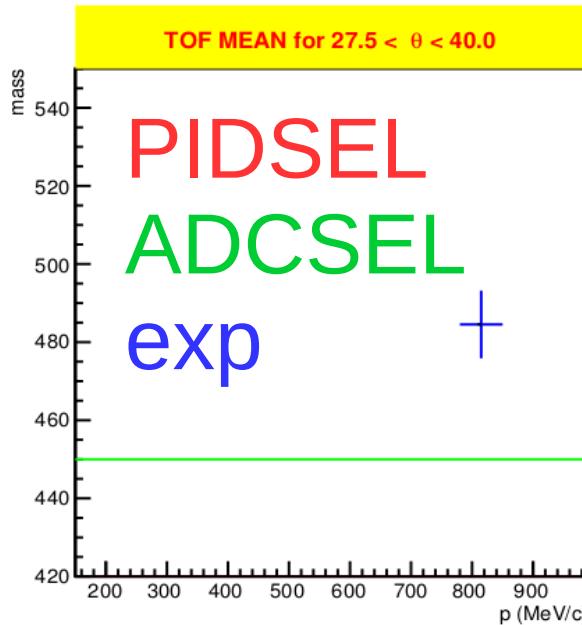
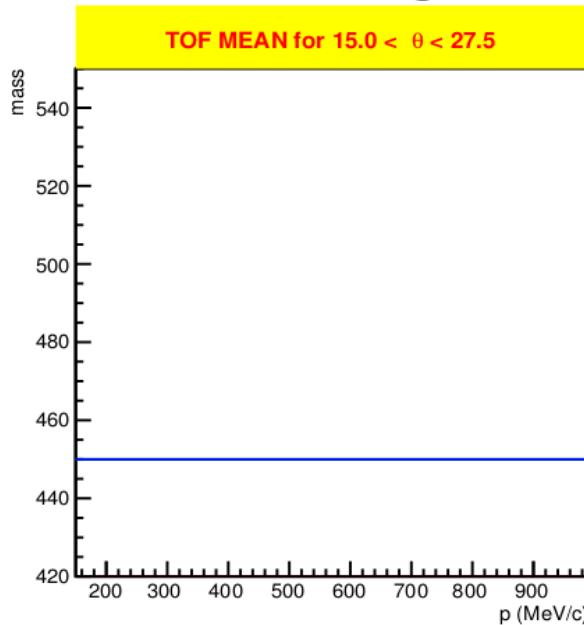
# Checking $\sigma$ from MC: C(TOF) K<sup>+</sup>



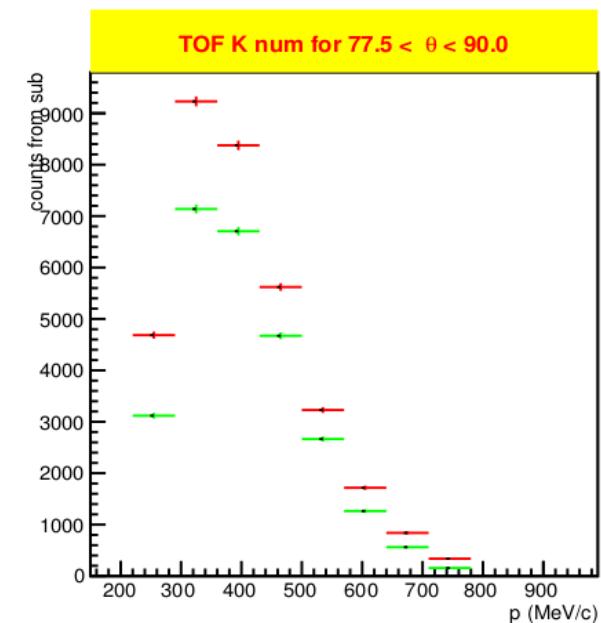
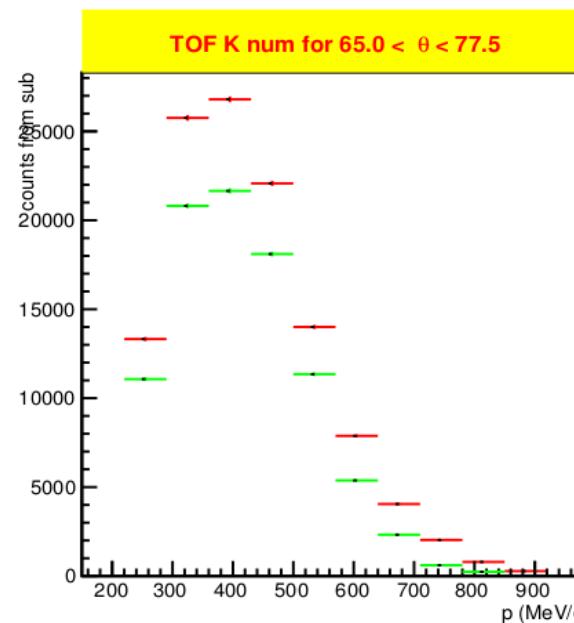
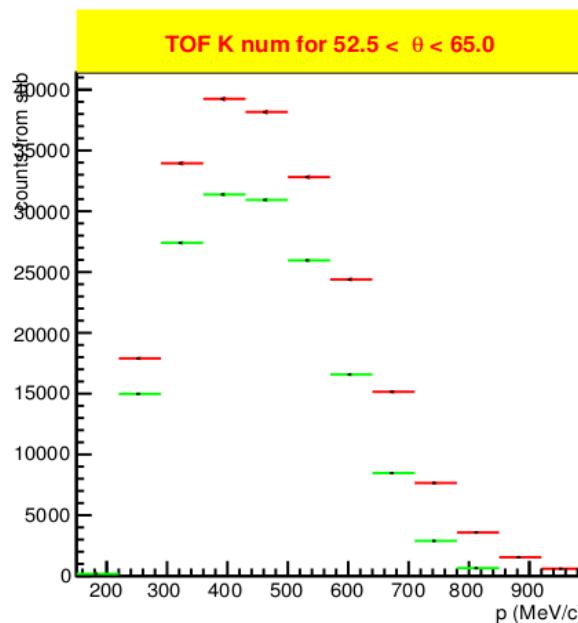
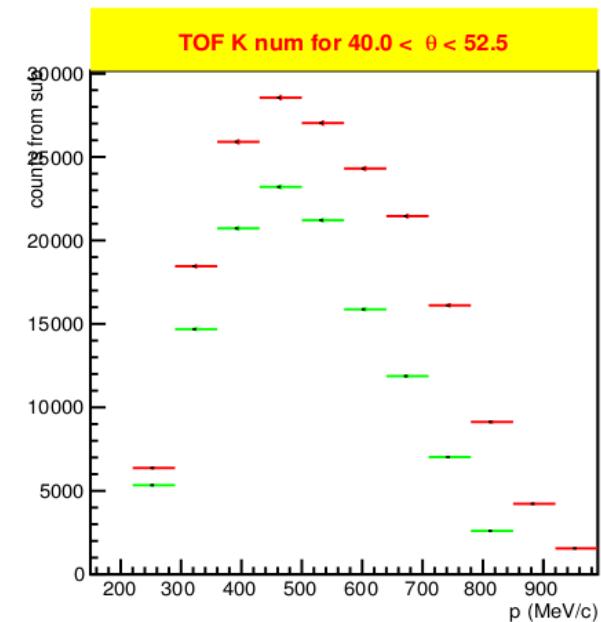
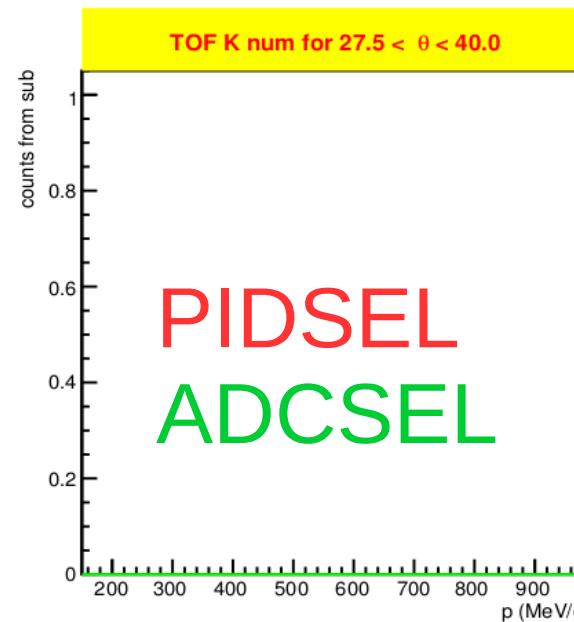
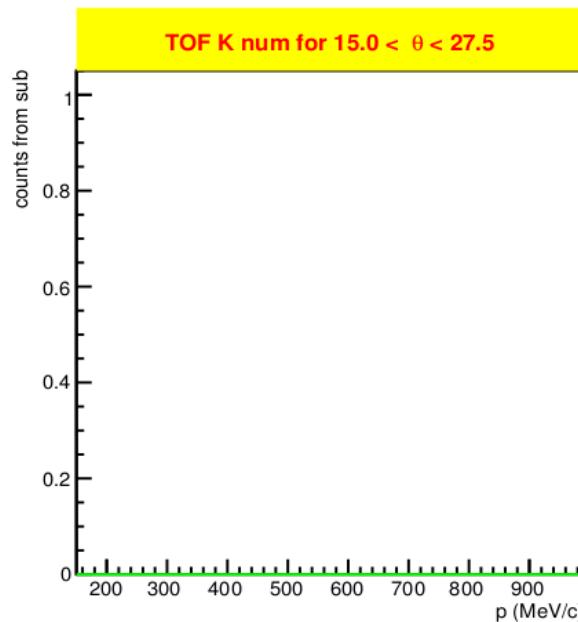
PIDSEL  
ADCSEL  
exp



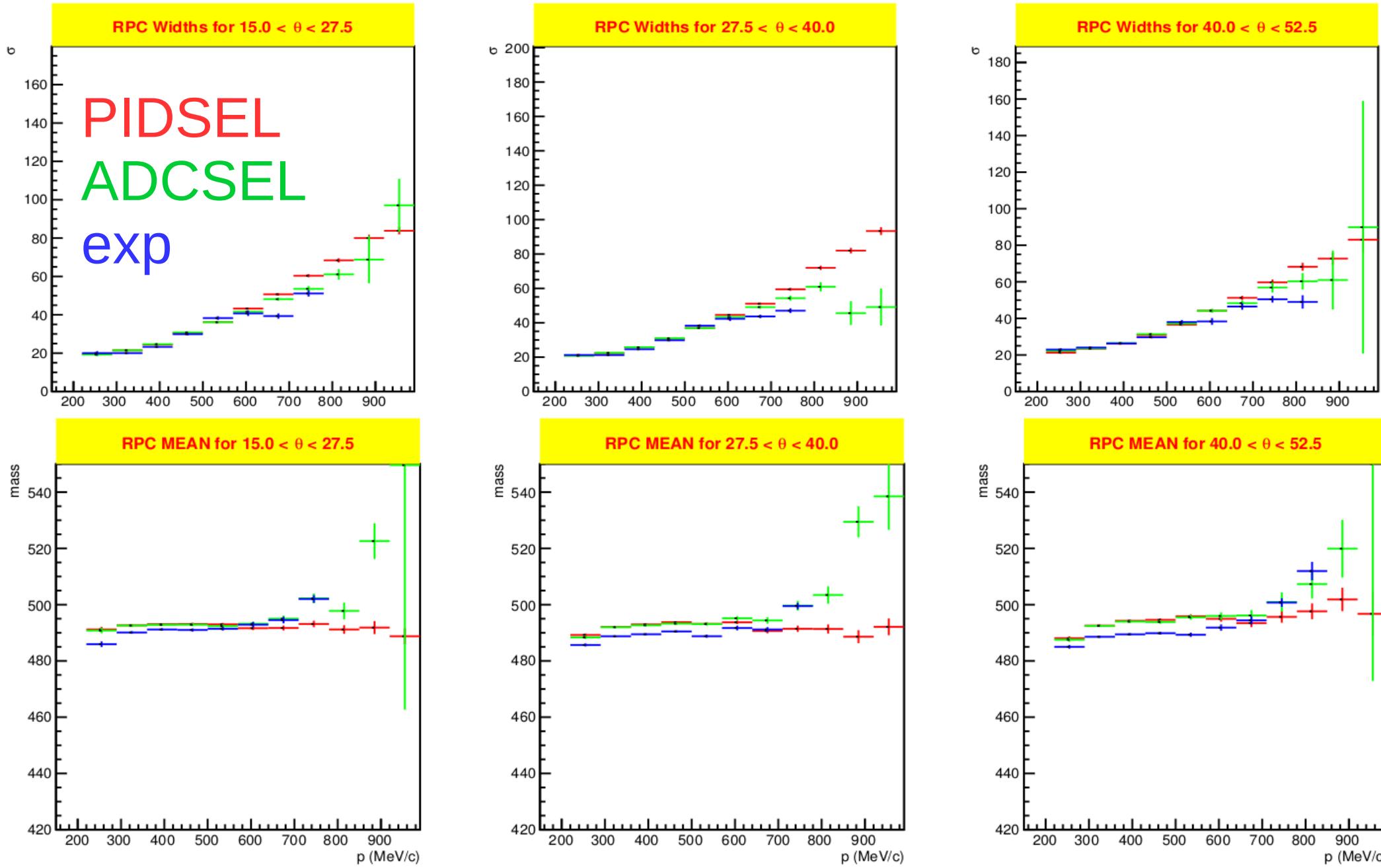
# Checking MEAN from MC: C(TOF) K<sup>+</sup>



# Checking K num from MC: C(TOF) K<sup>+</sup>

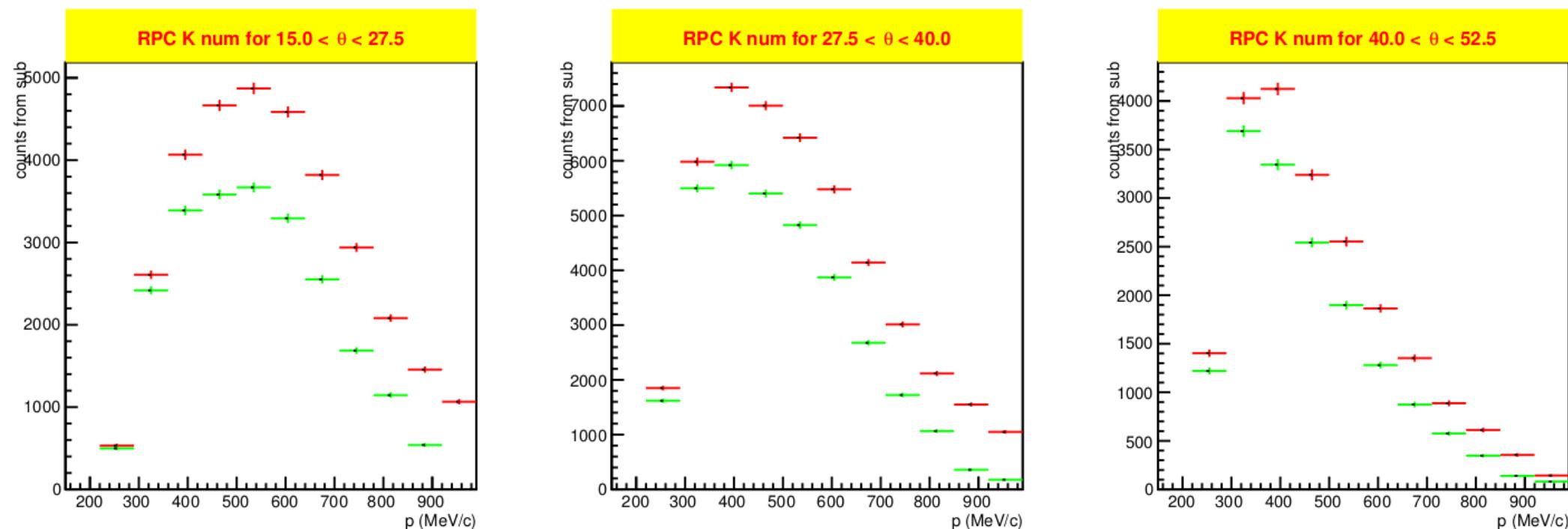


# Checking $\sigma$ & mean from MC: W(RPC) K<sup>+</sup>

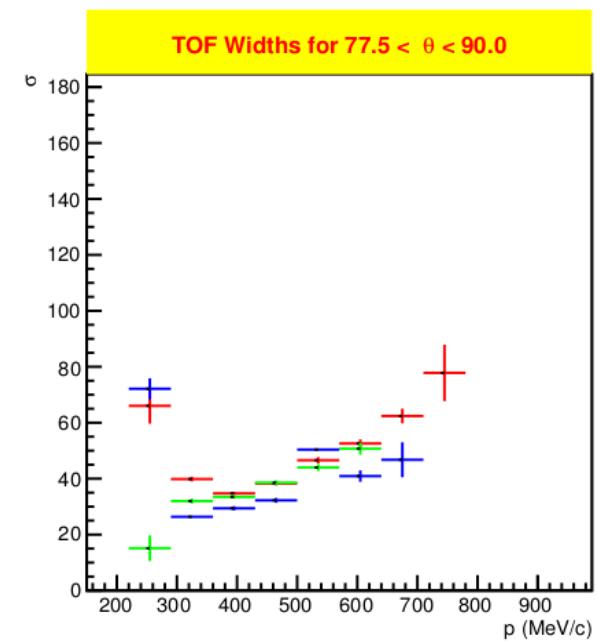
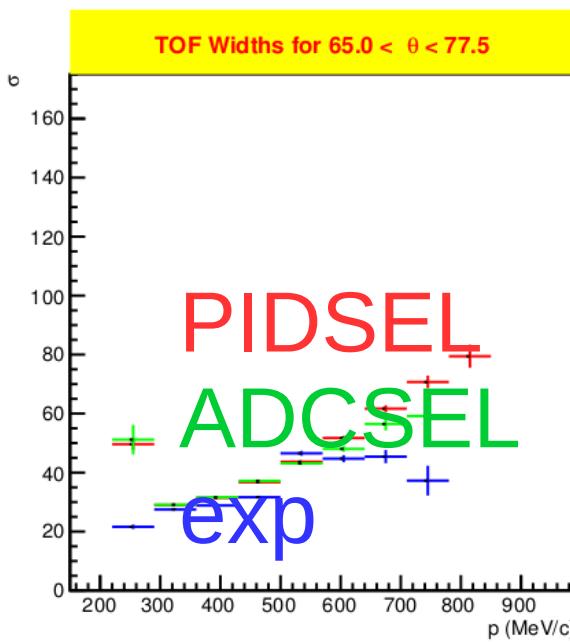
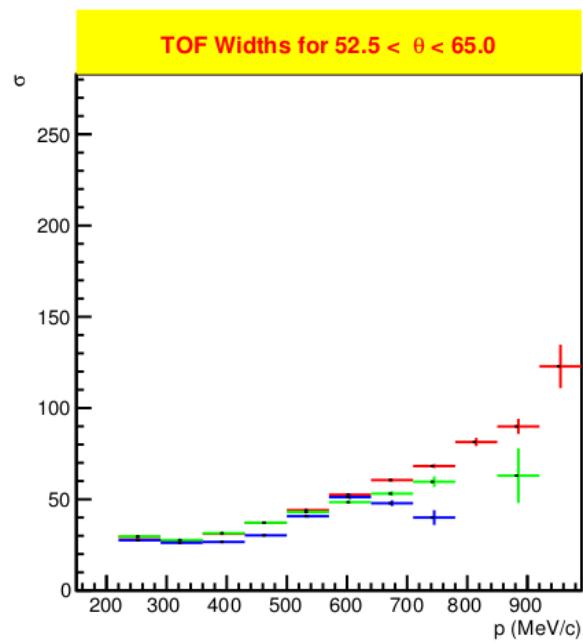
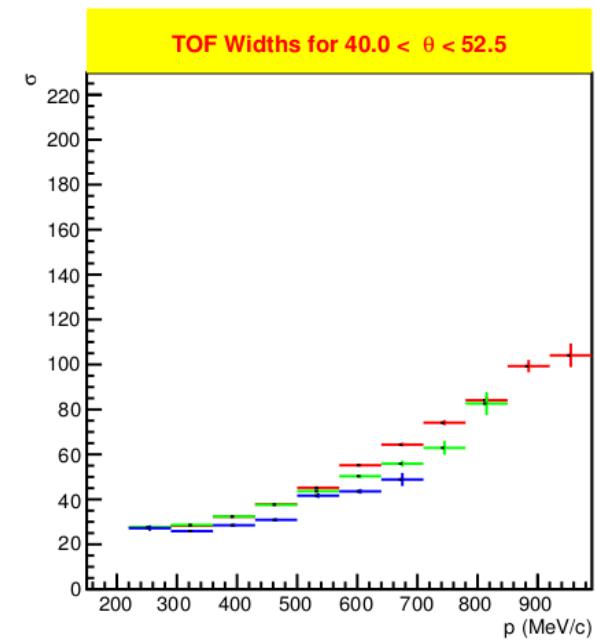
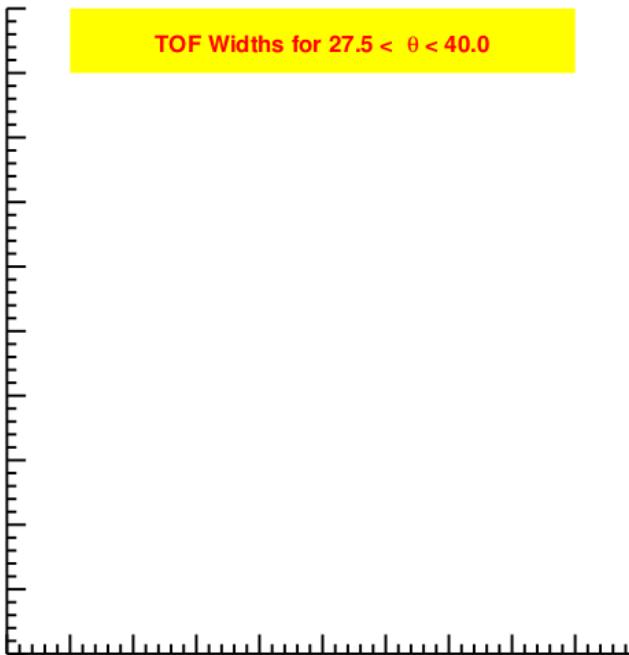
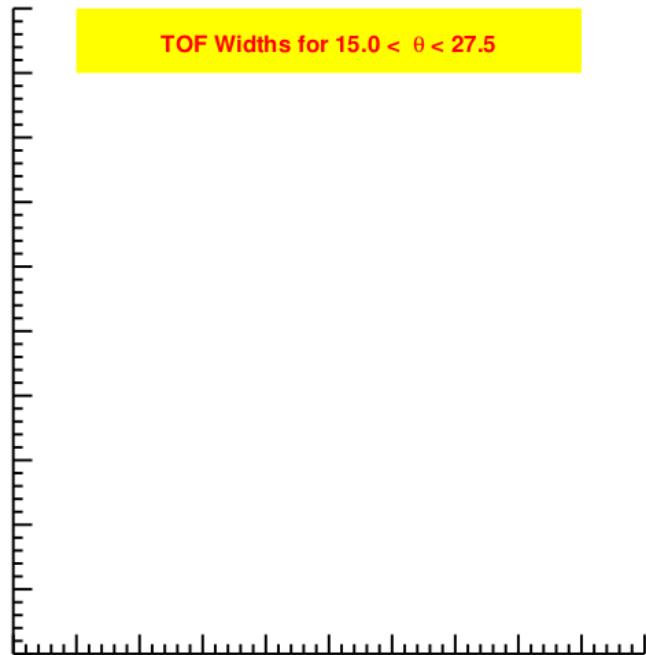


# Checking K num from MC: W(RPC) K<sup>+</sup>

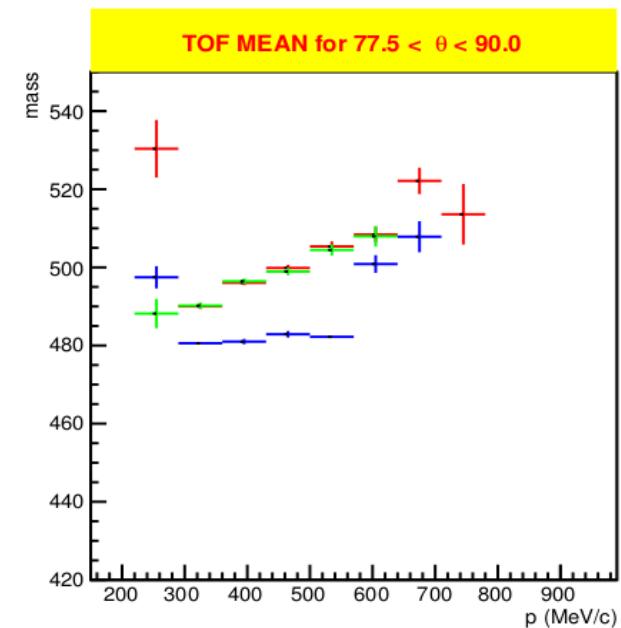
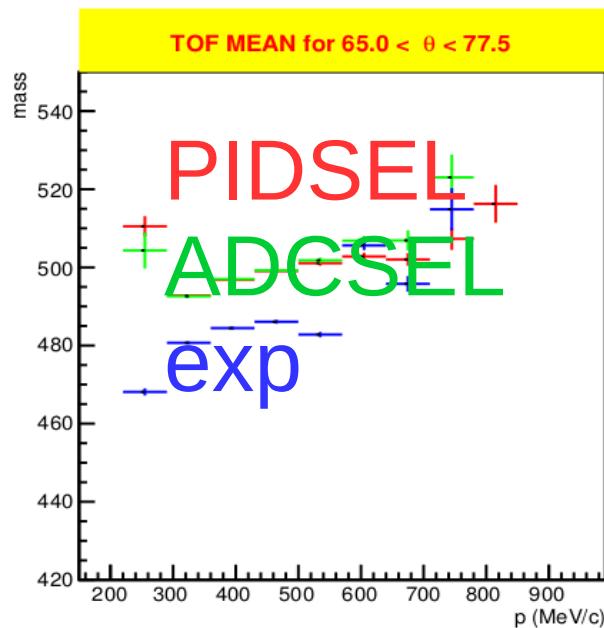
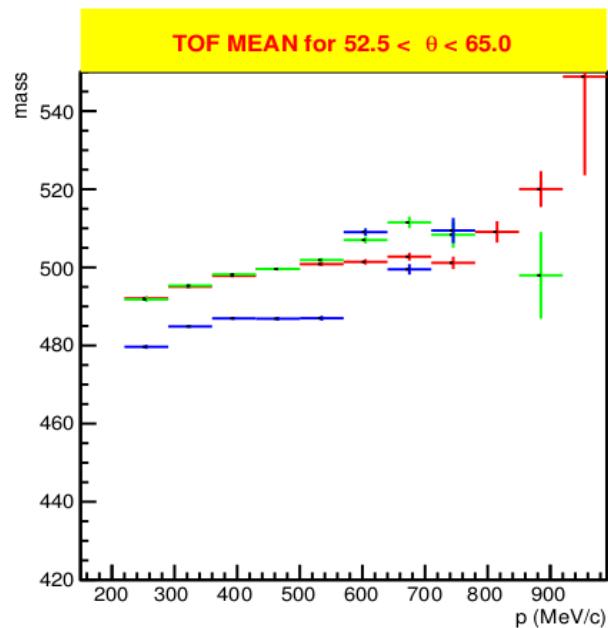
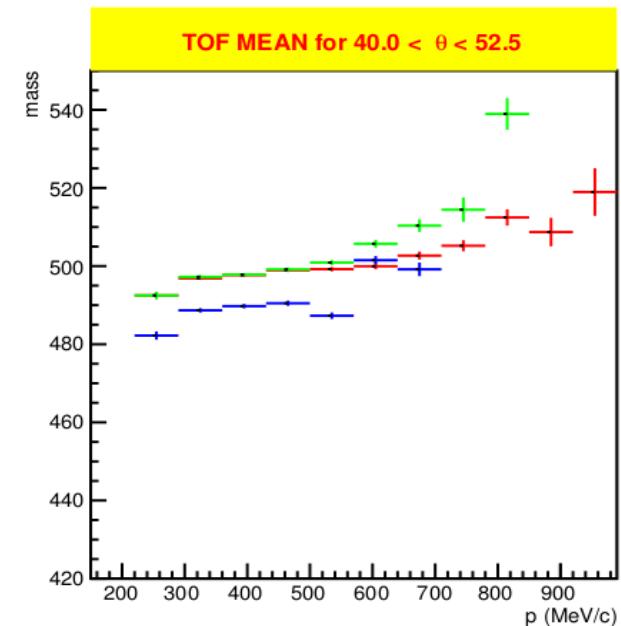
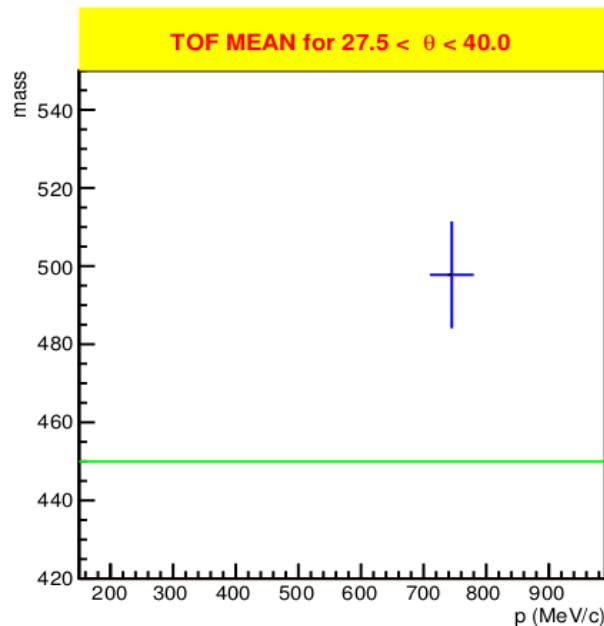
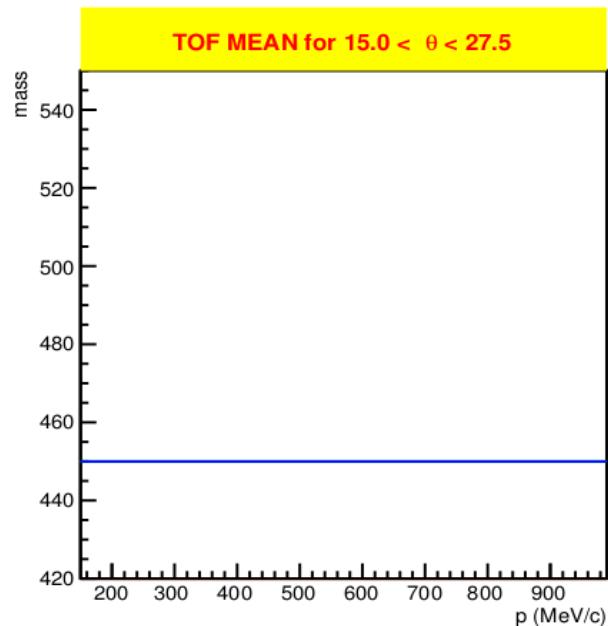
PIDSEL  
ADCSEL



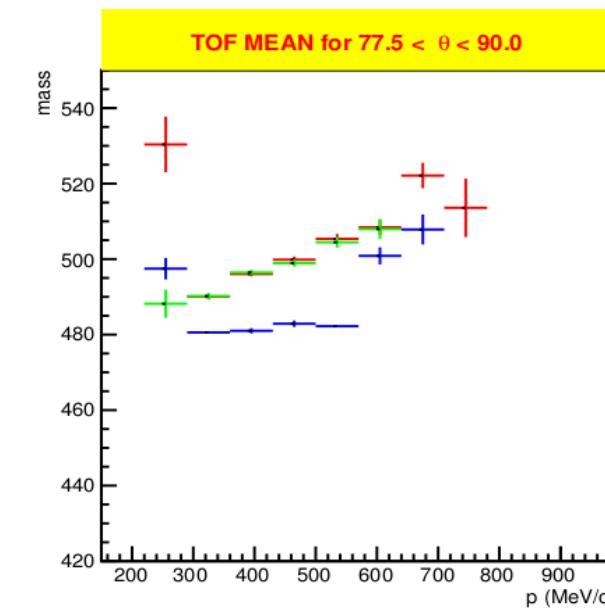
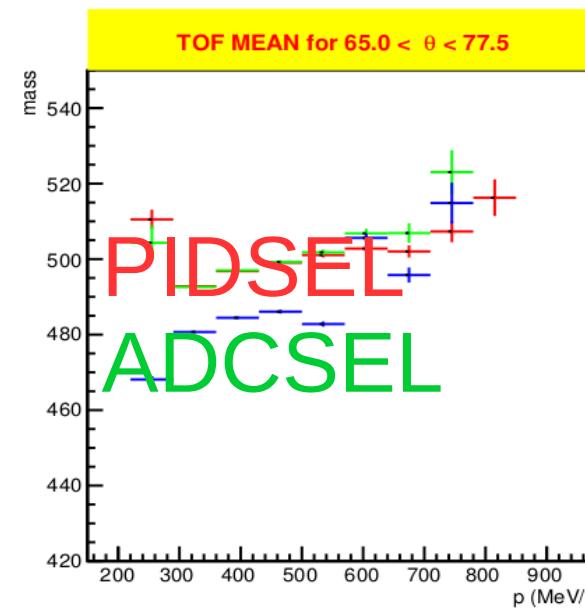
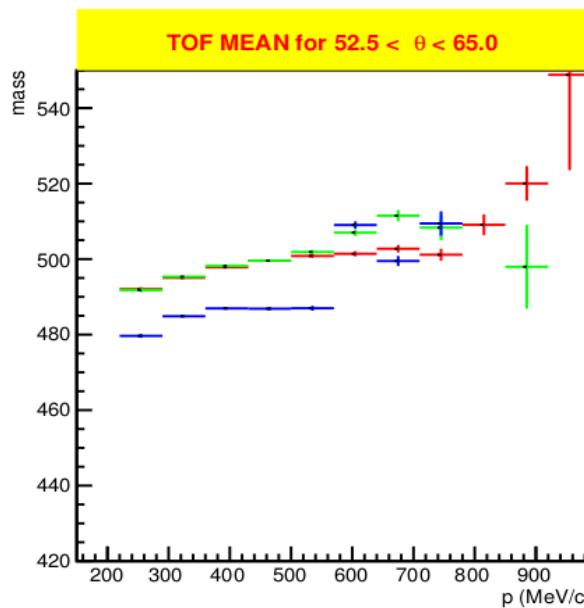
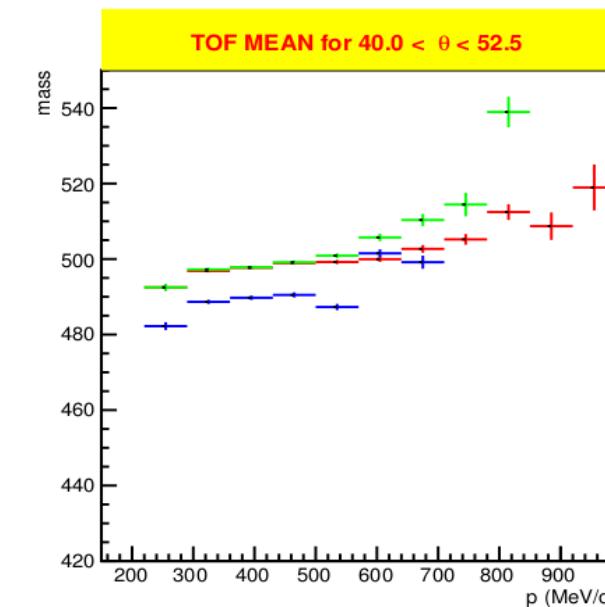
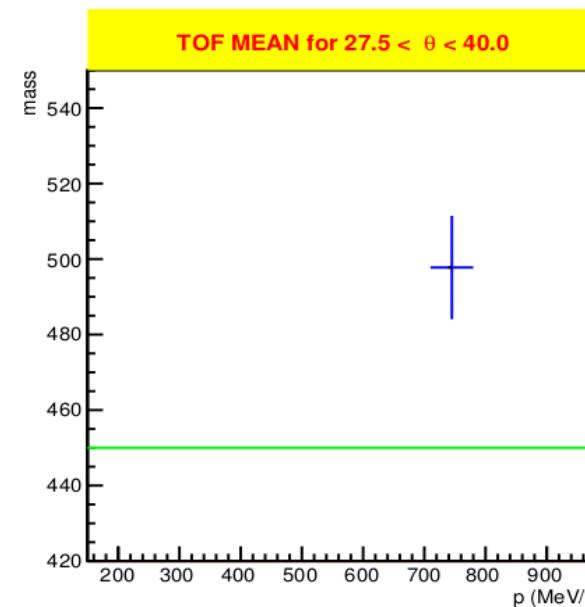
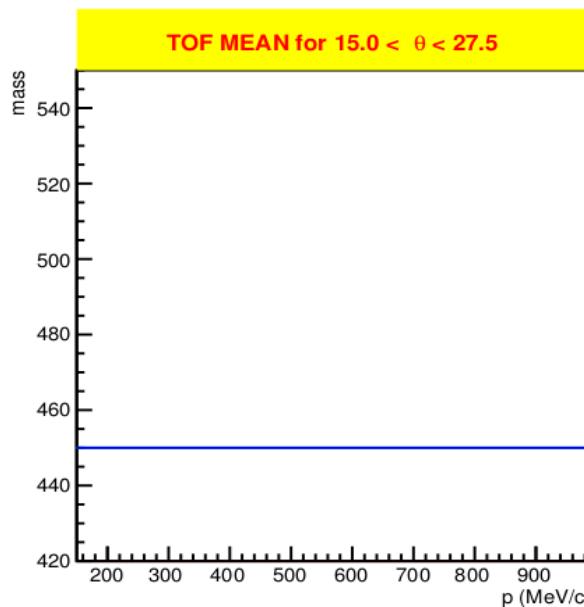
# Checking $\sigma$ from MC: W(TOF) K<sup>+</sup>



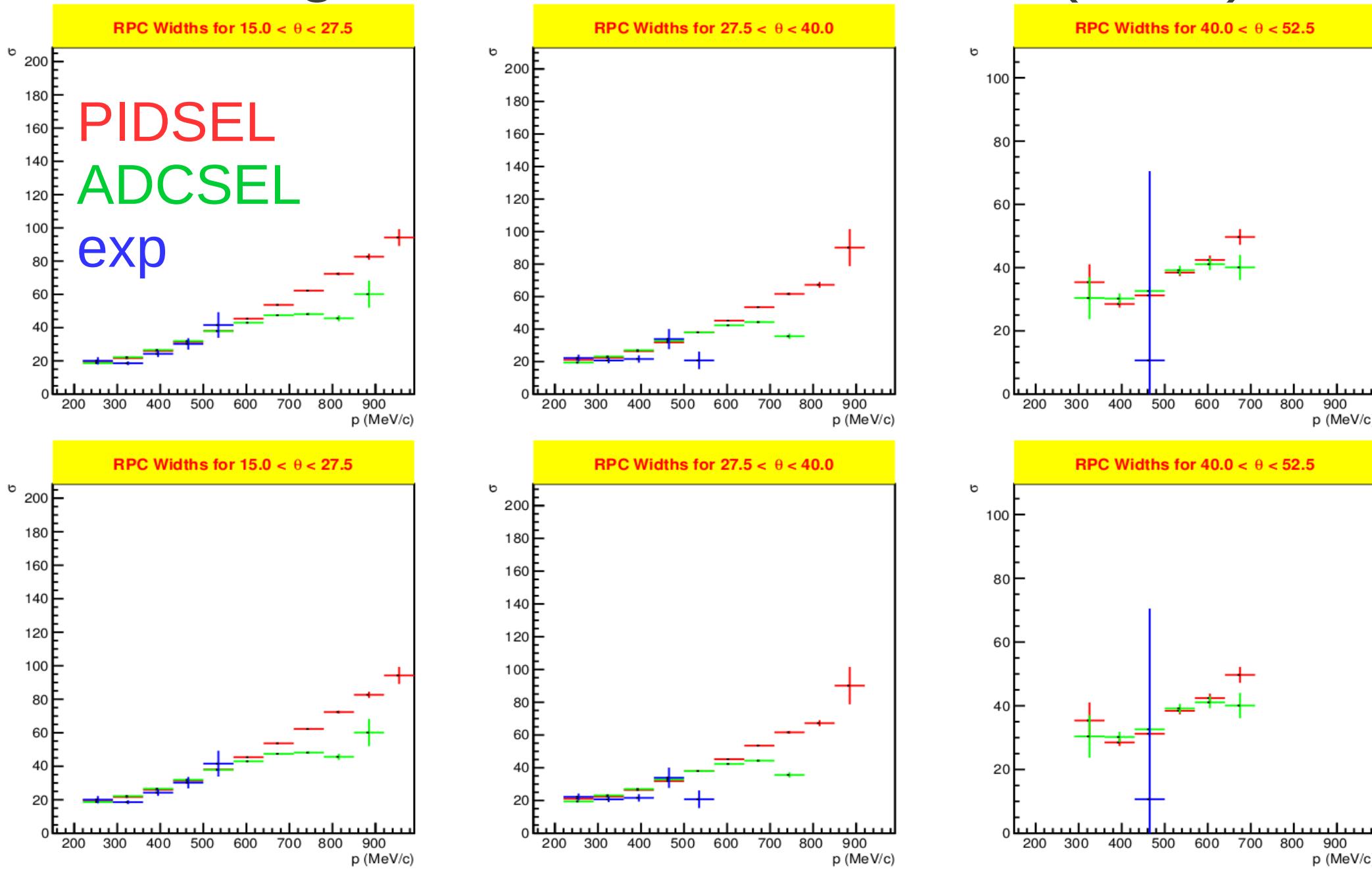
# Checking MEAN from MC: W(TOF) K<sup>+</sup>



# Checking K num from MC: W(ToF) K<sup>+</sup>

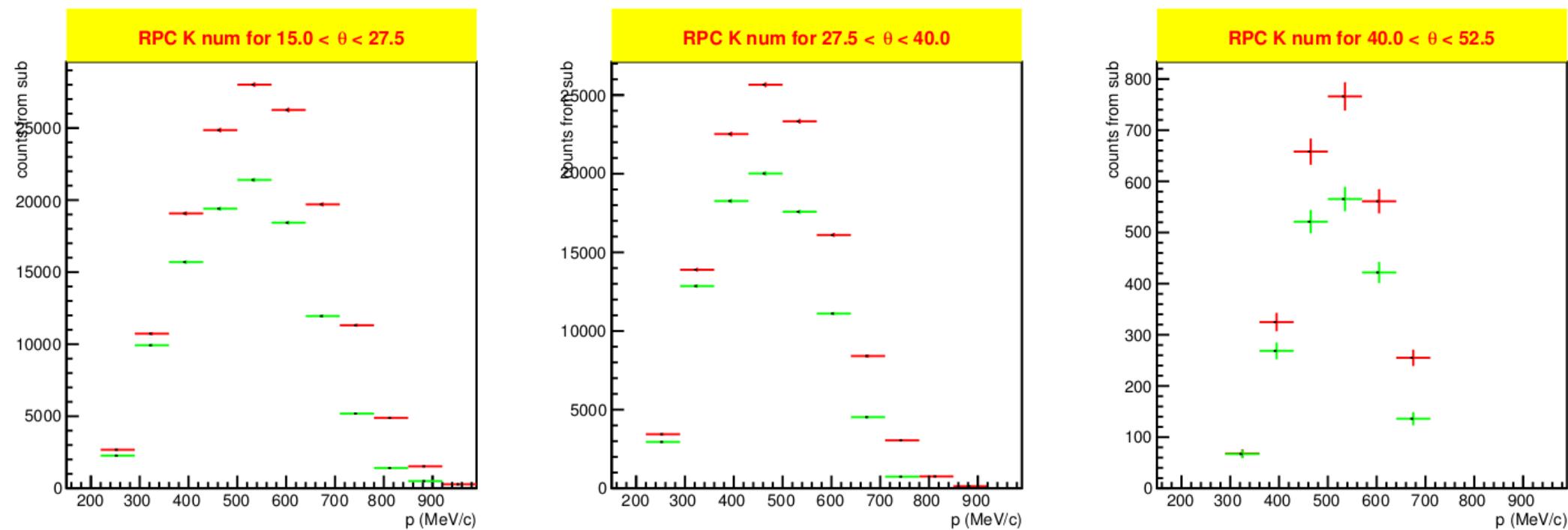


# Checking $\sigma$ & mean from MC: C(RPC) K<sup>-</sup>



# Checking K num from MC: C(RPC) K<sup>-</sup>

PIDSEL  
ADCSEL

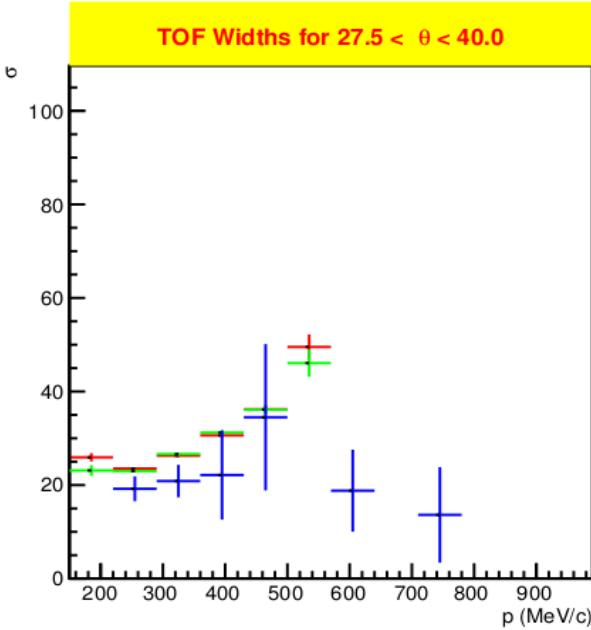


# Checking $\sigma$ from MC: C(TOF) K<sup>-</sup>

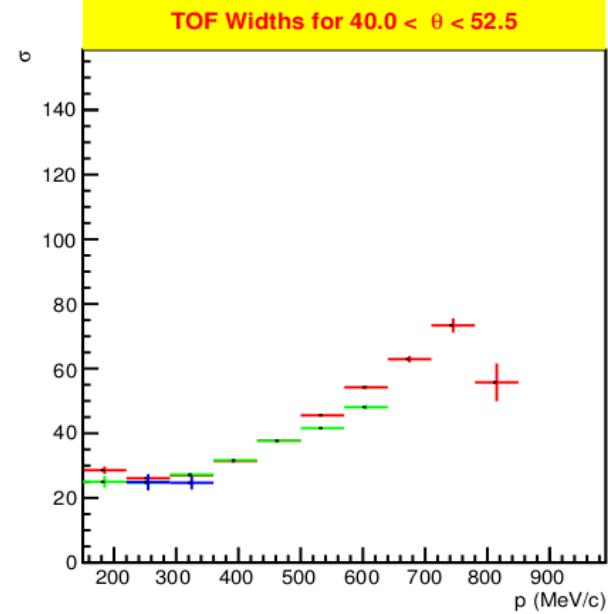
TOF Widths for  $15.0 < \theta < 27.5$

PIDSEL  
ADCSEL  
exp

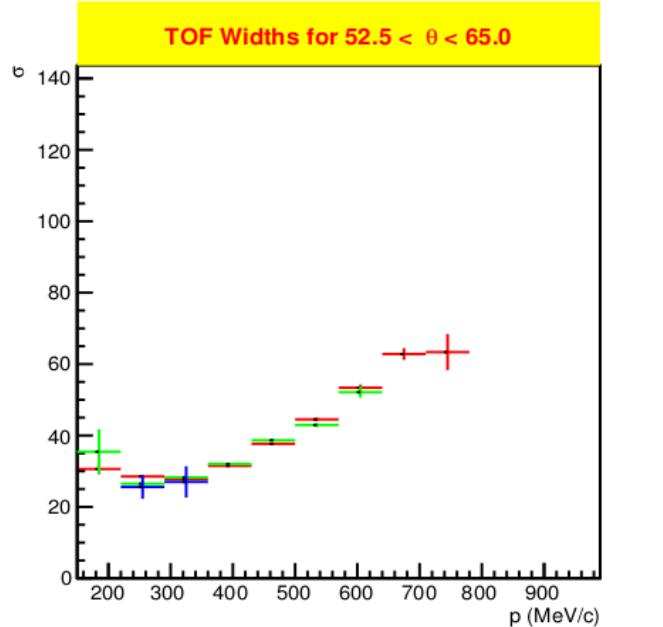
TOF Widths for  $27.5 < \theta < 40.0$



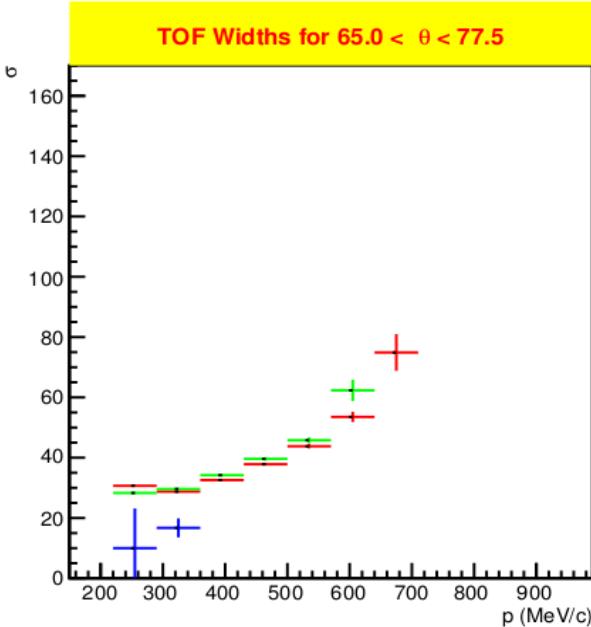
TOF Widths for  $40.0 < \theta < 52.5$



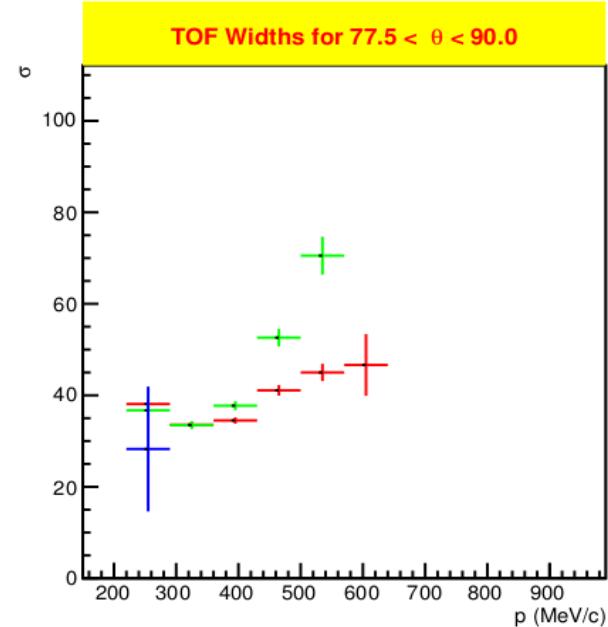
TOF Widths for  $52.5 < \theta < 65.0$



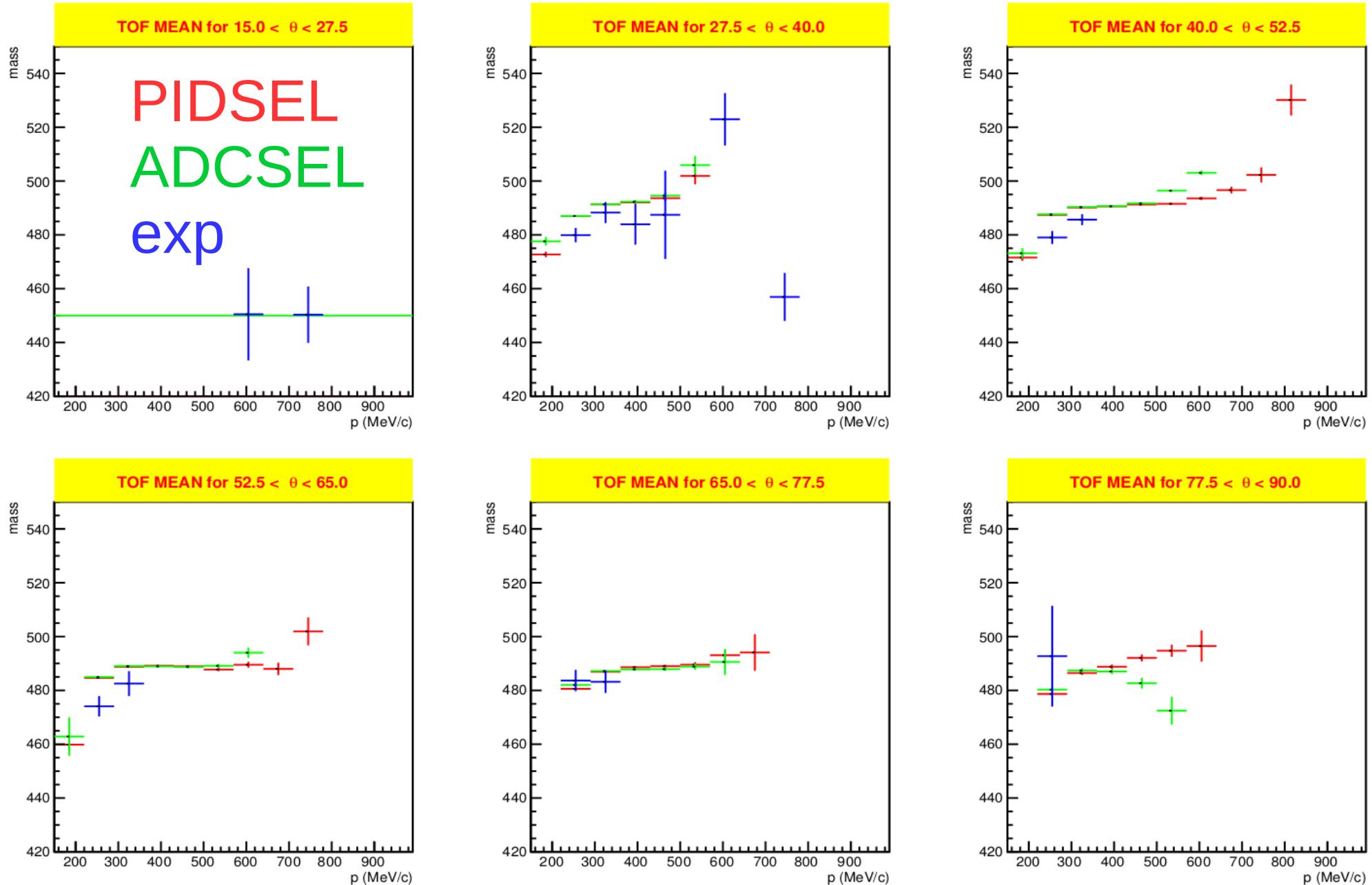
TOF Widths for  $65.0 < \theta < 77.5$



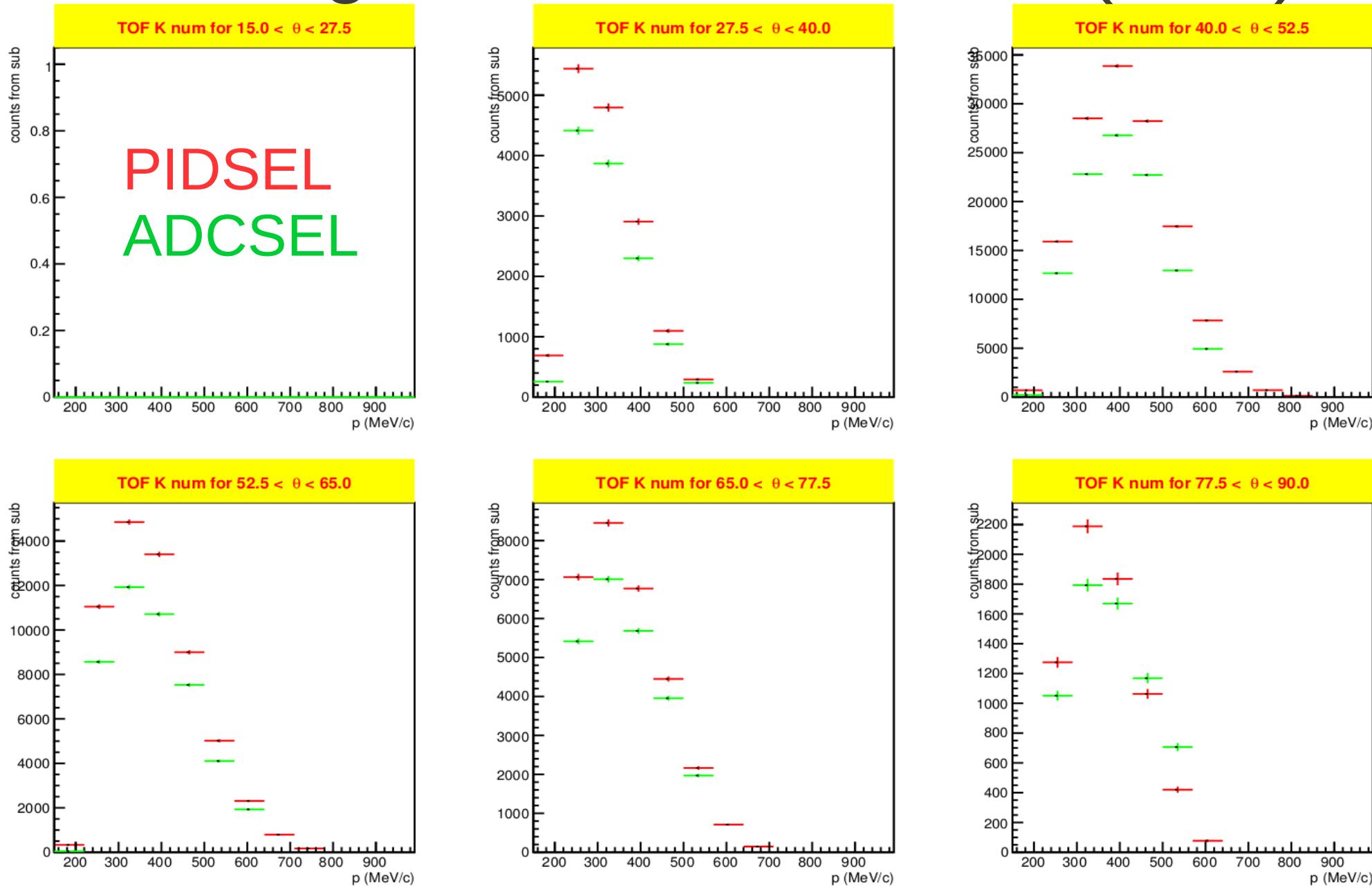
TOF Widths for  $77.5 < \theta < 90.0$



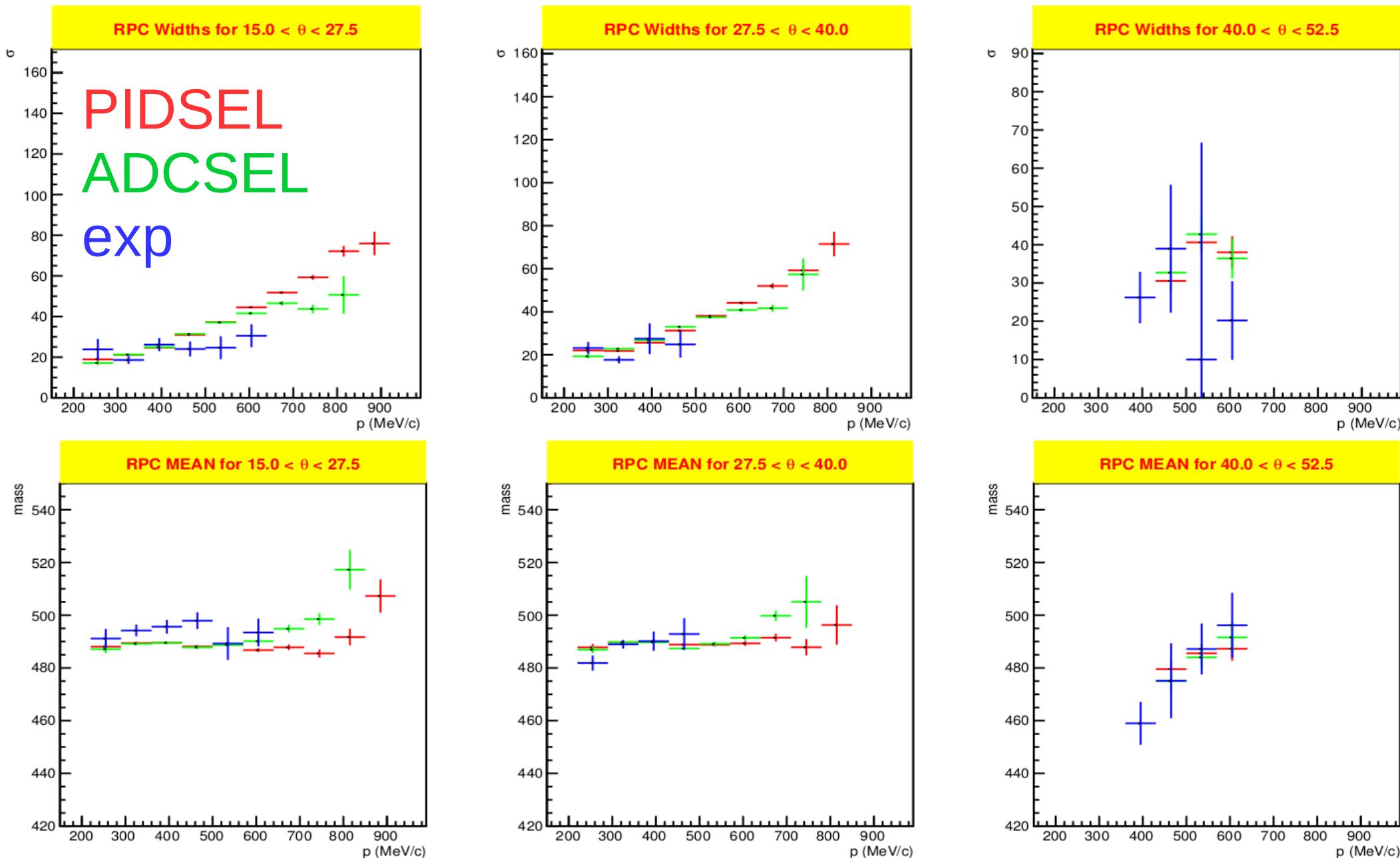
# Checking MEAN from MC: C(TOF) K<sup>-</sup>



# Checking K num from MC: C(TOF) K-

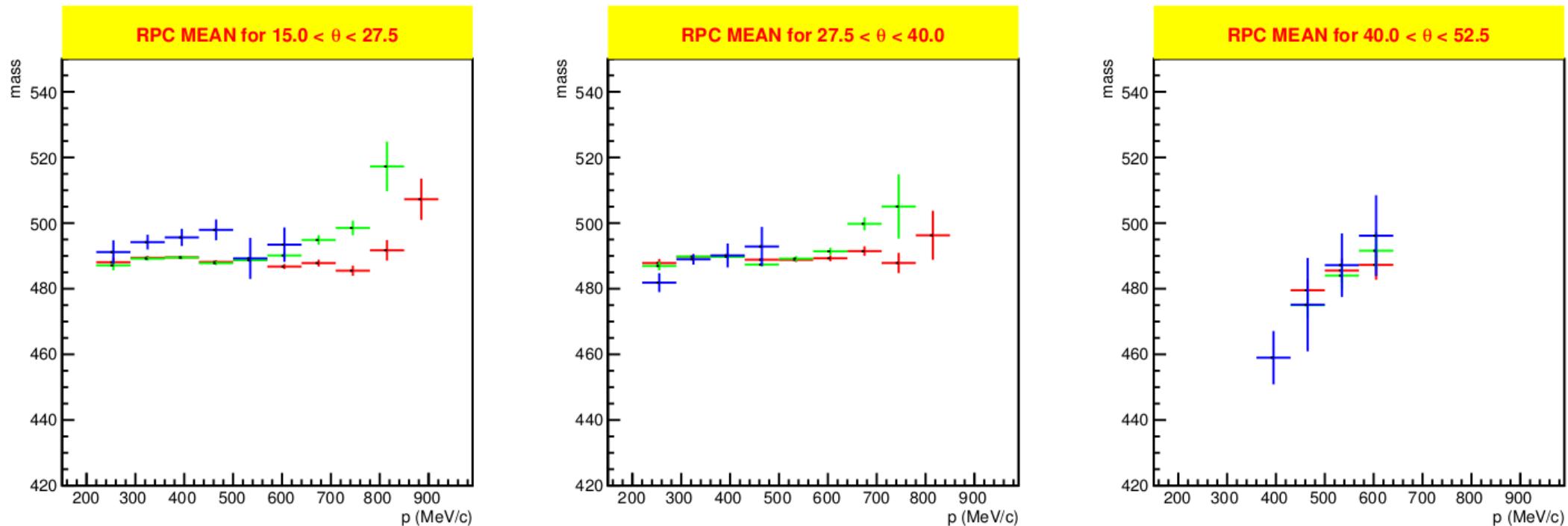


# Checking $\sigma$ & mean from MC: W(RPC) K<sup>-</sup>



# Checking K num from MC: W(RPC) K-

PIDSEL  
ADCSEL

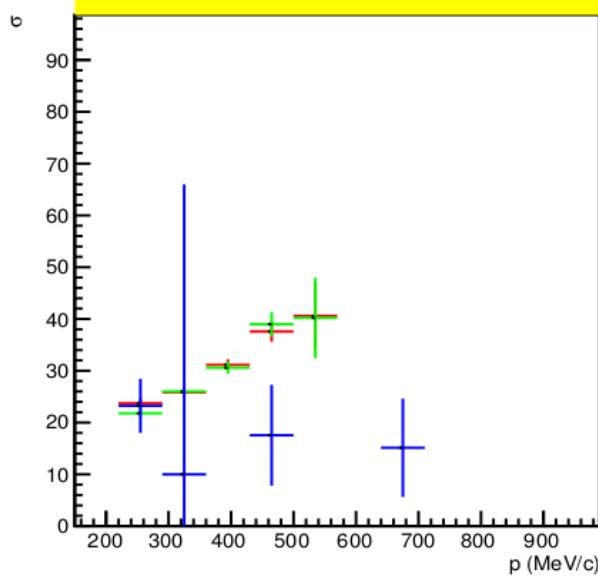


# Checking $\sigma$ from MC: W(ToF) K<sup>-</sup>

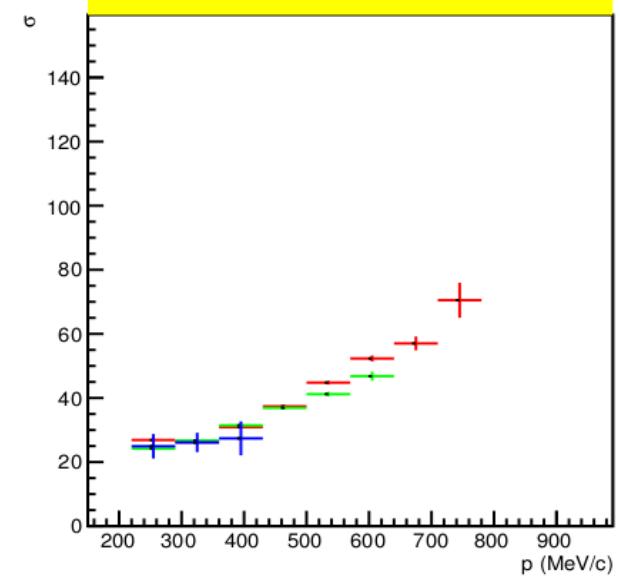
TOF Widths for  $15.0 < \theta < 27.5$

PIDSEL  
ADCSEL  
exp

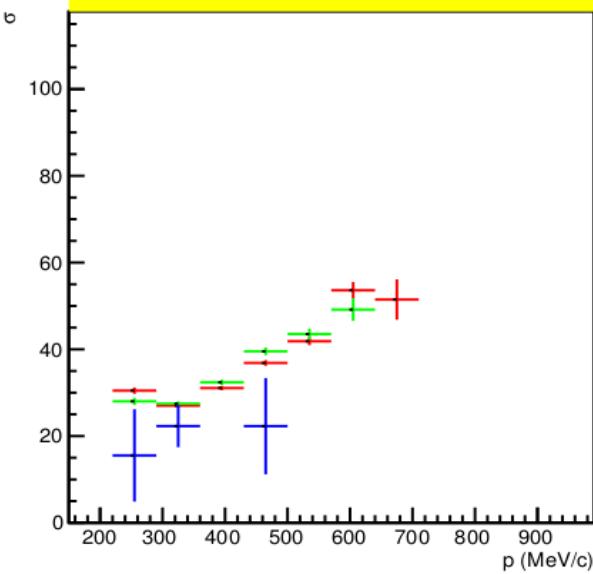
TOF Widths for  $27.5 < \theta < 40.0$



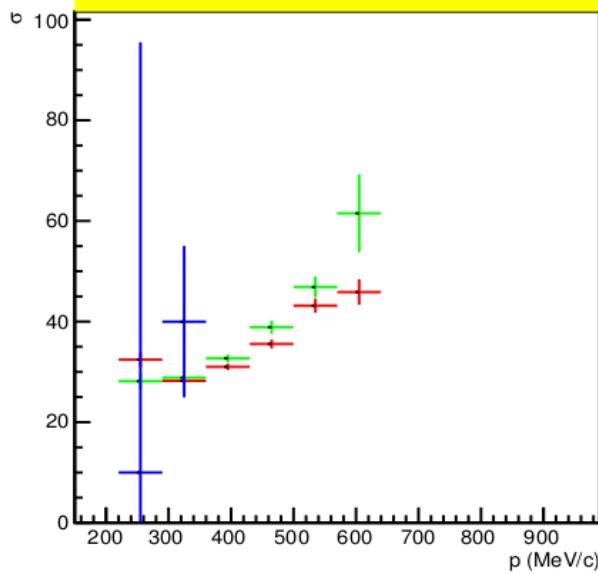
TOF Widths for  $40.0 < \theta < 52.5$



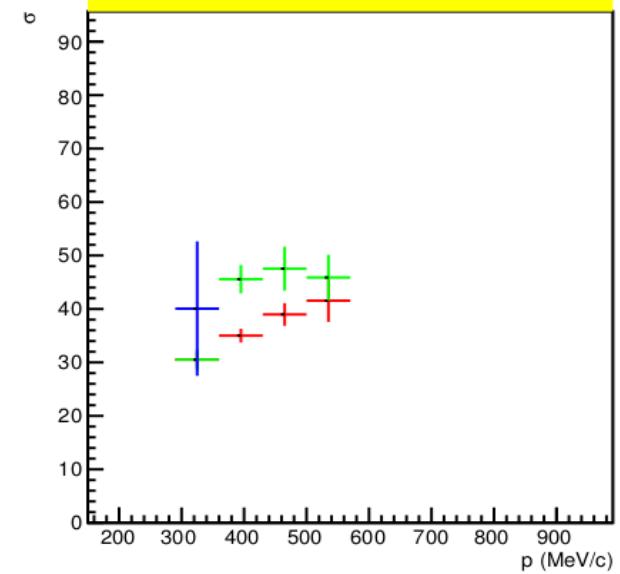
TOF Widths for  $52.5 < \theta < 65.0$



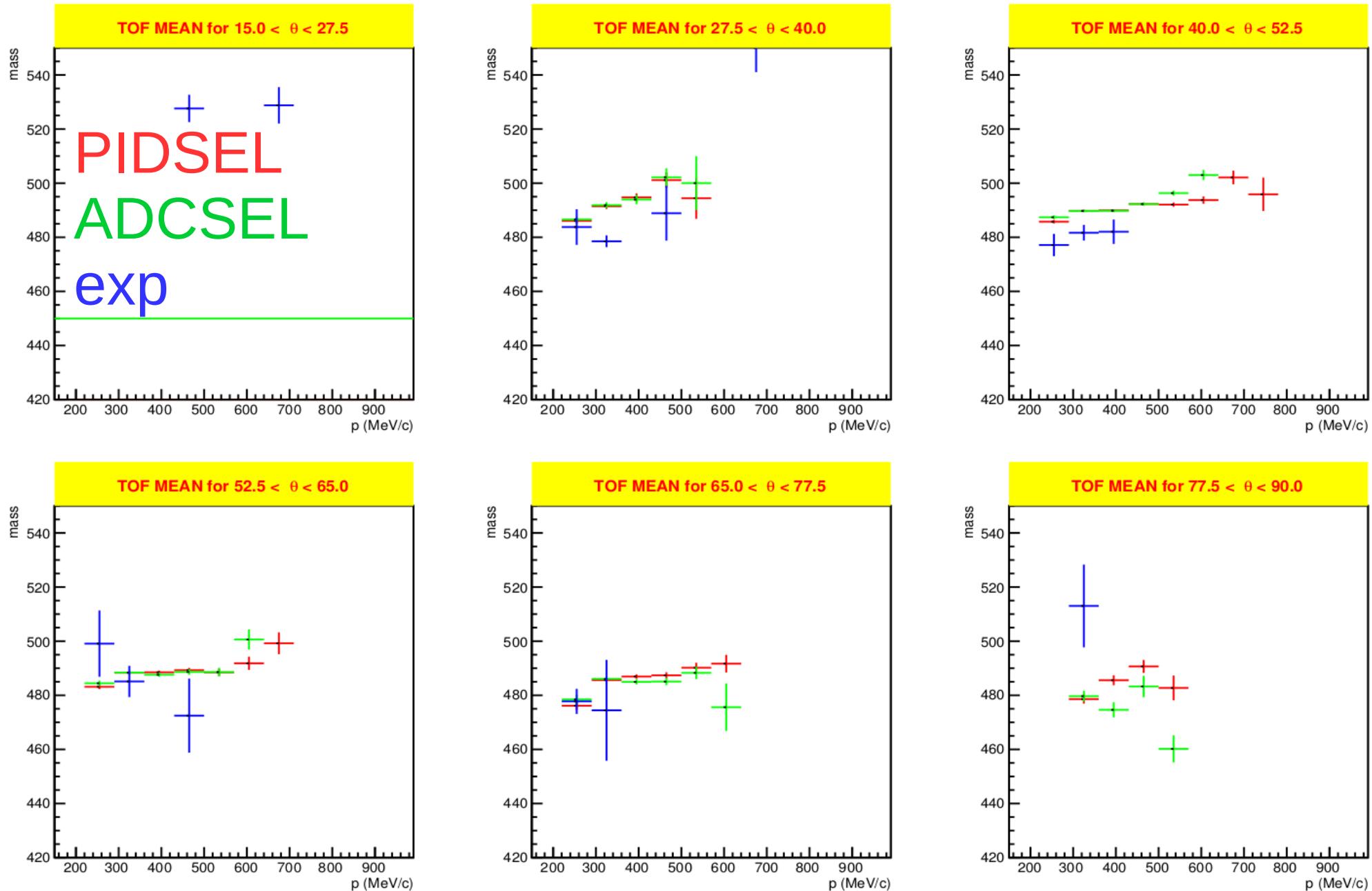
TOF Widths for  $65.0 < \theta < 77.5$



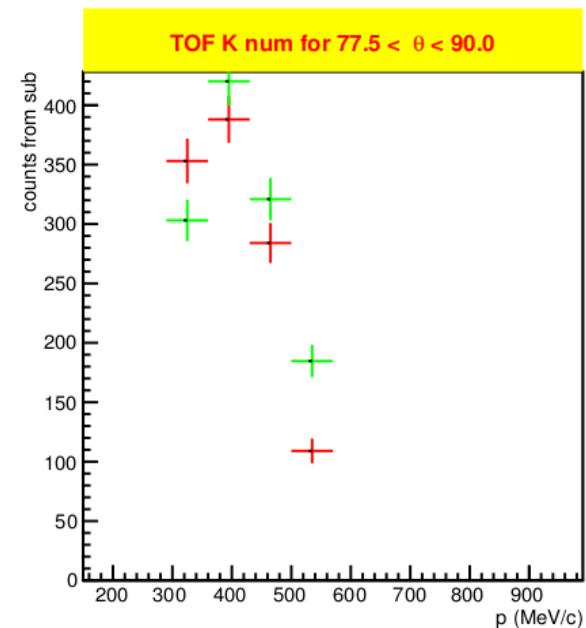
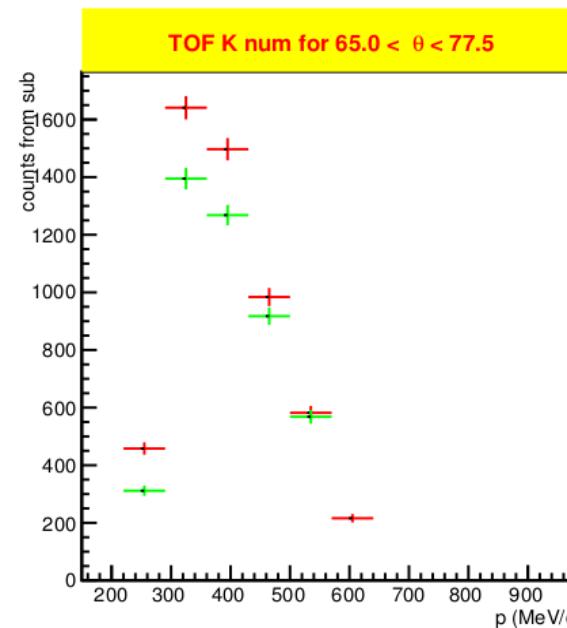
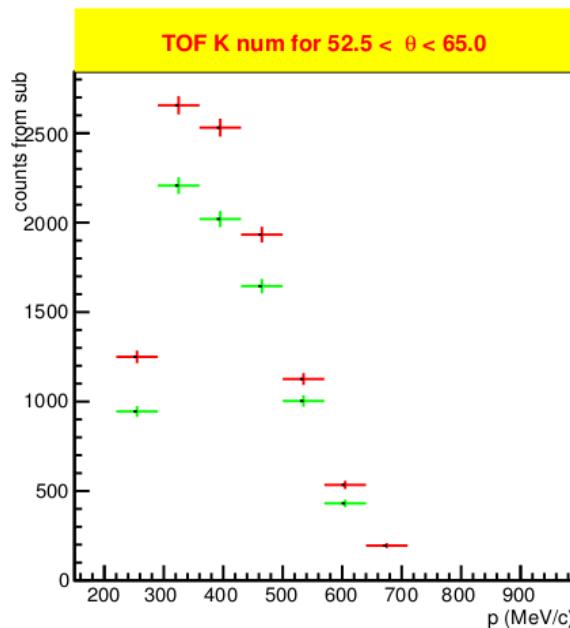
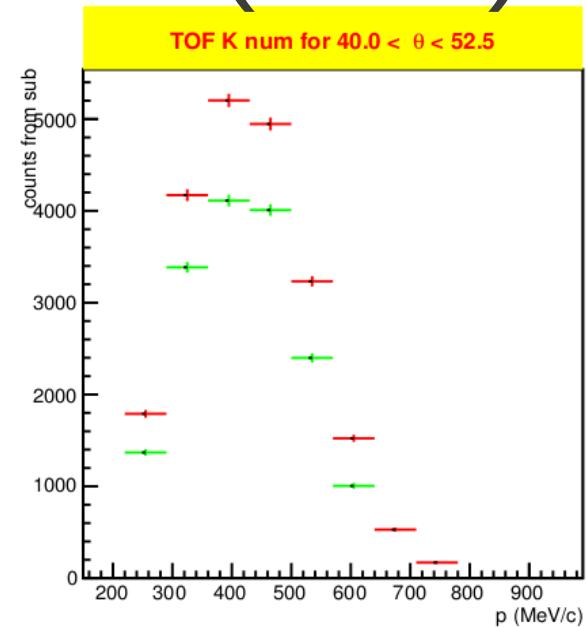
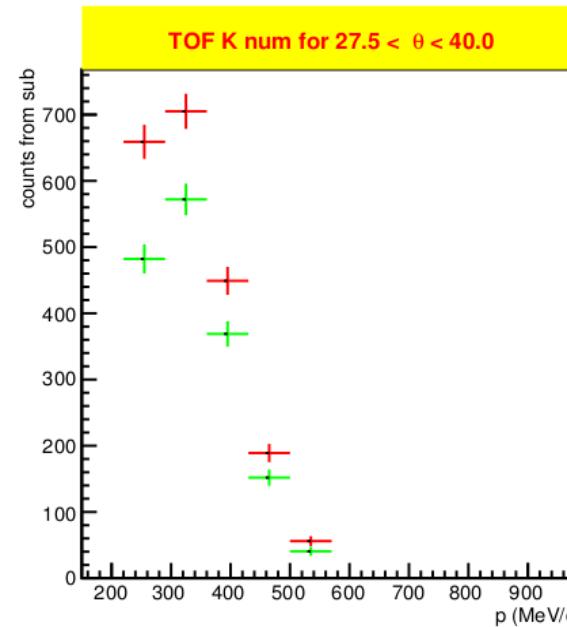
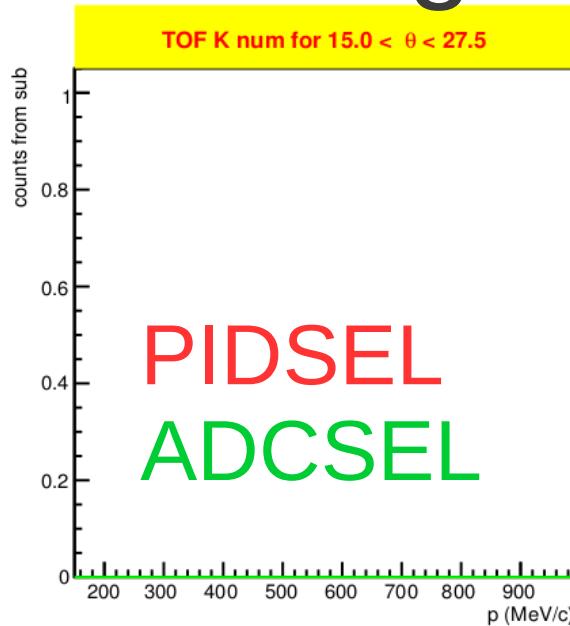
TOF Widths for  $77.5 < \theta < 90.0$



# Checking MEAN from MC: W(TOF) K<sup>-</sup>



# Checking K num from MC: W(TOF) K<sup>-</sup>



# Next steps

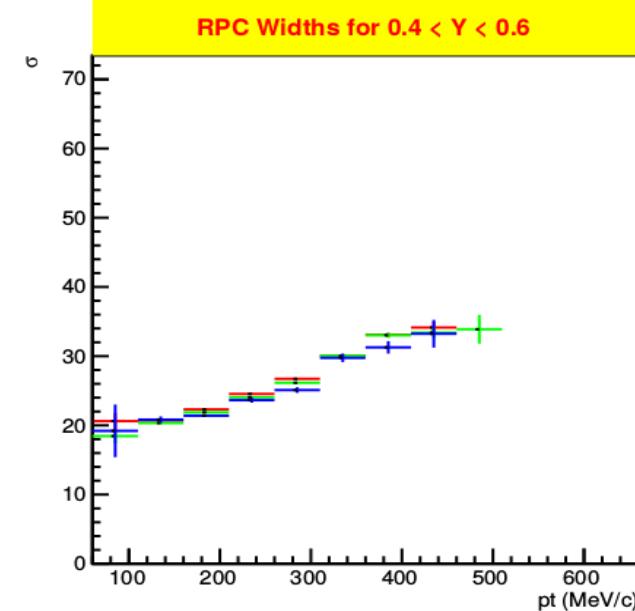
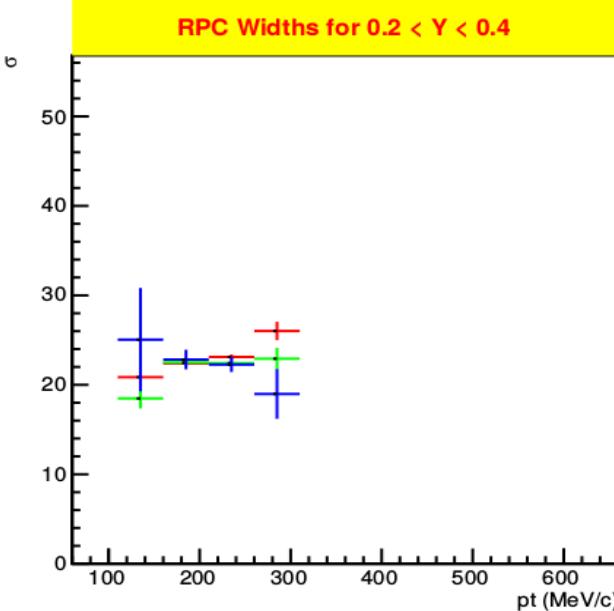
- Re-(again)-analysis of  $p\theta$  &  $p_T y$  bins with:
  - Mean from MC → bound in 2 or 3  $\sigma$  ?
  - Width from MC → bound in 2 or 3  $\sigma$  ?
  - Starting values from MC?
- Which are to be used for limits on exp data fit (red or green)?
- Check consistency in  $K^+/K^-$  W/C ratios between  $p\theta$  &  $p_T y$

OLD P<sub>T</sub> Y

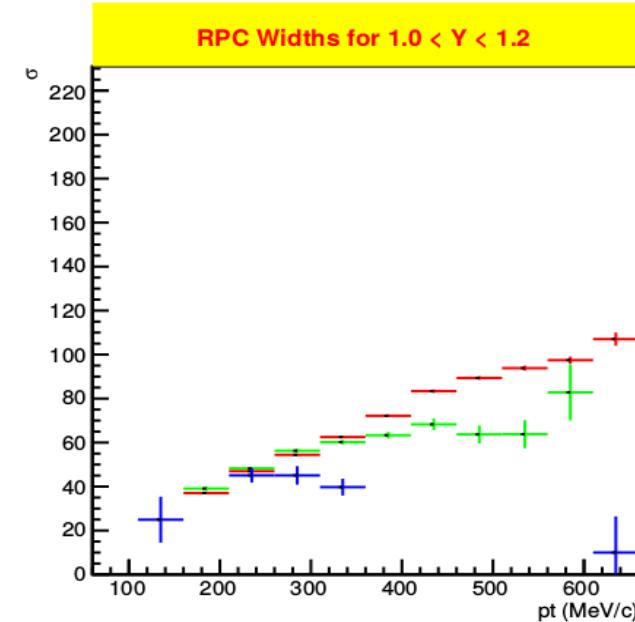
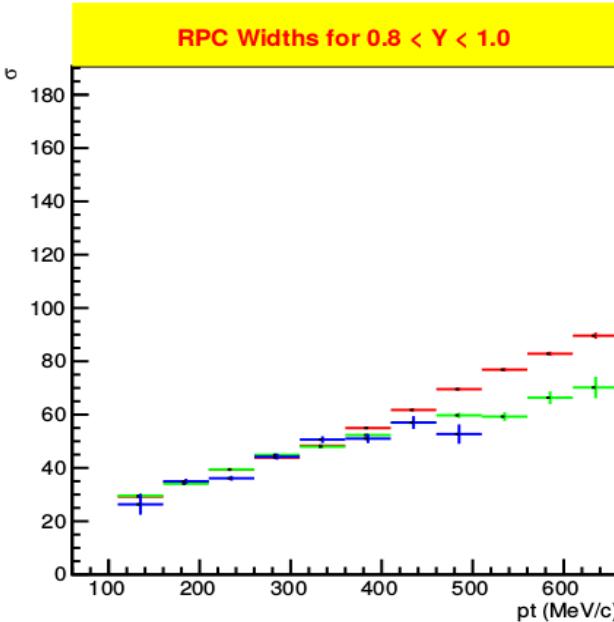
# Checking $\sigma$ from MC: C(RPC) K<sup>+</sup>

RPC Widths for  $0.0 < Y < 0.2$

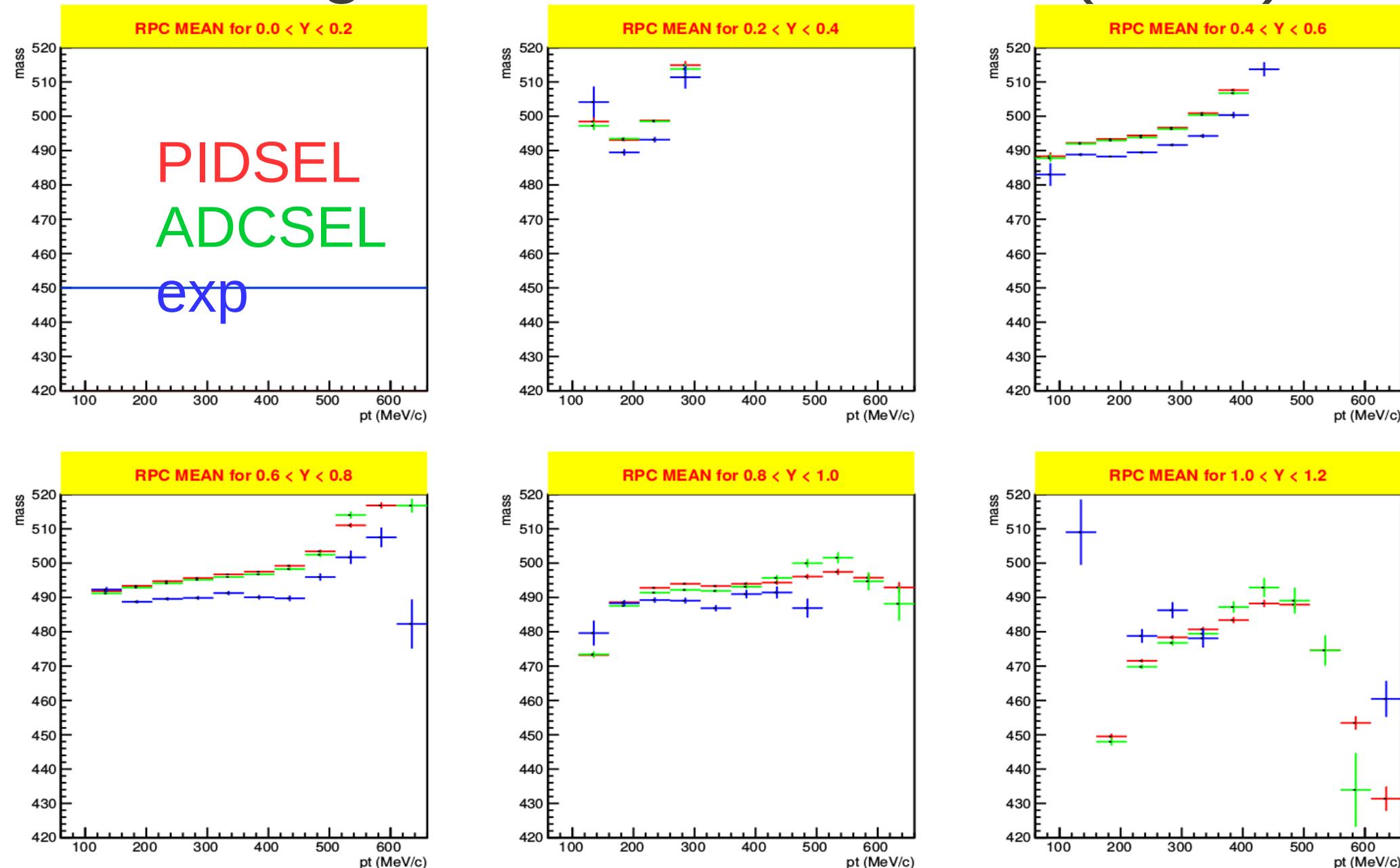
PIDSEL  
ADCSEL  
exp



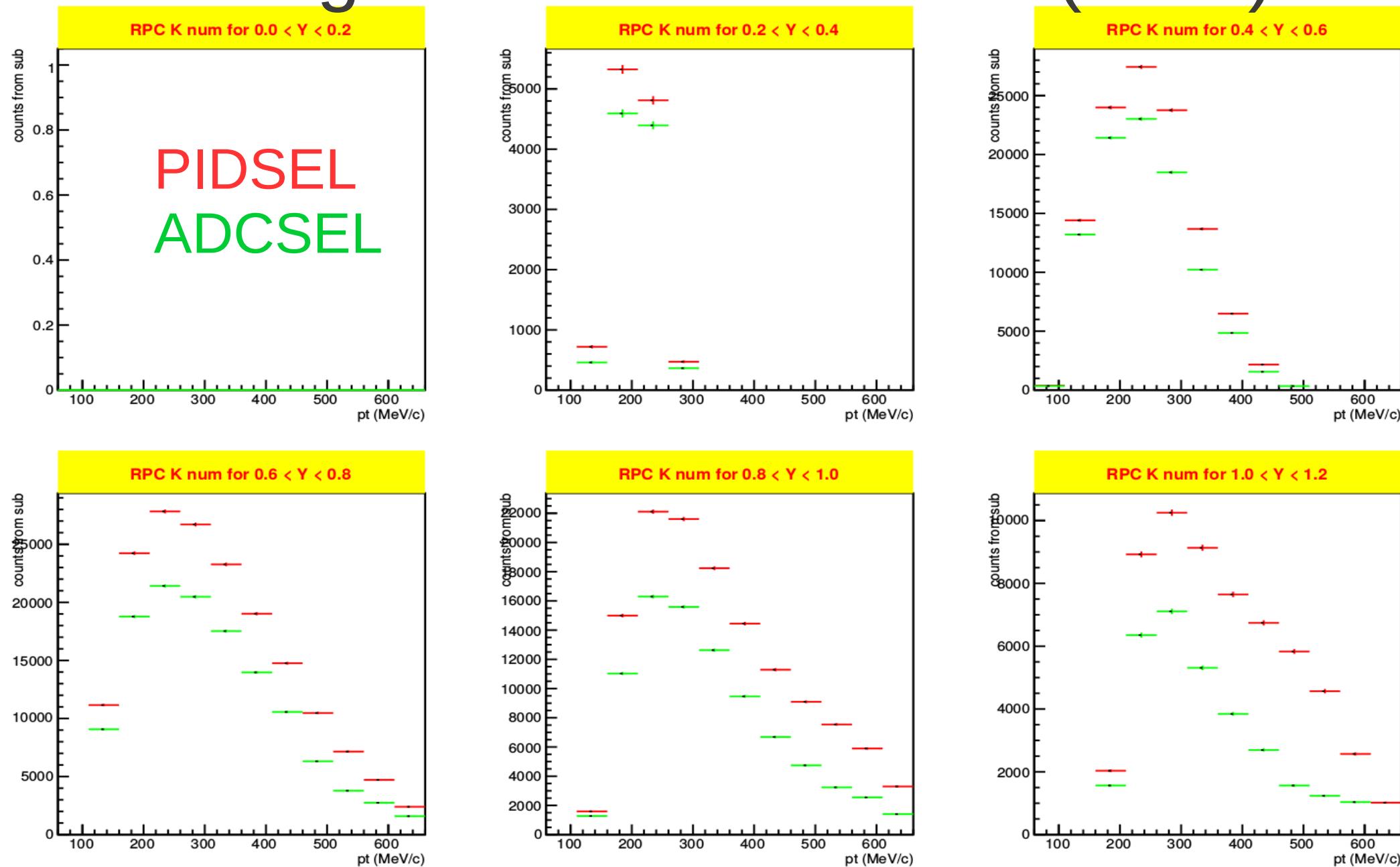
RPC Widths for  $0.6 < Y < 0.8$



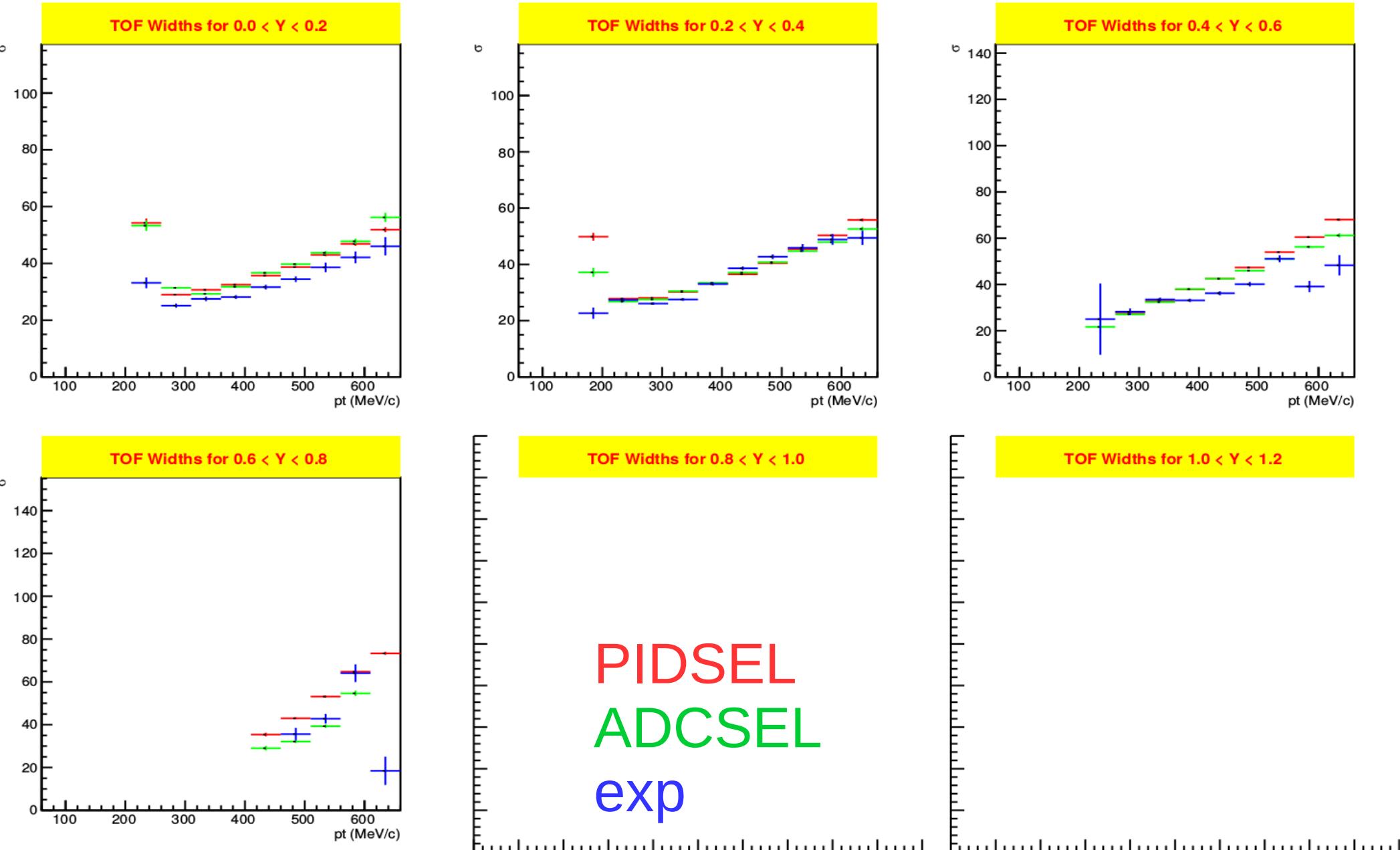
# Checking MEAN from MC: C(RPC) K<sup>+</sup>



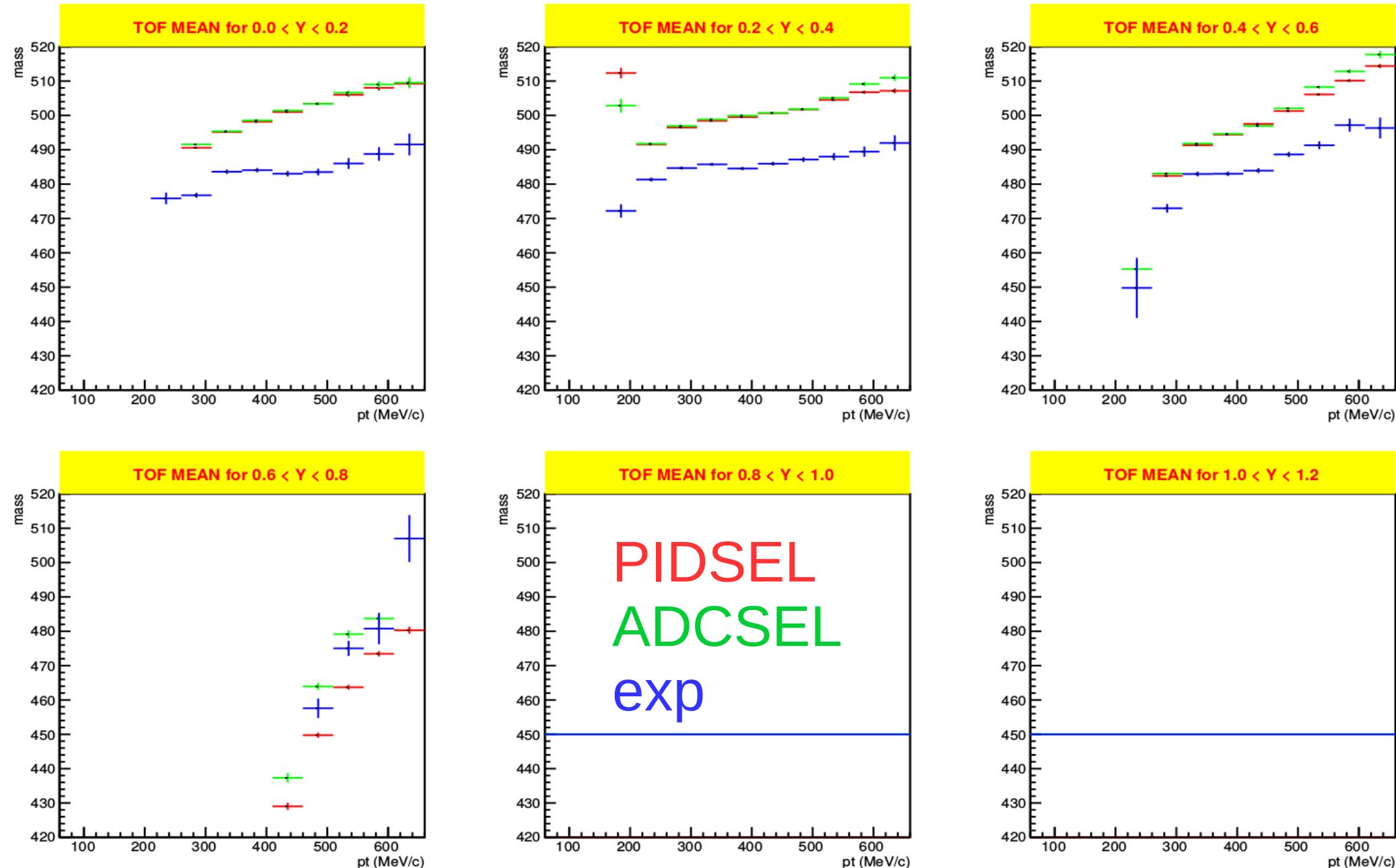
# Checking K num from MC: C(RPC) K<sup>+</sup>



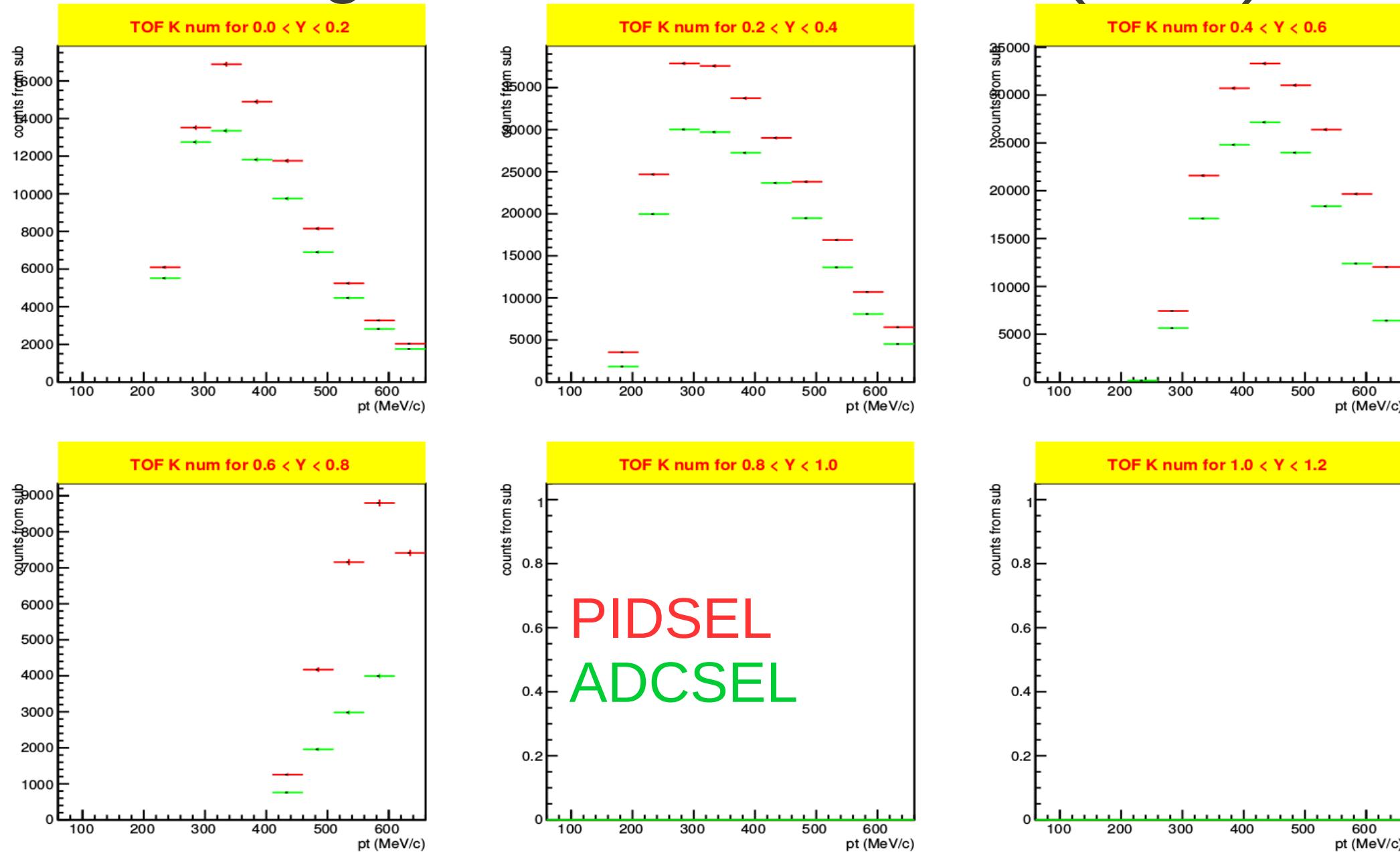
# Checking $\sigma$ from MC: C(TOF) K<sup>+</sup>



# Checking MEAN from MC: C(TOF) K<sup>+</sup>



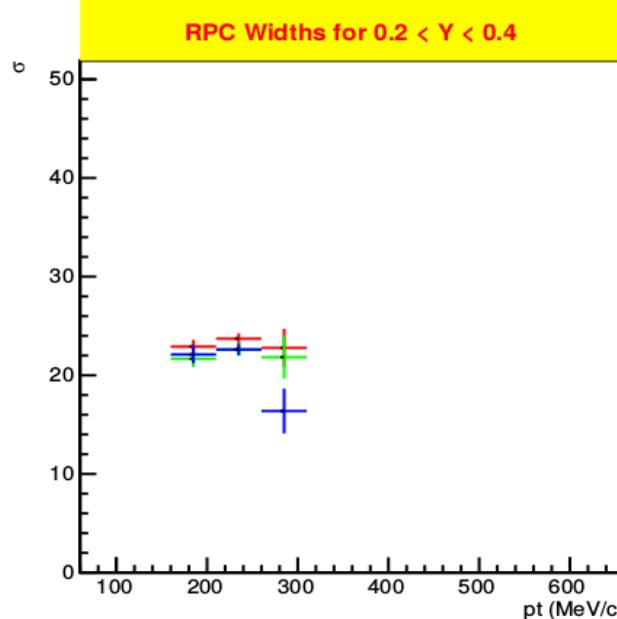
# Checking K num from MC: C(TOF) K<sup>+</sup>



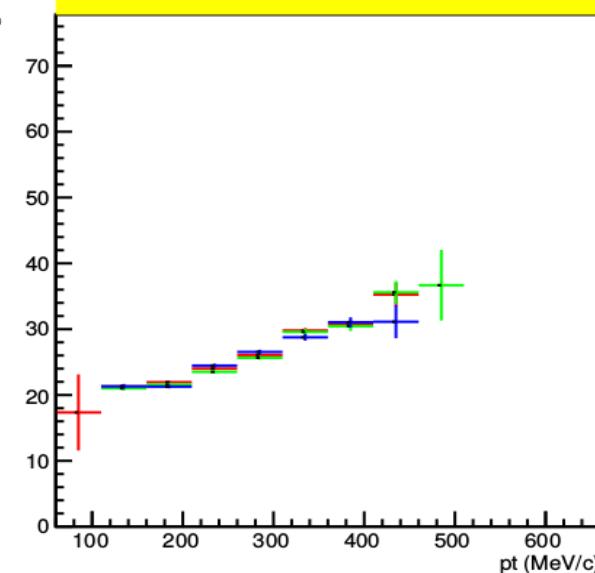
# Checking $\sigma$ from MC: W(RPC) K<sup>+</sup>

RPC Widths for  $0.0 < Y < 0.2$

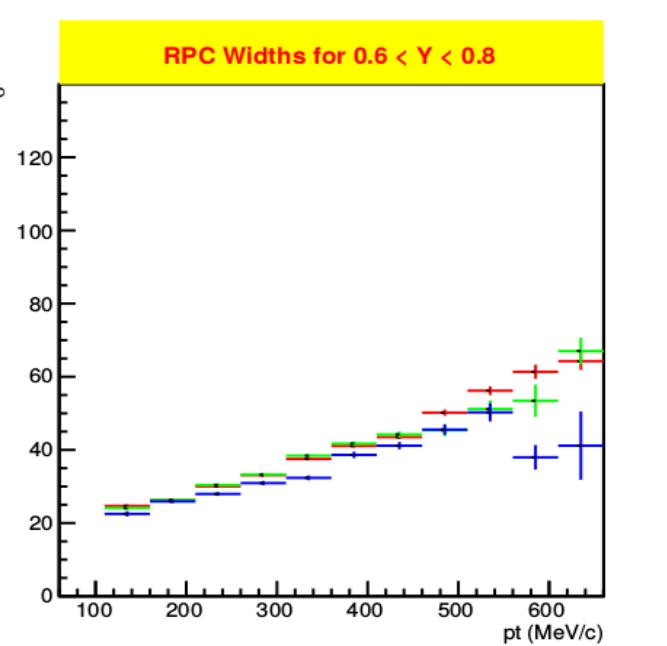
PIDSEL  
ADCSEL  
exp



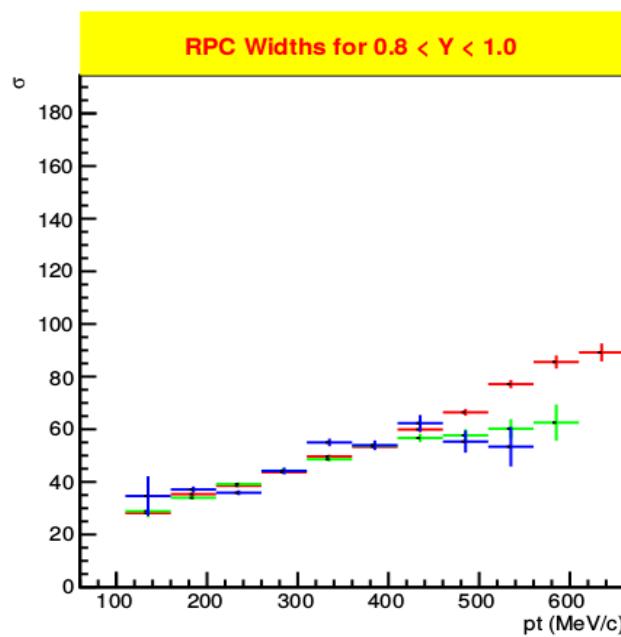
RPC Widths for  $0.4 < Y < 0.6$



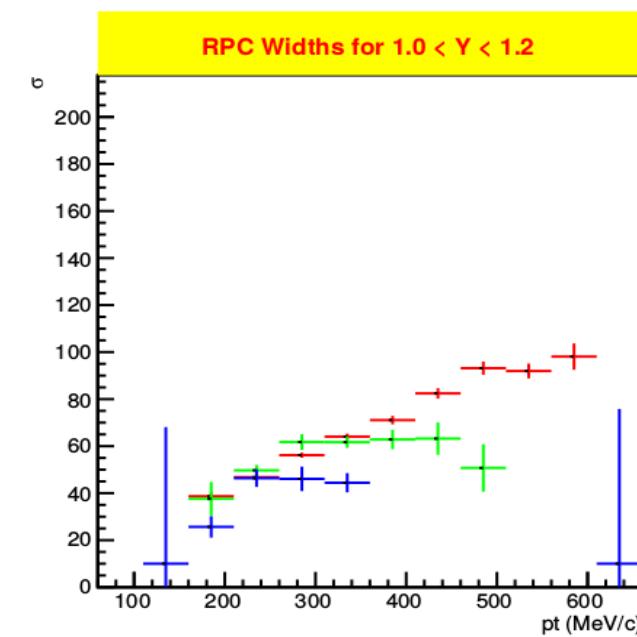
RPC Widths for  $0.6 < Y < 0.8$



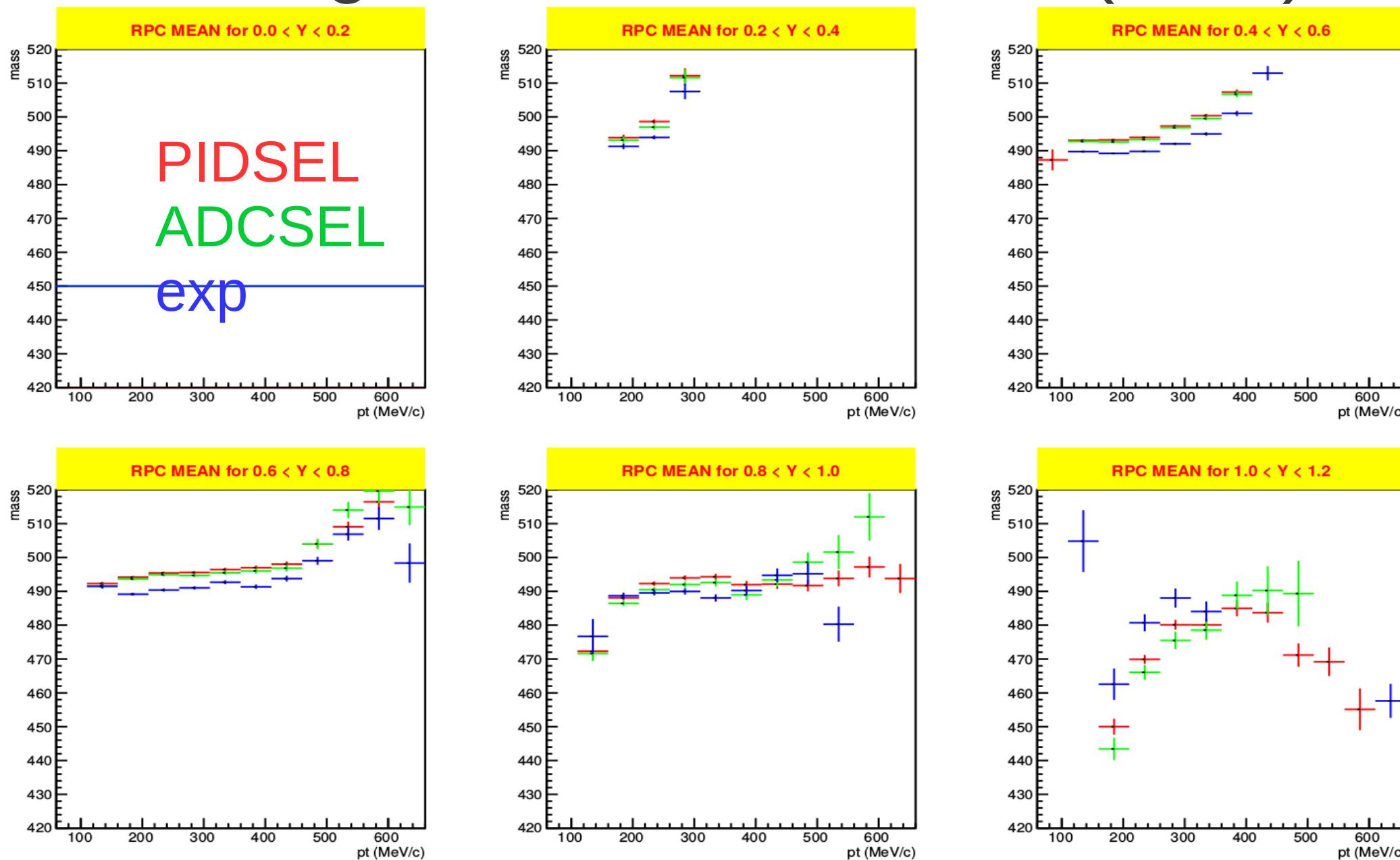
RPC Widths for  $0.8 < Y < 1.0$



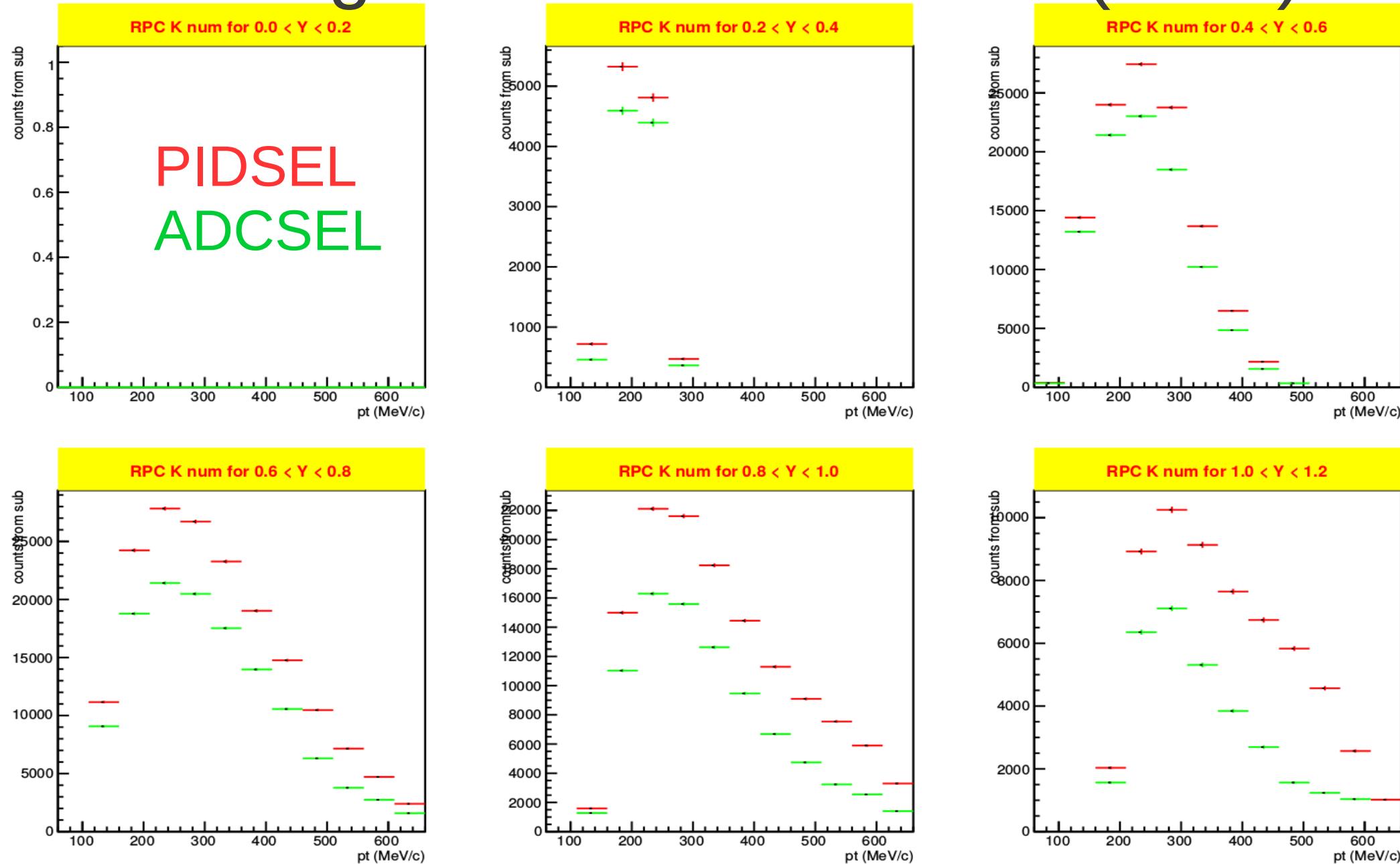
RPC Widths for  $1.0 < Y < 1.2$



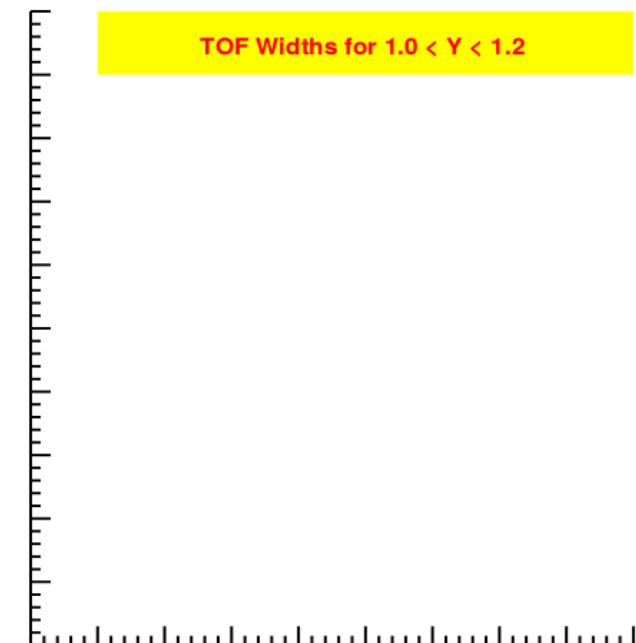
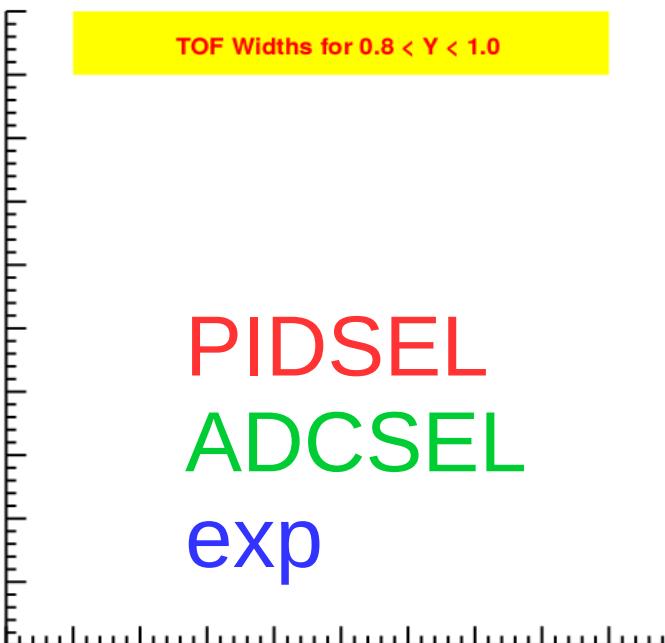
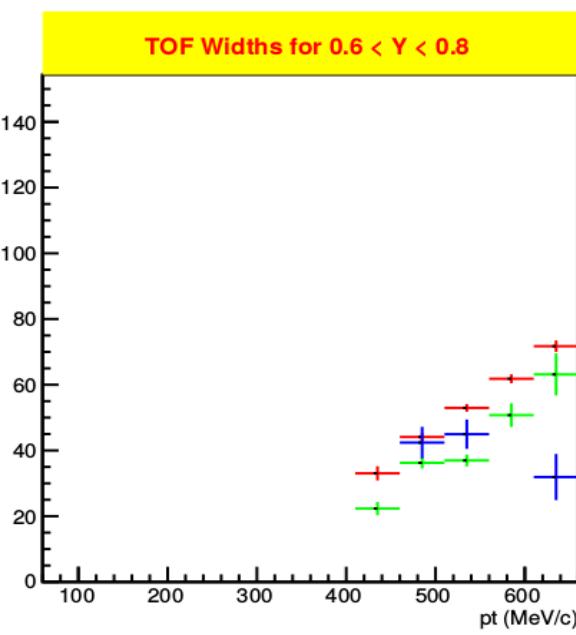
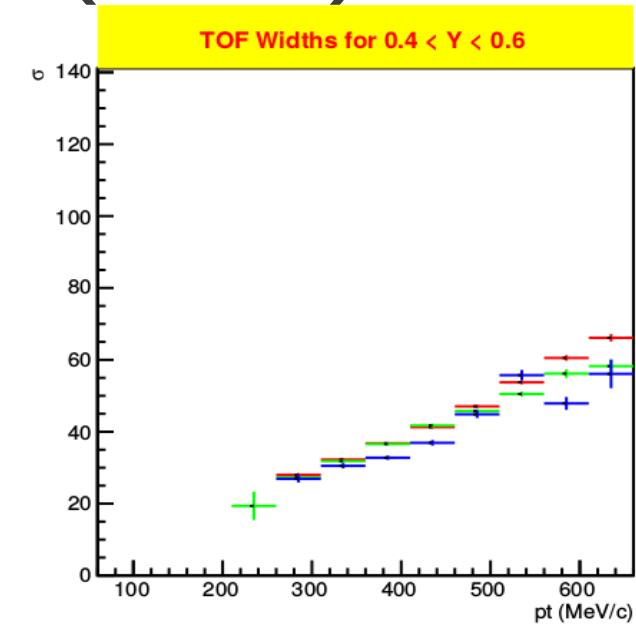
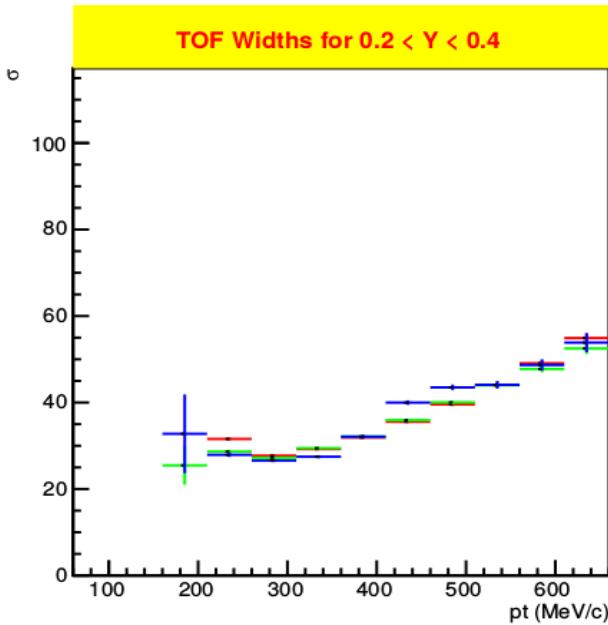
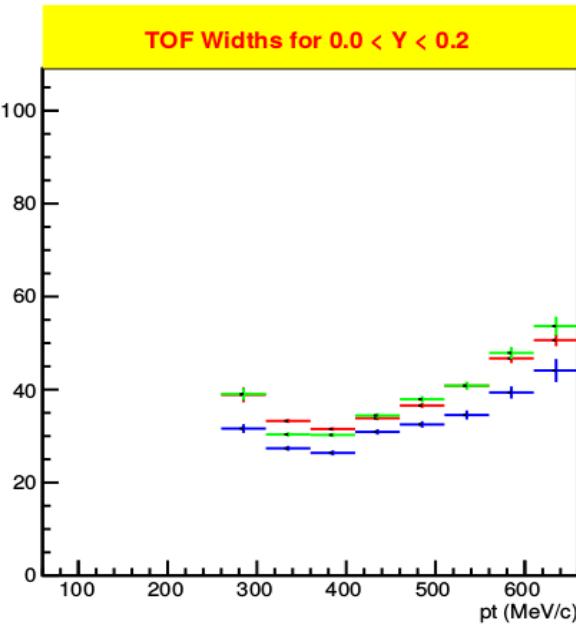
# Checking MEAN from MC: W(RPC) K<sup>+</sup>



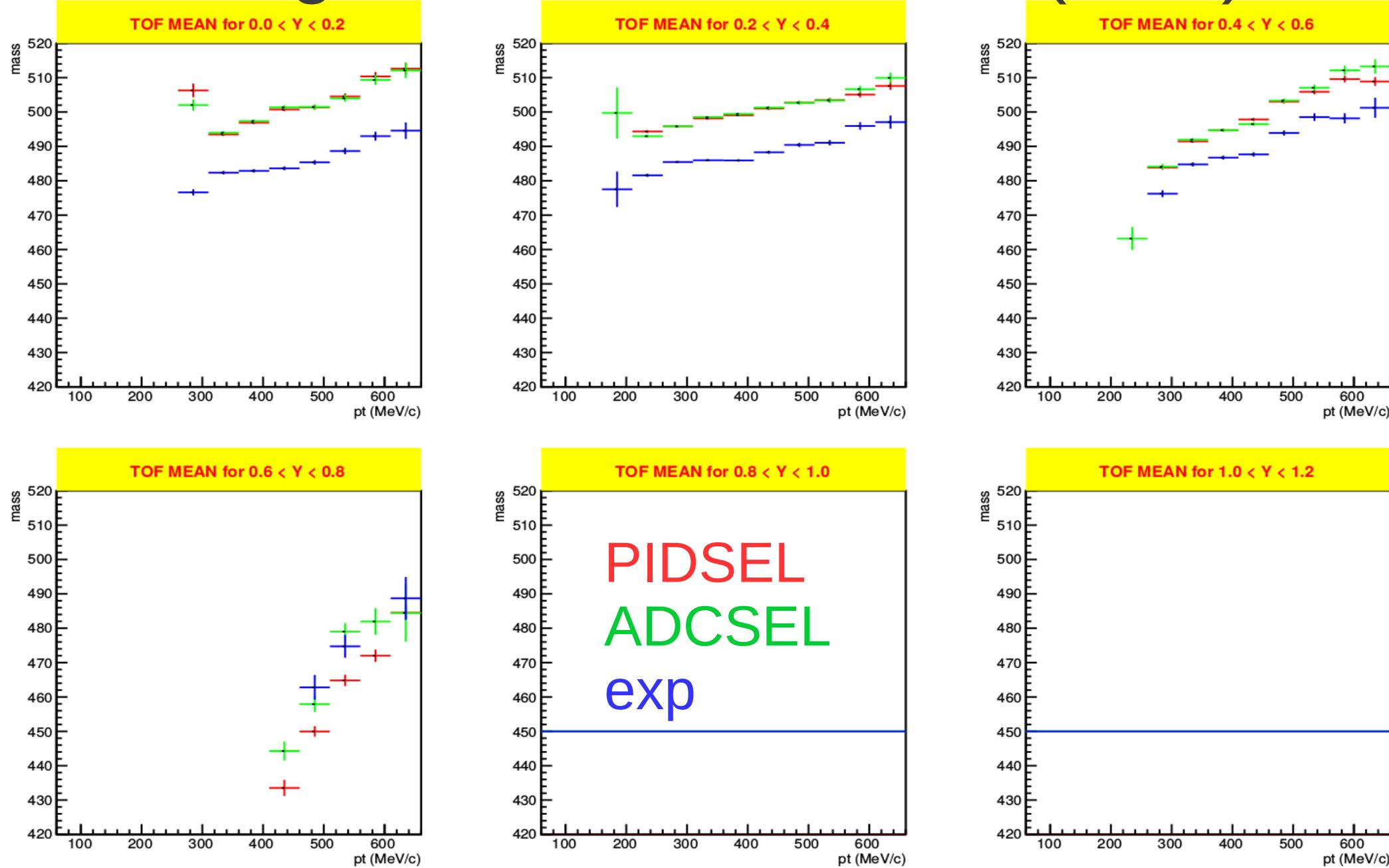
# Checking K num from MC: W(RPC) K<sup>+</sup>



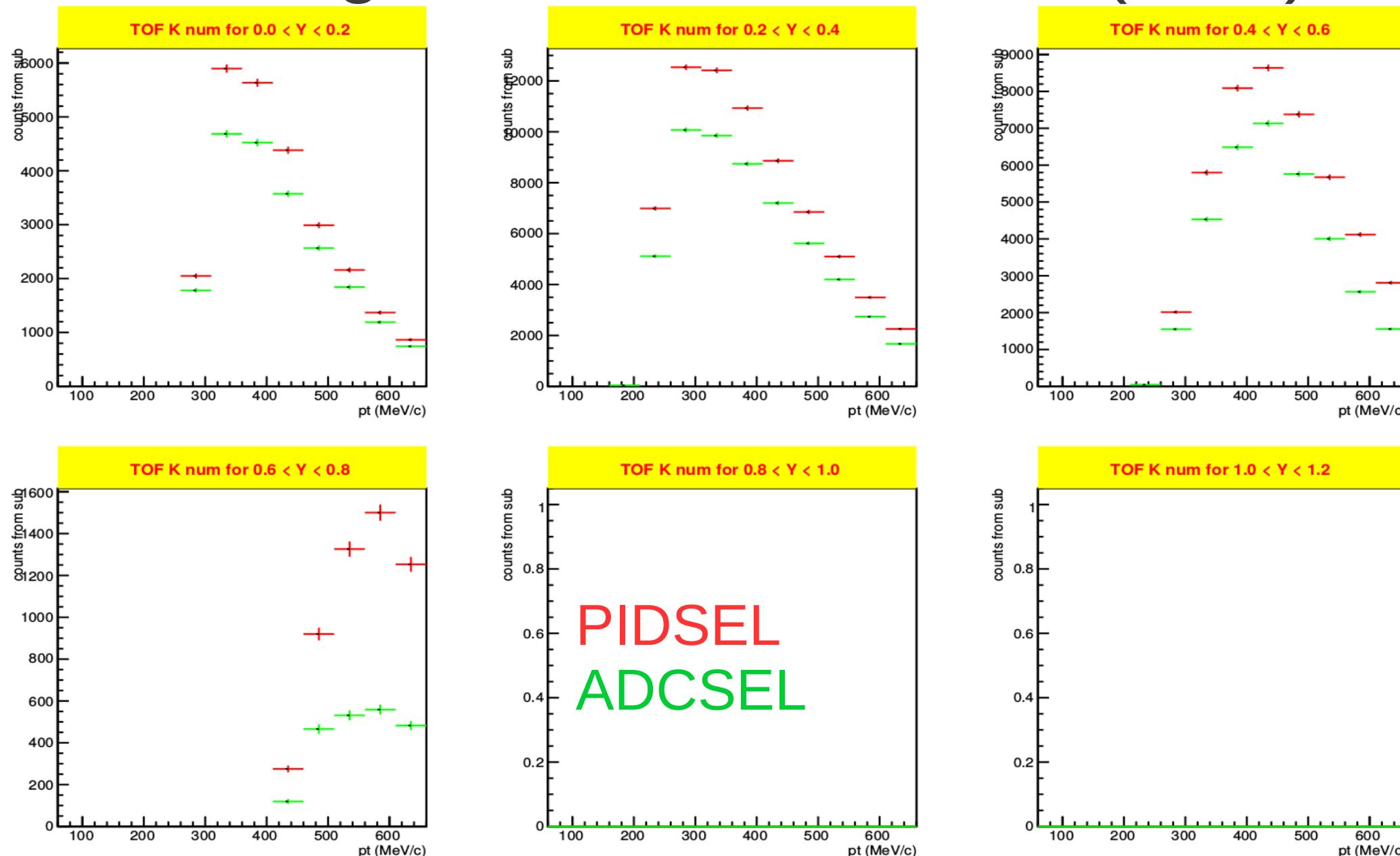
# Checking $\sigma$ from MC: W(TOF) K<sup>+</sup>



# Checking MEAN from MC: W(TOF) K<sup>+</sup>



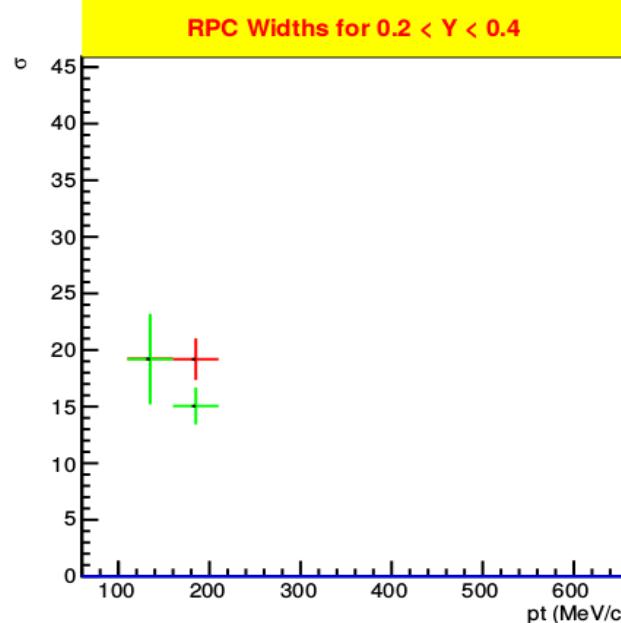
# Checking K num from MC: W(TOF) $K^+$



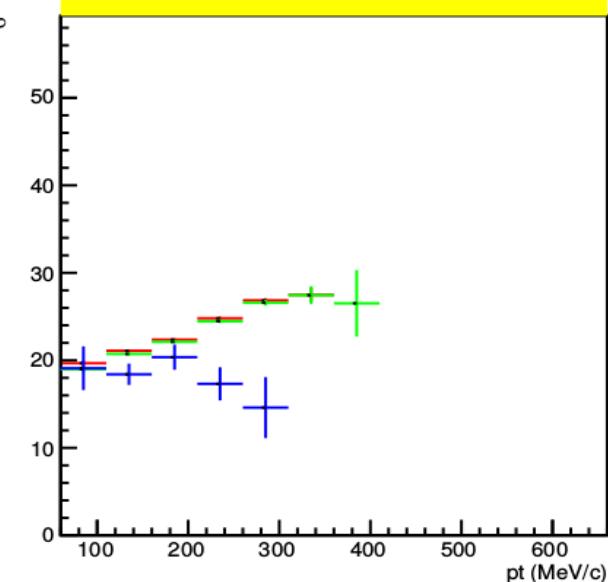
# Checking $\sigma$ from MC: C(RPC) K<sup>-</sup>

RPC Widths for  $0.0 < Y < 0.2$

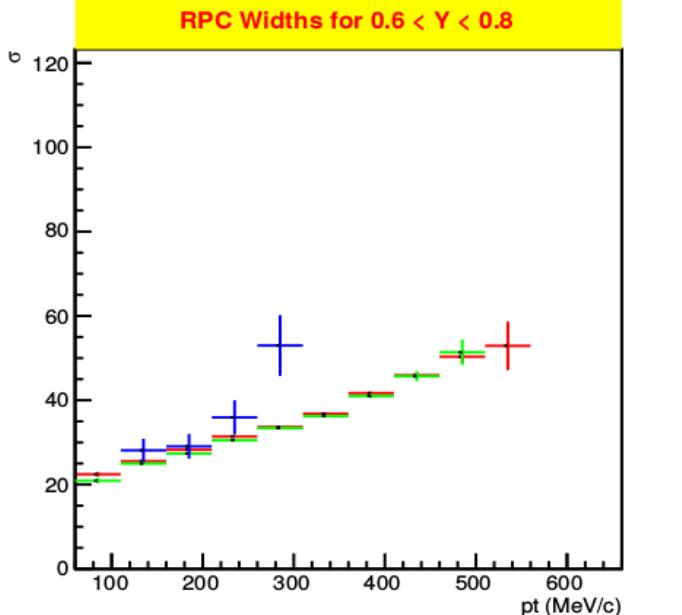
PIDSEL  
ADCSEL  
exp



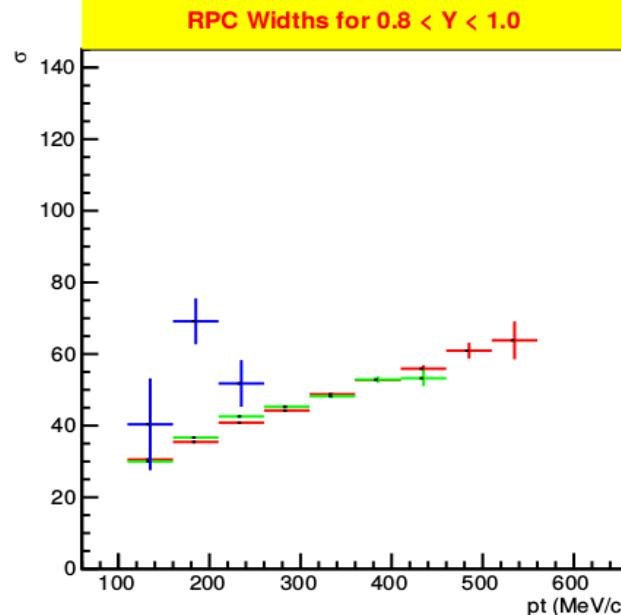
RPC Widths for  $0.4 < Y < 0.6$



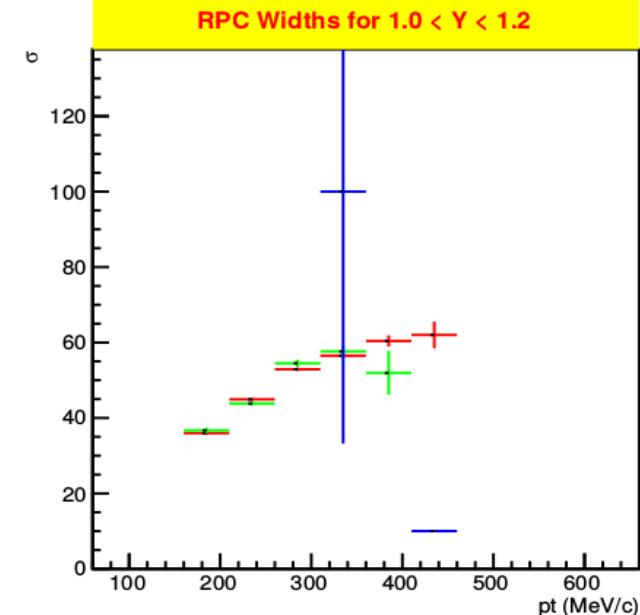
RPC Widths for  $0.6 < Y < 0.8$



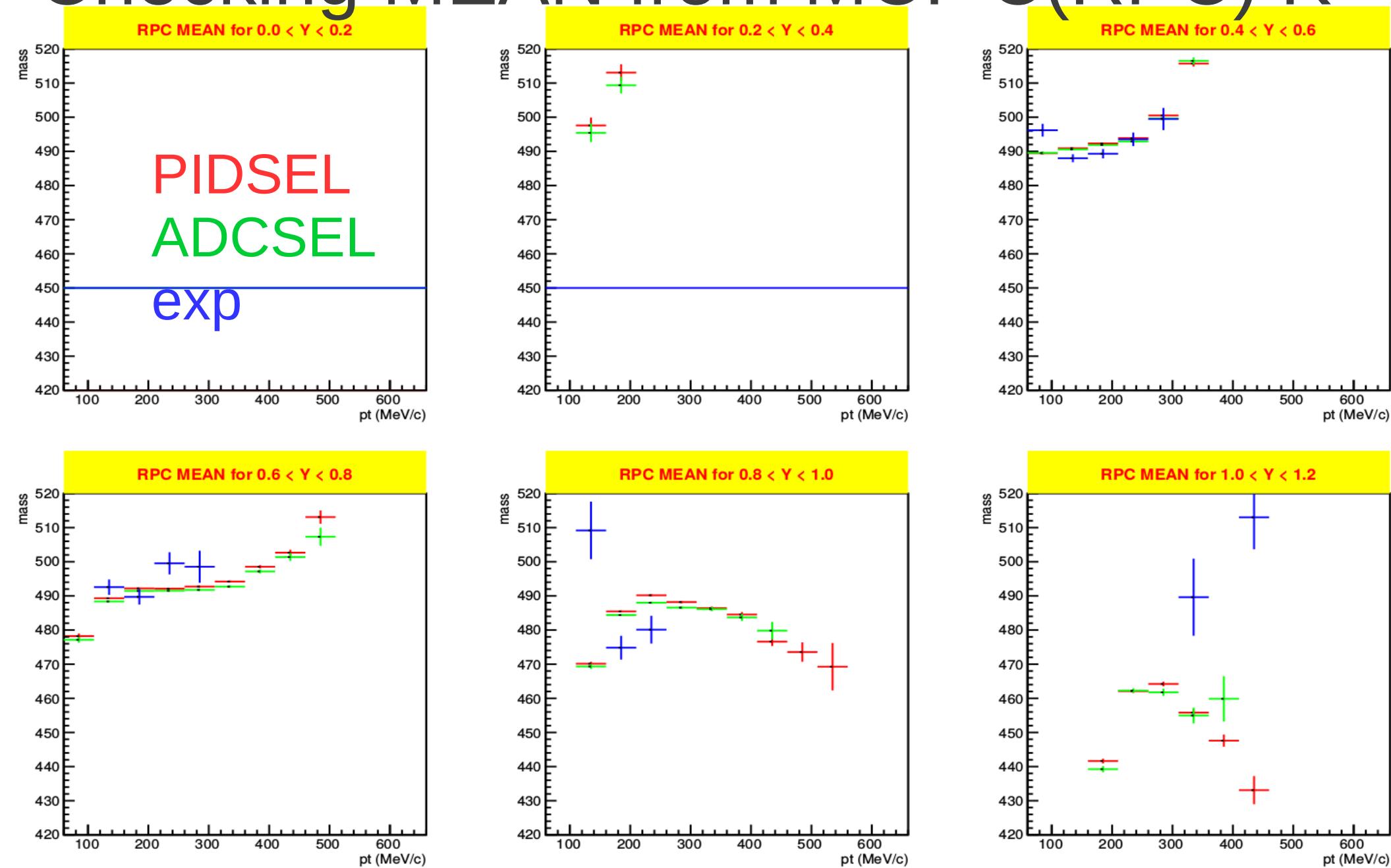
RPC Widths for  $0.8 < Y < 1.0$



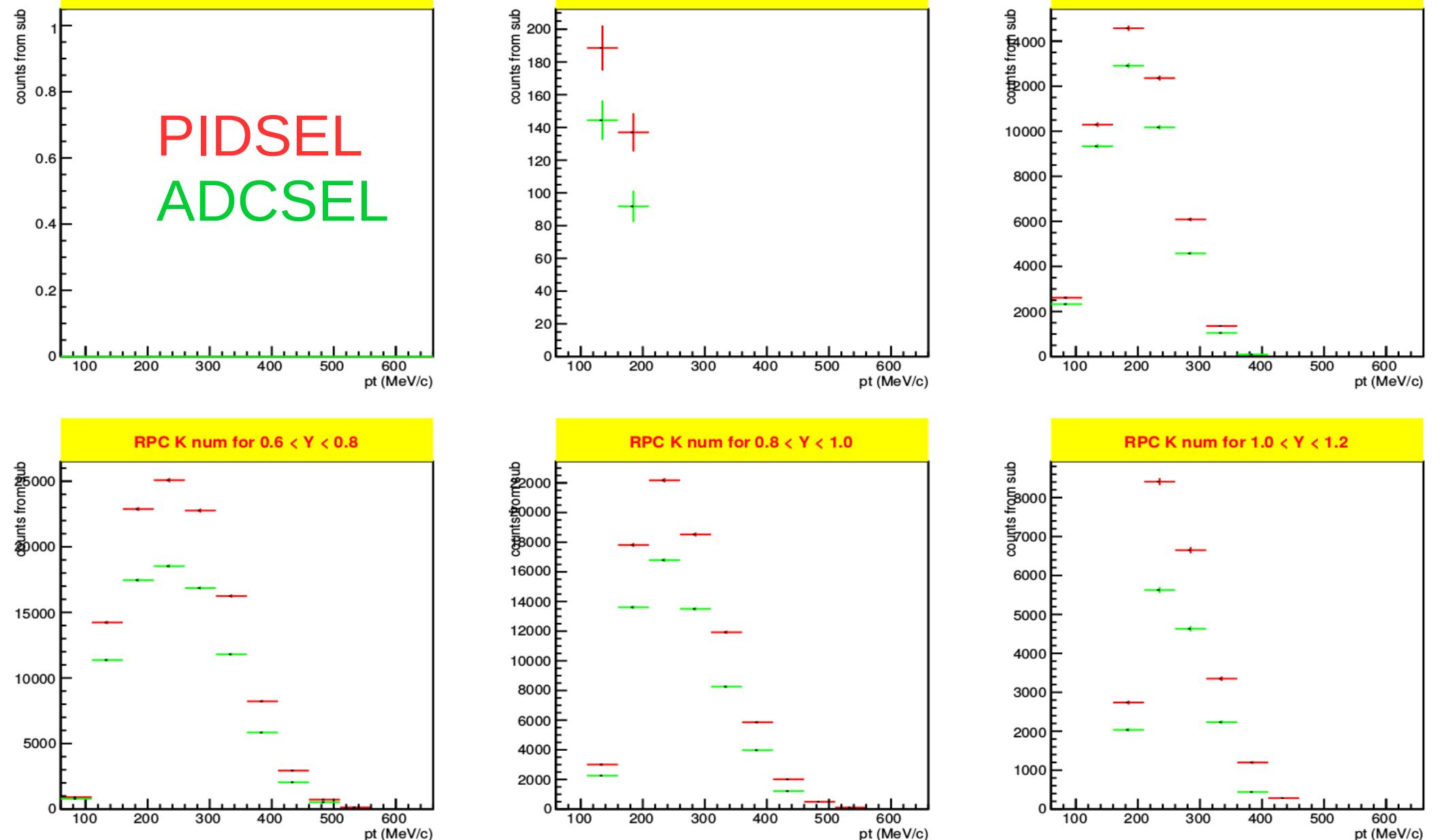
RPC Widths for  $1.0 < Y < 1.2$



# Checking MEAN from MC: C(RPC) K-

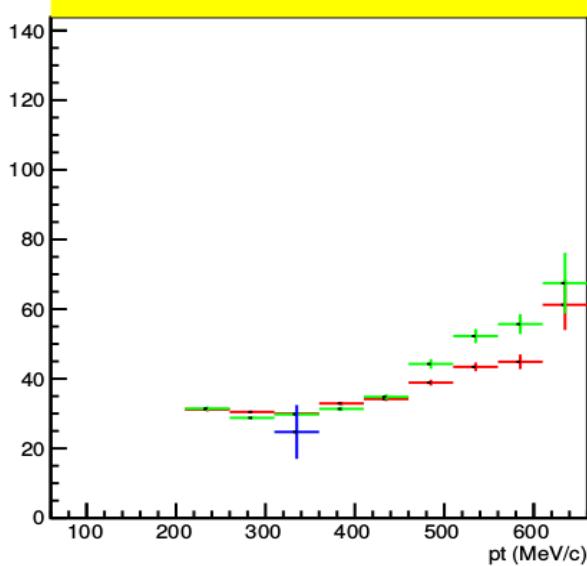


# Checking K num from MC: C(RPC) K-

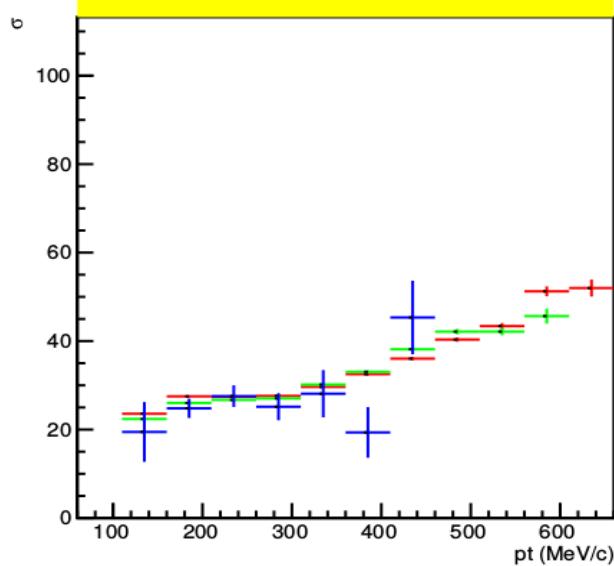


# Checking $\sigma$ from MC: C(TOF) K<sup>-</sup>

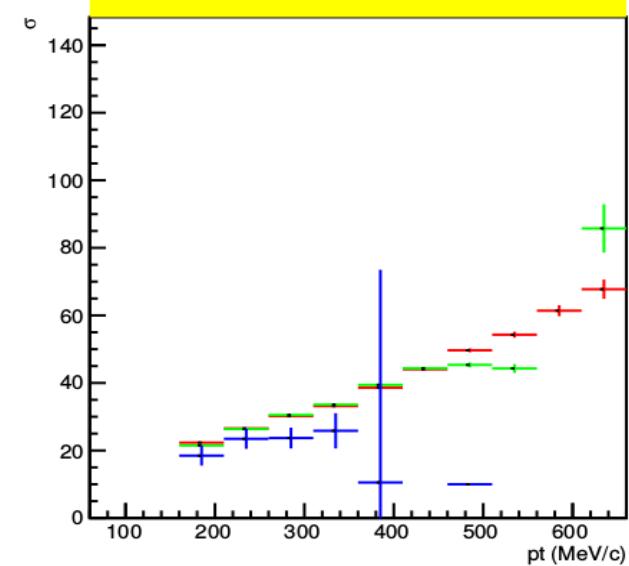
TOF Widths for  $0.0 < Y < 0.2$



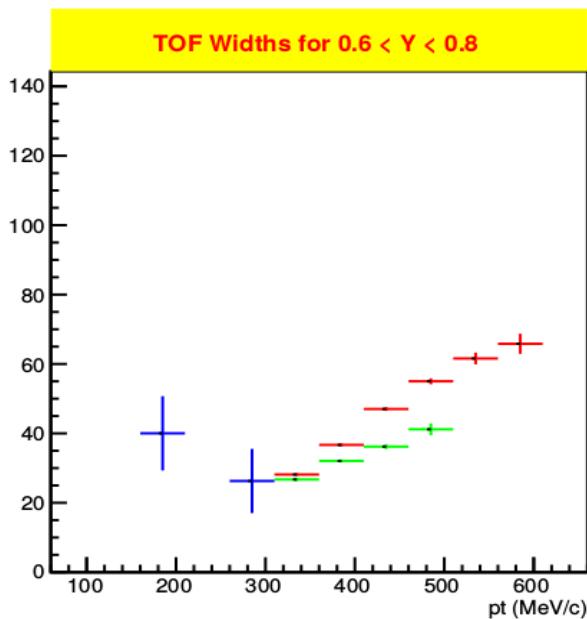
TOF Widths for  $0.2 < Y < 0.4$



TOF Widths for  $0.4 < Y < 0.6$



TOF Widths for  $0.6 < Y < 0.8$

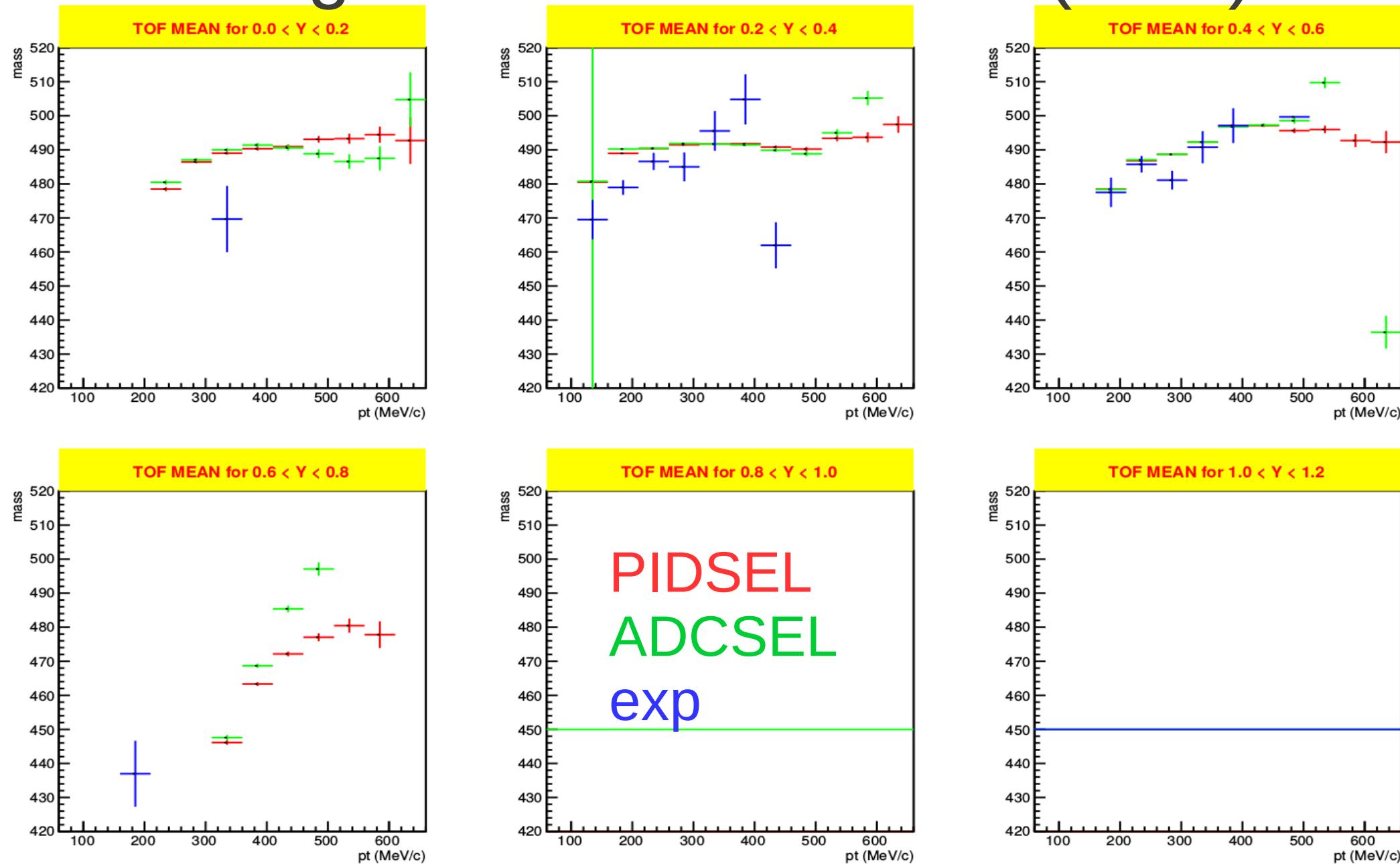


TOF Widths for  $0.8 < Y < 1.0$

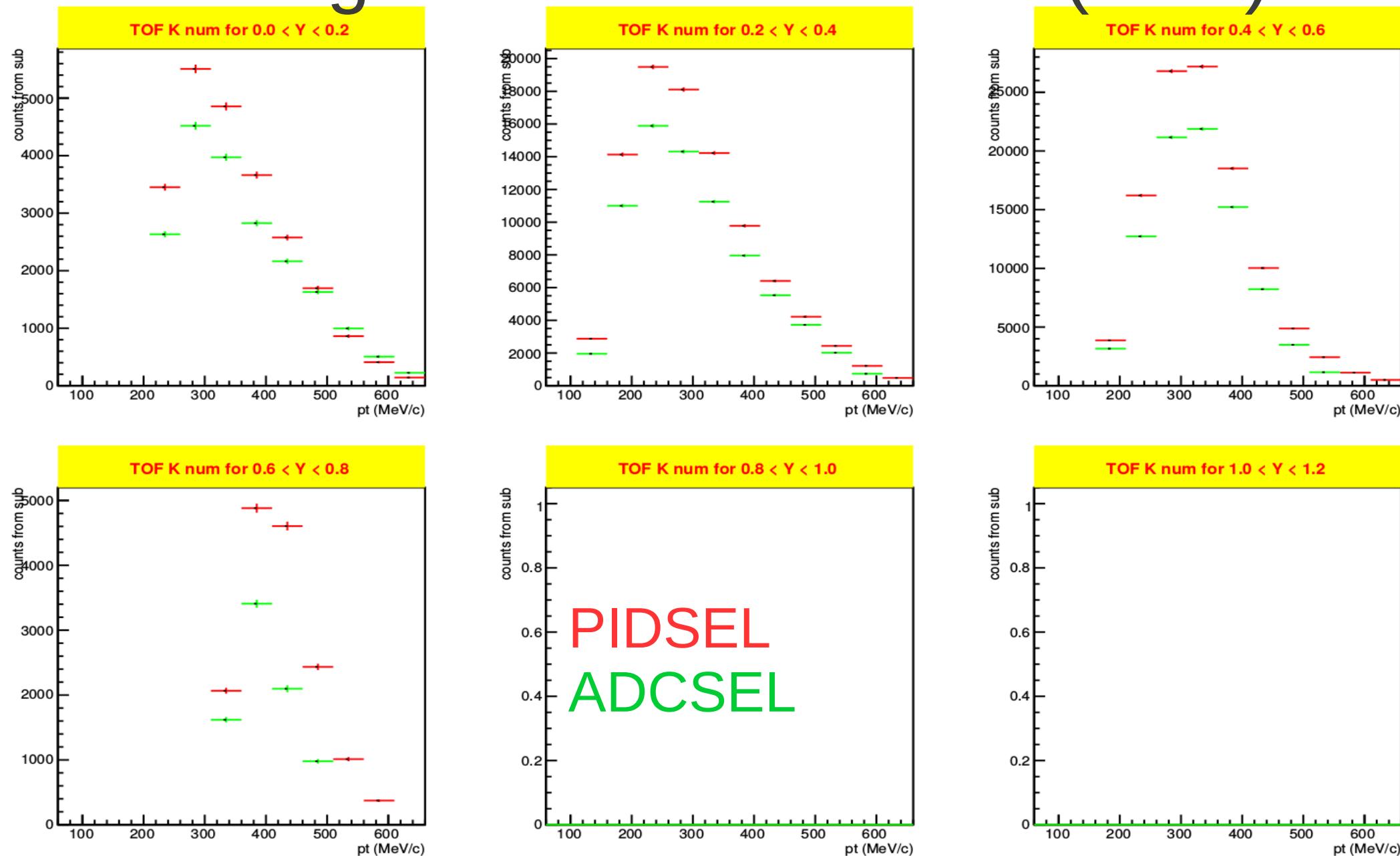


PIDSEL  
ADCSEL  
exp

# Checking MEAN from MC: C(TOF) K<sup>-</sup>



# Checking K num from MC: C(TOF) K-



# Checking $\sigma$ from MC: W(RPC) K<sup>-</sup>

RPC Widths for  $0.0 < Y < 0.2$

PIDSEL  
ADCSEL  
exp

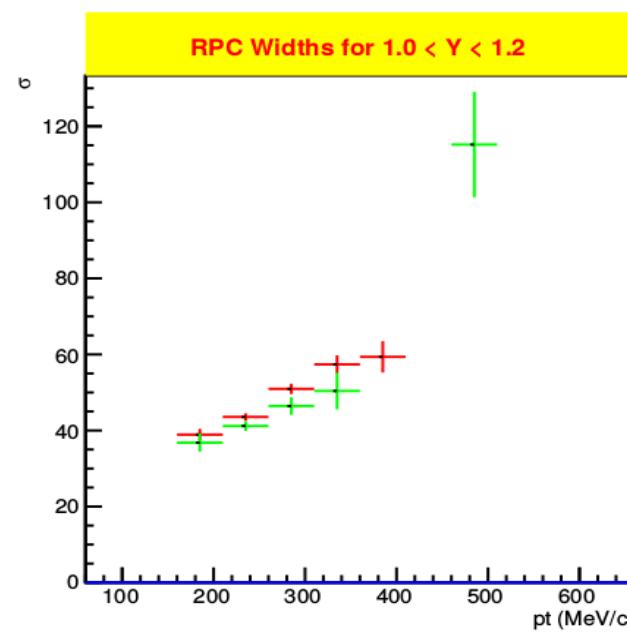
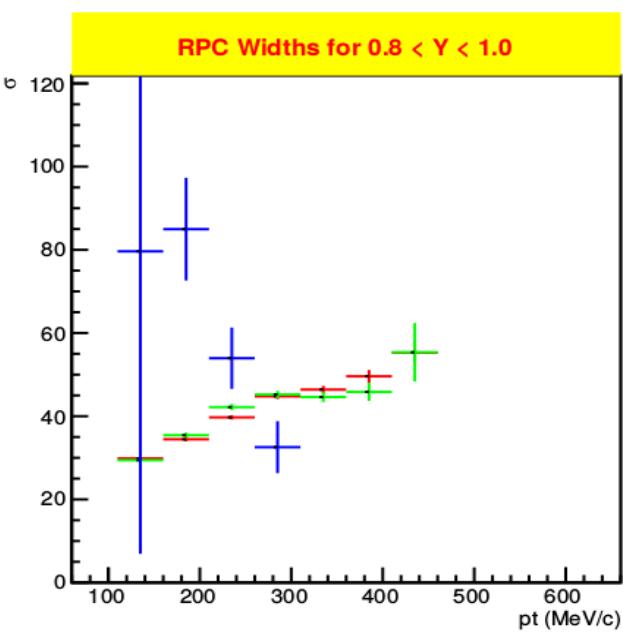
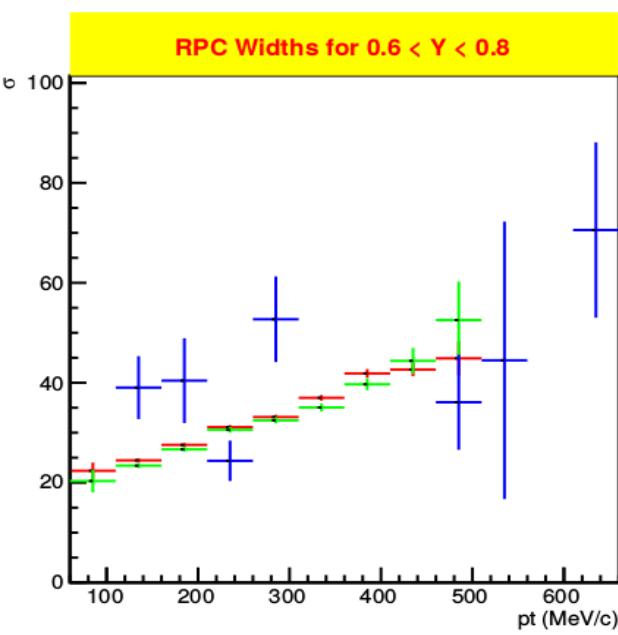
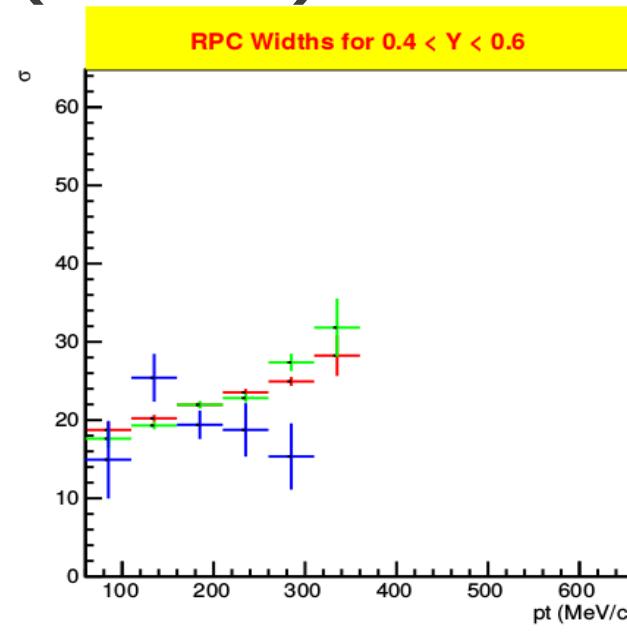
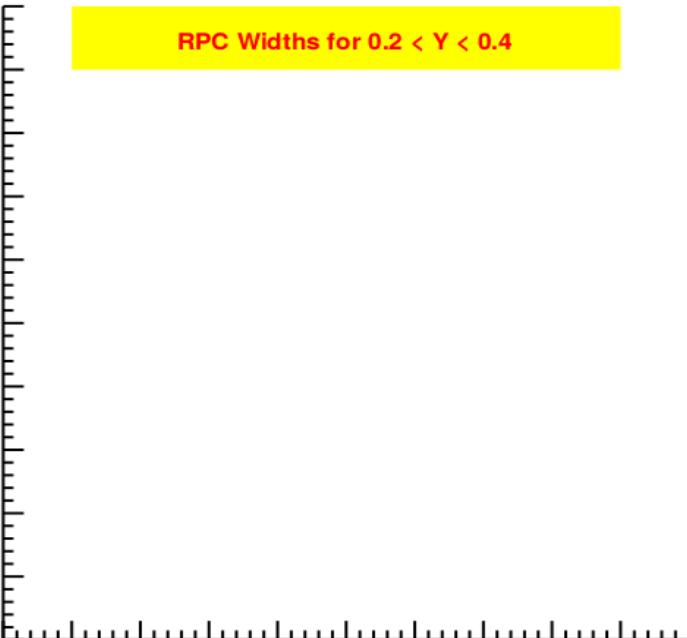
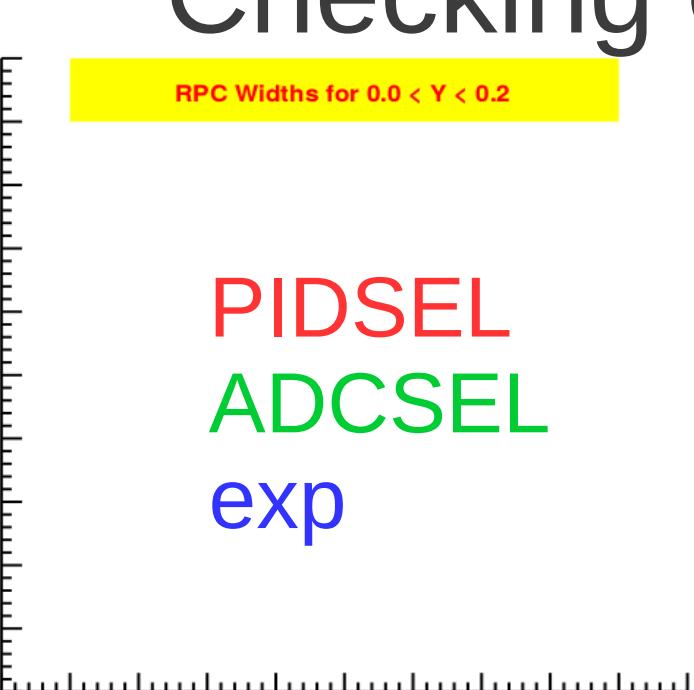
RPC Widths for  $0.2 < Y < 0.4$

RPC Widths for  $0.4 < Y < 0.6$

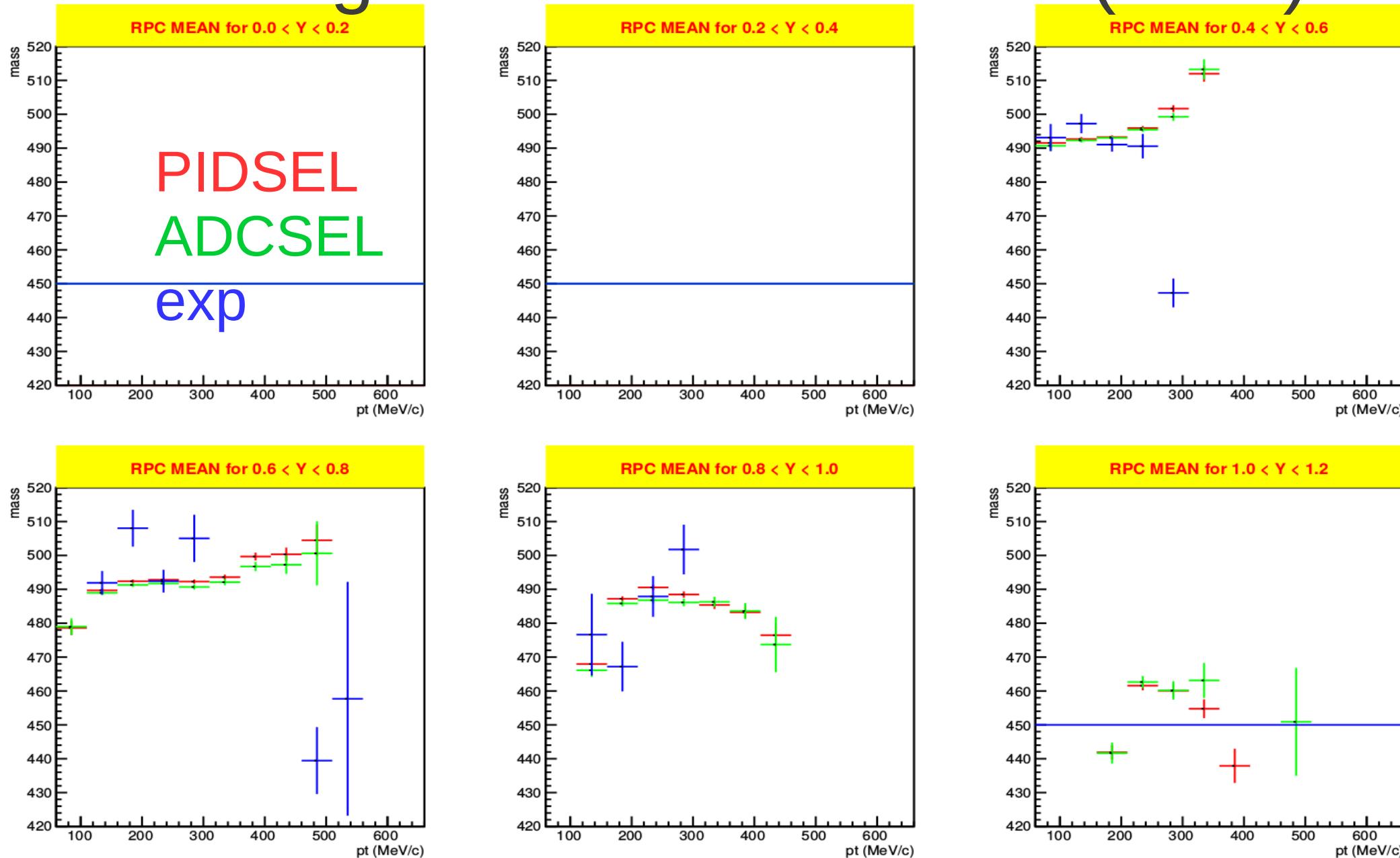
RPC Widths for  $0.6 < Y < 0.8$

RPC Widths for  $0.8 < Y < 1.0$

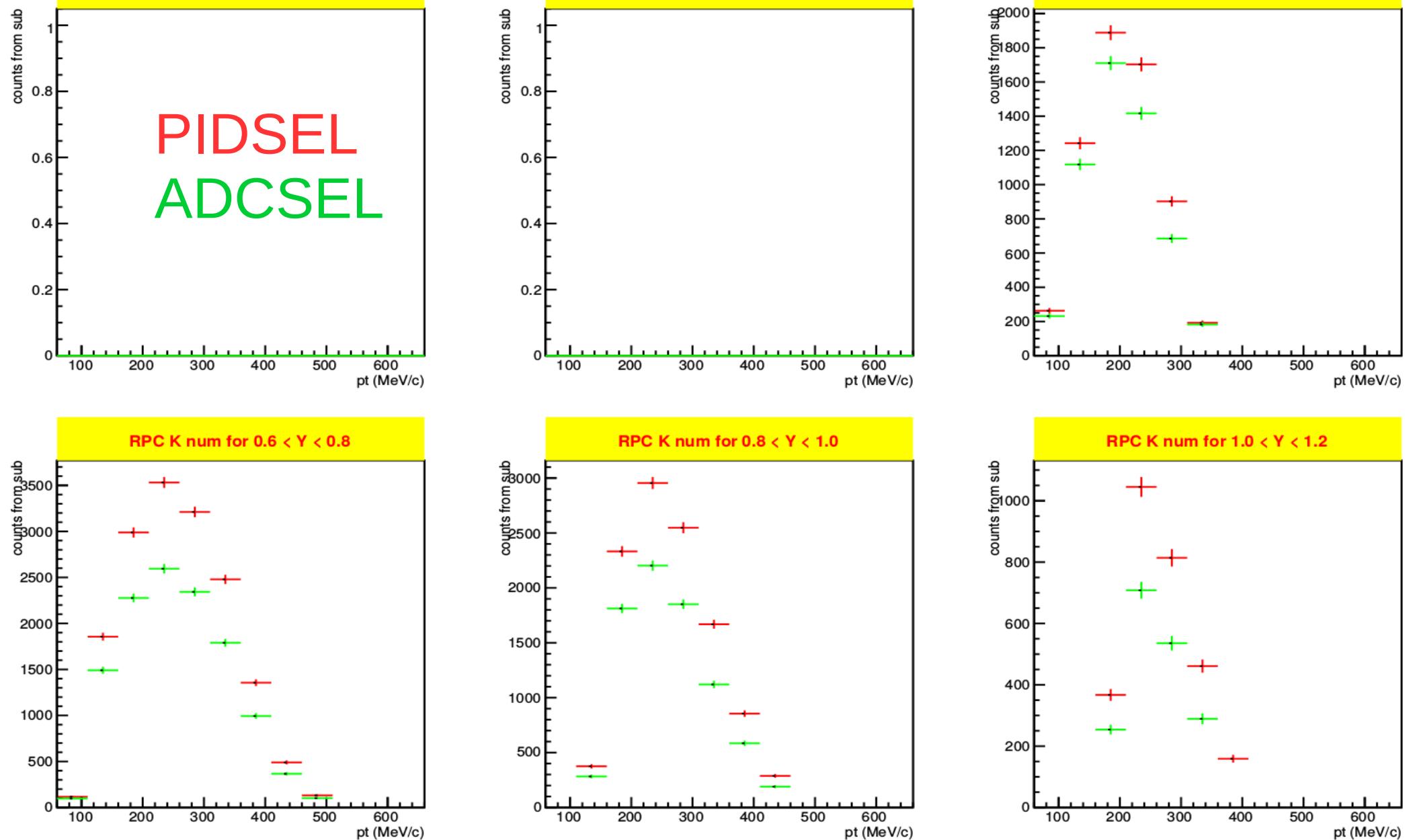
RPC Widths for  $1.0 < Y < 1.2$



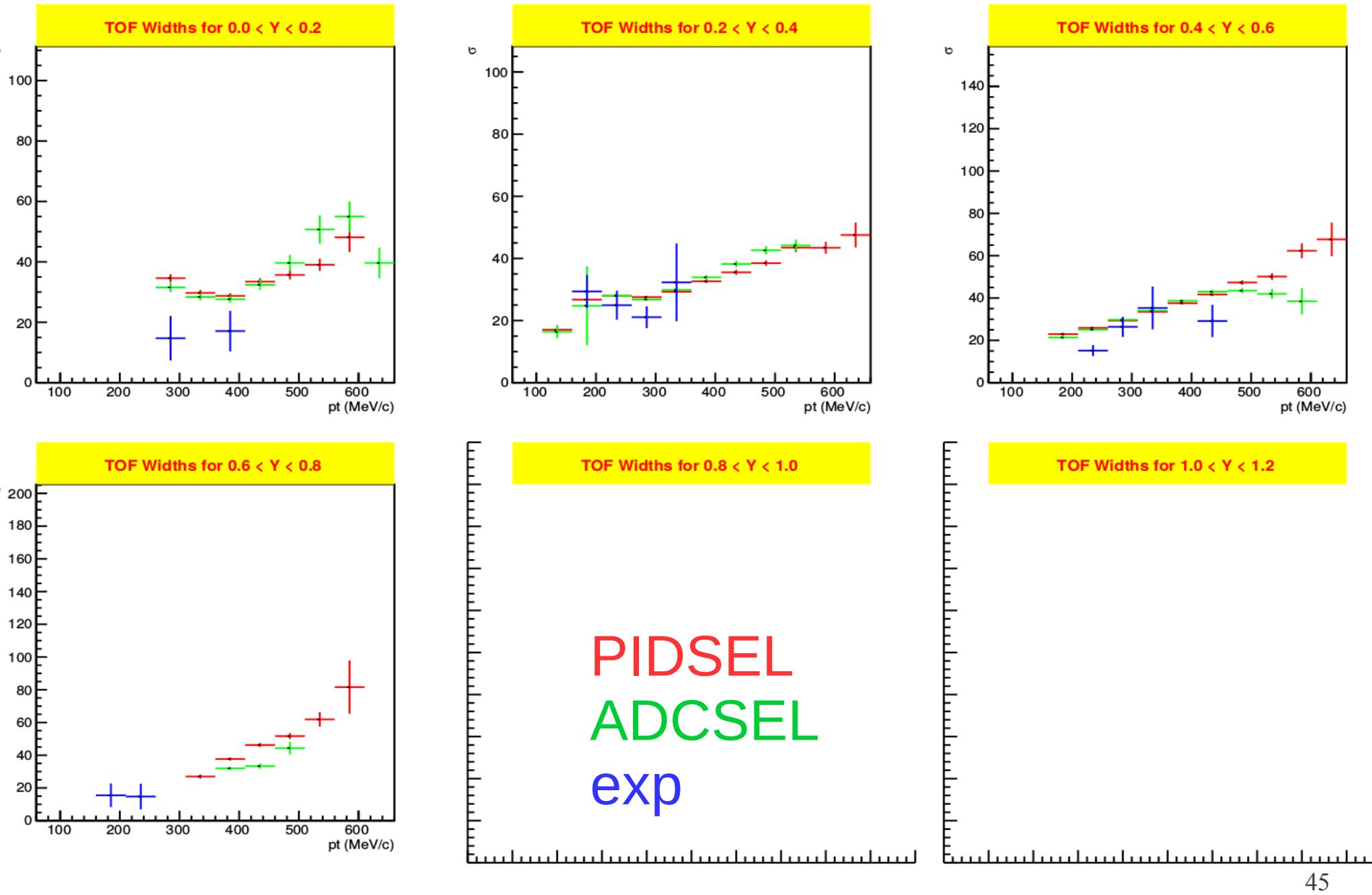
# Checking MEAN from MC: W(RPC) K-



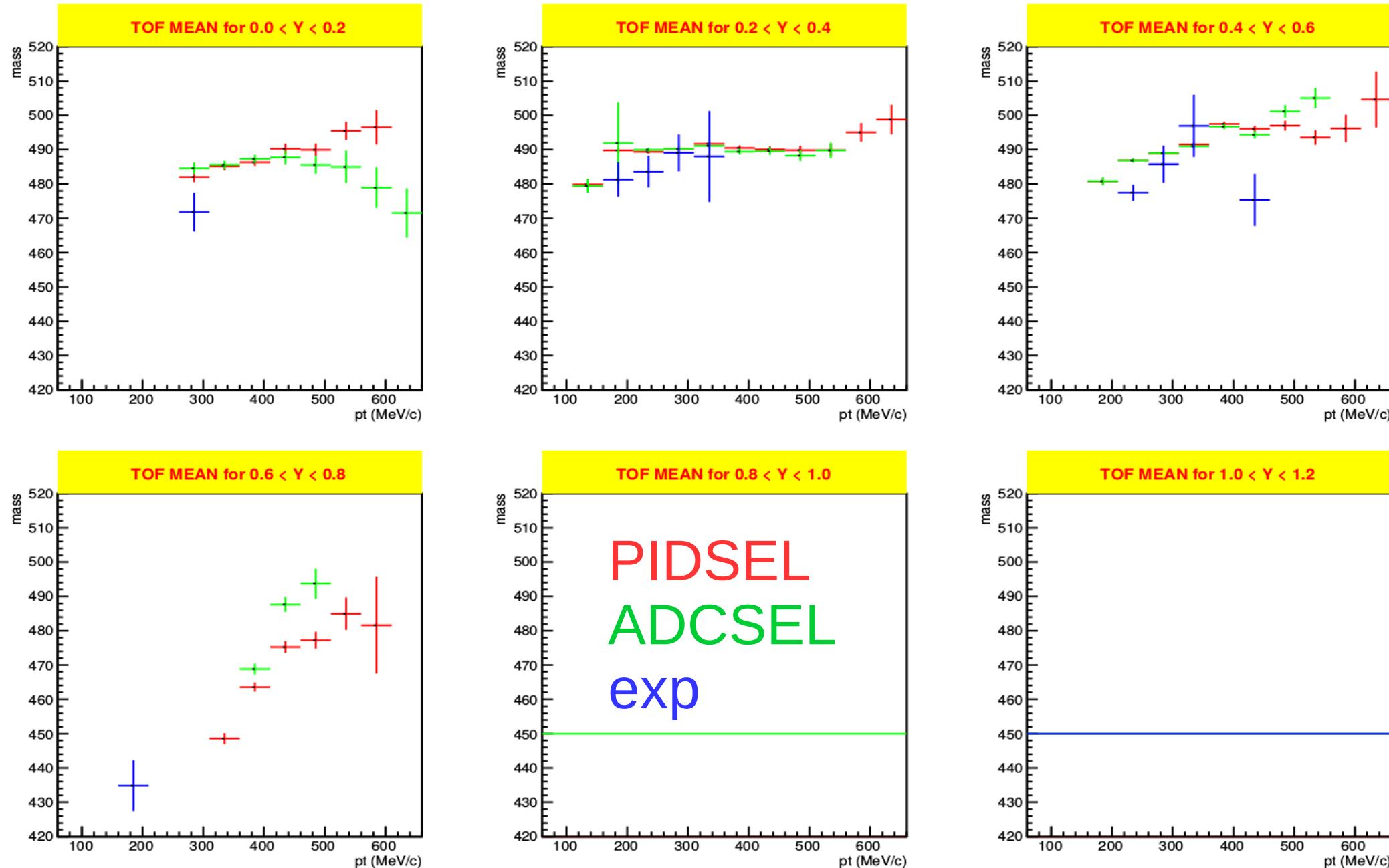
# Checking K num from MC: W(RPC) K<sup>-</sup>



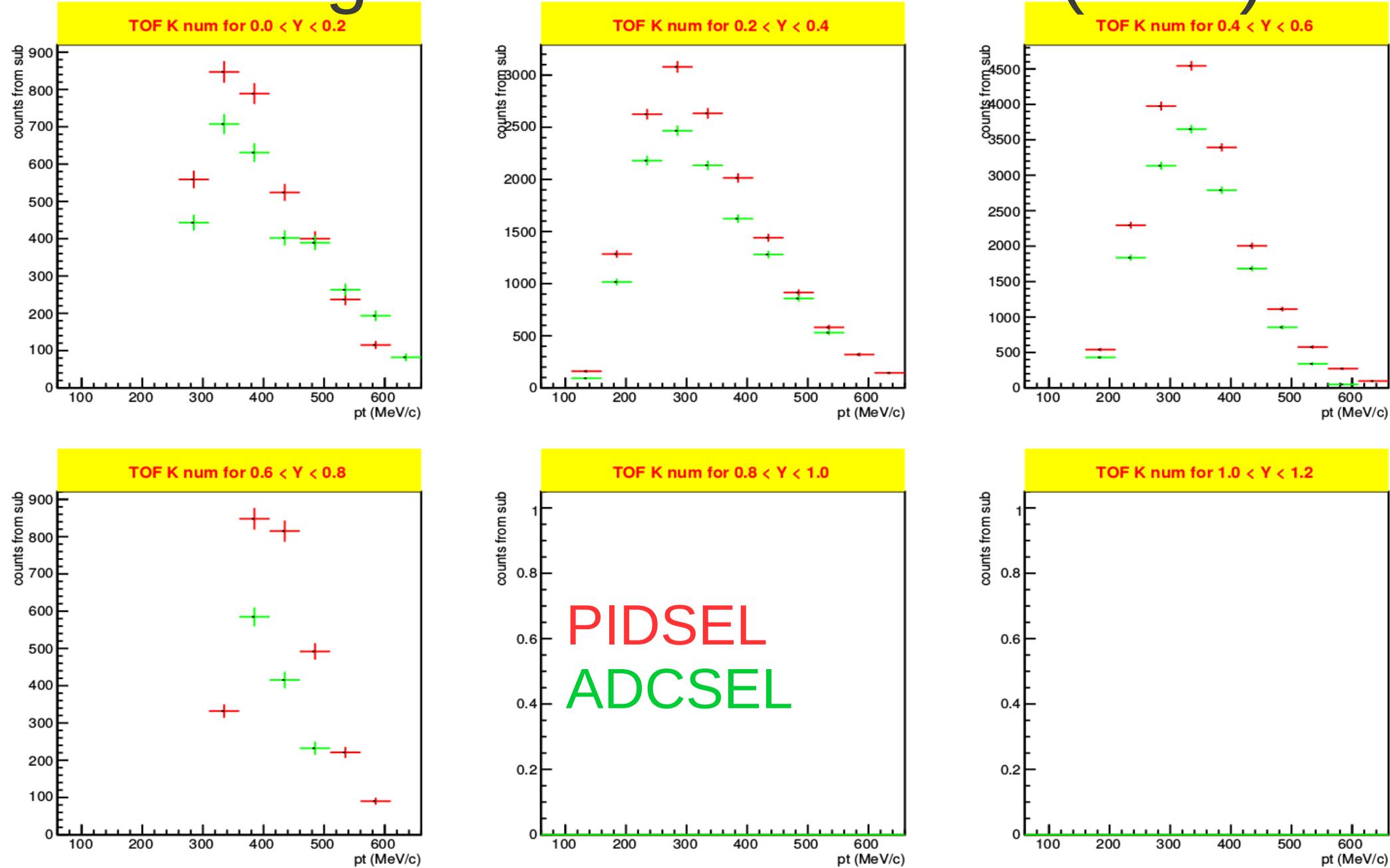
# Checking $\sigma$ from MC: W(TOF) K<sup>-</sup>



# Checking MEAN from MC: W(TOF) K<sup>-</sup>



# Checking K num from MC: C(TOF) K-



# Checking MC vs Data

- Differences in MEAN and WIDTH between different MC selection for some bins (but mostly above 500 MeV/c)
- Which are to be used for limits on exp data fit?
- Big difference in K number reconstruction
- Big influence on the efficiency correction → optimization is strongly needed