Possible Modifications of Q_{ch} Cut

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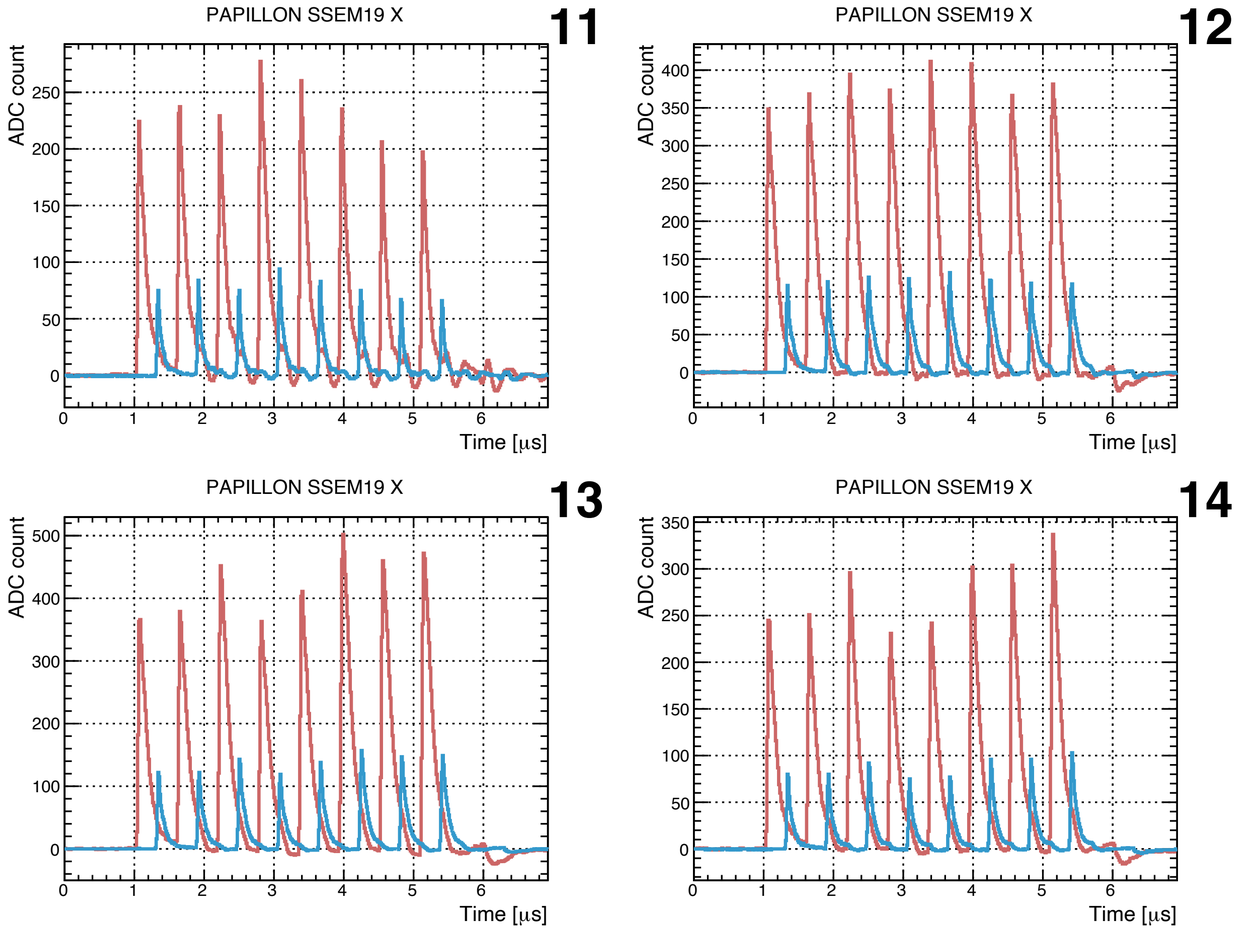
(Tohoku University)
Jan. 18, 2024

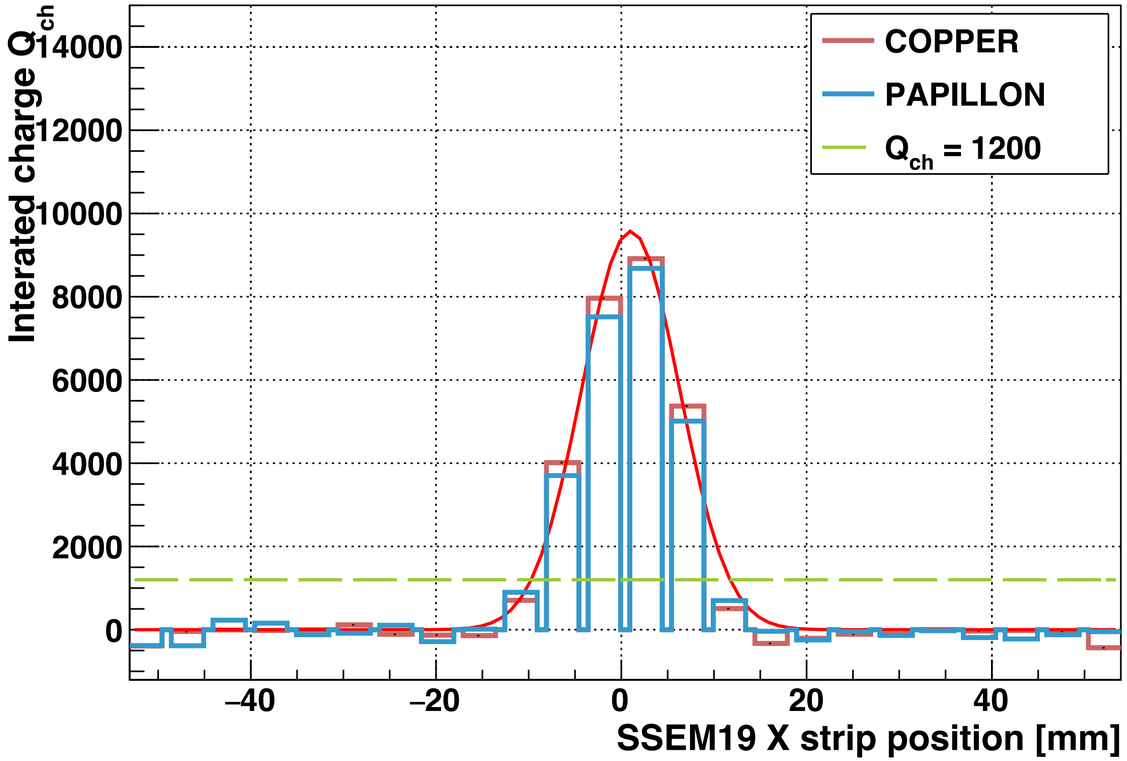
Waveform Comparison

COPPER PAPILLON



Basically, the height of PAPILLON waveform is smaller than that of COPPER.

→ PAPILLON < COPPER

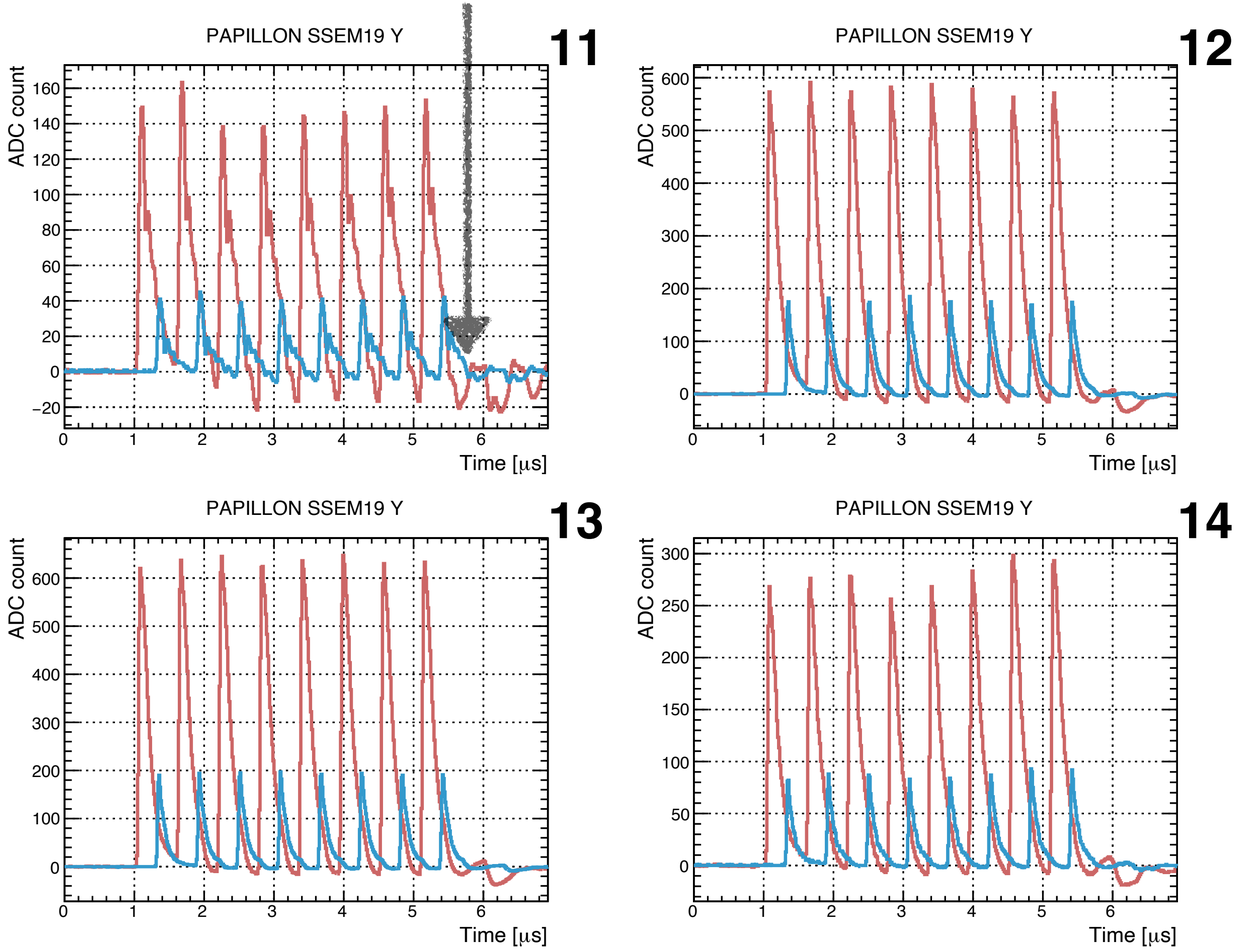


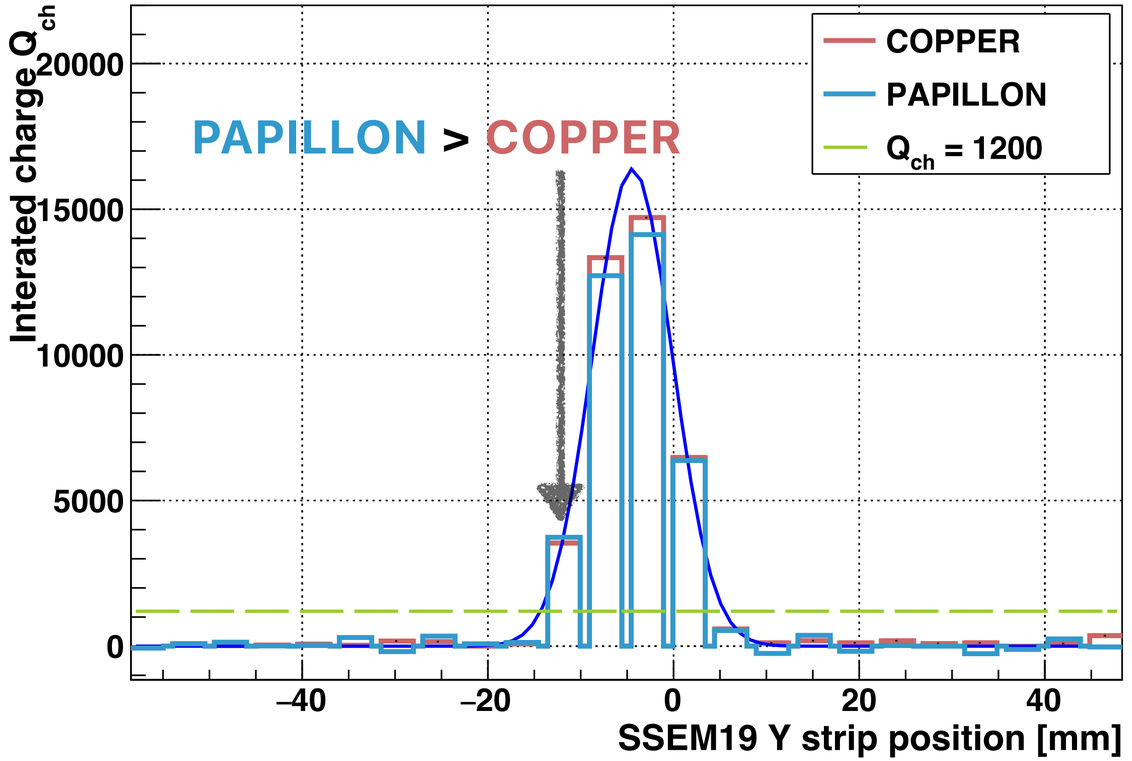
NOTE) after pedestal subtraction

Waveform Comparison

Large undershoot in COPPER

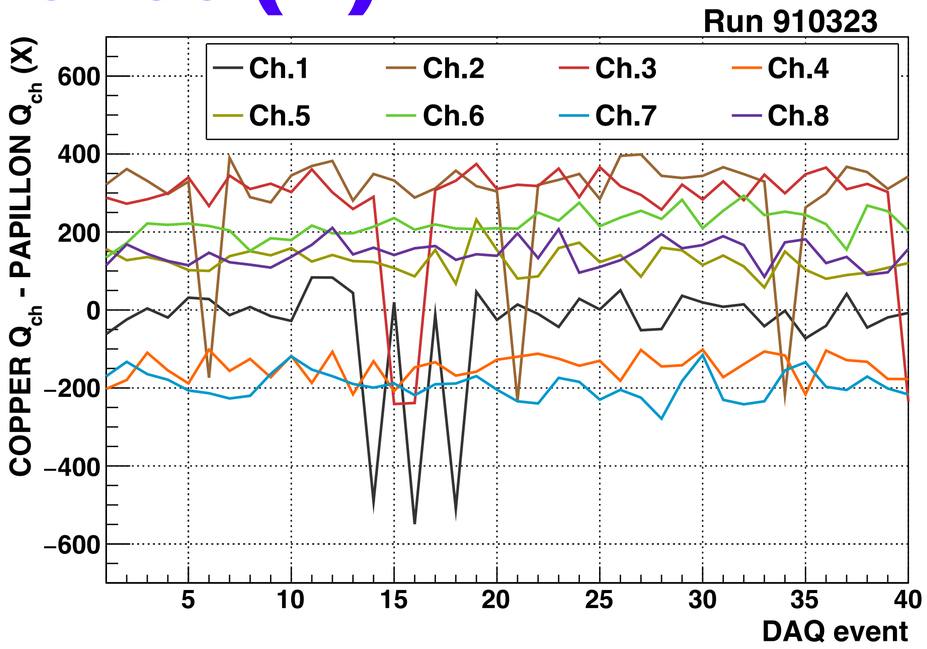
→ PAPILLON > COPPER



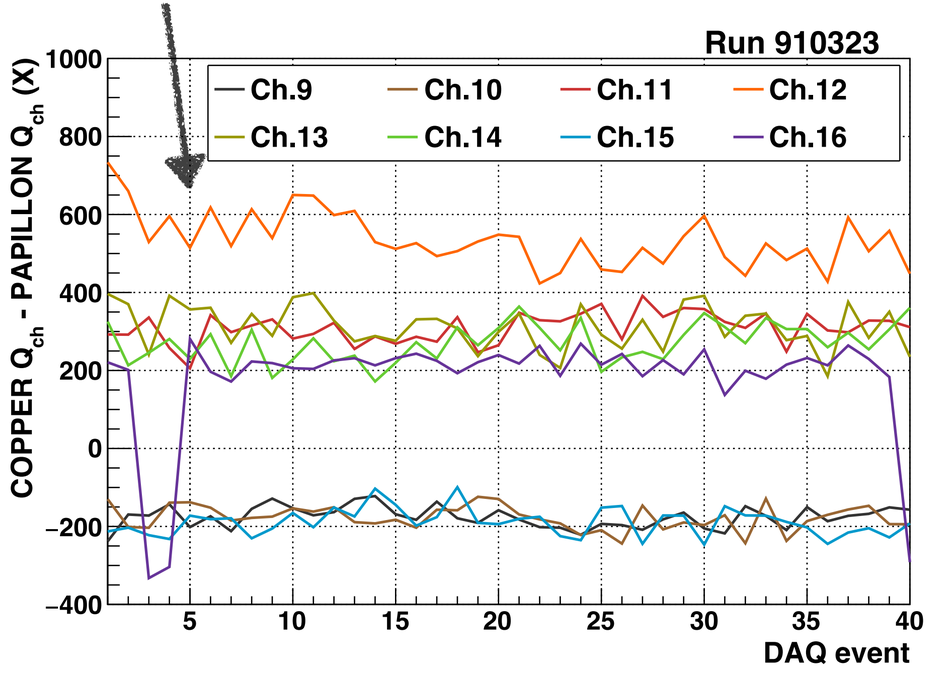


NOTE) after pedestal subtraction

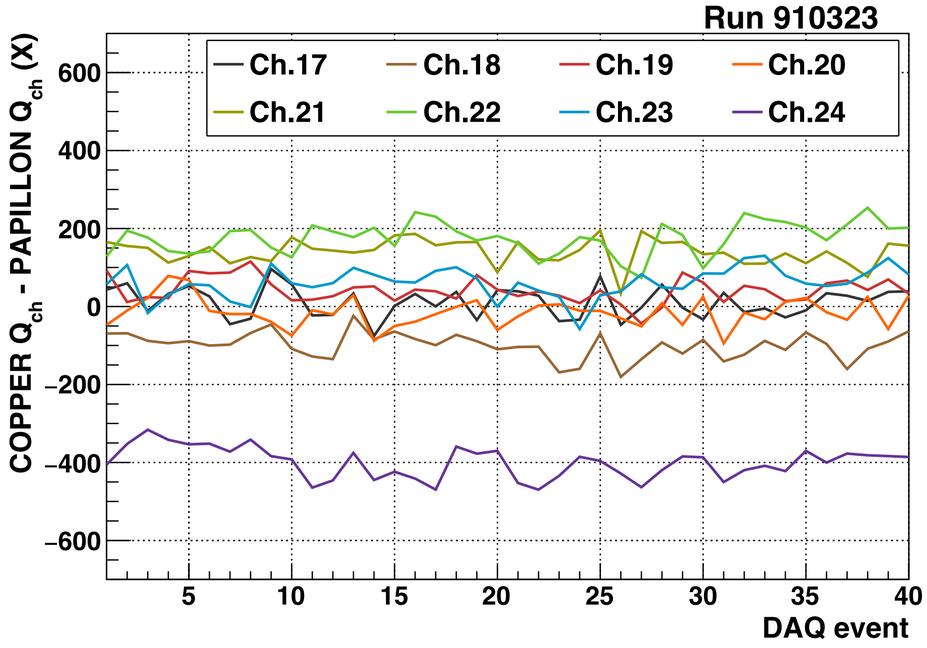
Stability of Q_{ch} Difference (X)



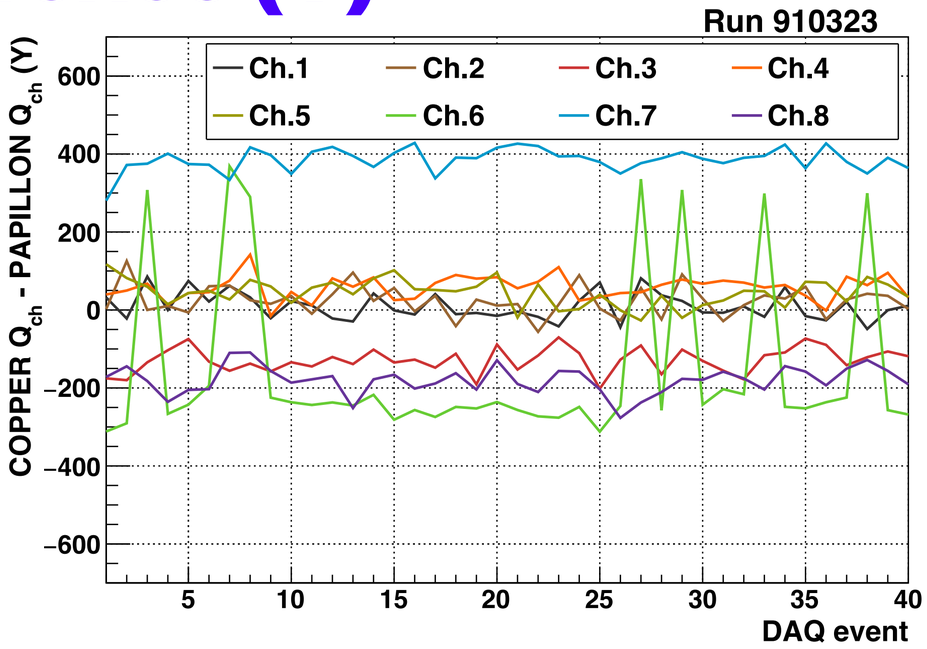
真ん中のchは
COPPER > PAPILLON



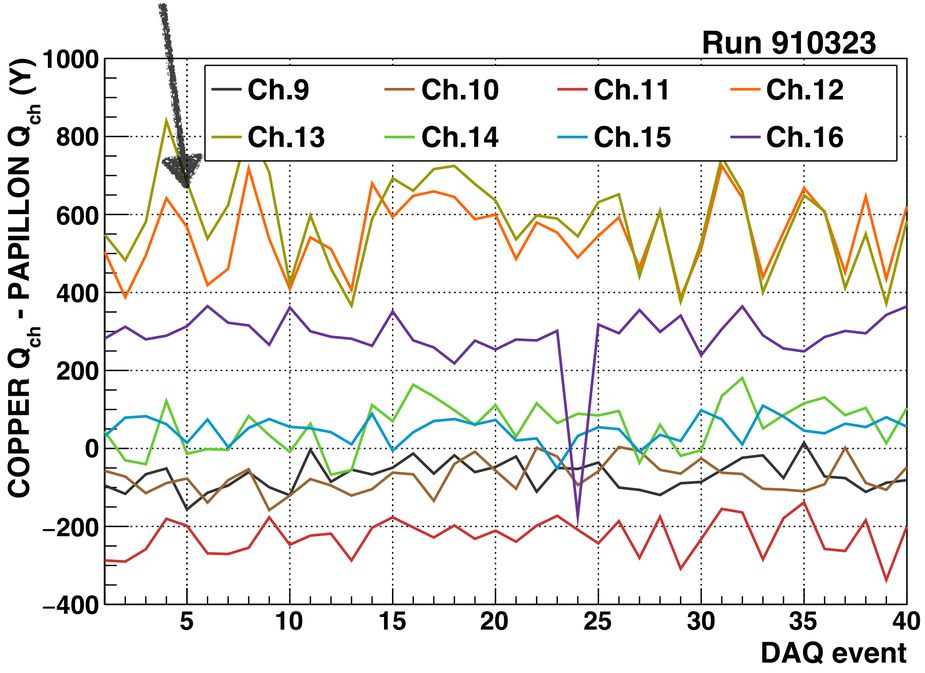
Noisyだと
PAPILLON > COPPERのchもある



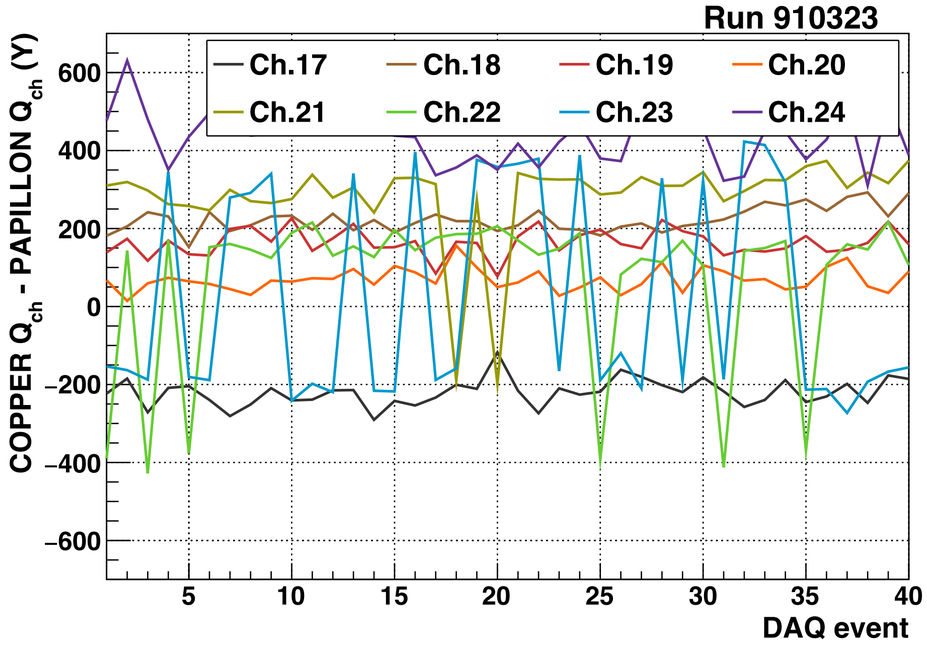
Stability of Q_{ch} Difference (Y)



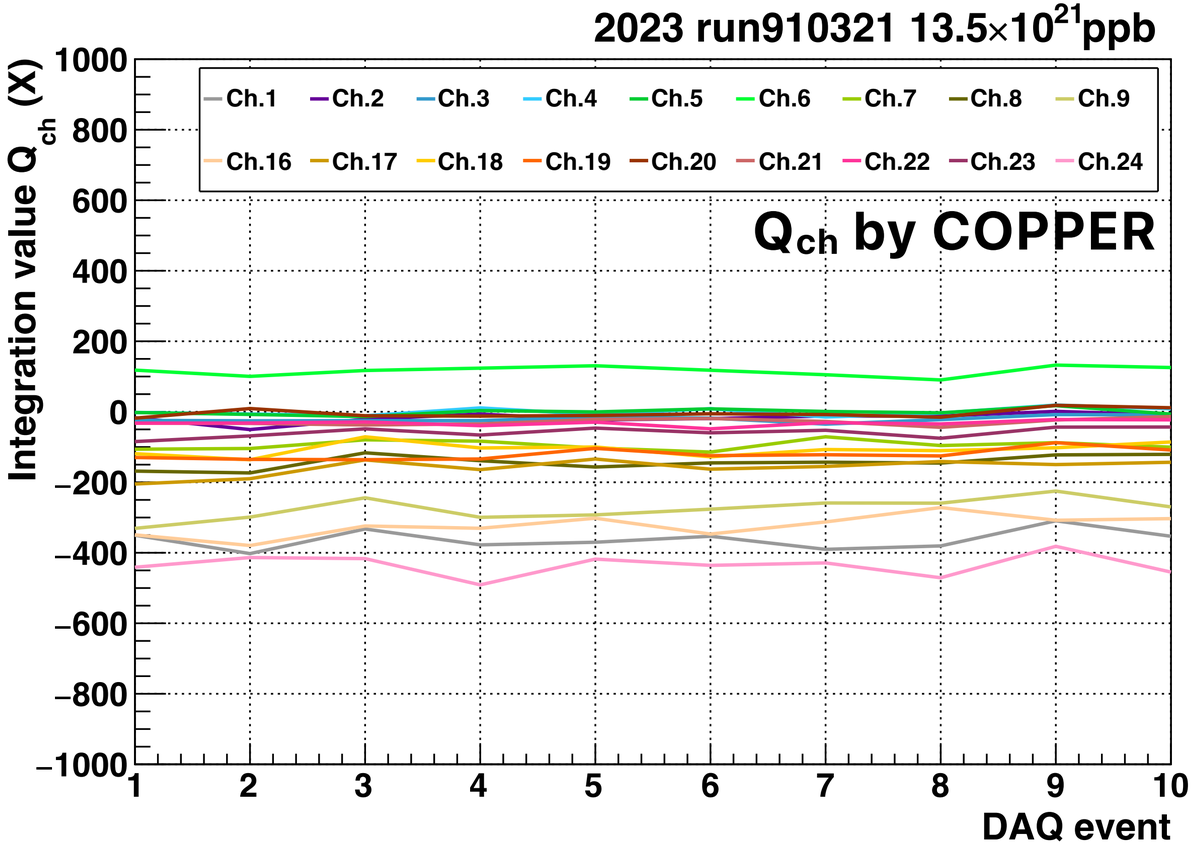
真ん中のchは
COPPER > PAPILLON

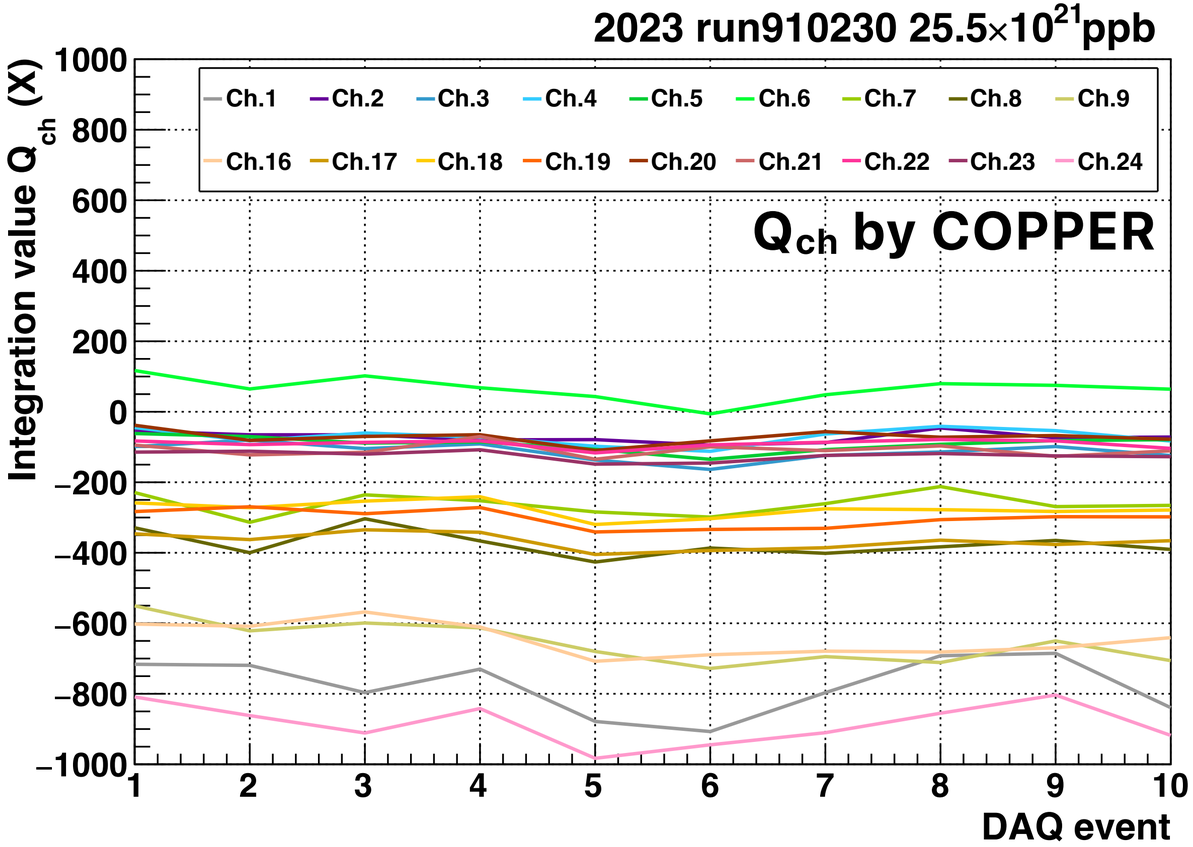


Noisyだと
PAPILLON > COPPERのchもある



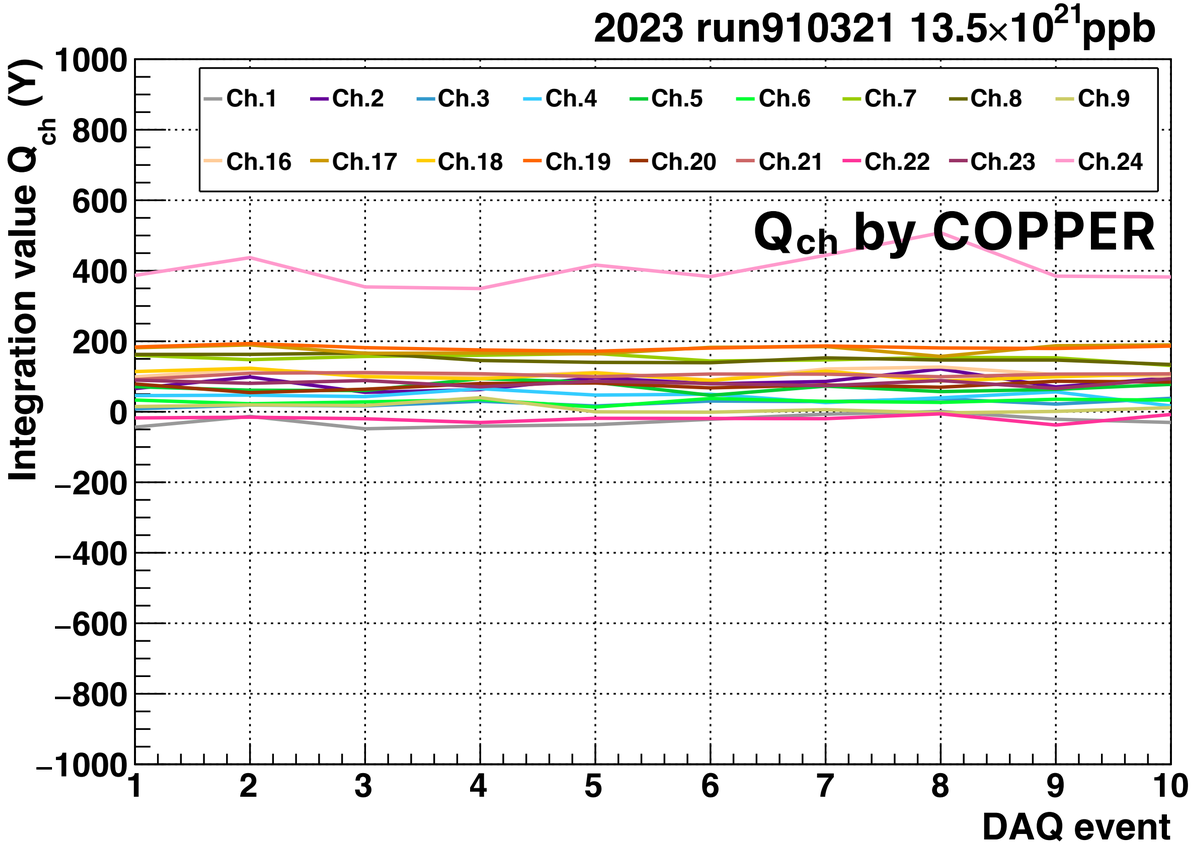
Contribution of Edge Strips (X)

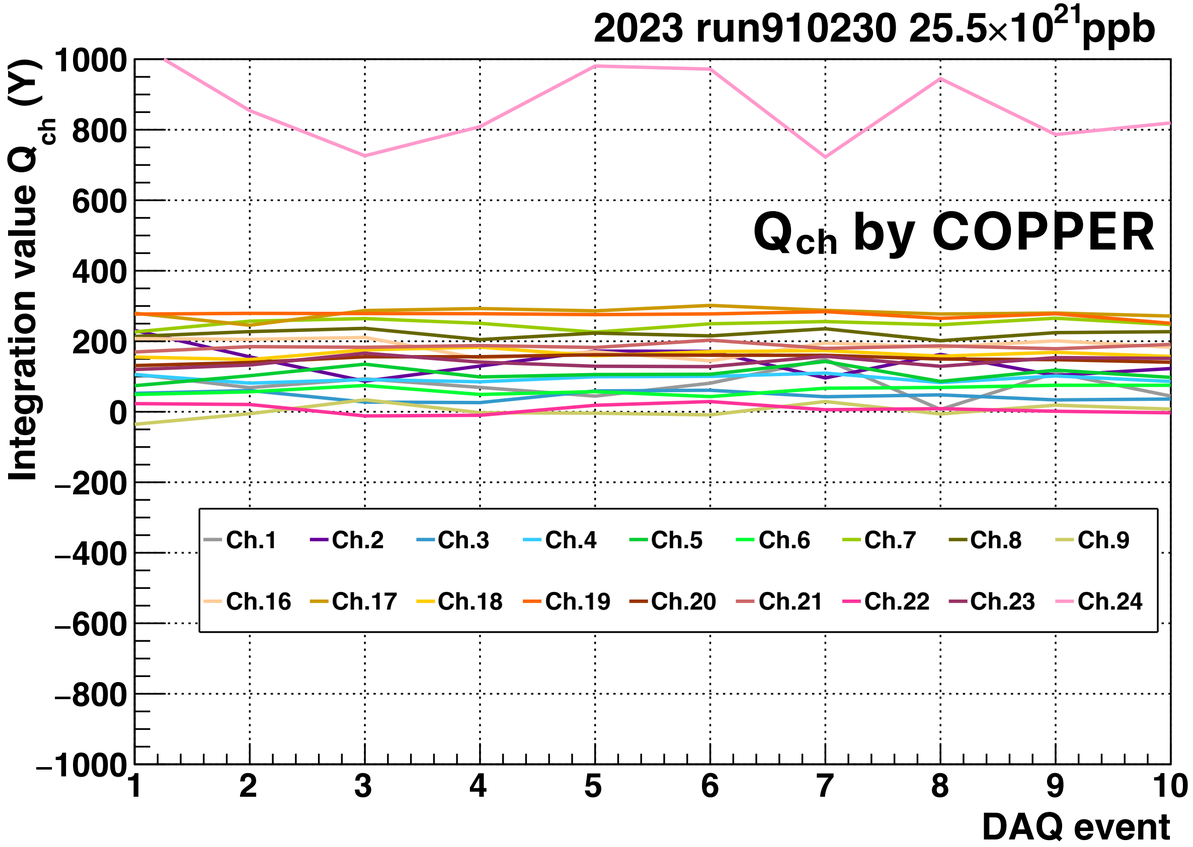




Upper level of Q_{ch}@edge strip does not change even at ~2 times ppb.
→We may change the threshold e.g. 1200→500.

Contribution of Edge Strips (Y)

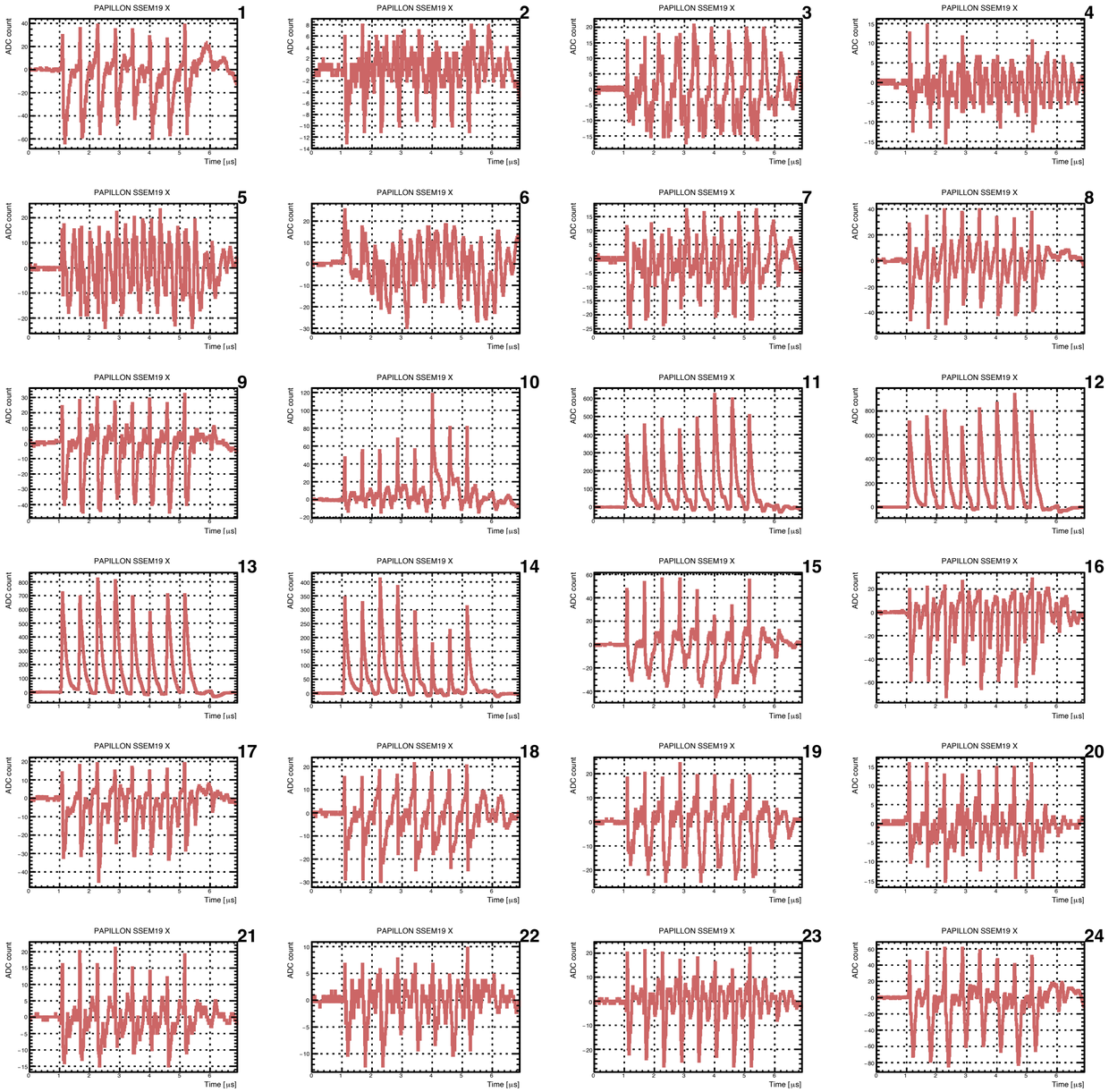




Upper level of Q_{ch}@edge strip slightly high by ~2 times large ppb.
→We may still change the threshold e.g. 1200→500.

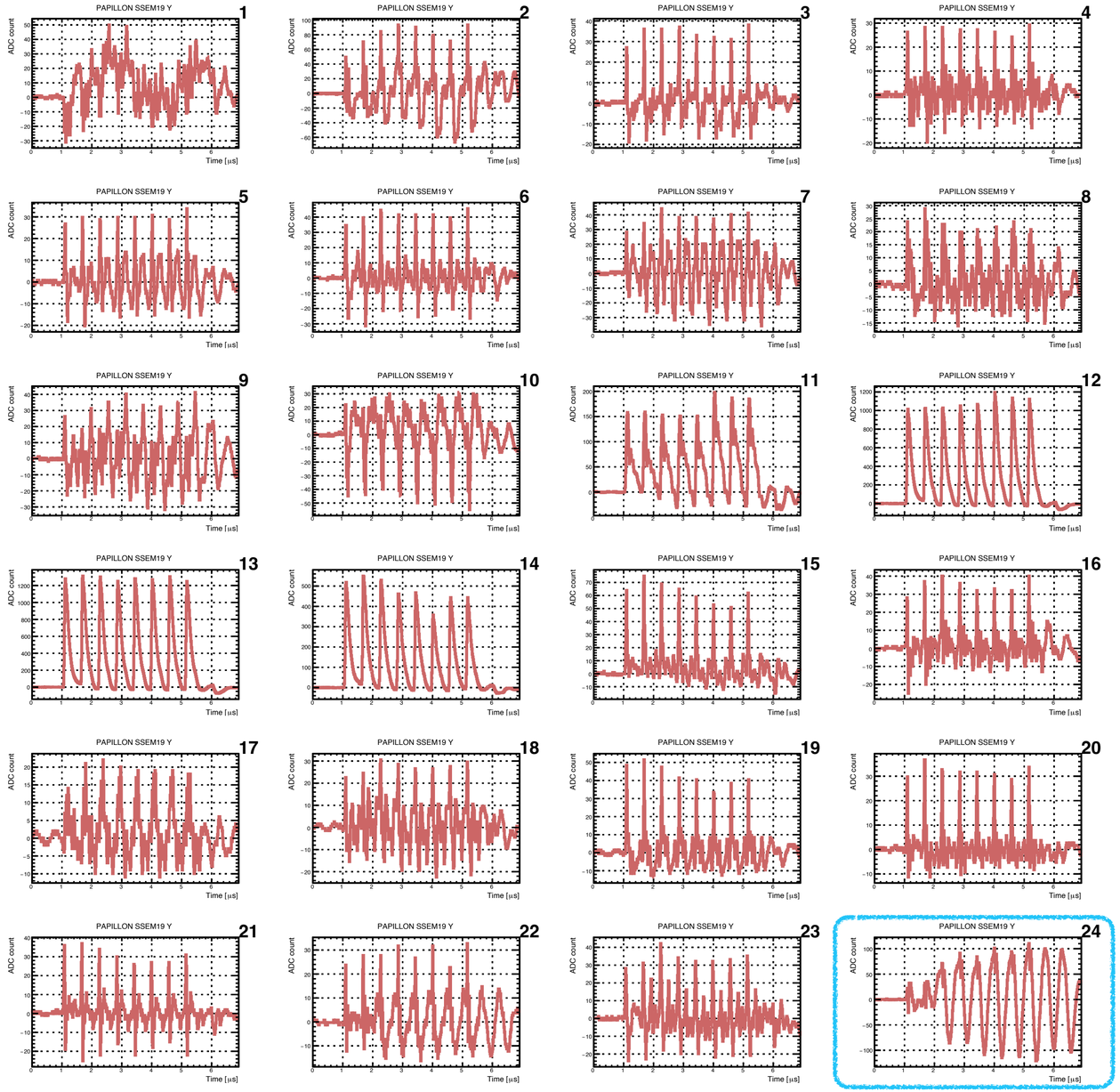
Ch.24 could be some board-dependent problem?

Waveform @ Ch.24?



Run910320, ev60
COPPER waveform (X)

Waveform @ Ch.24?

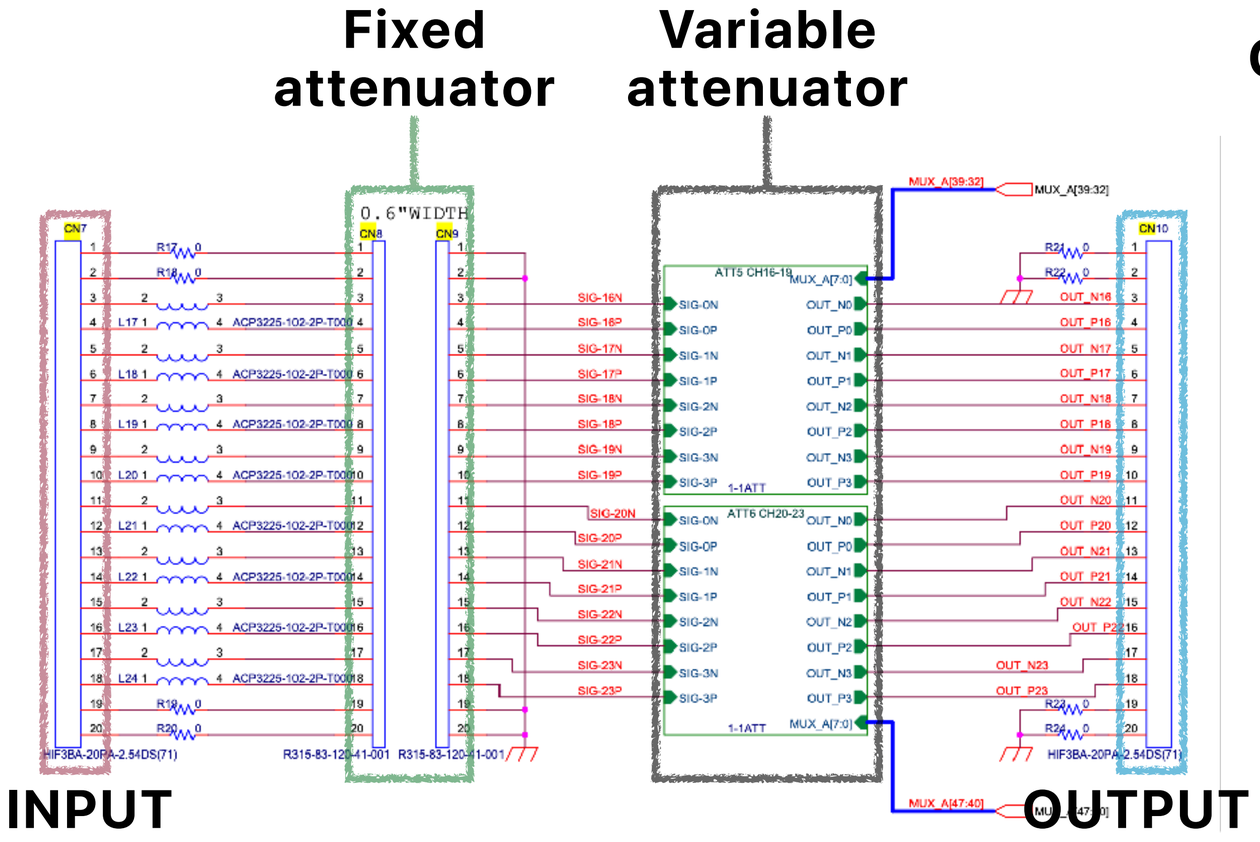


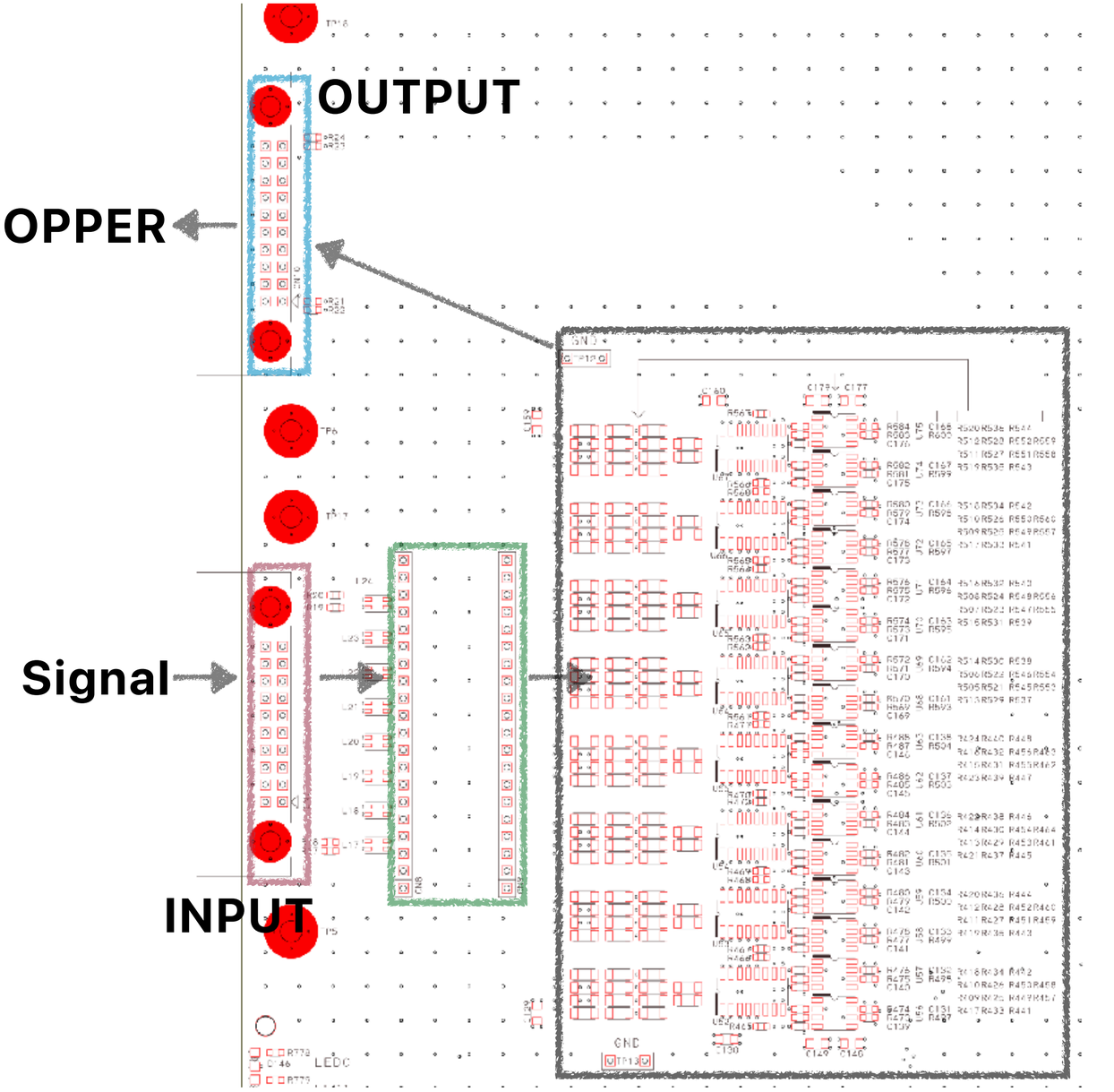
Run910320, ev60
COPPER waveform (Y)

Noisy channel
(Board problem?)
→large Q_{ch}

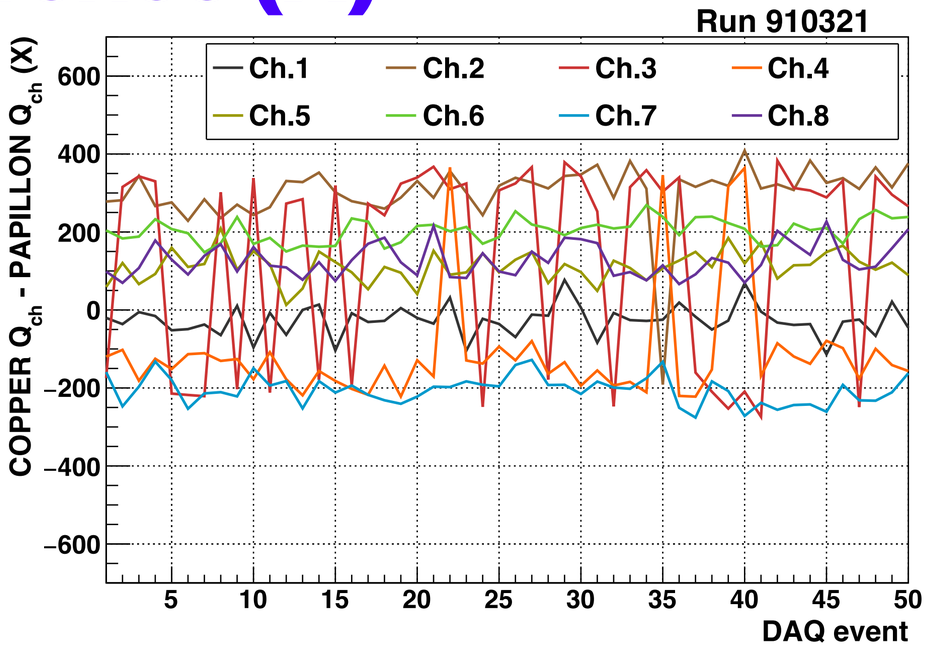
Backup

Why Waveforms are Different?

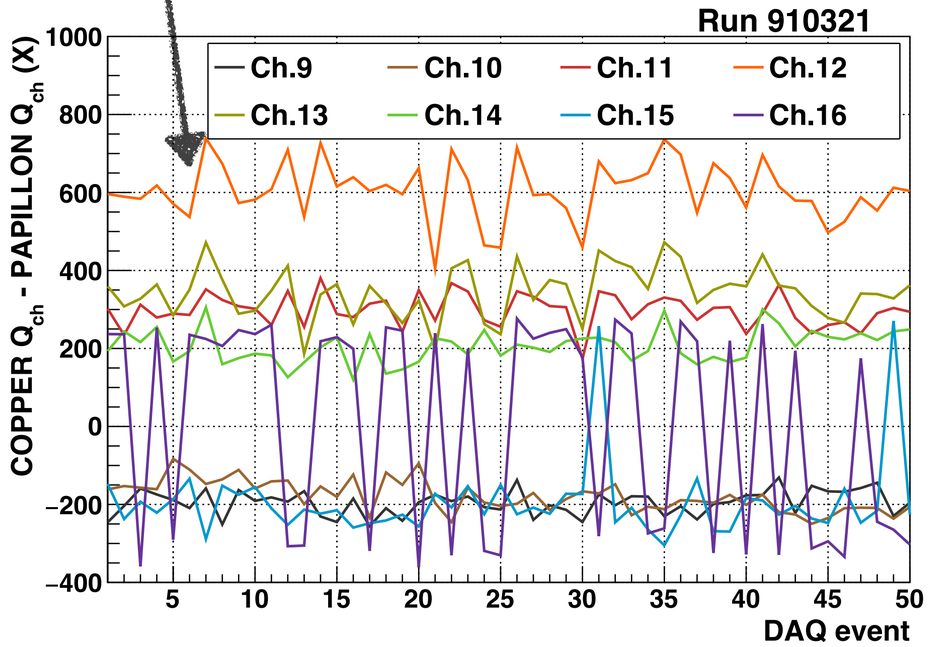




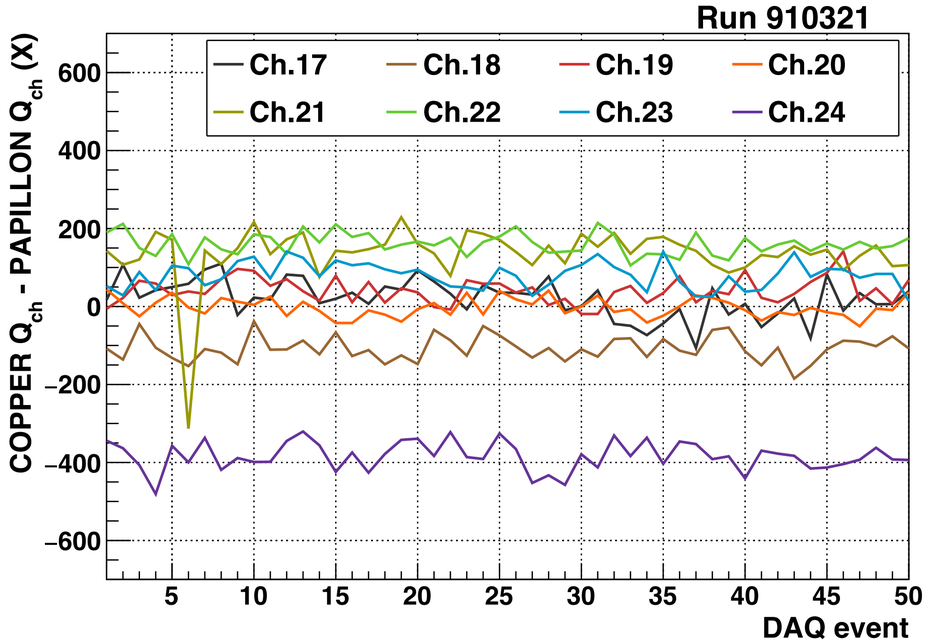
Stability of Q_{ch} Difference (X)



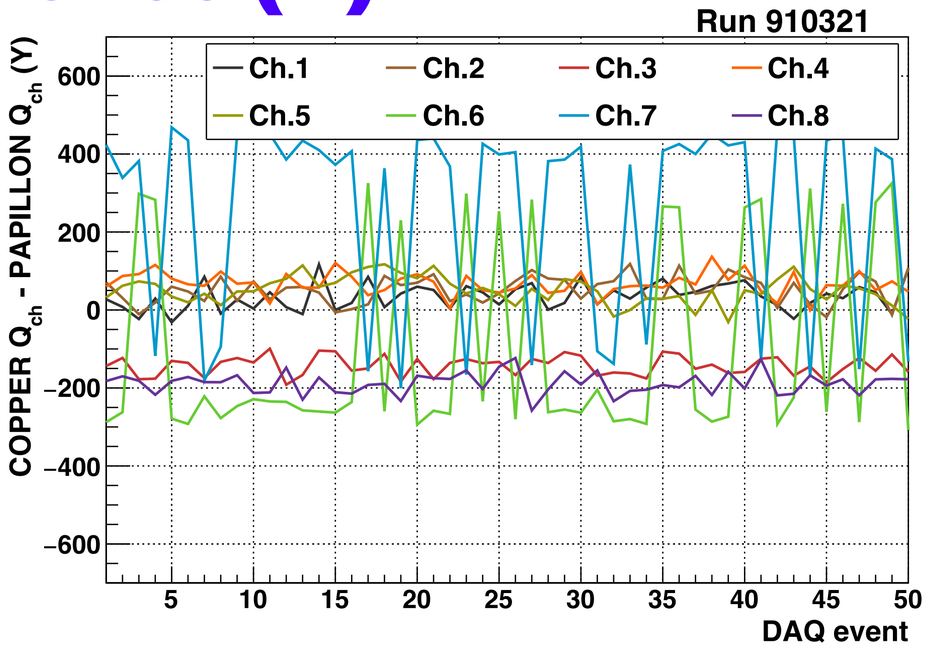
真ん中のchは
COPPER > PAPILLON



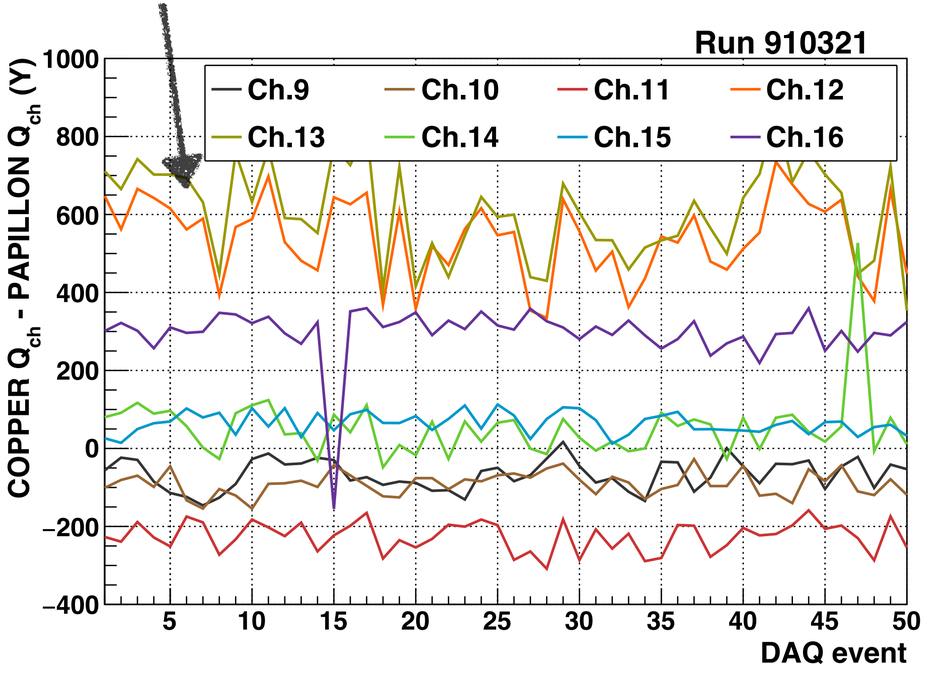
Noisyだと
PAPILLON > COPPERのchもある



Stability of Q_{ch} Difference (Y)



真ん中のchは
COPPER > PAPILLON



Noisyだと
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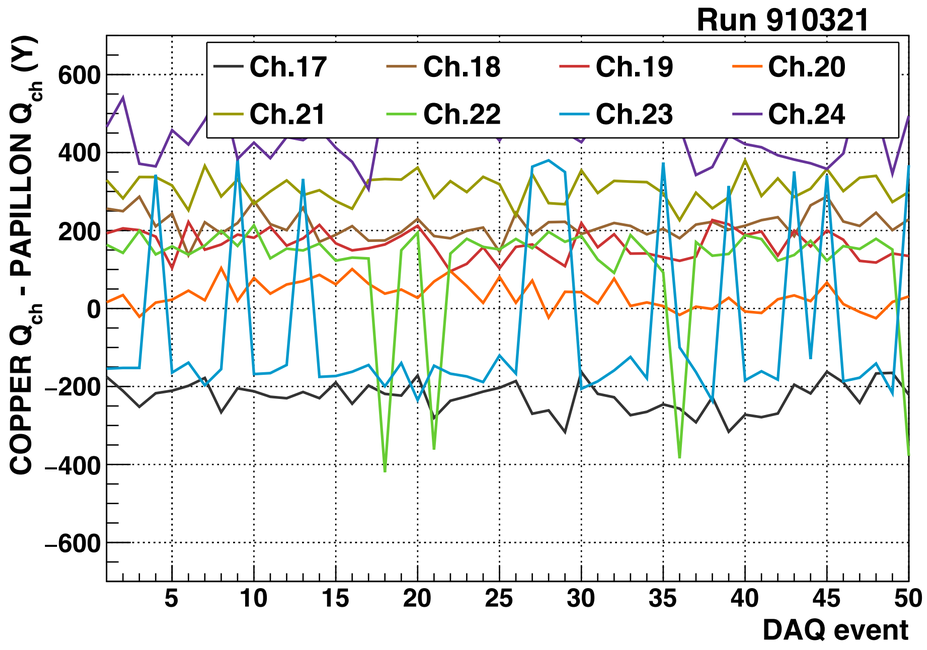
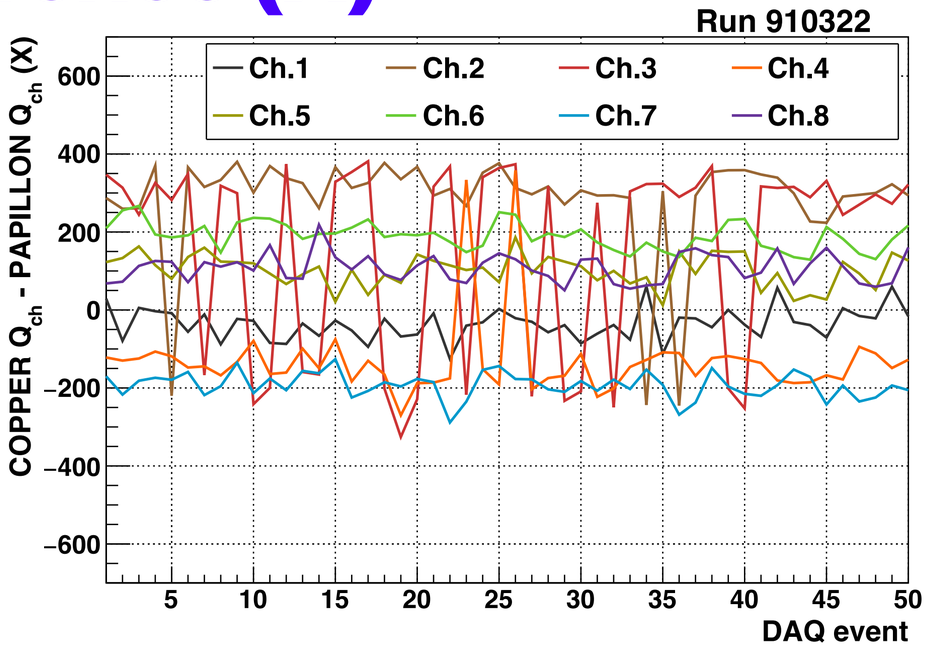


Stability of Q_{ch} Difference (X)



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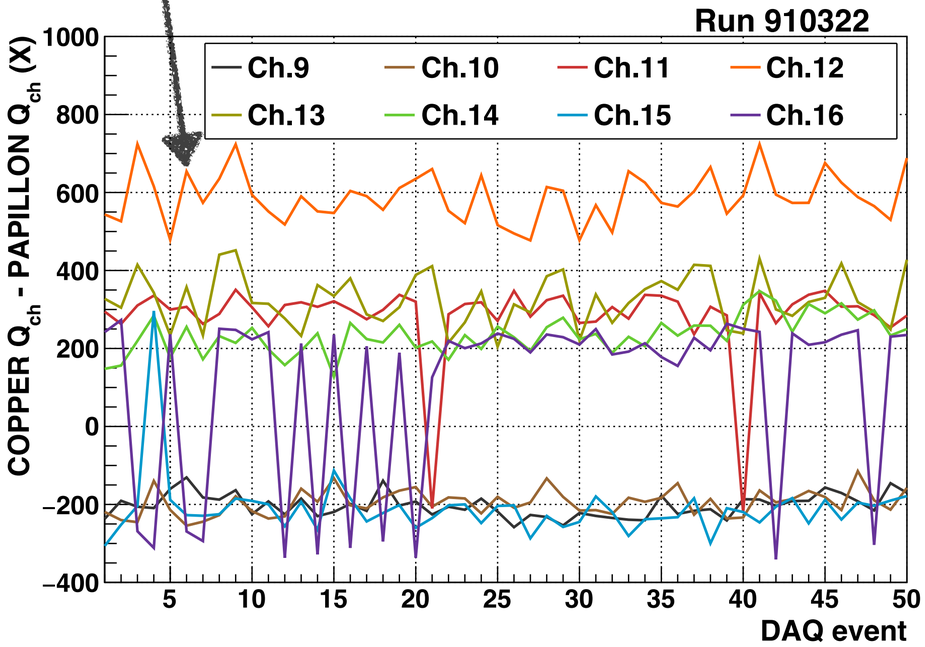

Noisyだと
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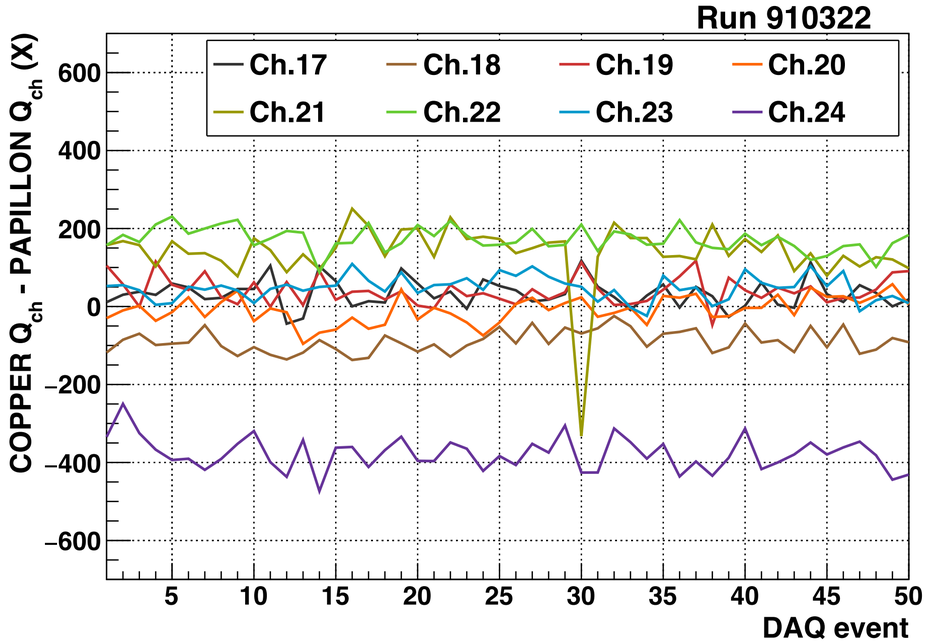
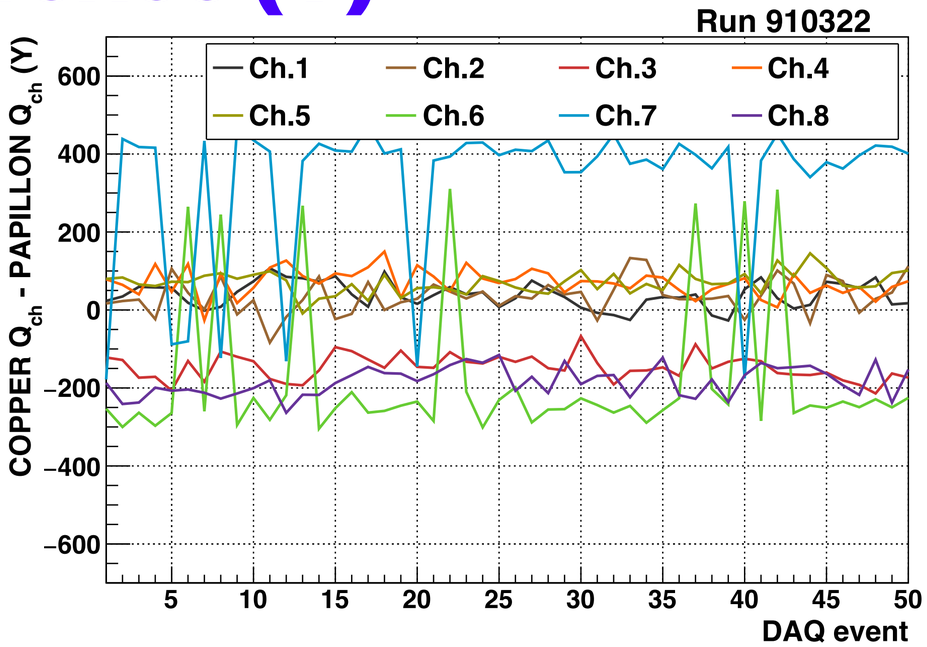


Stability of Q_{ch} Difference (Y)



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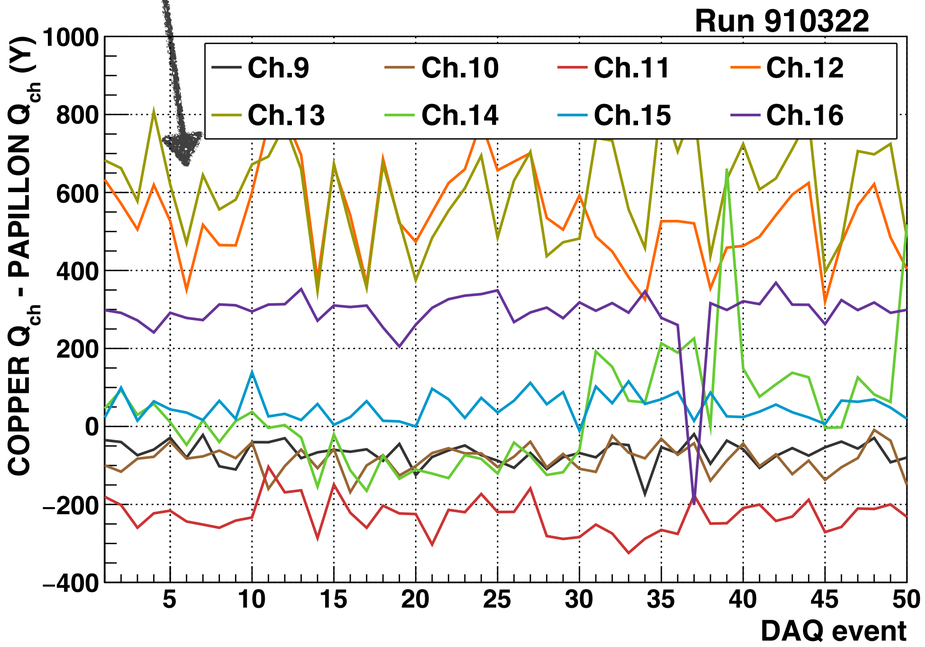

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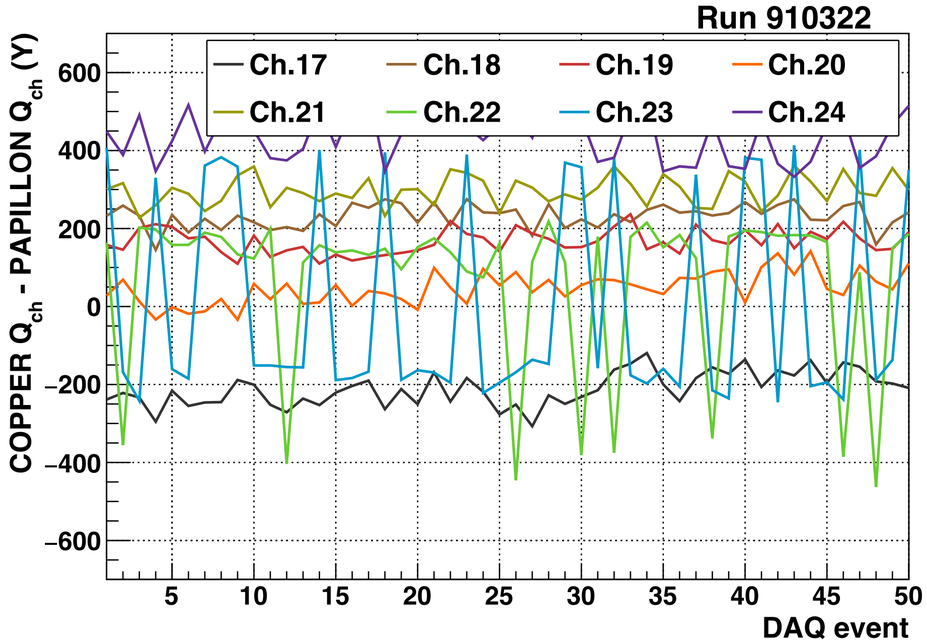
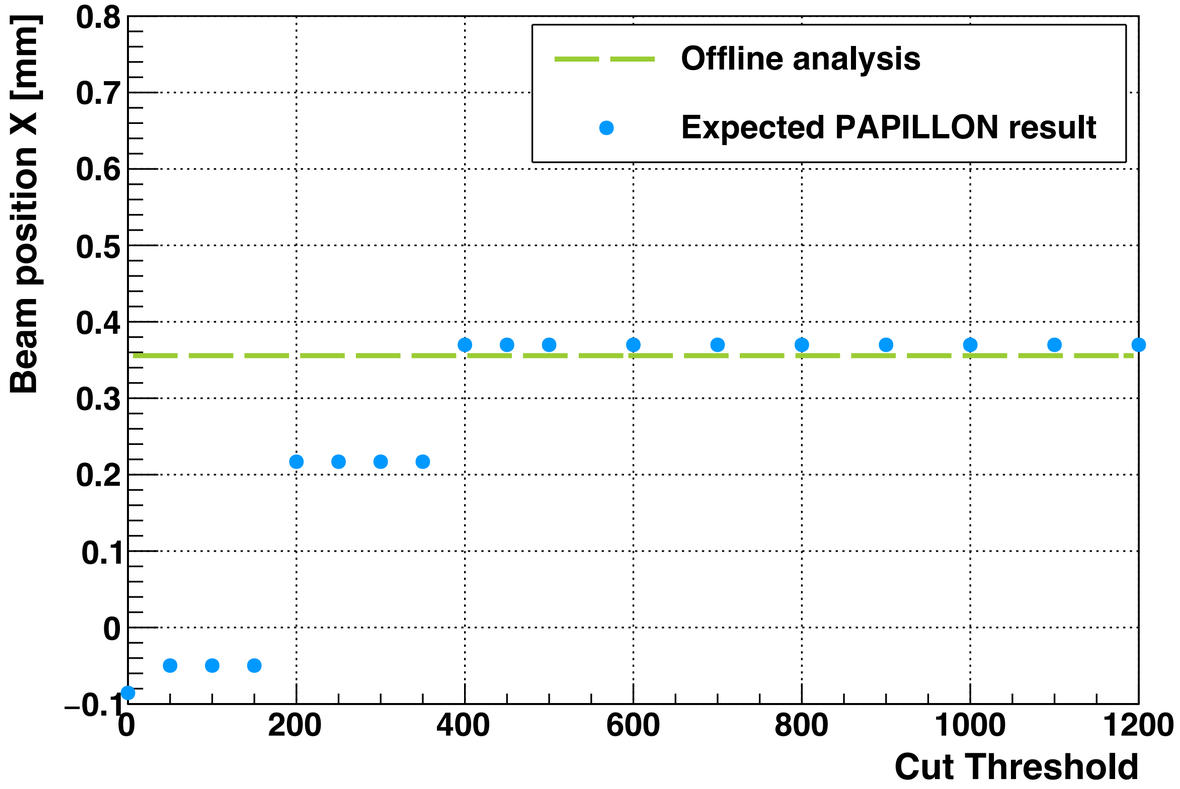
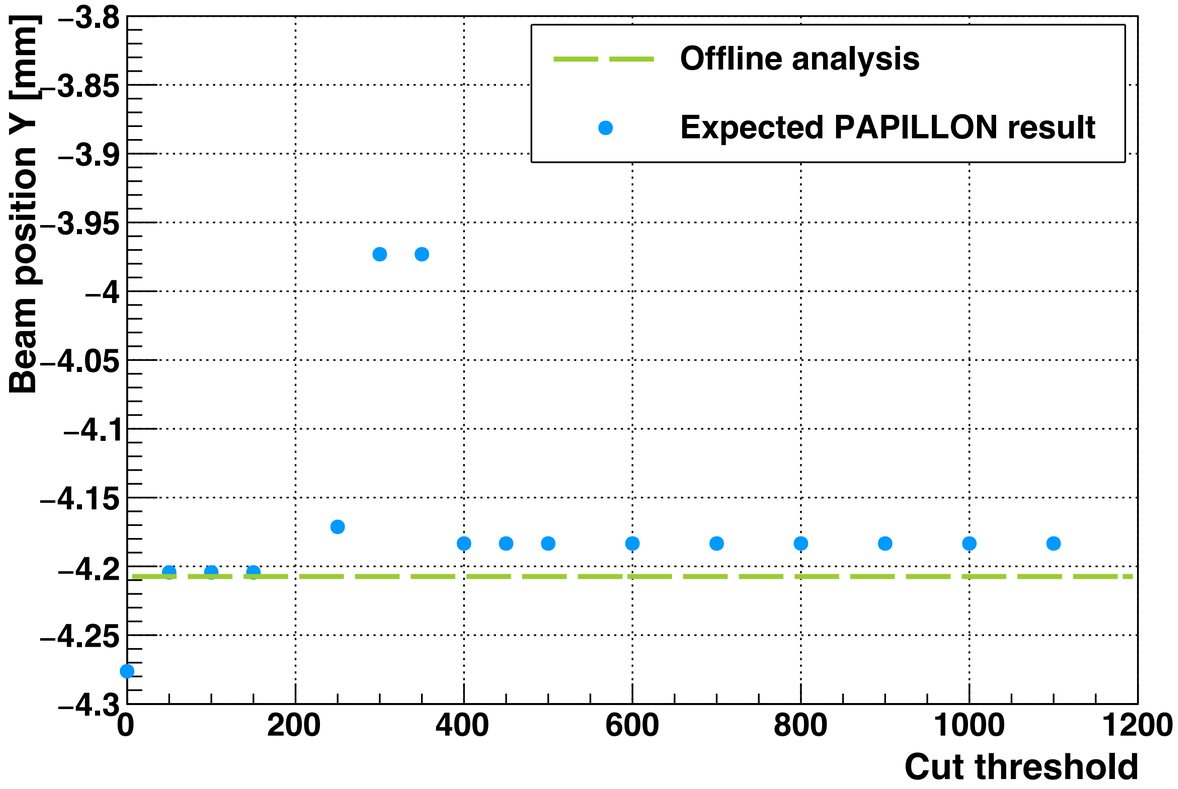


Beam Position under Different Q_{ch} Cut

Run910321 ev47
(X position scan, nominal)

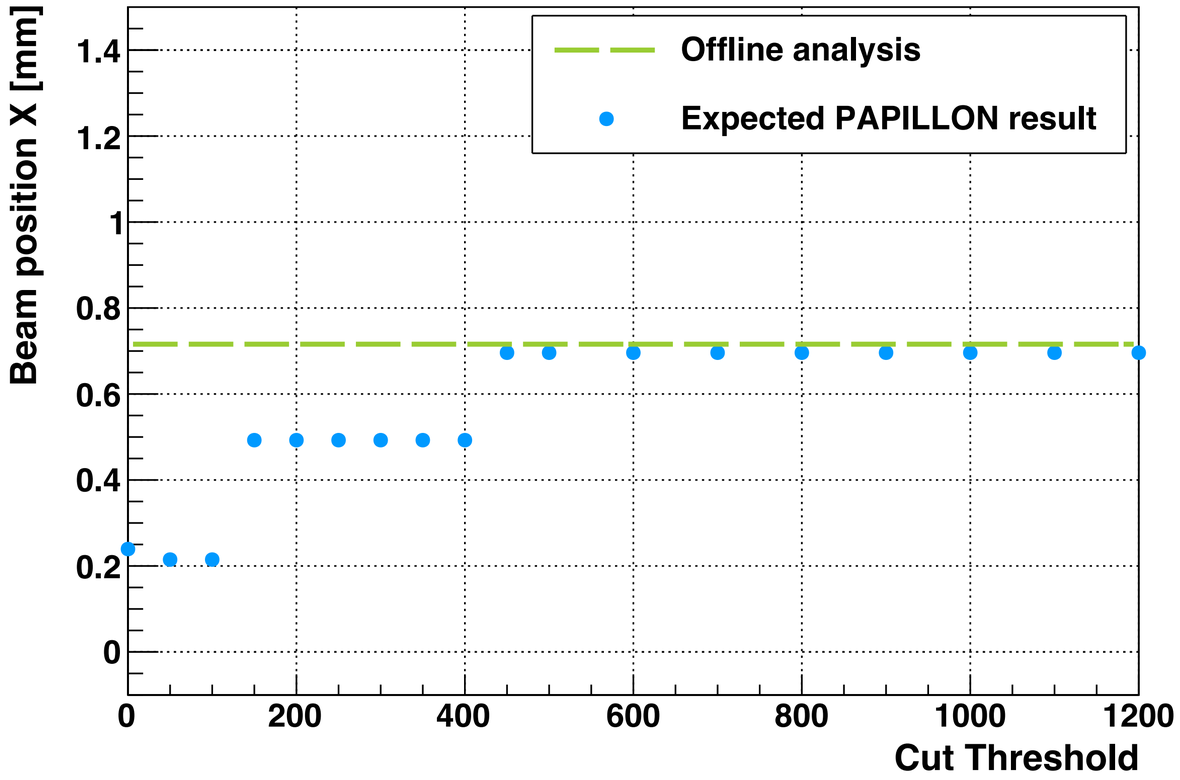


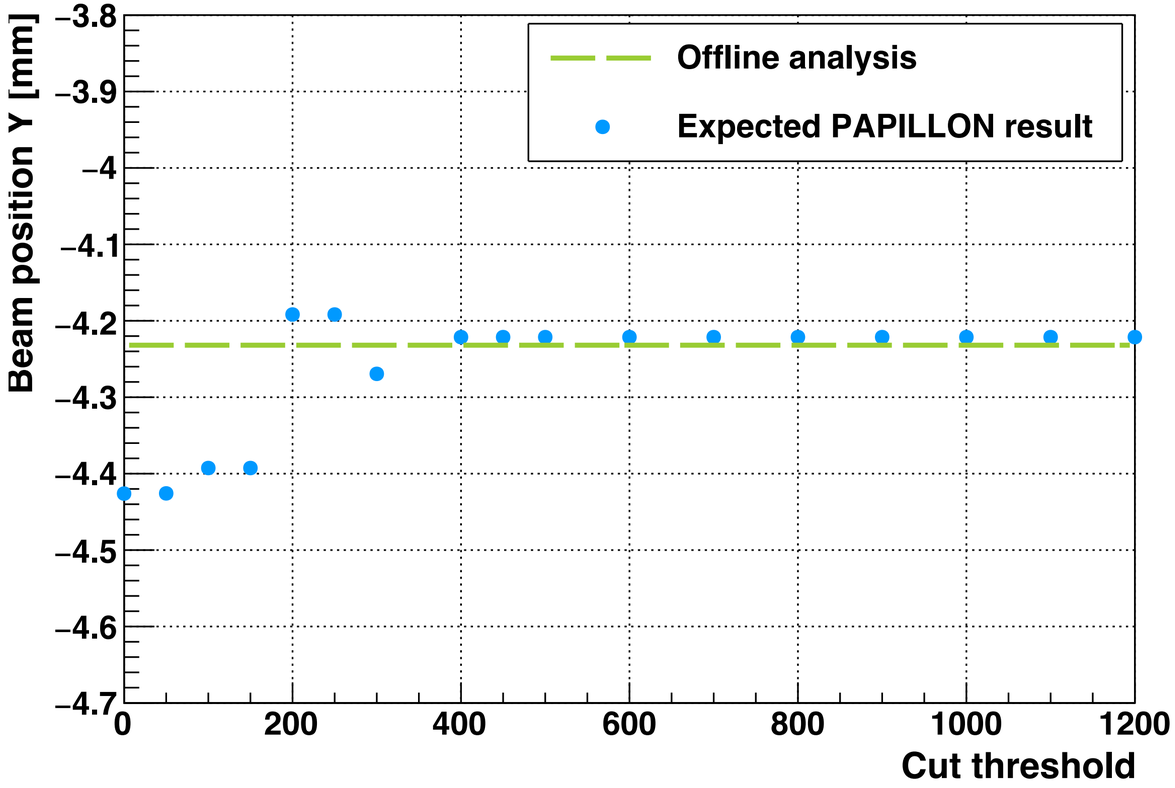


Results of threshold = 400 - 1200 are same.

Beam Position under Different Q_{ch} Cut

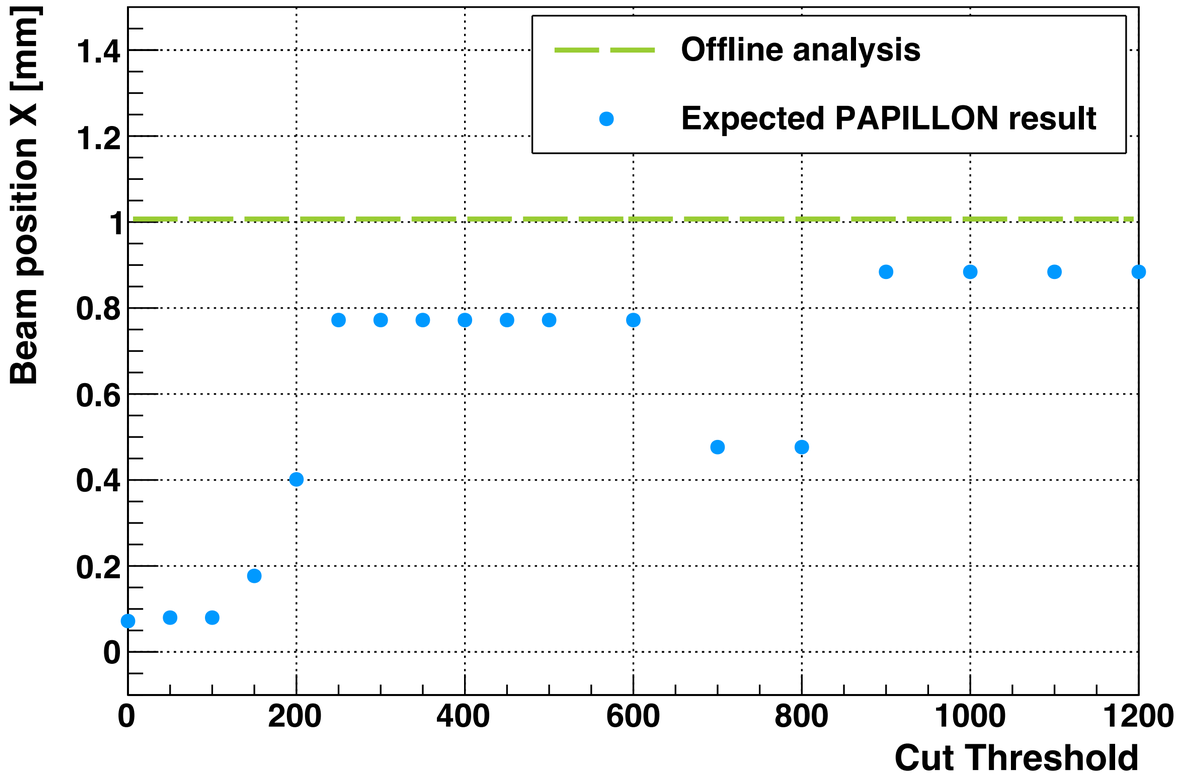
Run910321 ev93
(X position scan, +1.0 mm)

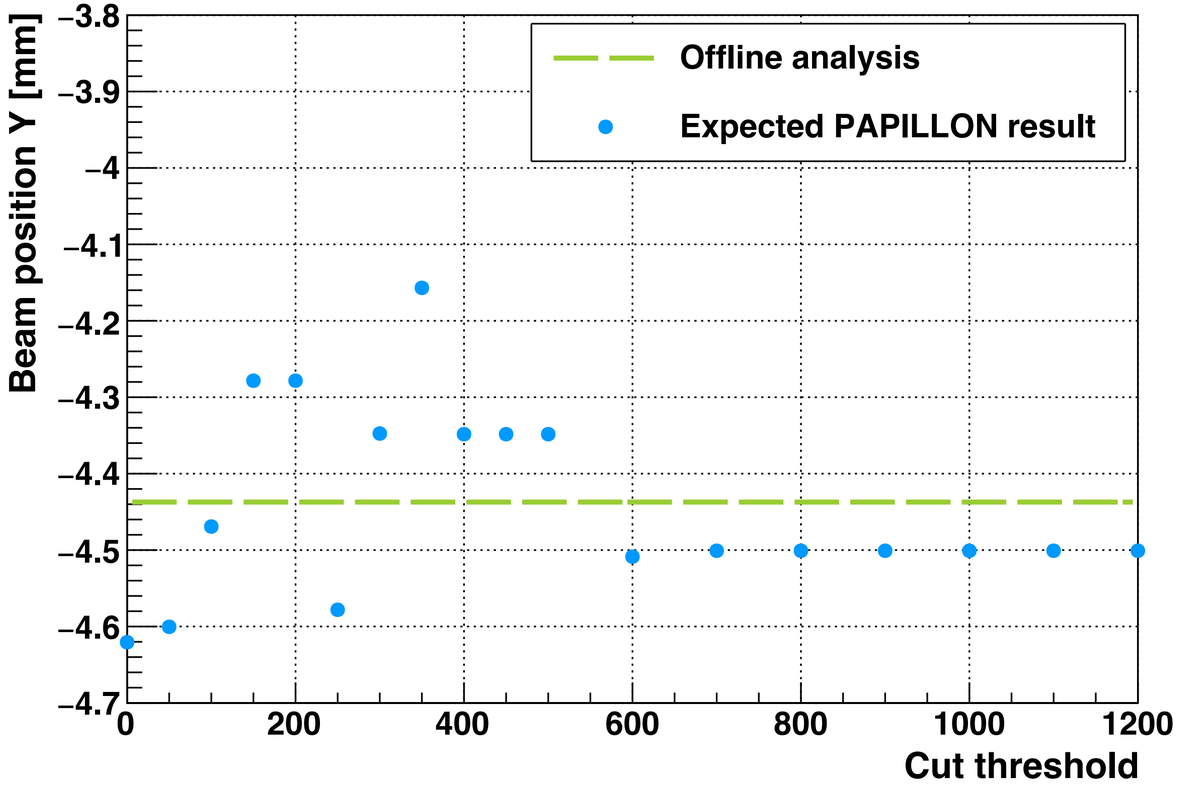




Beam Position under Different Q_{ch} Cut

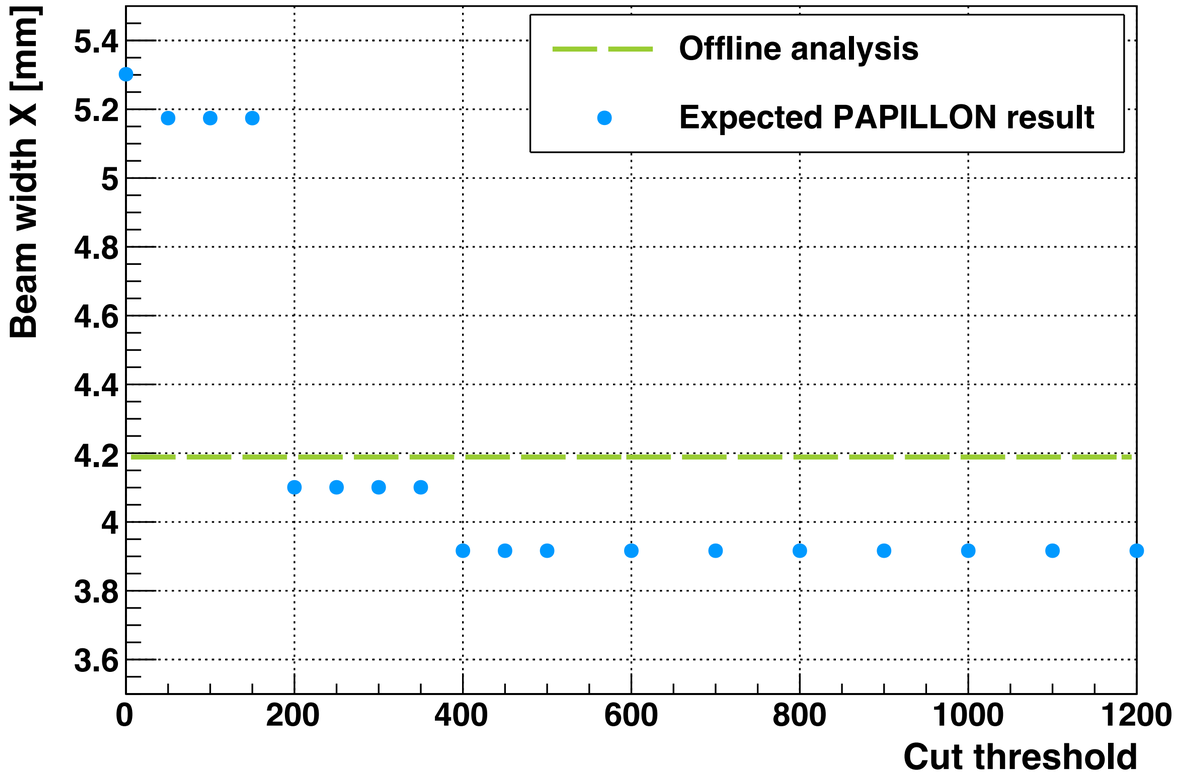
Run910323 ev79
(Width scan, +0.6 mm)

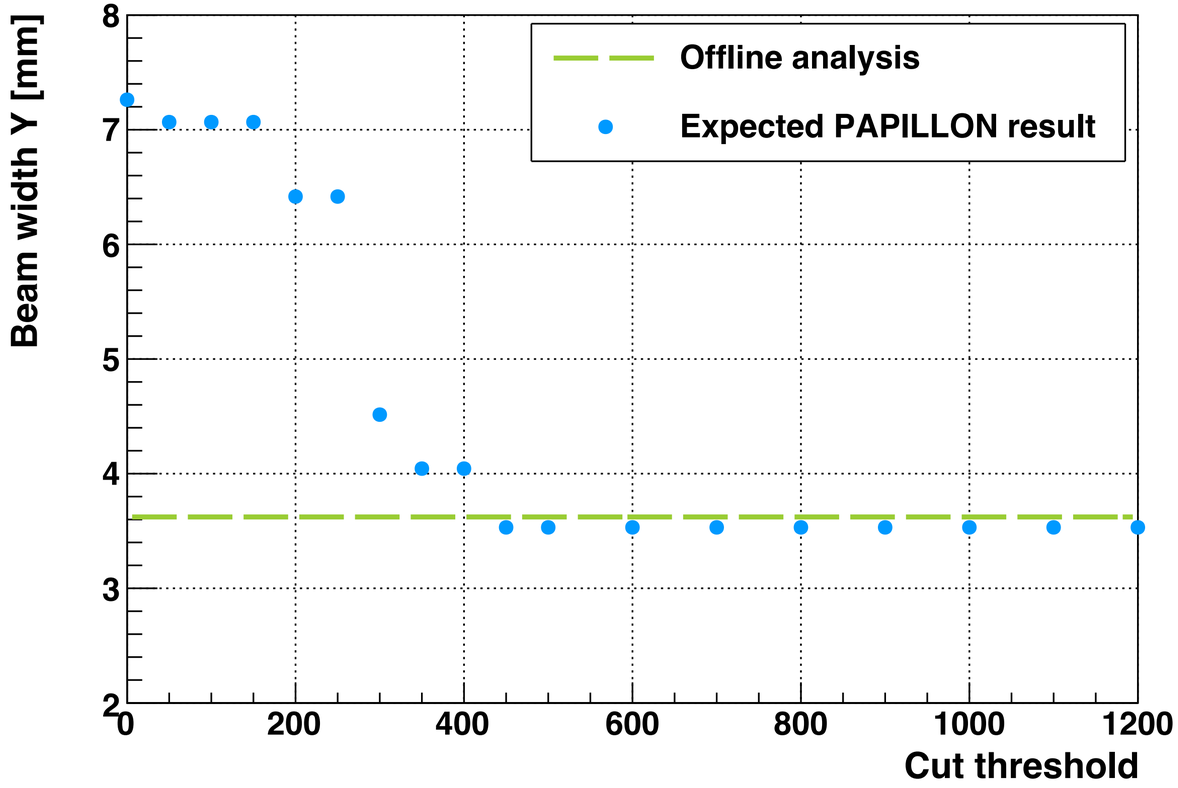




Beam Width under Different Q_{ch} Cut

Run910321 ev47
(X position scan, nominal)

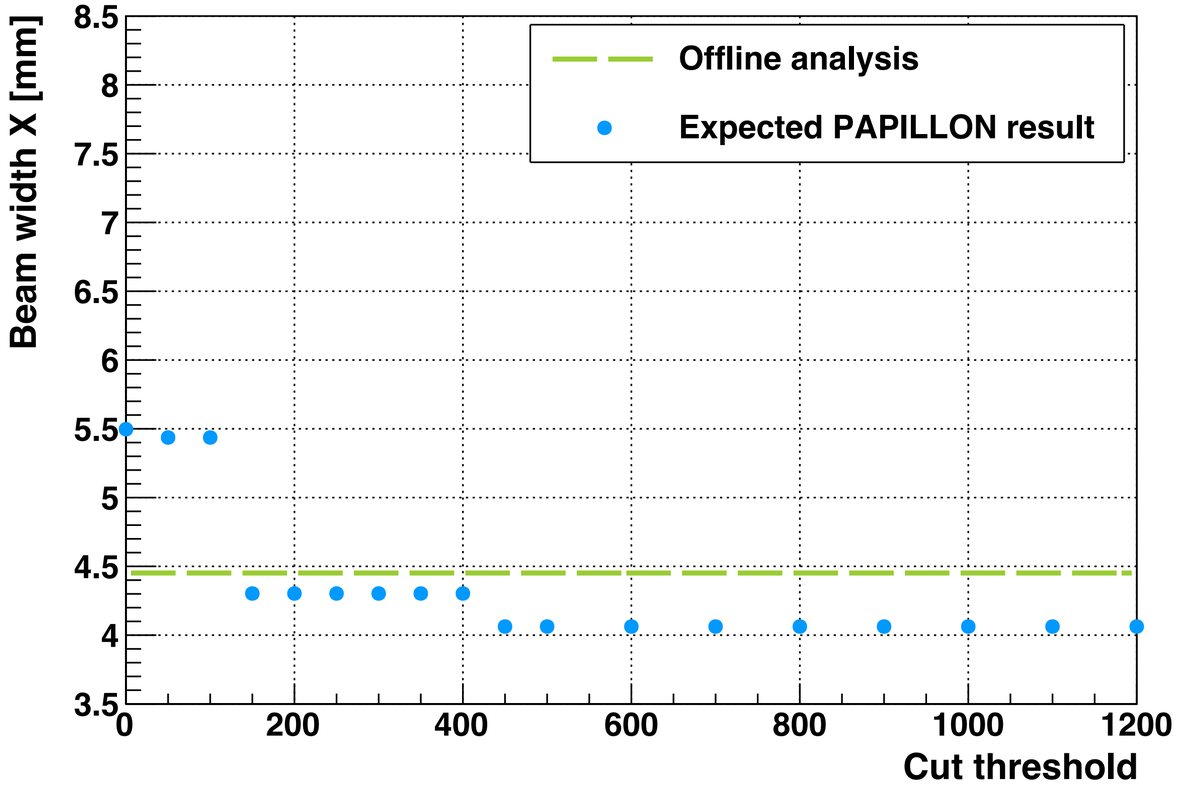


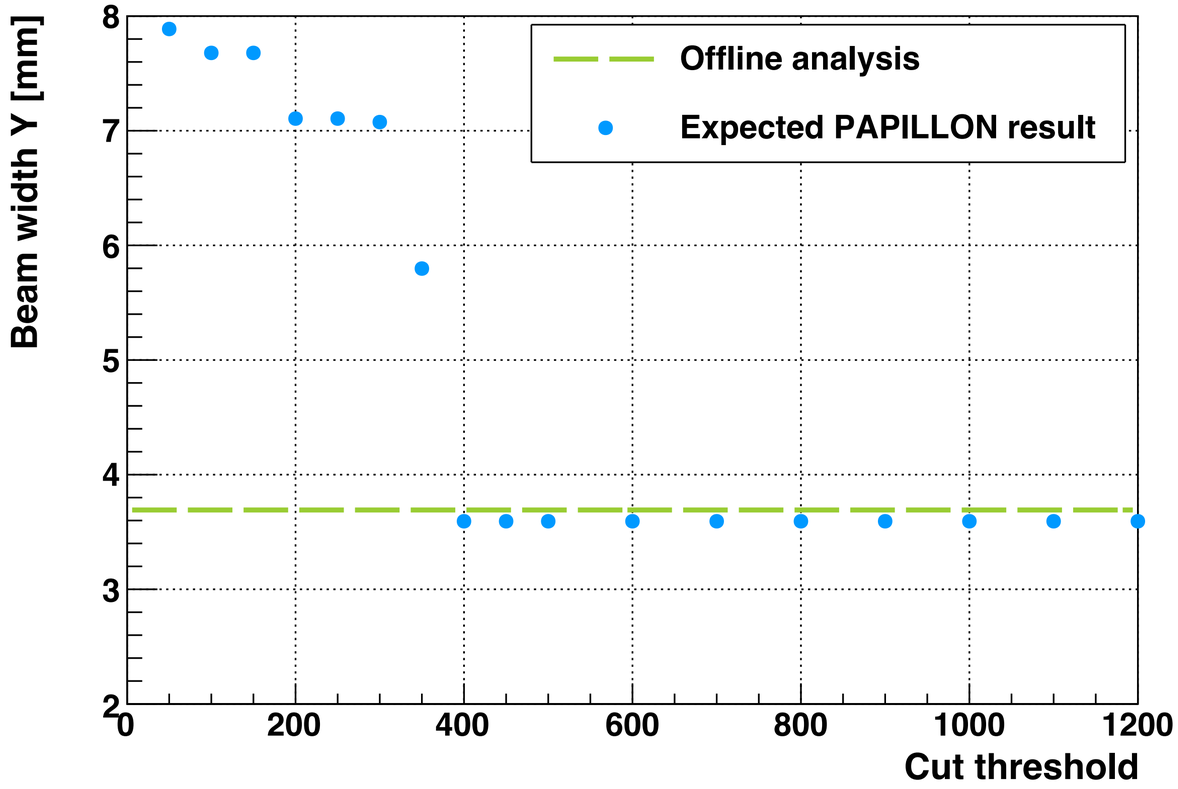


Results of threshold = 400 - 1200 are same.

Beam Width under Different Q_{ch} Cut

Run910321 ev93
(X position scan, +1.0 mm)

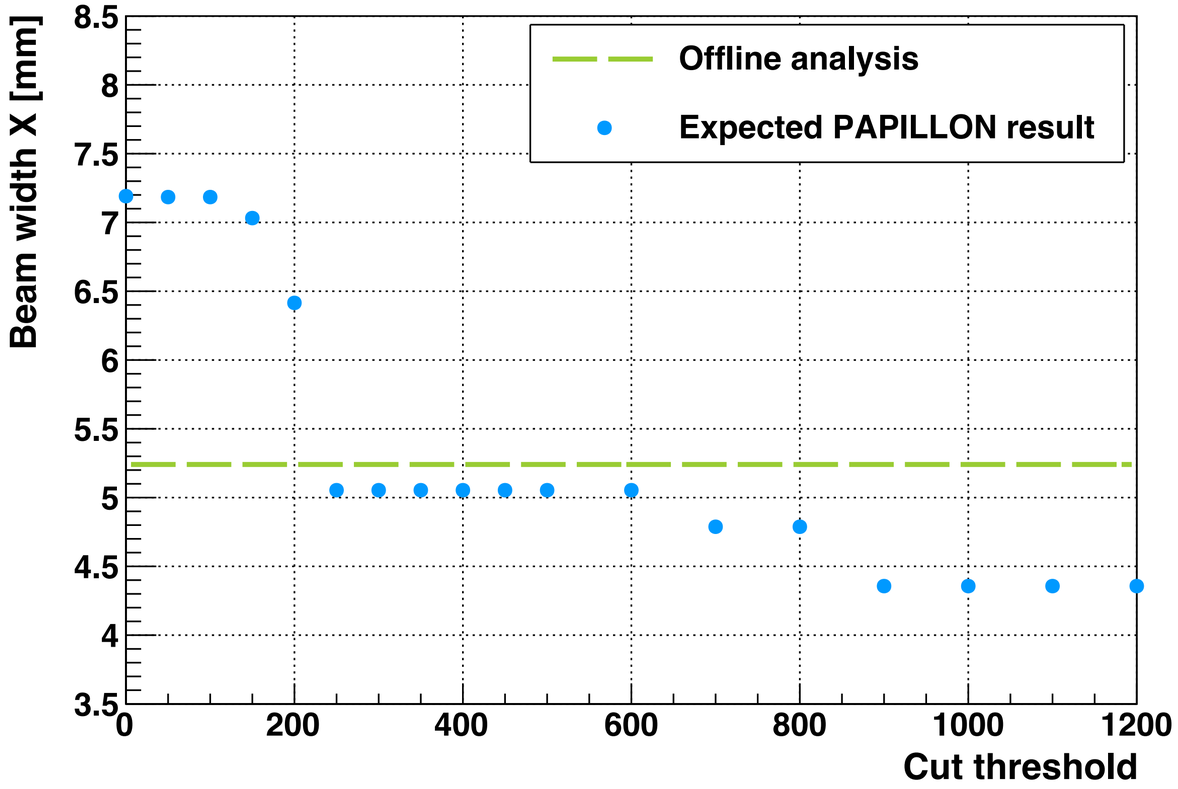


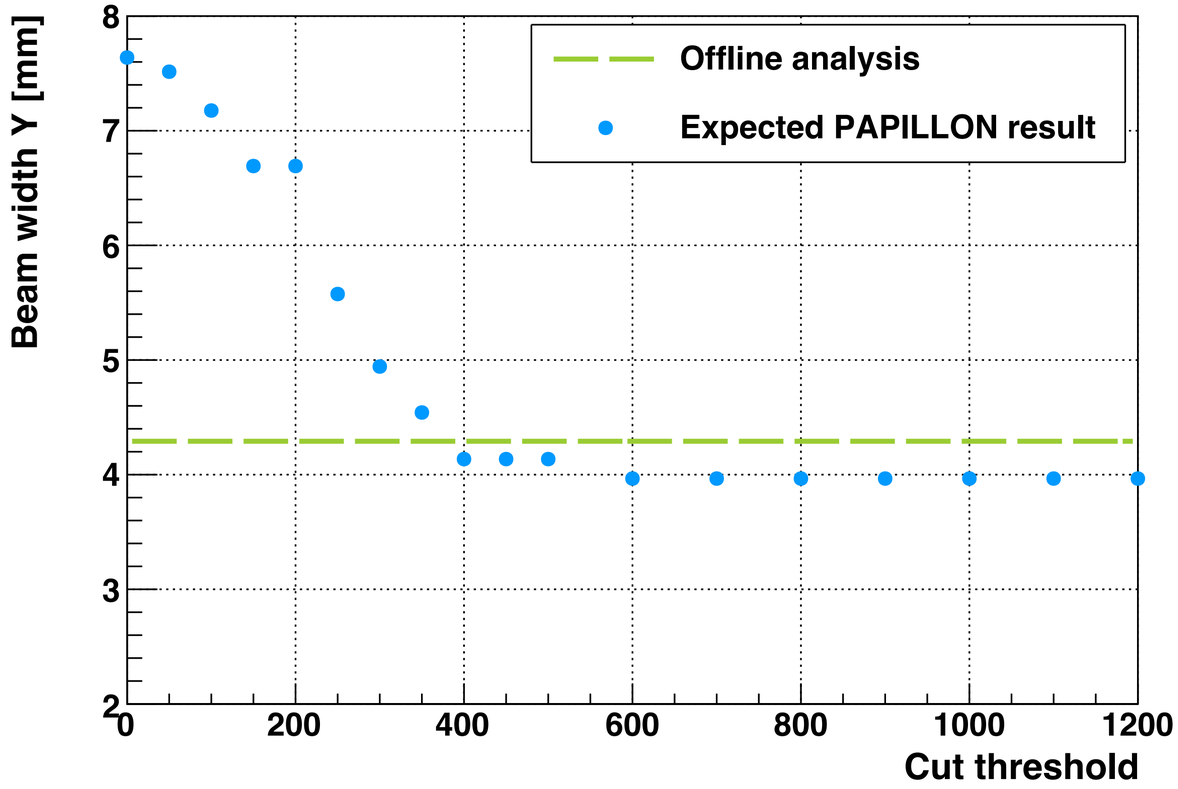


Results of threshold = 400 - 1200 are same.

Beam Width under Different Q_{ch} Cut

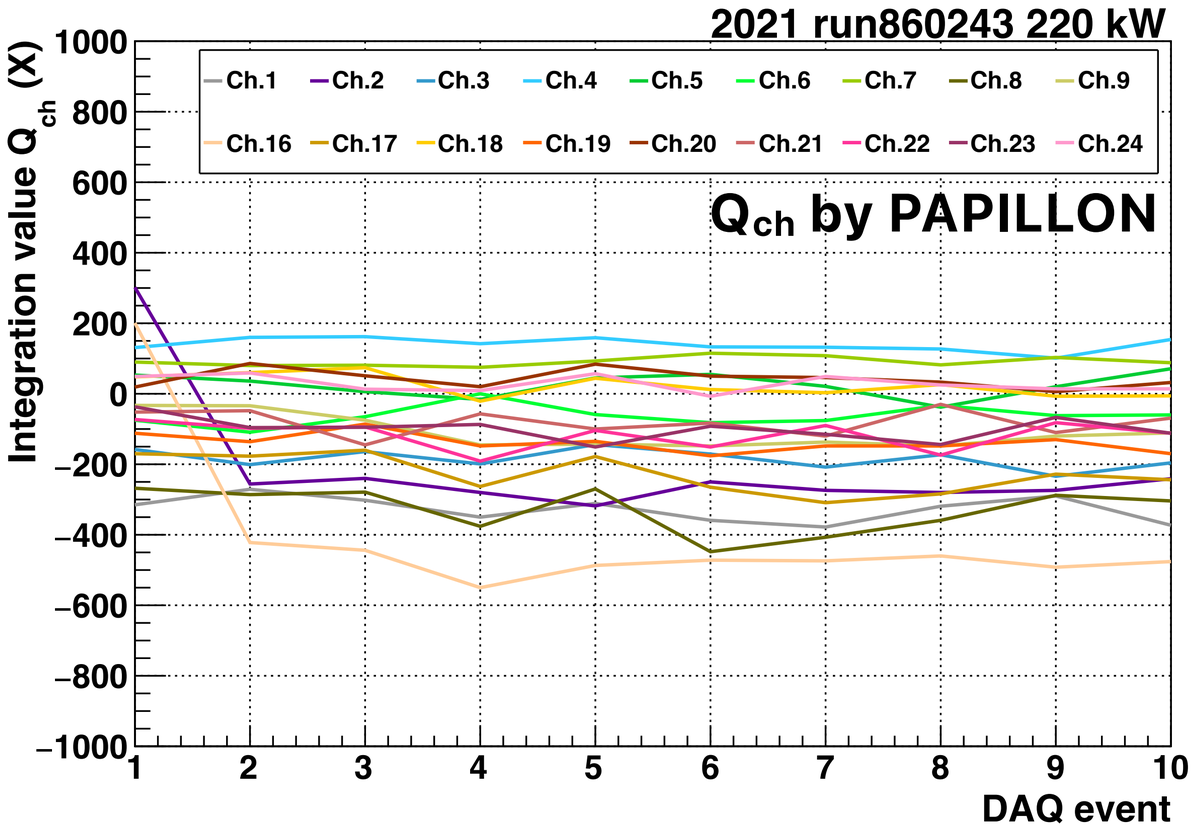
Run910323 ev79
(Width scan, +0.6 mm)

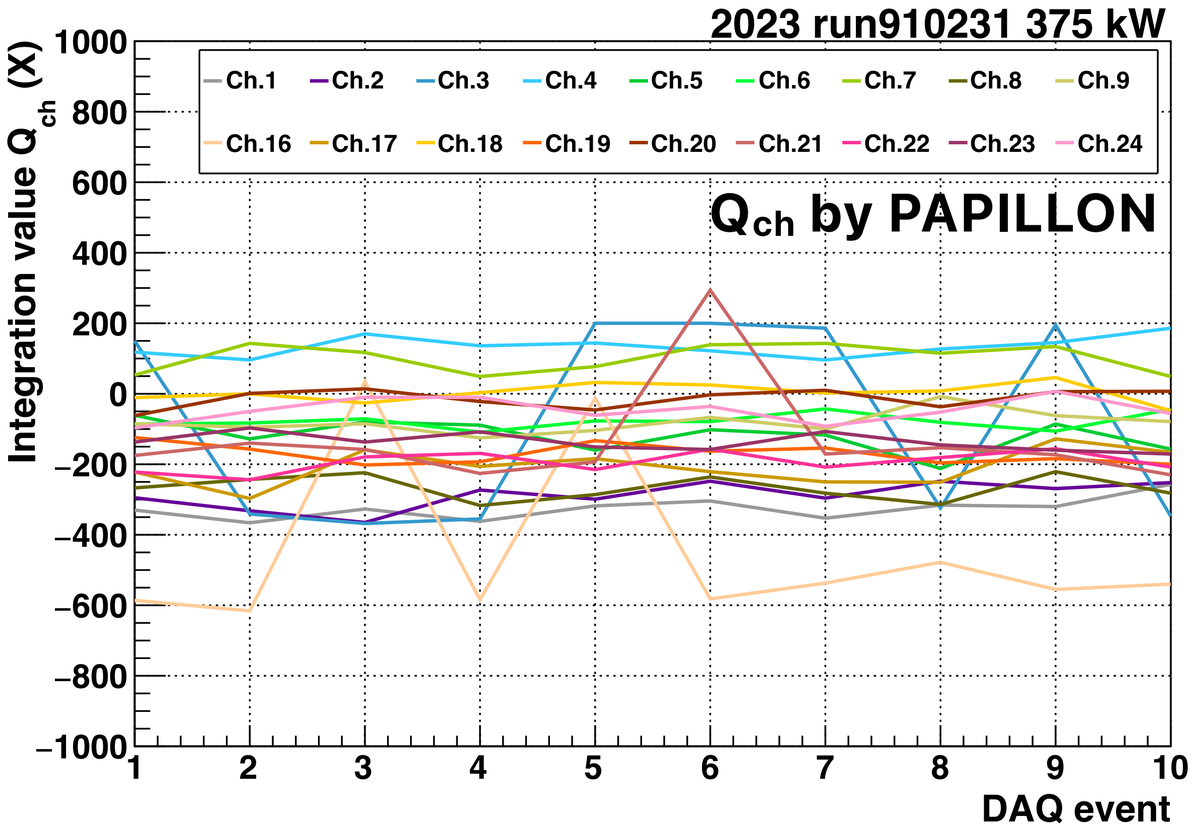




Results of threshold ~500 would be better?

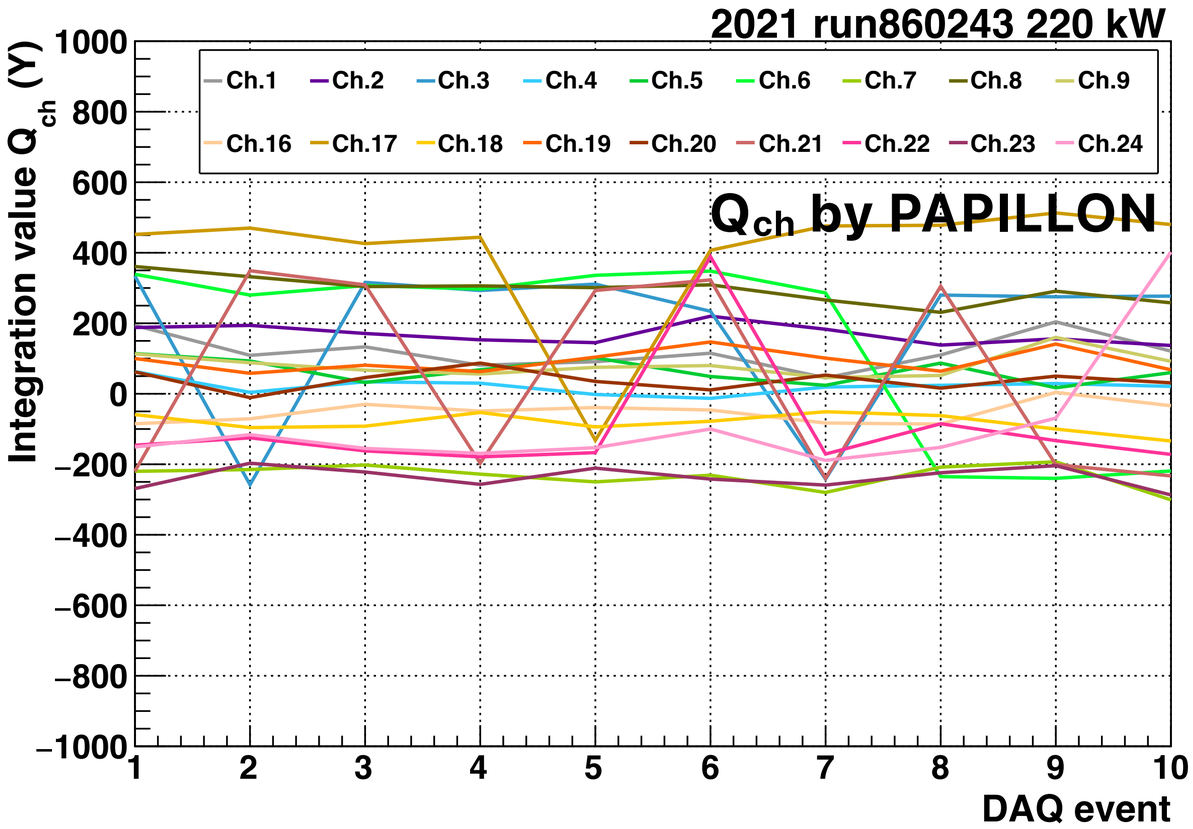
Contribution of Edge Strips (X)

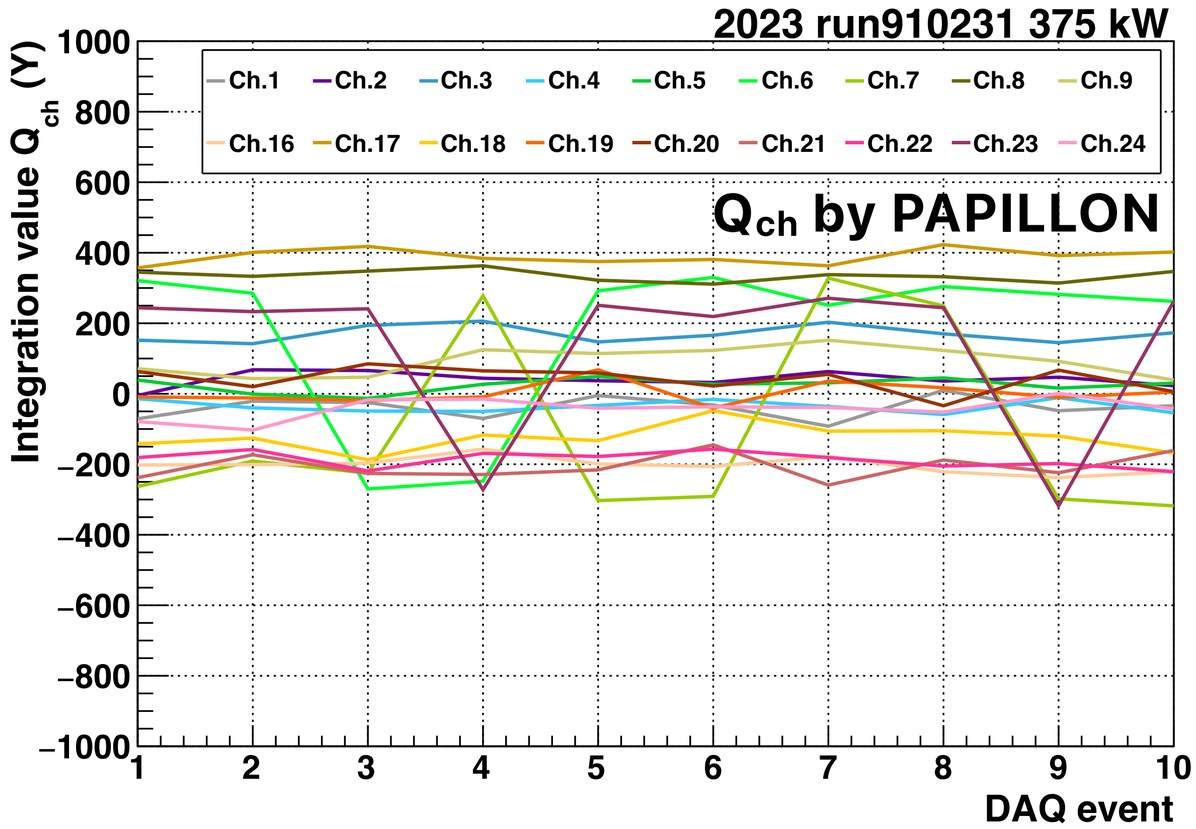




Q_{ch}@edge strip does not change even at ~1.7 times beam intensity.
→We may change the threshold e.g. 1200→500.

Contribution of Edge Strips (Y)





Q_{ch}@edge strip does not change even at ~1.7 times beam intensity.
→We may change the threshold e.g. 1200→500.

Waveform in 2021 Beam Test