Clusters & Mathieson parameters (2)

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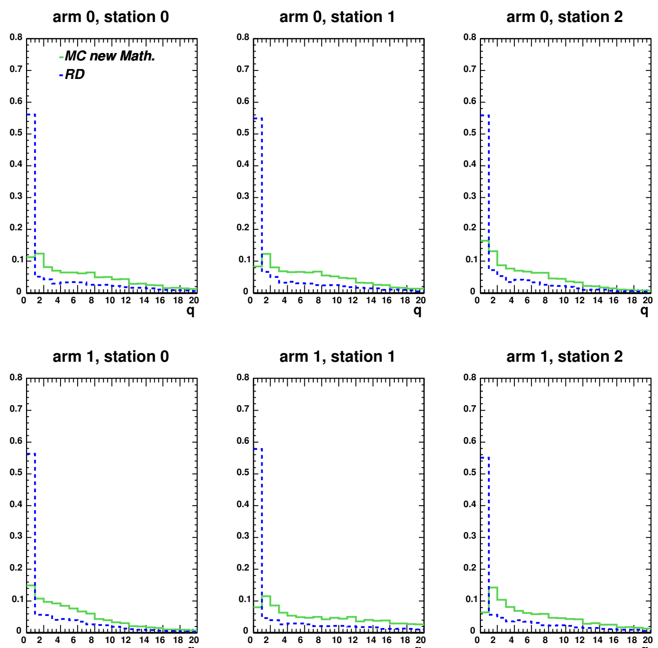
Outline

Charge distribution in the clusters [1/2]



Charge distribution seems flat so that cutting for low q should remoove too much statistics.

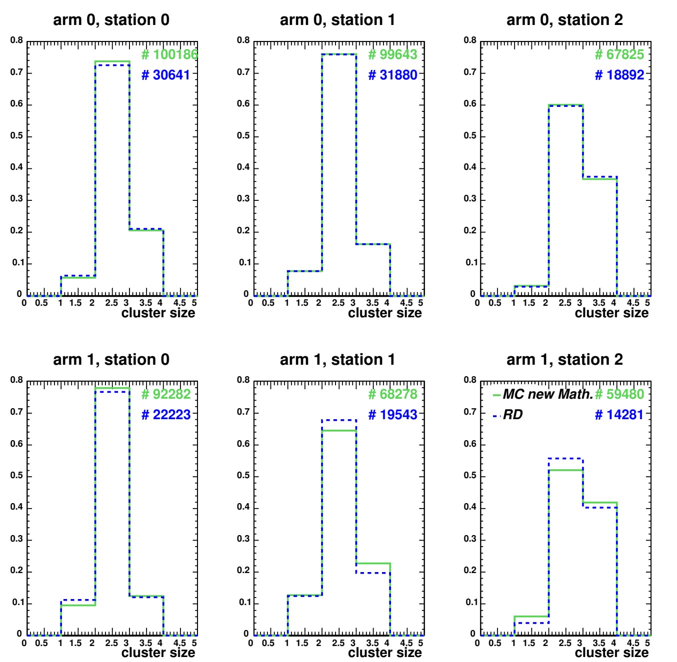
Charge distribution in the clusters [2/2]

Open questions

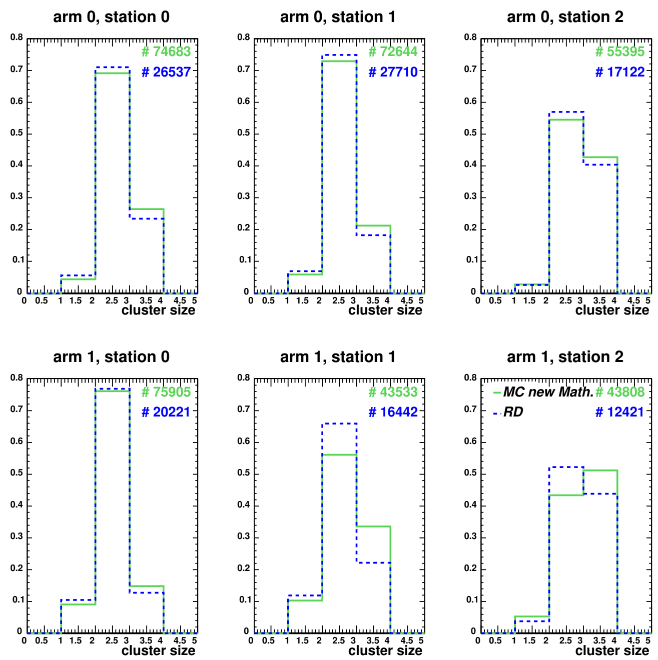
- Landau parameters are fitted ⇒ cluster should charge match well between MC and RD.
- Mathieson parameters are adjusted ⇒ cluster size also match.

  ⇒ **Then why don't the strip charge match ?**
  At first order: charge/cluster = sum charge/strip
  The fit could move slightly the hits of low charges seen for RD and not MC, but stil...

Cluster size per station with $q < 20$



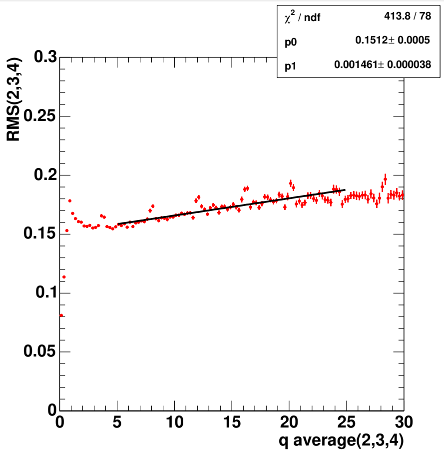
cluster size per station with $q < 10$



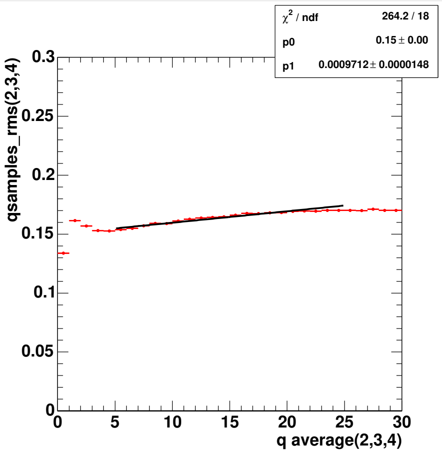
Less match because charge distribution differ.

There seem to be more clusters of size 3 in proportion for MC but not that much for RD.

rms vs q



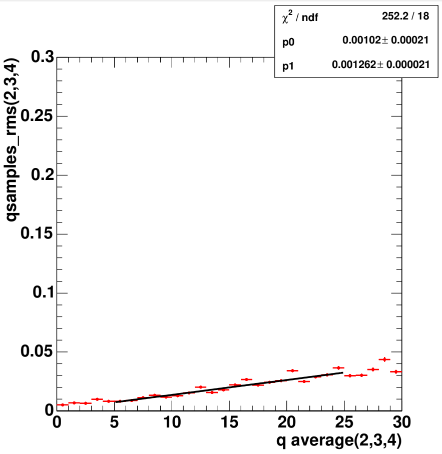
RD



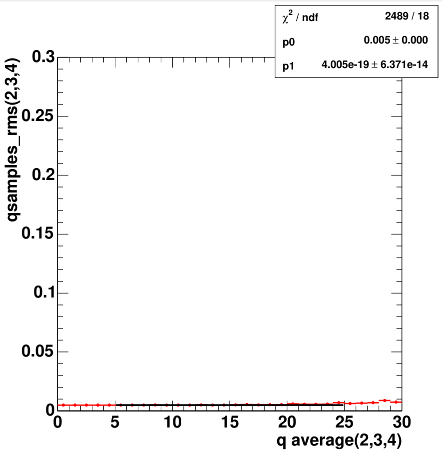
MC

Without RMS/GAIN, the distribution almost go through 0 $\Rightarrow$ all constant part comes from RMS/gain.

rms sample vs q



RD



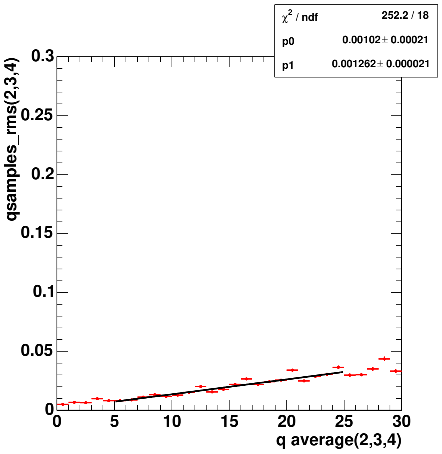
MC

Without RMS/GAIN, the distribution almost go through 0 ⇒ all constant part comes from RMS/gain.

Discussion

The error increases with q even if the error on the strip charge used as an input to the cluster fit is charge dependant. However, for MC the error is calculated as for RD but t additional noise is quadratically added (and it should be checked that the RMS of the simulated samples behave the same).
Should we better account for the charge of strips that have a lower charge than the thresholds of the zero-suppresion? (Are strips of low charge wrongly zero-suppresed during th eMathieson fit?)
Are there only distribution tails in the rms vs q plot (especially for MC)?
Cluster of size 2 have mostly charges higher than 10 ?
Dans le cas donnes relles, Pq dans RD mm pente alors que dans MC non ? PQ dans MC c'est plat vs q ? (jamie pensais que normalement plat vs q, hugo pense que normalement pas plat)
regarder RMS/q Plus le signal est de grande amplitude, plus les mesures des samples sont eloigns les uns des autres A priori il devrait pas y avoir de dispersion, sauf a cause du "drift time" temps de drive, qui fait que le temps des samples ne correspond pas toujours au meme endroit dans le signal ... (si la particule est proche du fil, le signal est tot, par rapport aux temps du samples, si elle est loin, le signal est tard par rapport au temps du sample).

Discussion



χ^2 / ndf 252.2 / 18
p0 0.00102 ± 0.00021
p1 0.001262 ± 0.000021
qsamples_rms(2,3,4)
q average(2,3,4)
0.3
0.25
0.2
0.15
0.1
0.05
0
0 5 10 15 20 25 30

Comparing with "No noise"