Simulation of (M)RPC: analysis update

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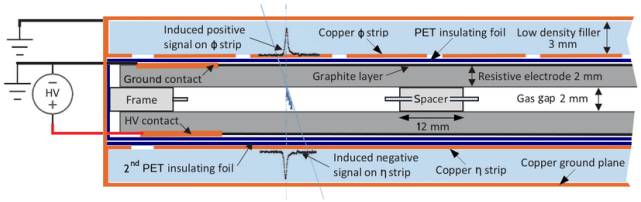
First results

We use the integrated charge distribution to find the efficiency of the detector ($\epsilon = (100\%) n_{Q>tr}/n_{events}$). Standard conditions of 1mm gap RPC's operation are STP at 7 kV of applied voltage.



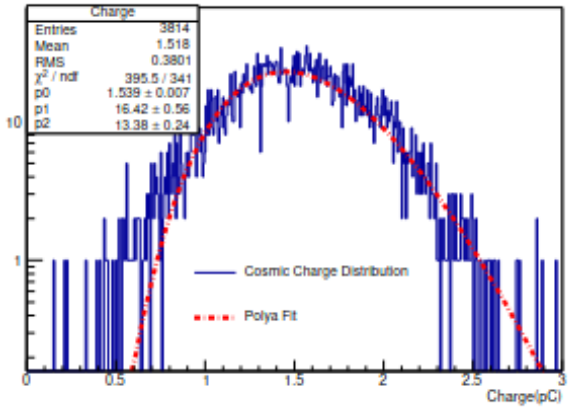
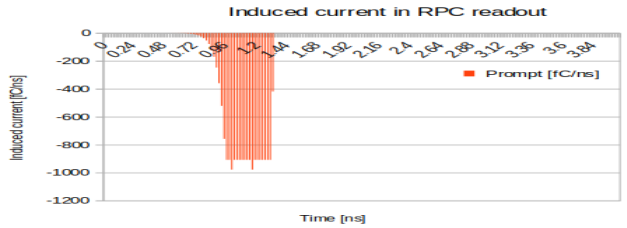
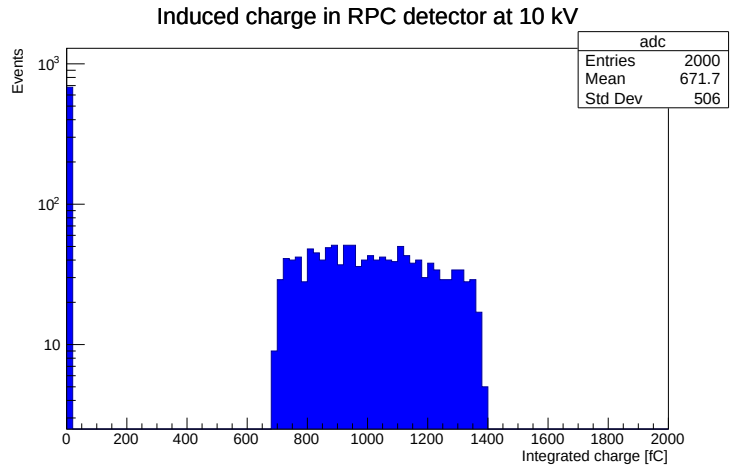


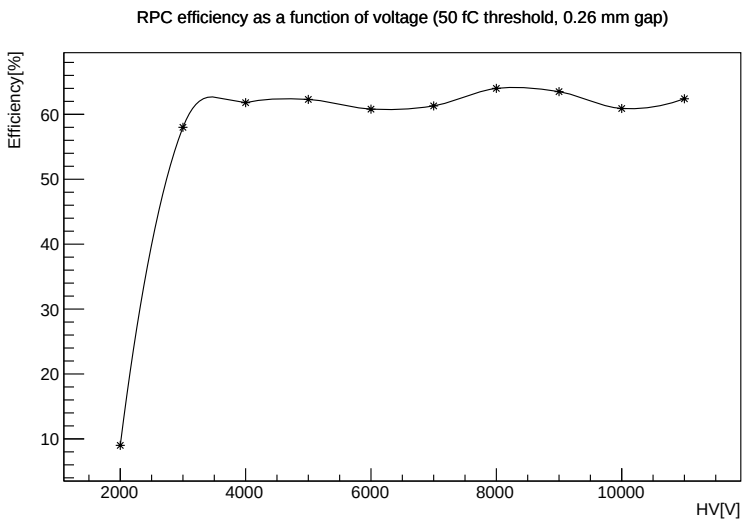
Fig. 3. Typical avalanche signal charge spectrum and its Polya fitting curve.

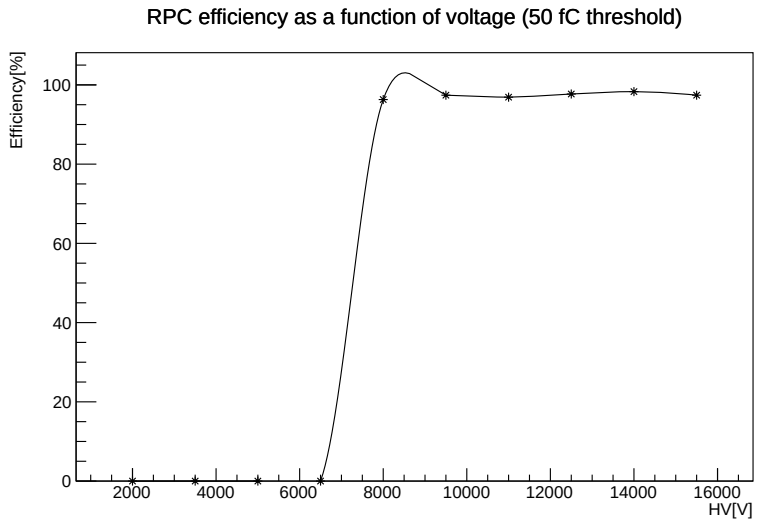




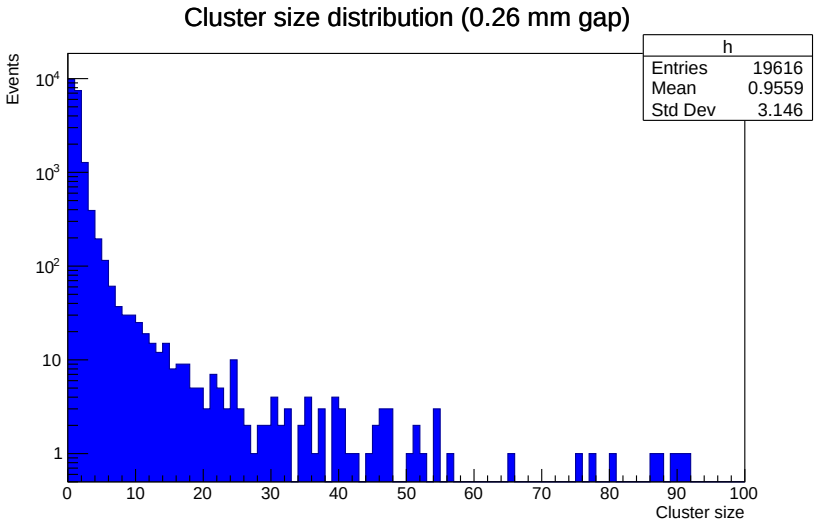
Results

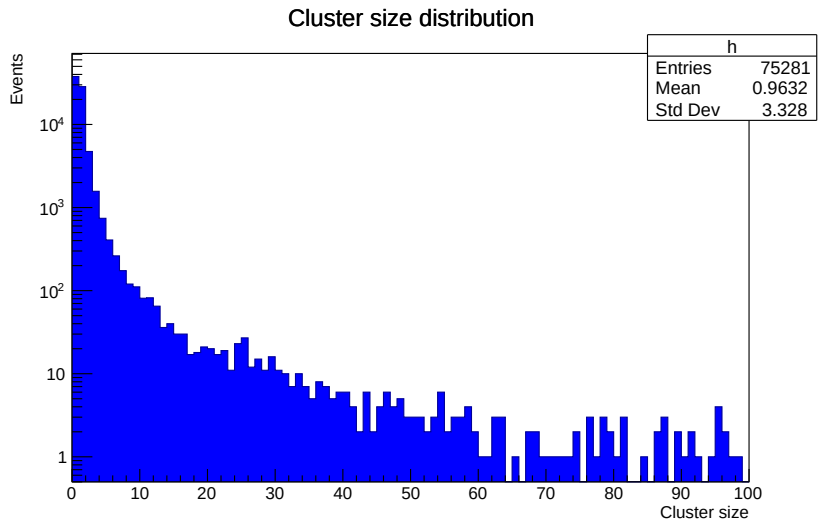
MRPC's gap size is too small for the interaction between the muons and the gas in an RPC, increasing the gas gap will require higher voltage to get same electric field.





In both cases, cluster size distributions are similar with a mean cluster size of $\approx 1 \rightarrow$ primary ionization stars with one electron in average, the RPC with 1 mm gap has more entries (clusters) than the 0.26 mm gap.





Smaller gaps in MRPC control avalanche size, which improves time resolution, electric field can be weaker using ionization from other gaps to increase the probability of detection. (Next: MRPC Garfield++ simulation)