Vertex cluster size studies

V.Patera, A.Sarti, M.Toppi

FIRST General Meeting – Rome, 21 November 2013

Pixel counting

- The scope of this study is to clean the data sample with some "good cuts" that can allow to use (calibrate) the charge of the VTX detector in the reconstruction algorithm starting from the work of C. Finck

- Study done on glbtracks

- We call here cluster size the average of pixels on all clusters for each glbtrack that have fired more than 1 hit per cluster

- Cluster Size studied for each fragment selected with Z_tof

Cuts used in the analysis

The study was done on the whole sample (last production v64)

- Number of Vertexes for each event == 1

- Vtx Validity: trks in the vertex >=1 (include in the Fragmentation condition)

- BM matching

- Fragmentation condition: ntrks @ vertex >1

- Select events with just two only hits in the Tof Wall: one in the front and the other in the rear with the same charges
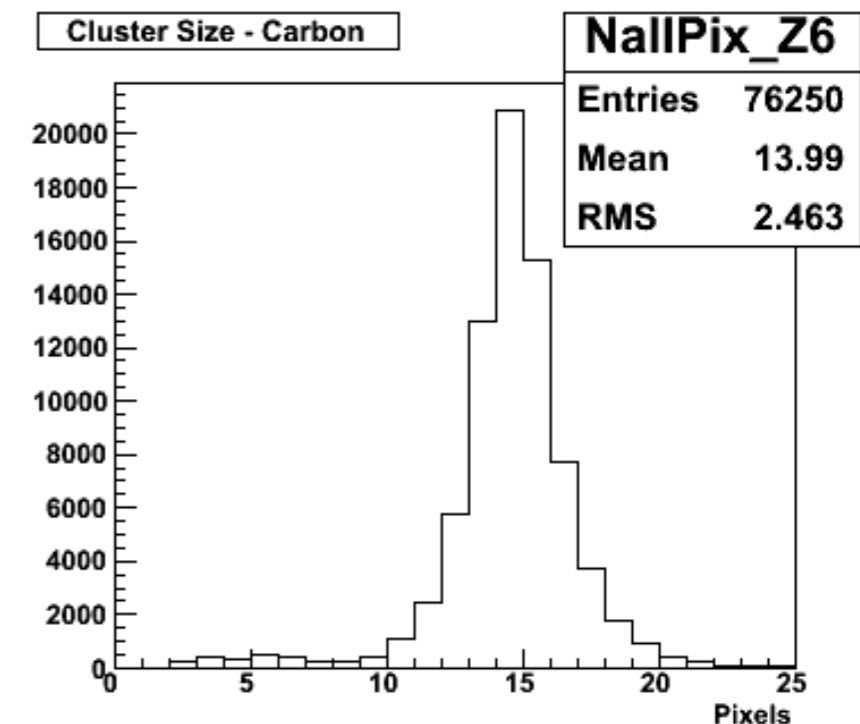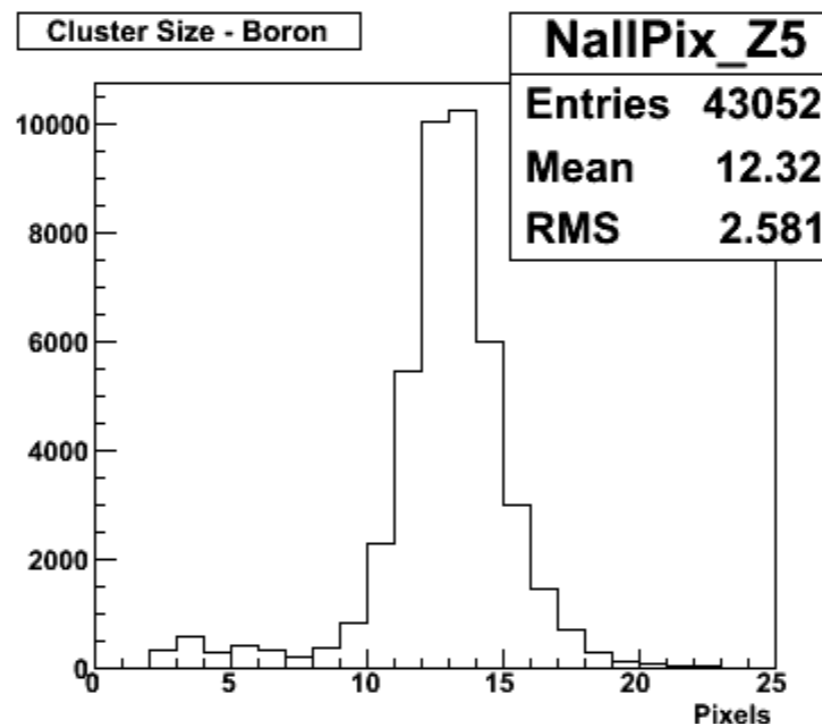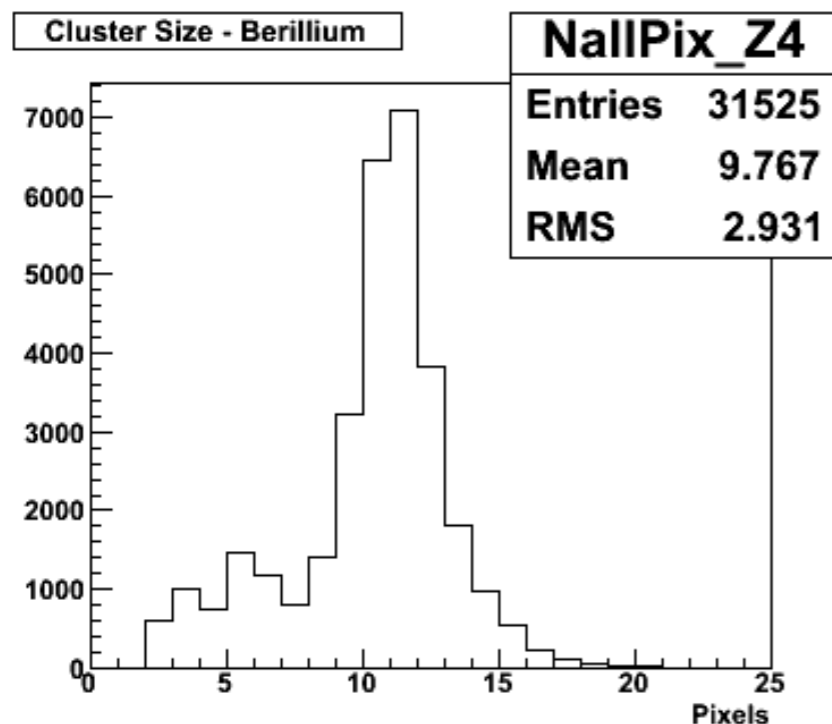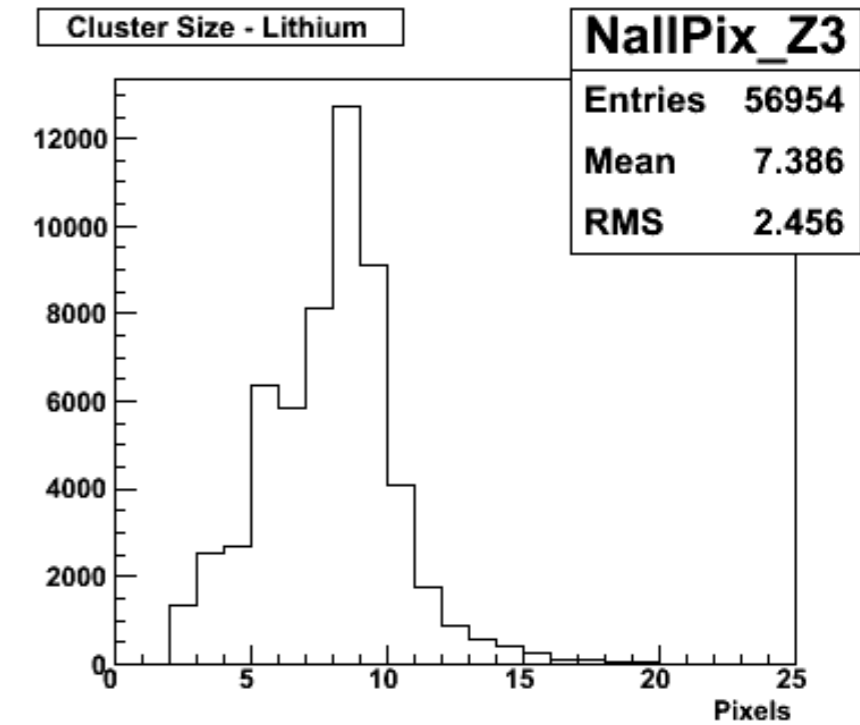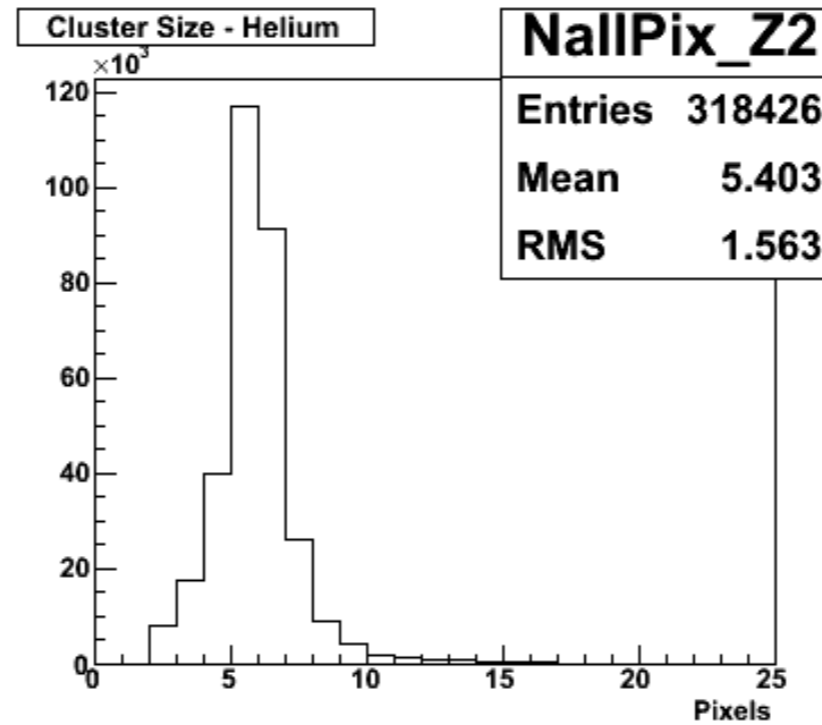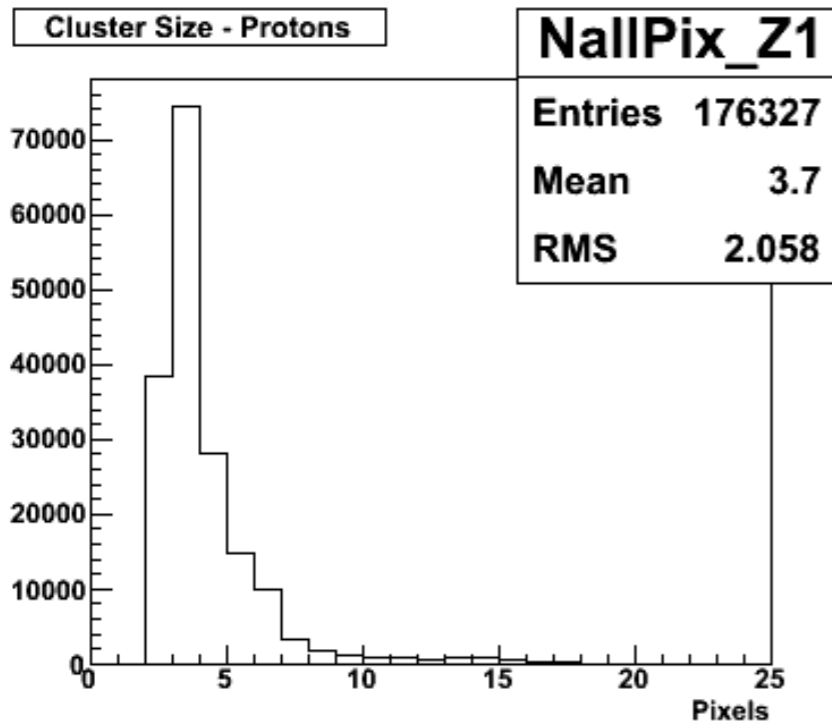
Other possible cuts:

- Tracks that enter in the Aladin angular acceptance

- Select events with just a single hit in the front or in the rear Tof Wall

No Cuts
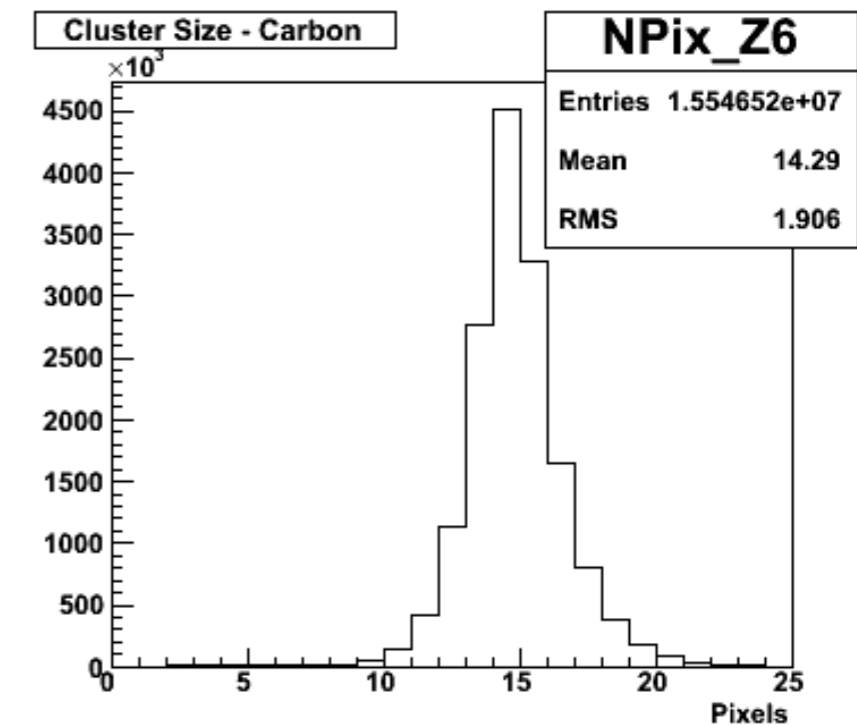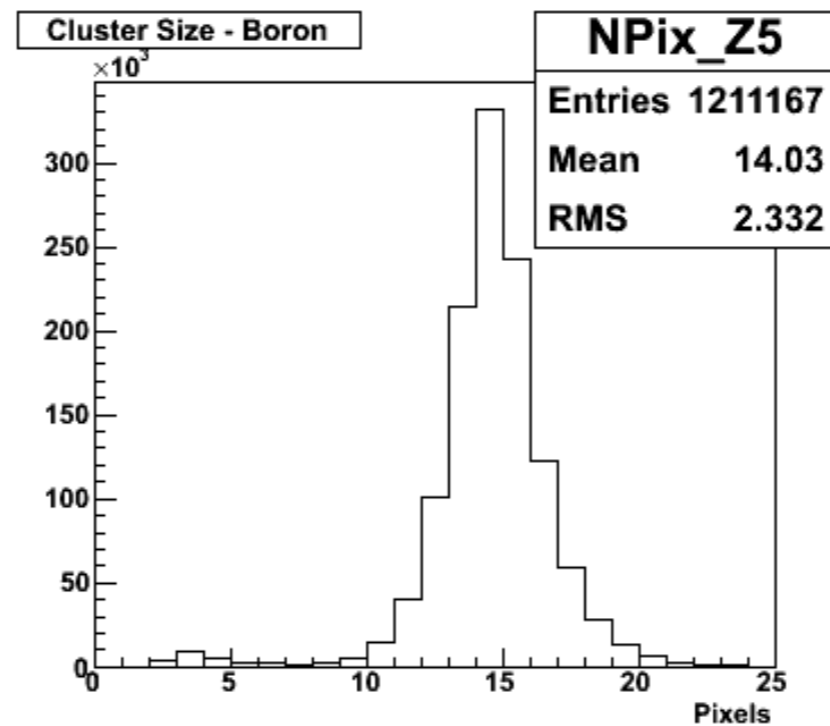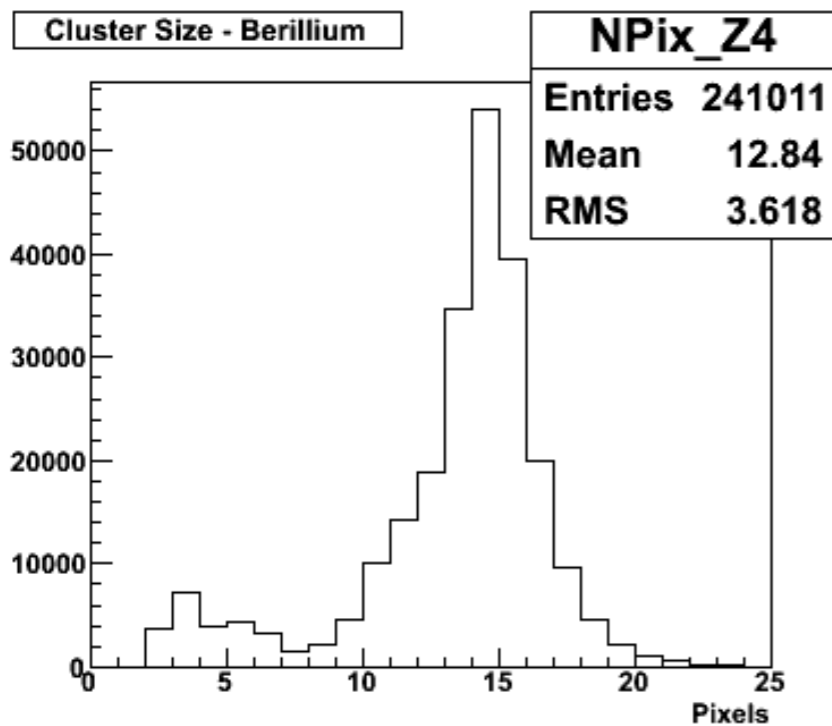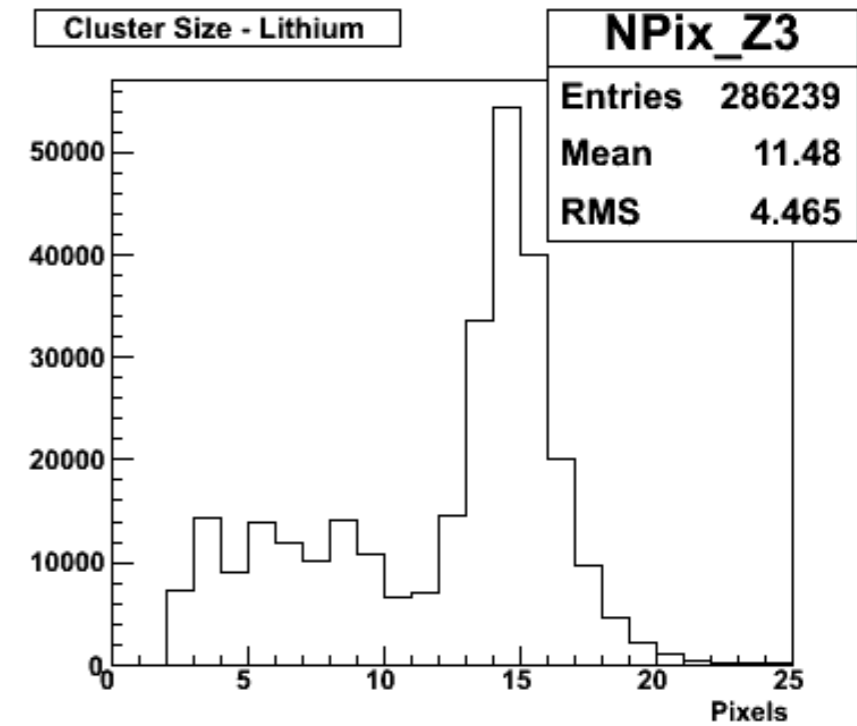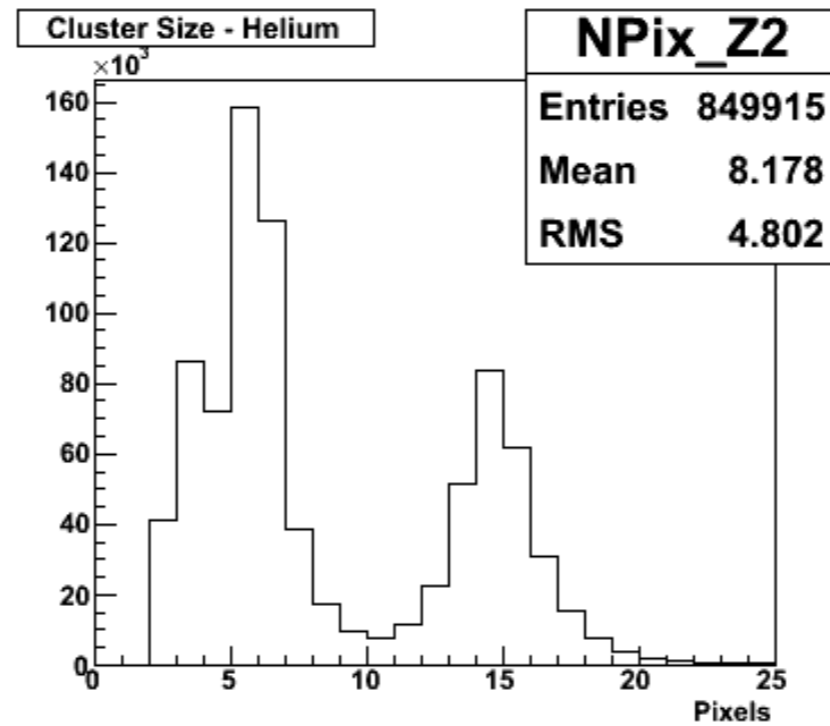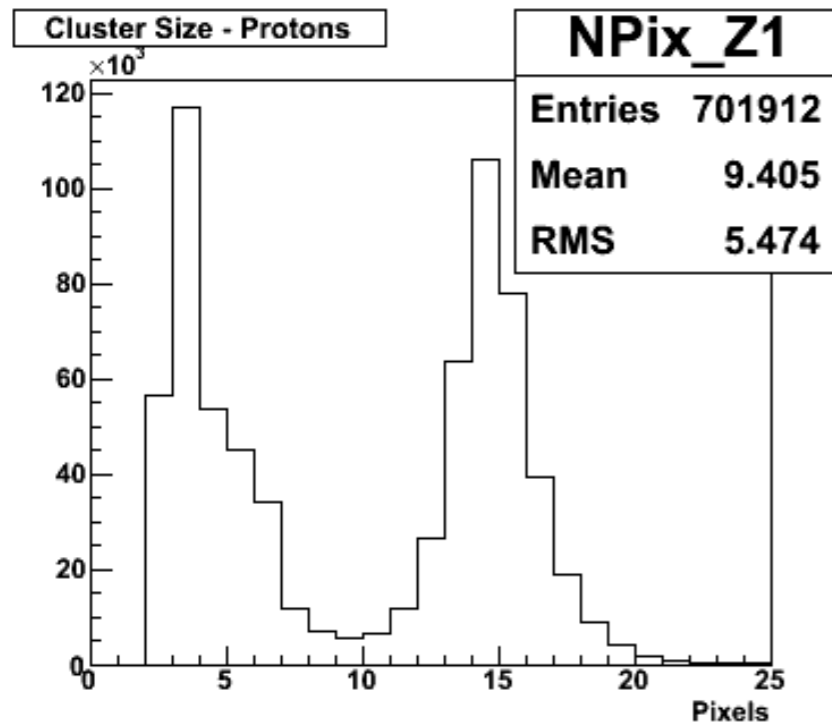
Ntracks > 1 and BM matching (see C. Finck)
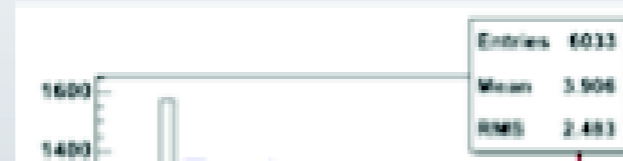
Comparison with C. Finck

- wrt C.Finck:

  - BM matching is applied AFTER tracking not during tracking itself

  - instead of full production, C.Finck uses 350-353 (only 4 runs)

  - check tracking code : rating vs ToF clustering
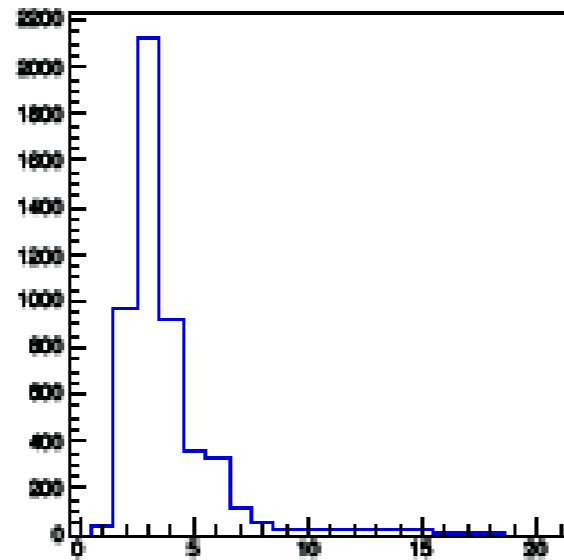
Vertex Cluster Size (i)
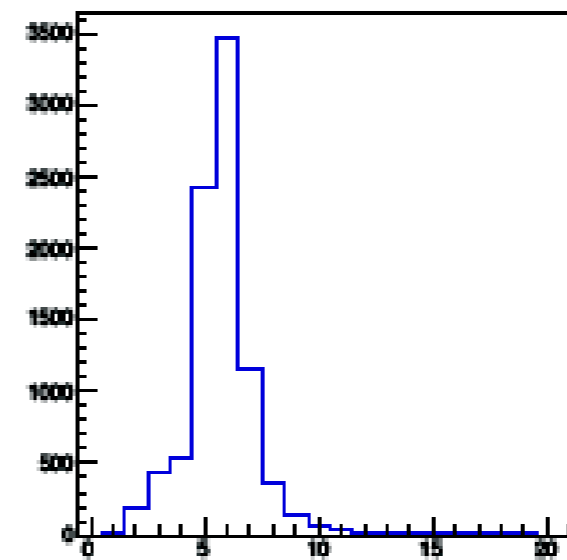
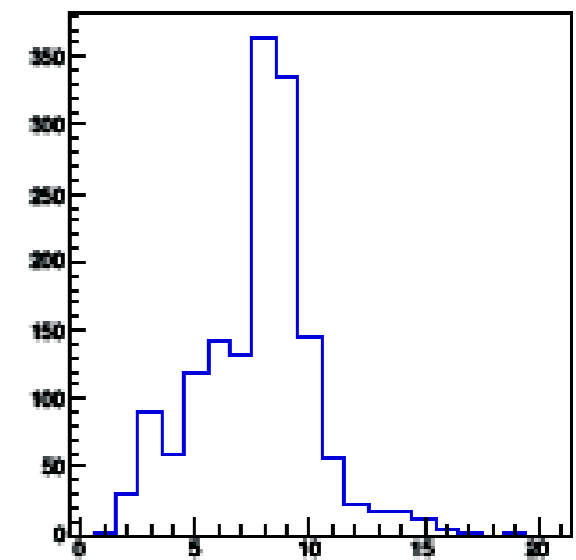Clusters size vs charge (ToF)

- with cut nTracks > 1

- BM Matched
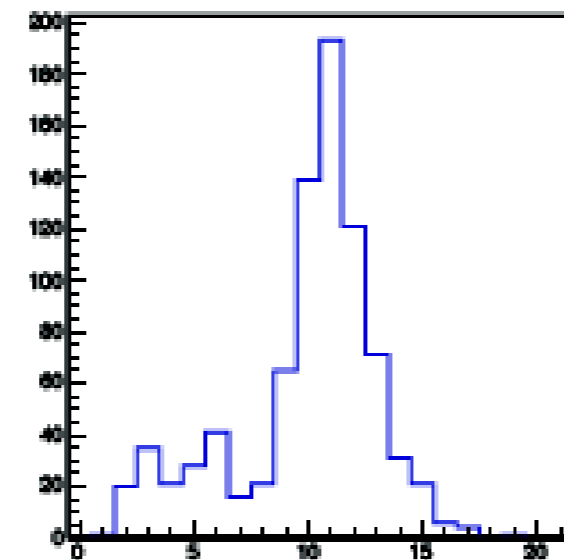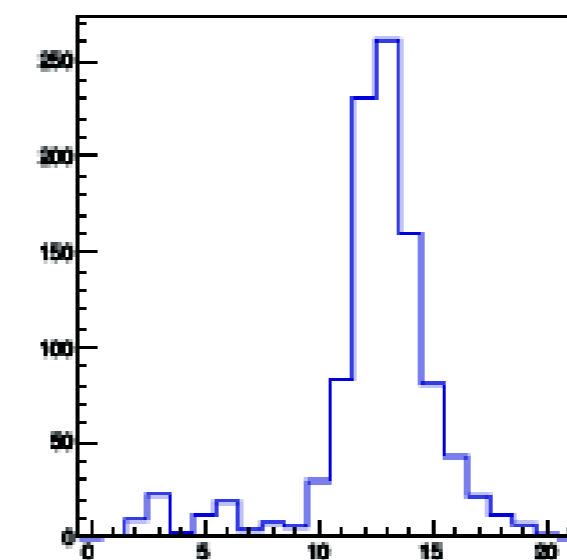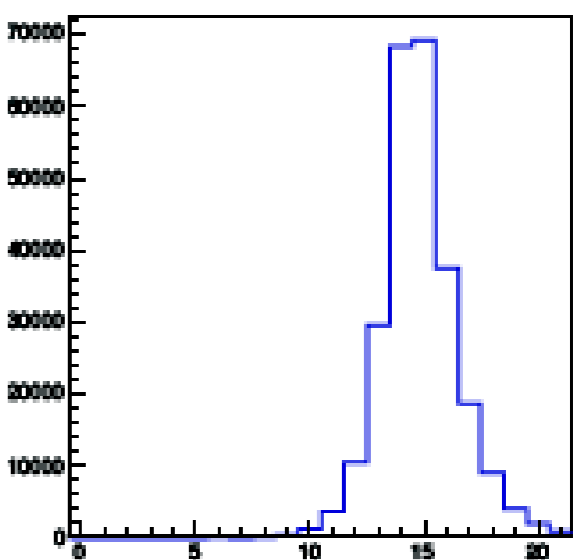
Appling all cuts
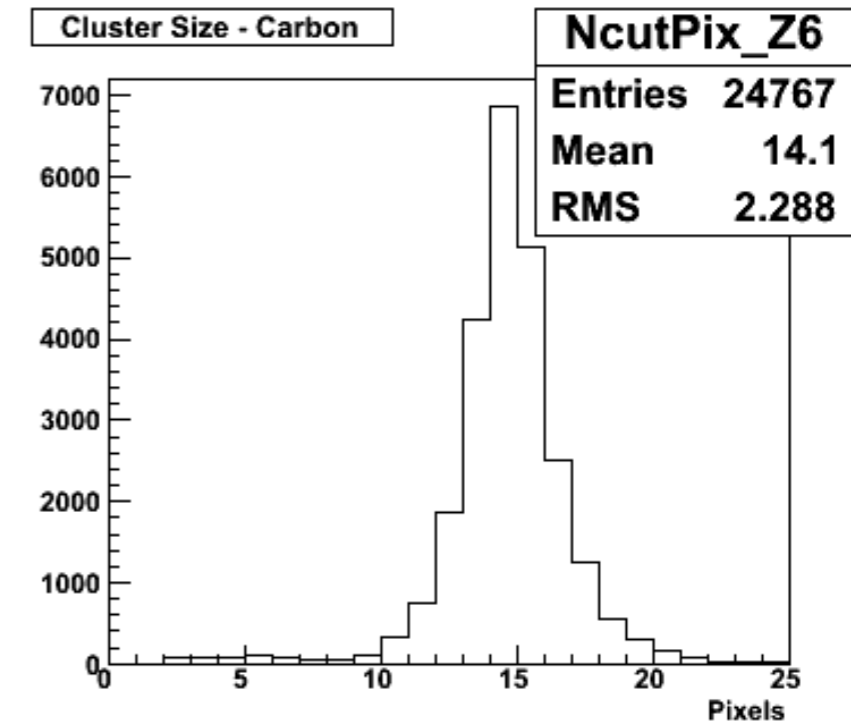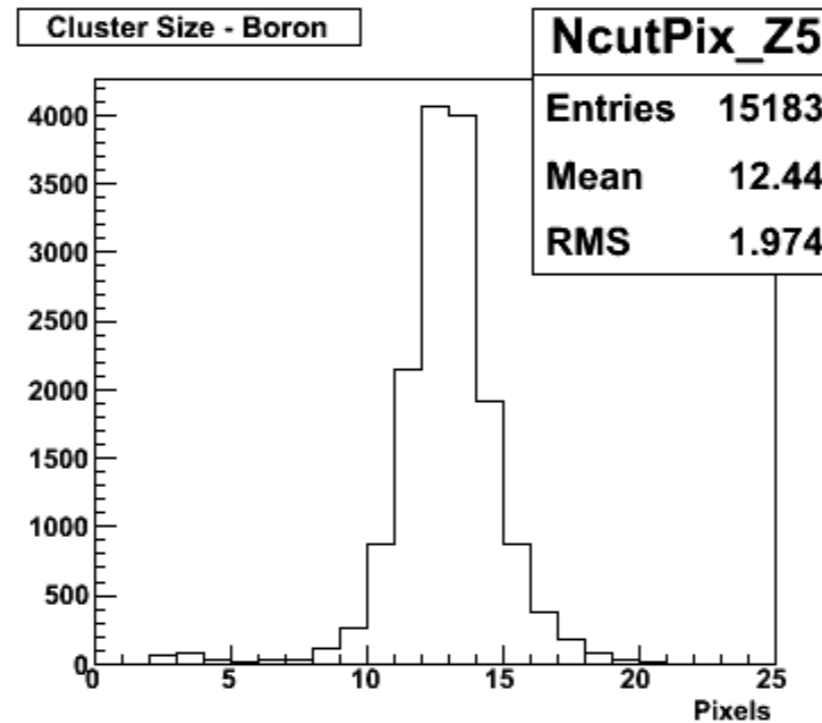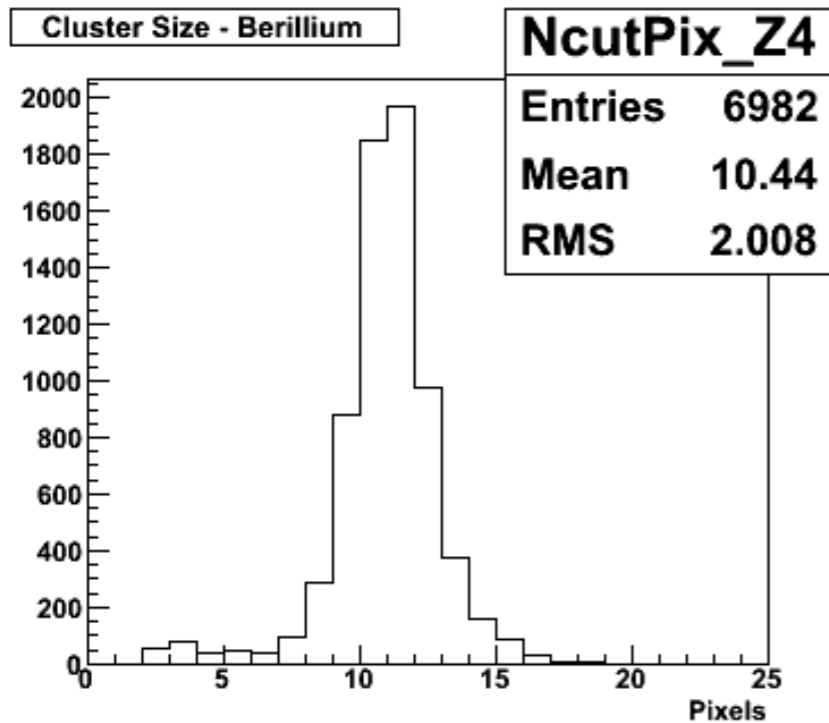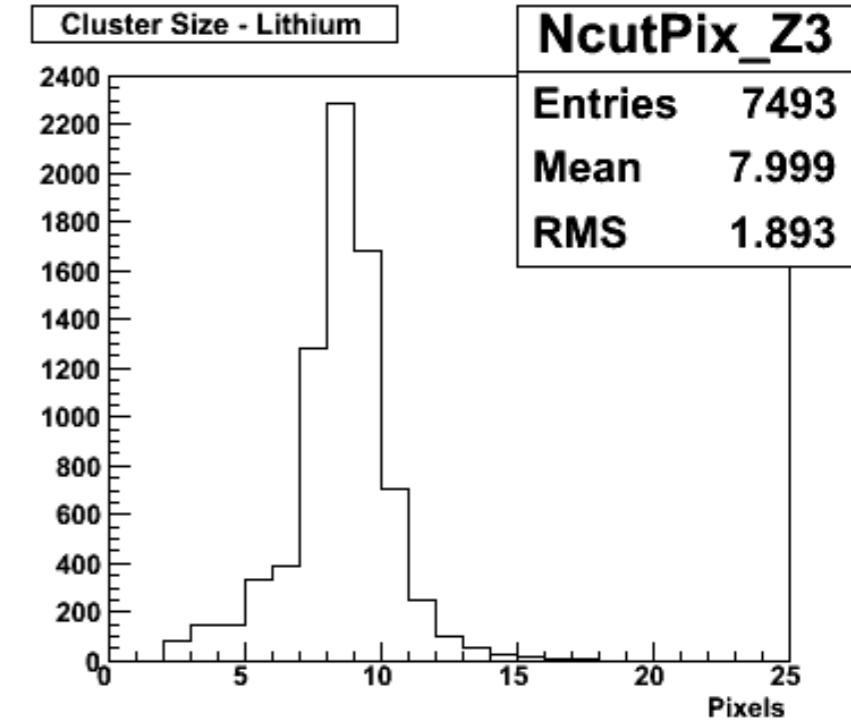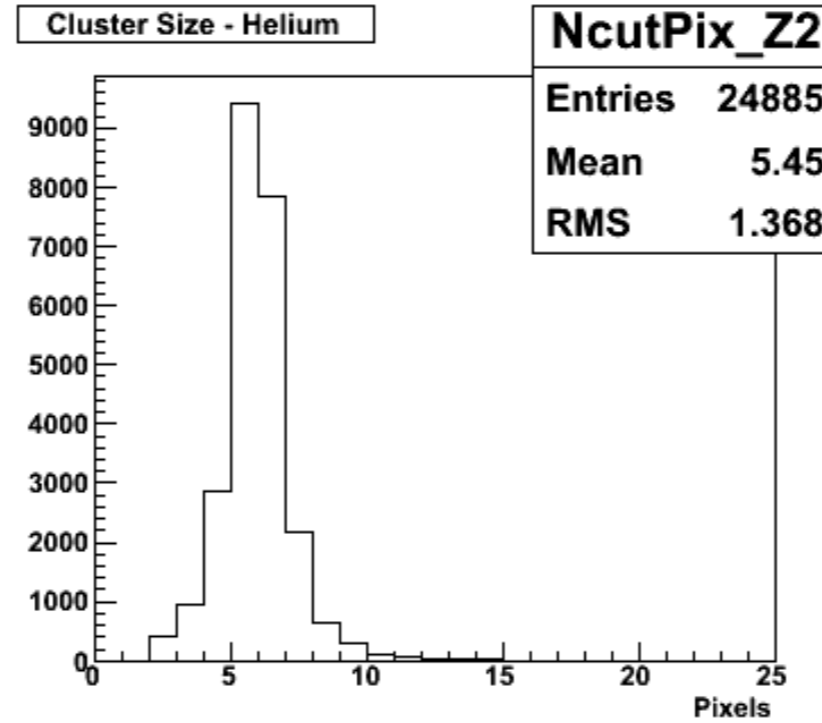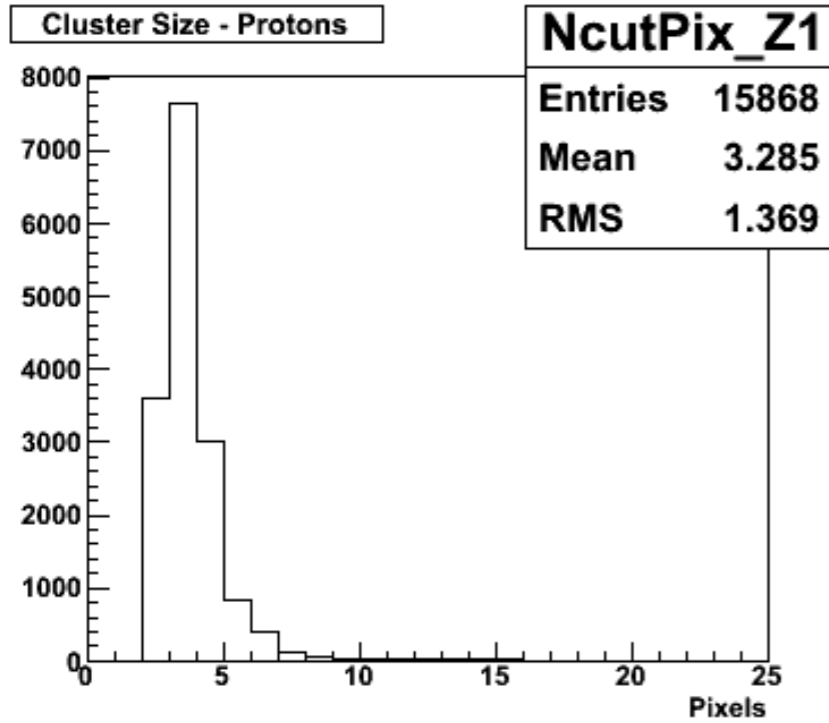
Comparison btw all frag-1

Comparison btw all frag-2

Tof Charge vs Cluster Size

Conclusions and other studies

- The use of the charge from VTX detector seem possible
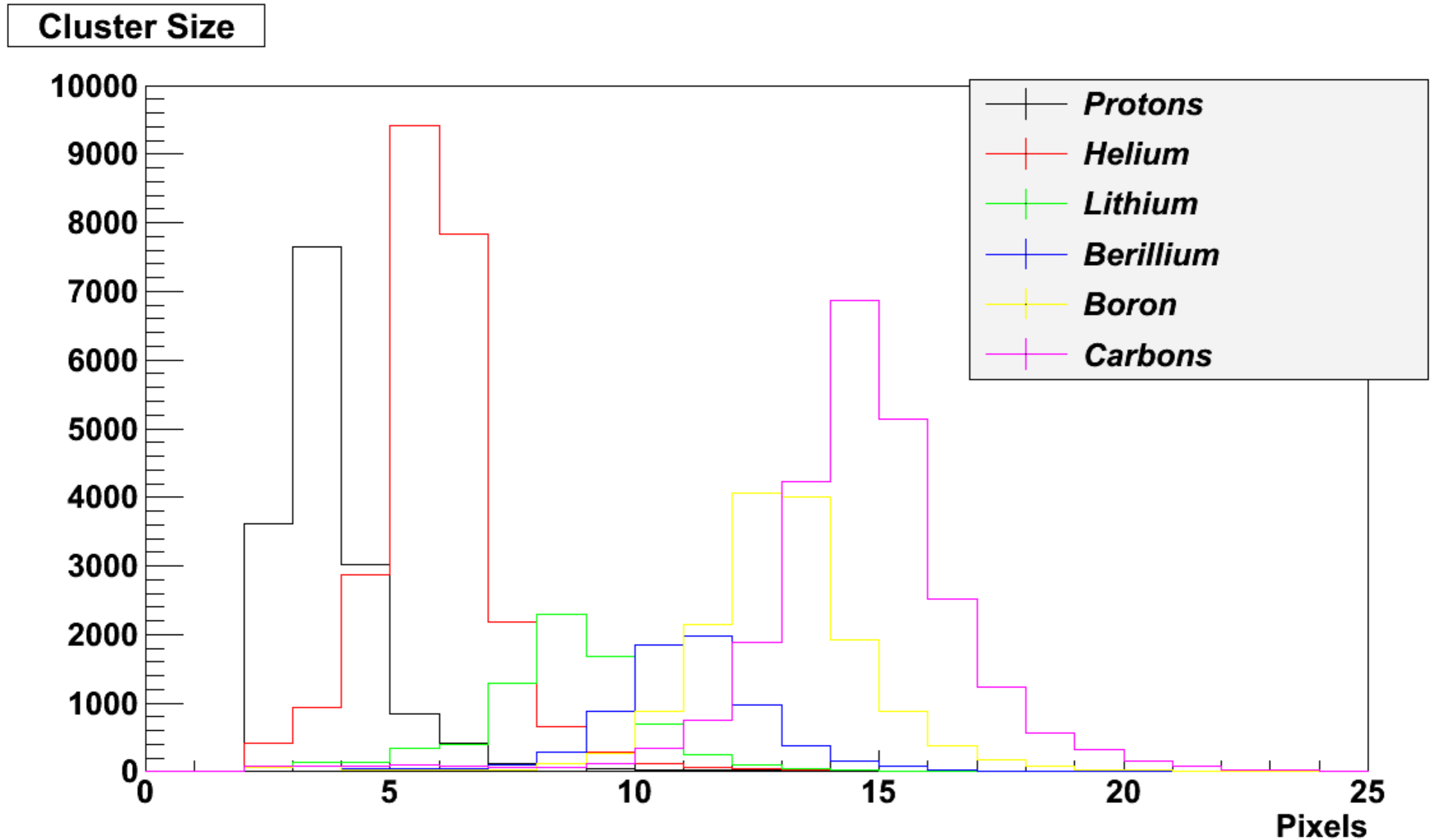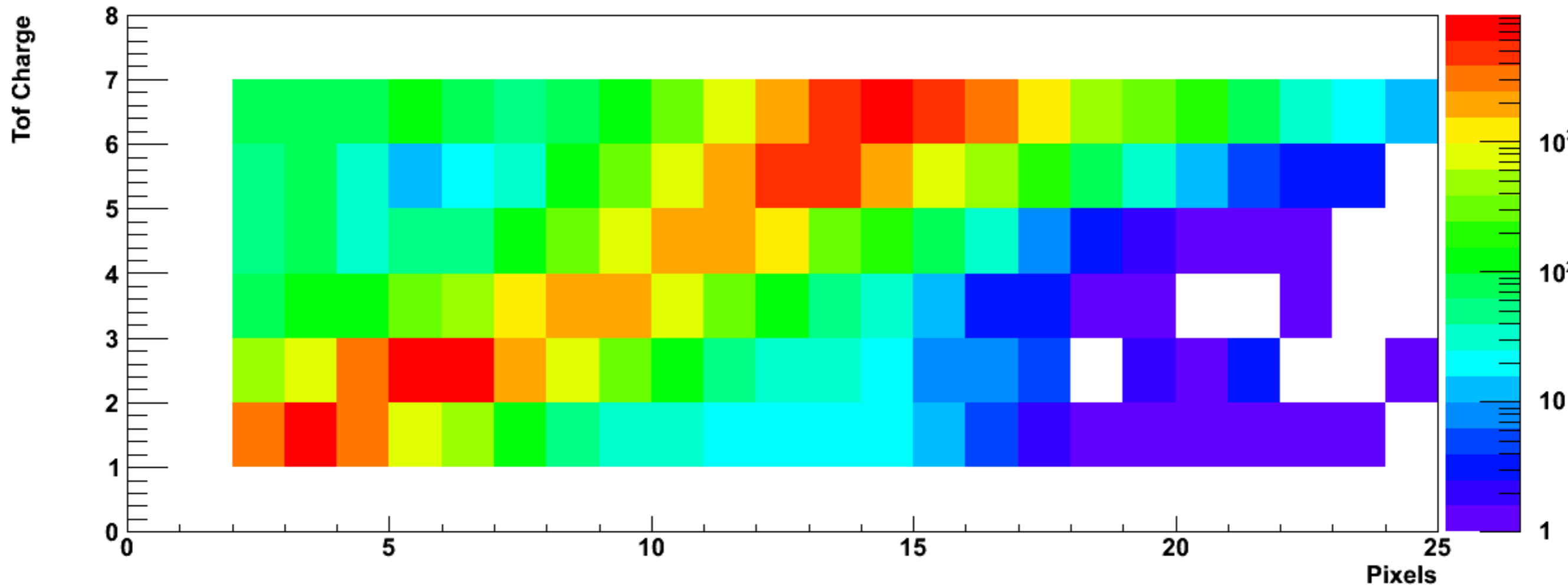
- Other possible different cuts are under study

- Studied also some correlations between cluster size and:

- X and Y cluster spatial position (for the whole sensors and for each sensor apart)

- The parameter used in the Newton-Raphson minimization for the ZID in the Tof. This is a kind of "distance" from the Bethe-Bloch curve determined for each fragment