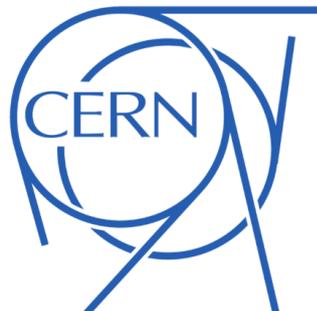


BGV - Hlt Status

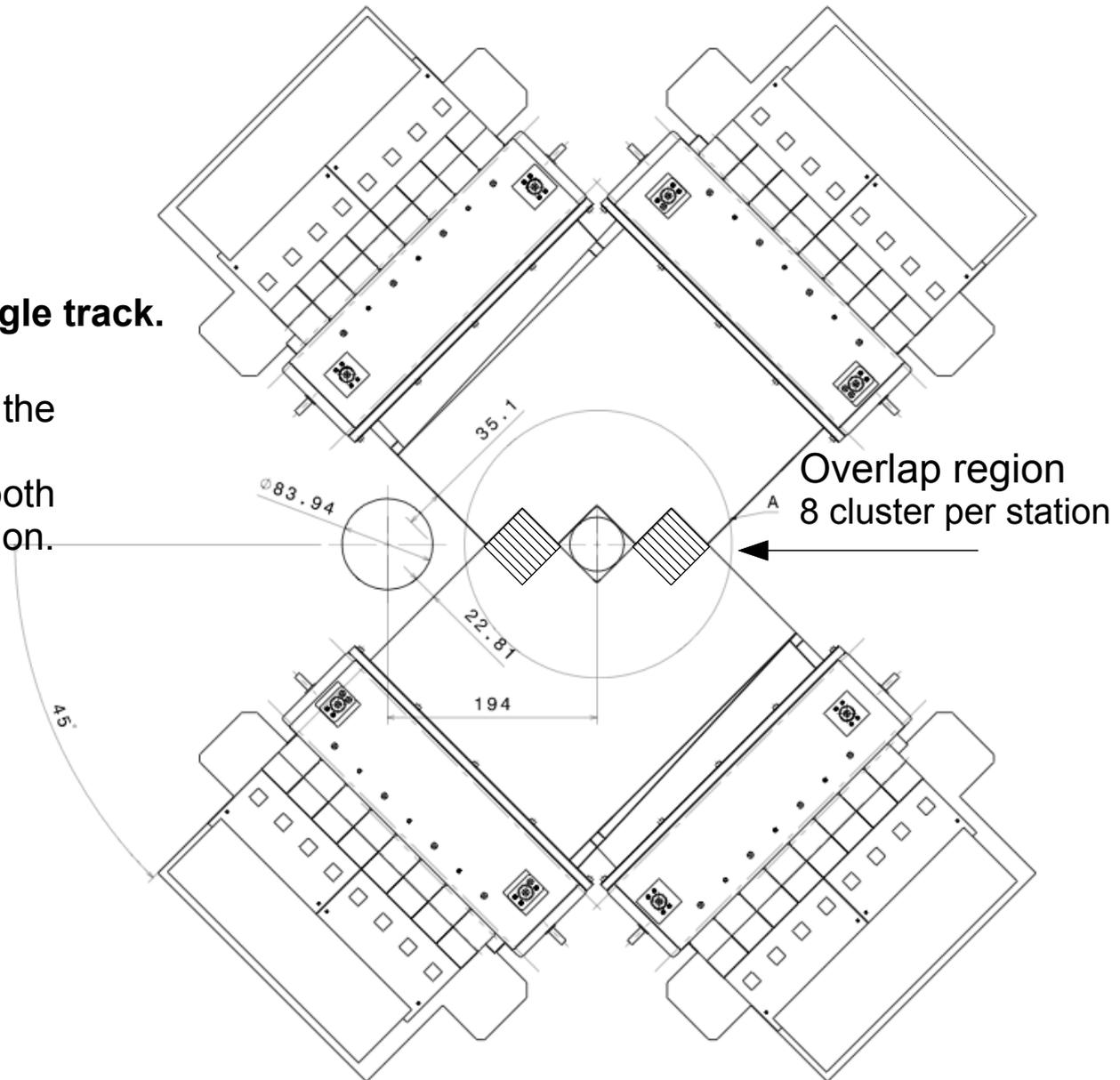
Pattern Recognition strategy and status

- Valdir Salustino



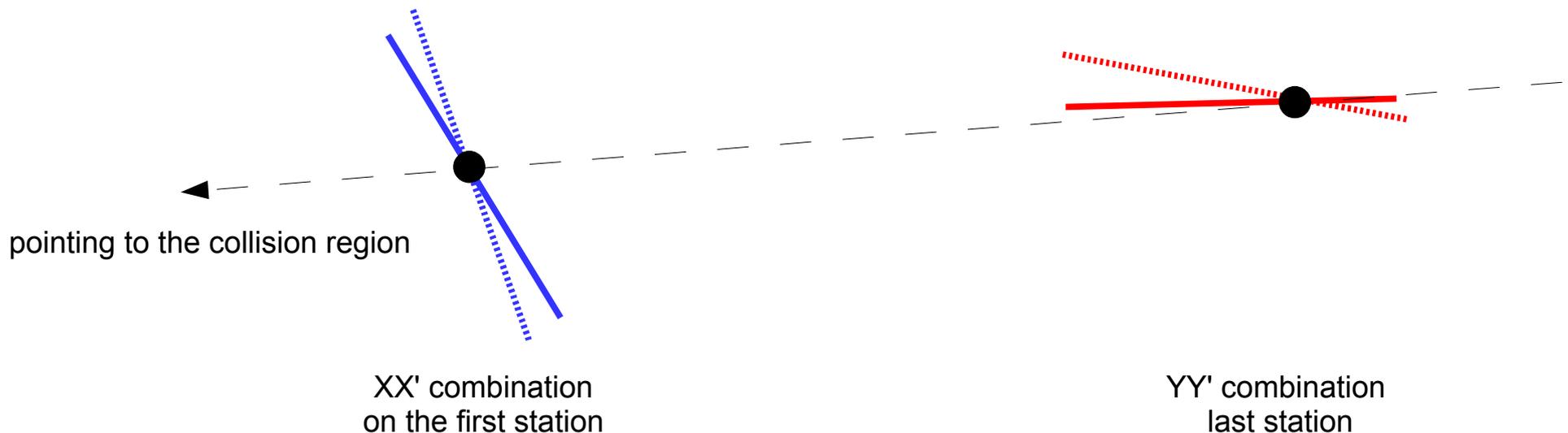
Goal:
Create a cluster list associated to a single track.

At first moment we do not consider the overlapped region:
16 cluster/track for track reaching both overlapped region in the near and far station.



Initial strategy

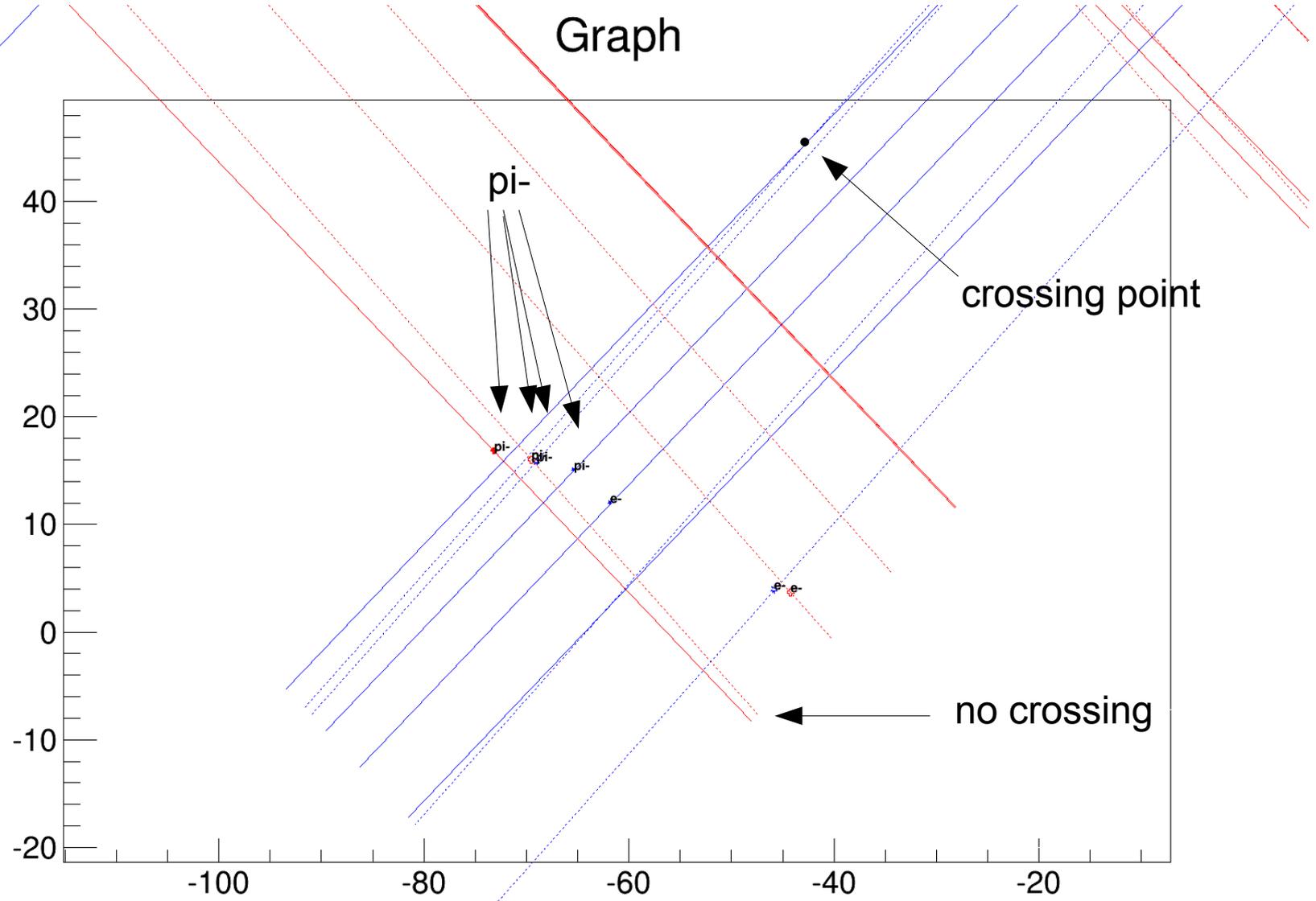
- Select cluster in the X- and stereo-plane with crossing point.
- Looking for combinations XX' on the first station and the YY' on the last station whose a “possible track” point to the beam-gas collision region.



- Select the middle fibers whose crossing points has closest approach position to the “possible track”.

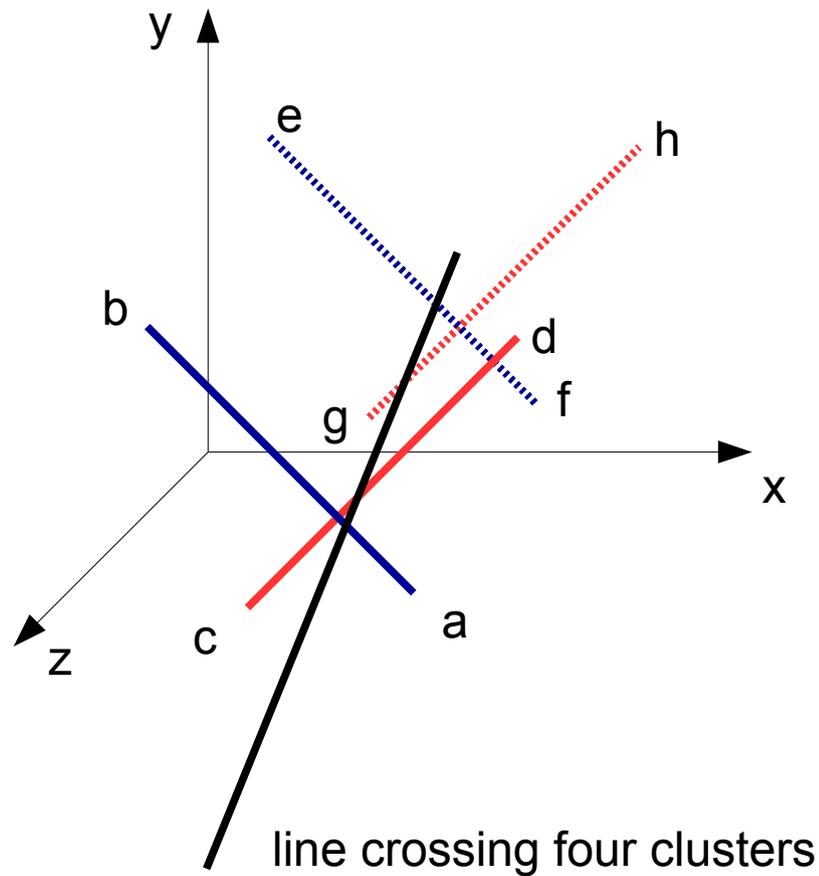
•Problems

- Distance between XX' and YY' = 46.76 mm. Large enough to the shifted clusters create a huge bias.
- Clusters haven't radial symmetry in z axis --> the crossing point is not the most probably particle position (next slide).
- ~8 % of events have no combinations (YY' or XX') both station.



Analytical approach

Given four lines (line segment in our case), whose less than two are parallels, only one line has crossing point with the others four.



Knowing the points:
 $(a,b), (c,d), (e,f), (g,h)$

the crossing line is
analytically defined

Strategy now:

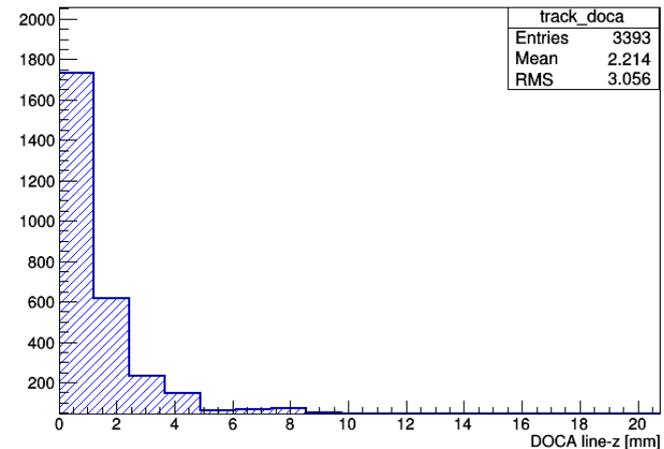
For each event:

- > Select four clusters; (2 in the near and 2 in the last station).
- > Define the vector crossing the clusters (determined by the analytical approach);
- > Check whether the vector point to the beam-gas region or not;

If (yes) {

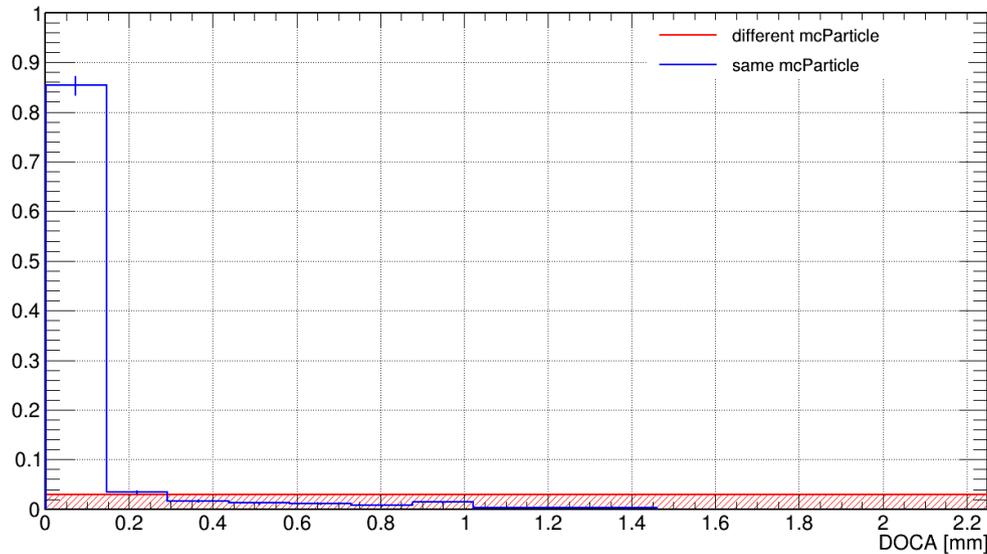
add the others four clusters.

}

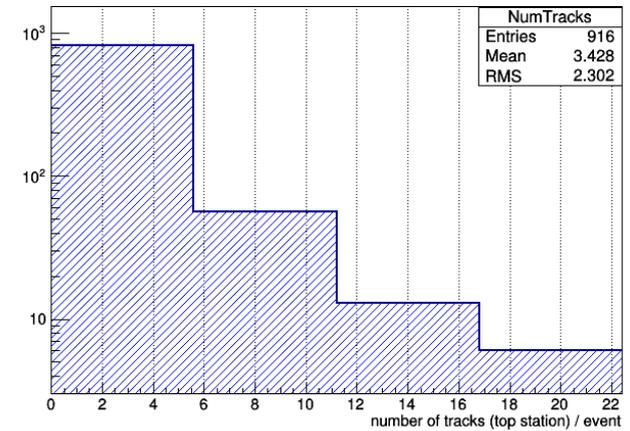


(DOCA line and beam)
for POCA ($0 < z < 1500$)

-> the added clusters is chosen by selecting a cut on DOCA between the cluster and the vector. Such cut is determined by selecting the same ScifiCluster->mcParticle.



DOCA of the analytical line and to the clusters associated to the same mcParticle (blue) and different mcParticle (red).



If we chose the cut = 0.3 events with cluster multiplicity/layer < 20 (to be check)

Summary:

The Pattern Recognition is about the be completed.

To do:

- > MCHits <--> SiciCluster association to select the DOCA (Plamen).
- > Implement the overlap region.
 - track reach both overlapped region on the both **near** and **far** station.
 - track reach **only** the overlapped **near** station.
- > Select cut on DOCA between the “analytical line” and the beam.
- > Improve the computing performance.