MPAS ECAL Clustering plans

CALICE MAPS ECAL meeting
at Rutherford Appleton Laboratory

8th February 2007

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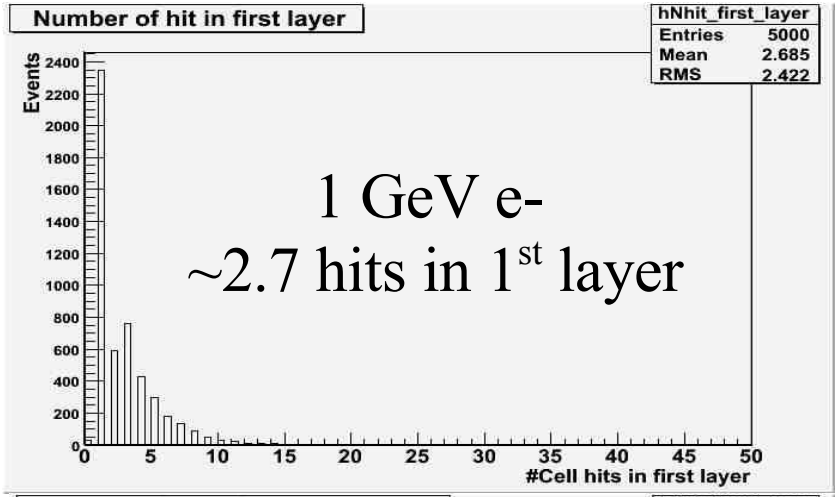
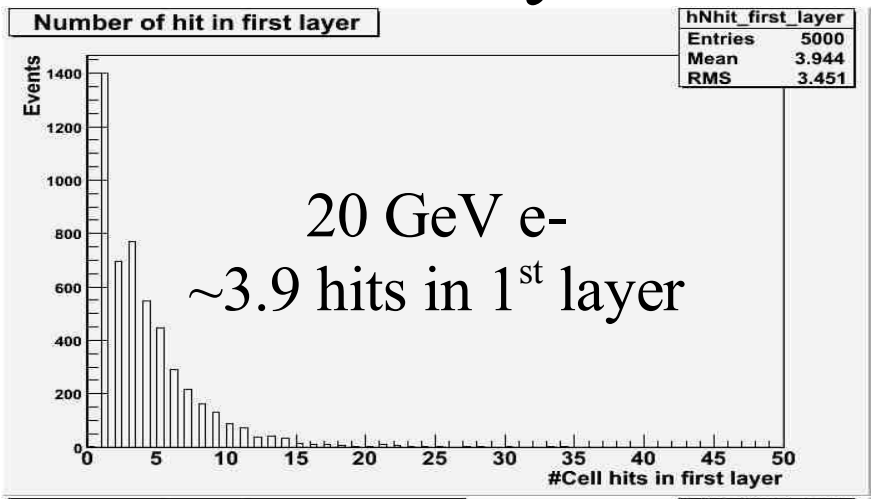
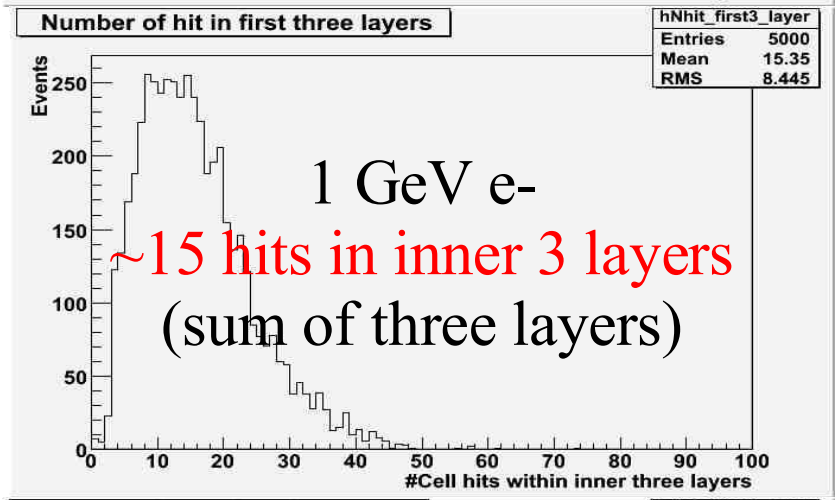
Baseline for MAPS ECAL clustering algorithm [method (1)]

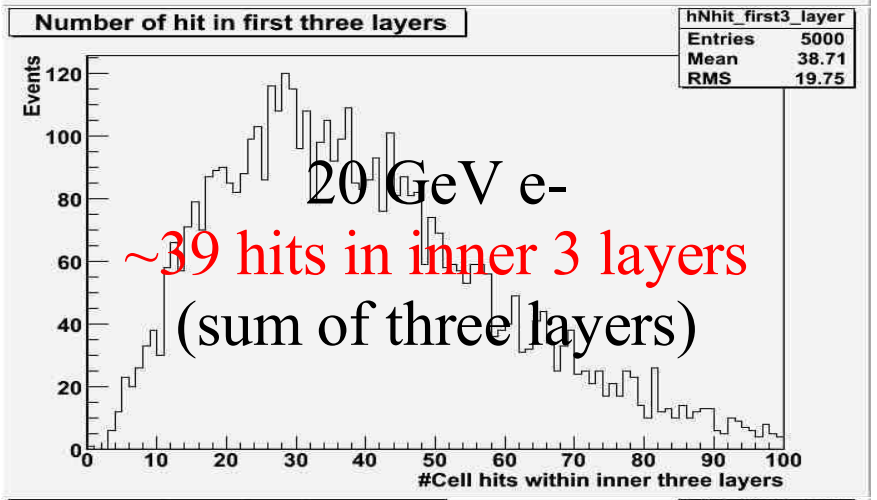
1. Finding group of hits within inner three layers.
2. Deciding direction of cluster
   - ➔ From a mean position of first or second layer to a mean position of third layer.
3. Adding all hits in 30 layers within cylinder of Moliere radius order.
   - ➔ Then taking a ratio of two different radius for particle identification between photon and electron.

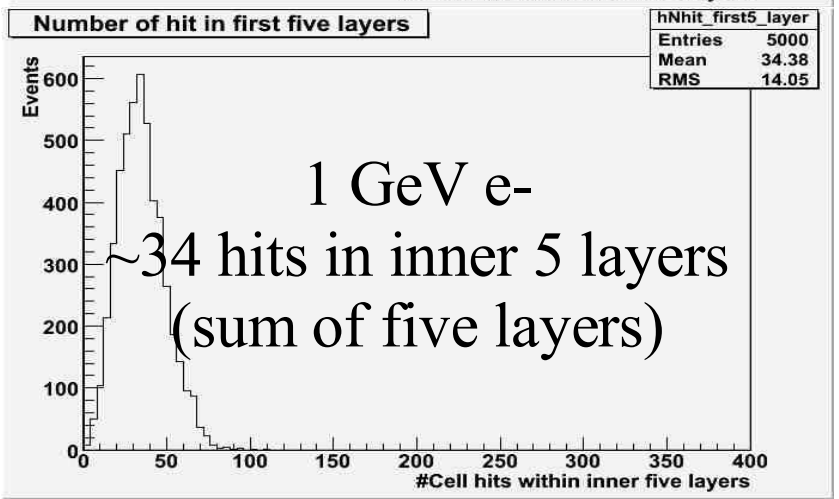
Total #cell hits within inner 1/3/5 layers:

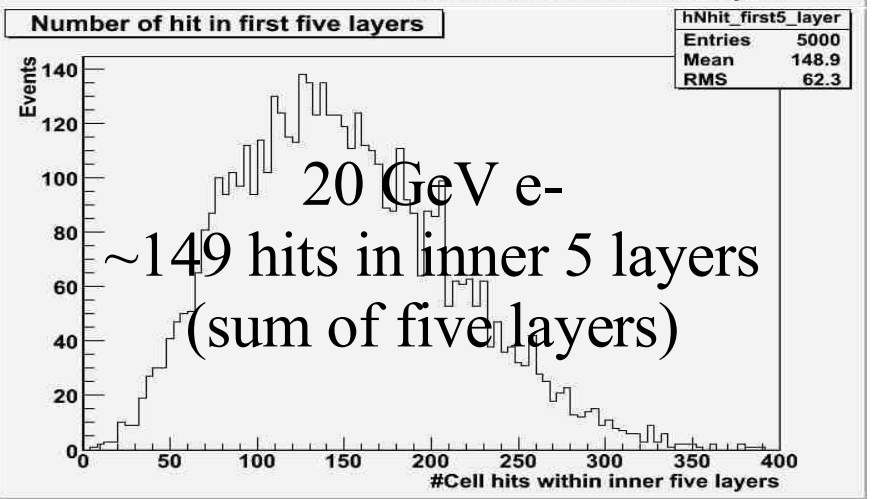




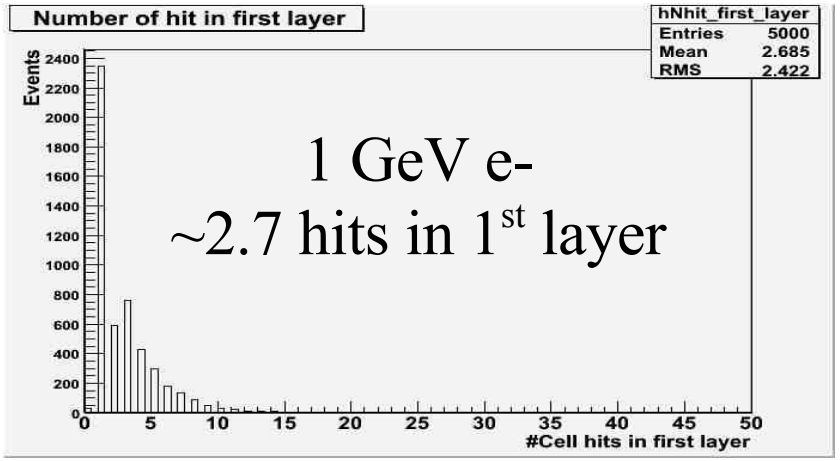


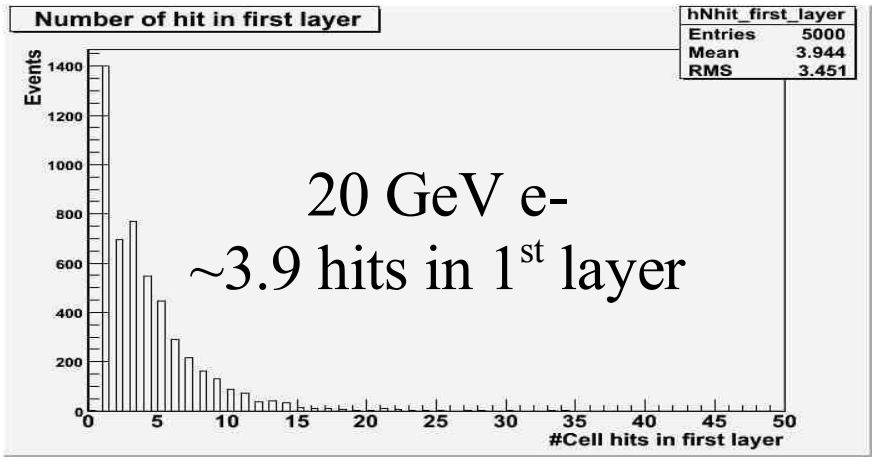


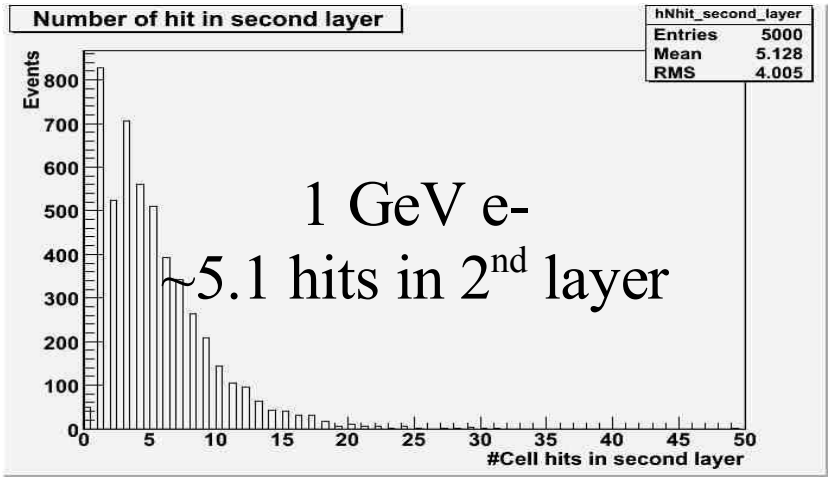


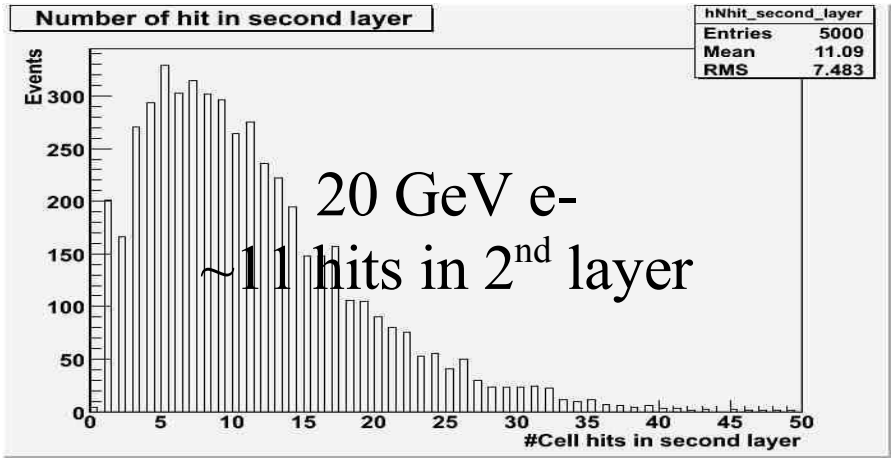


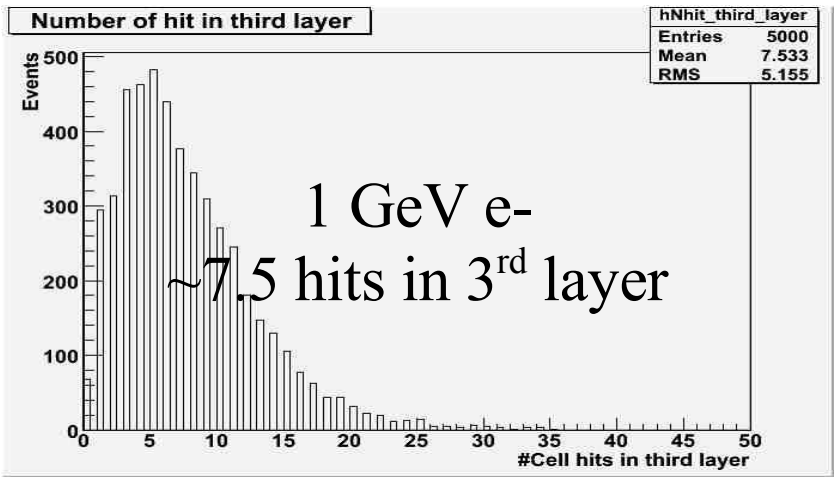
#Cell hits in each first/second/third layer

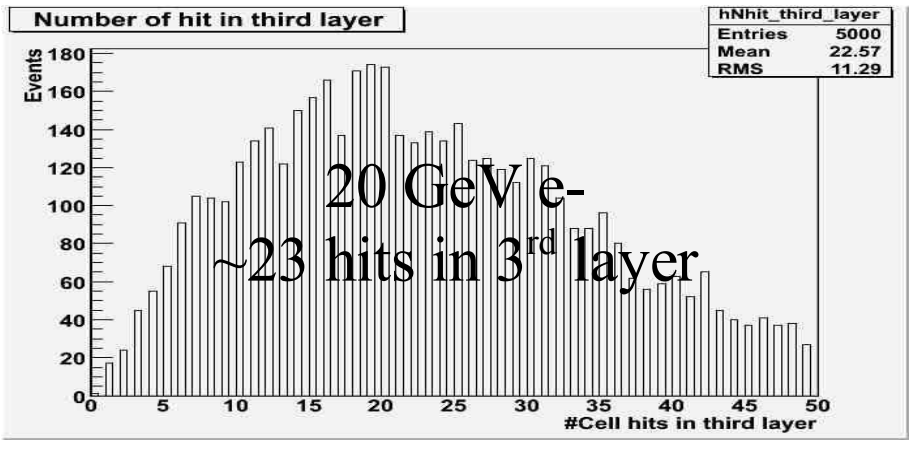




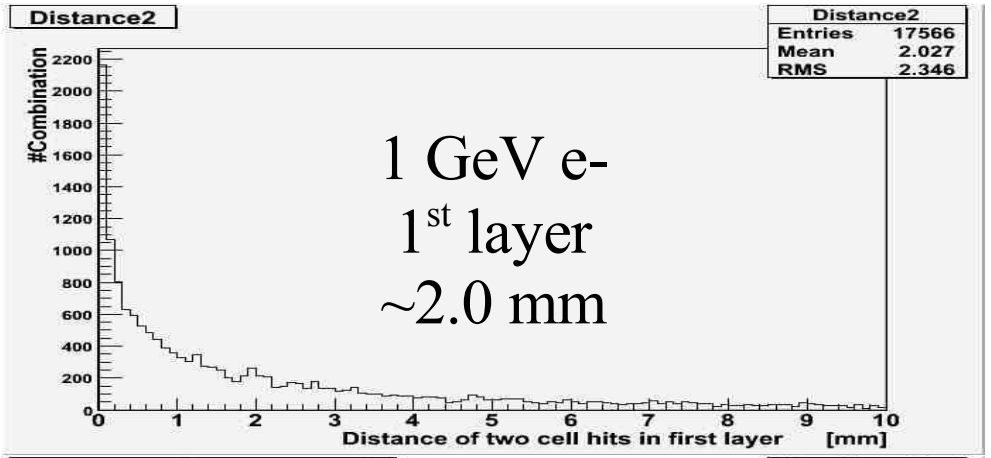




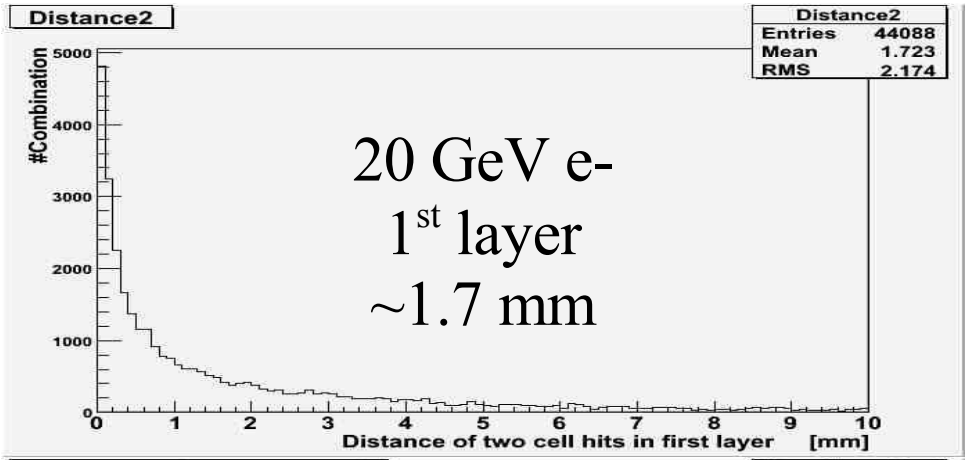




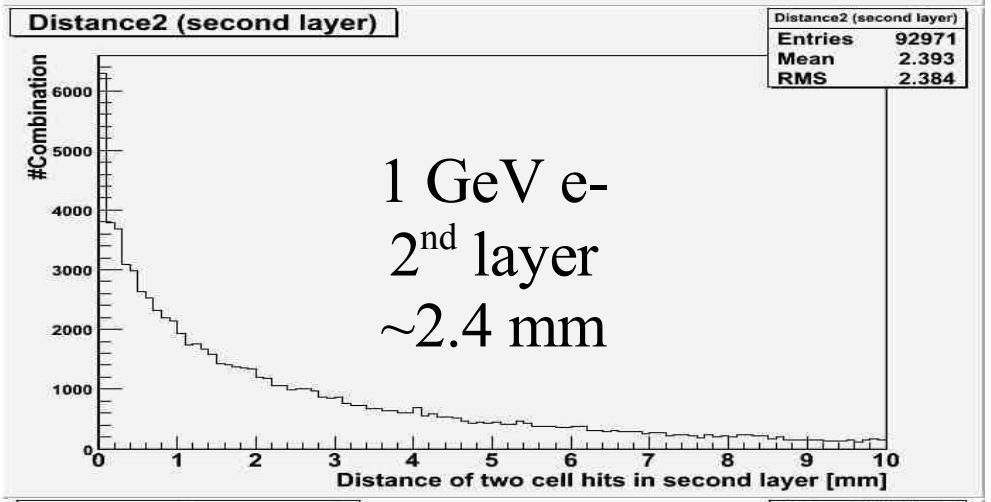
Distance of two cell hits in one layer



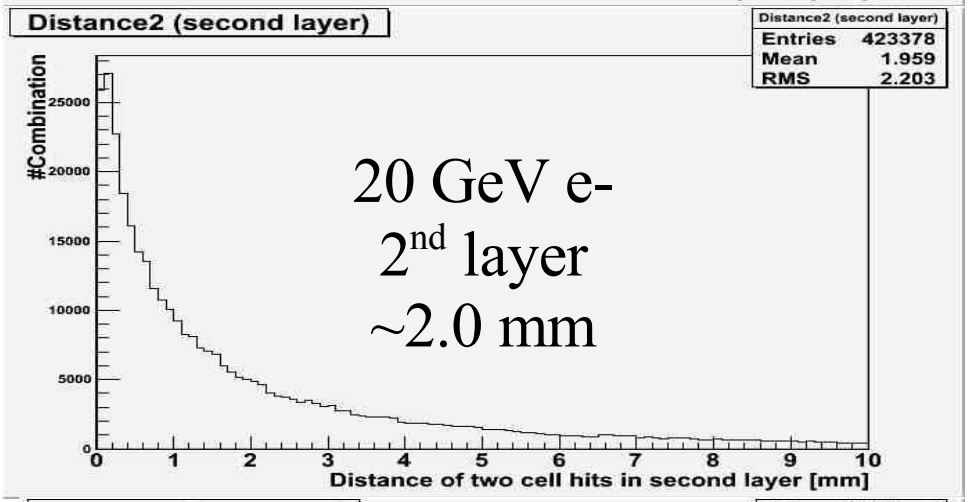
1 GeV e-
1st layer
~2.0 mm



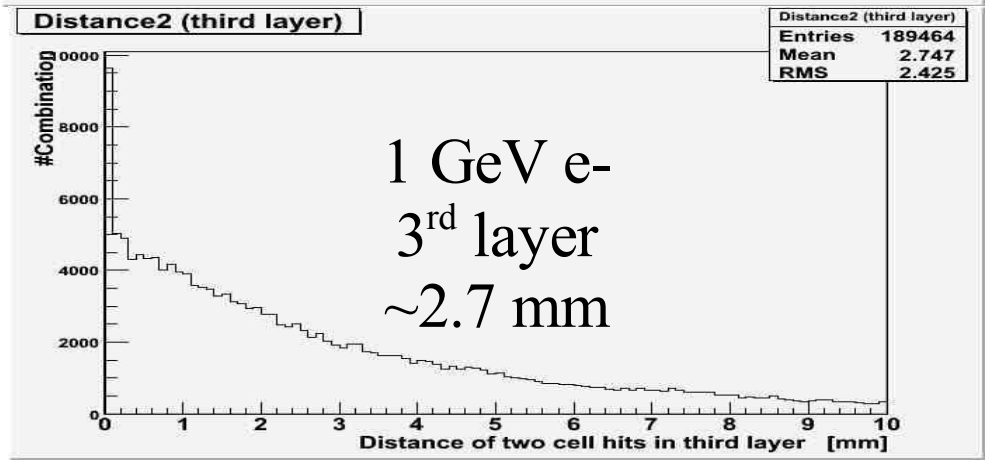
20 GeV e-
1st layer
~1.7 mm



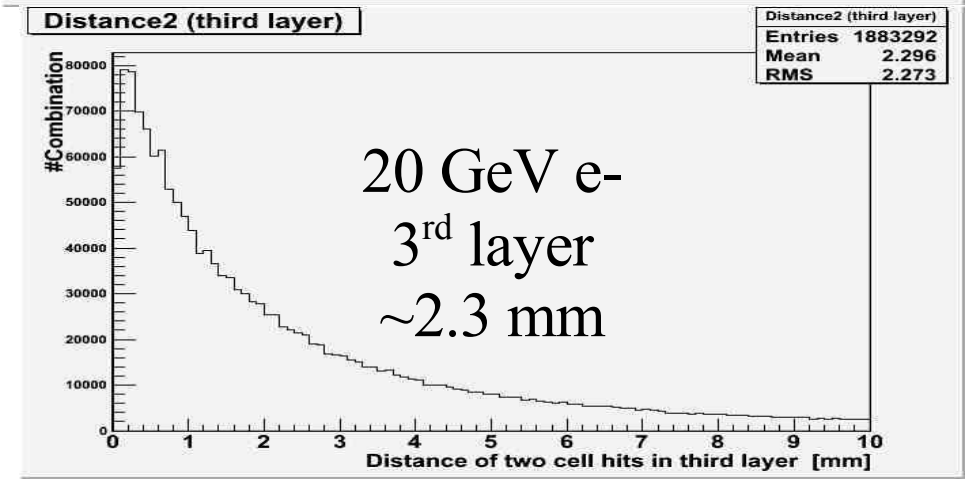
1 GeV e-
2nd layer
~2.4 mm



20 GeV e-
2nd layer
~2.0 mm

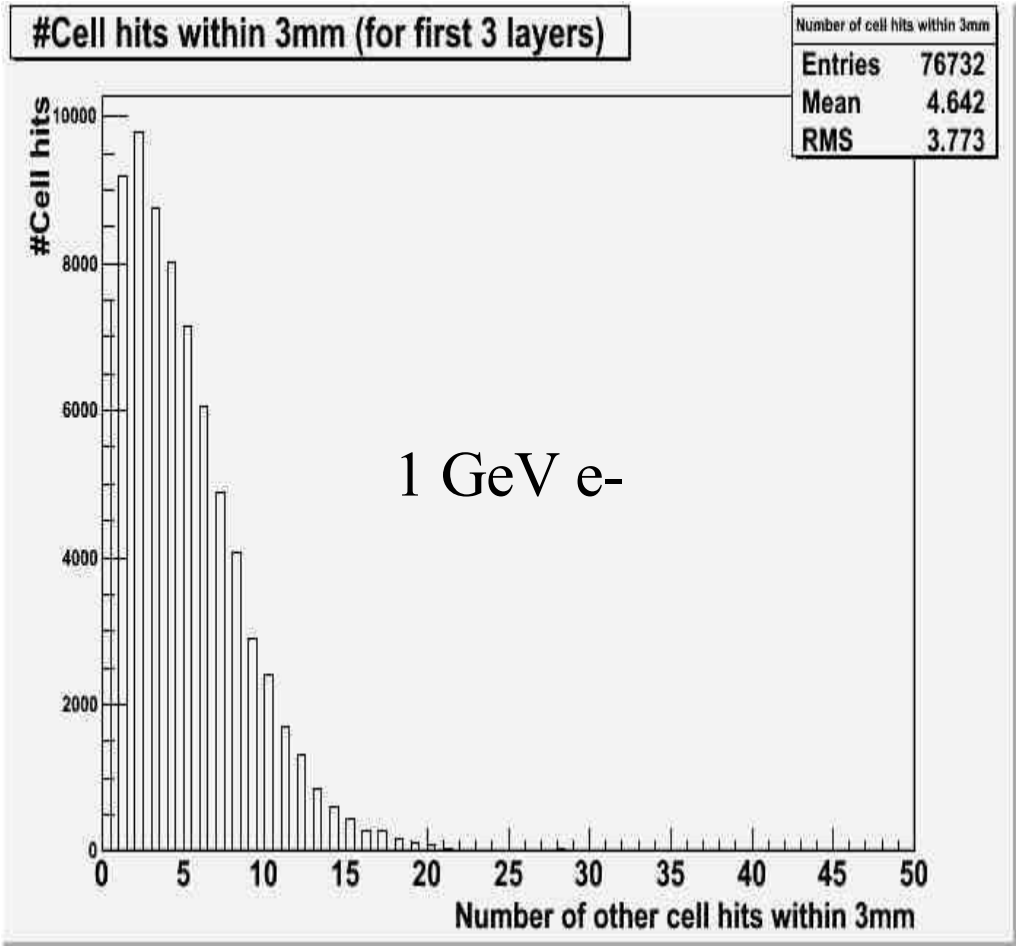


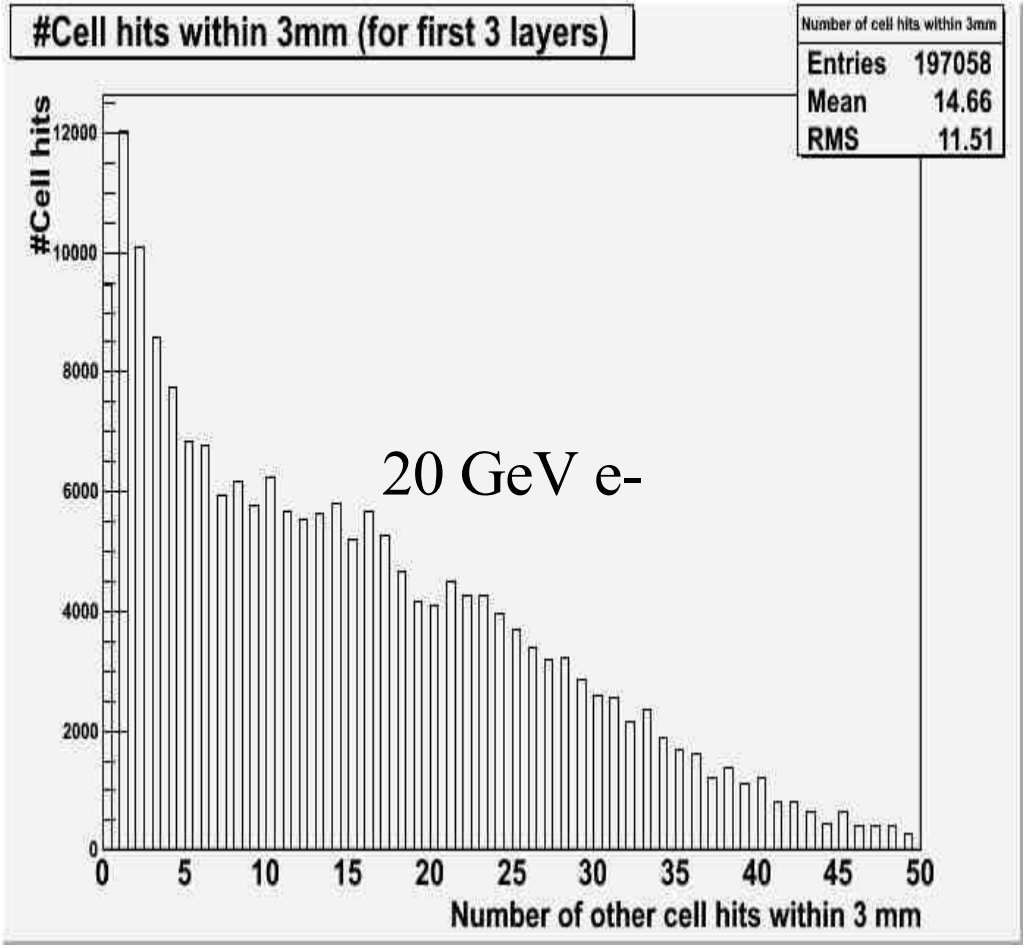
1 GeV e-
3rd layer
~2.7 mm



20 GeV e-
3rd layer
~2.3 mm

Number of other cell hits within 3mm (only for cell hits in first three layers)





Next steps

- Developing cluster finder algorithm
- Optimizing each parameters
- Efficiency and resolution study after clustering
- Applying into physics events