EMC Full Simulation Background Studies

Background EVO Meeting

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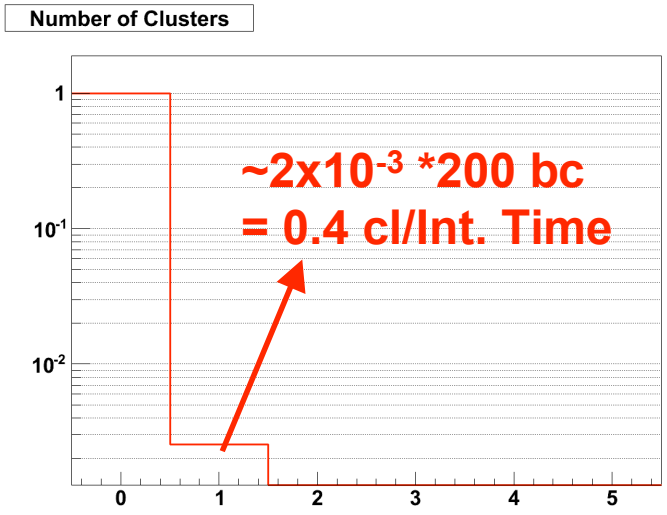
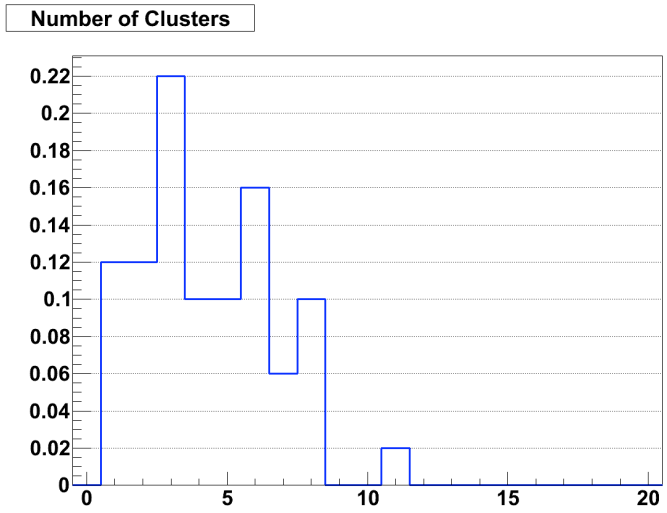
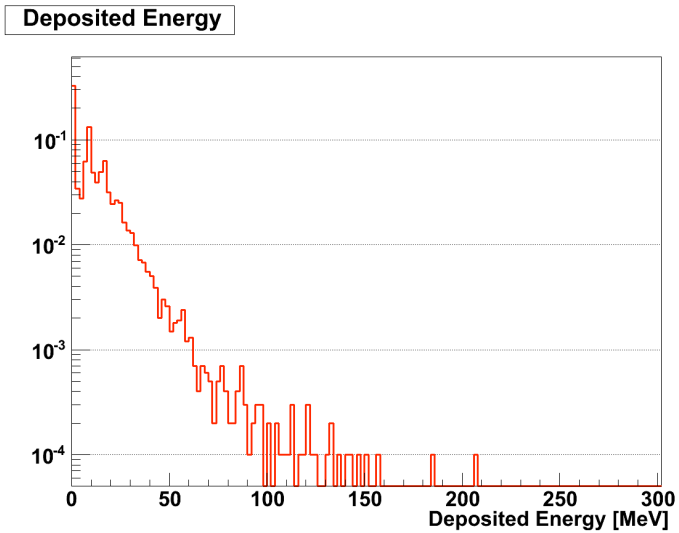
Outline

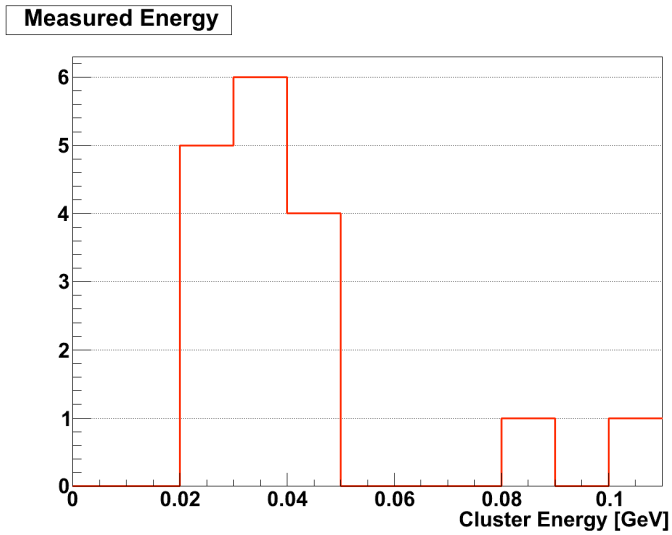
- Neutron Test for FastSim comparison
- Particle spectra enetring EMC
- Number of particles enetring the EMC
- Cluster - particle match

Neutron Test For fast sim comaprison

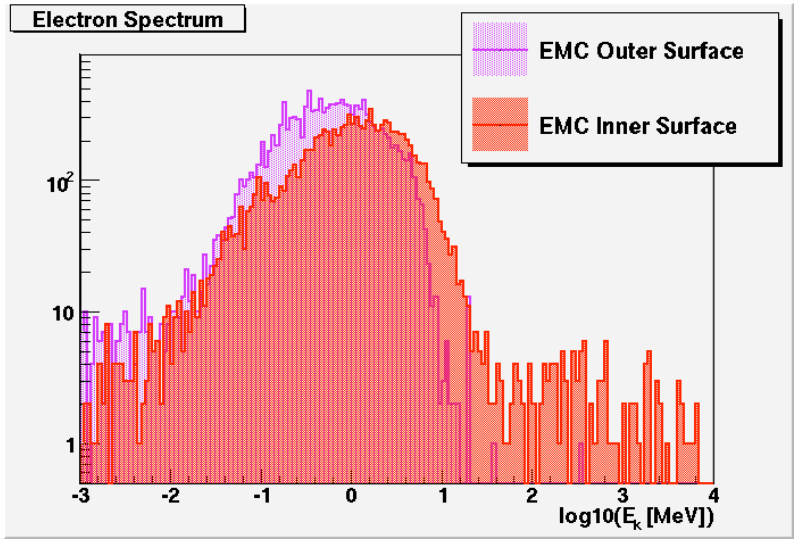


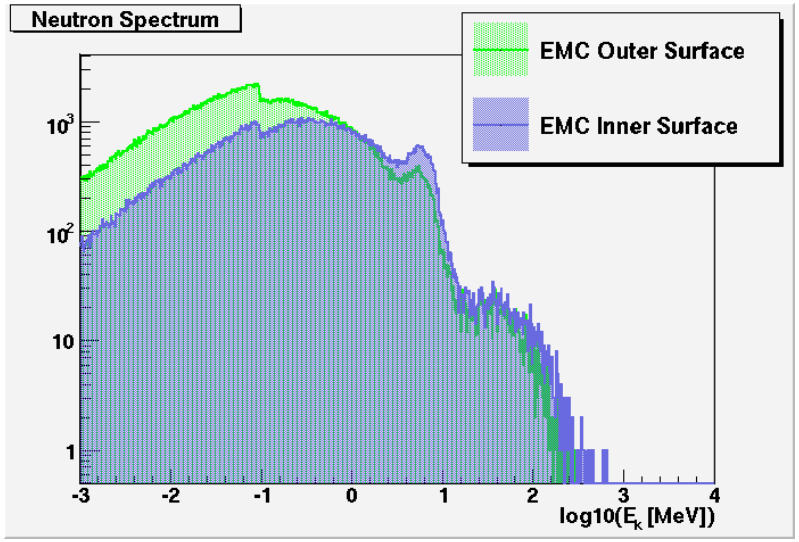


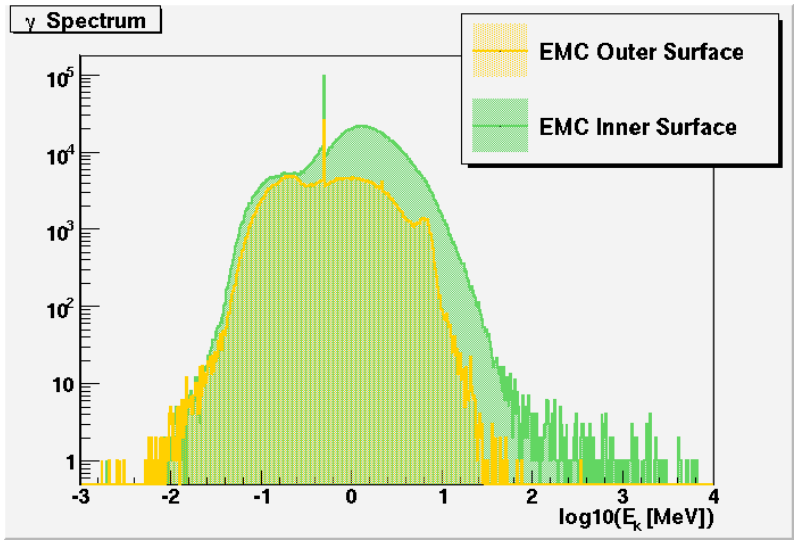




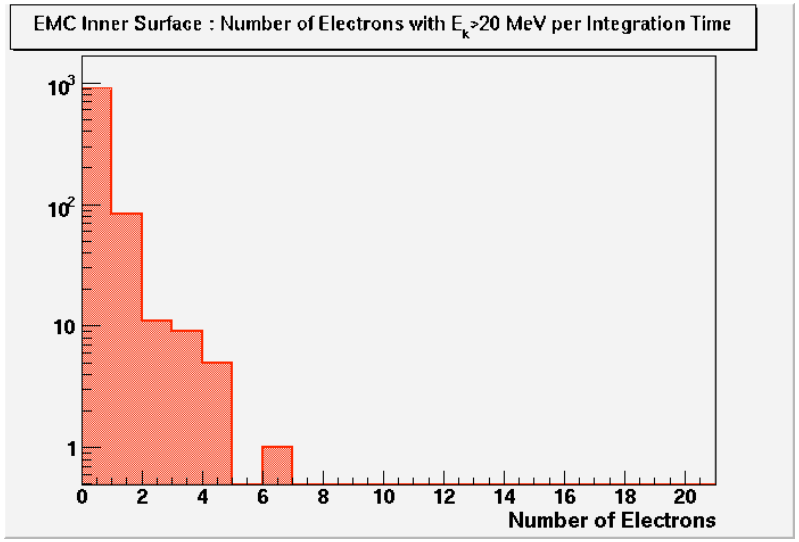
Particles Spectra trhough EMC Boundary

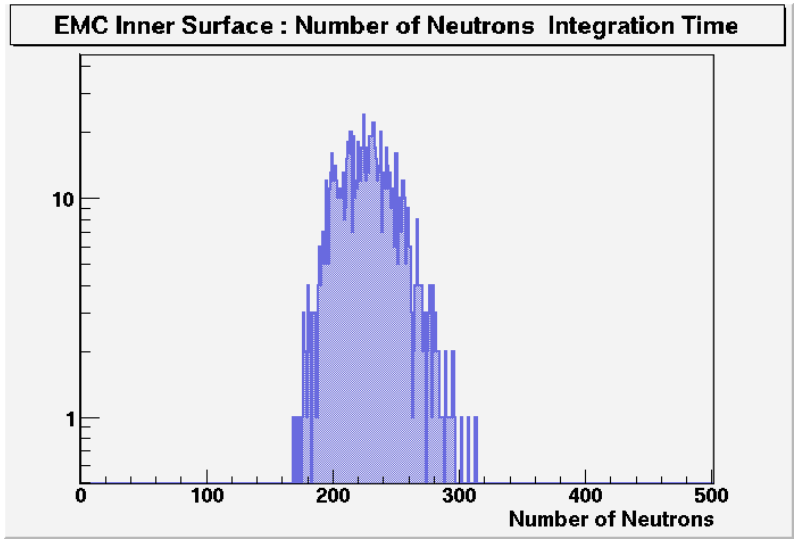


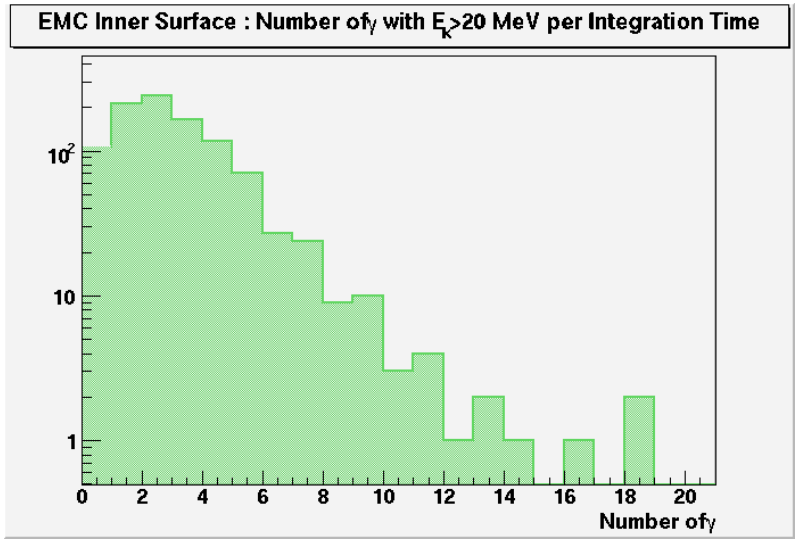




Number of Particles per Integration Time







Number of particles enetring the EMC volume:

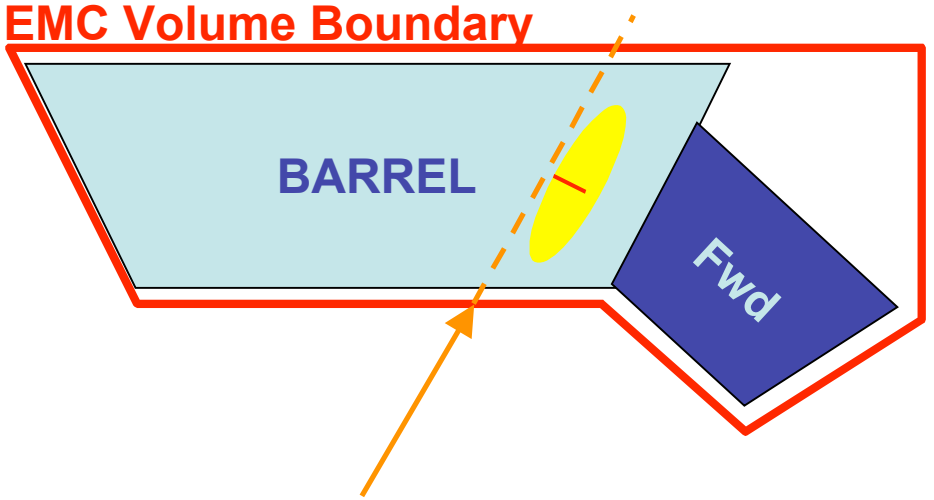
- **Direction Selection**
  - **Outward bound cossing Inner Surface**
  - **Inward bound crossing Outer Surface**
- **Particle Selection**
  - **γ e± : E > 20 MeV**
  - **n : all**

Cluster Mc Truth Match

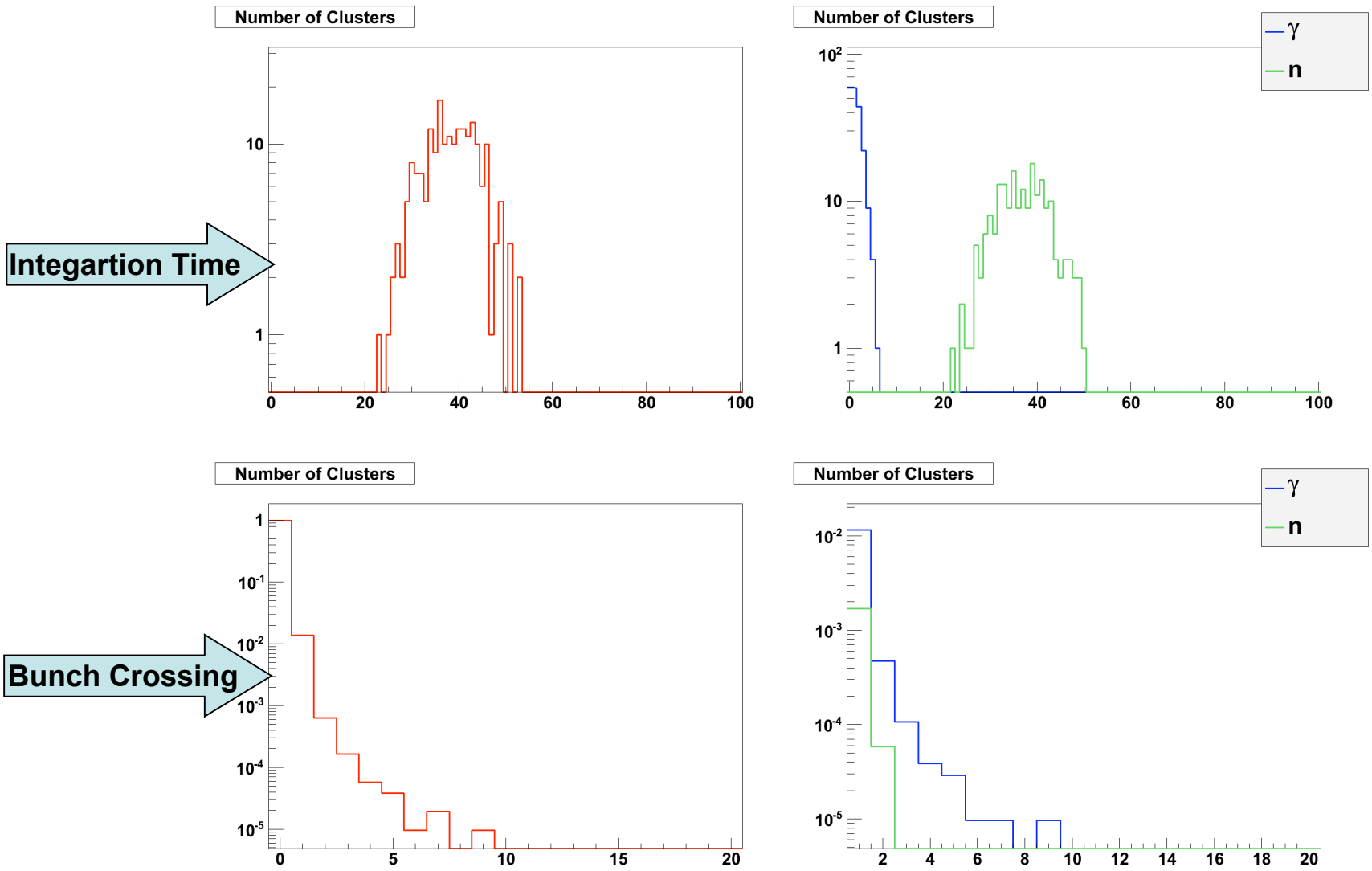
- Bruno stores Type, Position and Momentum of particles crossing EMC Volume boundary

- Select particles enetring the EMC Volume
- Select γ, $e\pm$ with E > 15 MeV
- Select all neutrons

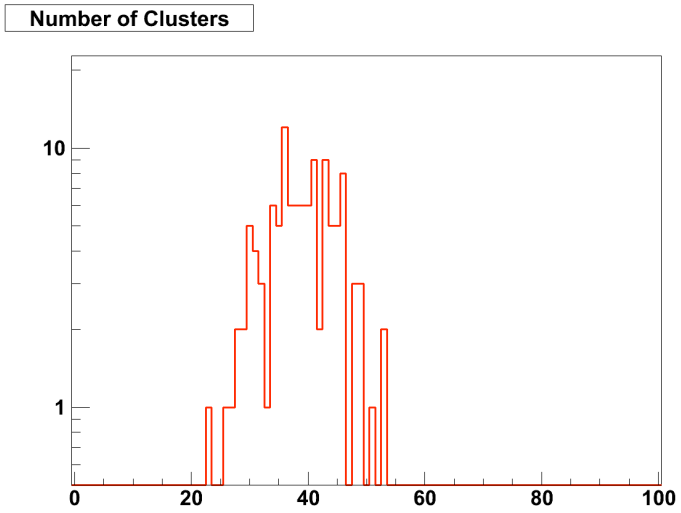
- Assign cluster to particle with minimum distance from cluster (logarithmically weighted) energy barycenter

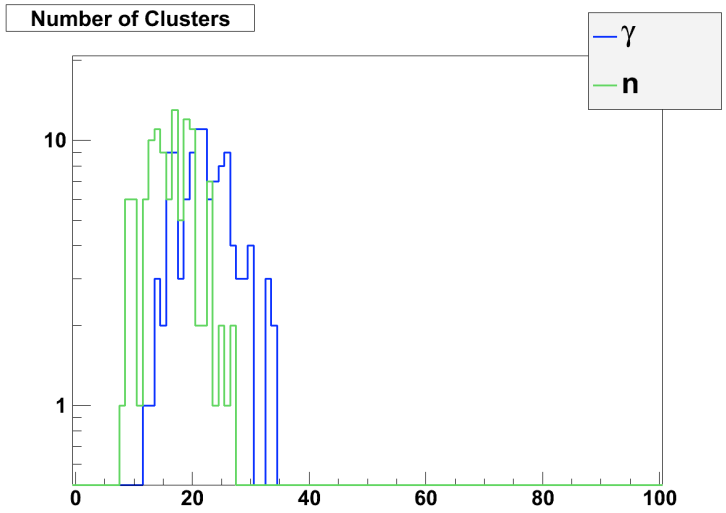


Cluster Mc Truth Match (QED E_{min} = 15 MeV)

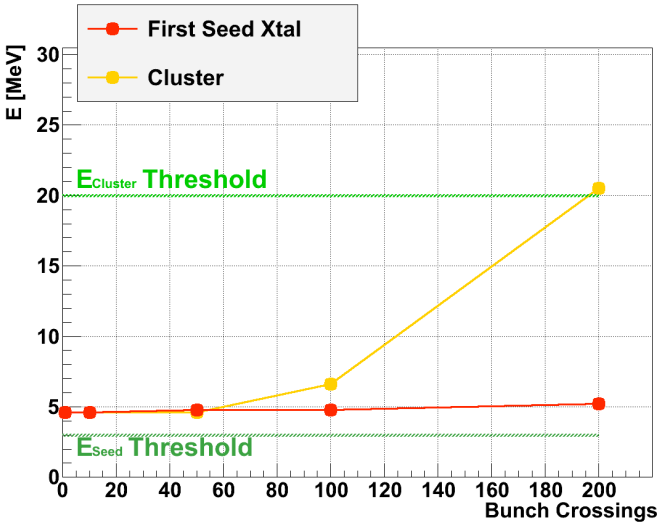


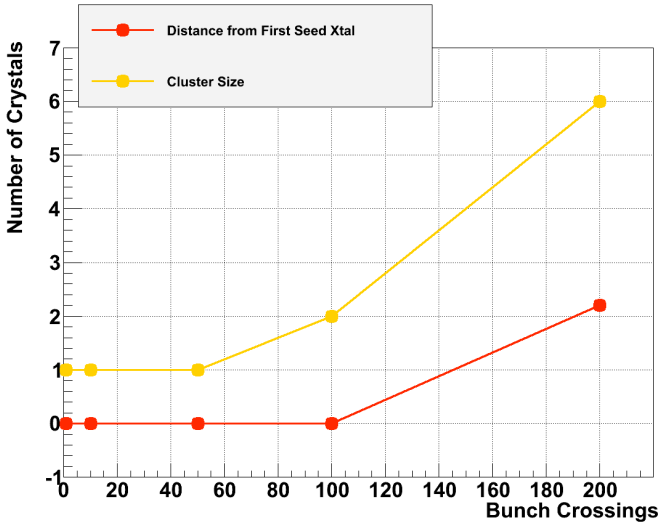
Cluster Mc Truth Match (QED $E_{min} = E_{seed}$)

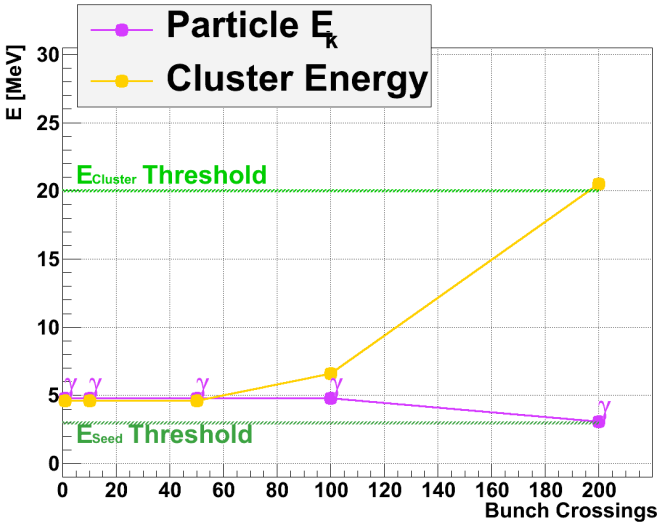




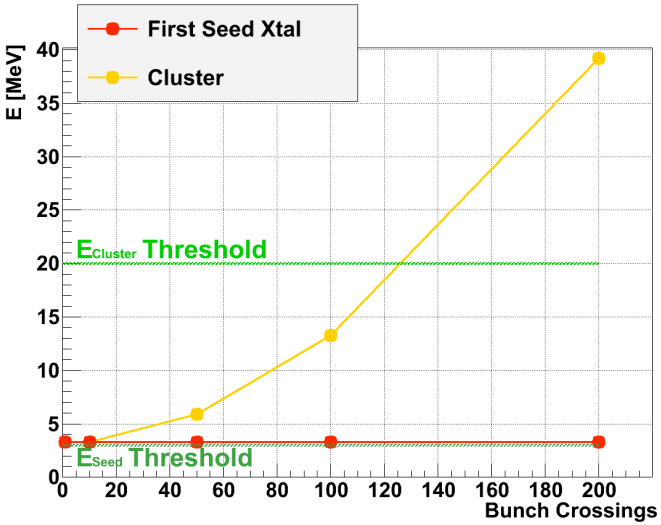
Cluster example 1

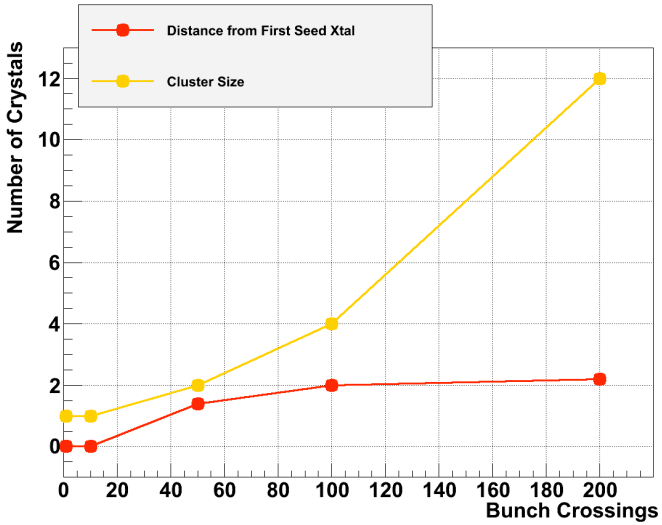


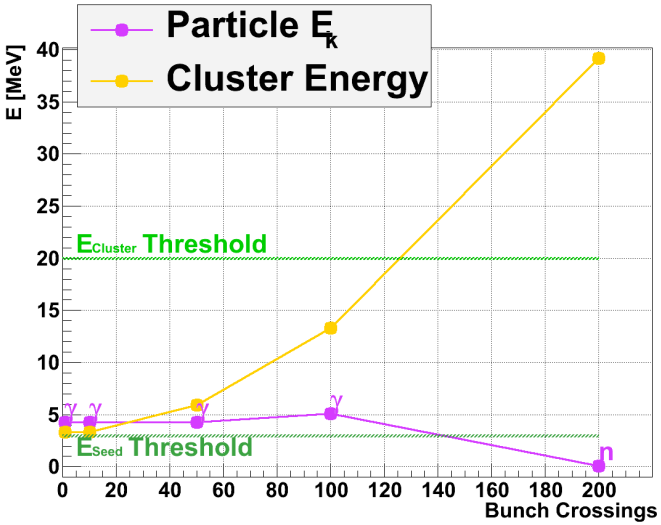




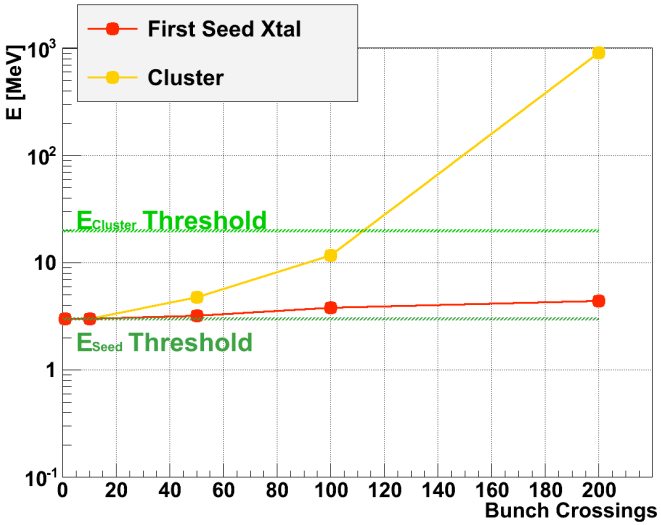
Cluster Example 2

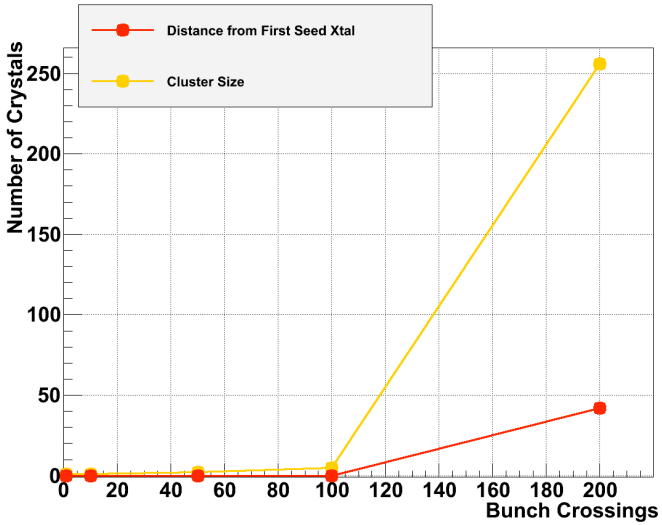


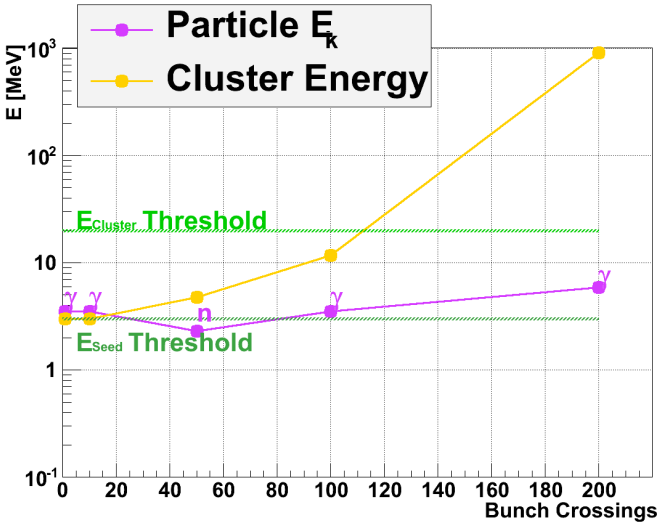




Cluster Example 3







Conclusions

- The number of (High Energy) QED particles enetring the EMC is smaller than the number of clusters
- The number of cluster to be assigned to a neutrons for each BC is small
- The majority of clusters seems to come from small energy deposit accumulated in time close to one or more seed crystals