



EMC Background Studies

FullSiom/Background Seesion

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*Work supported by


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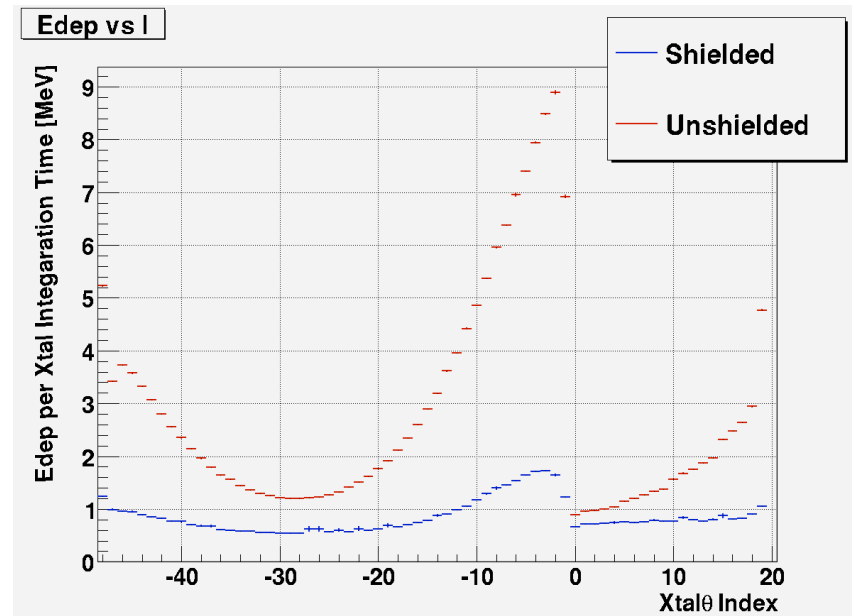
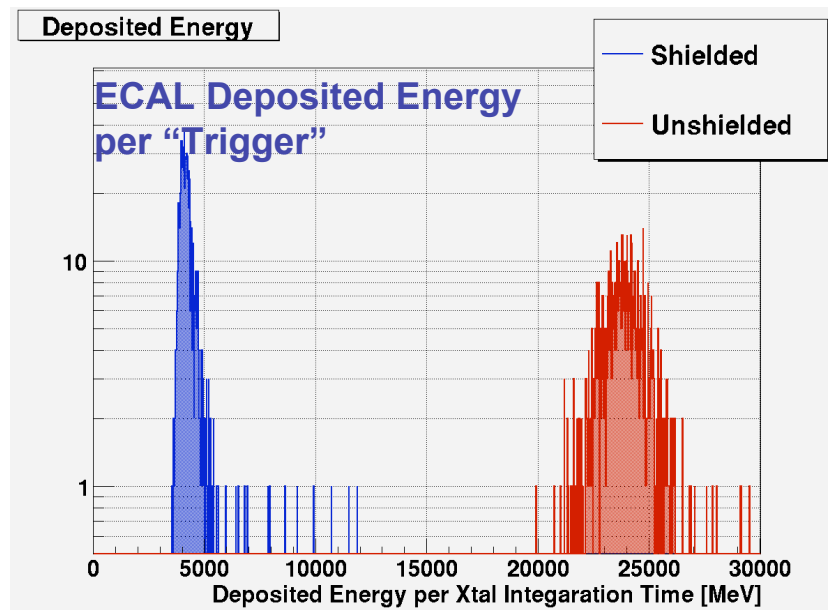
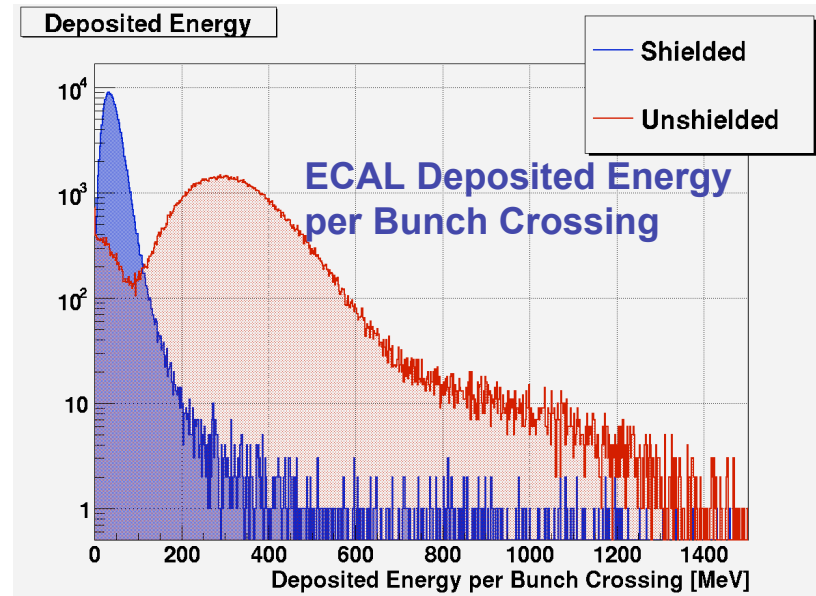
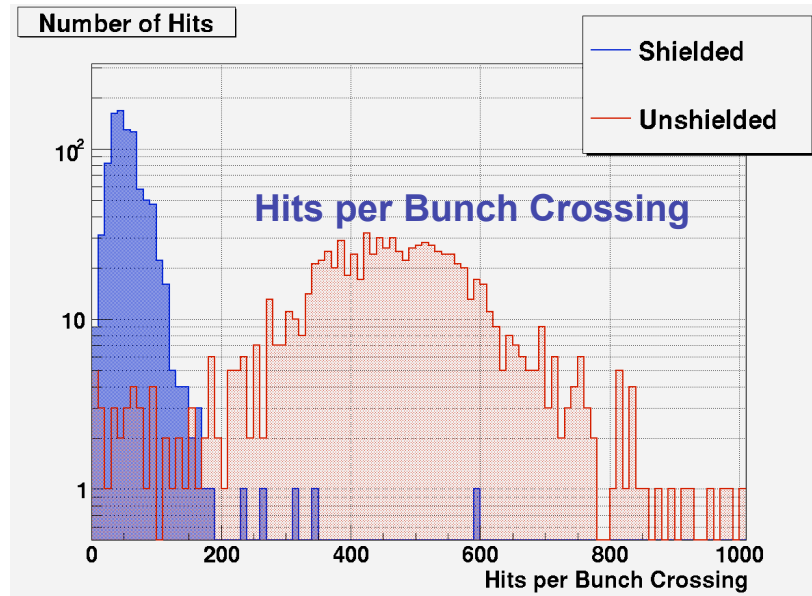
Background Studies



- Data:
 - 0.929 ms of Radiative Bhabha background (Full Simulation)
 - Shielded - Unshielded comparison
 - Delta_Emin comparison
 - 1 Bunch crossing every 4.644 ns
- Deposited energy
 - Bunch crossing
 - Crystal integration time
 - 1 us Csl
 - 0.2us LSO
 - Energy deposit scaled as $(1 - e^{-\Delta t/\tau}) / (1 - e^{-\text{gate}/\tau})$
 - Clustering
- Particles Flux

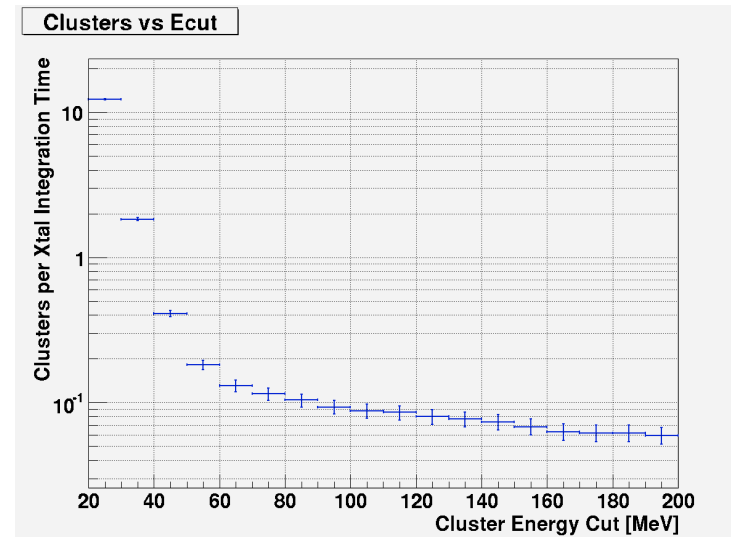
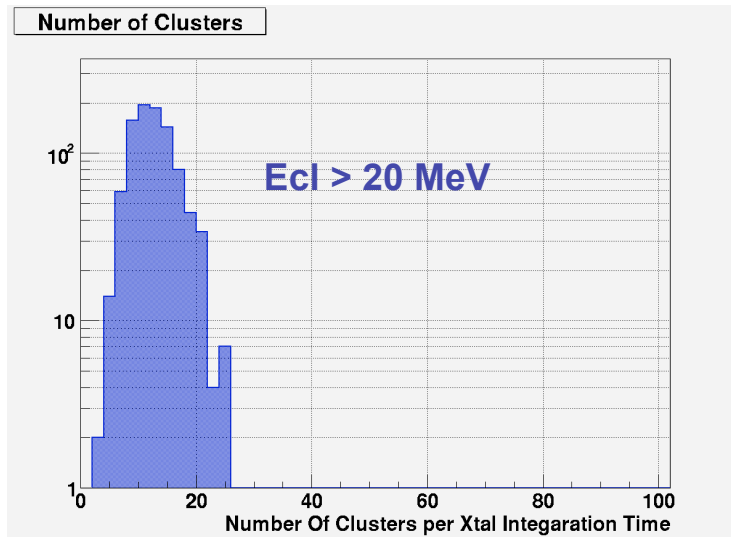
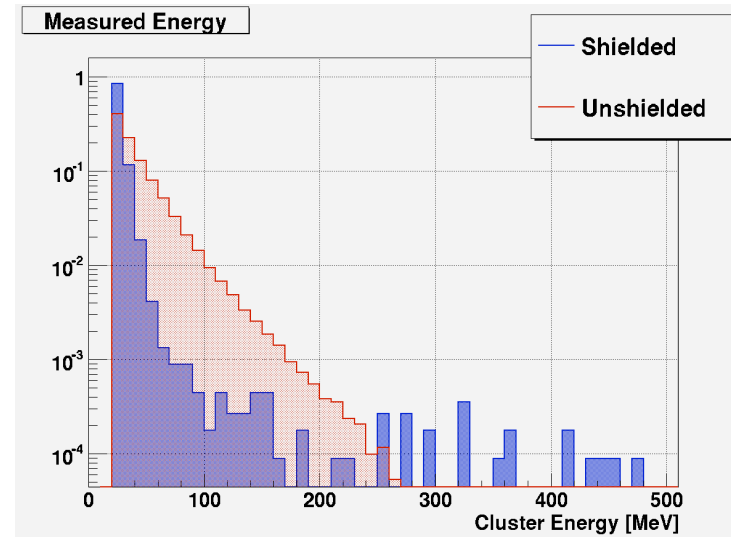
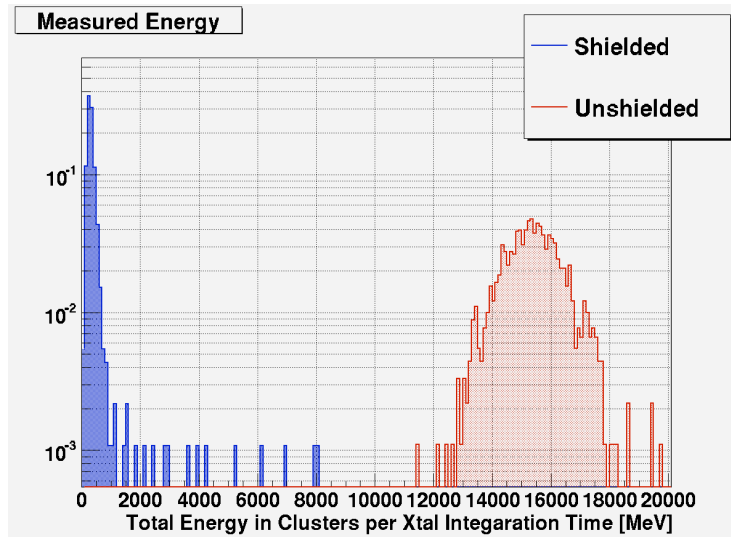


Shielded - Unshielded



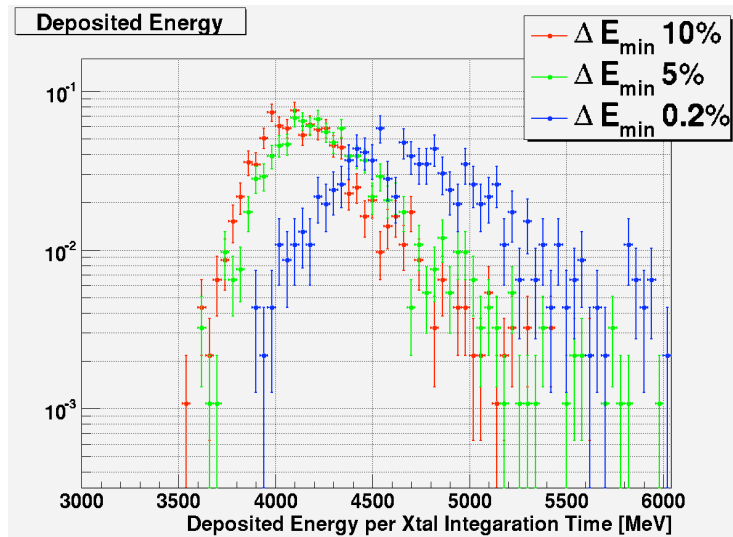
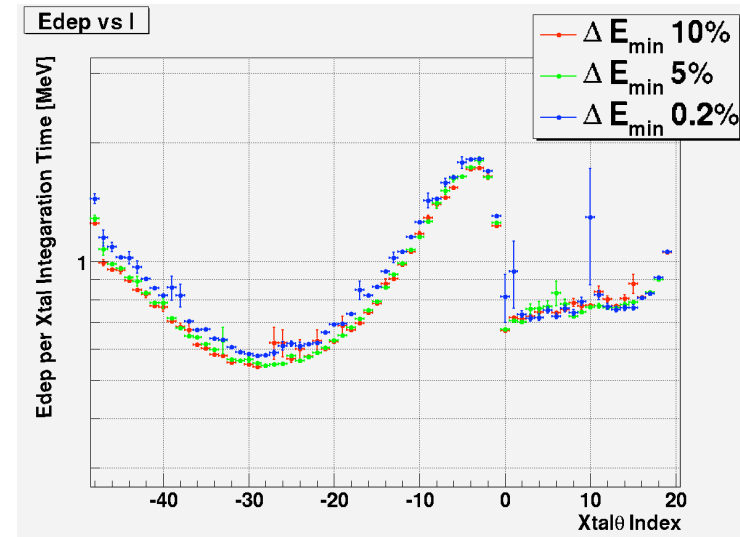
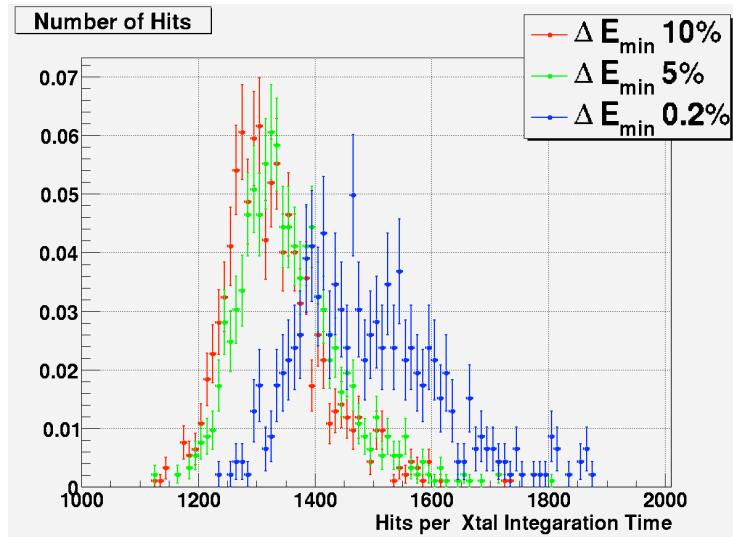


Clusters



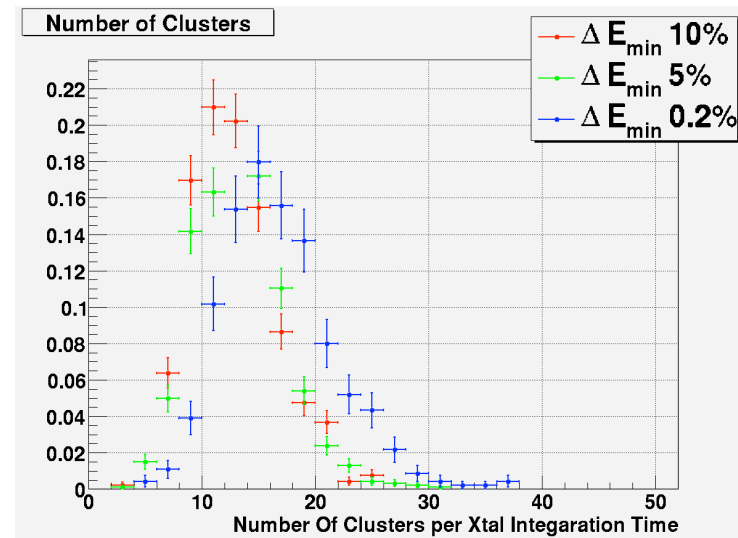
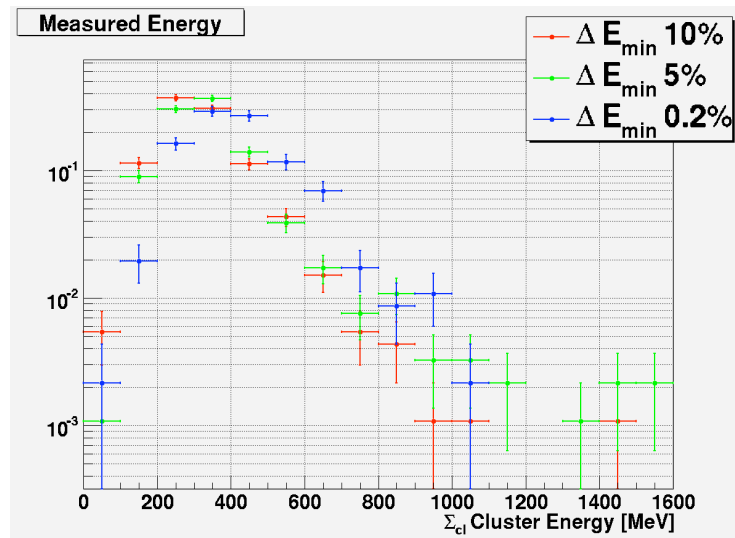


Delat Emin : Crystal Integration time

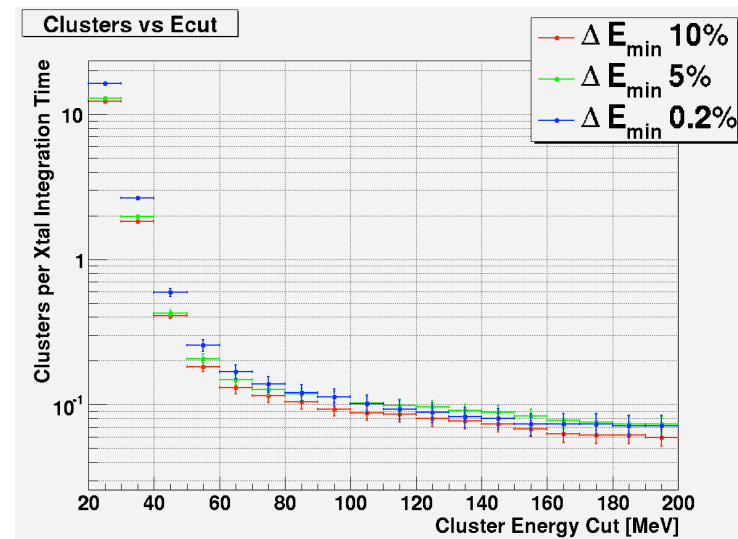




Delta Emin : Clusters

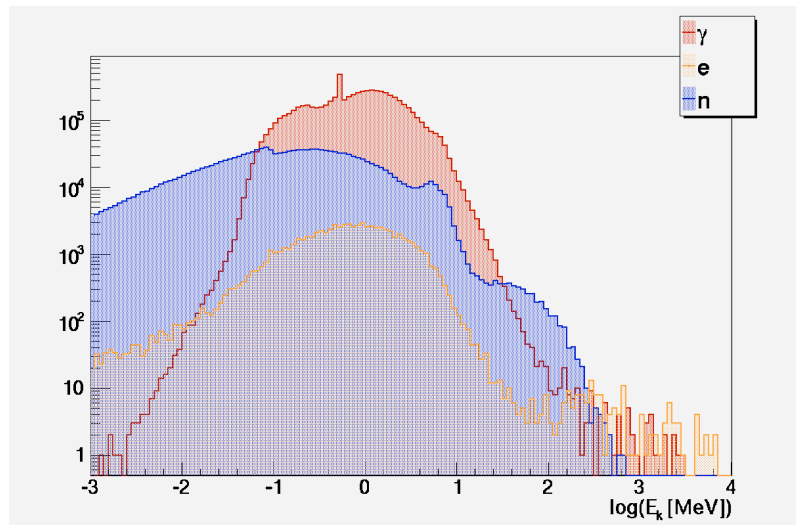


- There is a significant difference between the 10% and 0.2% cuts
- Need to check what happens at lower cut energies

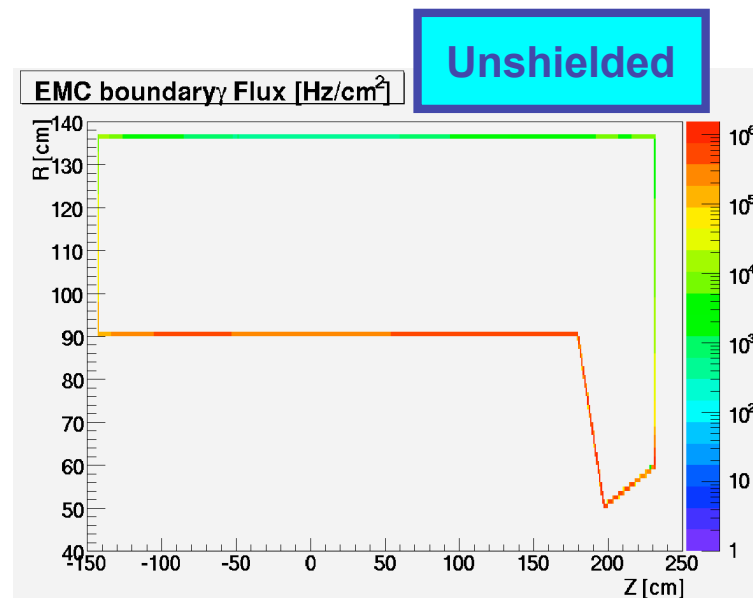
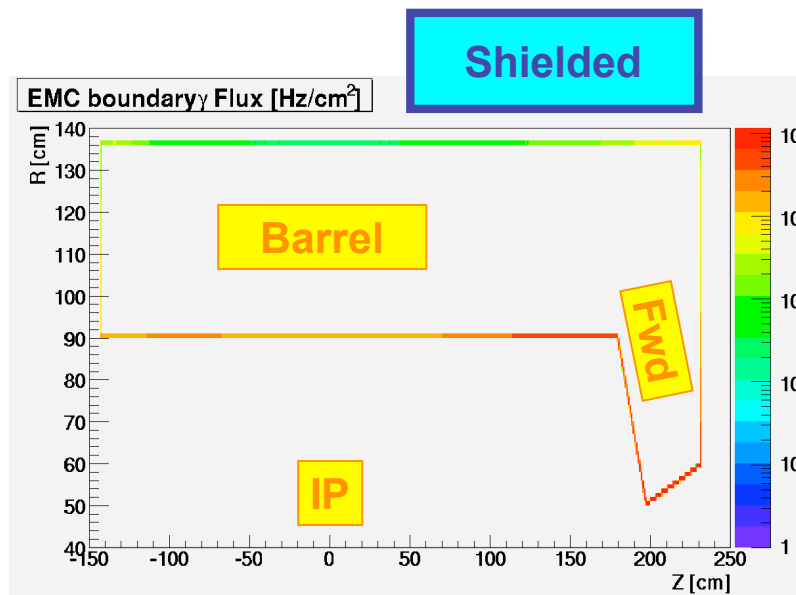




Particles Flux



The simulation tool records infos for all the particles crossing the EMC (and other detectors) volume boundary

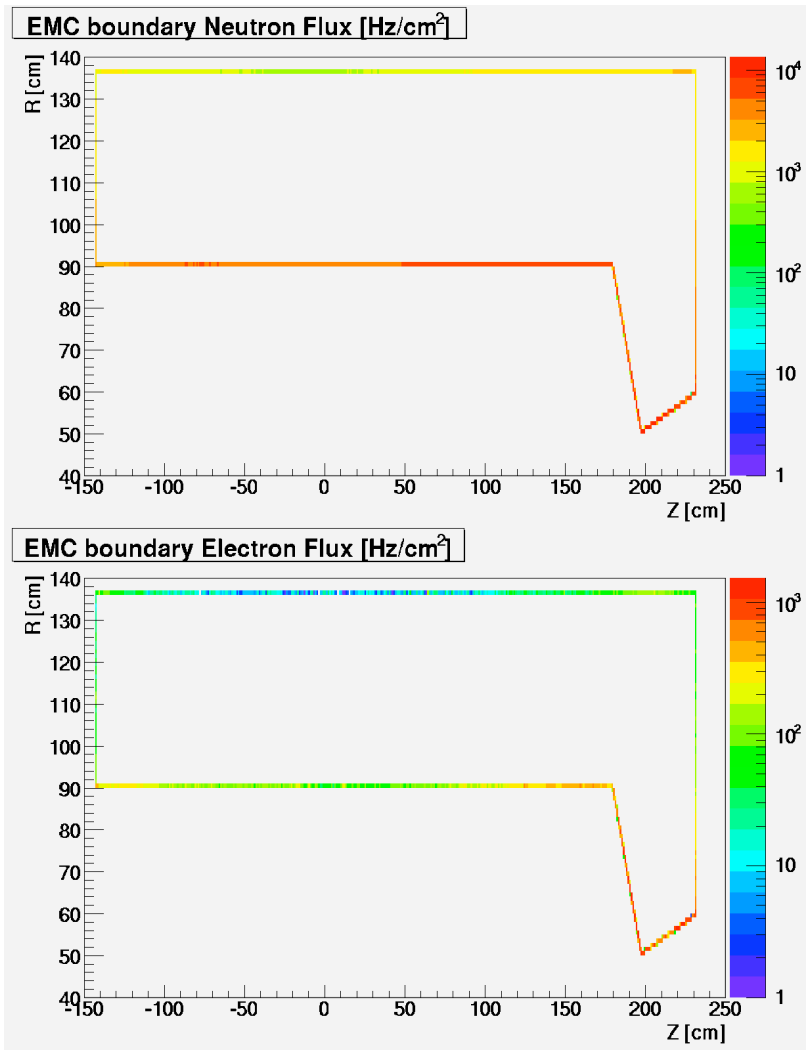




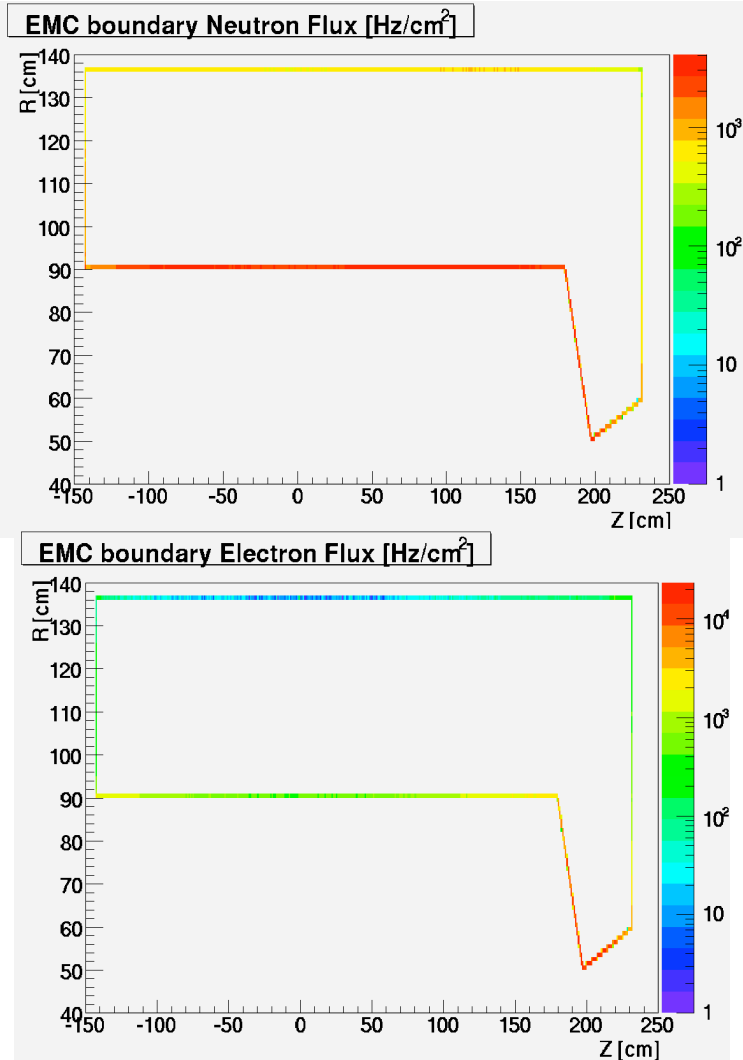
Particles Flux



Shielded

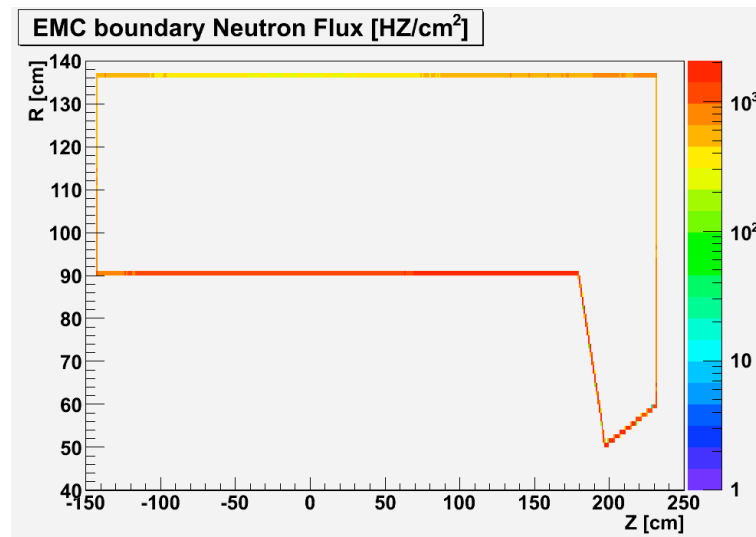
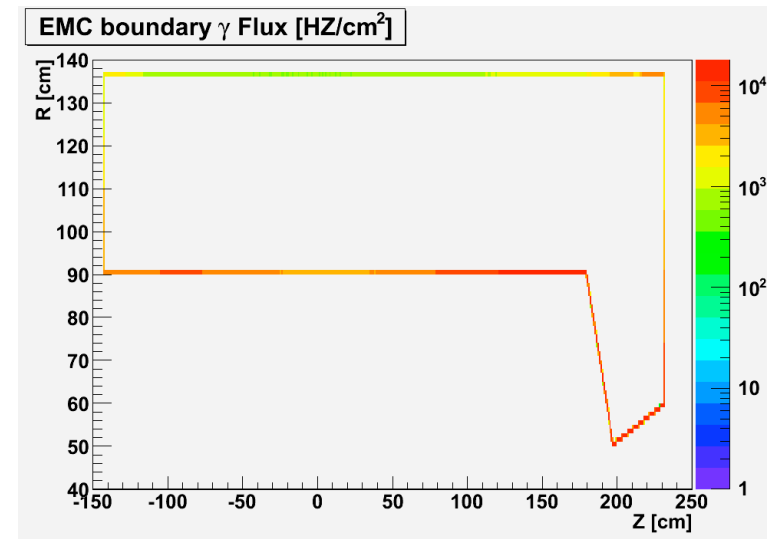
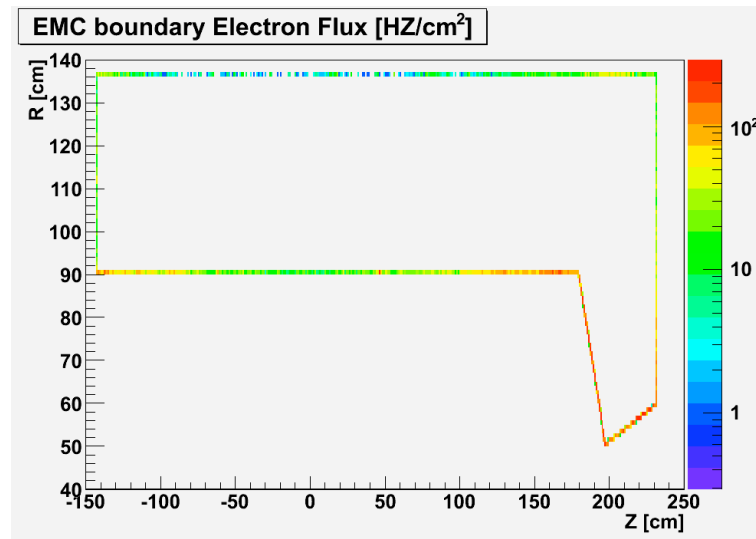


Unshielded





HP Particle Flux





Full Sim - Fast Sim comparison



- Agreement with Chih-hisiang to directly compare Full and Fast simulations
 - Define the same timing windows and energy threshold
 - Use exactly the same set of data
- My analysis still not ready
 - Quick look at fast Sim results may hint that FullSim has larger number of clusters (see Chih-hisiang presentation at EMC session)



Conclusions



- Background
 - Unshielded configuration
 - seems to have too much EM particles in the EMC
 - Shielded configuration
 - Need to check effects with Physics analysis
 - Cross check with Fast Sim under way
 - Need to lower the cut on the Δ_{Emin} parameter