A 3D CAD model of a detector assembly, likely a calorimeter, showing various components and structures. The model is rendered in shades of orange, brown, and grey. A white text box with rounded corners is overlaid on the center of the image, containing the title and author information. The background shows a complex arrangement of layers and components, with some parts labeled with numbers like 200 and 100.

# NEUTRON BACKGROUND RADIATION IN SOLID

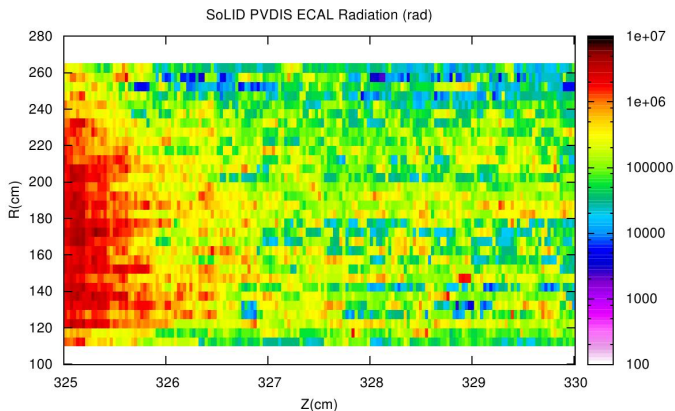
Lorenzo Zana  
Syracuse University  
August 15 2012

- 1 Radiation on Electronic calorimeter
- 2 Source from Traget
- 3 CONCLUSIONS

# Radiation on Electronic calorimeter

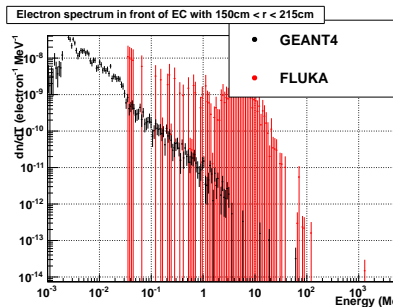
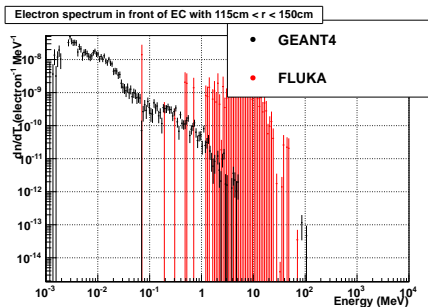
## Discrepancy between FLUKA and Geant4

The dose by my Fluka simulation (last dry run) was an order of magnitude higher than the one obtained by Geant4



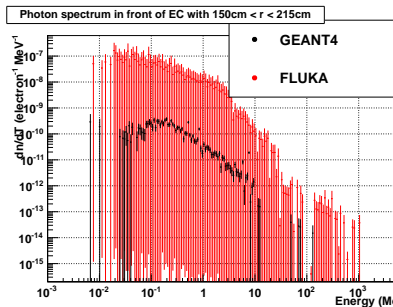
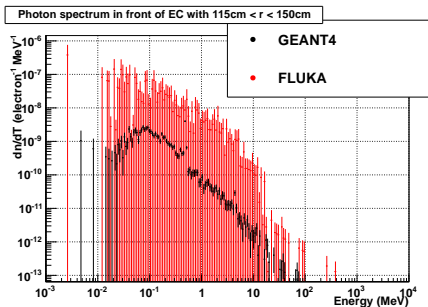
# Radiation on Electronic calorimeter

Electron on EC Calorimeter (PVDIS) Deuterium tg.



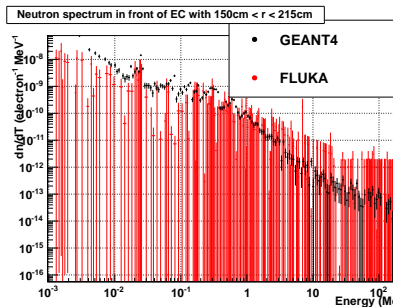
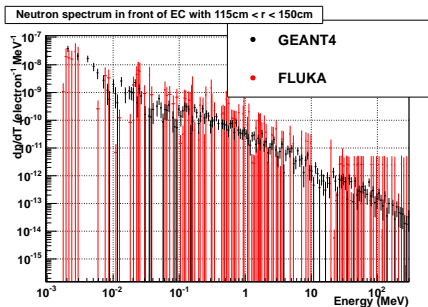
# Radiation on Electronic calorimeter

Photon on EC Calorimeter (PVDIS) Deuterium tg.



# Radiation on Electronic calorimeter

Neutron on EC Calorimeter (PVDIS) Deuterium tg.



# Deuterium target

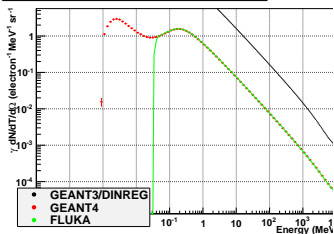
## Implementation of common source from target for Geant4 and Fluka

I am working on constructing a common source term from the target evaluating the input from:

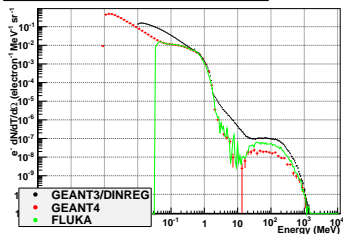
- FLUKA
- GEANT4
- GEANT3/DINREG (Pavel)

# Deuterium target

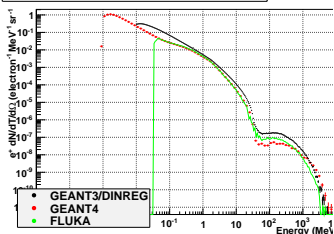
$\gamma$  spectrum Deuterium target 40.00 cm for  $0.0^\circ < \theta < 10.0^\circ$



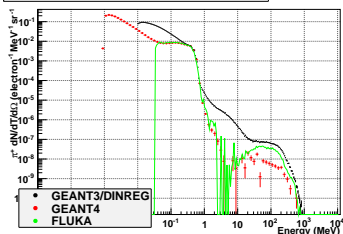
$\gamma$  spectrum Deuterium target 40.00 cm for  $45.0^\circ < \theta < 75.0^\circ$



$\gamma$  spectrum Deuterium target 40.00 cm for  $10.0^\circ < \theta < 45.0^\circ$



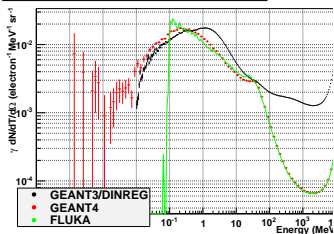
$\gamma$  spectrum Deuterium target 40.00 cm for  $75.0^\circ < \theta < 105.0^\circ$



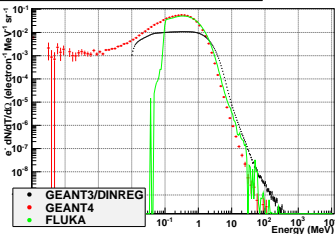


# Deuterium target

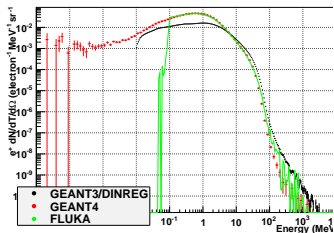
$e^-$  spectrum Deuterium target 40.00 cm for  $0.0^\circ < \theta < 10.0^\circ$



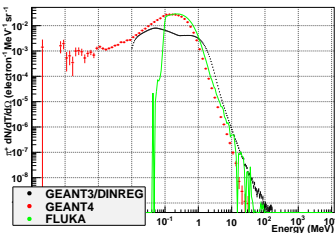
$e^-$  spectrum Deuterium target 40.00 cm for  $45.0^\circ < \theta < 75.0^\circ$



$e^-$  spectrum Deuterium target 40.00 cm for  $10.0^\circ < \theta < 45.0^\circ$

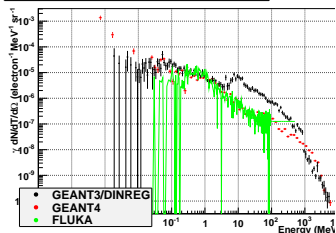


$e^-$  spectrum Deuterium target 40.00 cm for  $75.0^\circ < \theta < 105.0^\circ$

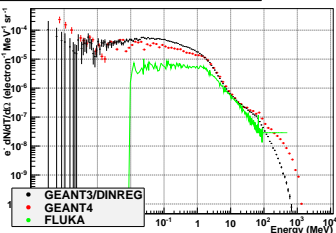


# Deuterium target

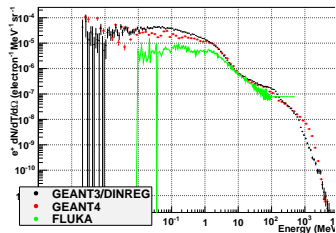
n spectrum Deuterium target 40.00 cm for  $0.0^\circ < \theta < 10.0^\circ$



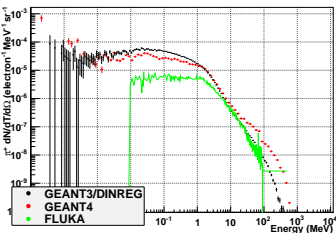
n spectrum Deuterium target 40.00 cm for  $45.0^\circ < \theta < 75.0^\circ$



n spectrum Deuterium target 40.00 cm for  $10.0^\circ < \theta < 45.0^\circ$



n spectrum Deuterium target 40.00 cm for  $75.0^\circ < \theta < 105.0^\circ$



# Conclusions

## Electronic Calorimeter Dose

- It is probable I have a small misalignment on the baffle design in FLUKA (I think I found it).
- New design under way and new results coming soon

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## Source term

- Implementation of neutron source term from the target in FLUKA, using Geant4 as a model
- Implement the possibility to change the cross section from the target to see the possible impact on the simulation