

# NEUTRON BACKGROUND RADIATION IN SOLID

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- 1 Geant 4 Neutron
- 2 Results Vertex Geant4 Neutron
- 3 Shielding Strategy

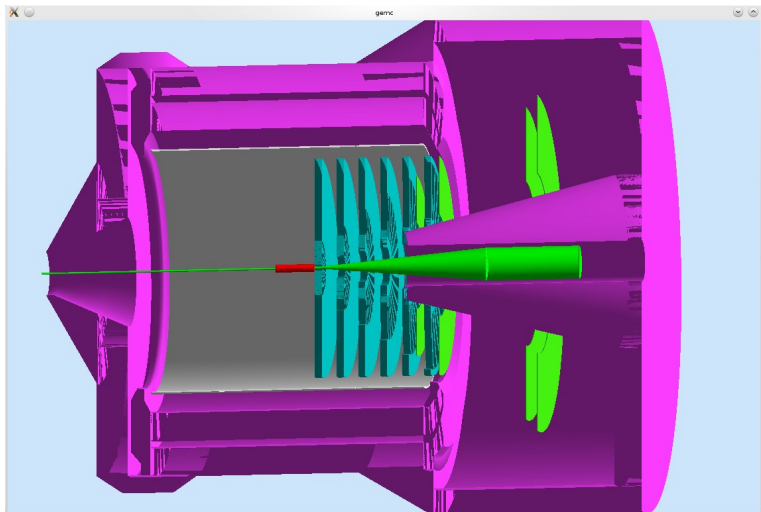
# CLEO Design updated

## Updated CLEO design for baffles

- Removed the “magnetic fin”
- Changed the baffle design to avoid superposition with the new design of the magnet
- Working and good enough for comparisons with FLUKA results
- Geant4 easier for vertex reconstruction of particle hits

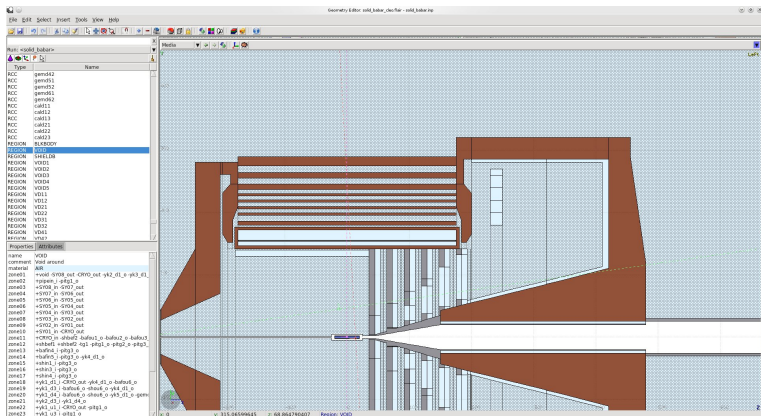
# CLEO Design updated

## UPDATED GEANT4 CLEO



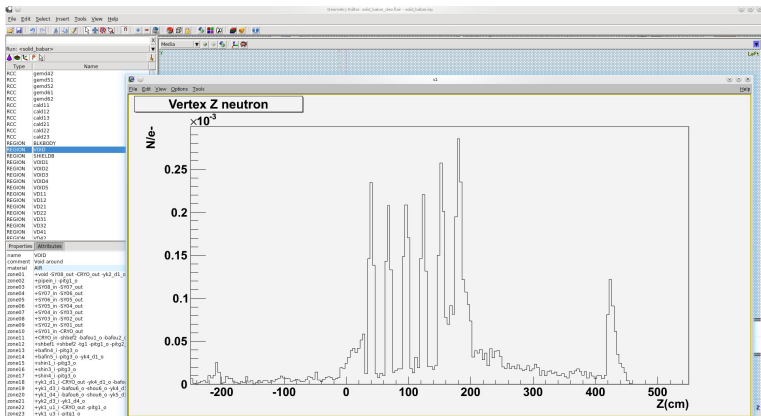
# Neutron Origin Vertex on gems (Z)

## CLEO design



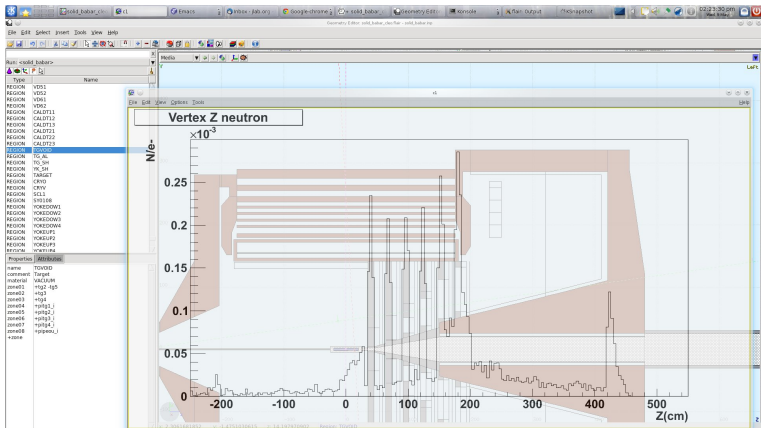
# Neutron Origin Vertex on gems (Z)

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# Neutron Origin Vertex on gems (Z)

## Neutron Origin Vertex on gems (Z) Position

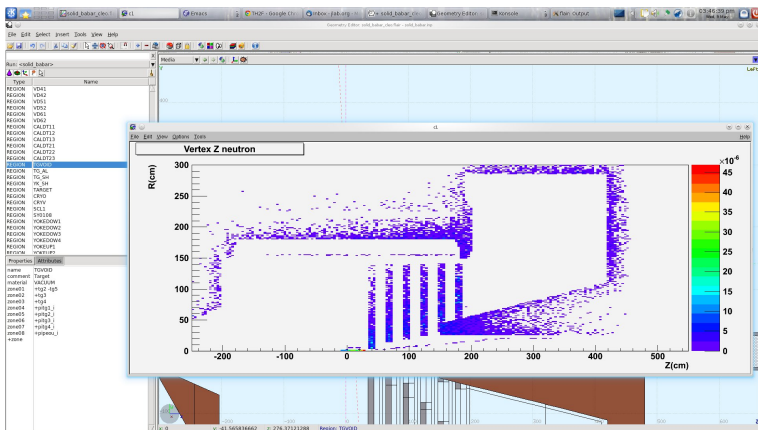






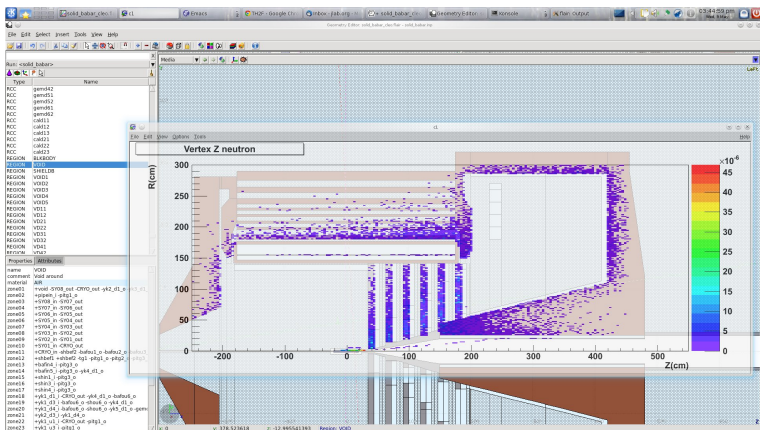
# Neutron Origin Vertex on gems (2D)

## Neutron Origin Vertex on gems (Z)



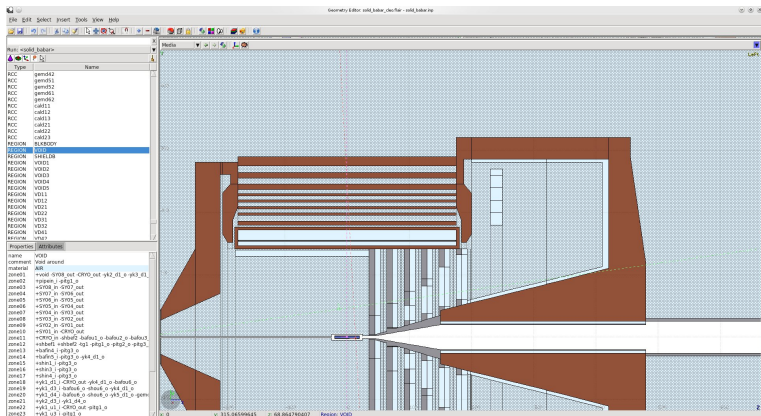
# Neutron Origin Vertex on gems (2D)

## Neutron Origin Vertex on gems (Z) Position



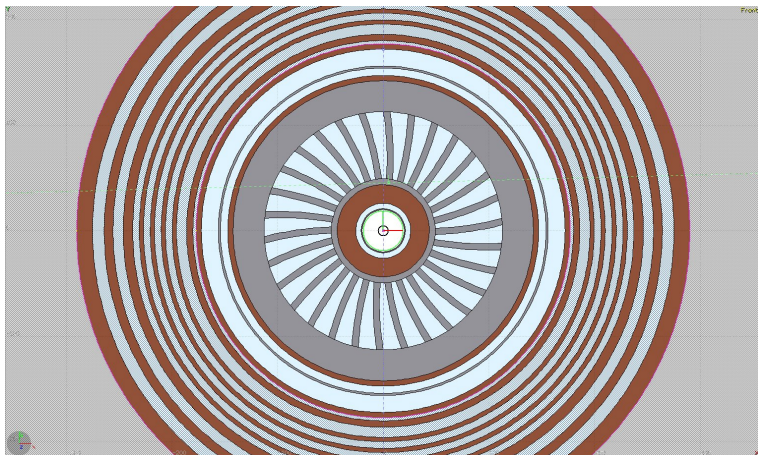
# Neutron Origin Vertex on gems (xy) at baffles

## CLEO design



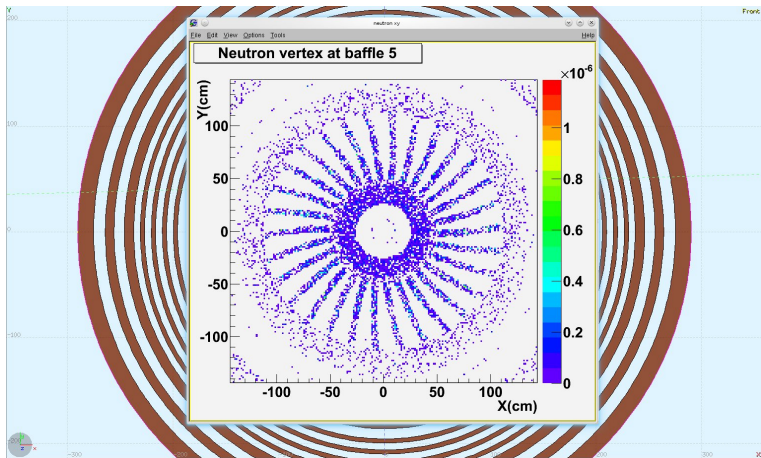
# Neutron Origin Vertex on gems (xy) at baffles

## Example (Baffle 5)



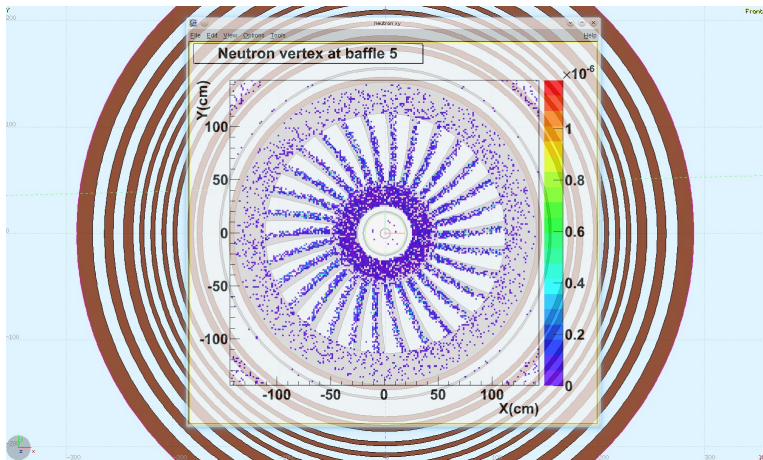
# Neutron Origin Vertex on gems (xy) at baffles

Example (Baffle 5) Vertex on gems (xy)



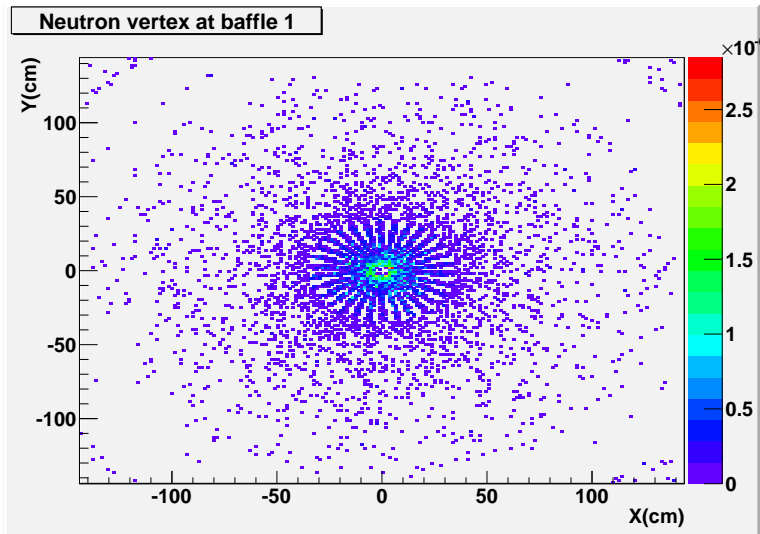
# Neutron Origin Vertex on gems (xy) at baffles

Example (Baffle 5) Vertex on gems (xy) Position



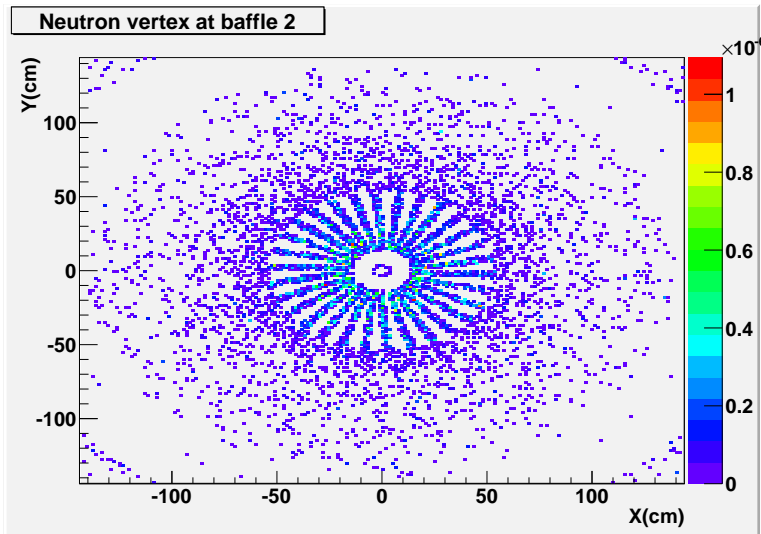
# Neutron Origin Vertex on gems (xy) at baffles

## Baffle 1 Vertex on gems (xy)



# Neutron Origin Vertex on gems (xy) at baffles

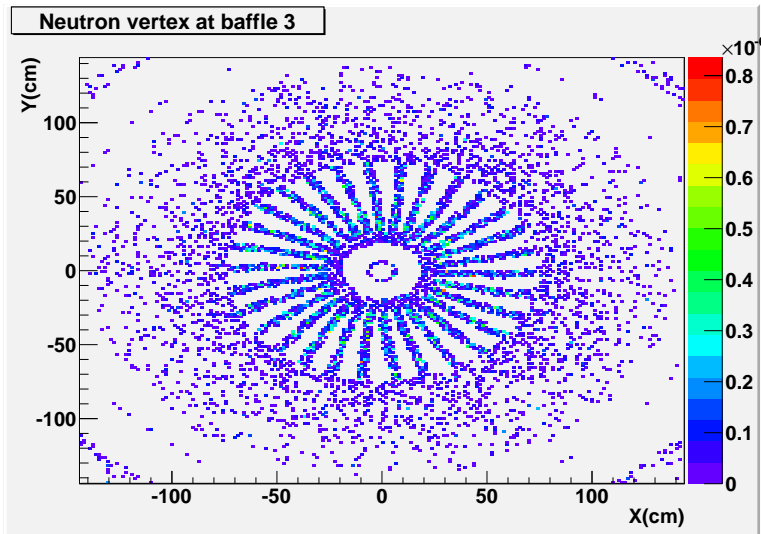
## Baffle 2 Vertex on gems (xy)





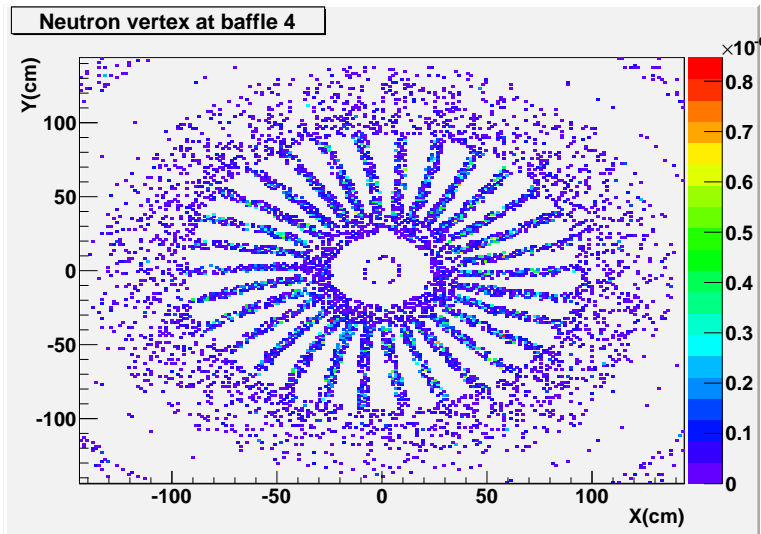
# Neutron Origin Vertex on gems (xy) at baffles

## Baffle 3 Vertex on gems (xy)



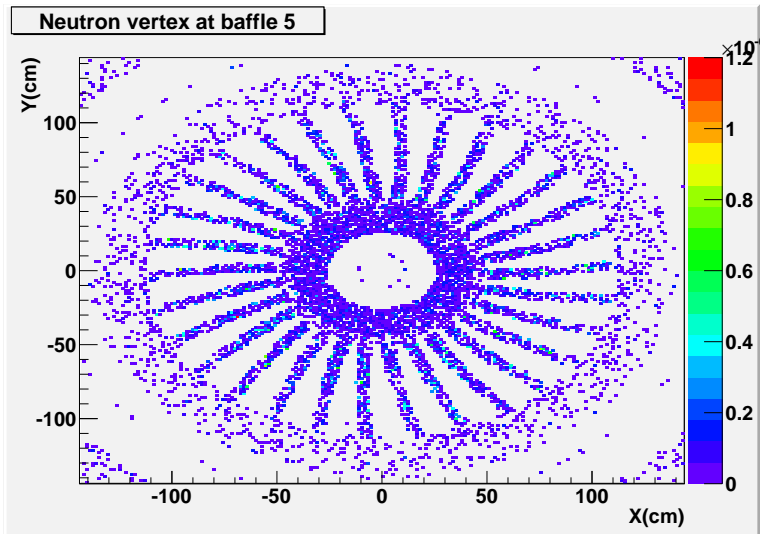
# Neutron Origin Vertex on gems (xy) at baffles

## Baffle 4 Vertex on gems (xy)



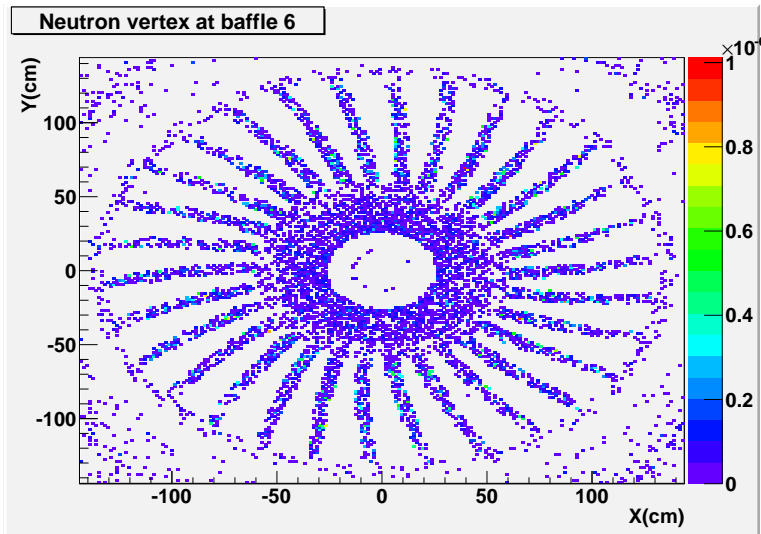
# Neutron Origin Vertex on gems (xy) at baffles

## Baffle 5 Vertex on gems (xy)



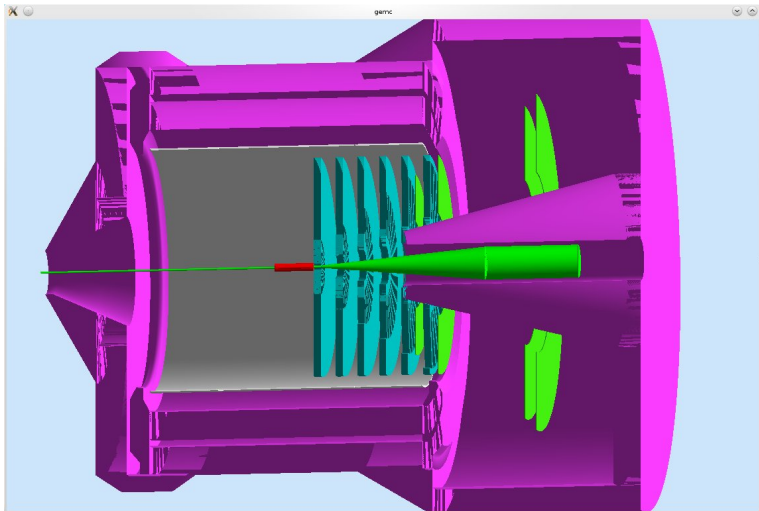
# Neutron Origin Vertex on gems (xy) at baffles

## Baffle 6 Vertex on gems (xy)



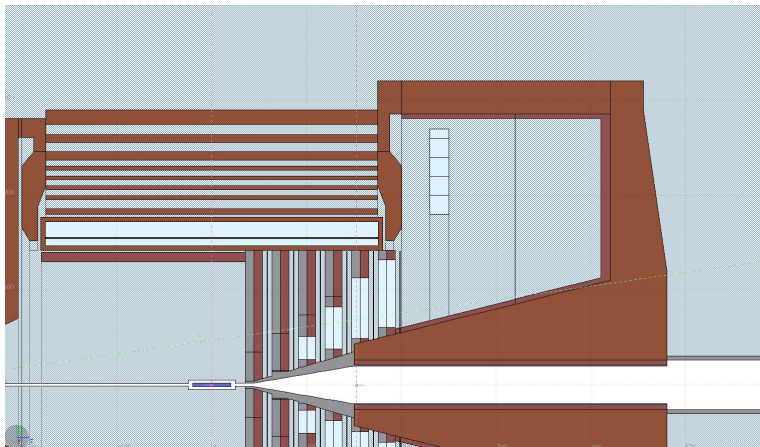
# Neutron Origin Vertex on gems (xy) at baffles

Position of gems



# Shielding Strategy

Possible strategy of shielding



# Shielding Strategy

## CONCLUSIONS, TO DO

- Geant4 is a good tool to integrate with FLUKA
- Energy binning for neutrons to better design the shielding (more statistic needed)
- Update shielding design on GEANT4 to check local importance of shielding
- Update baffle “pedestal”