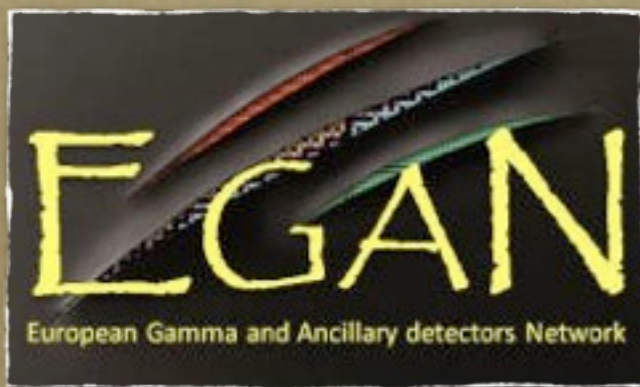


# PARIS SIMULATIONS



*Past, Present and Future*

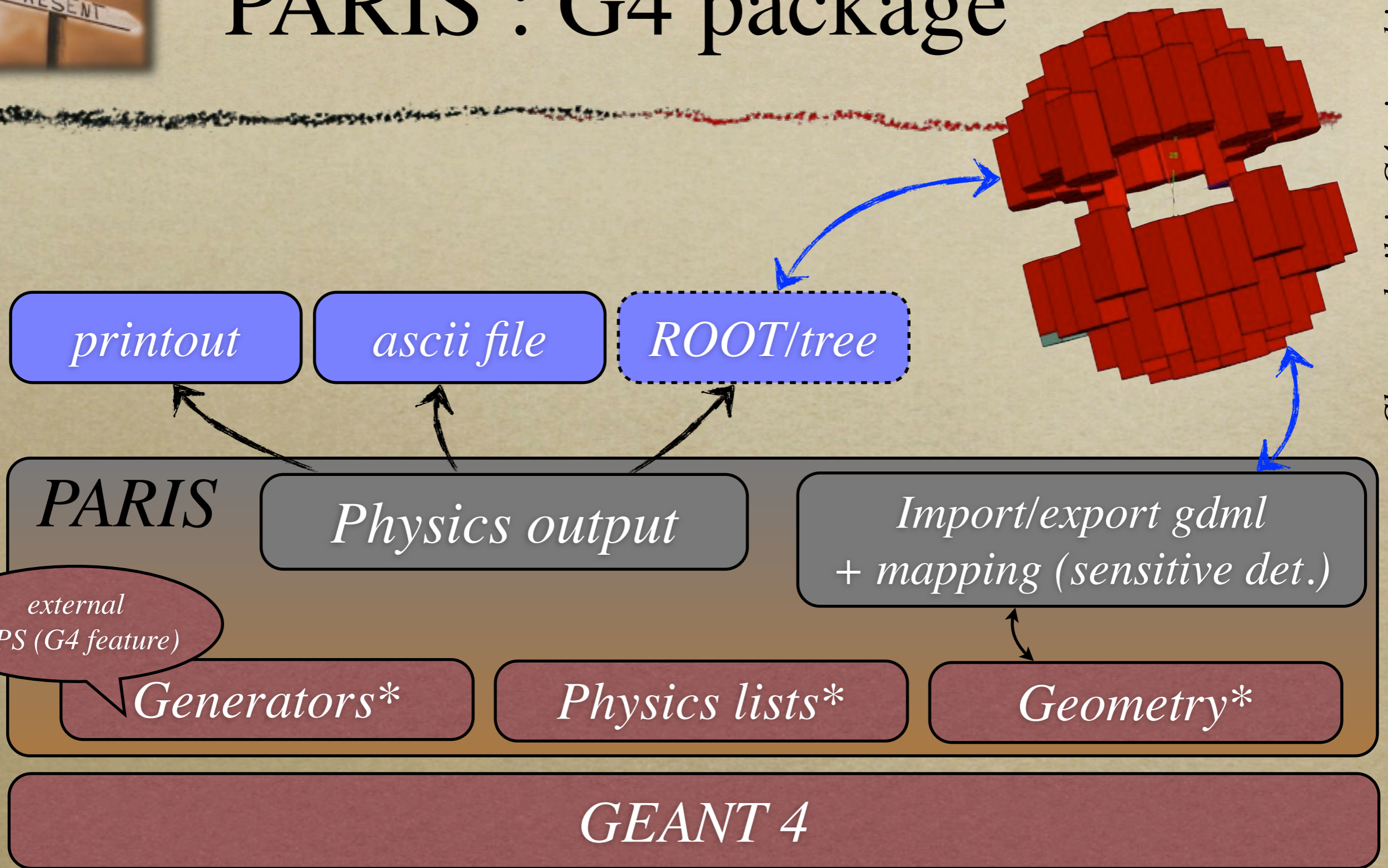
*O. Stézowski - **IPN Lyon** - 28/06/2012*



More informations  <http://paris.ifj.edu.pl>



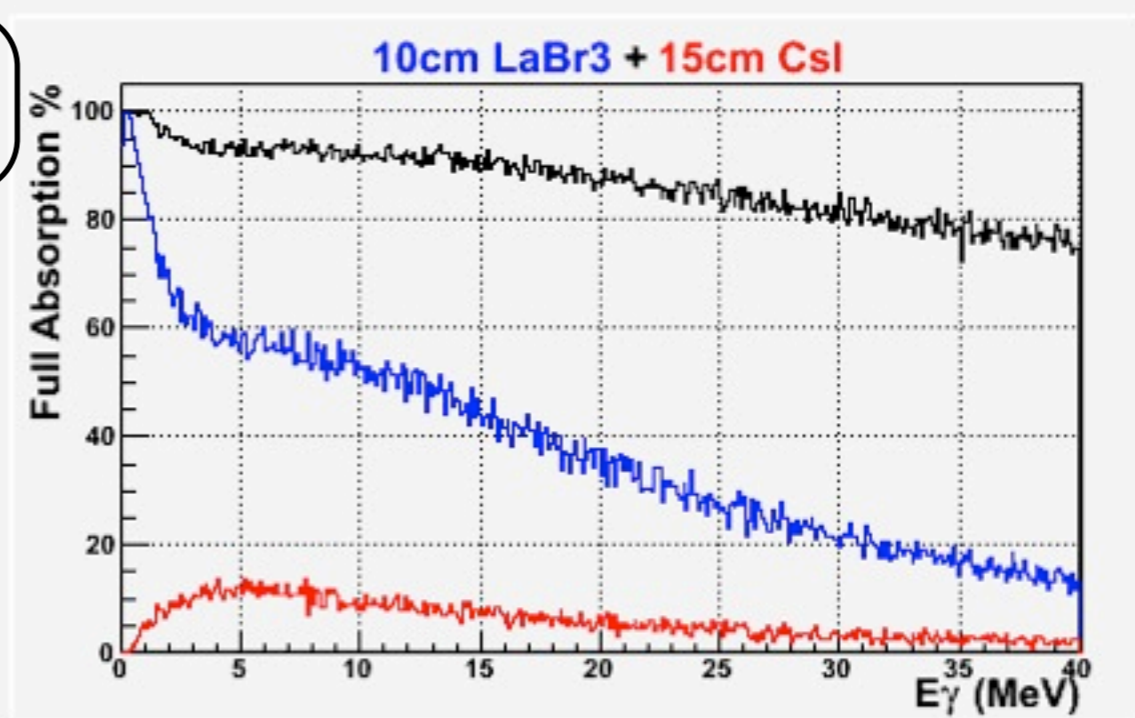
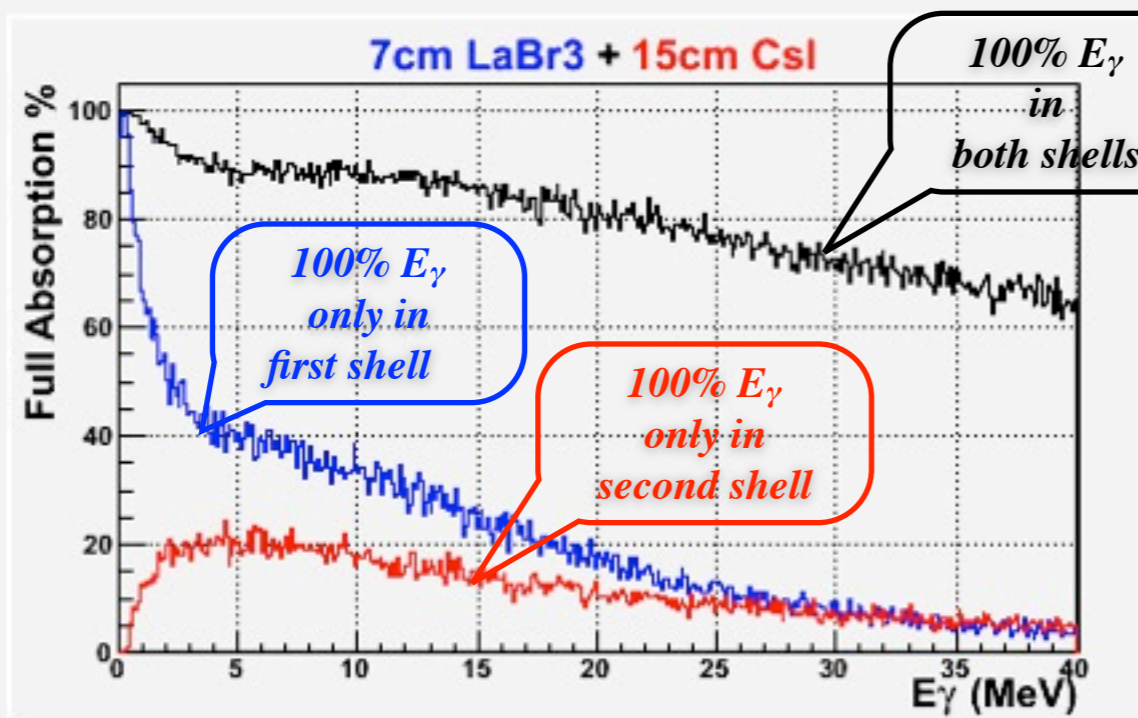
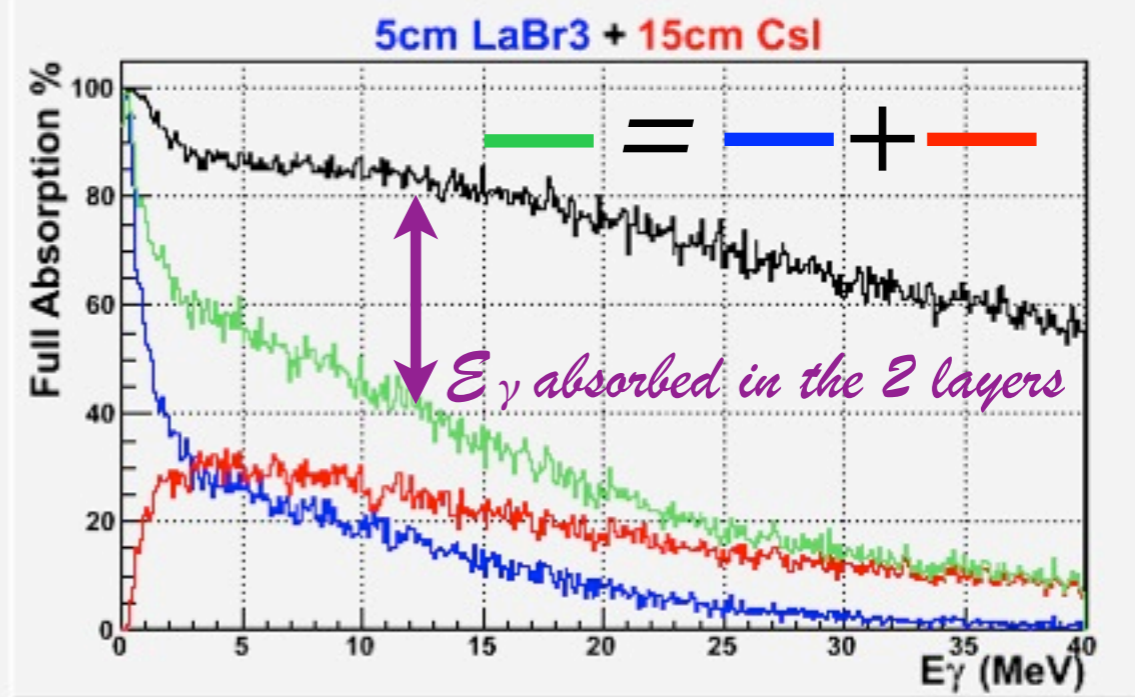
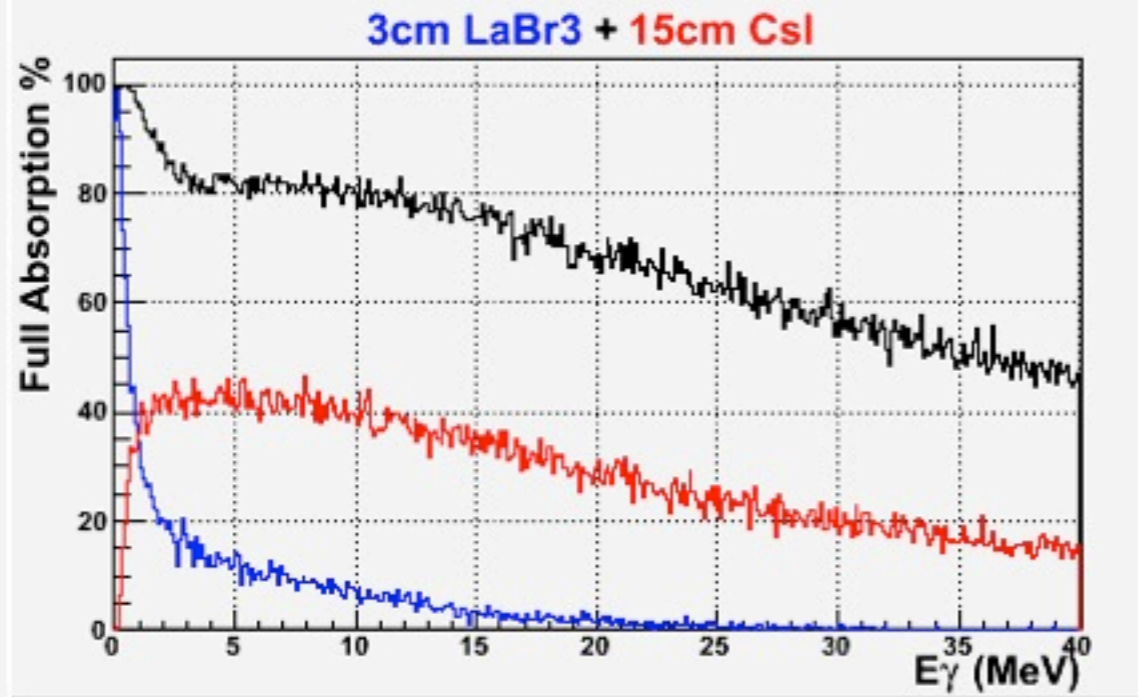
# PARIS : G4 package



*\*movable as such to other G4 packages*

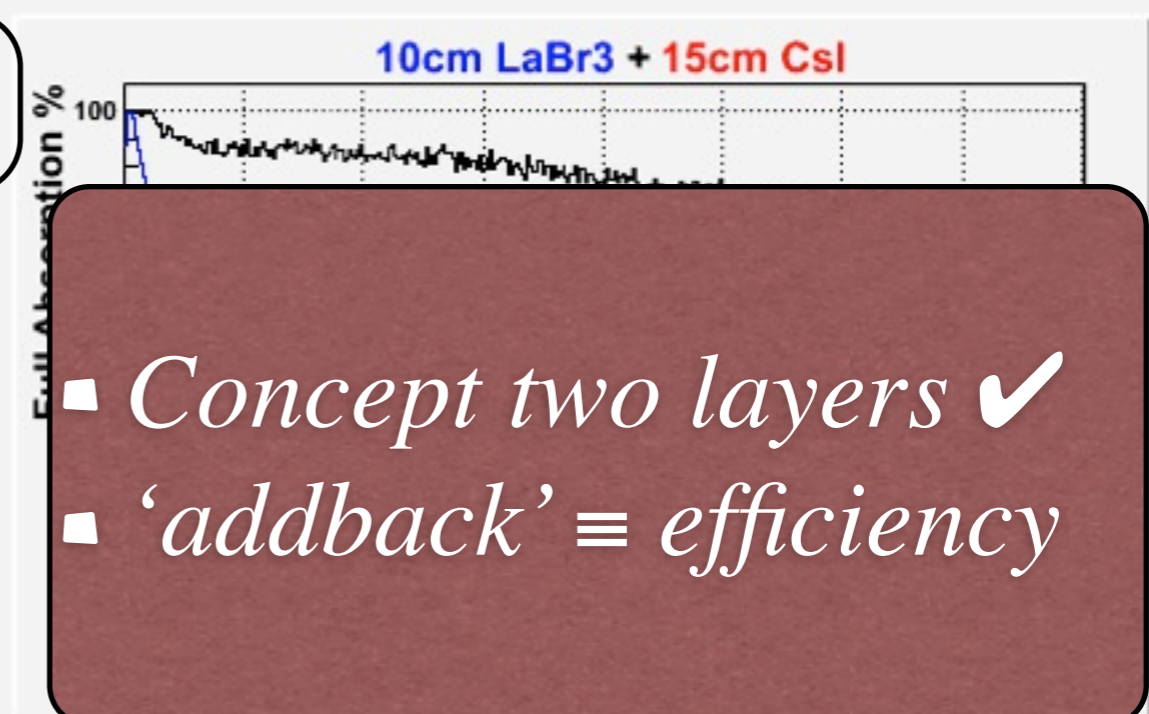
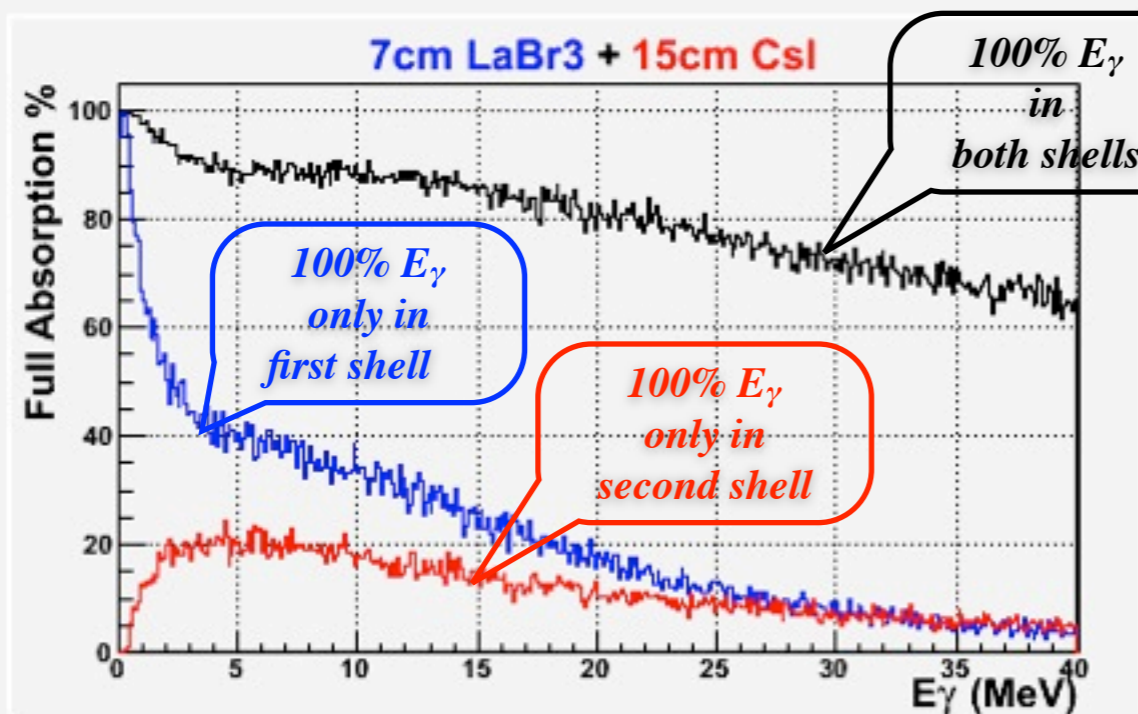
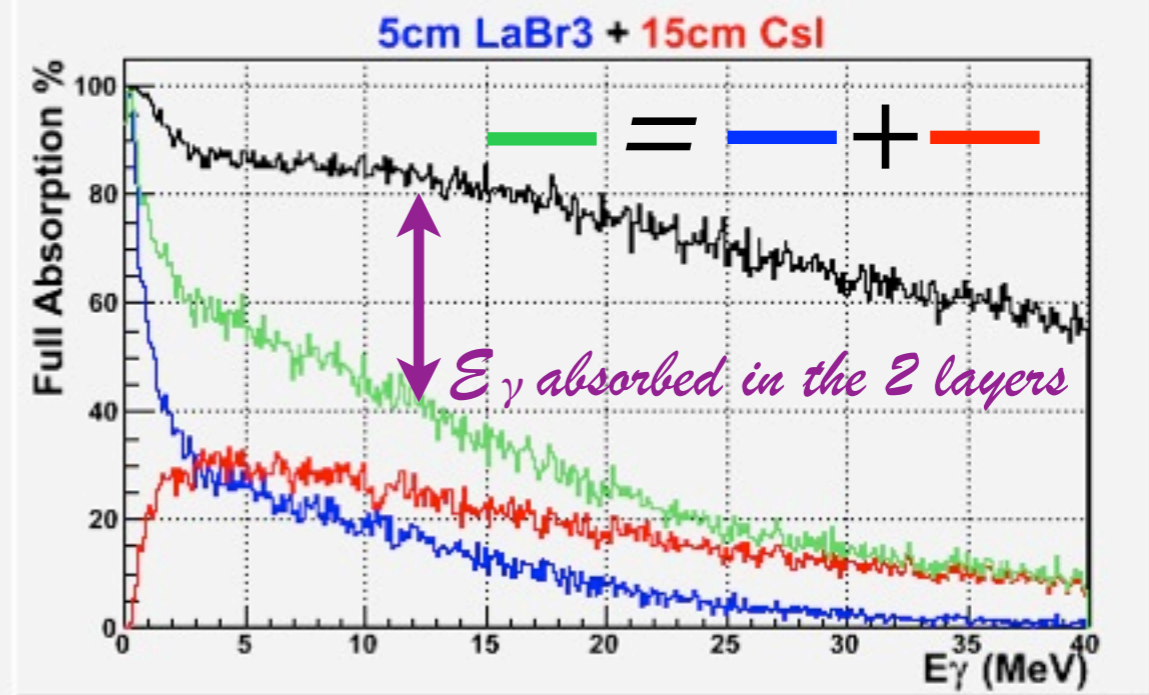
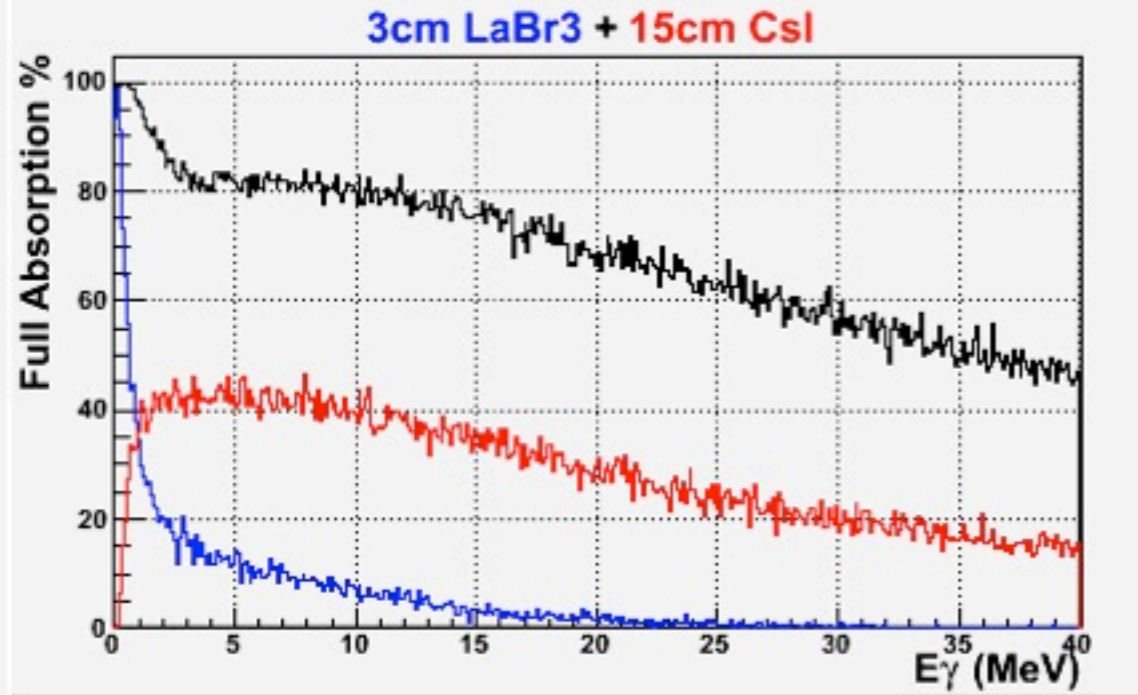


# First important result !





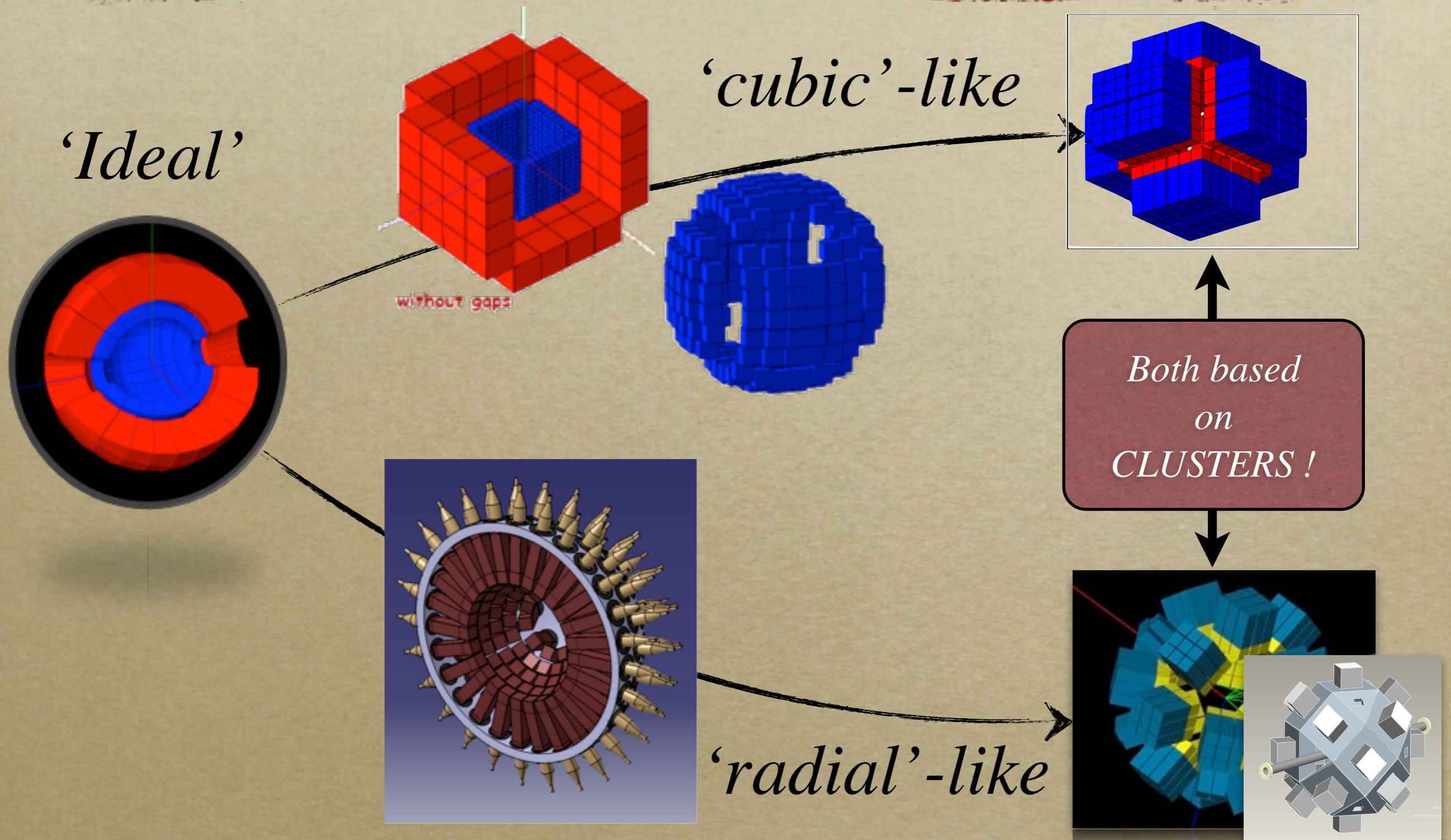
# First important result !



- Concept two layers ✓
- 'adddback' ≡ efficiency

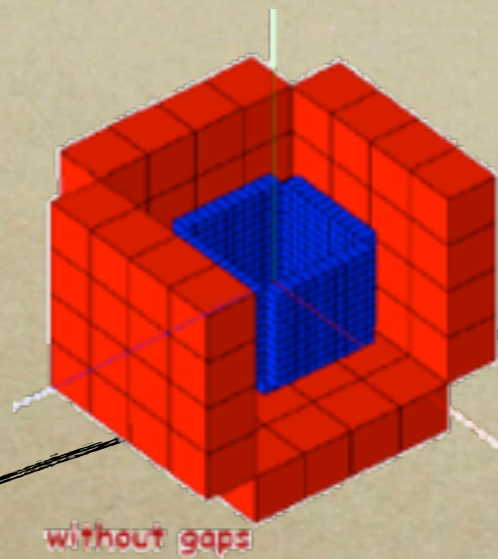


# + studies to go to clusters

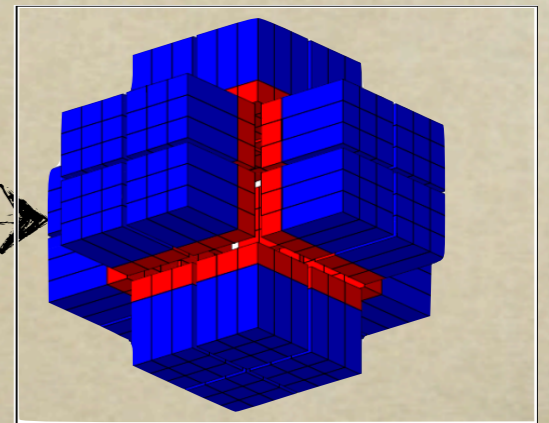
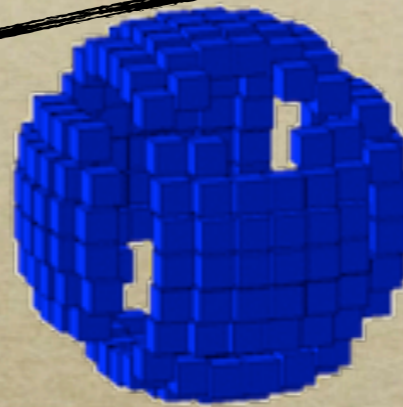




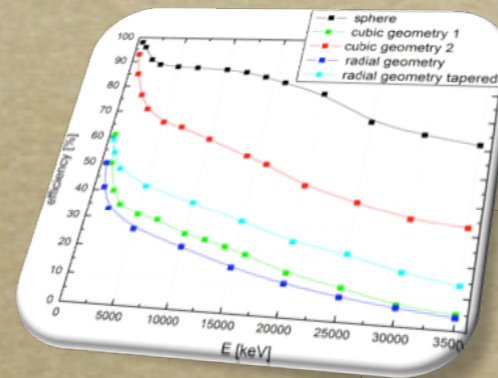
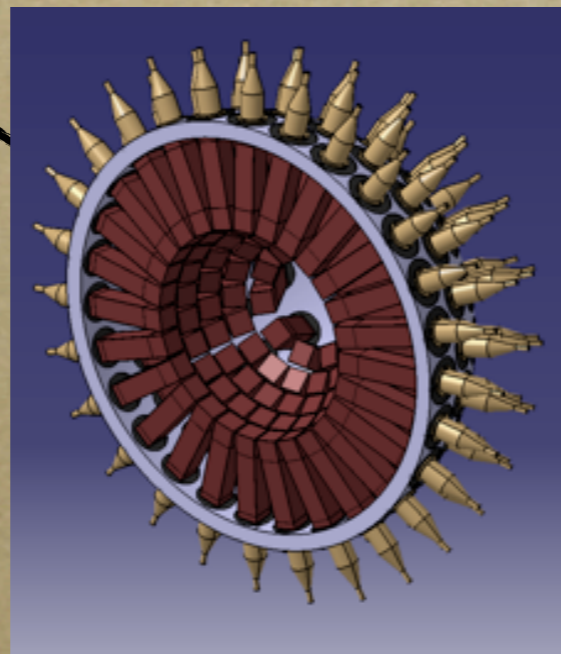
# + studies to go to clusters



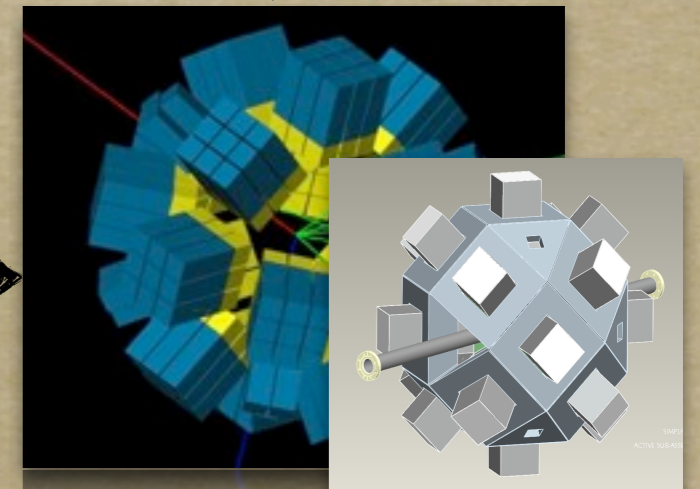
*'cubic'-like*



*Both based  
on  
CLUSTERS !*



*'radial'-like*

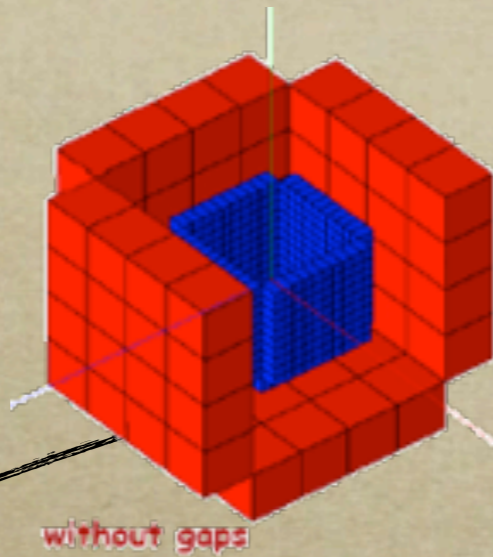




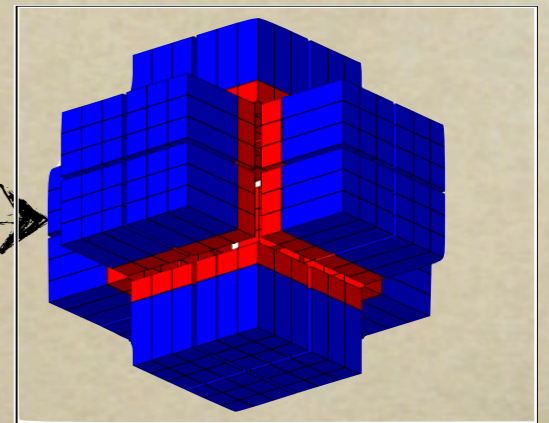
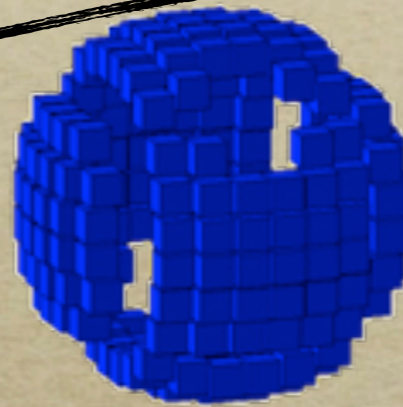
# + studies to go to clusters



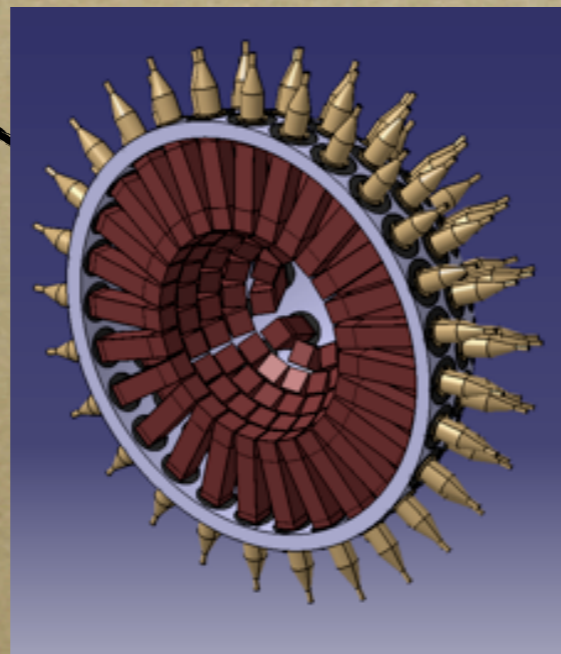
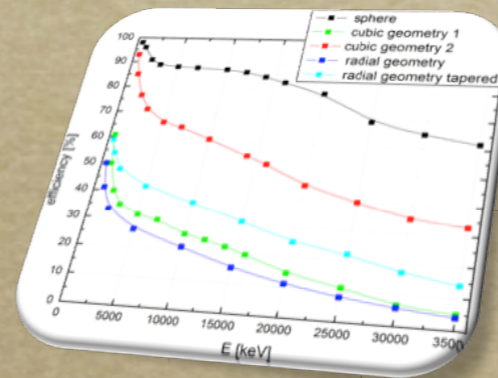
*'Ideal'*



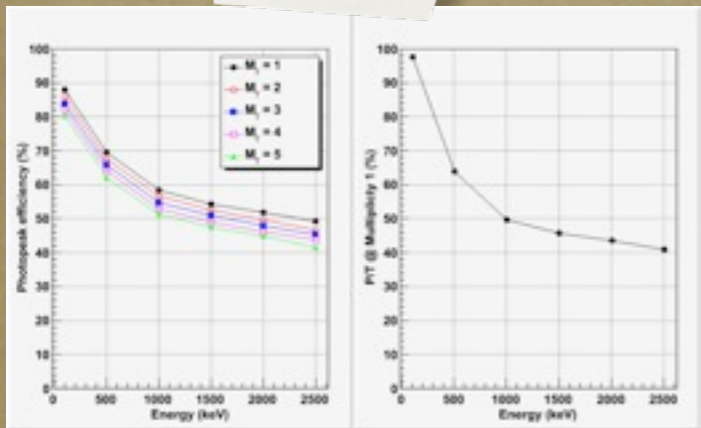
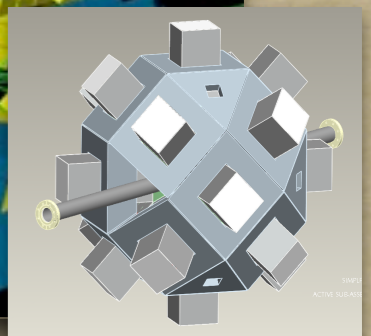
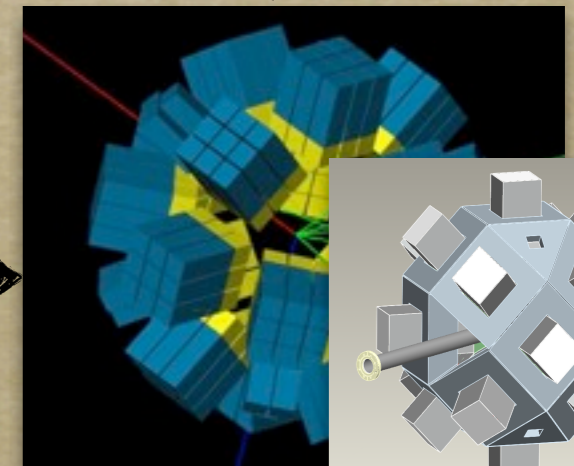
*'cubic'-like*



*Both based  
on  
CLUSTERS !*



*'radial'-like*

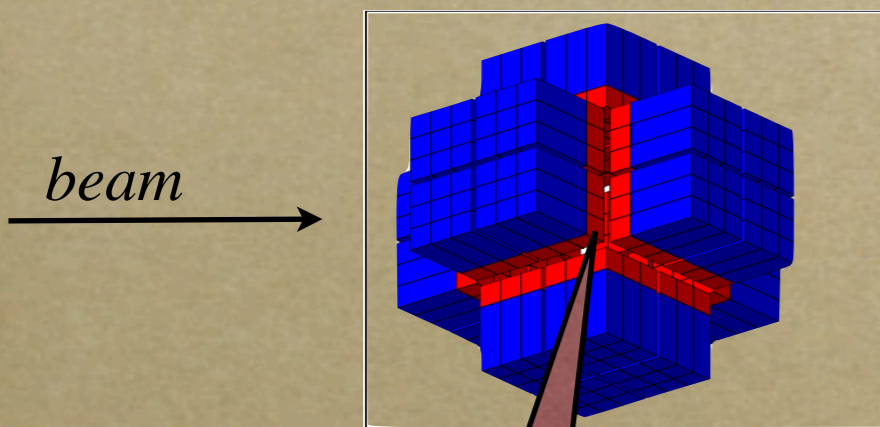




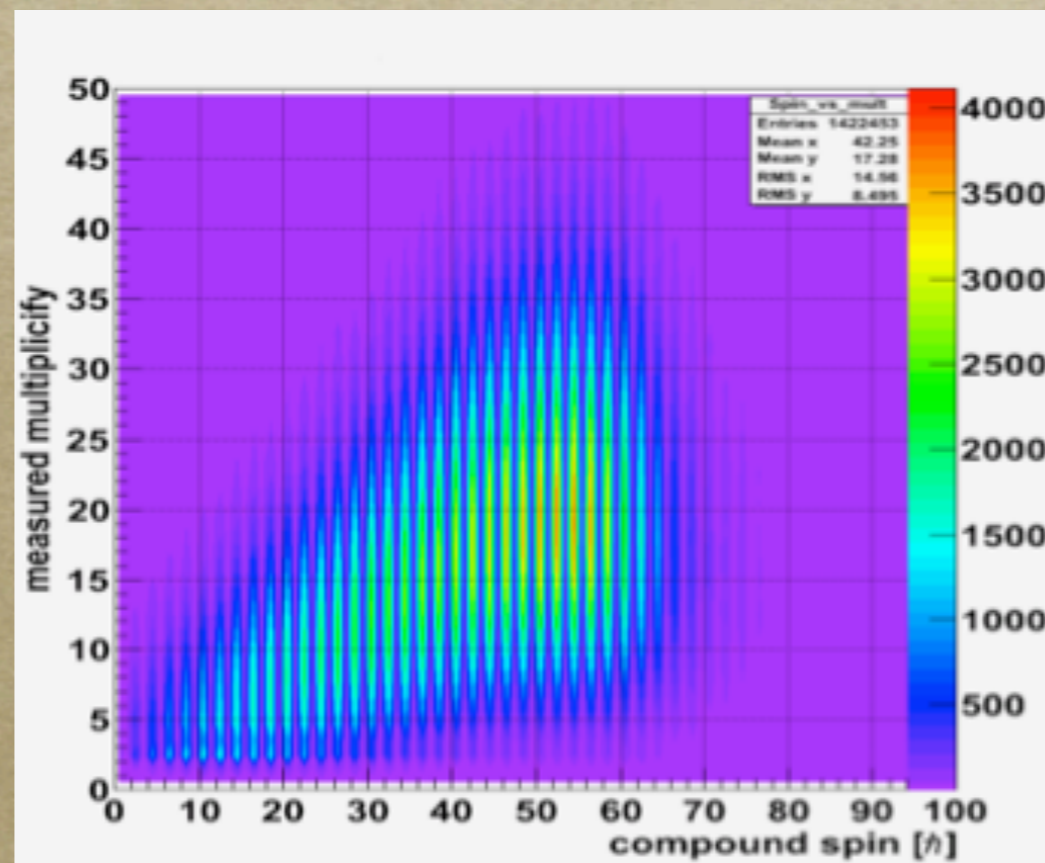
# Fusion-evaporation generator

*goal: towards full simulation of experiments*

- *External generator [cascade,gemini++] ✓:*  
***But***, *ok as soon as vertex of primary particles can be de-coupled from tracking*
- *Otherwise internal [in G4] generator ... currently on test ✓*



*Fusion,  
evaporation  
in G4*





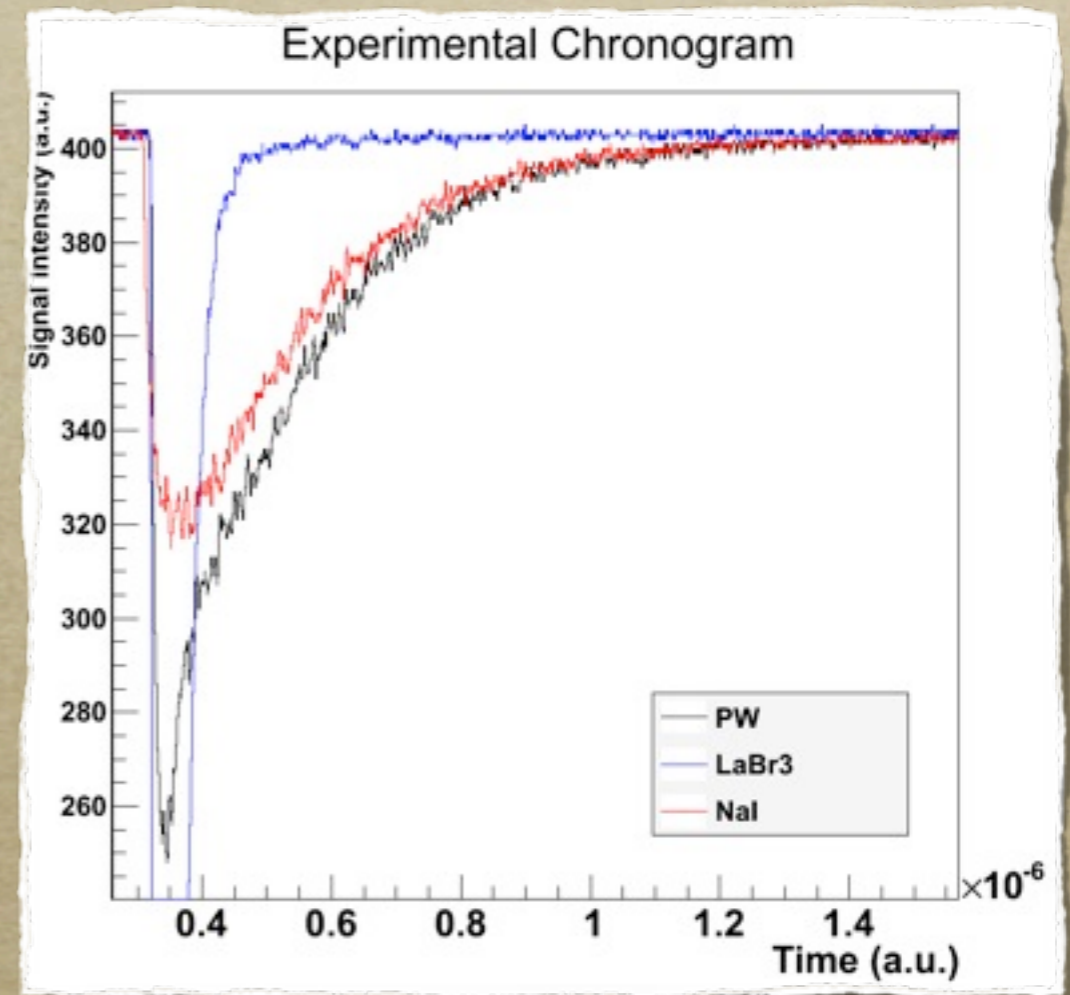
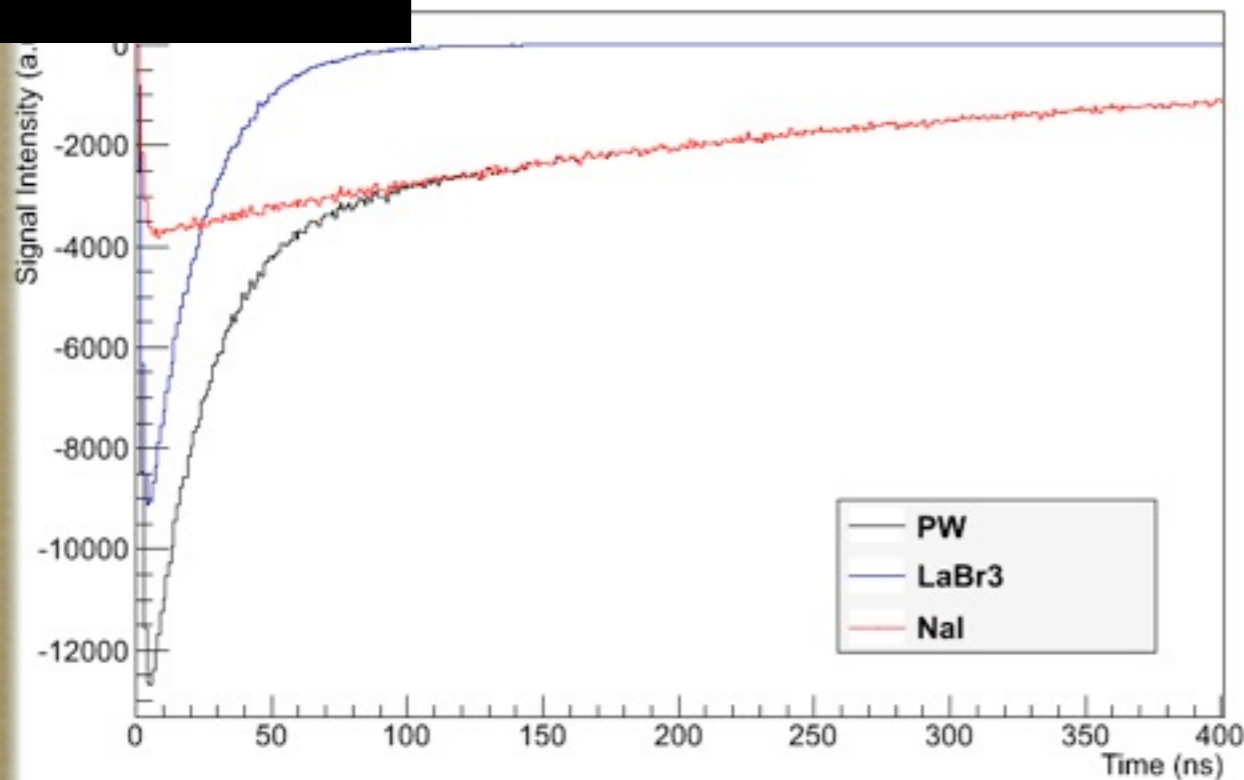


# Scintillation process in PARIS

Signal collected @ the photocathode

63000 photons/MeV !

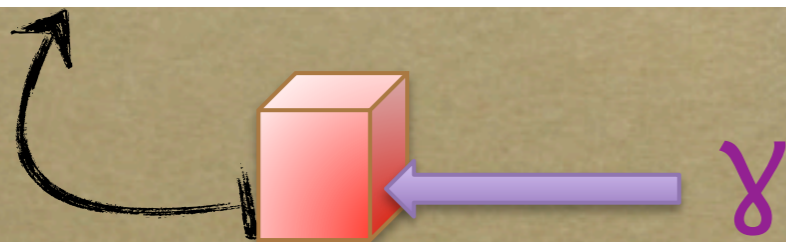
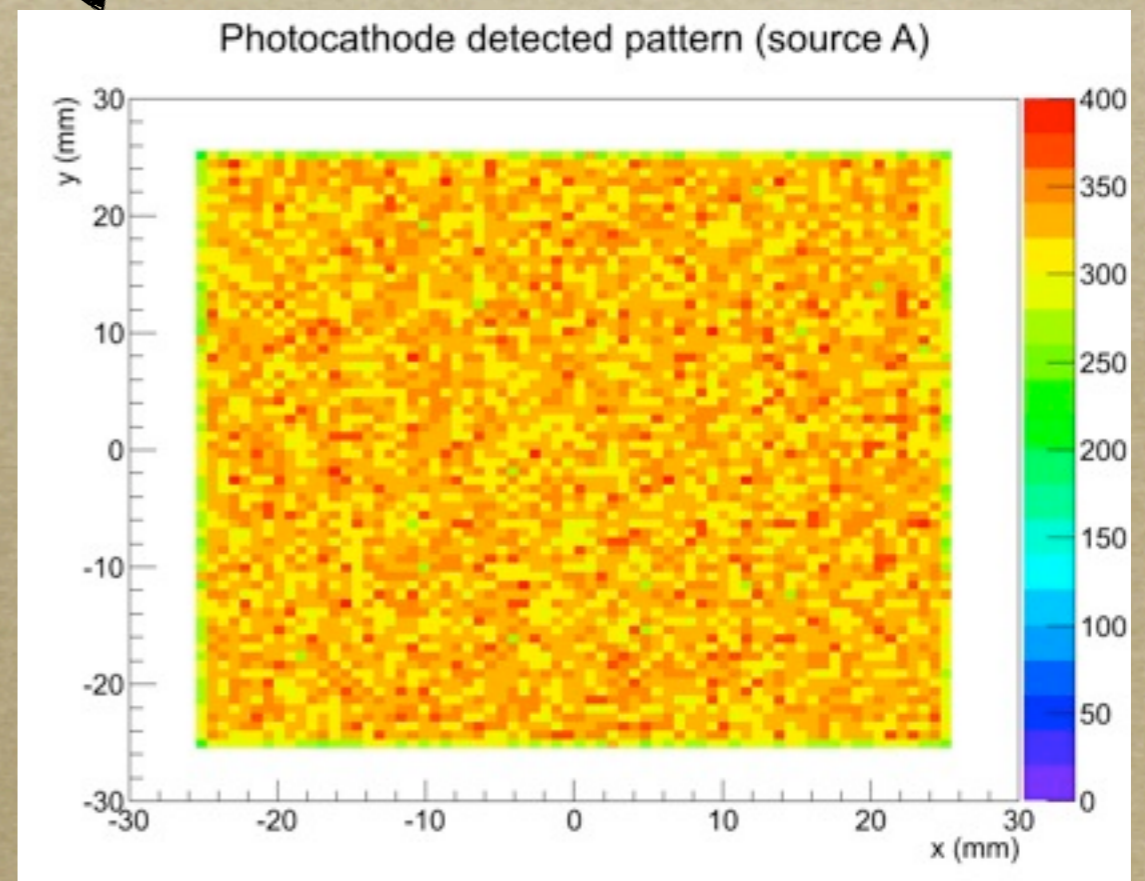
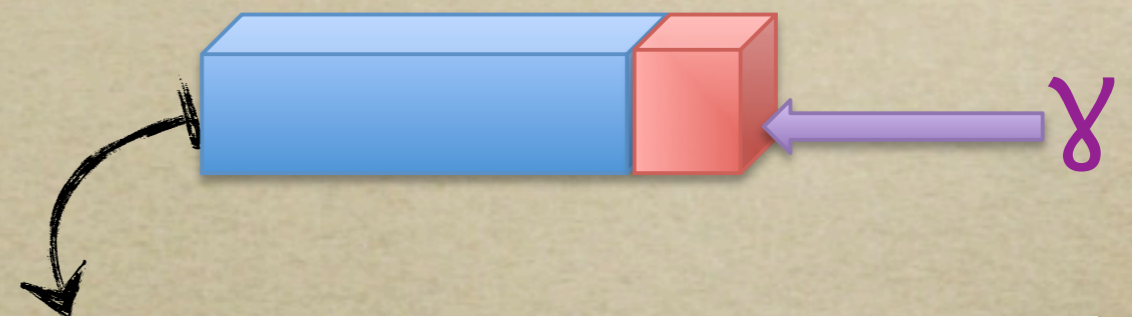
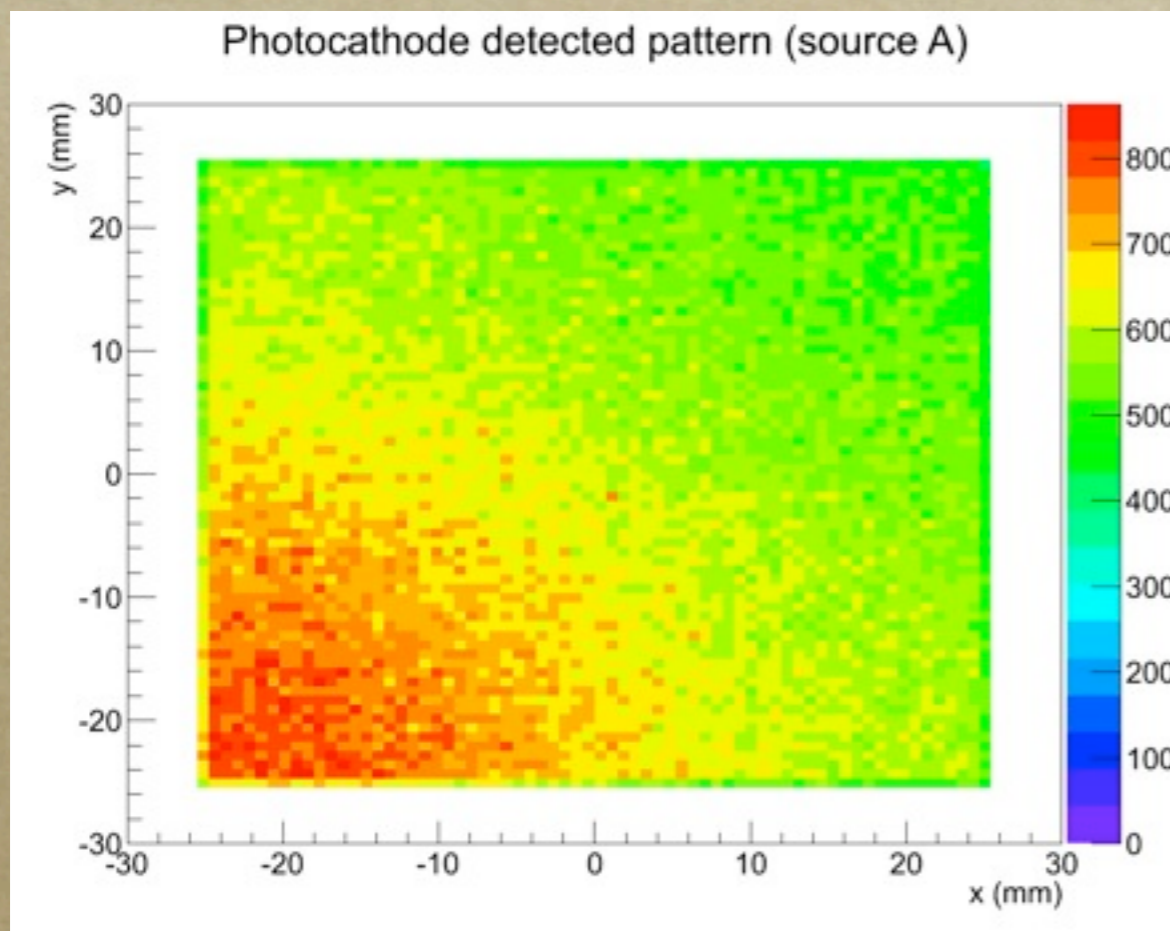
Scintillation signal of the PW





# Scintillation process in PARIS

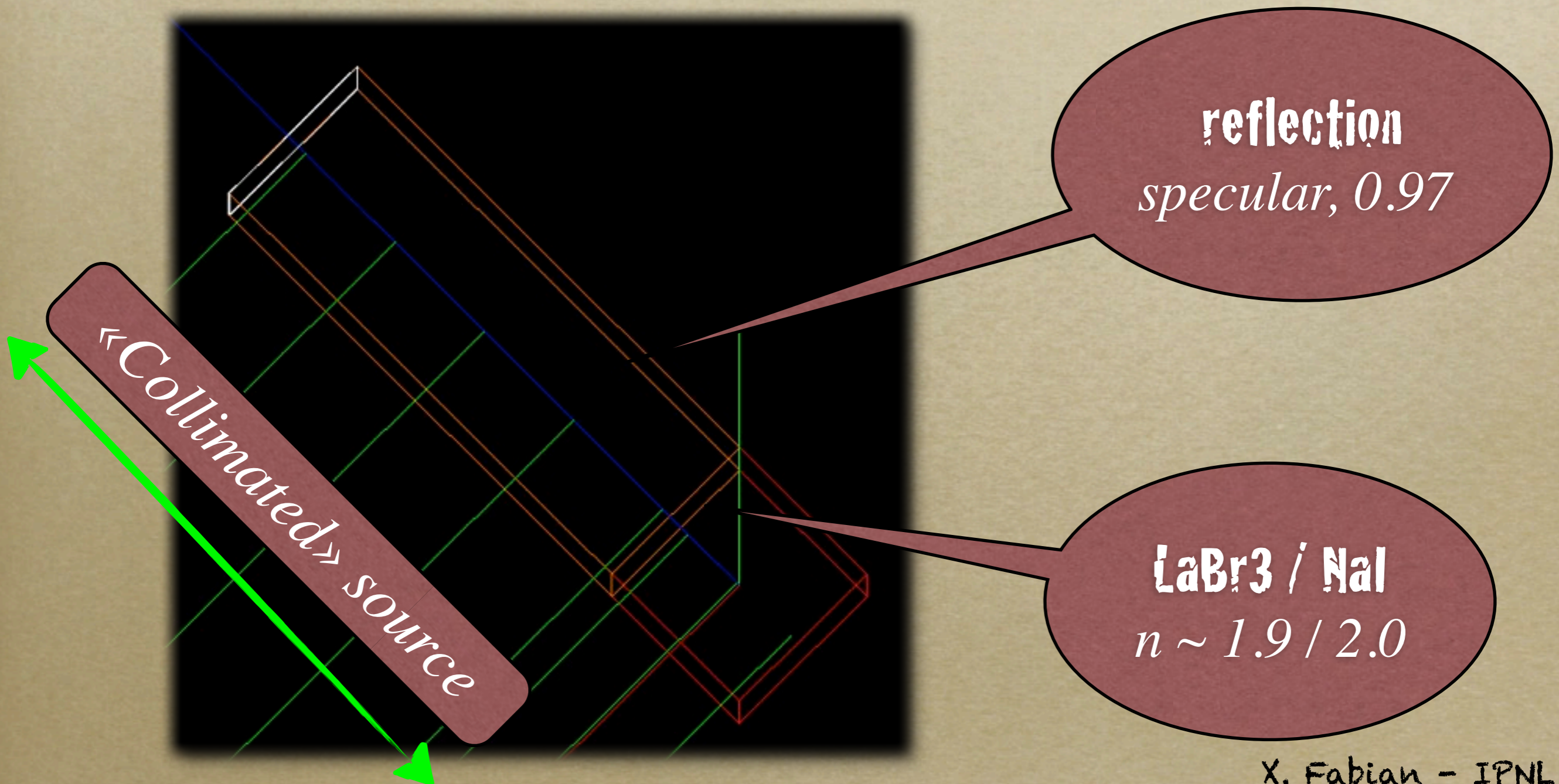
*Pattern @ the photocathode*





# Scintillation process in PARIS

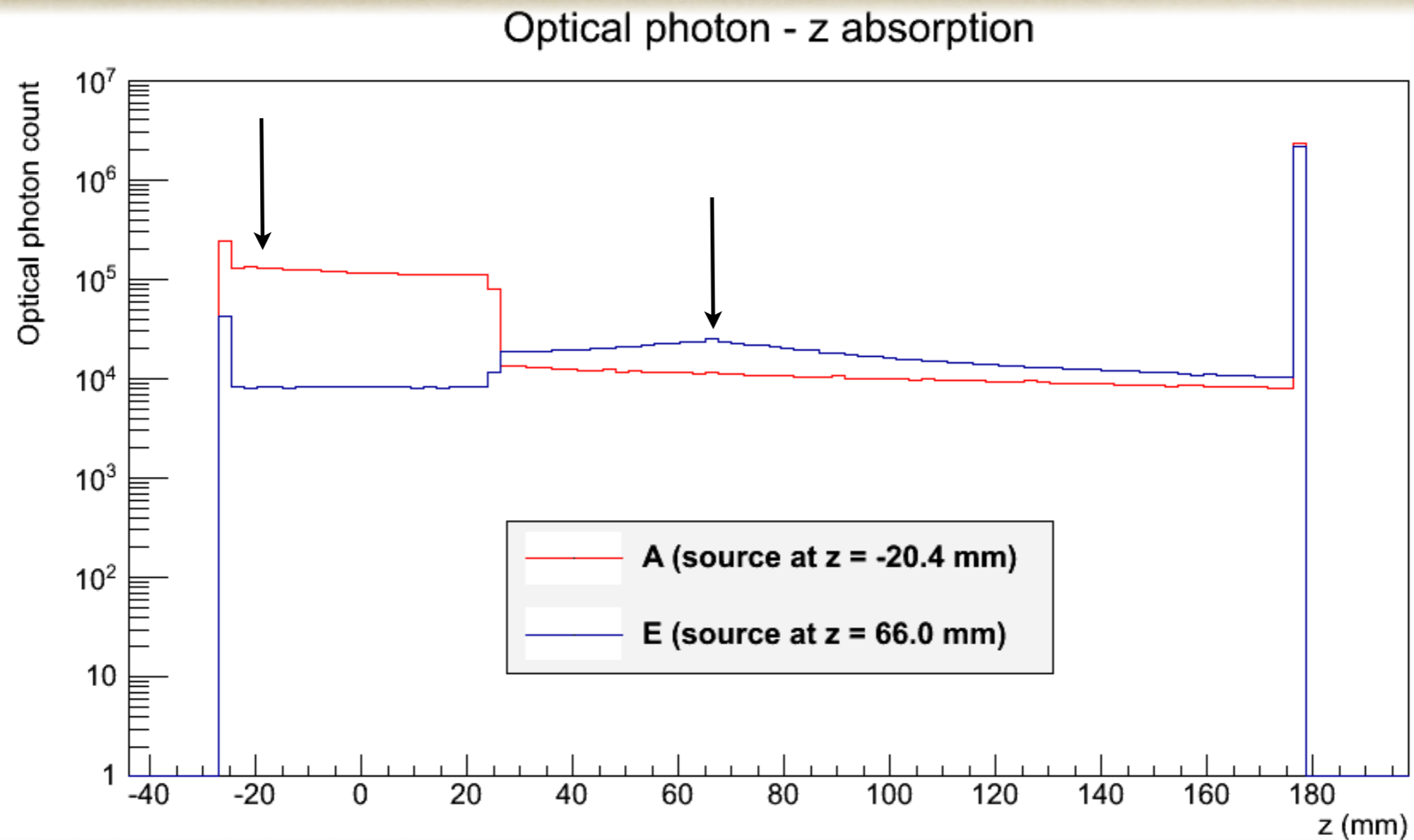
*Virtual in-depth scanning of a phoswich element*





# Scintillation process in PARIS

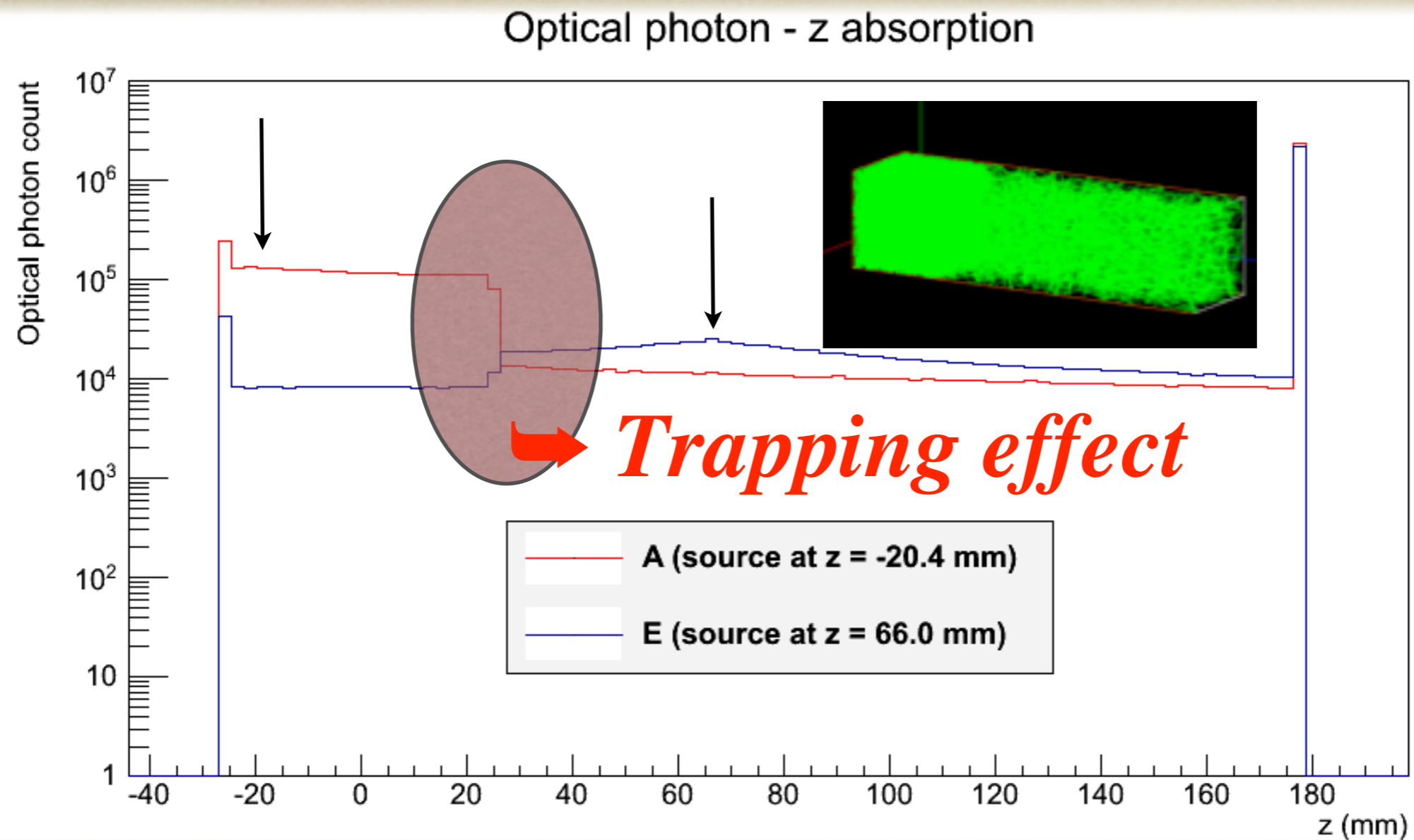
*Where are lost optical photons ?*





# Scintillation process in PARIS

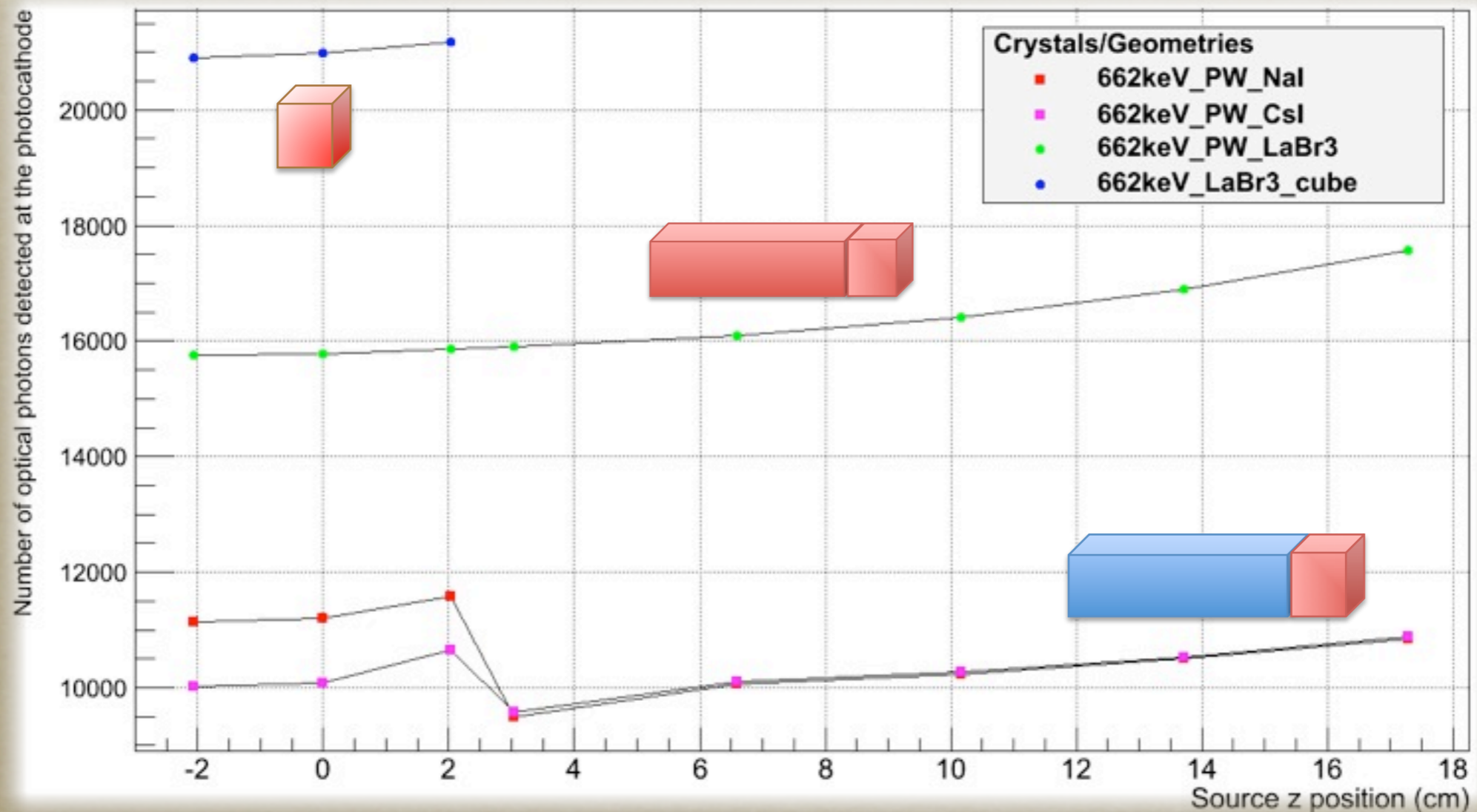
Where are lost optical photons ?





# Scintillation process in PARIS

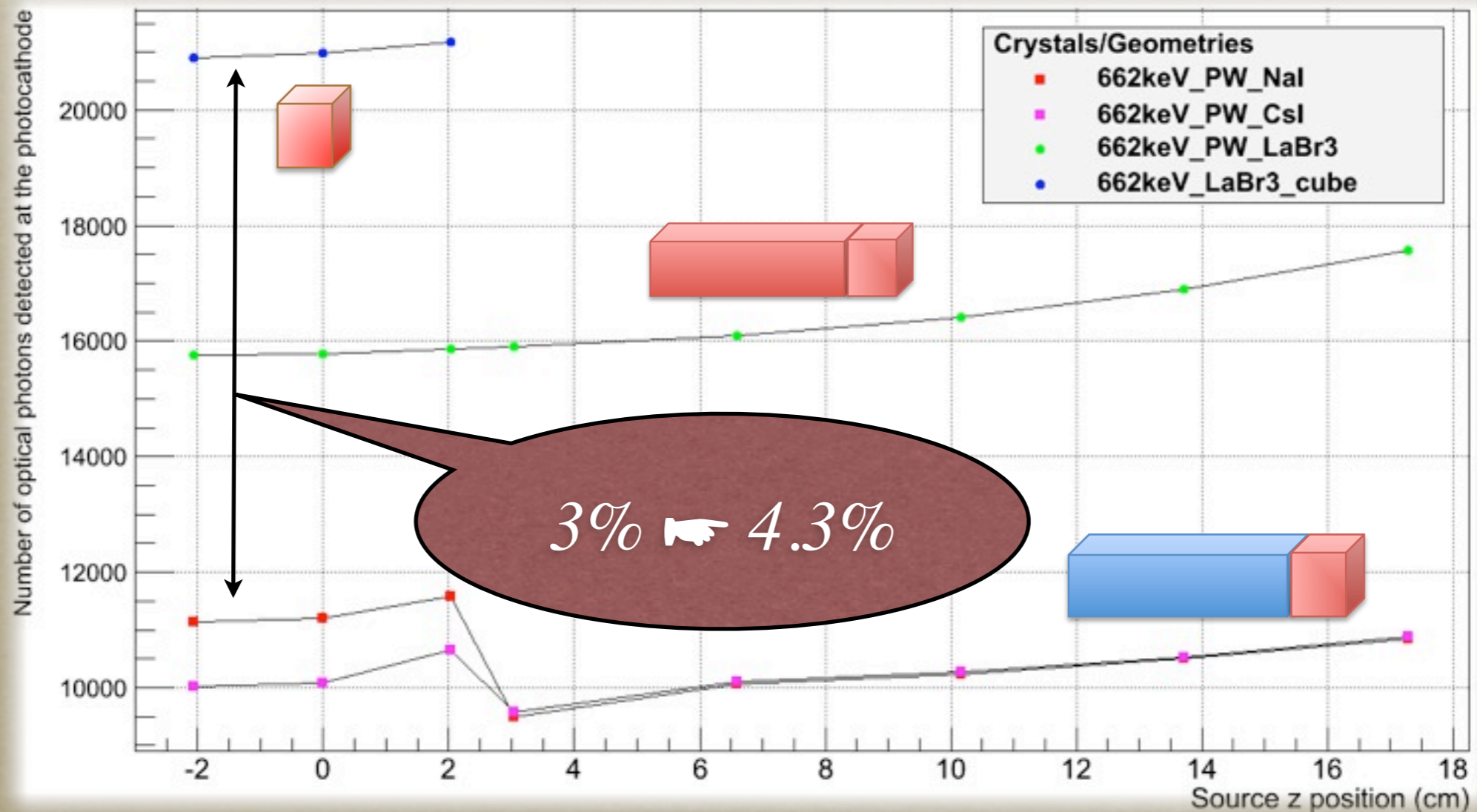
Where are lost optical photons ...  $\Rightarrow$  lost @ the photocathode





# Scintillation process in PARIS

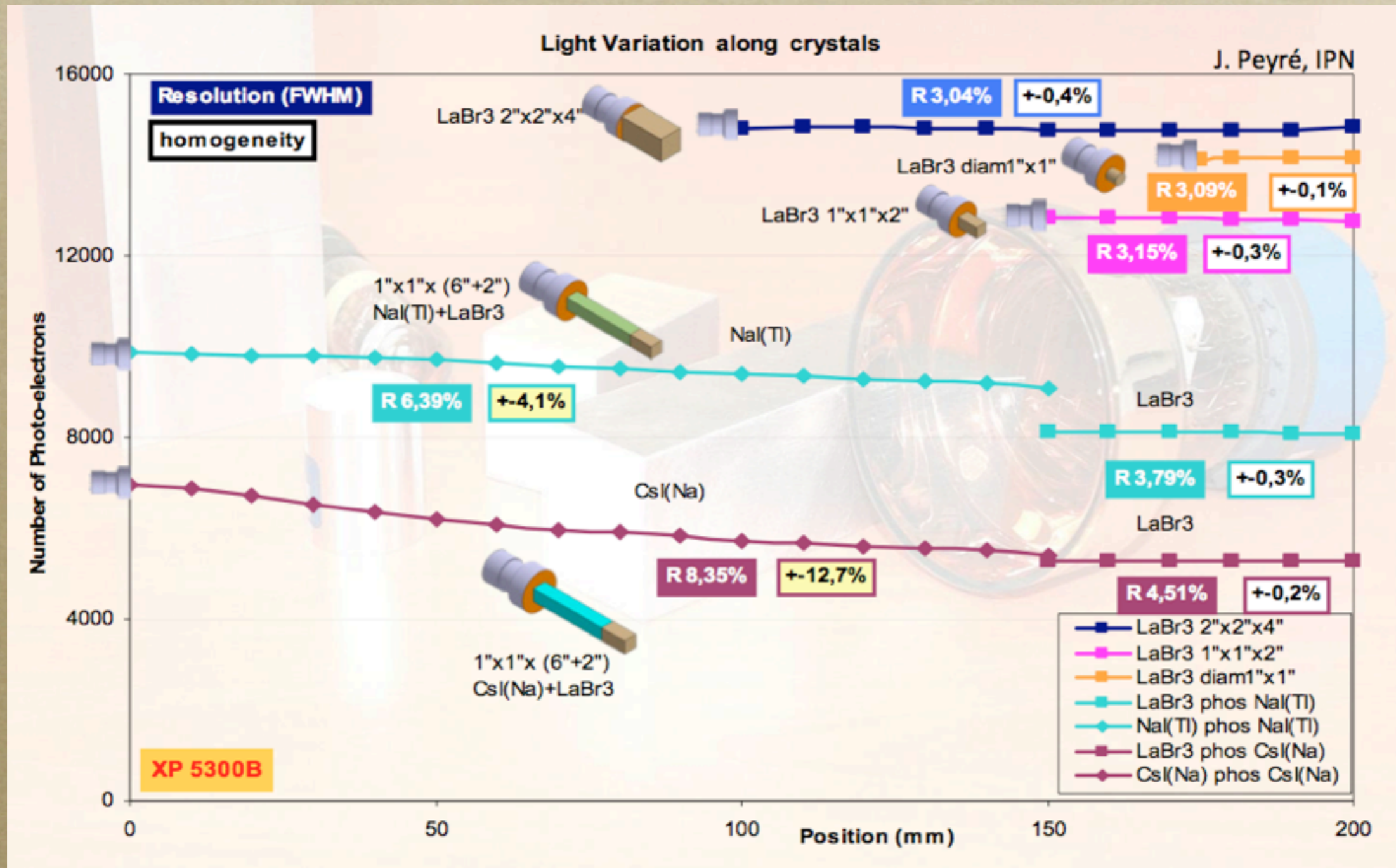
Where are lost optical photons ...  $\Rightarrow$  lost @ the photocathode





# Scintillation process in PARIS

*to be compared with 'real' scanning ...*

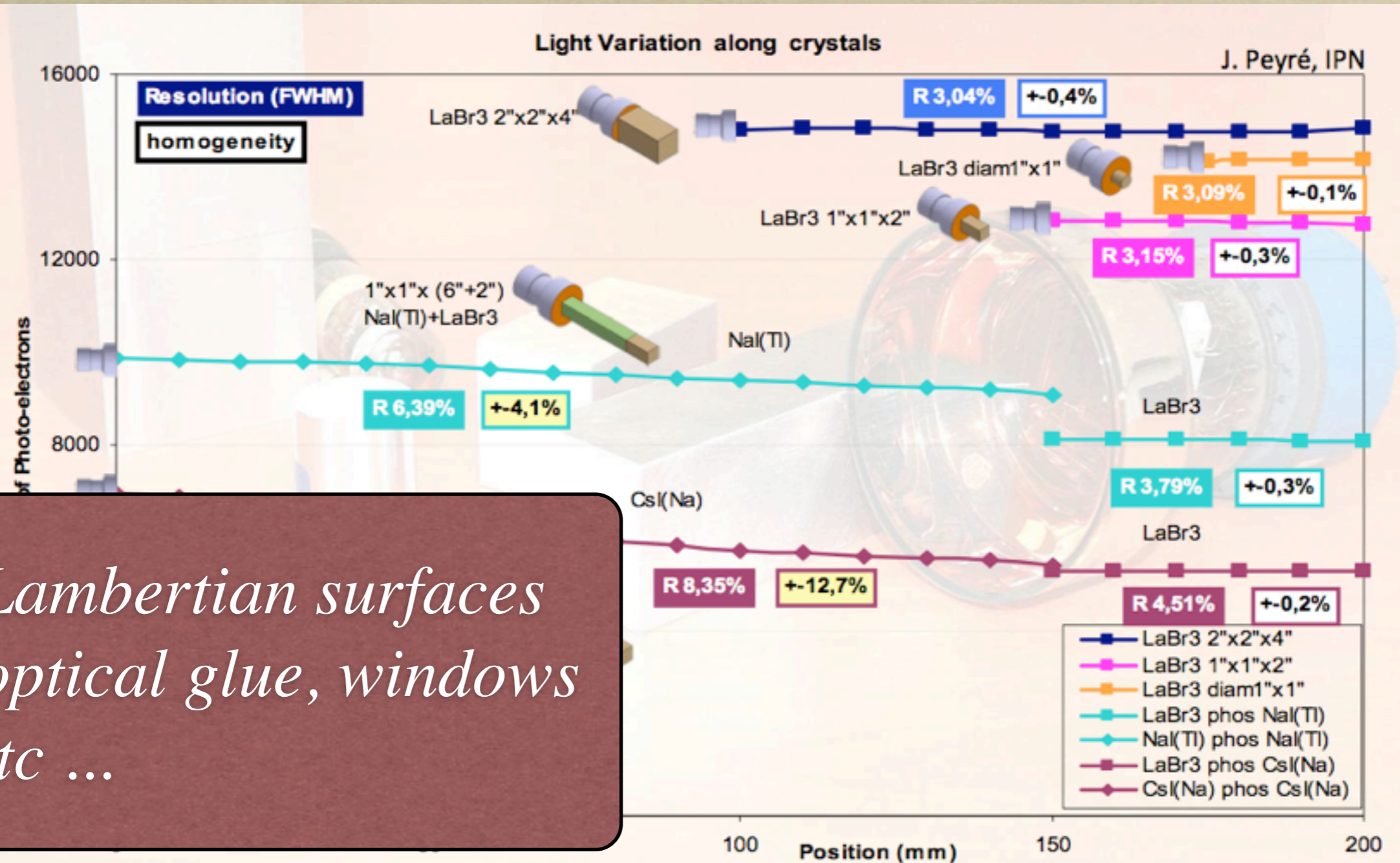






# Scintillation process in PARIS

*to be compared with 'real' scanning ...*



+ *Lambertian surfaces*  
 + *optical glue, windows*  
 etc ...



# Perspectives & developments

- *More characterisations:*
    - *$\gamma$ , scintillation, neutron*
    - *Phoswich, cluster 3x3, demonstrator*
  - *More realistic Physics generators*
  - *Radioactivity / Reconstruction algorithms*
  - *Paris Package:*
    - *Detector Factory, G4 output = same as exp.*
    - *fast simulation/parallel/grid*
- ➔ *Towards High Energy Physics way to work*