

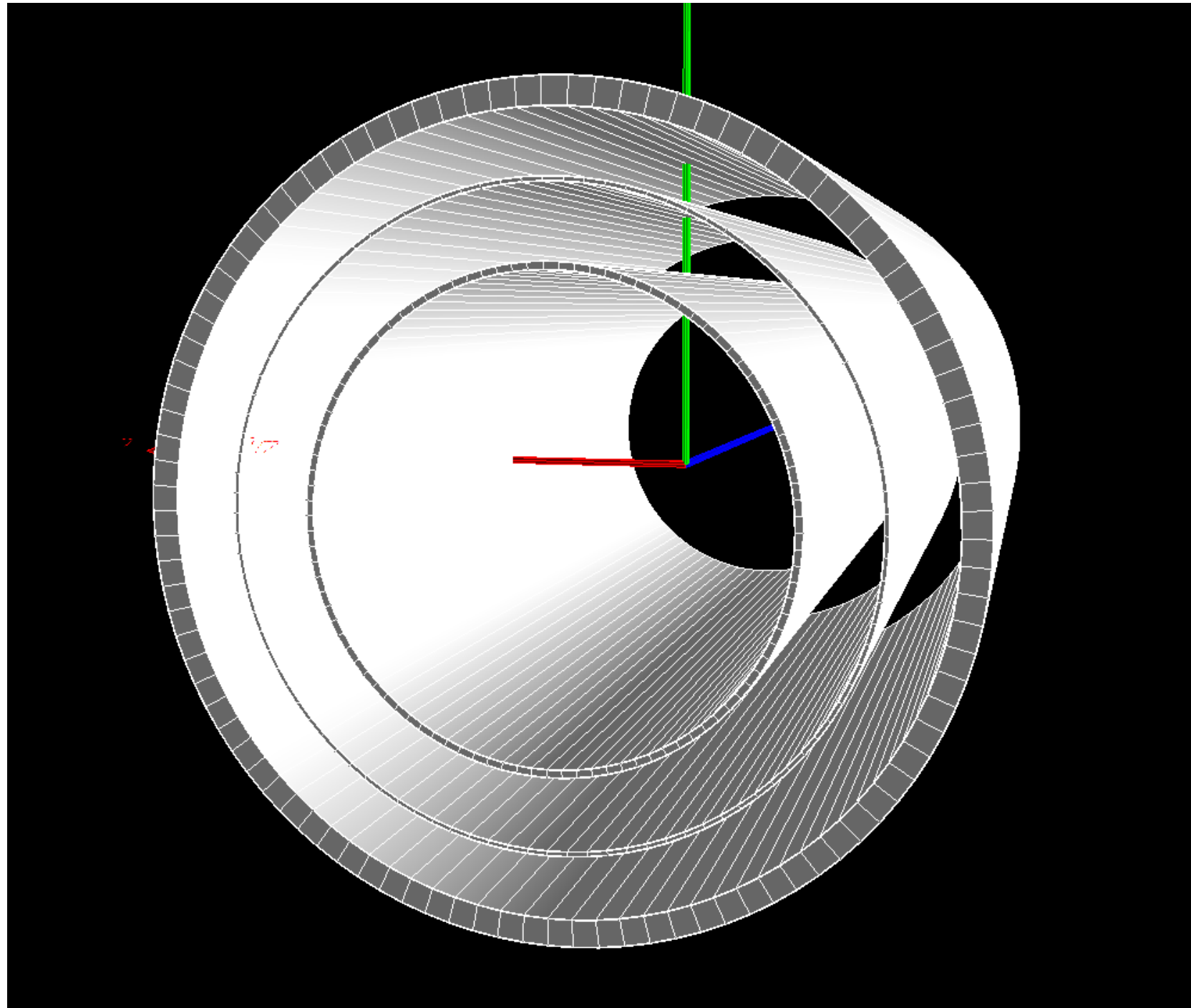
**simulation update**

- **2 configurations :**
  - **YAG-LaBr-BGO**
  - **YAG-YAG-YAG**
- **Removed the 1mm aluminium shroud around detectors**

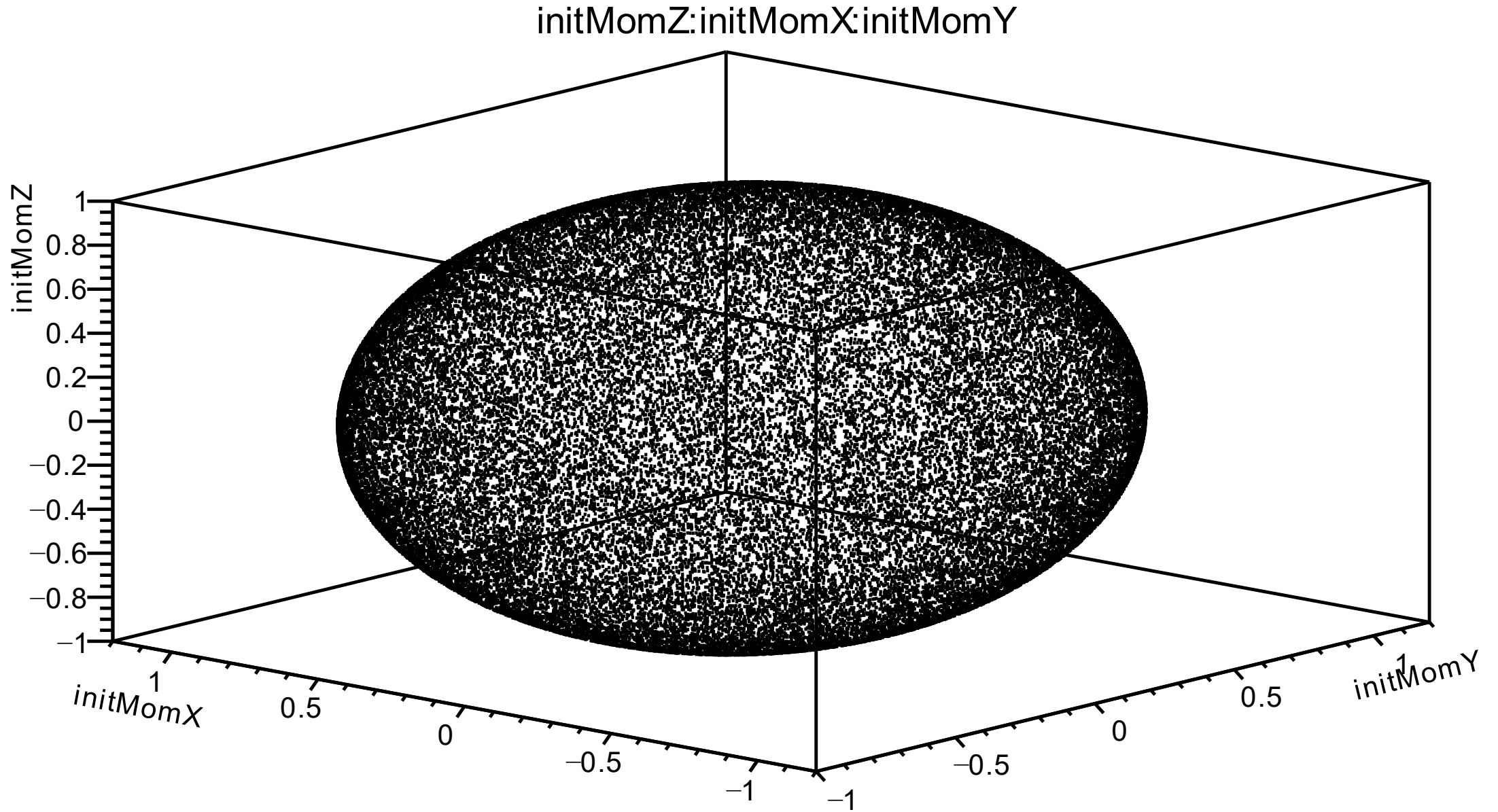
**YAG X0 = 35.4mm**

**LaBr X0 = 19.7mm**

**BGO X0 = 11.2mm**

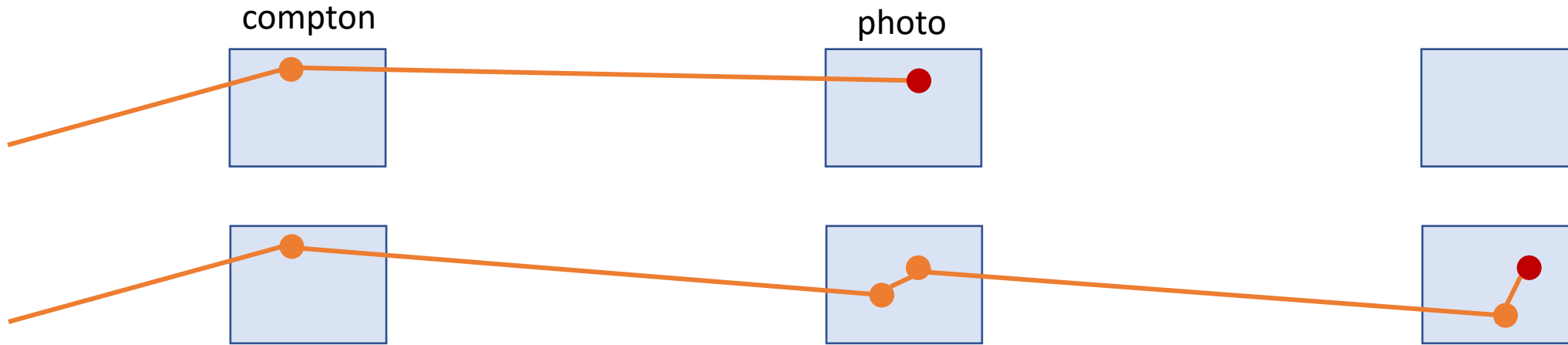


- photon initial momentum



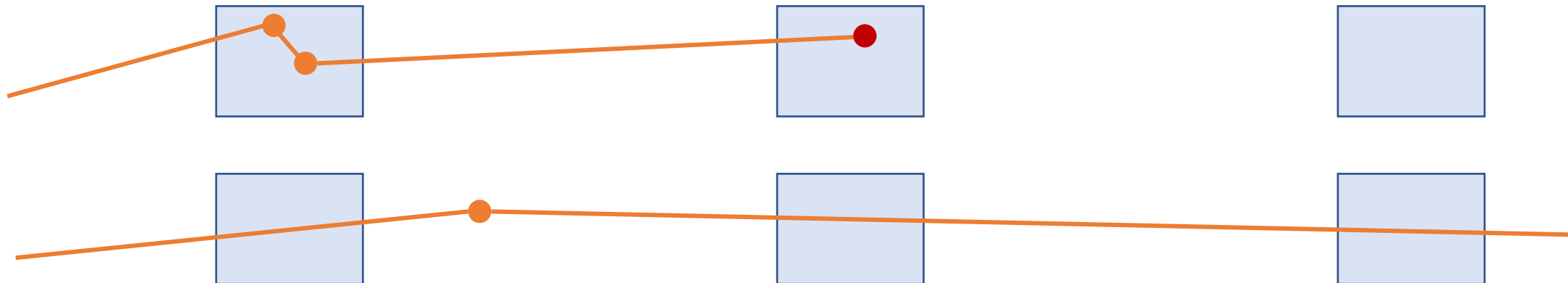
### Usable events :

- No interaction in the air
- The photon does not escape the detector
- The first compton is the only interaction in the layer which the first compton happens



### Bad events :

- All the remaining topologies

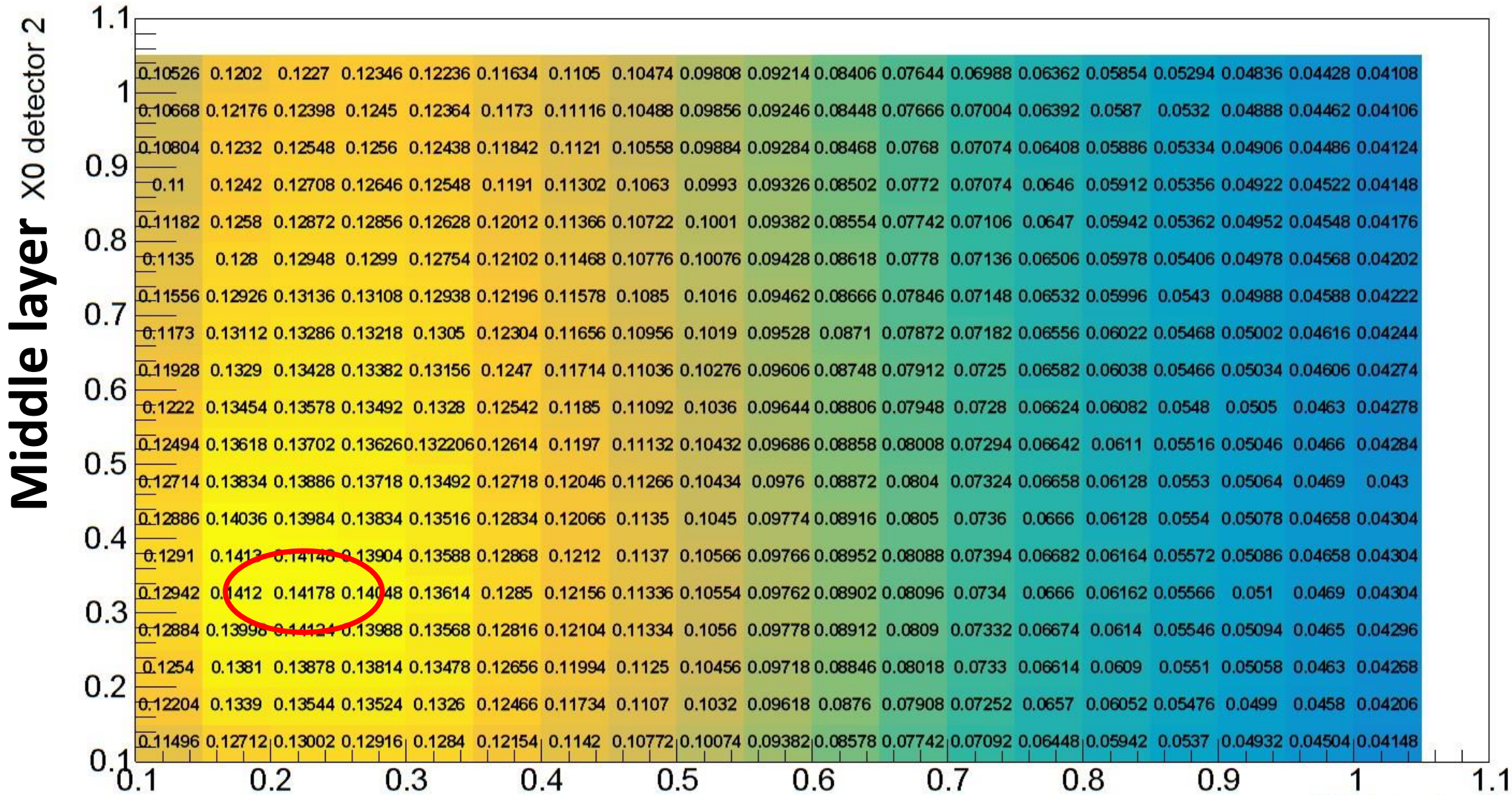


**YAG – LaBr – BGO configuration**

218 keV photons

YAG-LaBr-BGO

Outer layer 3X0



218 keV Maximum 14% inner 0.2 X0, middle 0.3 X0

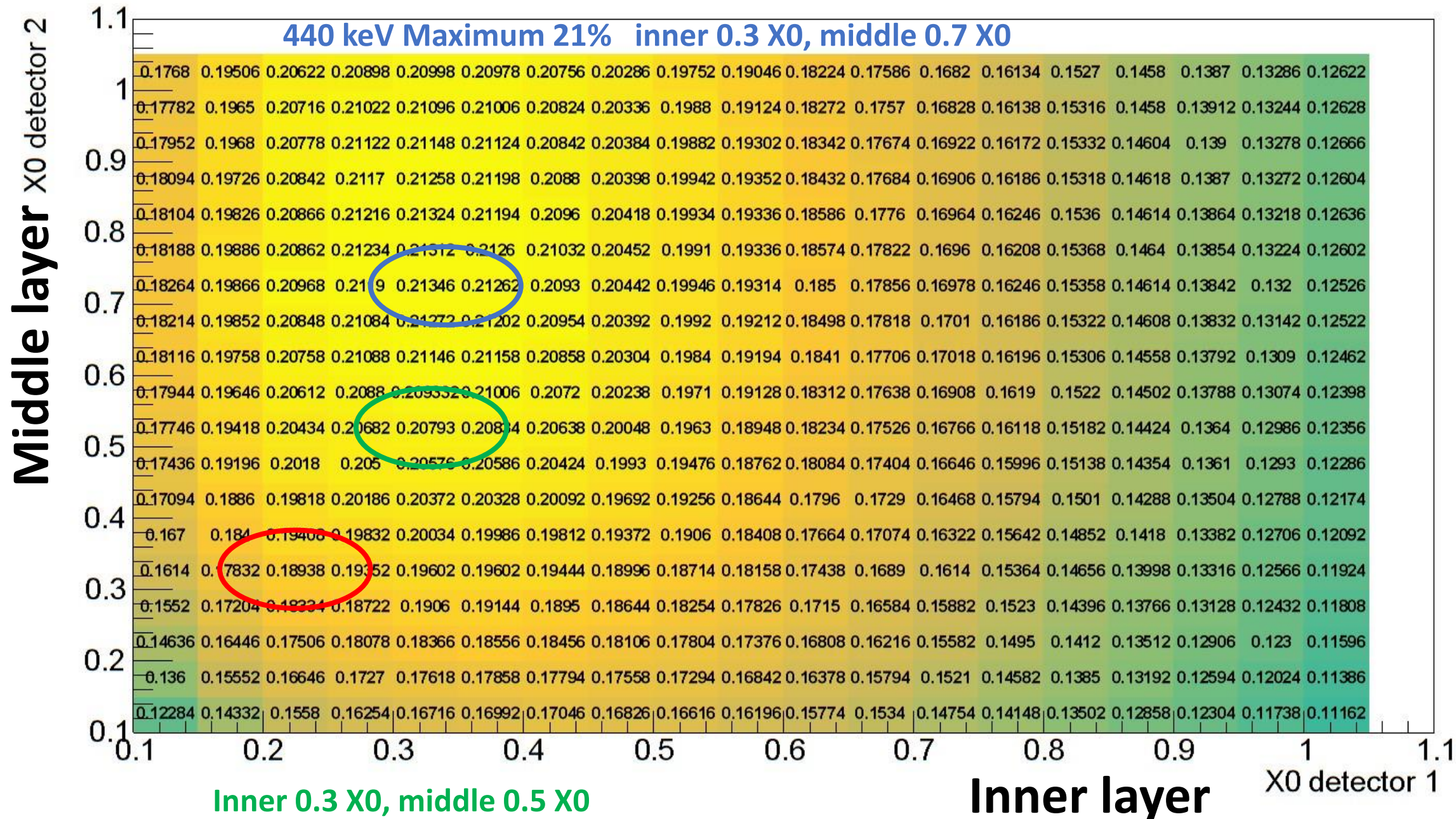
Inner layer

X0 detector 1

440 keV photons

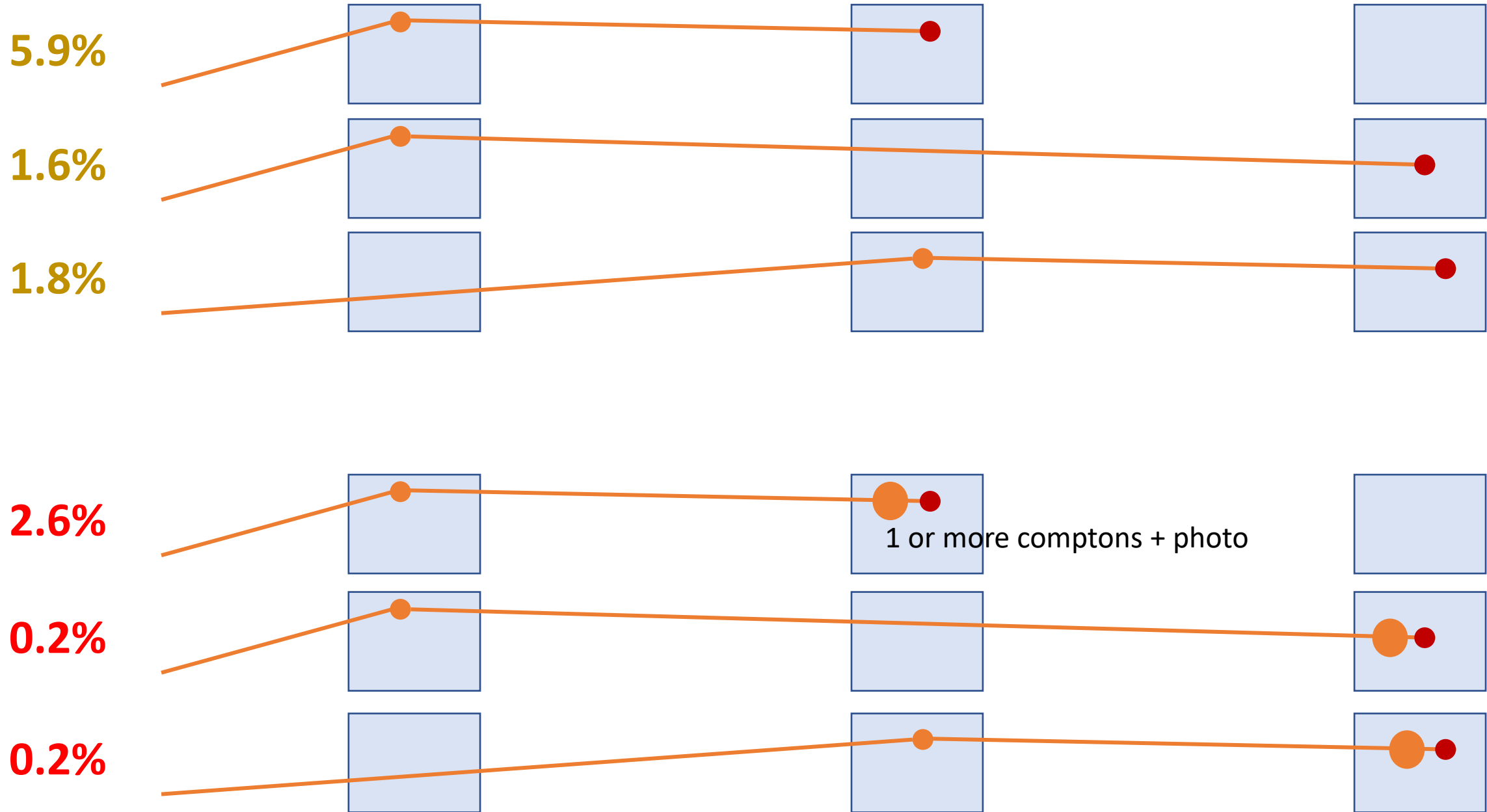
YAG-LaBr-BGO

Outer layer 3X0



YAG – LaBr – BGO configuration  
218 keV

2 interactions events



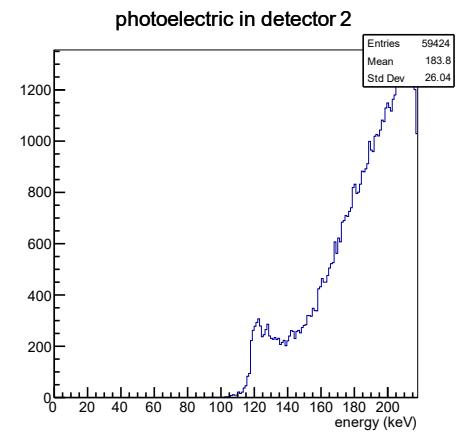
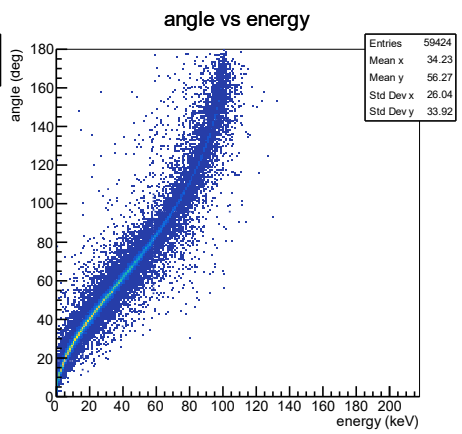
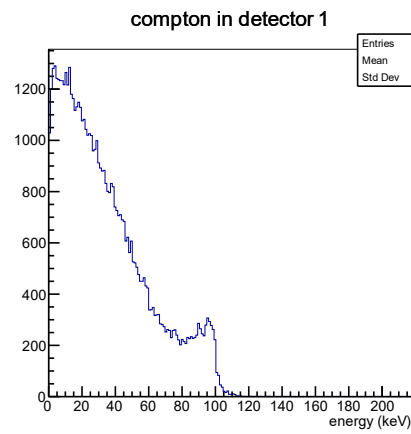


# YAG – LaBr – BGO configuration

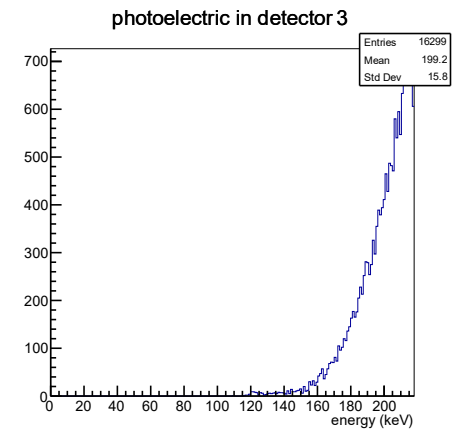
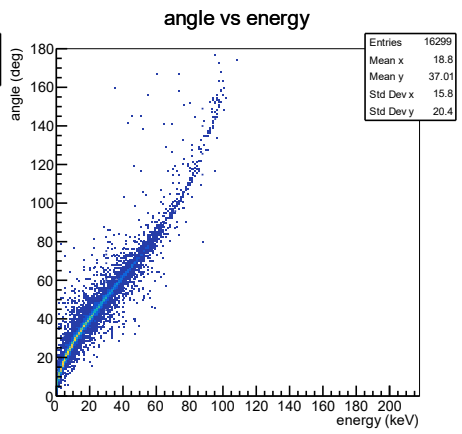
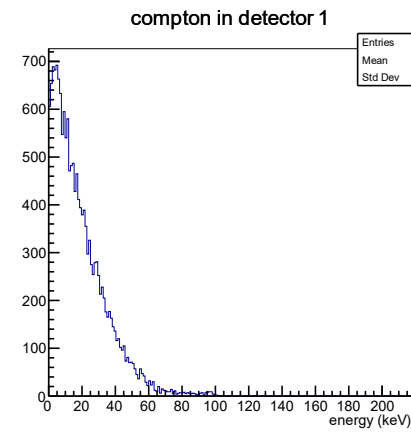
## 218 keV

# 2 interactions events

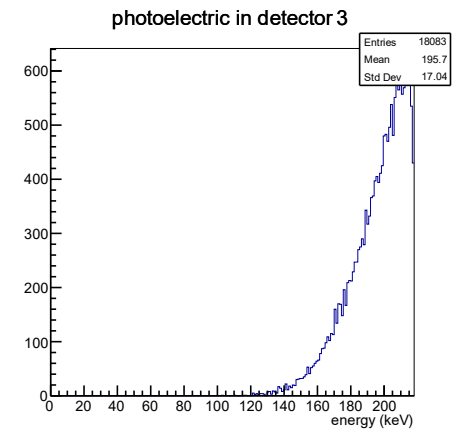
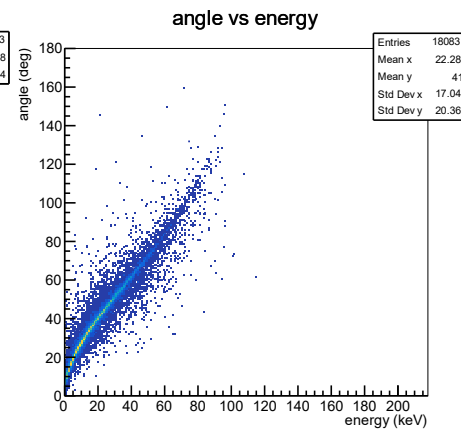
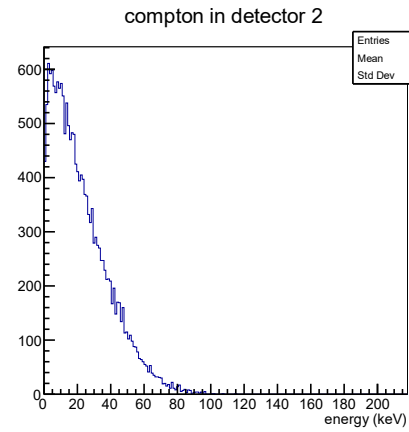
5.9%



1.6%



1.8%



# YAG – LaBr – BGO configuration

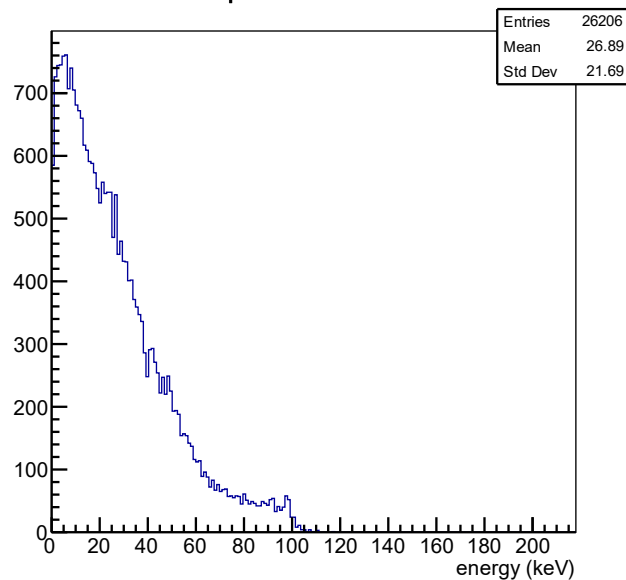
218 keV

## 2 interactions events

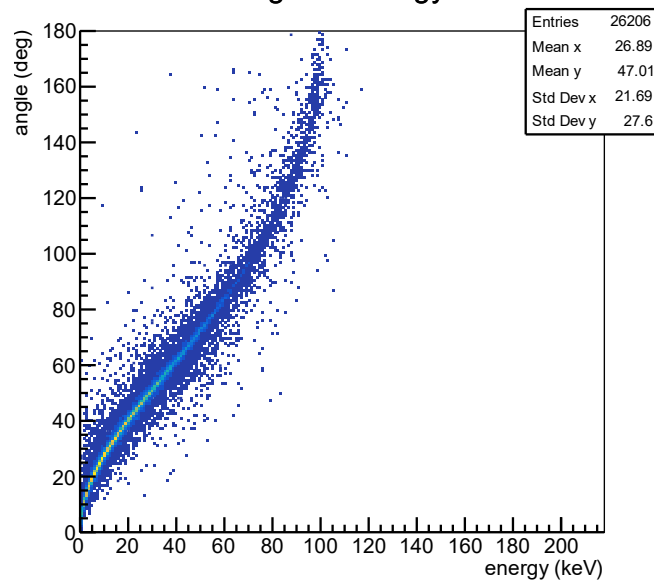
2.6%

inner layer

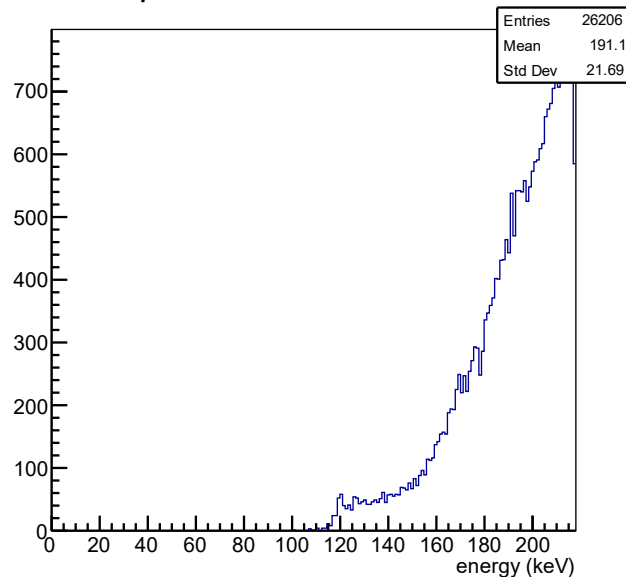
compton in detector 1



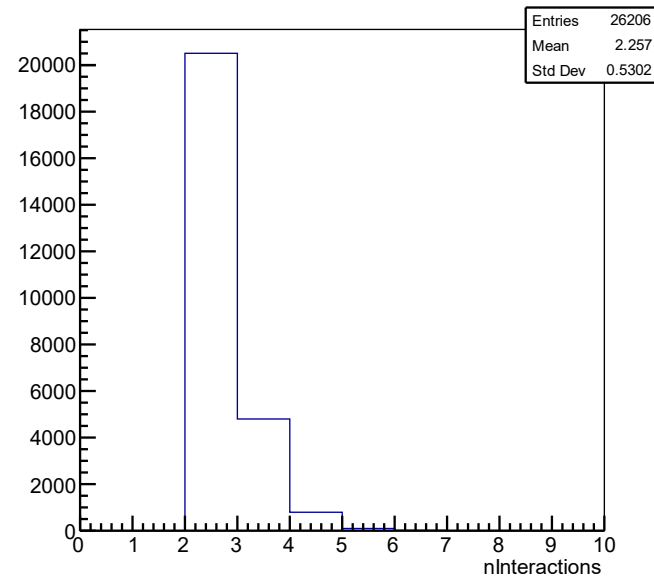
angle vs energy



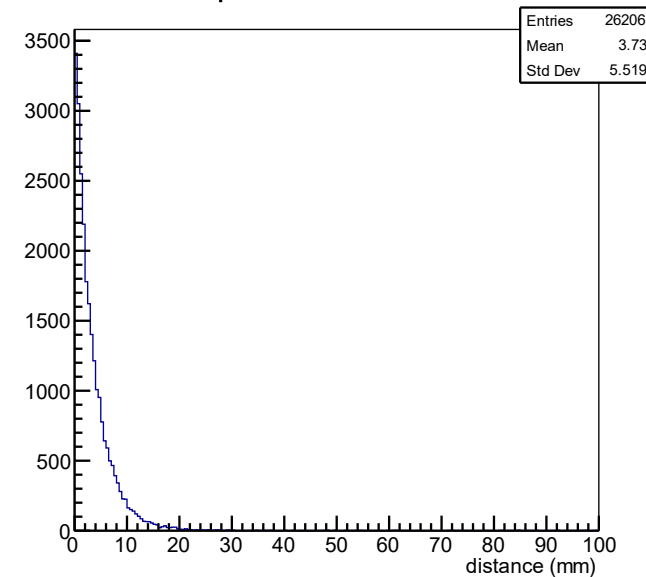
photoelectric in detector 2



n Interactions in detector 2



spread in detector 2



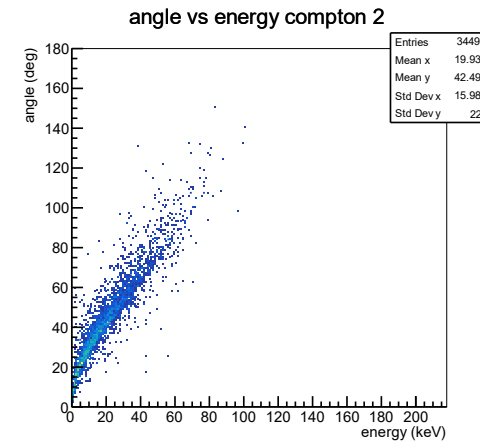
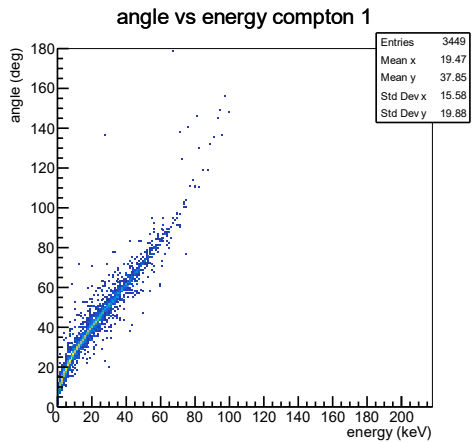
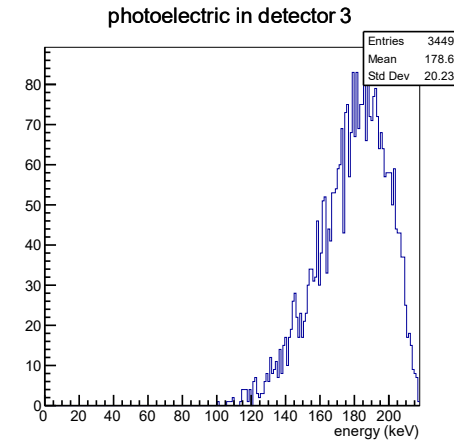
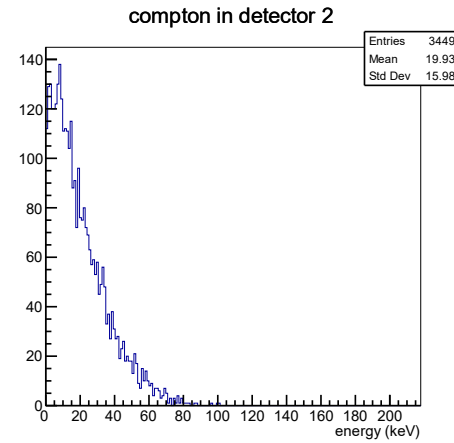
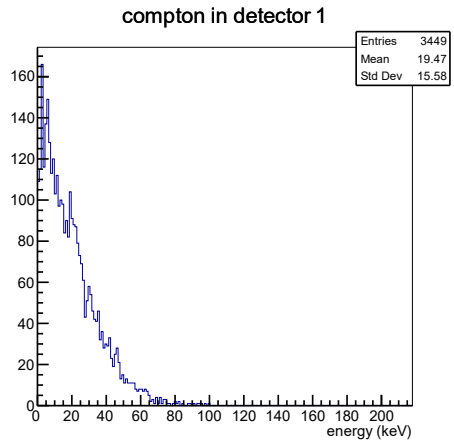
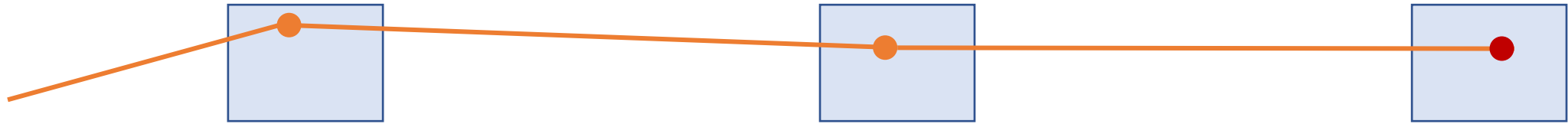
middle layer

# YAG – LaBr – BGO configuration

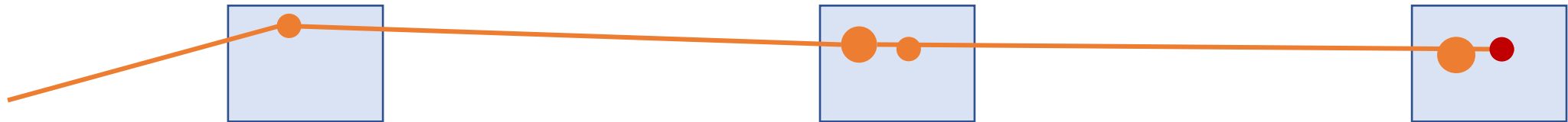
218 keV

## 3 interactions events

0.3%

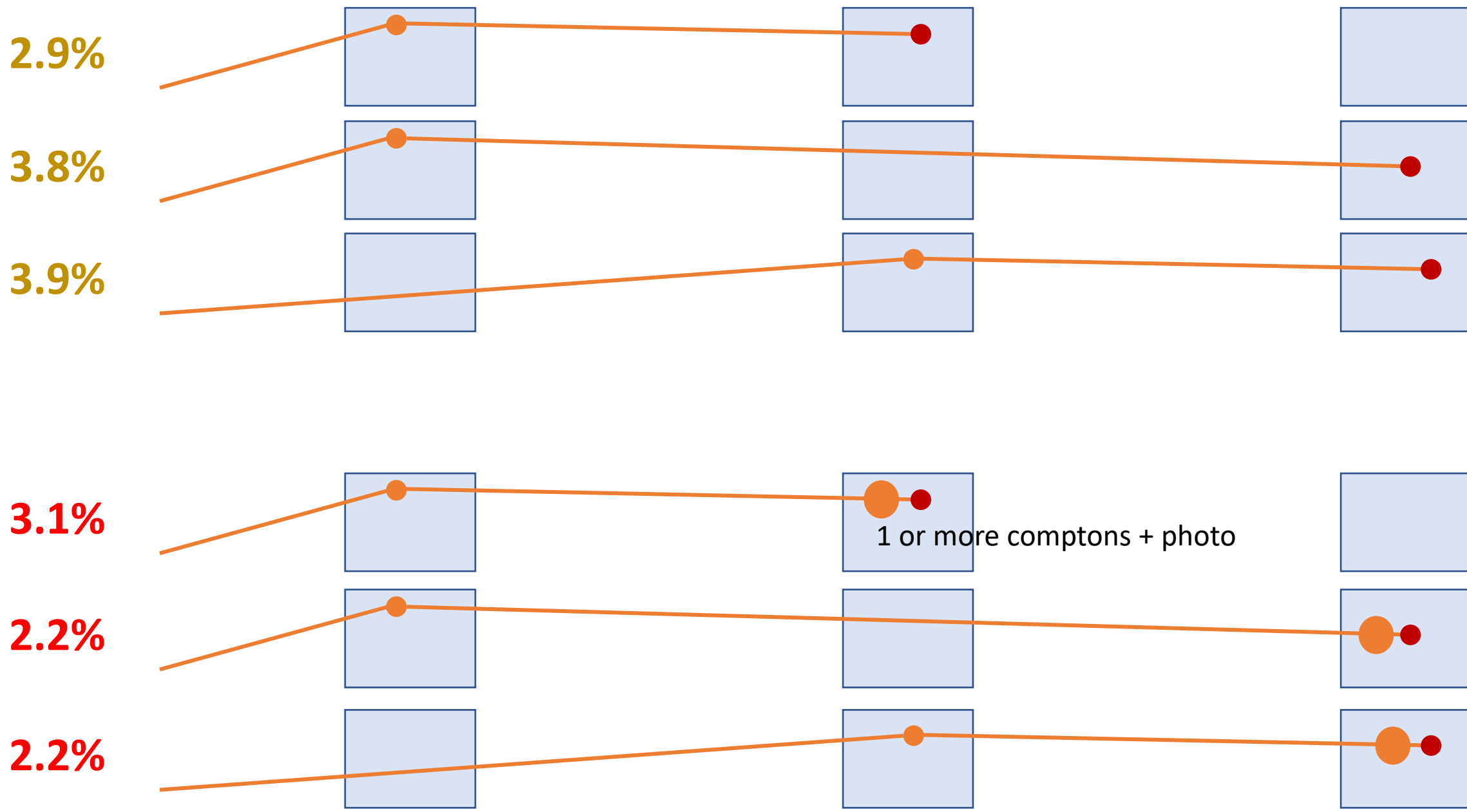


0.1%



YAG – LaBr – BGO configuration  
440 keV

## 2 interactions events

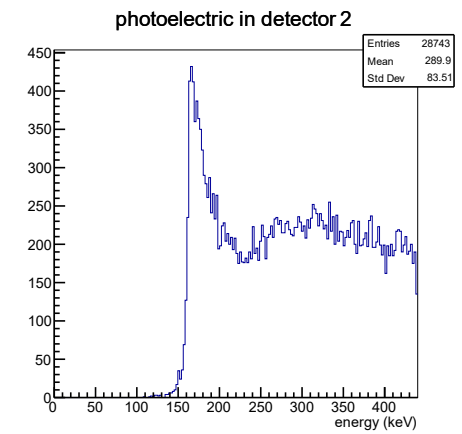
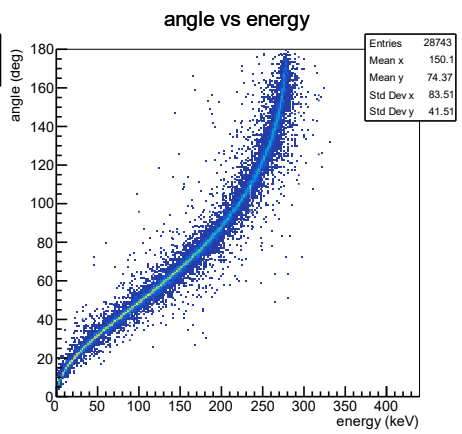
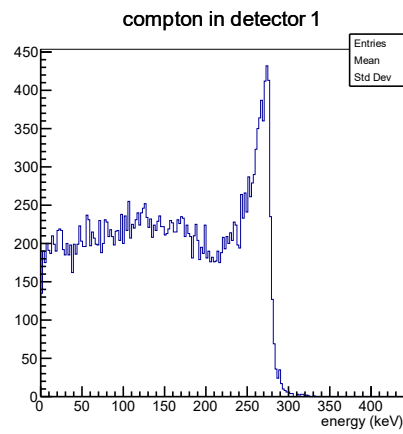


# YAG – LaBr – BGO configuration

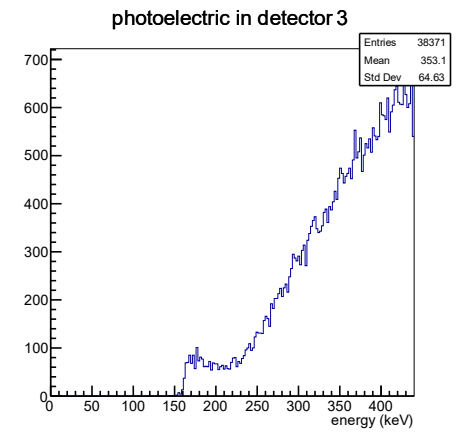
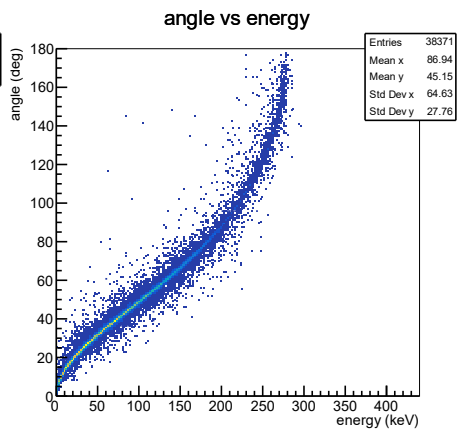
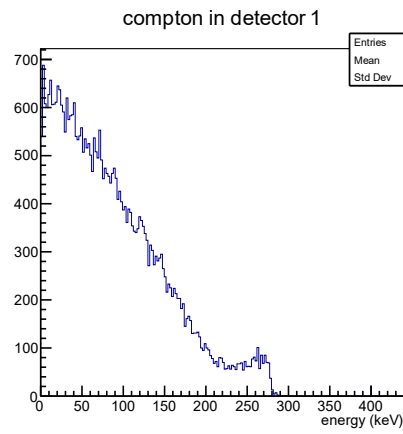
440 keV

## 2 interactions events

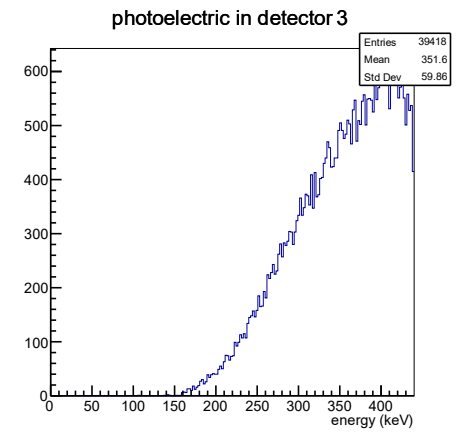
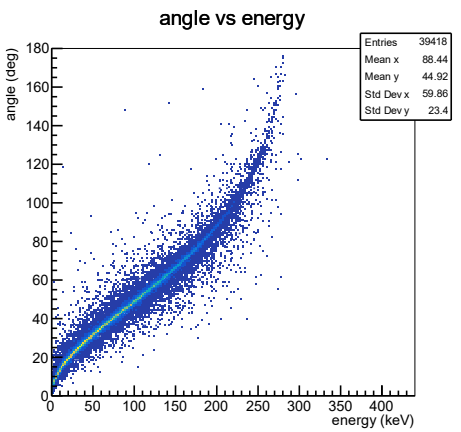
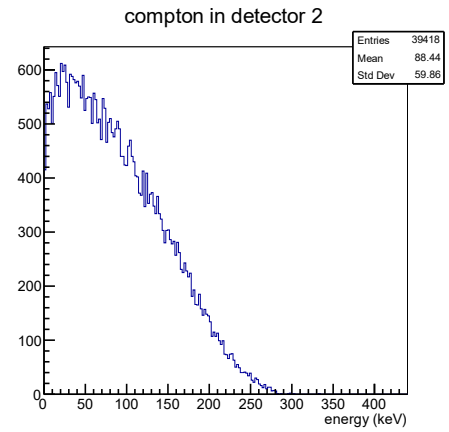
2.9%



3.8%



3.9%



# YAG – LaBr – BGO configuration

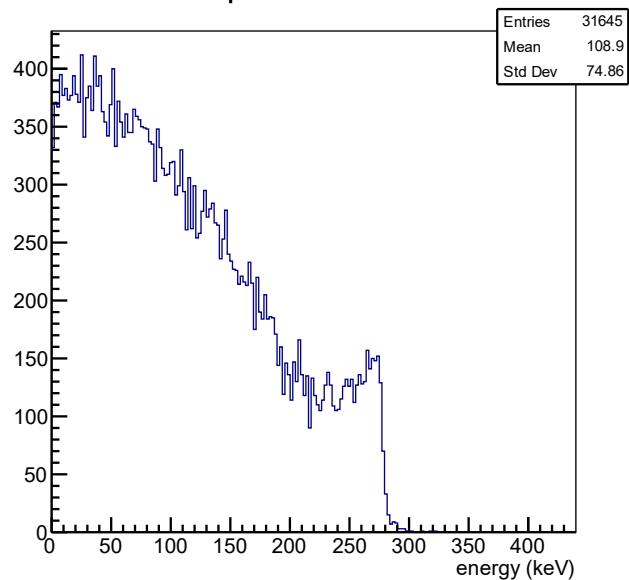
440 keV

## 2 interactions events

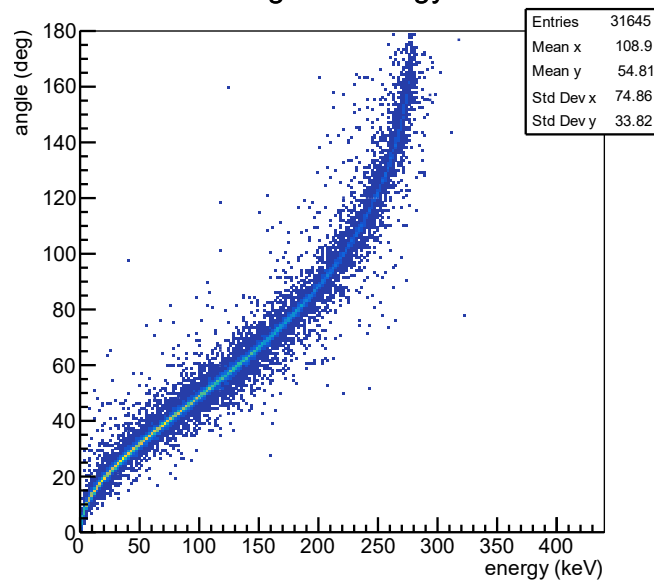
3.1%

inner layer

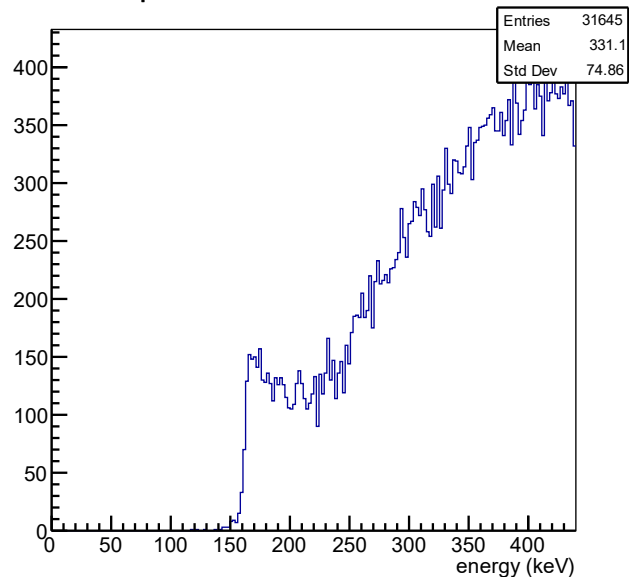
compton in detector 1



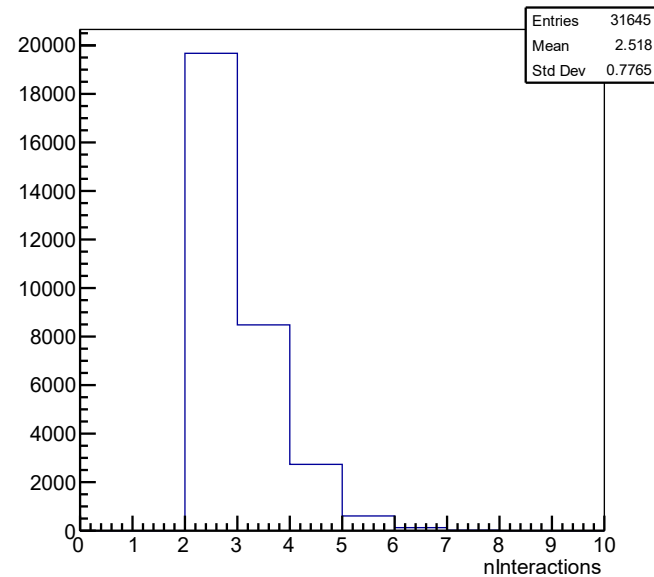
angle vs energy



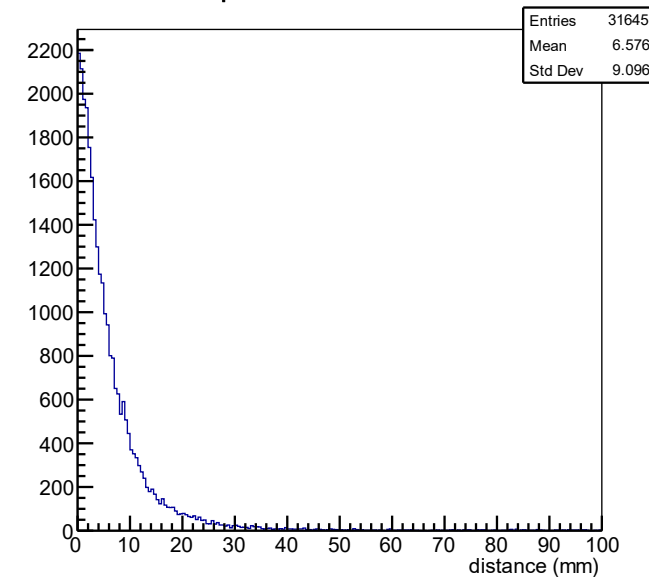
photoelectric in detector 2



n Interactions in detector 2



spread in detector 2



middle layer

# YAG – LaBr – BGO configuration

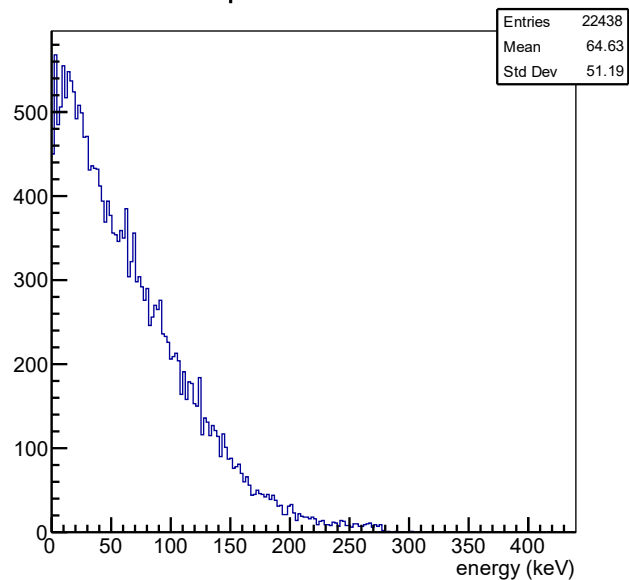
440 keV

## 2 interactions events

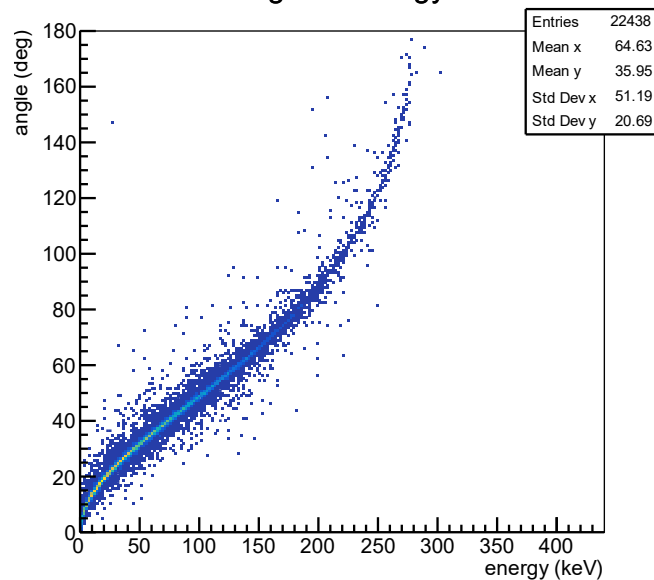
2.2%

inner layer

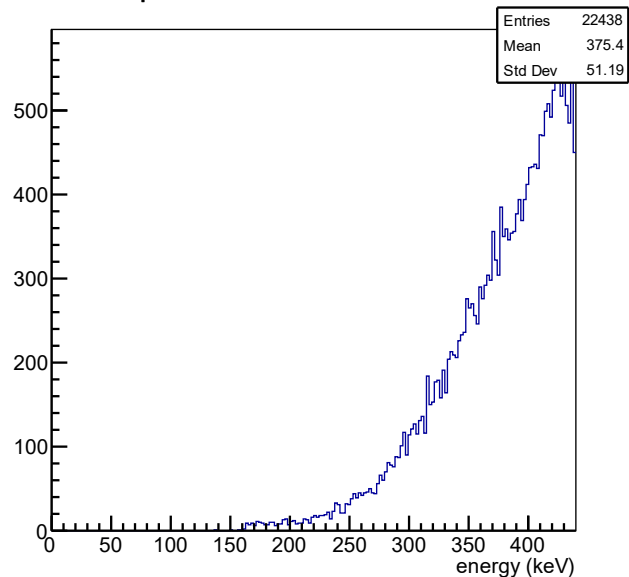
compton in detector 1



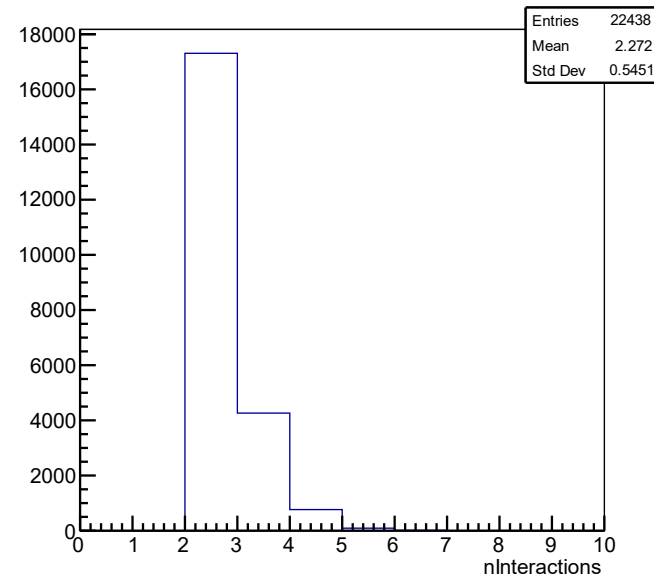
angle vs energy



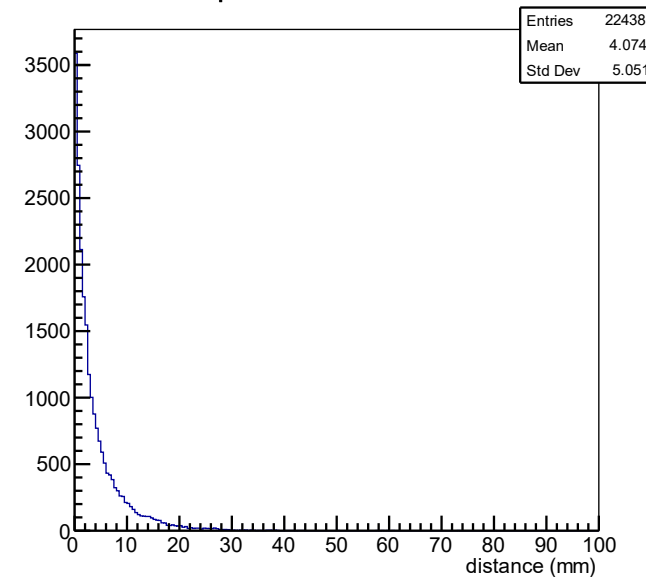
photoelectric in detector 3



n Interactions in detector 3



spread in detector 3



outer layer

# YAG – LaBr – BGO configuration

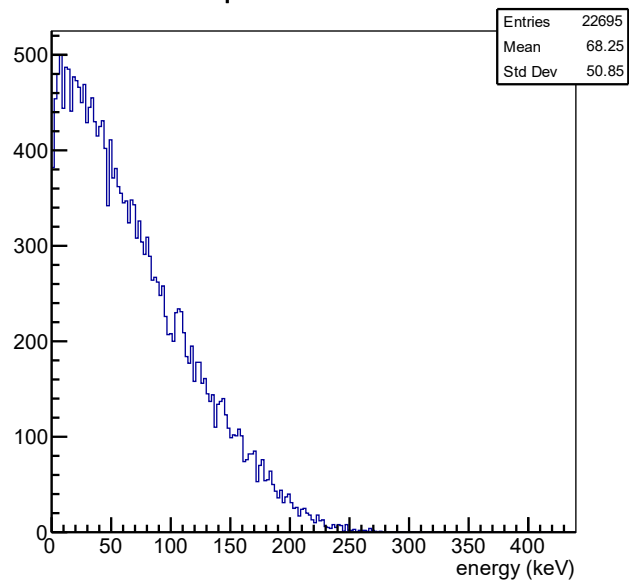
440 keV

## 2 interactions events

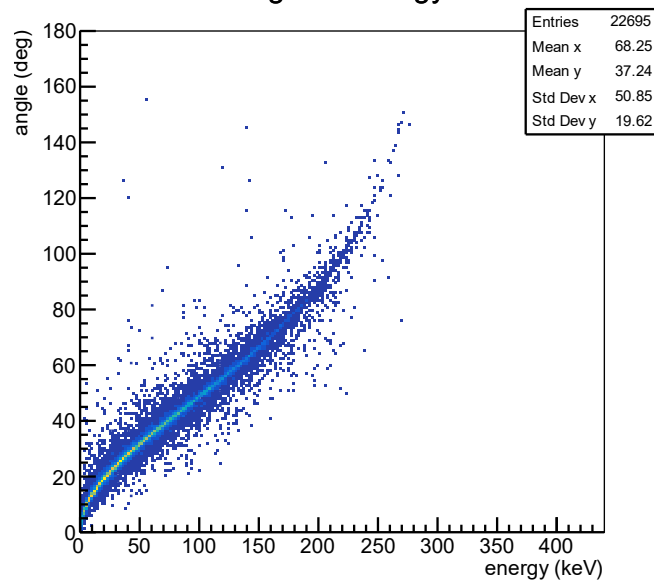
2.2%

middle layer

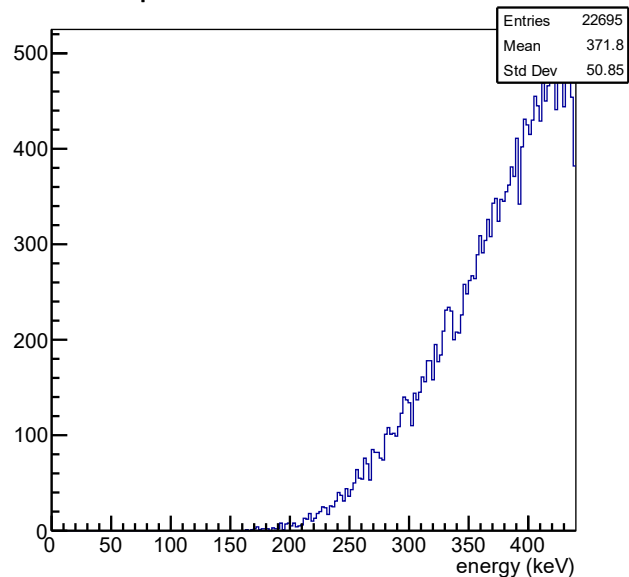
compton in detector 2



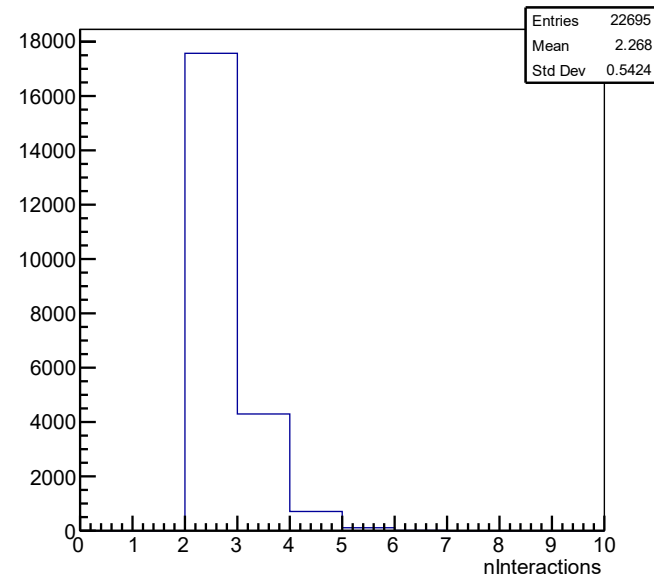
angle vs energy



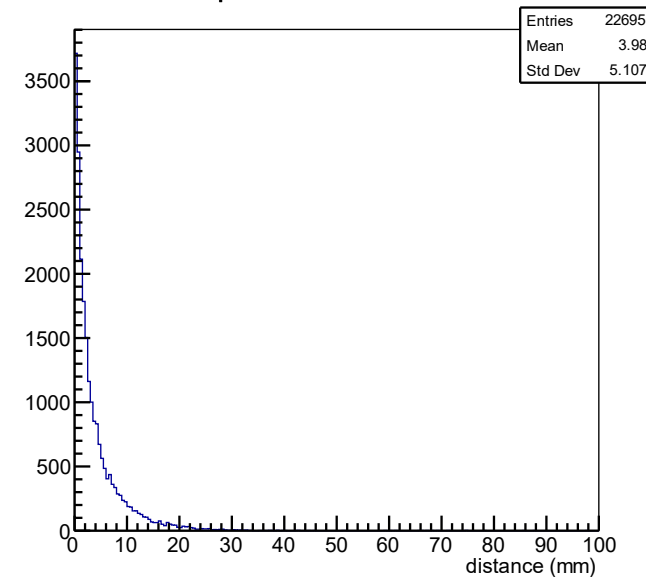
photoelectric in detector 3



n Interactions in detector 3



spread in detector 3



outer layer

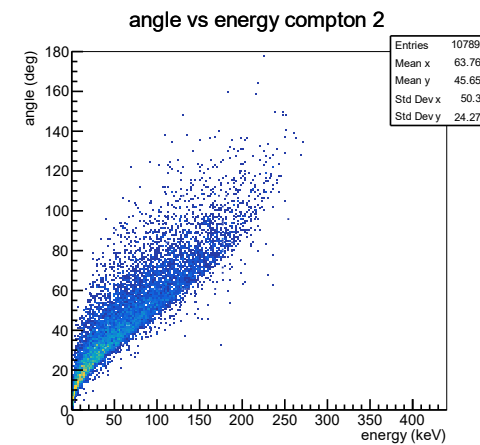
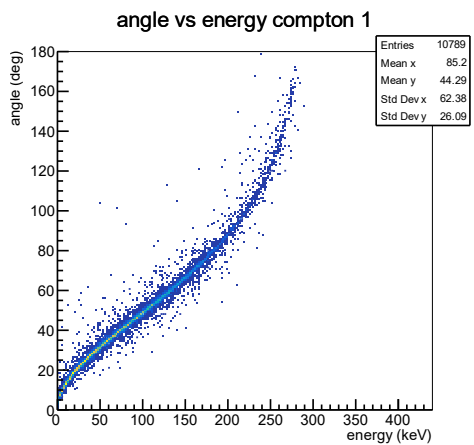
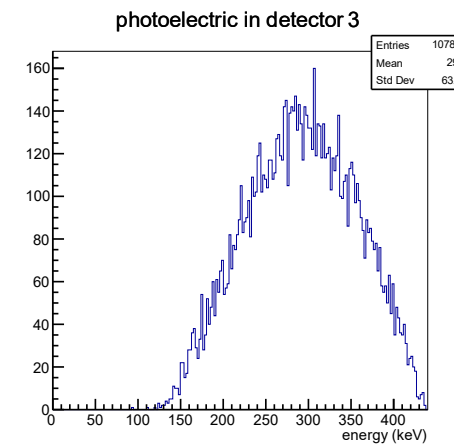
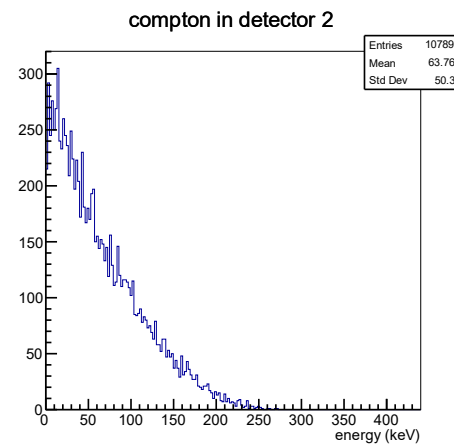
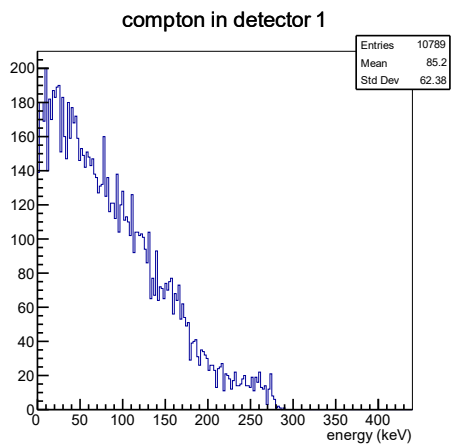
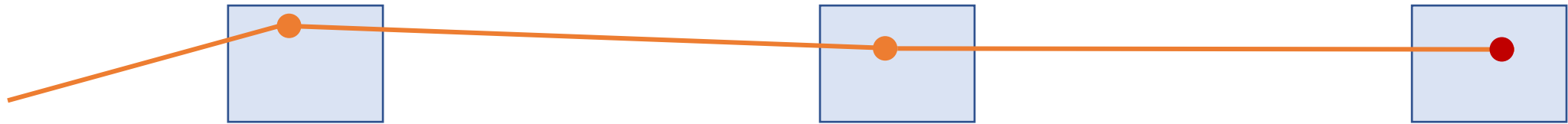


# YAG – LaBr – BGO configuration

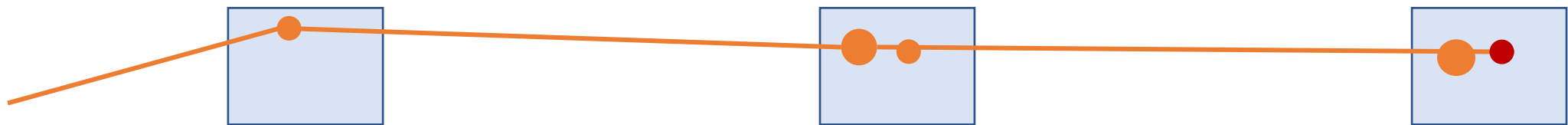
440 keV

## 3 interactions events

1%



0.8%

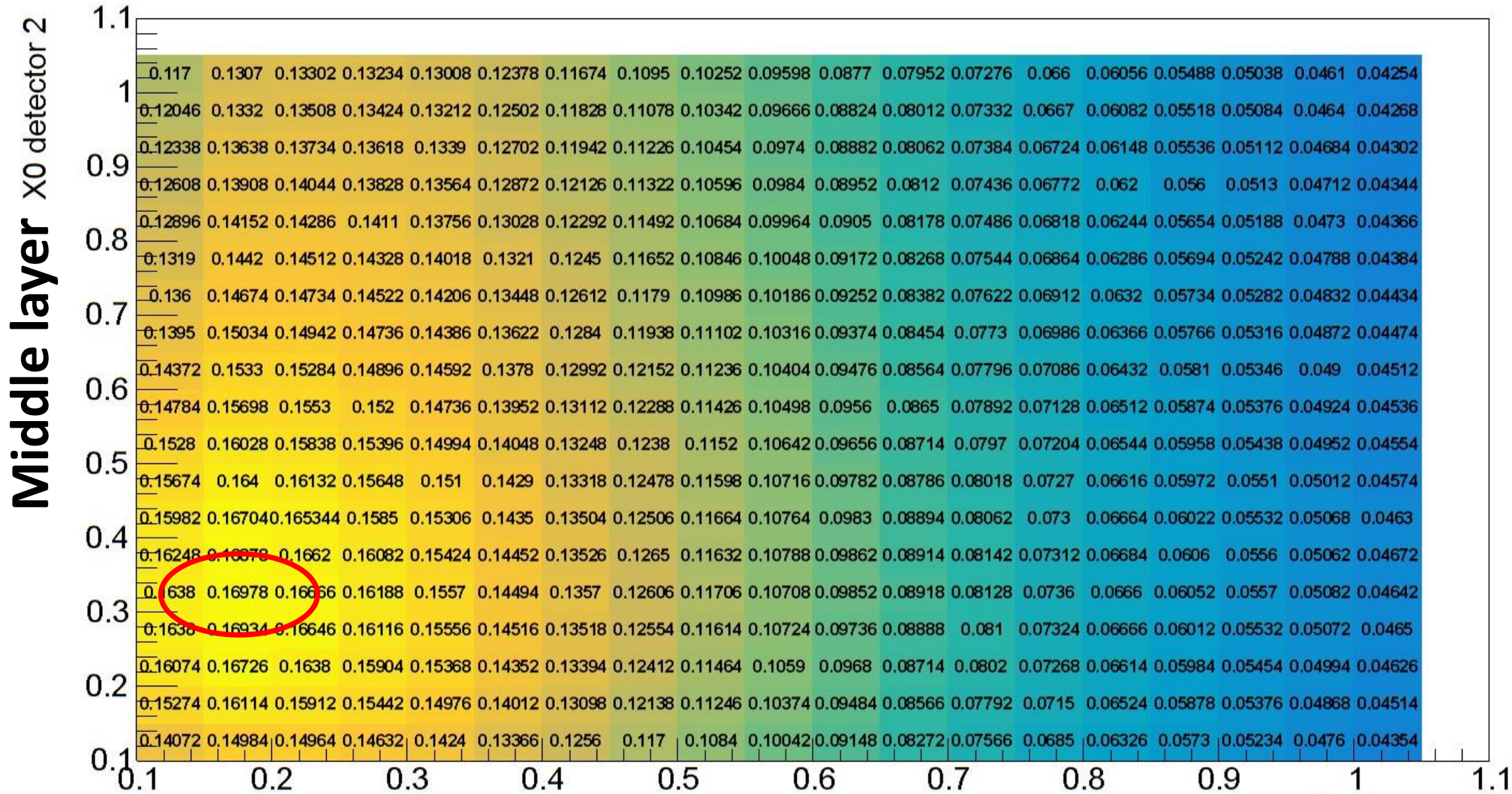


**YAG – YAG – YAG configuration**

218 keV photons

YAG-YAG-YAG

Outer layer 3X0



218 keV Maximum 17% inner 0.15 X0, middle 0.3 X0

Inner layer

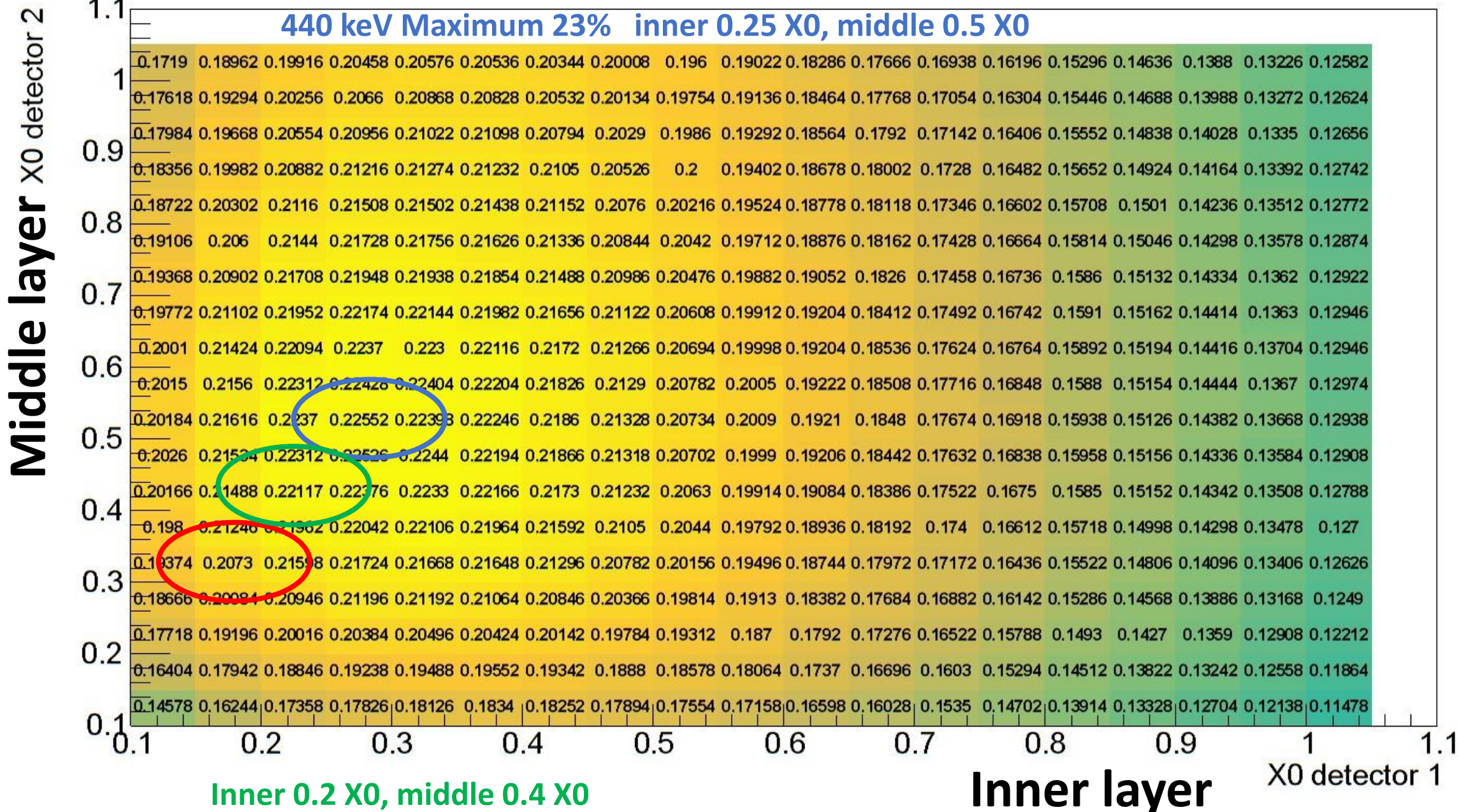
X0 detector 1

440 keV photons

YAG-YAG-YAG

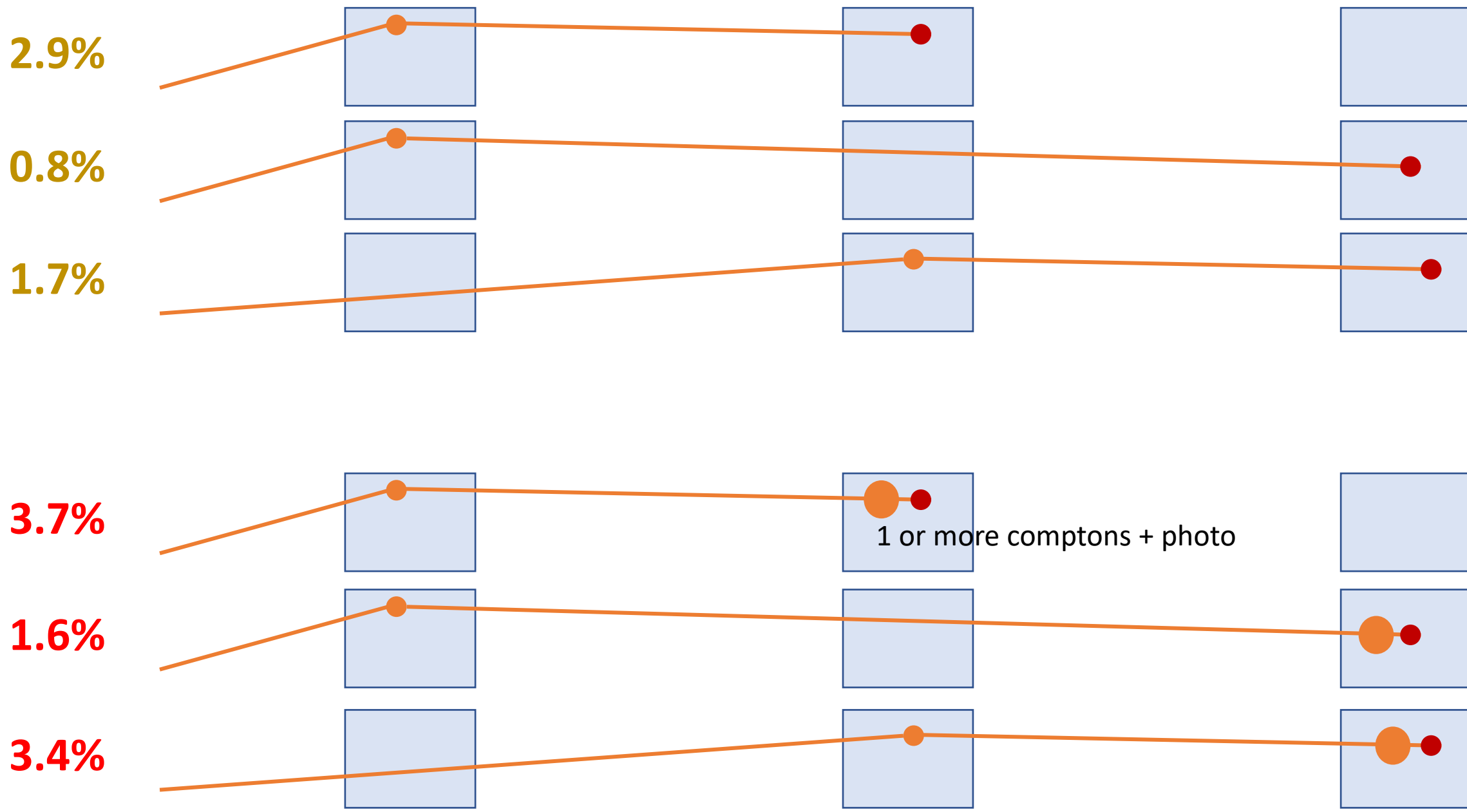
Outer layer 3X0

440 keV Maximum 23% inner 0.25 X0, middle 0.5 X0



YAG – YAG – YAG configuration  
218 keV

### 2 interactions events

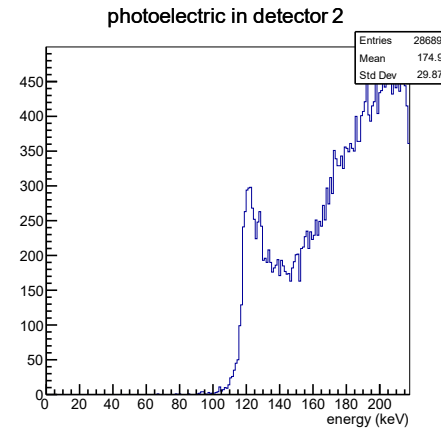
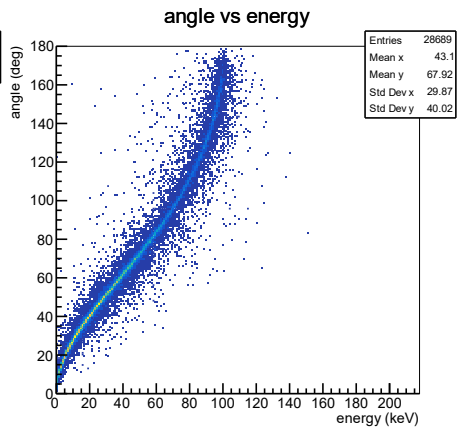
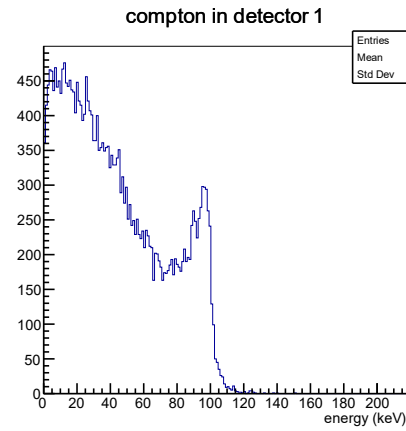


# YAG – YAG – YAG configuration

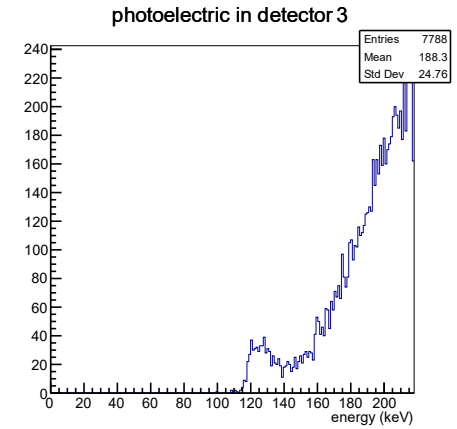
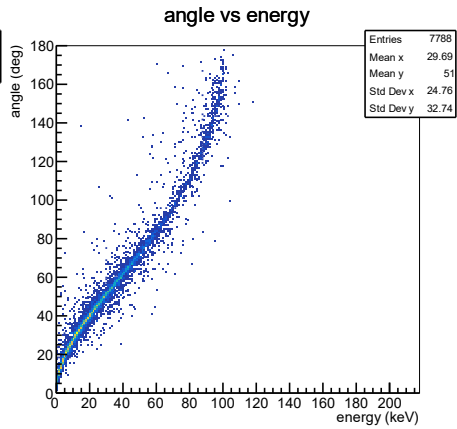
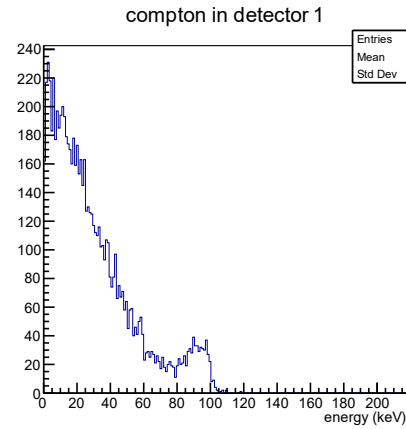
218 keV

## 2 interactions events

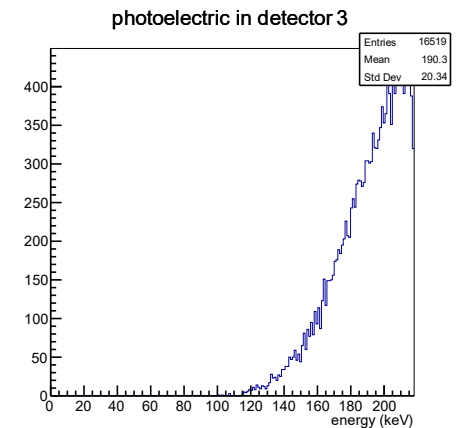
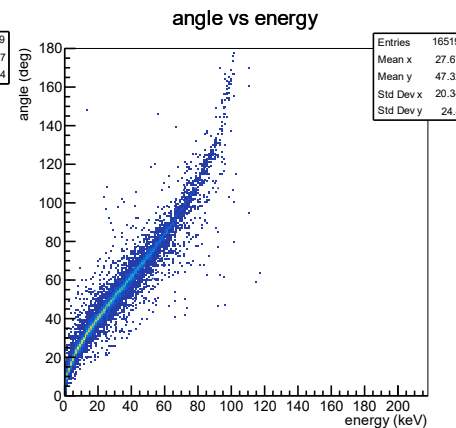
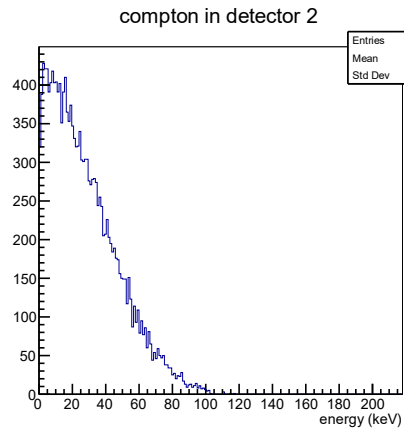
2.9%



0.8%



1.7%



# YAG – YAG – YAG configuration

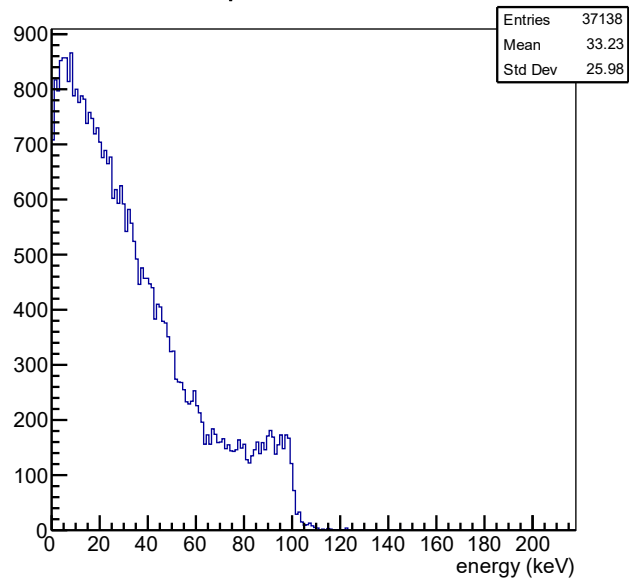
218 keV

# 2 interactions events

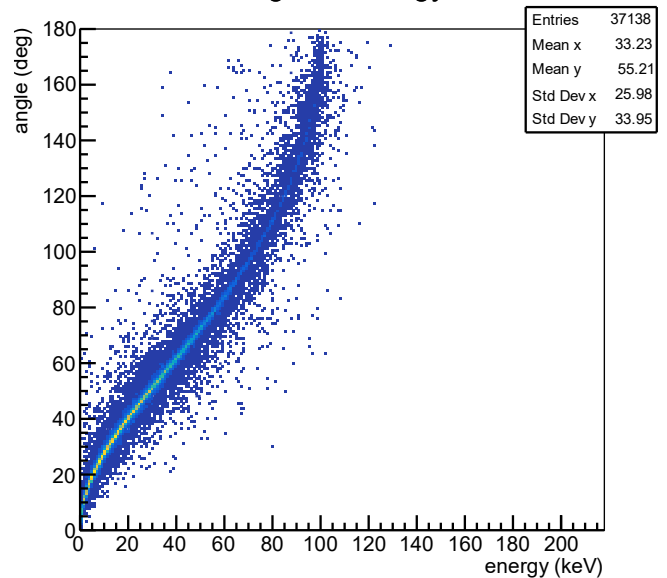
3.7%

inner layer

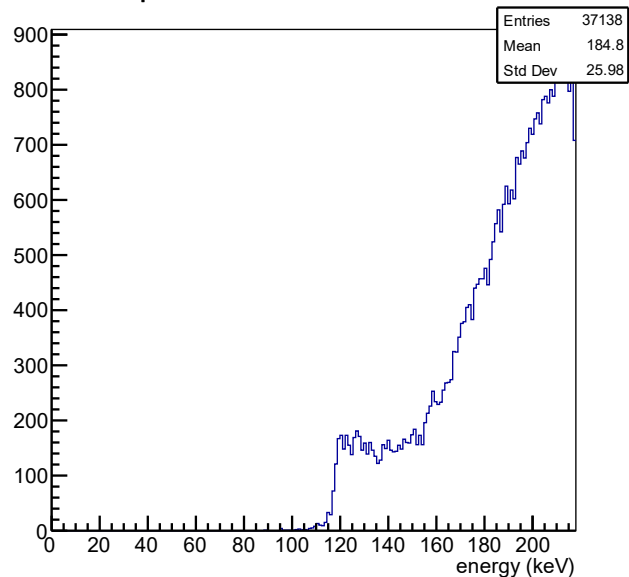
compton in detector 1



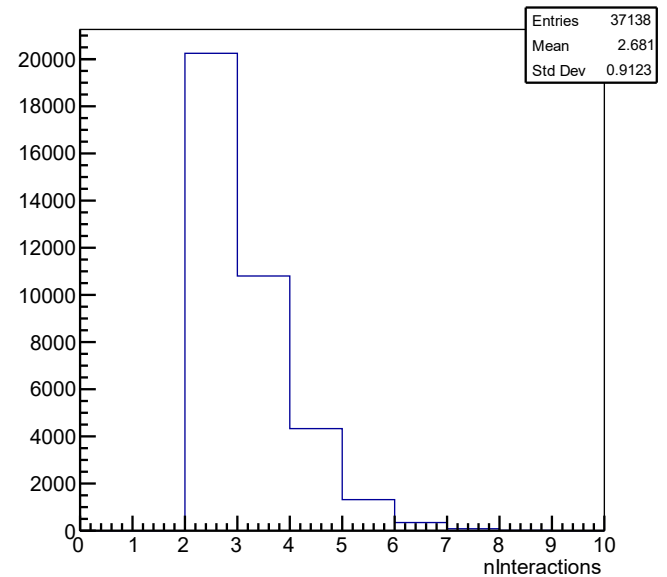
angle vs energy



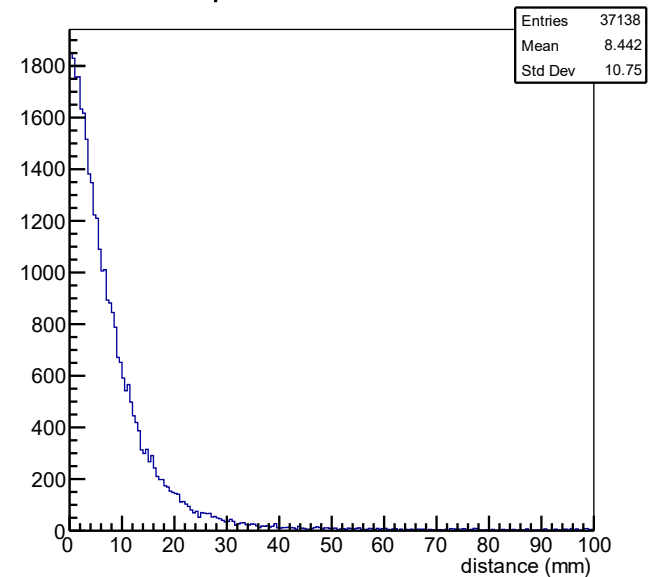
photoelectric in detector 2



n Interactions in detector 2



spread in detector 2



middle layer

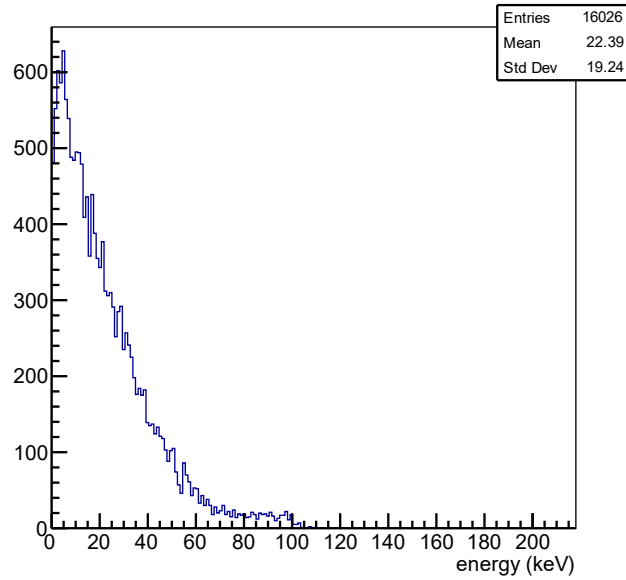
# YAG – YAG – YAG configuration

218 keV

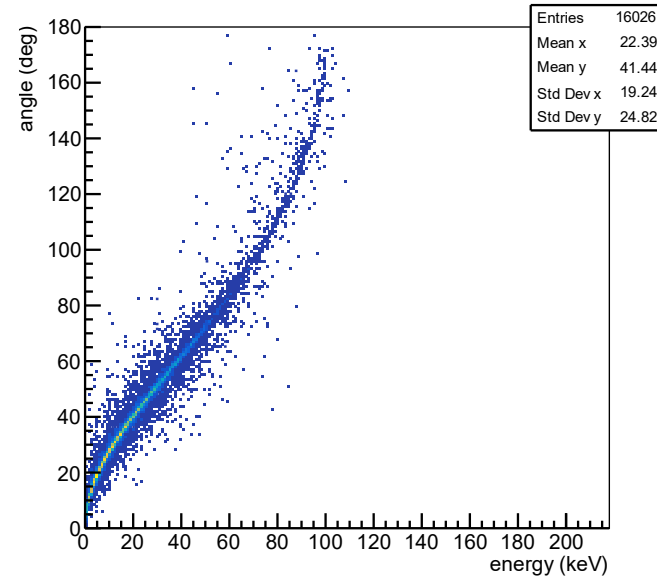
## 2 interactions events

**1.6%**  
**inner layer**

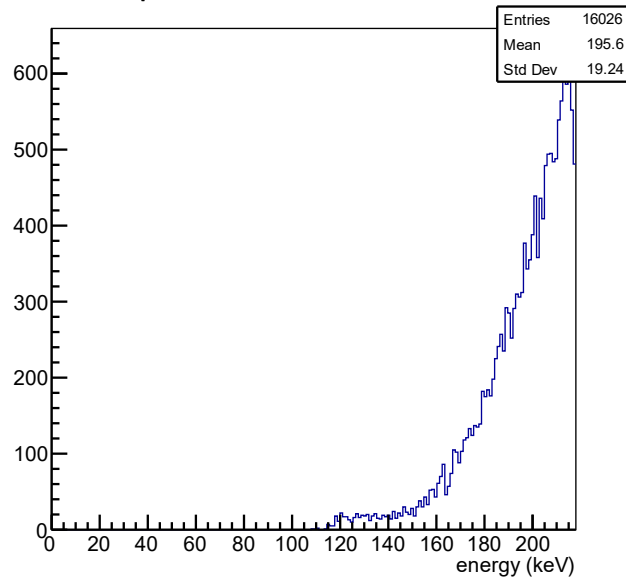
compton in detector 1



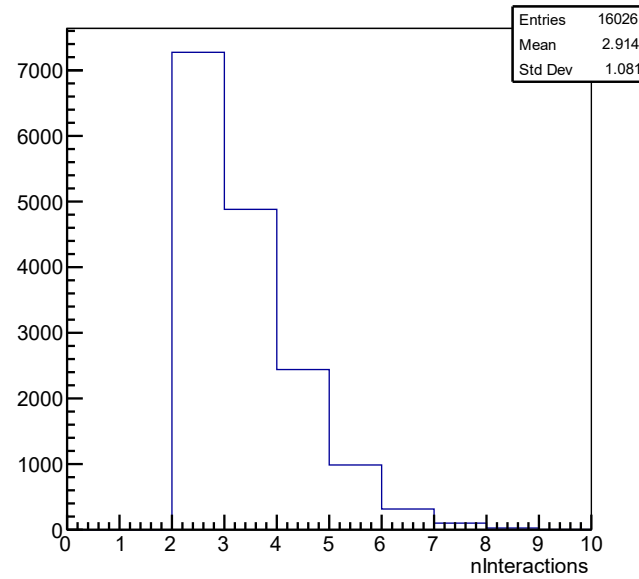
angle vs energy



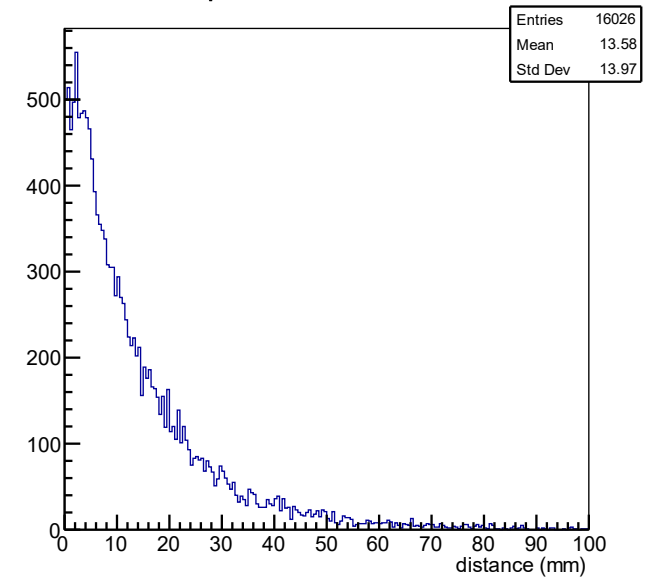
photoelectric in detector 3



n Interactions in detector 3



spread in detector 3



**outer layer**

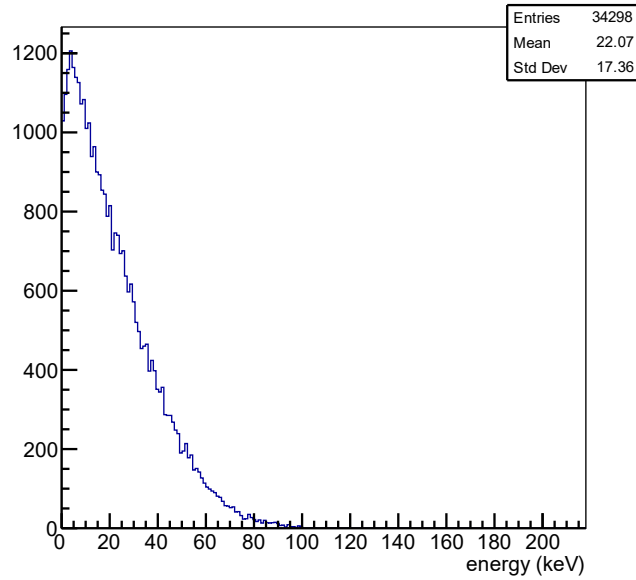


# YAG – YAG – YAG configuration

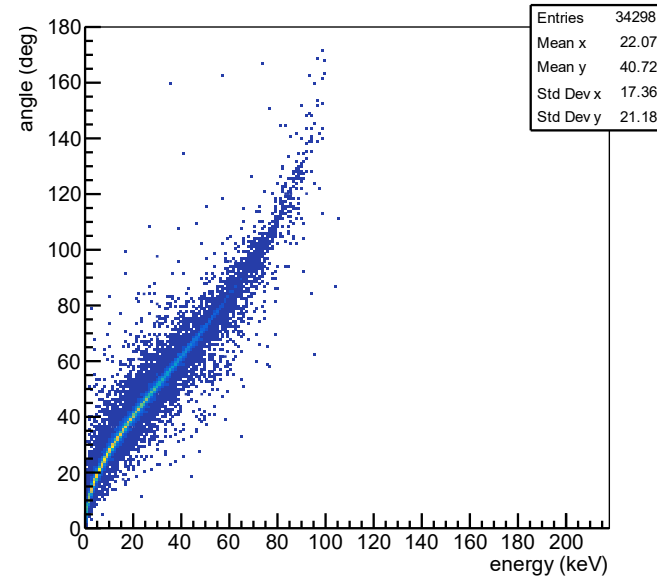
218 keV

## 2 interactions events

compton in detector 2



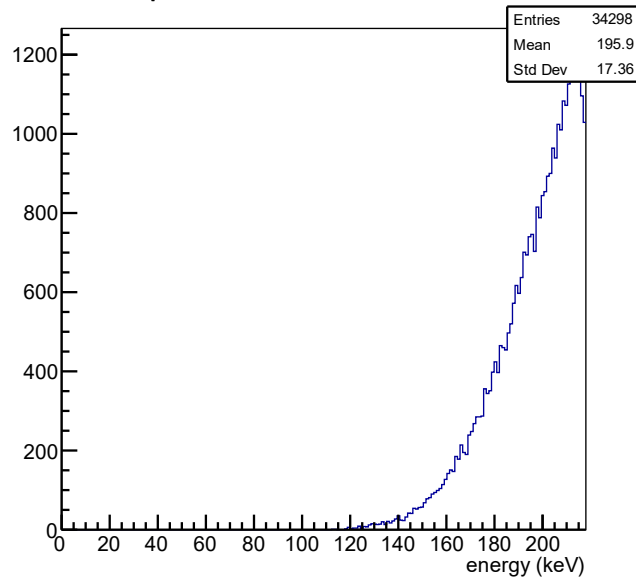
angle vs energy



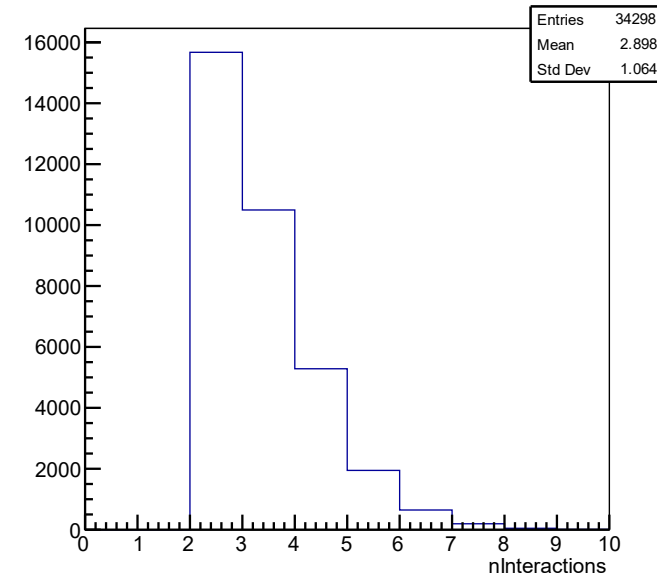
3.4%

middle layer

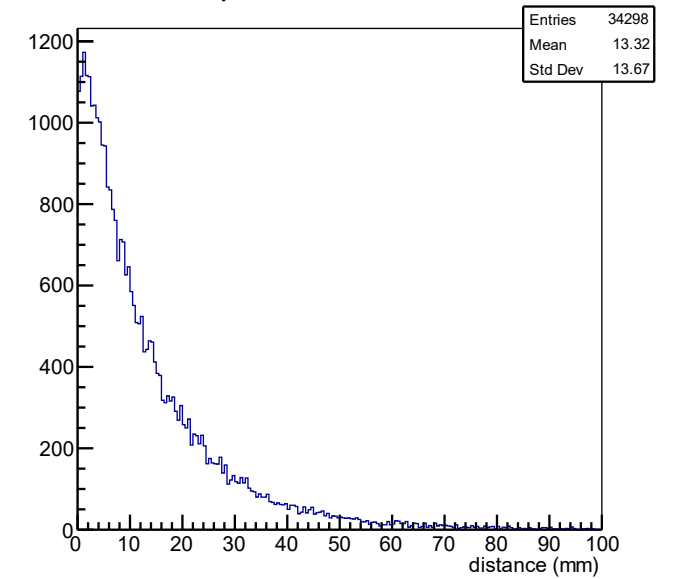
photoelectric in detector 3



n Interactions in detector 3



spread in detector 3



outer layer

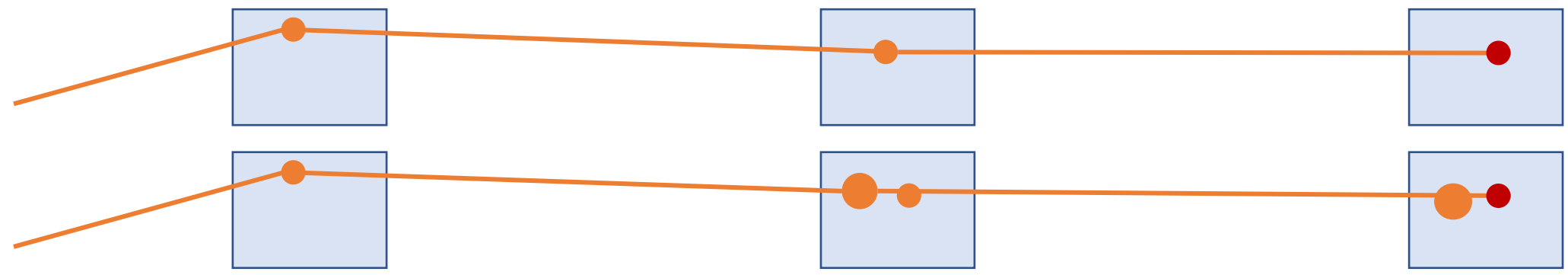
# YAG – YAG – YAG configuration

218 keV

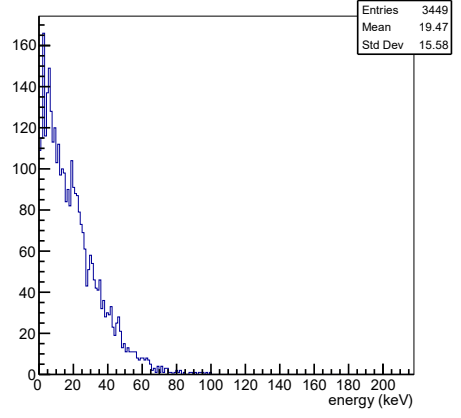
## 3 interactions events

0.3%

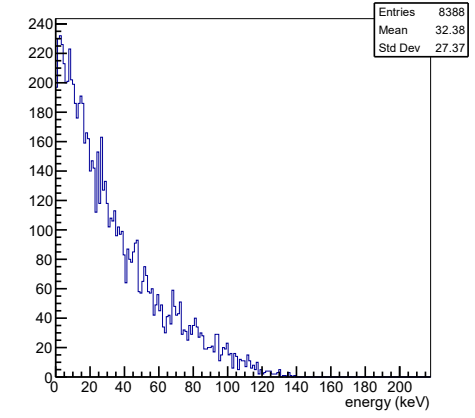
0.8%



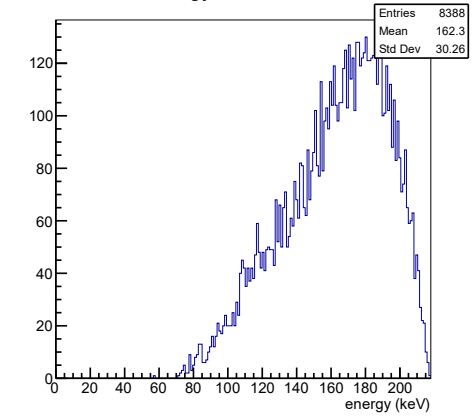
compton in detector 1



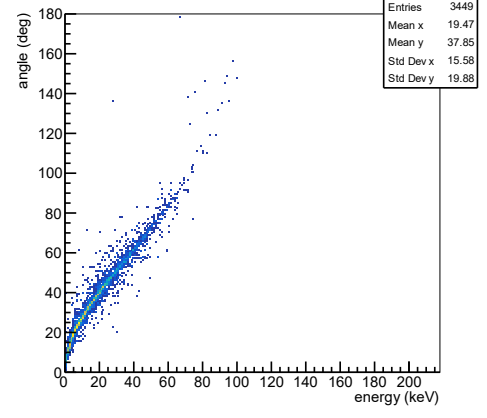
energy in detector 2



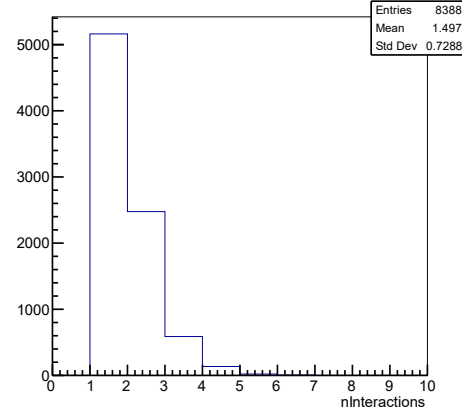
energy in detector 3



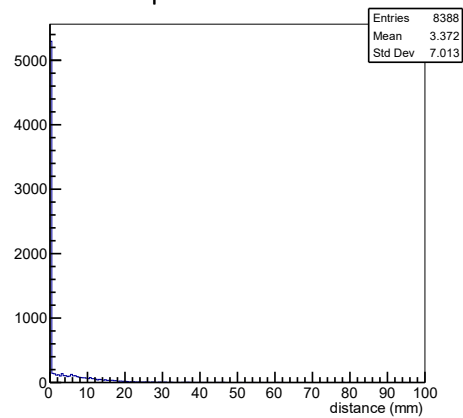
angle vs energy compton 1



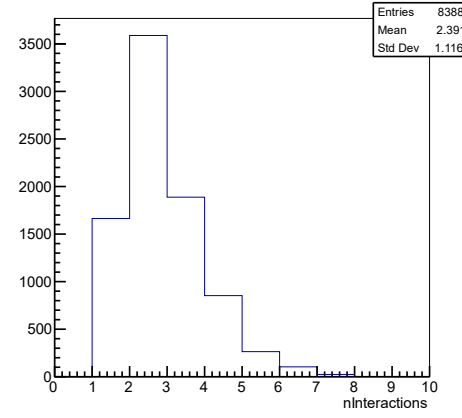
n Interactions in detector 2



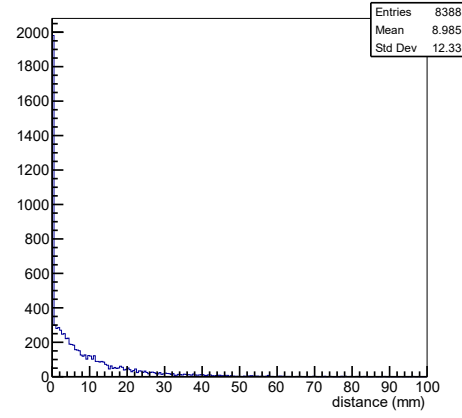
spread in detector 2



n Interactions in detector 3

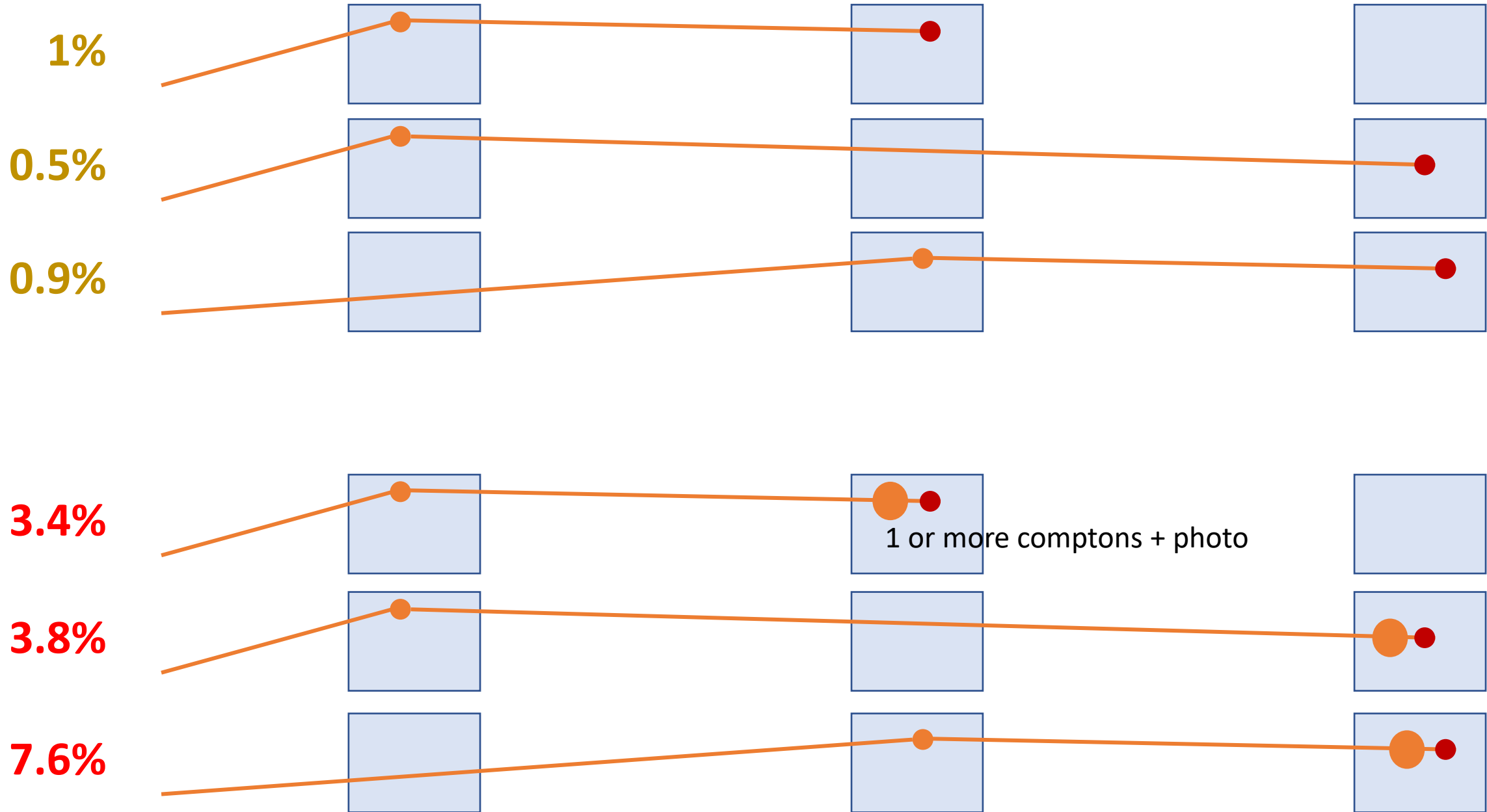


spread in detector 3



**YAG – YAG – BGO configuration**  
**440 keV**

**2 interactions events**

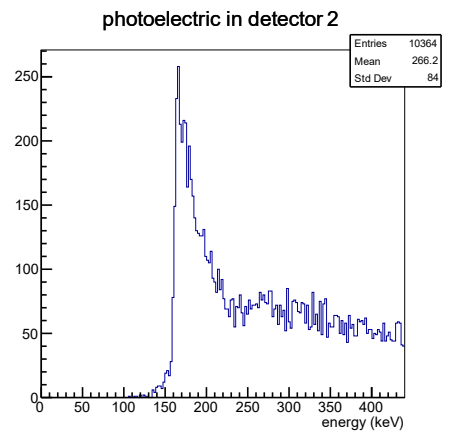
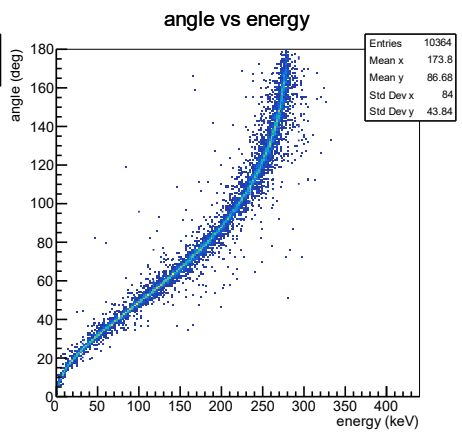
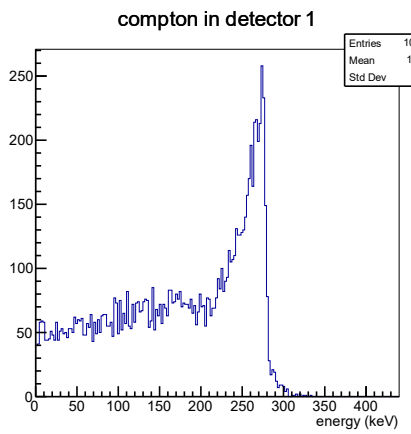


# YAG – YAG – BGO configuration

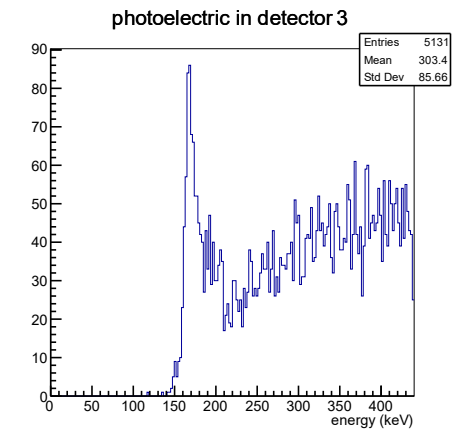
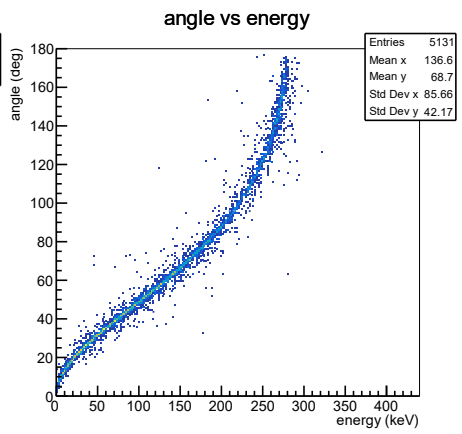
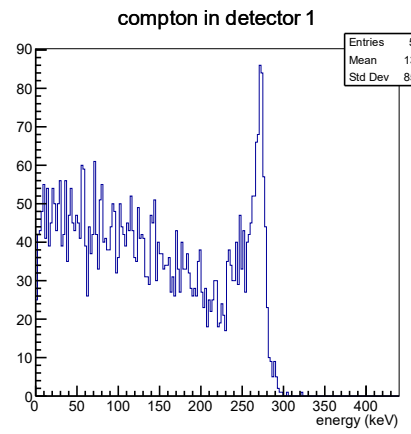
## 440 keV

# 2 interactions events

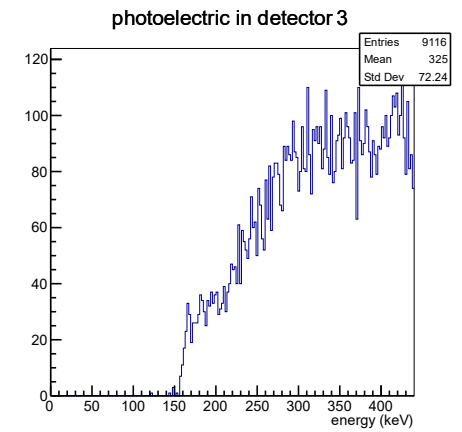
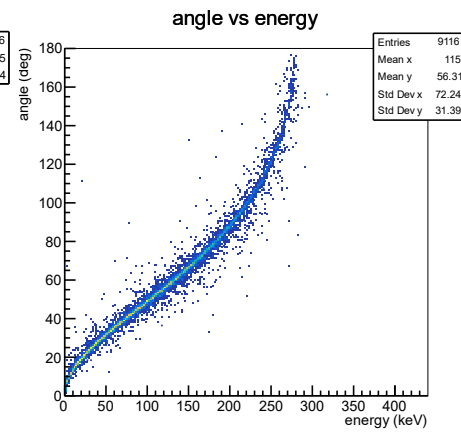
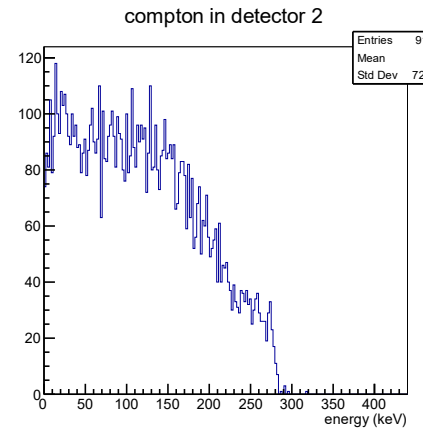
1%



0.5%



0.9%



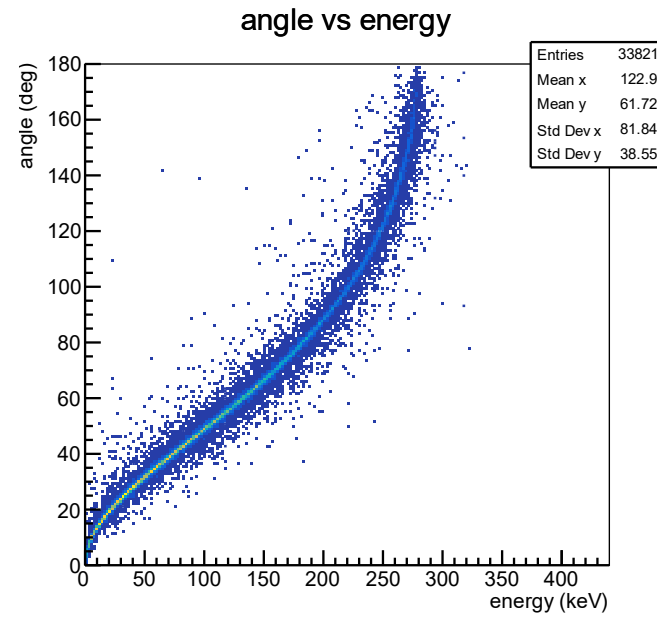
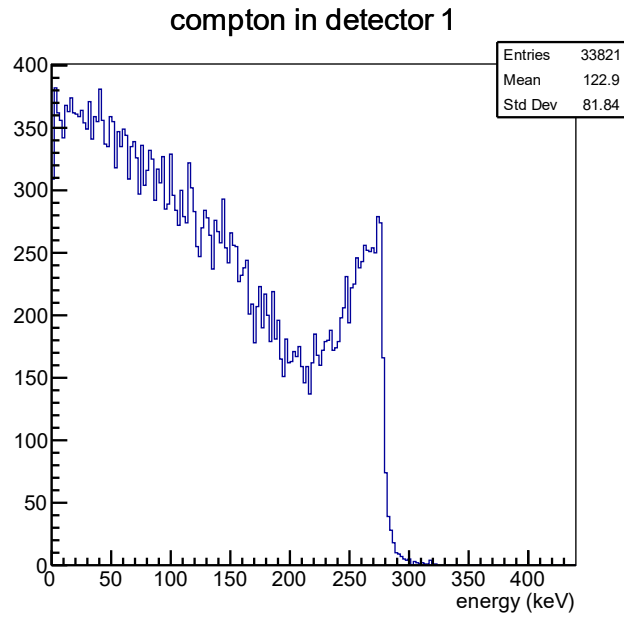
# YAG – YAG – BGO configuration

440 keV

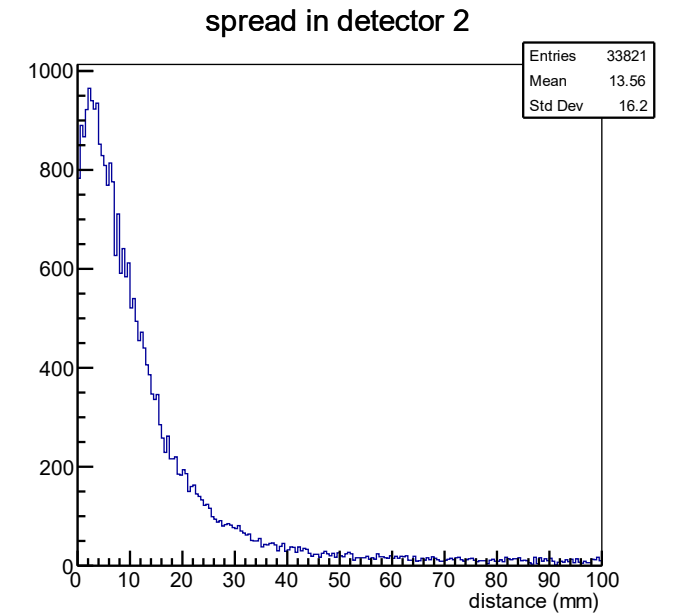
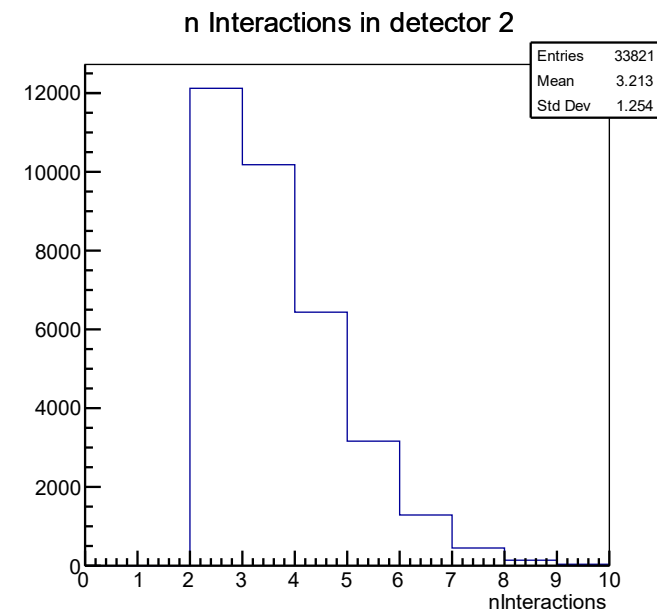
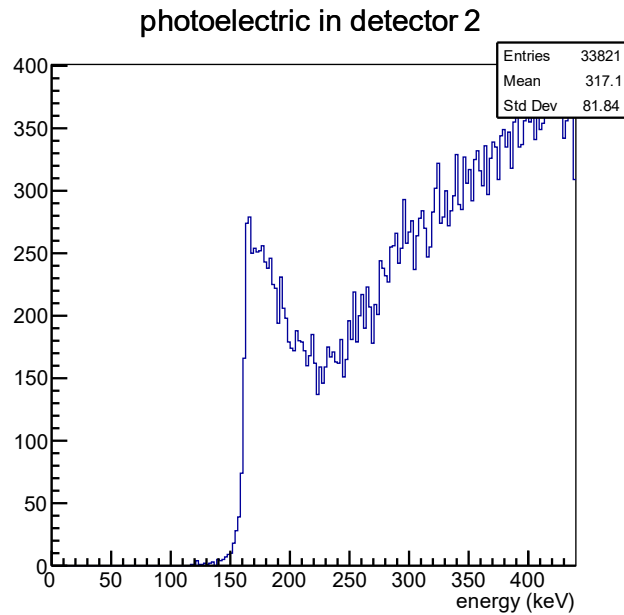
## 2 interactions events

3.4%

inner layer



middle layer



# YAG – YAG – BGO configuration

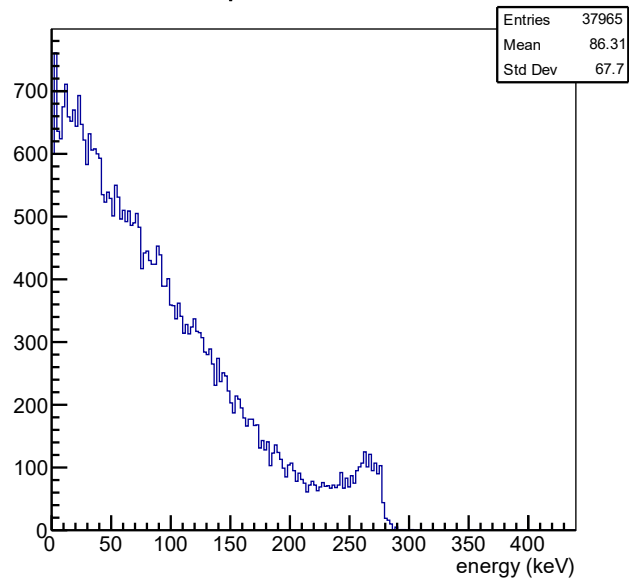
440 keV

## 2 interactions events

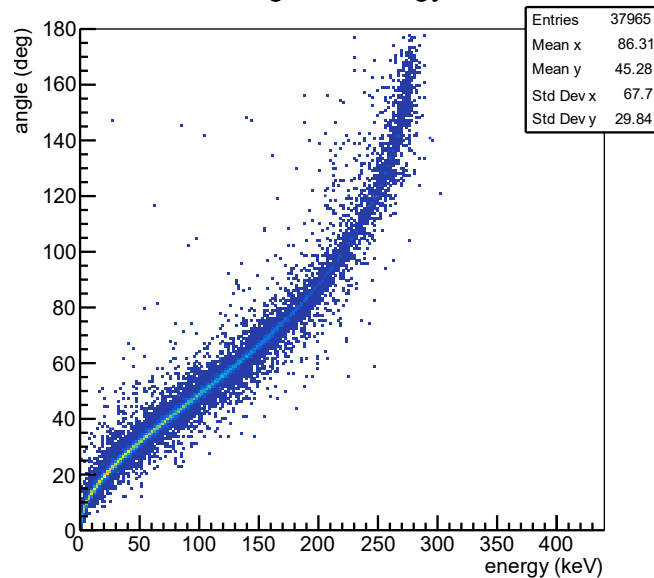
3.8%

inner layer

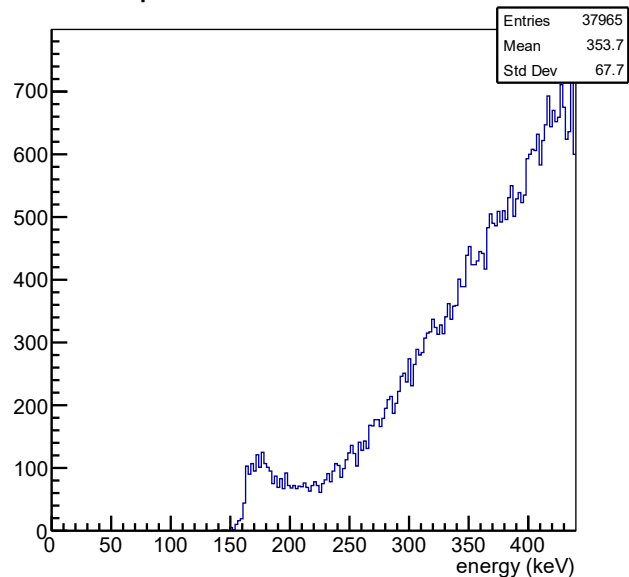
compton in detector 1



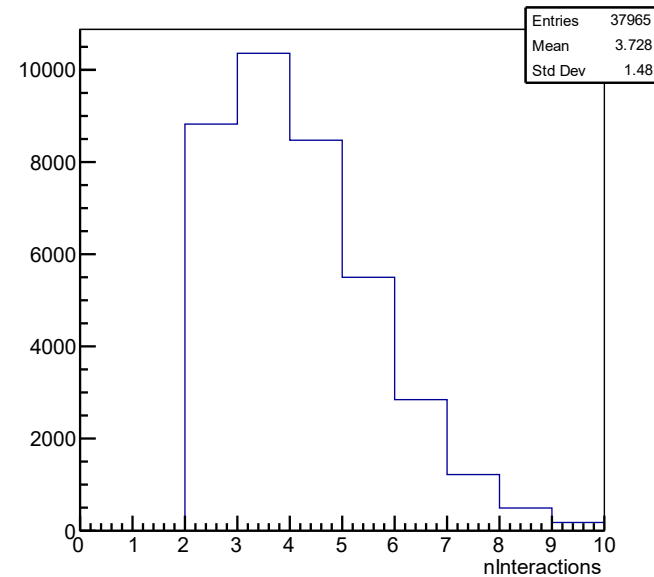
angle vs energy



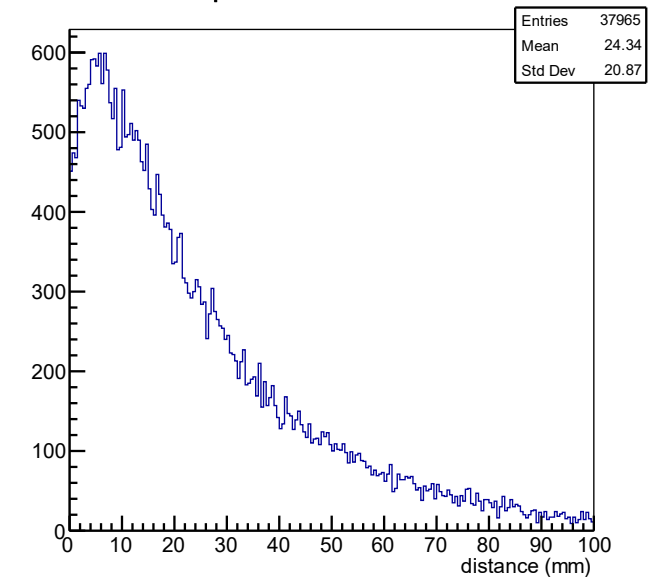
photoelectric in detector 3



n Interactions in detector 3



spread in detector 3



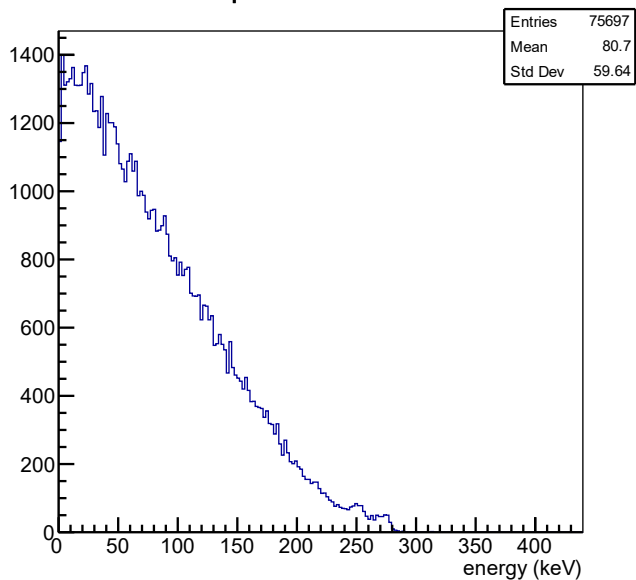
outer layer

# YAG – YAG – BGO configuration

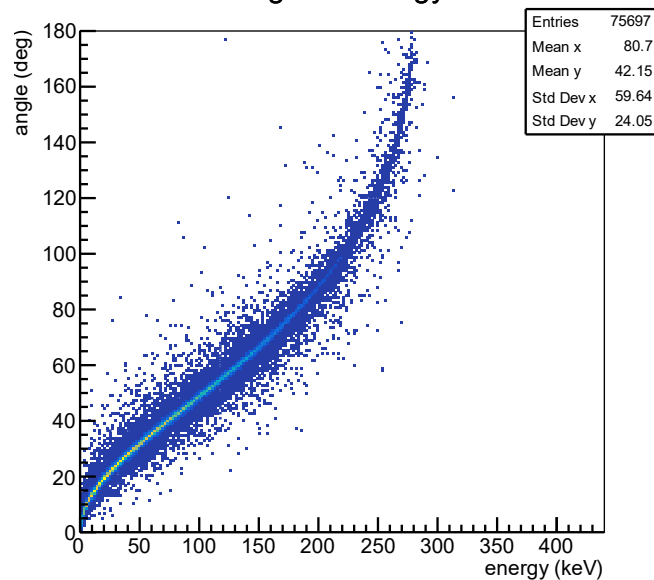
440 keV

## 2 interactions events

compton in detector 2



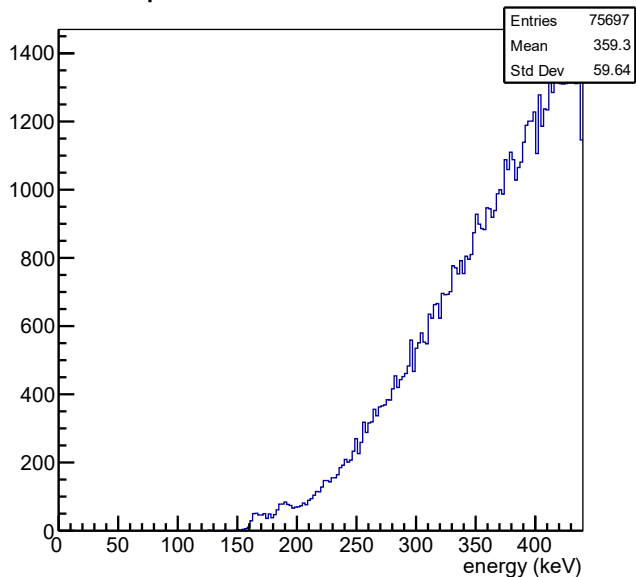
angle vs energy



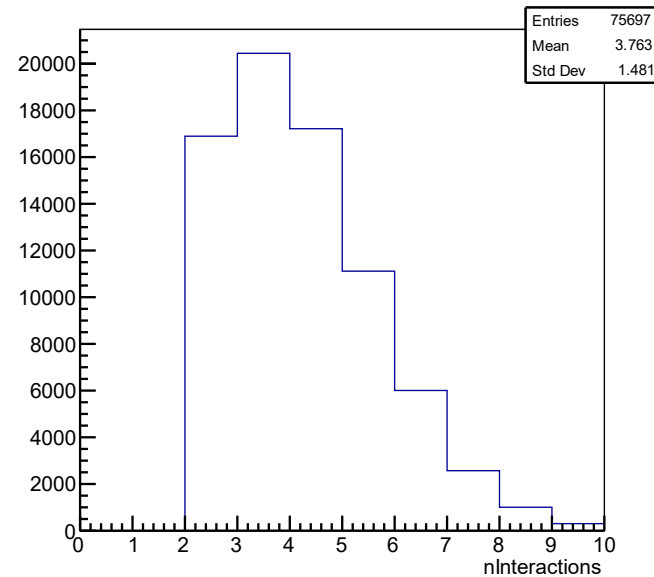
7.6%

middle layer

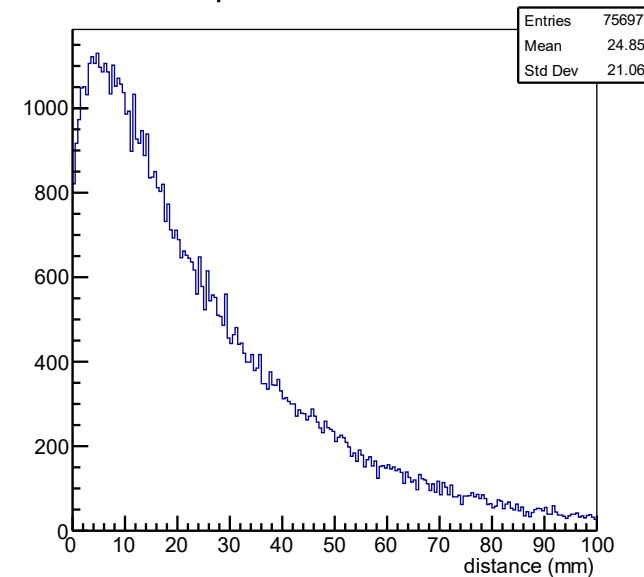
photoelectric in detector 3



n Interactions in detector 3



spread in detector 3



outer layer

# YAG – YAG – YAG configuration

## 440 keV

# 3 interactions events

0.3%

2.2%

