

# PLUME Detector:

## Geant4 Exploration 3

Duque Bran, Moreno Sarria

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- 1 Two Modules Simulation
- 2 Single Module Simulation
  - Random Perpendicular Beam
  - Random Angle Beam

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# Measure for Angle Entrance

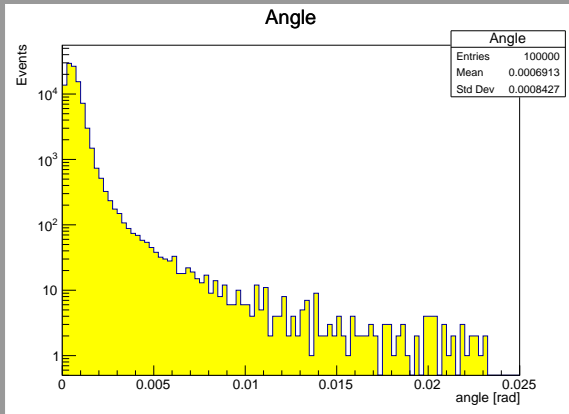


Figure 1: Angle entrance for the second module

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# Uniform Distributed Perpendicular Beam

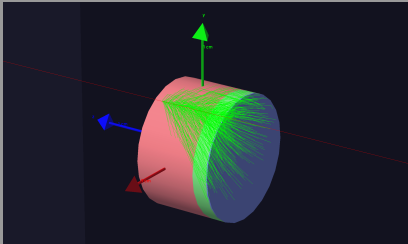


Figure 2: Perpendicular Beam in Single Module Detector.

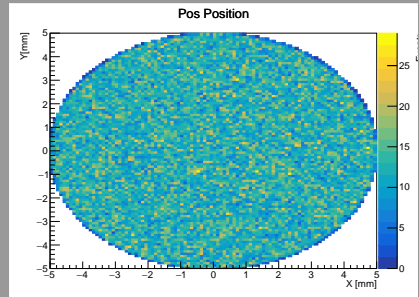


Figure 3: Uniform Distribution for Perpendicular Beam.

# Secondary Electrons

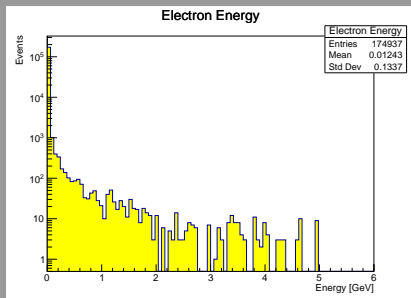


Figure 4: Energy Distribution for Secondary Electrons.

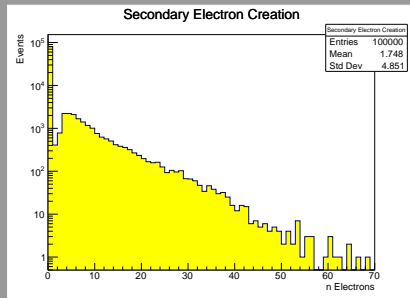


Figure 5: Secondary Electrons Generation.



# Secondary Electrons

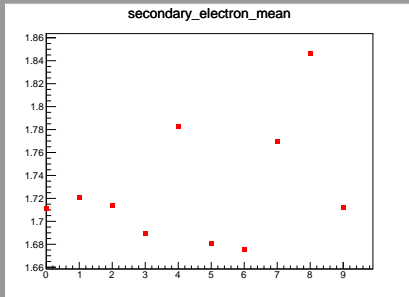


Figure 6: Mean of Secondary Electrons in each zone.

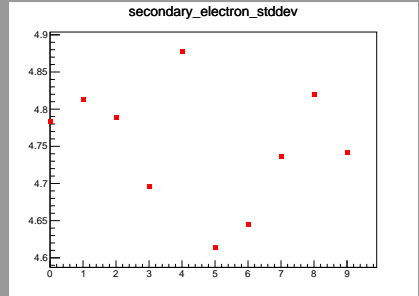
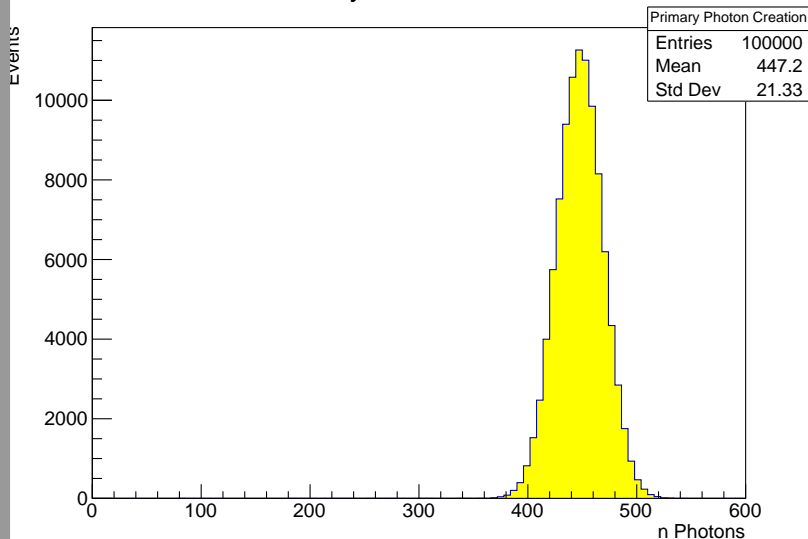


Figure 7: Standard Deviation of Secondary Electrons in each zone.

# Primary Photons Counter

## Primary Photon Creation



# Primary Photons Counter

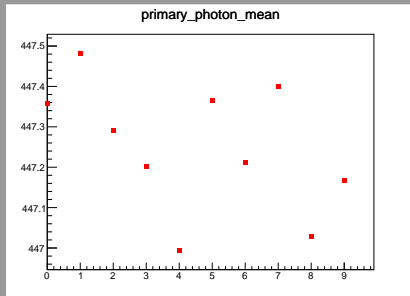


Figure 9: Mean of Primary Photons Counter for each zone.

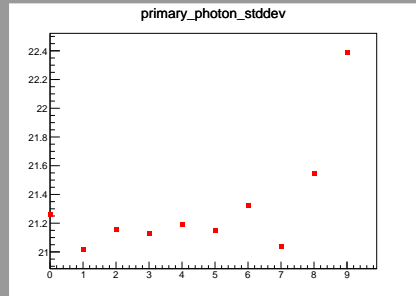
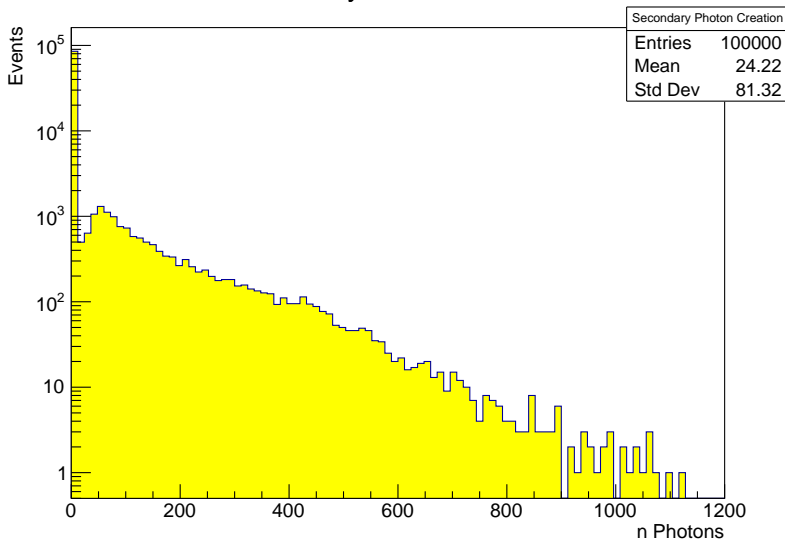


Figure 10: Standard Deviation of Primary Photons Counter for each zone.

# Secondary Photons Counter

## Secondary Photon Creation



# Secondary Photons Counter

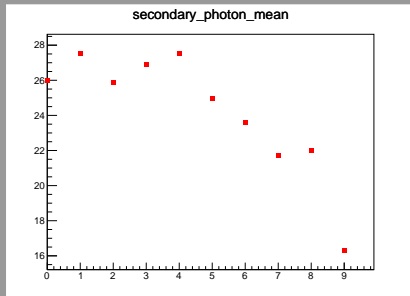


Figure 12: Mean of Secondary Photons Counter for each zone.

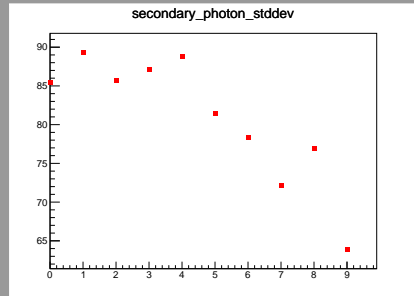
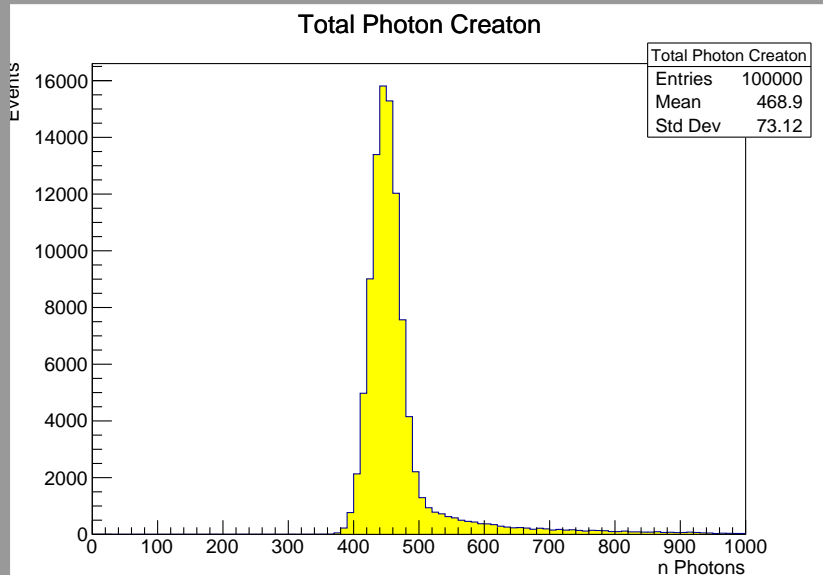


Figure 13: Standard Deviation of Secondary Photons Counter for each zone.

# Total Photons Counter



# Total Photons Counter

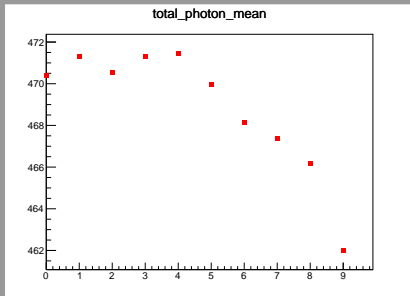


Figure 15: Mean of Total Photons Counter for each zone.

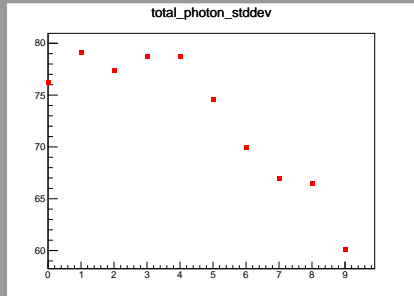
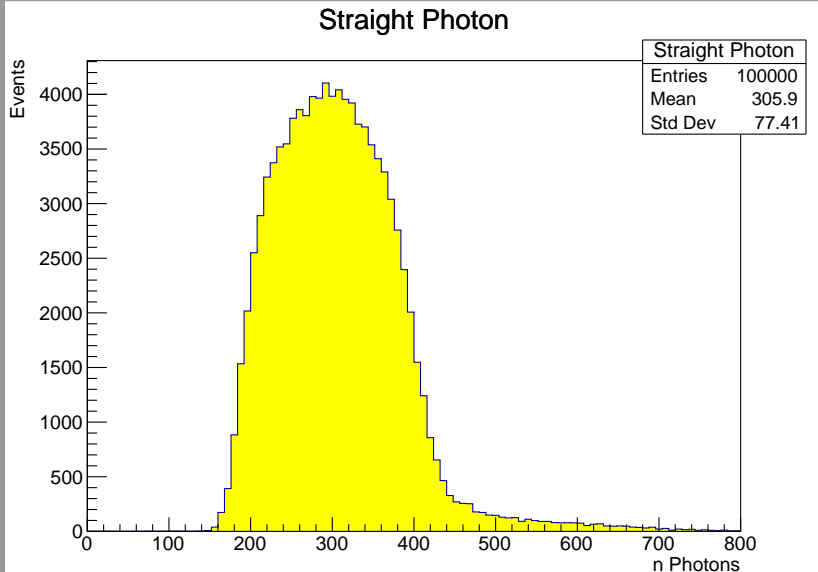


Figure 16: Standard Deviation of Total Photons Counter for each zone.

# Straight Photons Counter





# Straight Photons Counter

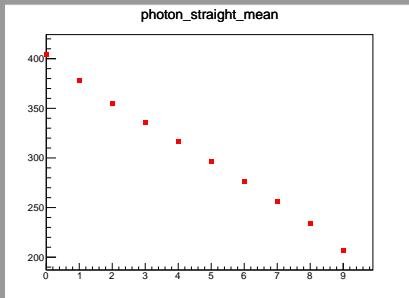


Figure 18: Mean of Straight Photons for each zone.

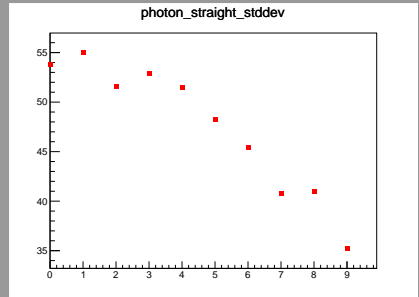
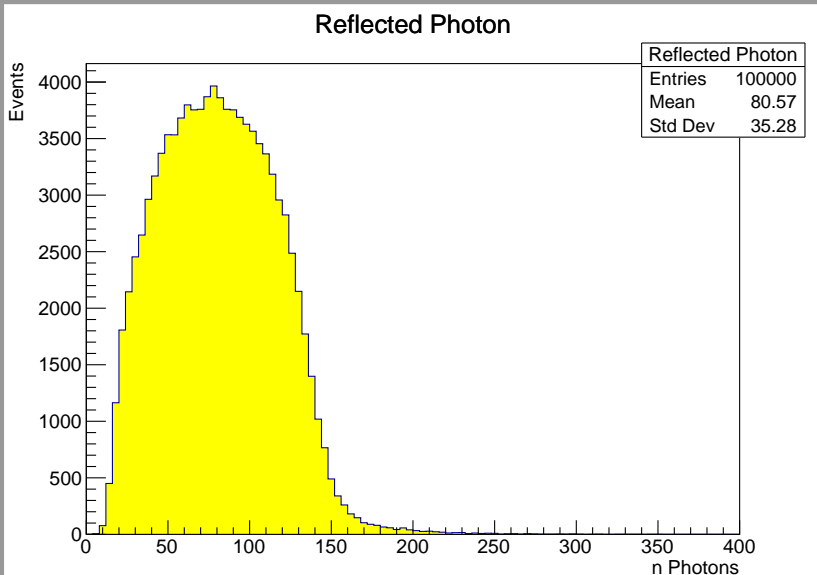


Figure 19: Standard Deviation of Straight Photons for each zone.

# Reflected Photons Counter



# Reflected Photons Counter

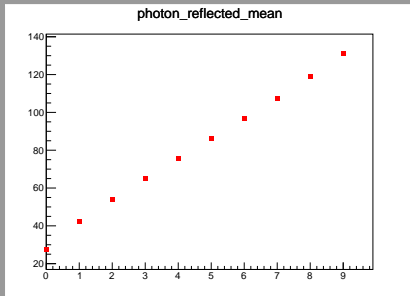


Figure 21: Mean of Reflected Photons for each zone.

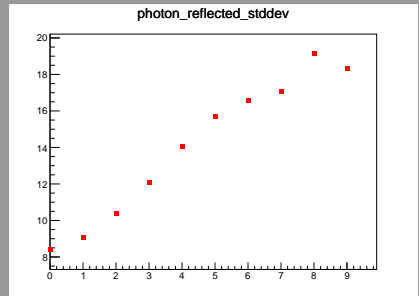
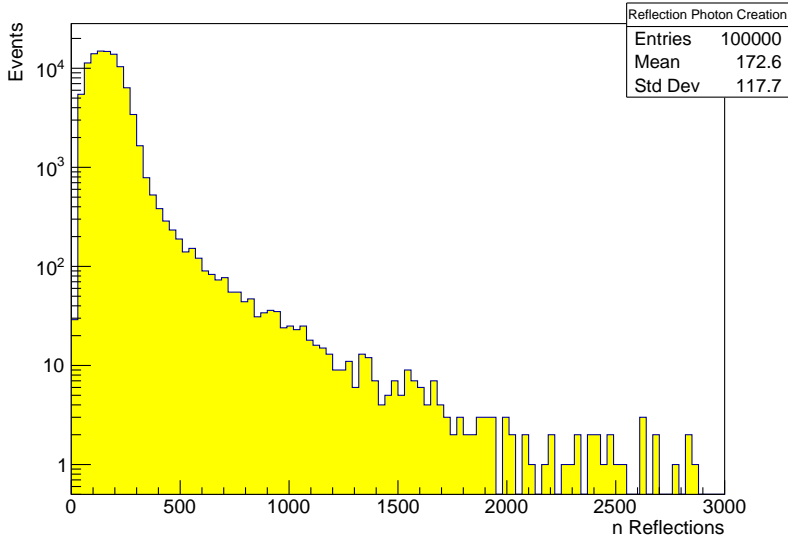


Figure 22: Standard Deviation of Reflected Photons for each zone.

# Reflections Counter

## Reflection Photon Creation



# Reflections Counter

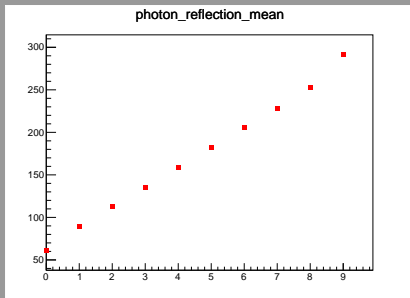


Figure 24: Mean of Number of Reflections per event for each zone.

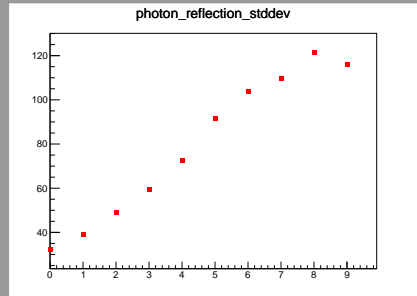
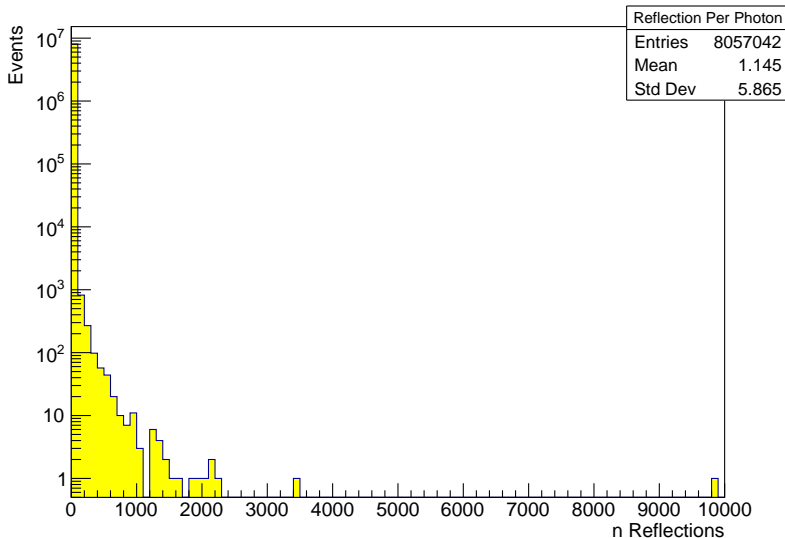


Figure 25: Standard Deviation of Number of Reflections per event for each zone.

# Reflections Counter

## Reflection Per Photon



# Reflections Counter

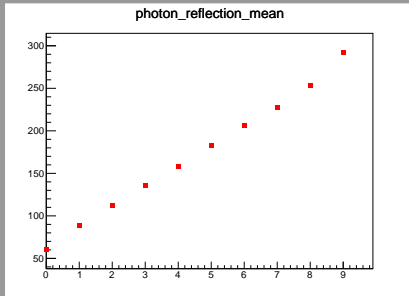


Figure 27: Mean of Number of Reflections per Photon for each zone.

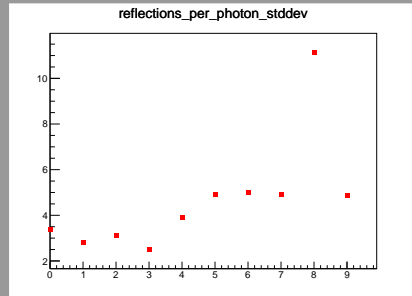


Figure 28: Standard Deviation of Number of Reflections per Photon for each zone.

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# Simulation Illustration

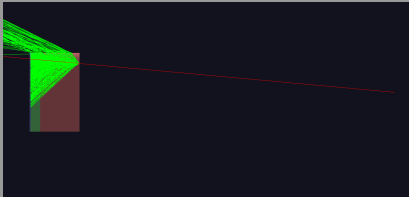


Figure 29: Illustration of a single event of the simulation

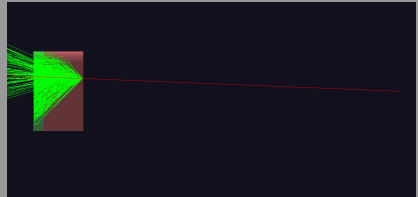


Figure 30: Illustration of a single event of the simulation

# Total Photon Count

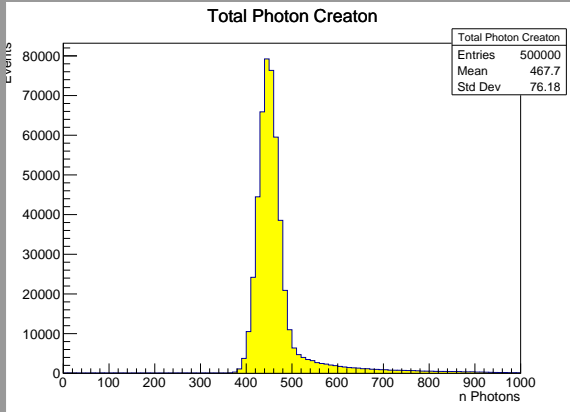


Figure 31: Total photon count in the simulation.

# Total Photon Count (Zones)

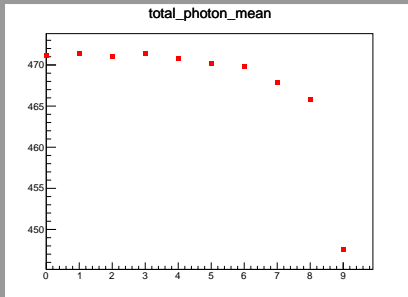


Figure 32: Total photon count mean in the simulation.

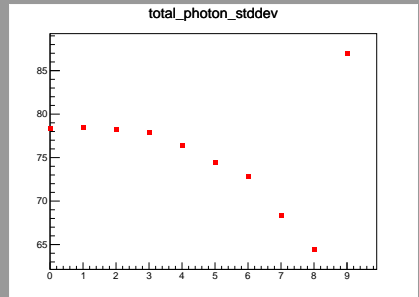


Figure 33: Total photon count standard deviation in the simulation.

# Primary Photon Count

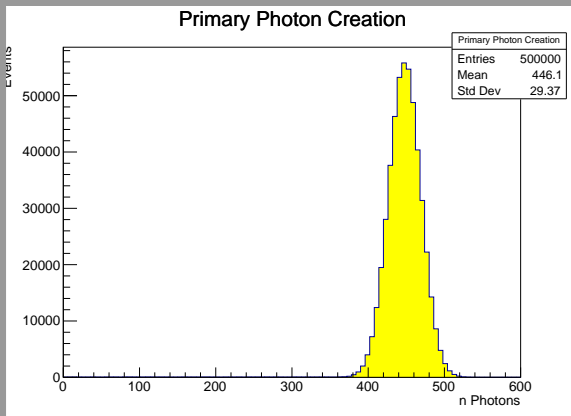


Figure 34: Primary photon count in the simulation.

# Primary Photon Count (Zones)

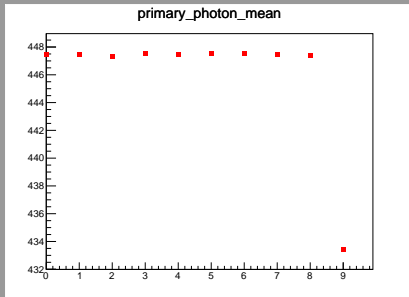


Figure 35: Primary photons count mean in the simulation.

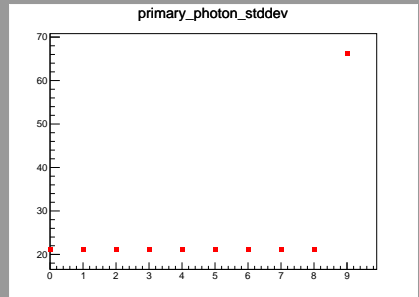


Figure 36: Primary photons count standard deviation in the simulation.

# Secondary Photon Count

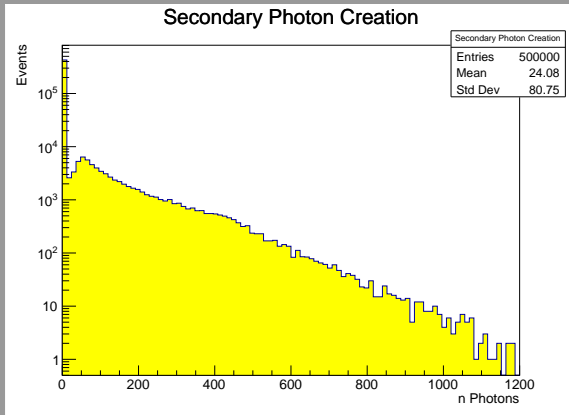


Figure 37: Secondary photon count in the simulation.

# Secondary Photon Count (Zones)

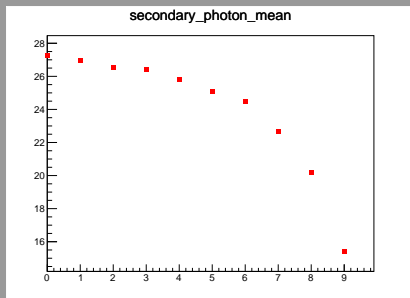


Figure 38: Secondary photons count mean in the simulation.

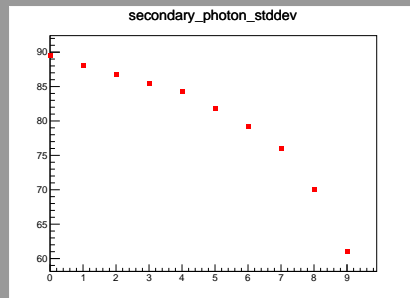


Figure 39: Secondary photons count standard deviation in the simulation.

# Straight Photon Count

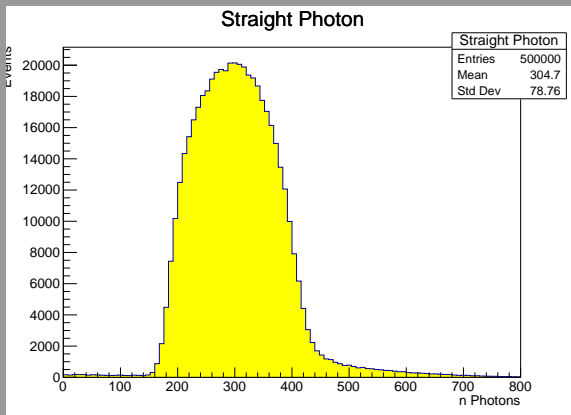


Figure 40: Straight photon count in the simulation.



# Straight Photon Count (Zones)

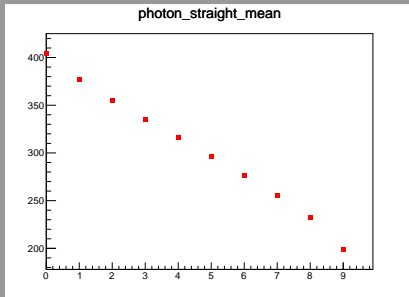


Figure 41: Straight photons count mean in the simulation.

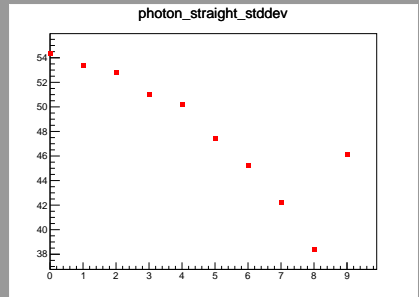


Figure 42: Straight photons count standard deviation in the simulation.

# Reflected Photon Count

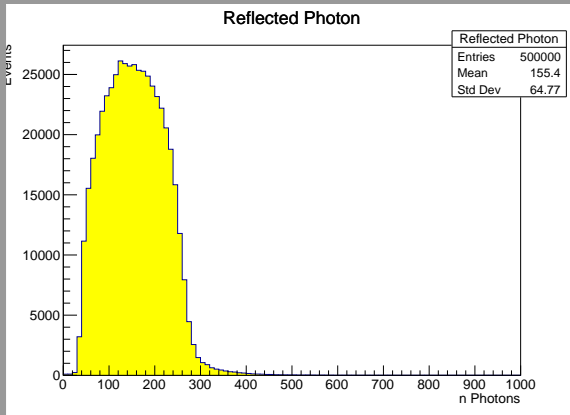


Figure 43: Reflected photon count in the simulation.

# Reflected Photon Count (Zones)

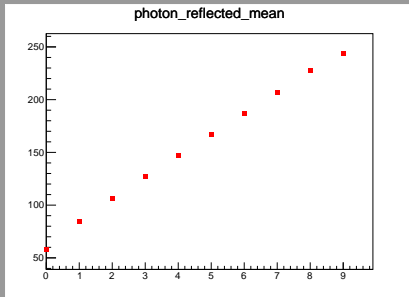


Figure 44: Reflected photons count mean in the simulation.

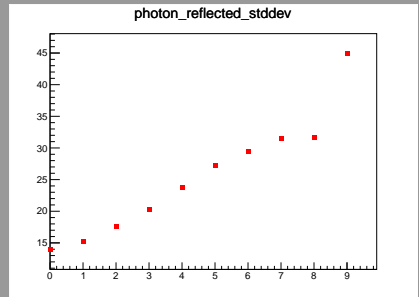


Figure 45: Reflected photons count standard deviation in the simulation.

# Reflections Count

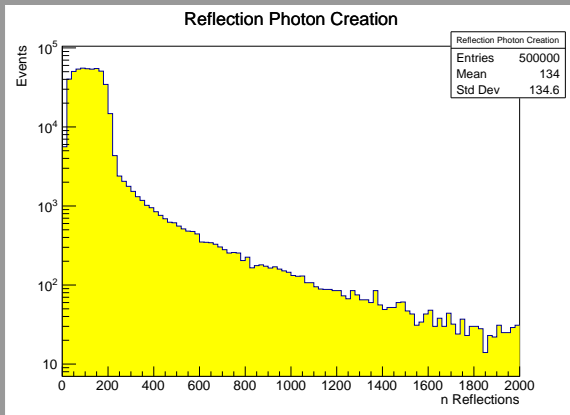


Figure 46: Reflections count in the simulation.

# Reflections Count (Zones)

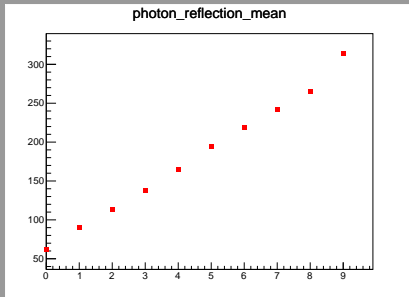


Figure 47: Reflections count mean in the simulation.

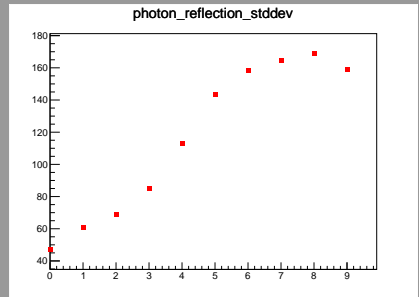


Figure 48: Reflections count standard deviation in the simulation.

# Reflections per Photon Count

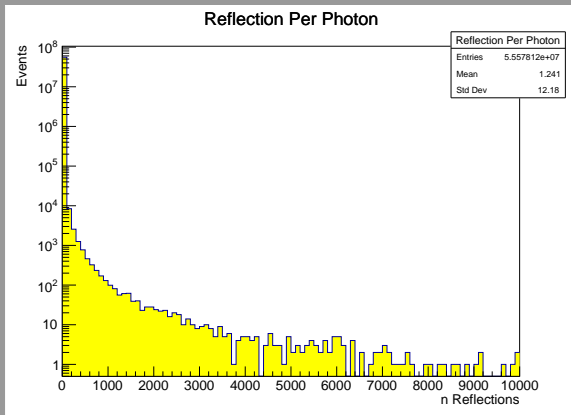


Figure 49: Reflections per photon count in the simulation.

# Reflections Count (Zones)

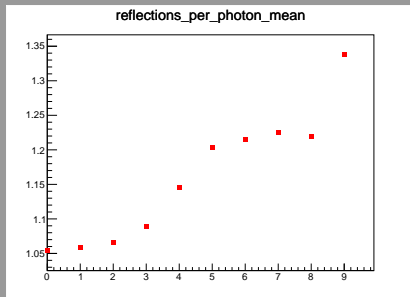


Figure 50: Reflections per photon count mean in the simulation.

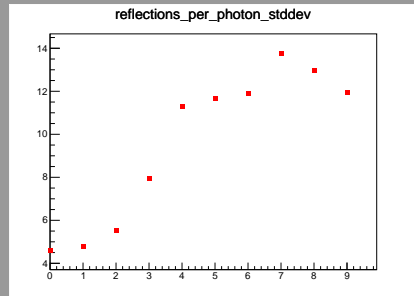


Figure 51: Reflections per photon count standard deviation in the simulation.

# Secondary Electron Count

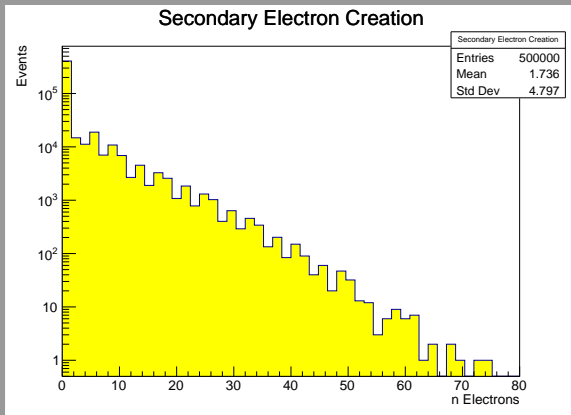


Figure 52: Secondary electron count in the simulation.



# Secondary Electron Count (Zones)

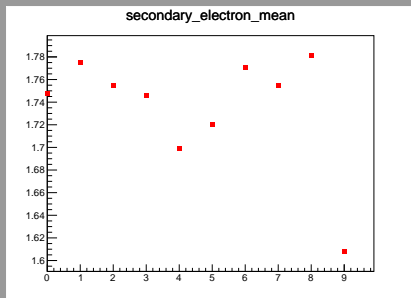


Figure 53: Secondary electron count mean in the simulation.

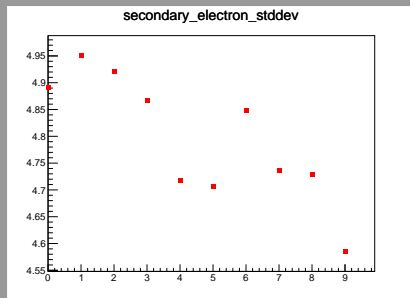


Figure 54: Secondary electron count standard deviation in the simulation.