GEANT4 Simulation Report

Riccardo Nicolaidis ²

August 22, 2023

GDML File Name: LEM_Plastic_Mirion_Ametek-worldVOL_DummyMaterials_Parsed.gdml

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    Ntuple ID: 0 Ntuple Column ID: 7 Ntuple Column Name: EventID

    Ntuple ID: 0 Ntuple Column ID: 8 Ntuple Column Name: JobNumber

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Volume	Material	Mass (g)
LV_AITop	G4_Galactic	1.97275e-23
LV_AIFrame_Thick_3	G4_Galactic	1.10354e-25
LV AlBottom	G4 Galactic	1.56411e-23
LV_AlCoverLower	G4_Galactic	8.5101e-25
LV_SiliconDetector_Thin_1	G4_Si	0.0325397
LV SiliconDetector Thin 0	G4_Si	0.0104495
LV_SiliconDetector_Thick_3	G4_Si	0.135903
LV_SiliconDetector_Thick_0	G4_Si	0.0439621
LV_AIFrame_Thick_0	G4_Galactic	8.11217e-26
LV_AIFrame_Thin_4	G4_Galactic	8.49576e-26
LV_AIScrew_Thick_0	G4_Galactic	5.42892e-26
LV_AIScrew_Thick_3	G4_Galactic	9.05215e-26
LV_AlCoverUpper	G4_Galactic	8.07654e-25
LV_AIFrame_Thin_3	G4_Galactic	8.49576e-26
LV_AIFrame_Thin_2	G4_Galactic	8.49576e-26
LV_AIScrew_3	G4_Galactic	2.0382e-25
LVBakeliteBoardMiddleUpper	G4_Galactic	1.26296e-24
LV_AIScrew_1	G4_Galactic	2.0382e-25
$LV_BakeliteBoardCalo$	G4_Galactic	6.393e-25
LV_AIFrame_Thin_1	G4_Galactic	8.49576e-26
LV_AIFrame_Thin_0	G4_Galactic	4.81911e-26
LV_SiliconDetector_Thin_2	G4_Si	0.0325397
LV_SiliconDetector_Thin_4	G4_Si	0.0325397
LV_SiliconDetector_Thin_3	G4_Si	0.0325397
$LV_BakeliteBoardBottom$	G4_Galactic	1.52827e-24
$LV_BakeliteBoardMiddleLower$	G4_Galactic	1.20638e-24
LV_Calo	G4_PLASTIC_SC_VINYLTOLUENE	74.304
$LV_PlasticVetoTop$	G4_PLASTIC_SC_VINYLTOLUENE	235.225
$LV_BakeliteCable_Thick_3$	G4_Galactic	2.21425e-26
$LV_BakeliteCable_Thick_0$	G4_Galactic	2.13526e-26
LV_AIScrew_2	G4_Galactic	2.0382e-25
$LV_AIFrame_Thick_2$	G4_Galactic	1.10354e-25
$LV_PlasticVetoBottom$	G4_PLASTIC_SC_VINYLTOLUENE	128.504
LV_AIScrew	G4_Galactic	2.0382e-25
$LV_{L}BakeliteBoardTop$	G4_Galactic	1.43828e-24
LV_SiliconDetector_Thick_2	G4_Si	0.135903
$LV_AIFrame_Thick_4$	G4_Galactic	1.10354e-25
$LV_AlFrame_Thick_1$	G4_Galactic	1.10354e-25
LV_BakeliteCable_Thick_4	G4_Galactic	2.21425e-26
LV_AIScrew_Thick_4	G4_Galactic	9.05215e-26
LV_AlScrew_Thick_1	G4_Galactic	9.05215e-26
LV_SiliconDetector_Thick_4	G4_Si	0.135903
LV_SiliconDetector_Thick_1	G4_Si	0.135903
LV_BakeliteCable_Thick_1	G4_Galactic	2.21425e-26
LV_BakeliteCable_Thick_2	G4_Galactic	2.21425e-26
LV_AlScrew_Thick_2	G4_Galactic	9.05215e-26

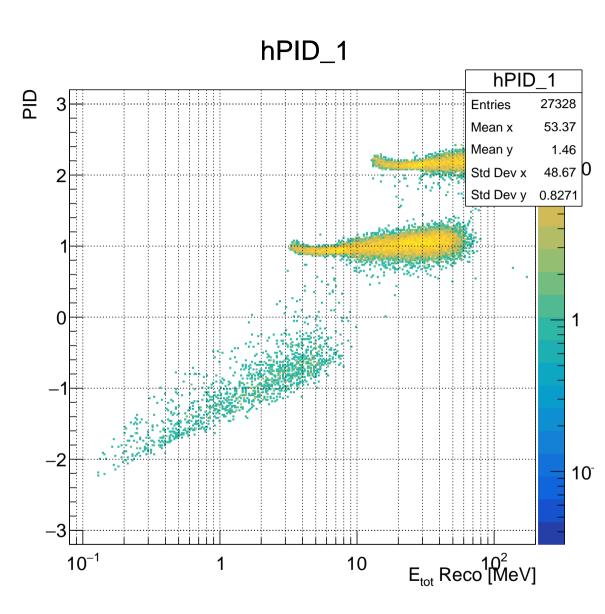


Figure: PID, No Gaussian Smearing, Total Energy is the Energy reconstructed.

iccardo Nicolaidis ⁶ GEANT4 Simulation Report August 22, 2023

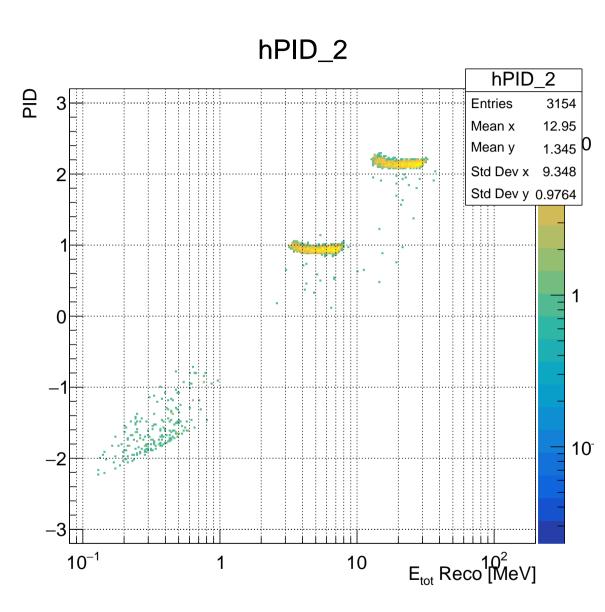


Figure: PID, No Gaussian Smearing, Total Energy is the Energy reconstructed, No Calorimeter.

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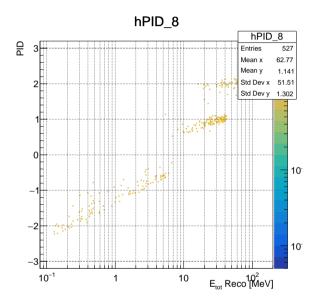


Figure: PID. Convined events but Measured energy is not equal to the MC energy.

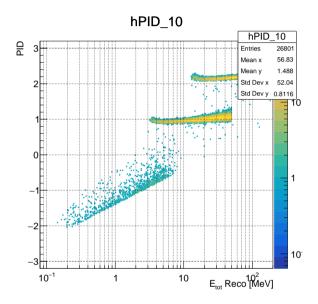


Figure: PID. Convined events and Measured energy is equal to the MC energy.

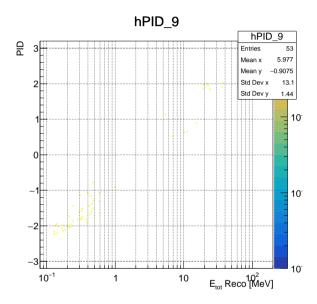


Figure: PID. Convined events but Measured energy is not equal to the MC energy. No Calorimeter.

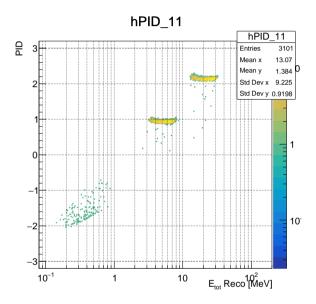


Figure: PID. Convined events and Measured energy is equal to the MC energy. No Calorimeter.

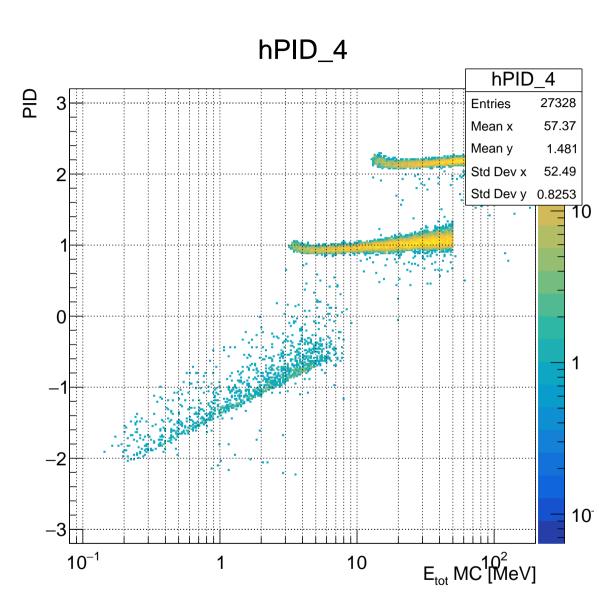


Figure: PID, No Gaussian Smearing, Total Energy is the MC Energy.

Riccardo Nicolaidis 12 GEANT4 Simulation Report August 22, 2023 10

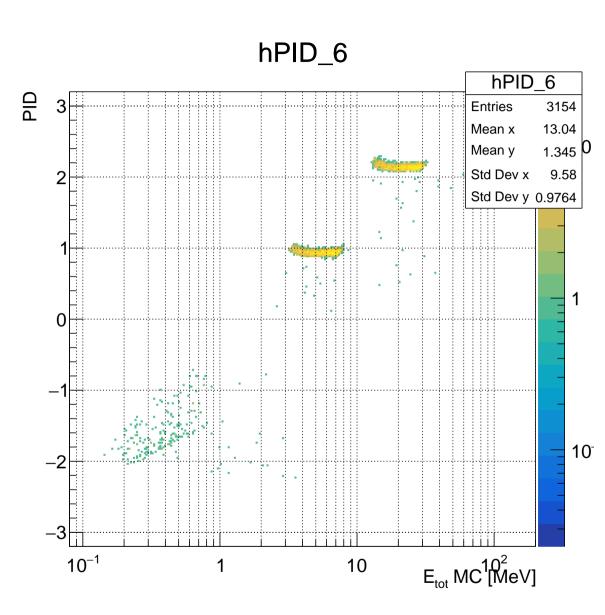


Figure: PID, No Gaussian Smearing, Total Energy is the MC Energy, No Calorimeter.

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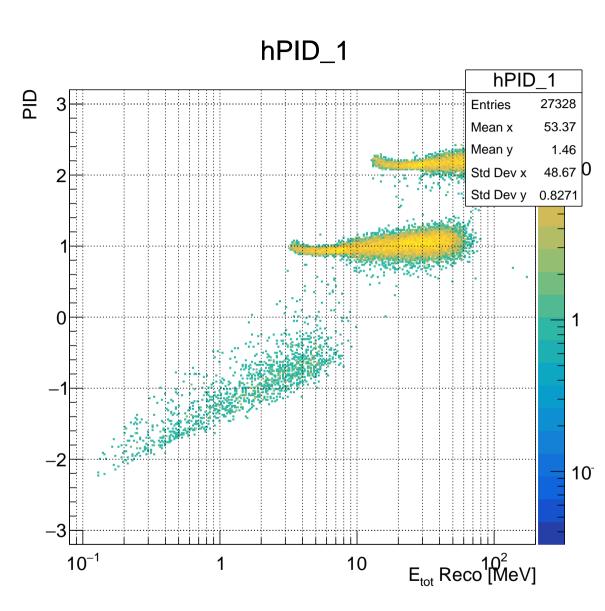


Figure: PID, Gaussian Smearing, Total Energy is the Energy reconstructed.

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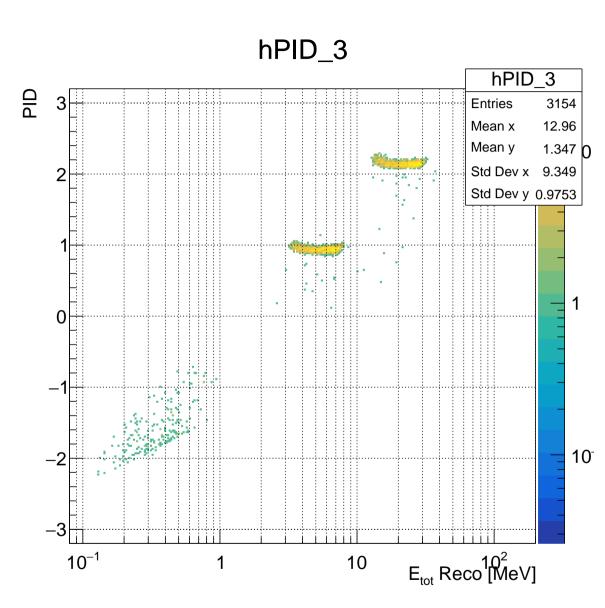


Figure: PID, Gaussian Smearing, Total Energy is the Energy reconstructed, No Calorimeter.

Riccardo Nicolaidis 15 GEANT4 Simulation Report August 22, 2023 13

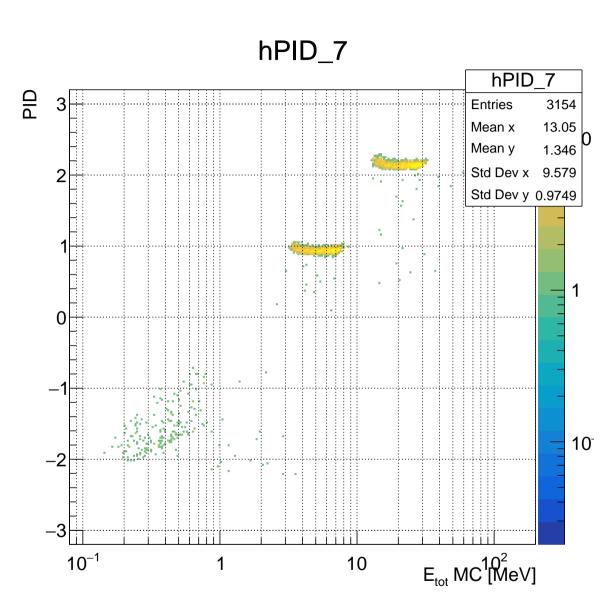


Figure: PID, Gaussian Smearing, Total Energy is the MC Energy, No Calorimeter.

Riccardo Nicolaidis 17 GEANT4 Simulation Report August 22, 2023 19

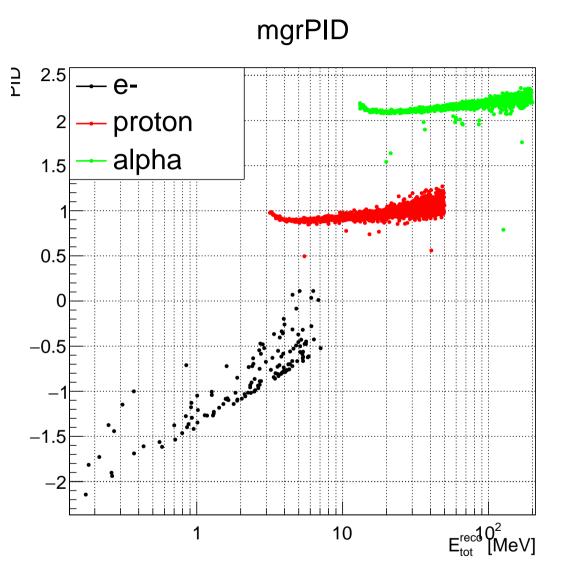


Figure: PID, Gaussian Smearing, Total Energy is the Energy reconstructed, No Calorimeter.

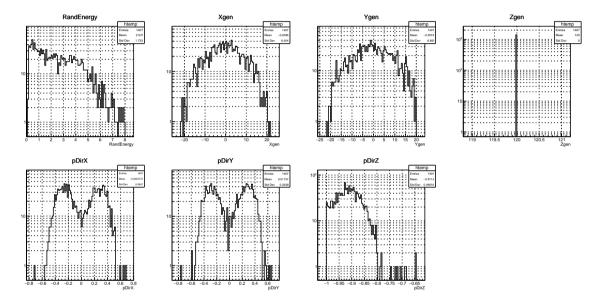


Figure: MC quantities

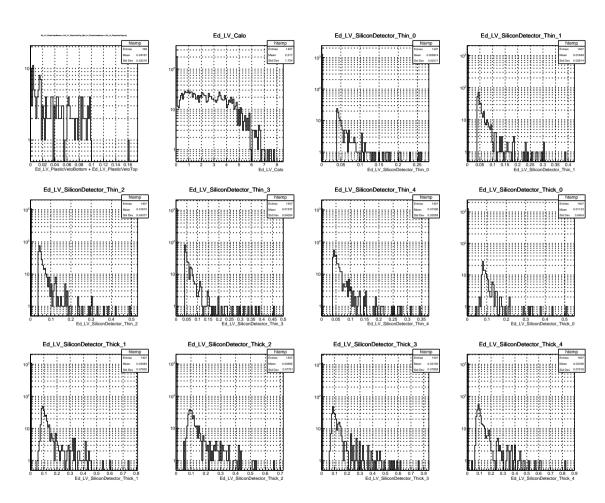


Figure: Detected energies

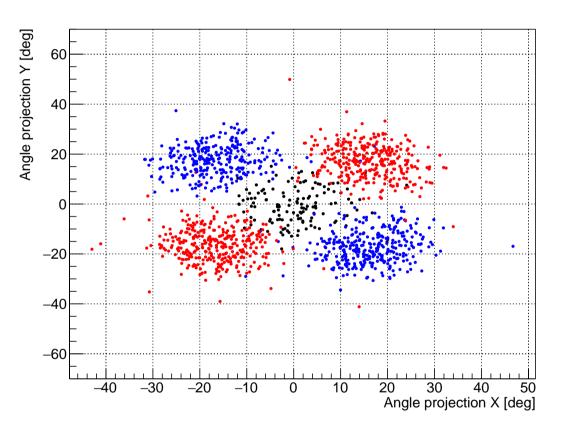


Figure: Angles distribution

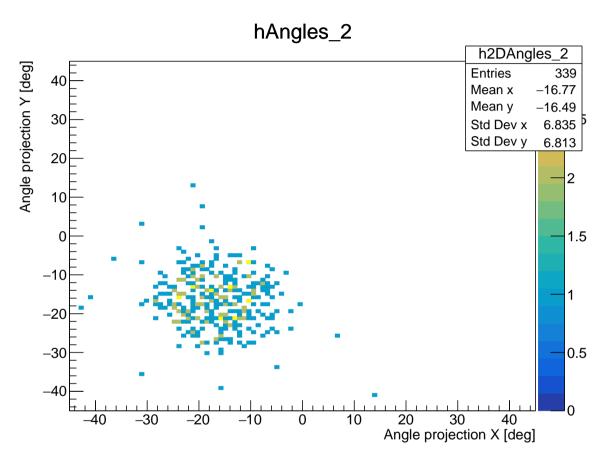


Figure: Angles distribution

Riccardo Nicolaidis ²² GEANT4 Simulation Report August 22, 2023

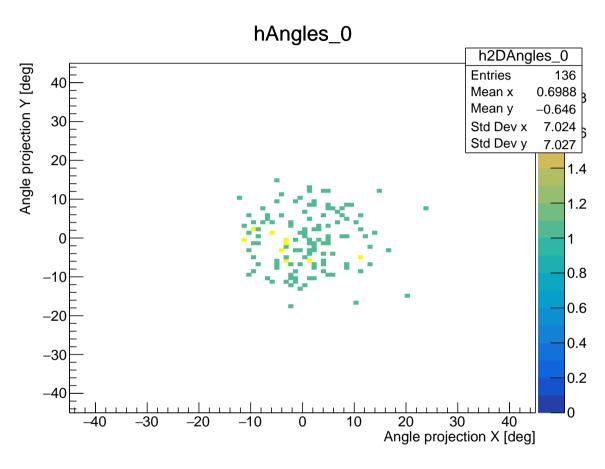


Figure: Angles distribution

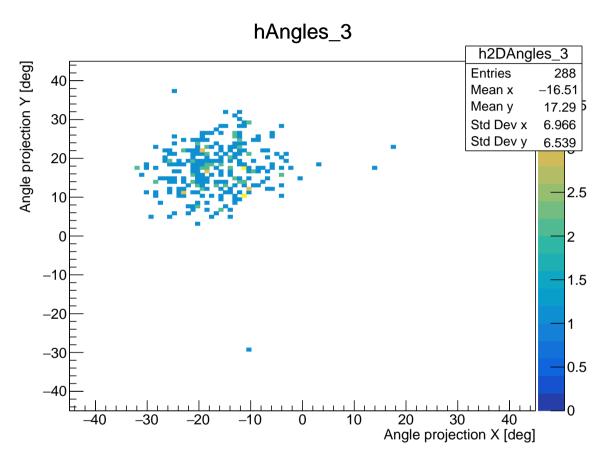


Figure: Angles distribution

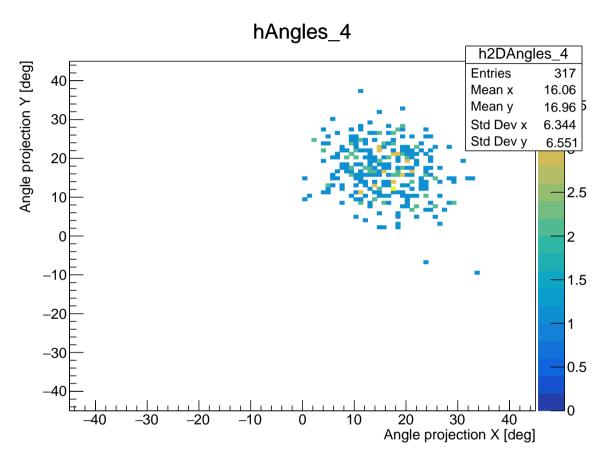


Figure: Angles distribution

Riccardo Nicolaidis 25 GEANT4 Simulation Report August 22, 2023

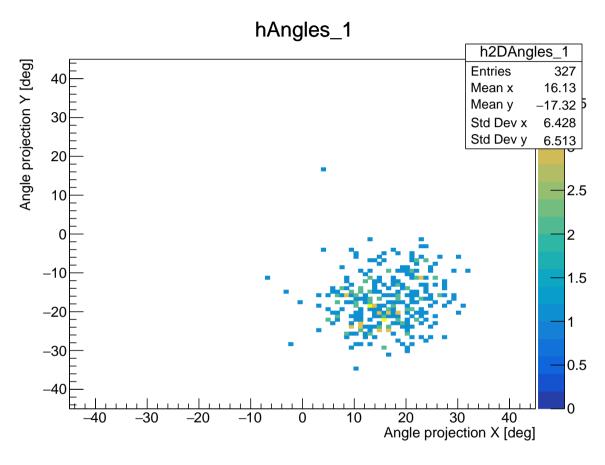


Figure: Angles distribution

Riccardo Nicolaidis ²⁶ GEANT4 Simulation Report August 22, 2023

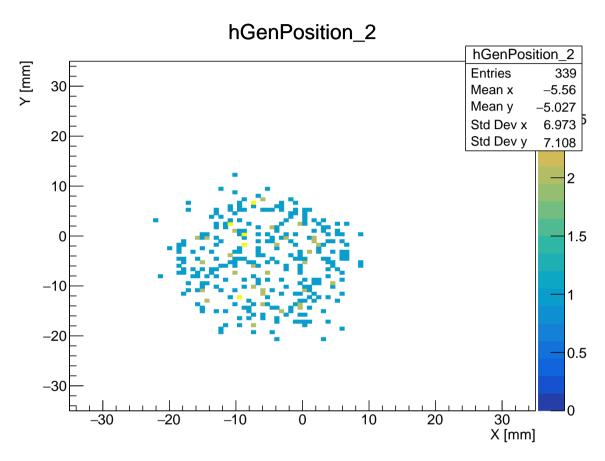


Figure: Generation Position

Riccardo Nicolaidis 27 GEANT4 Simulation Report August 22, 2023

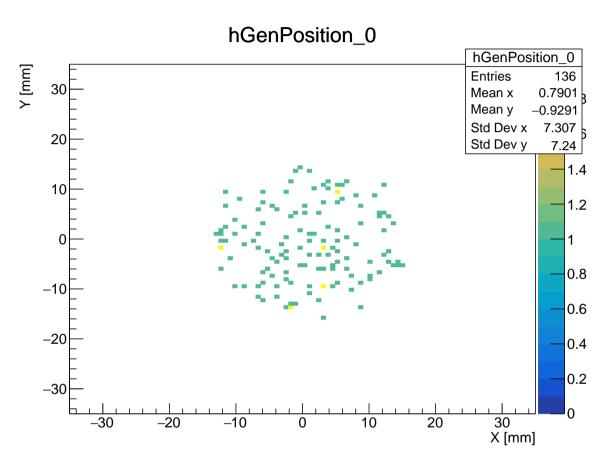


Figure: Generation Position

Riccardo Nicolaidis 28 GEANT4 Simulation Report August 22, 2023

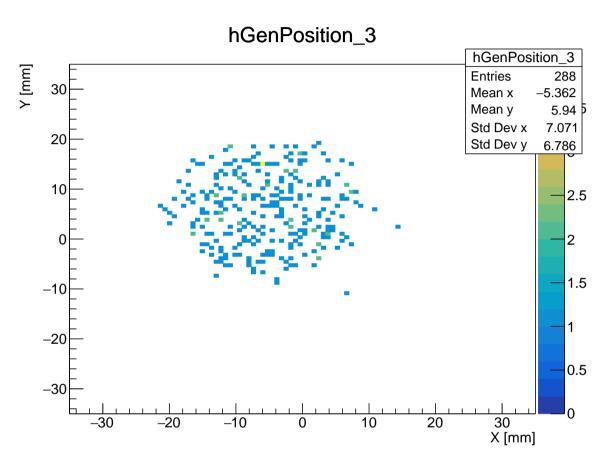


Figure: Generation Position

Riccardo Nicolaidis ²⁹ GEANT4 Simulation Report August 22, 2023

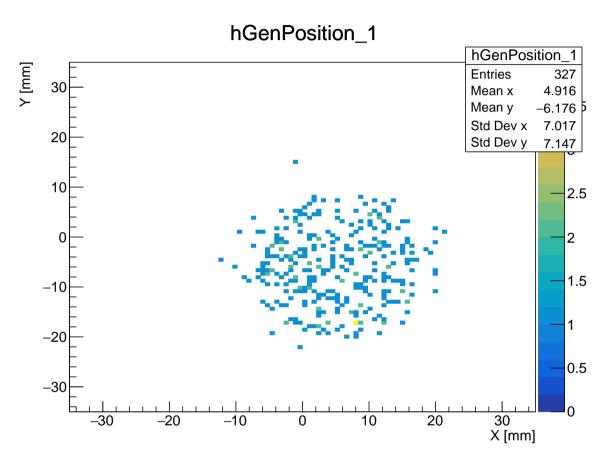


Figure: Generation Position

Riccardo Nicolaidis 30 GEANT4 Simulation Report August 22, 2023

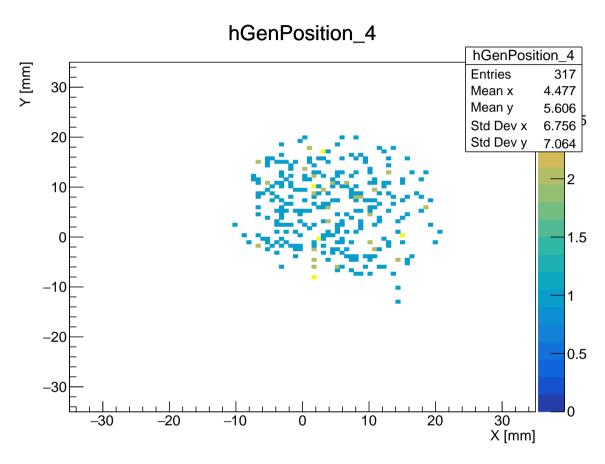


Figure: Generation Position

Riccardo Nicolaidis 31 GEANT4 Simulation Report August 22, 2023

Geometric factors for e-

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Geometric factors for e-

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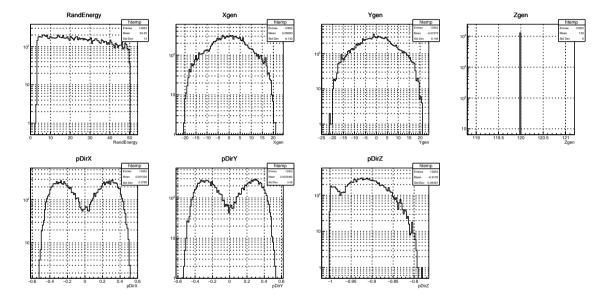


Figure: MC quantities

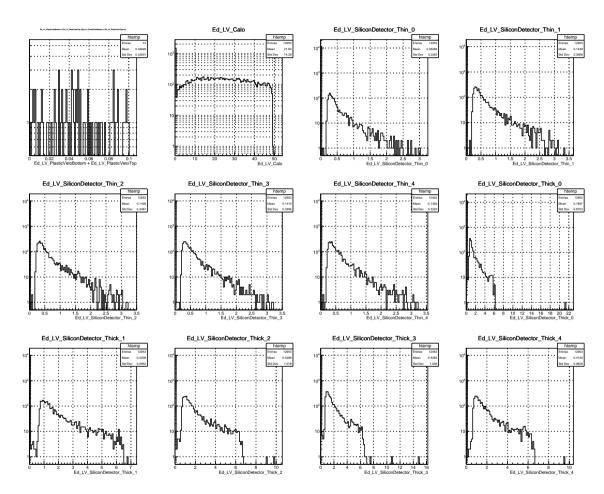


Figure: Detected energies

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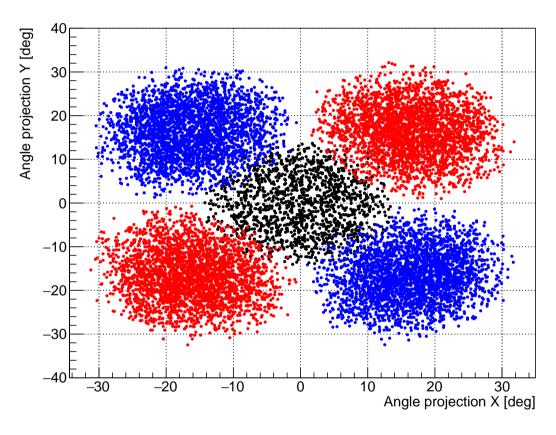


Figure: Angles distribution

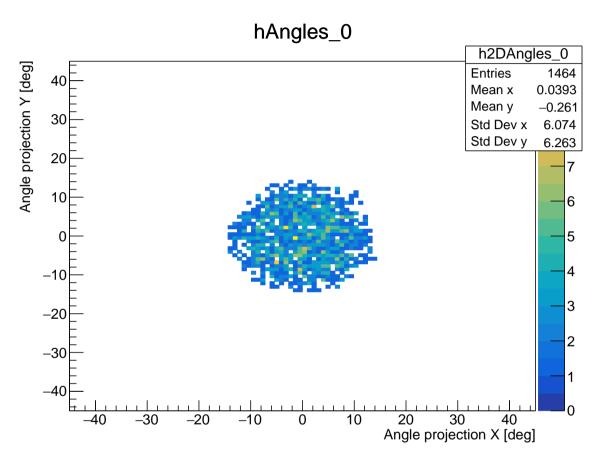


Figure: Angles distribution

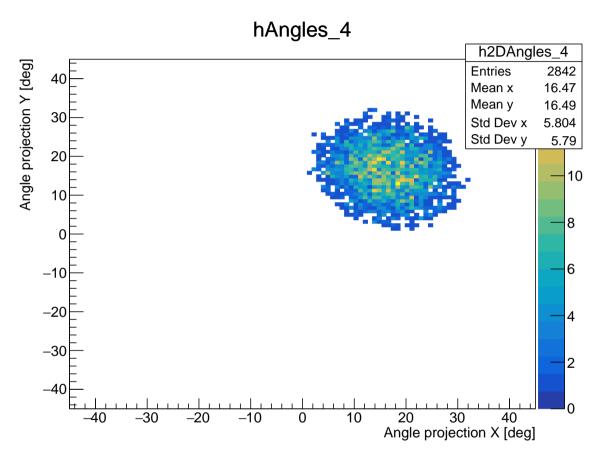


Figure: Angles distribution

Riccardo Nicolaidis 38 GEANT4 Simulation Report August 22, 2023

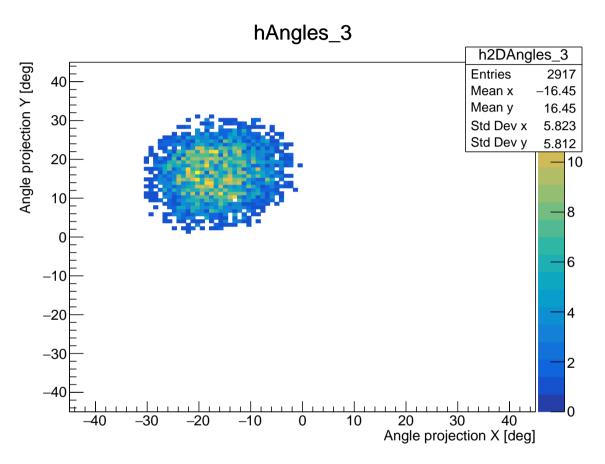


Figure: Angles distribution

Riccardo Nicolaidis 39 GEANT4 Simulation Report August 22, 2023

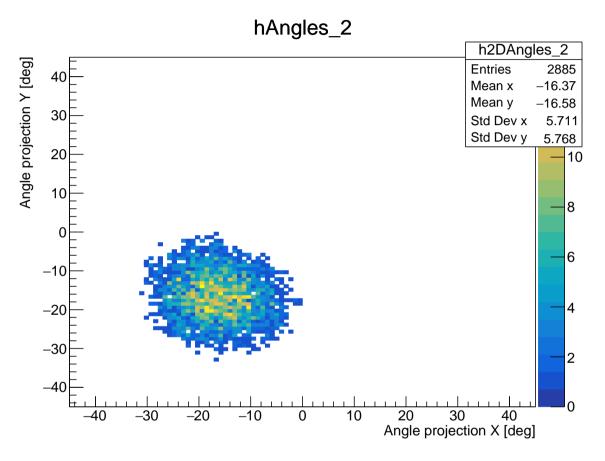


Figure: Angles distribution

Riccardo Nicolaidis 40 GEANT4 Simulation Report August 22, 2023

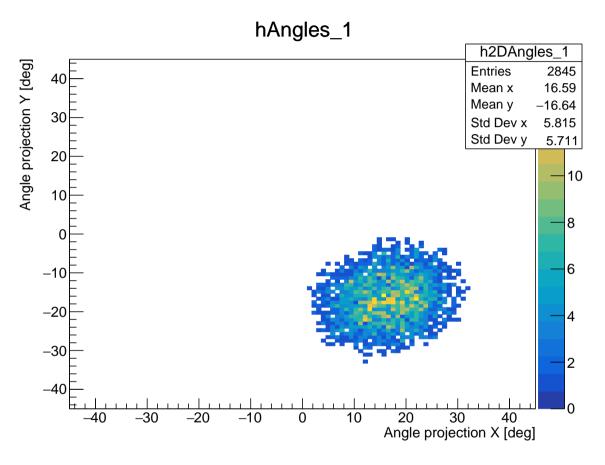


Figure: Angles distribution

Riccardo Nicolaidis ⁴¹ GEANT4 Simulation Report August 22, 2023

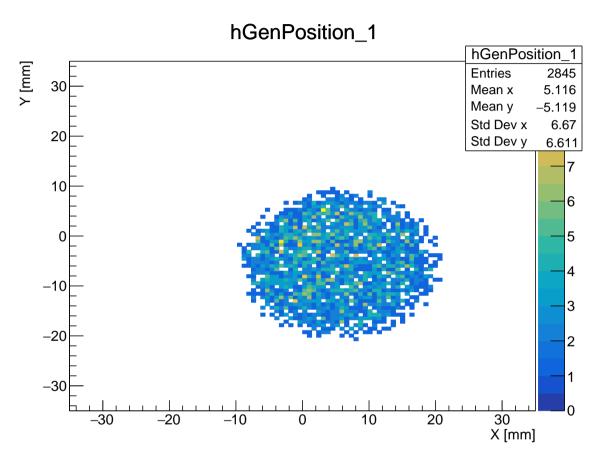


Figure: Generation Position

Riccardo Nicolaidis 42 GEANT4 Simulation Report August 22, 2023

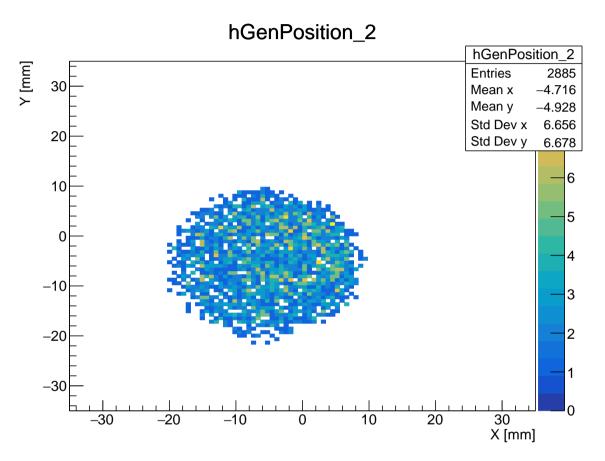


Figure: Generation Position

Riccardo Nicolaidis ⁴³ GEANT4 Simulation Report August 22, 2023

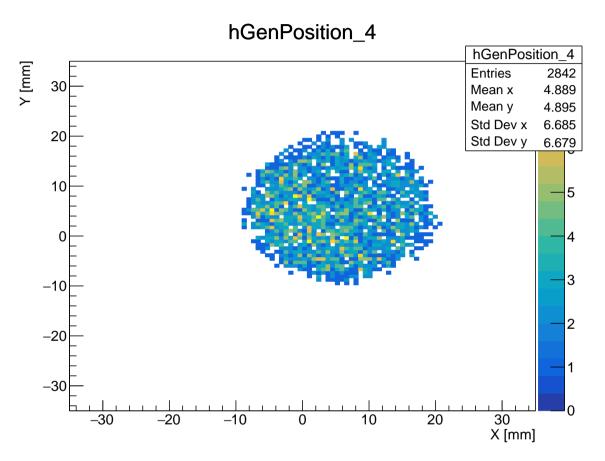


Figure: Generation Position

Riccardo Nicolaidis ⁴⁴ GEANT4 Simulation Report August 22, 2023

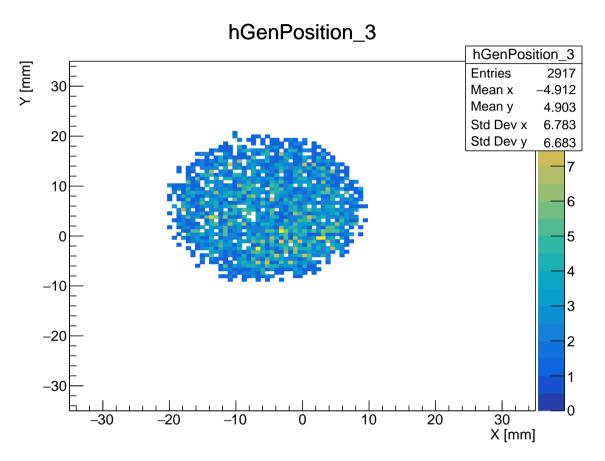


Figure: Generation Position

Riccardo Nicolaidis ⁴⁵ GEANT4 Simulation Report August 22, 2023

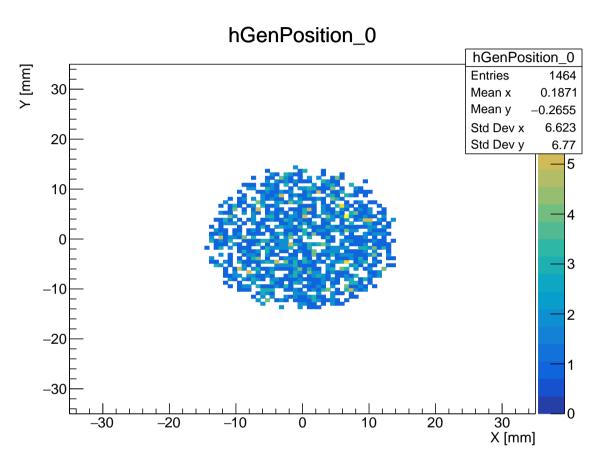


Figure: Generation Position

Riccardo Nicolaidis ⁴⁶ GEANT4 Simulation Report August 22, 2023





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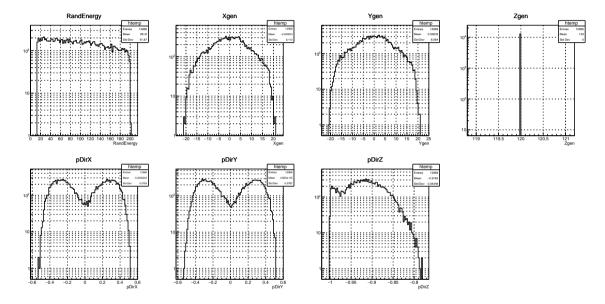


Figure: MC quantities

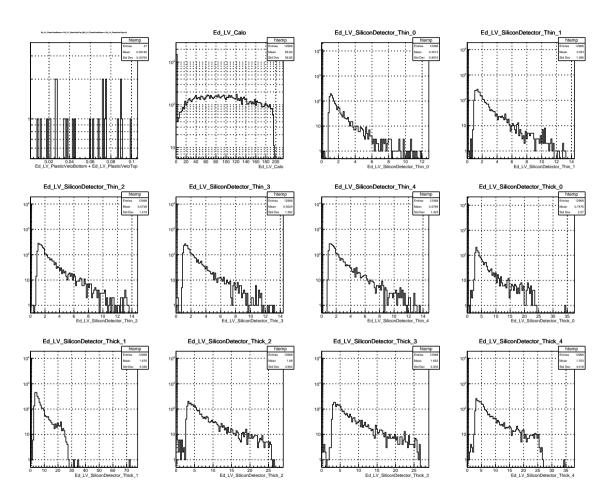


Figure: Detected energies

Riccardo Nicolaidis ⁵⁰ GEANT4 Simulation Report August 22, 2023 48

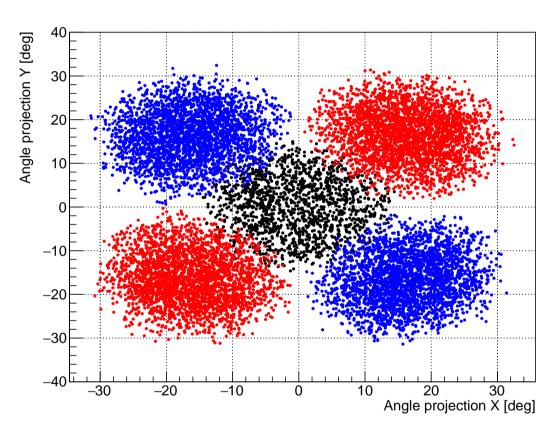


Figure: Angles distribution

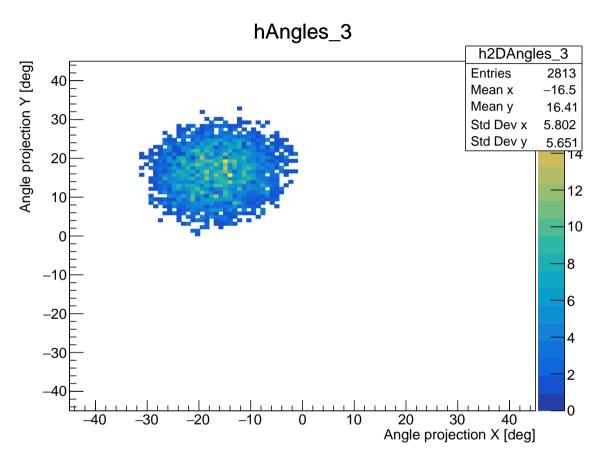


Figure: Angles distribution

Riccardo Nicolaidis ⁵² GEANT4 Simulation Report August 22, 2023 50

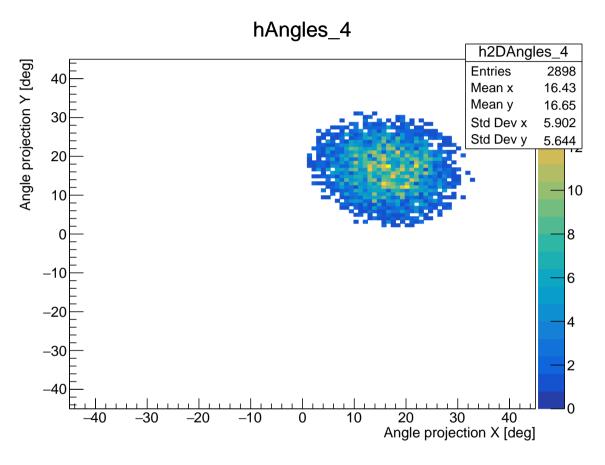


Figure: Angles distribution

Riccardo Nicolaidis ⁵³ GEANT4 Simulation Report August 22, 2023 51

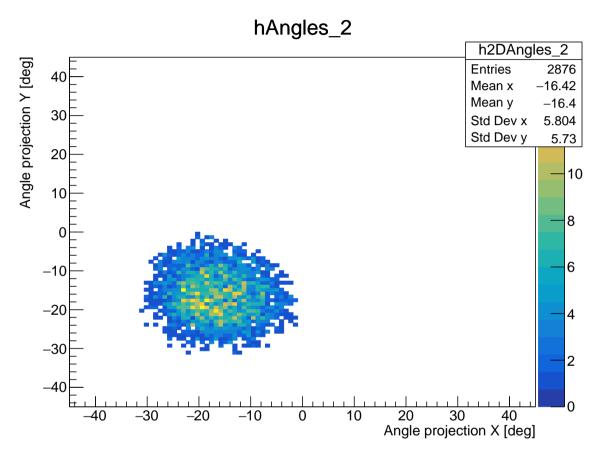


Figure: Angles distribution

Riccardo Nicolaidis ⁵⁴ GEANT4 Simulation Report August 22, 2023 52

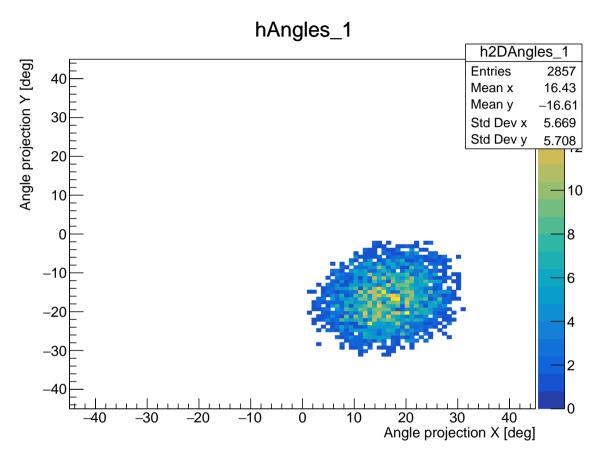


Figure: Angles distribution

Riccardo Nicolaidis ⁵⁵ GEANT4 Simulation Report August 22, 2023 53,

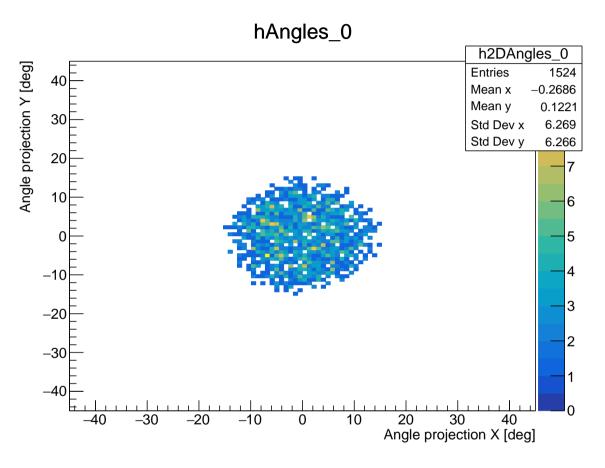


Figure: Angles distribution

Riccardo Nicolaidis ⁵⁶ GEANT4 Simulation Report August 22, 2023

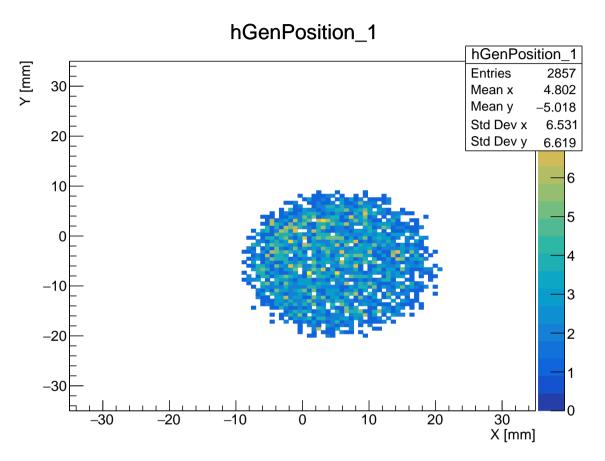


Figure: Generation Position

Riccardo Nicolaidis 57 GEANT4 Simulation Report August 22, 2023

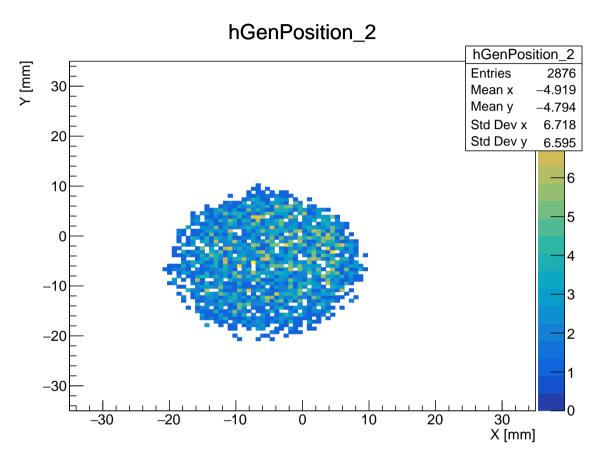


Figure: Generation Position

Riccardo Nicolaidis ⁵⁸ GEANT4 Simulation Report August 22, 2023

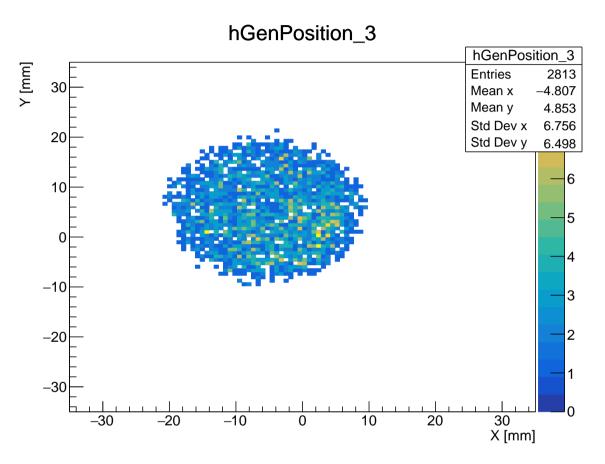


Figure: Generation Position

Riccardo Nicolaidis ⁵⁹ GEANT4 Simulation Report August 22, 2023

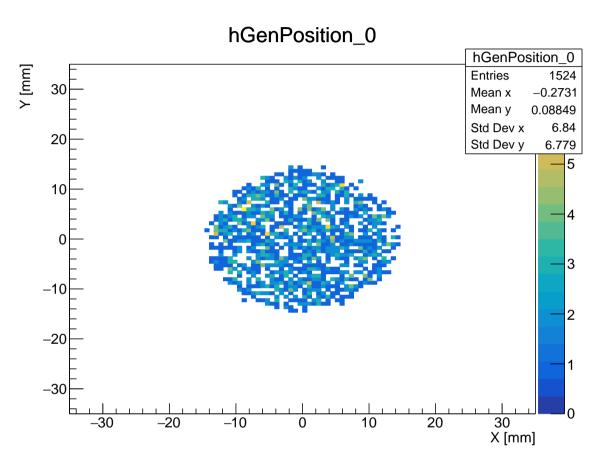


Figure: Generation Position

Riccardo Nicolaidis ⁶⁰ GEANT4 Simulation Report August 22, 2023

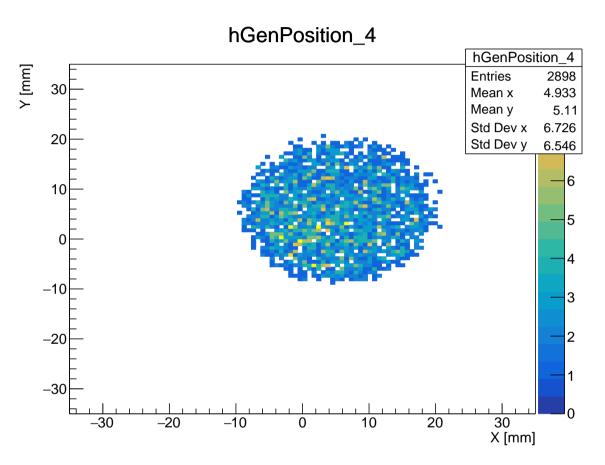
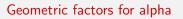
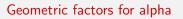


Figure: Generation Position

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