GEANT4 Simulation Report

Riccardo Nicolaidis [2]

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GDML File Name : **LEM_Plastic_Mirion_Ametek-worldVOL_Parsed.gdml**

NTuple Info:

- Ntuple ID: 0 Ntuple Name: Edep
- Ntuple ID: 0 Ntuple Column ID: 0 Ntuple Column Name: RandEnergy
- Ntuple ID: 0 Ntuple Column ID: 1 Ntuple Column Name: Xgen
- Ntuple ID: 0 Ntuple Column ID: 2 Ntuple Column Name: Ygen
- Ntuple ID: 0 Ntuple Column ID: 3 Ntuple Column Name: Zgen
- Ntuple ID: 0 Ntuple Column ID: 4 Ntuple Column Name: pDirX
- Ntuple ID: 0 Ntuple Column ID: 5 Ntuple Column Name: pDirY
- Ntuple ID: 0 Ntuple Column ID: 6 Ntuple Column Name: pDirZ
- Ntuple ID: 0 Ntuple Column ID: 7 Ntuple Column Name: EventID
- Ntuple ID: 0 Ntuple Column ID: 8 Ntuple Column Name: JobNumber
- Ntuple ID: 0 Ntuple Column ID: 9 Ntuple Column Name: Ed_LV_AlTop
- Ntuple ID: 0 Ntuple Column ID: 10 Ntuple Column Name: Ed_LV_AlFrame_Thick_3
- Ntuple ID: 0 Ntuple Column ID: 11 Ntuple Column Name: Ed_LV_AlBottom
- Ntuple ID: 0 Ntuple Column ID: 12 Ntuple Column Name: Ed_LV_AlCoverLower
- Ntuple ID: 0 Ntuple Column ID: 13 Ntuple Column Name: Ed_LV_SiliconDetector_Thin_1
- Ntuple ID: 0 Ntuple Column ID: 14 Ntuple Column Name: Ed_LV_SiliconDetector_Thin_0
- Ntuple ID: 0 Ntuple Column ID: 15 Ntuple Column Name: Ed_LV_SiliconDetector_Thick_3
- Ntuple ID: 0 Ntuple Column ID: 16 Ntuple Column Name: Ed_LV_SiliconDetector_Thick_0
- Ntuple ID: 0 Ntuple Column ID: 17 Ntuple Column Name: Ed_LV_AlFrame_Thick_0
- Ntuple ID: 0 Ntuple Column ID: 18 Ntuple Column Name: Ed_LV_AlFrame_Thin_4
- Ntuple ID: 0 Ntuple Column ID: 19 Ntuple Column Name: Ed_LV_AlScrew_Thick_0
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- Ntuple ID: 0 Ntuple Column ID: 21 Ntuple Column Name: Ed_LV_AlCoverUpper
- Ntuple ID: 0 Ntuple Column ID: 22 Ntuple Column Name: Ed_LV_AlFrame_Thin_3
- Ntuple ID: 0 Ntuple Column ID: 23 Ntuple Column Name: Ed_LV_AlFrame_Thin_2
- Ntuple ID: 0 Ntuple Column ID: 24 Ntuple Column Name: Ed_LV_AlScrew_3
- Ntuple ID: 0 Ntuple Column ID: 25 Ntuple Column Name: Ed_LV_BakeliteBoardMiddleUpper
- Ntuple ID: 0 Ntuple Column ID: 26 Ntuple Column Name: Ed_LV_AlScrew_1
- Ntuple ID: 0 Ntuple Column ID: 27 Ntuple Column Name: Ed_LV_BakeliteBoardCalo
- Ntuple ID: 0 Ntuple Column ID: 28 Ntuple Column Name: Ed_LV_AlFrame_Thin_1
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- Ntuple ID: 0 Ntuple Column ID: 35 Ntuple Column Name: Ed_LV_Calo
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- Ntuple ID: 0 Ntuple Column ID: 37 Ntuple Column Name: Ed_LV_BakeliteCable_Thick_3
- Ntuple ID: 0 Ntuple Column ID: 38 Ntuple Column Name: Ed_LV_BakeliteCable_Thick_0
- Ntuple ID: 0 Ntuple Column ID: 39 Ntuple Column Name: Ed_LV_AlScrew_2
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- Ntuple ID: 0 Ntuple Column ID: 46 Ntuple Column Name: Ed_LV_AlFrame_Thick_1
- Ntuple ID: 0 Ntuple Column ID: 47 Ntuple Column Name: Ed_LV_BakeliteCable_Thick_4
- Ntuple ID: 0 Ntuple Column ID: 48 Ntuple Column Name: Ed_LV_AlScrew_Thick_4

Volume	Material	Mass (g)
LV_AlTop	G4_Al	532.446
LV_AlFrame_Thick_3	G4_Al	2.97844
LV_AlBottom	G4_Al	422.153
LV_AlCoverLower	G4_Al	22.9688
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_AlFrame_Thick_0	G4_Al	2.18948
LV_AlFrame_Thin_4	G4_Al	2.29301
LV_AlScrew_Thick_0	G4_Al	1.46527
LV_AlScrew_Thick_3	G4_Al	2.44318
LV_AlCoverUpper	G4_Al	21.7986
LV_AlFrame_Thin_3	G4_Al	2.29301
LV_AlFrame_Thin_2	G4_Al	2.29301
LV_AlScrew_3	G4_Al	5.5011
LV_BakeliteBoardMiddleUpper	G4_BAKELITE	15.787
LV_AlScrew_1	G4_Al	5.5011
LV_BakeliteBoardCalo	G4_BAKELITE	7.99125
LV_AlFrame_Thin_1	G4_Al	2.29301
LV_AlFrame_Thin_0	G4_Al	1.30068
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_BAKELITE	19.1034
LV_BakeliteBoardMiddleLower	G4_BAKELITE	15.0798
LV_Calo	G4_PLASTIC_SC_VINYLTOLUENE	74.304
LV_PlasticVetoTop	G4_PLASTIC_SC_VINYLTOLUENE	235.225
LV_BakeliteCable_Thick_3	G4_BAKELITE	0.276781
LV_BakeliteCable_Thick_0	G4_BAKELITE	0.266907
LV_AlScrew_2	G4_Al	5.5011
LV_AlFrame_Thick_2	G4_Al	2.97844
LV_PlasticVetoBottom	G4_PLASTIC_SC_VINYLTOLUENE	128.504
LV_AlScrew	G4_Al	5.5011
LV_BakeliteBoardTop	G4_BAKELITE	17.9785
LV_SiliconDetector_Thick_2	G4_Si	0.135903
LV_AlFrame_Thick_4	G4_Al	2.97844
LV_AlFrame_Thick_1	G4_Al	2.97844
LV_BakeliteCable_Thick_4	G4_BAKELITE	0.276781
LV_AlScrew_Thick_4	G4_Al	2.44318
LV_AlScrew_Thick_1	G4_Al	2.44318
LV_SiliconDetector_Thick_4	G4_Si	0.135903
LV_SiliconDetector_Thick_1	G4_Si	0.135903
LV_BakeliteCable_Thick_1	G4_BAKELITE	0.276781
LV_BakeliteCable_Thick_2	G4_BAKELITE	0.276781
LV_AlScrew_Thick_2	G4_Al	2.44318

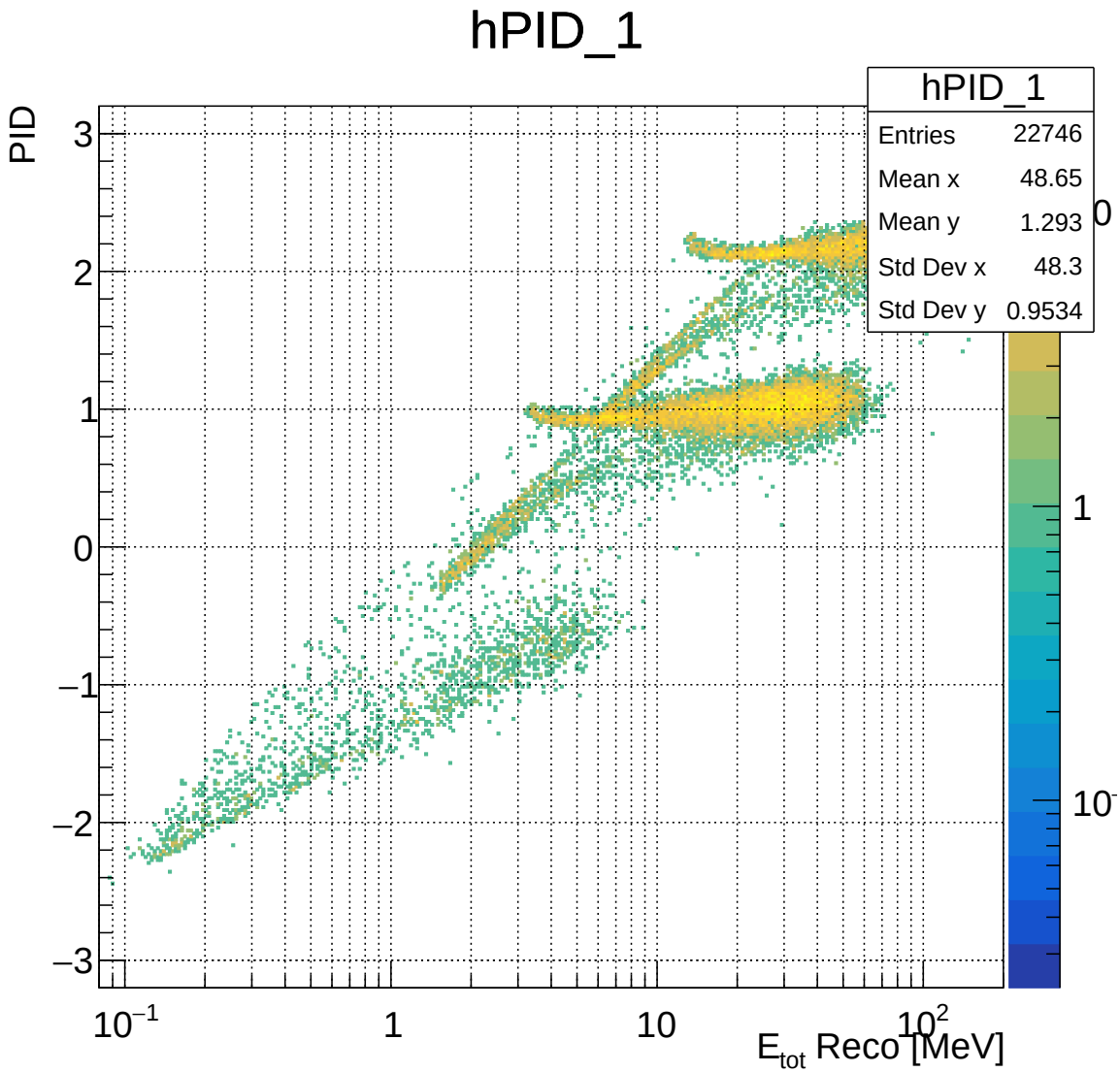


Figure: PID, No Gaussian Smearing, Total Energy is the Energy reconstructed.

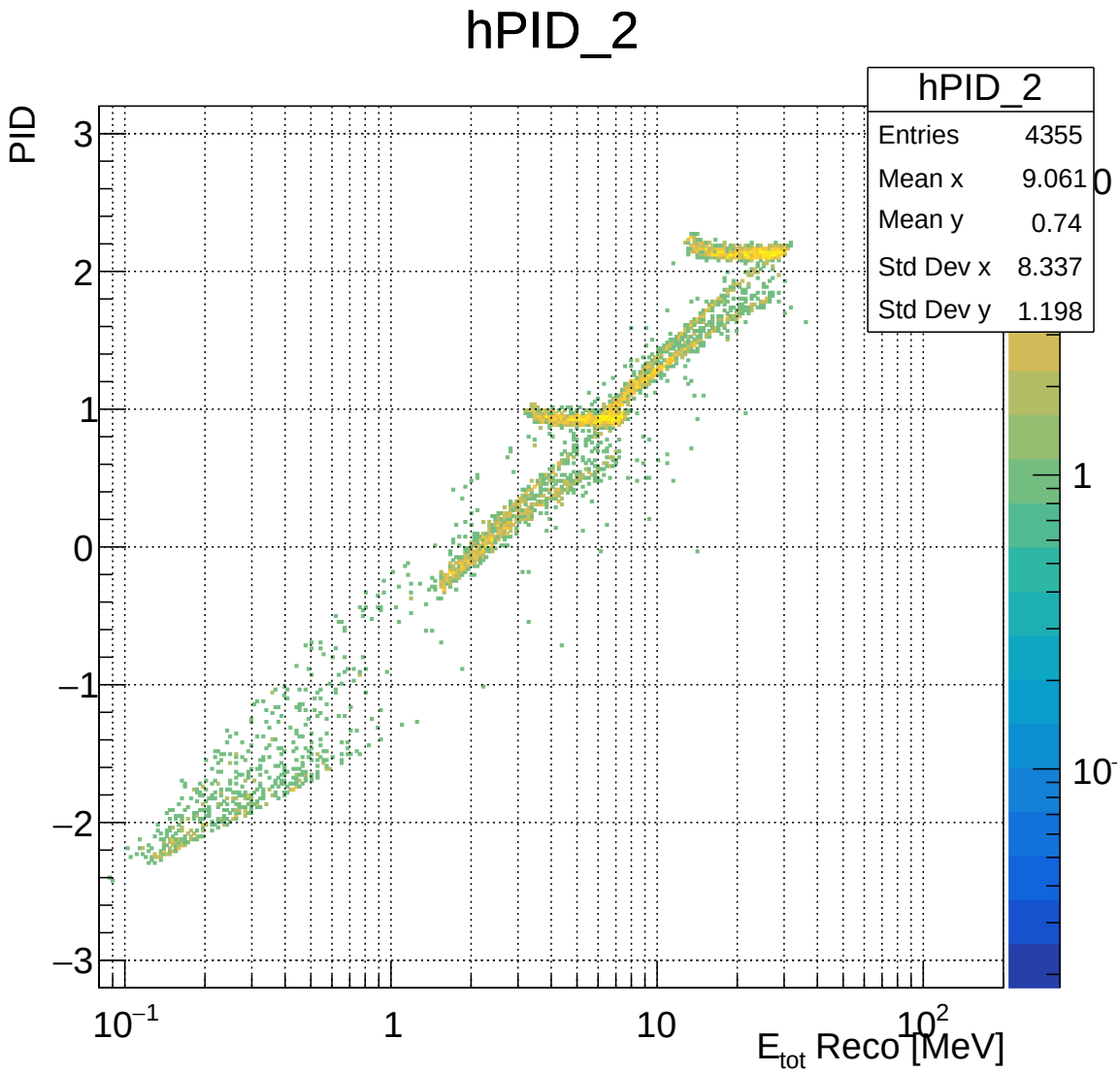


Figure: PID, No Gaussian Smearing, Total Energy is the Energy reconstructed, No Calorimeter.

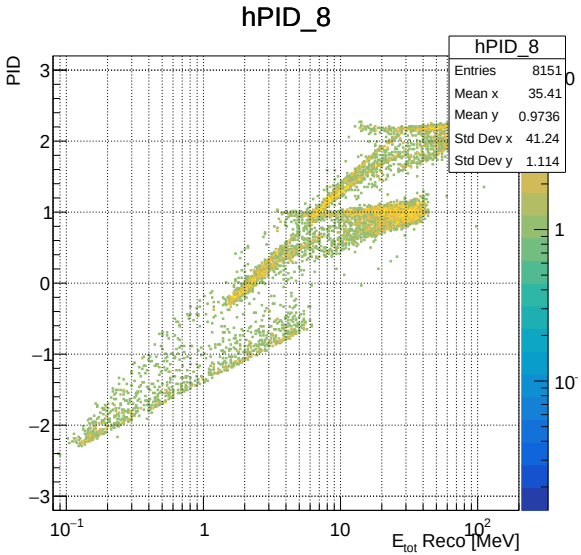


Figure: PID. Convined events but Measured energy is not equal to the MC energy.

PID - Non Confinement Violation Factor - OK

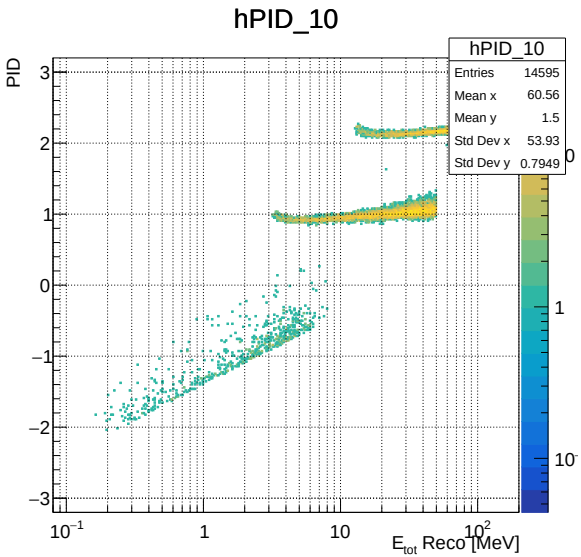


Figure: PID. Convined events and Measured energy is equal to the MC energy.

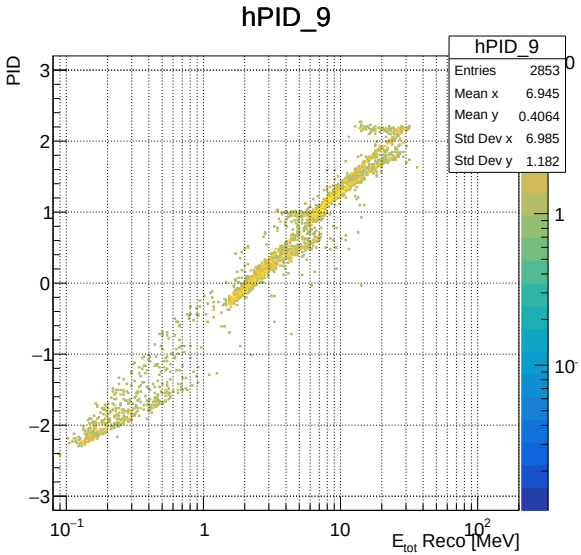
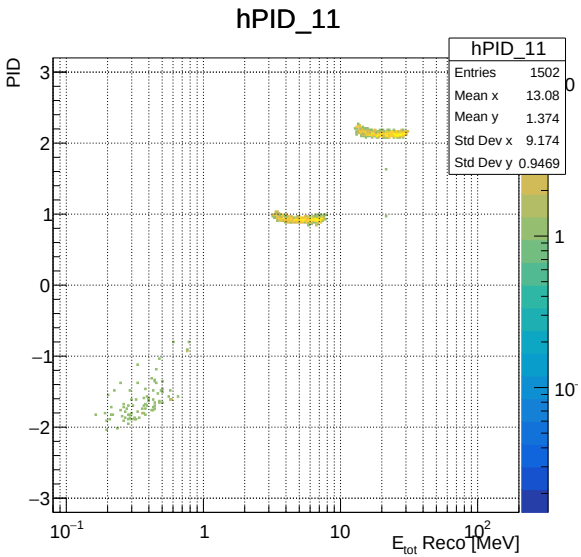


Figure: PID. Convined events but Measured energy is not equal to the MC energy. No Calorimeter.

PID - Non Confinement Violation Factor - OK - No Calorimeter



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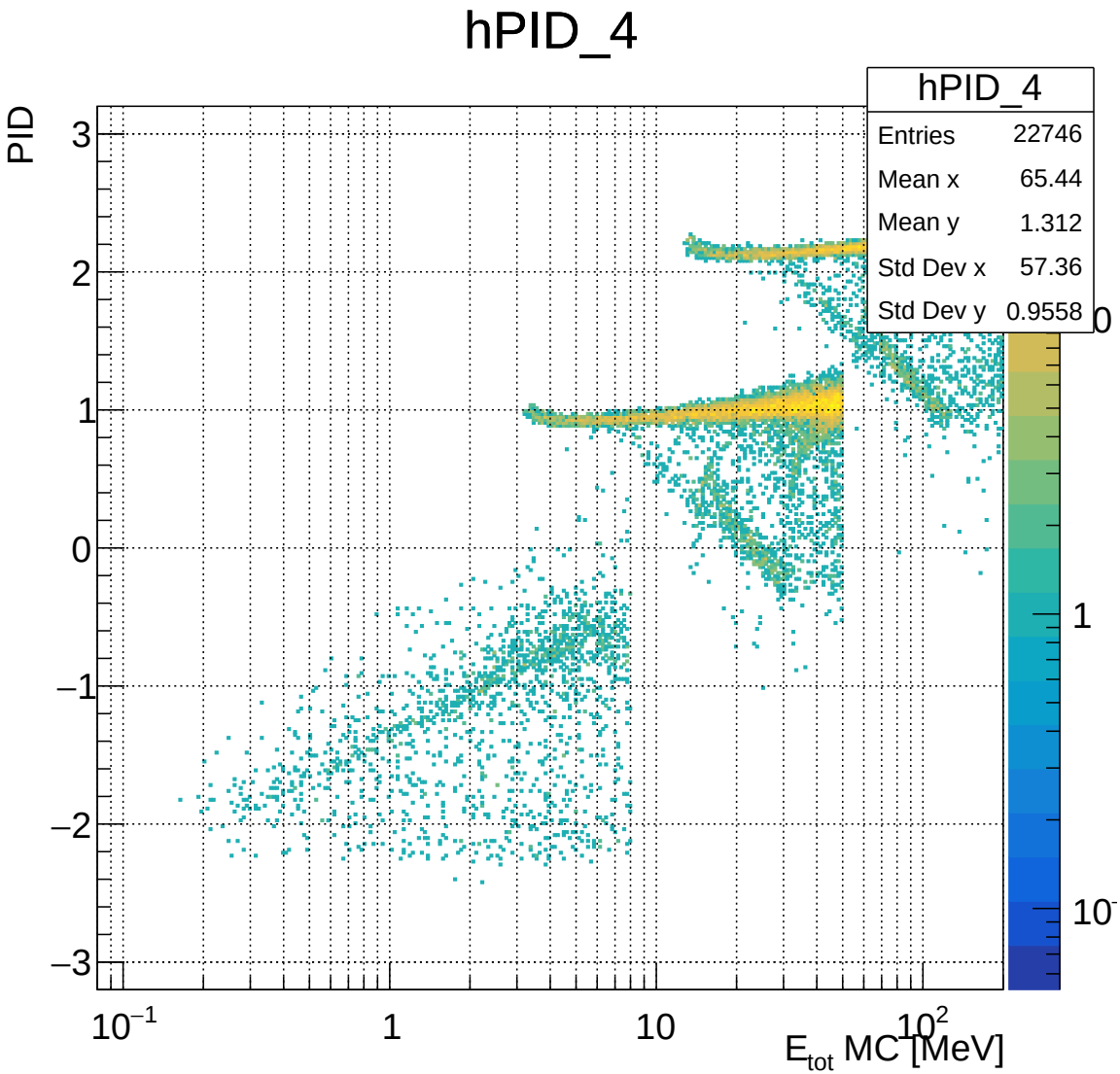


Figure: PID, No Gaussian Smearing, Total Energy is the MC Energy.

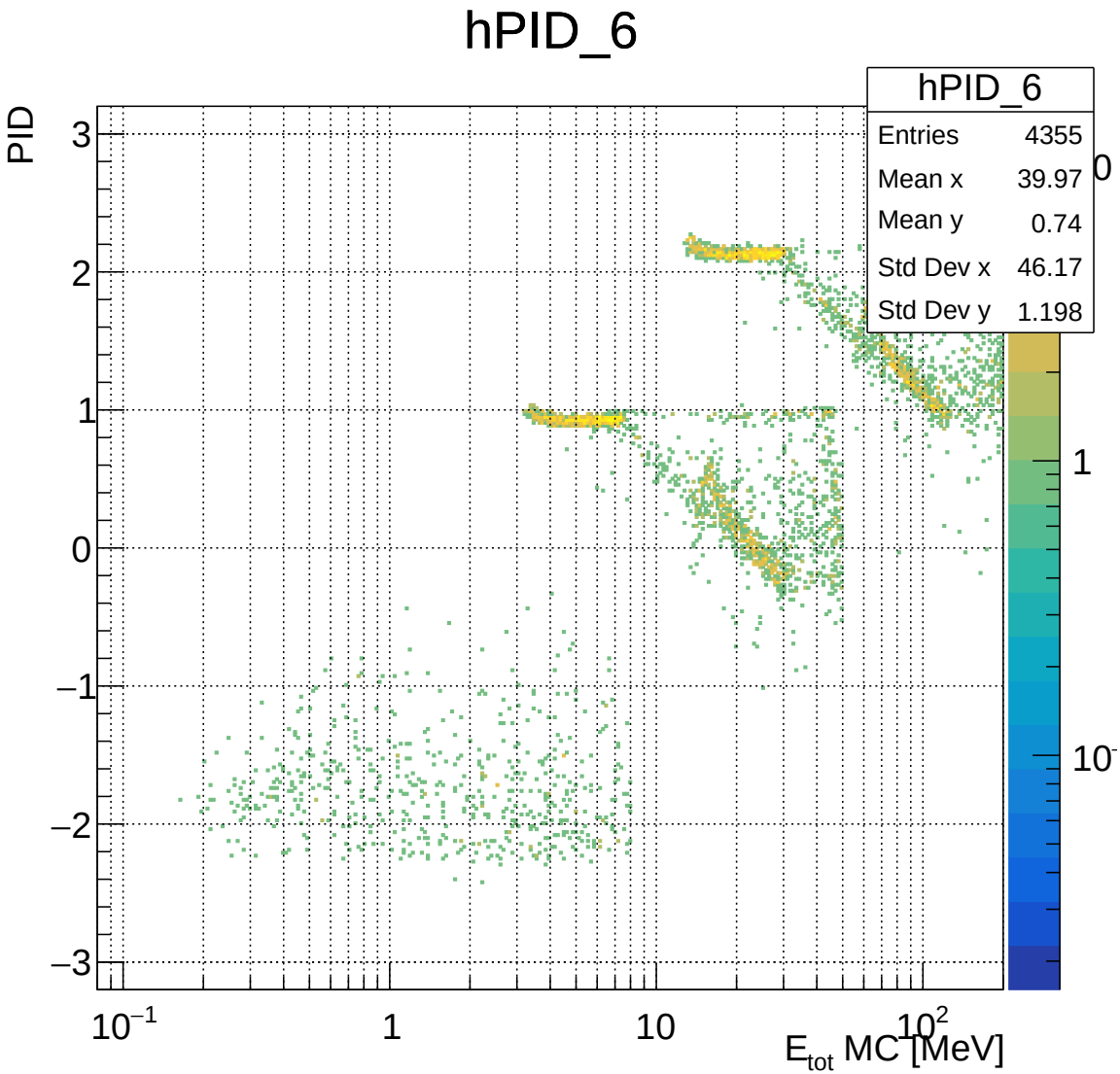
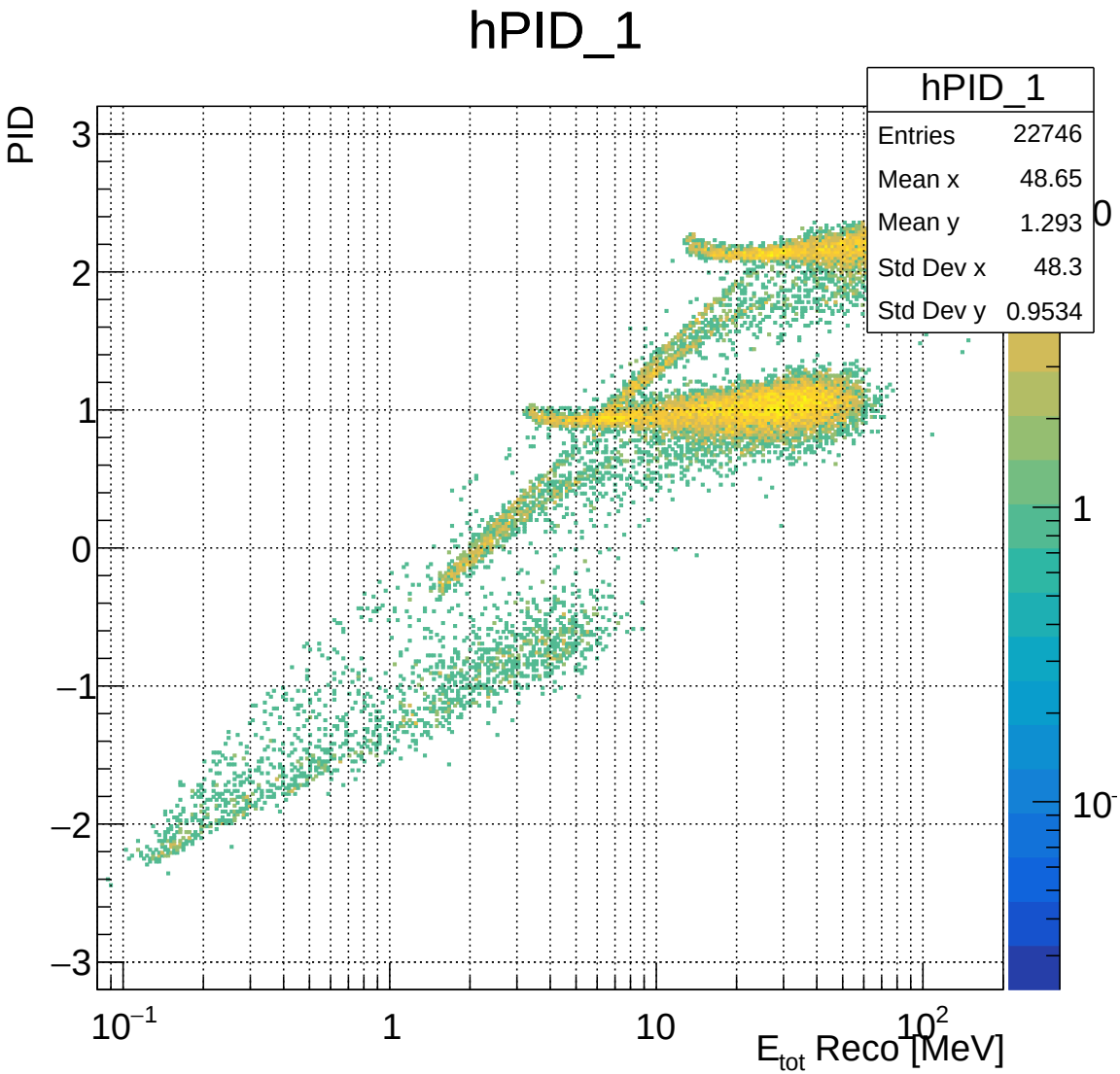


Figure: PID, No Gaussian Smearing, Total Energy is the MC Energy, No Calorimeter.



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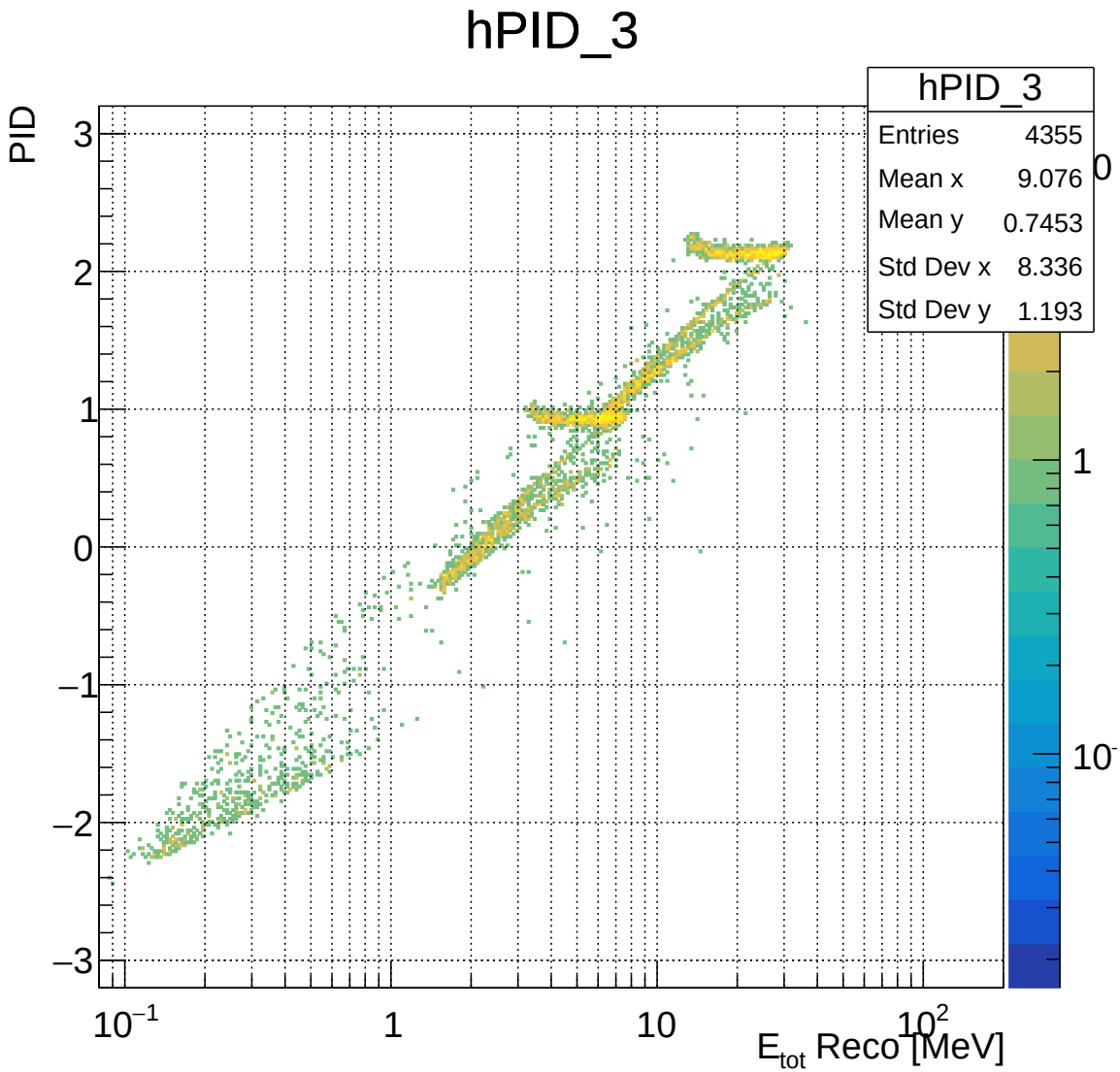

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PID MC Energy Gaussian Smearing

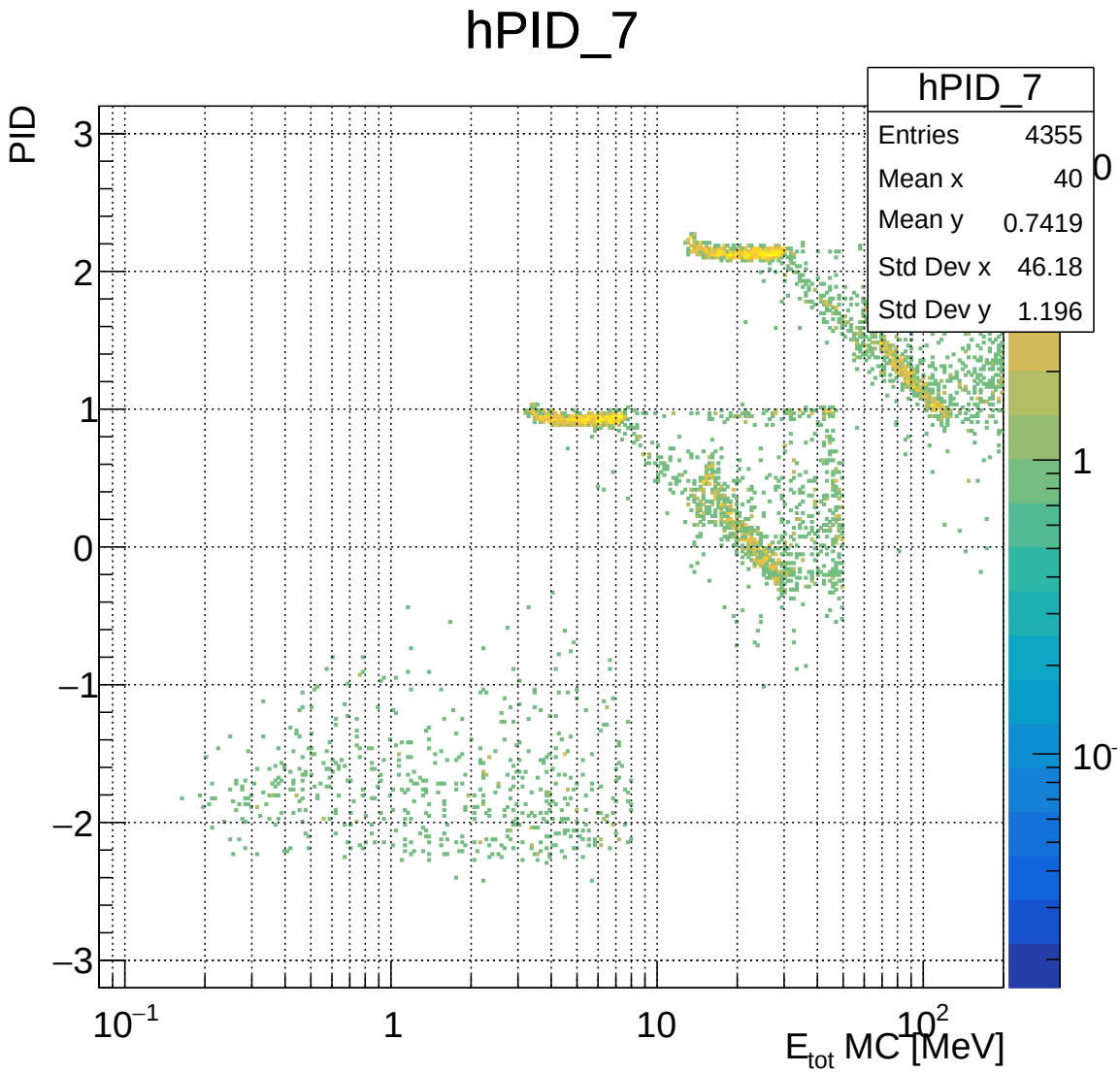
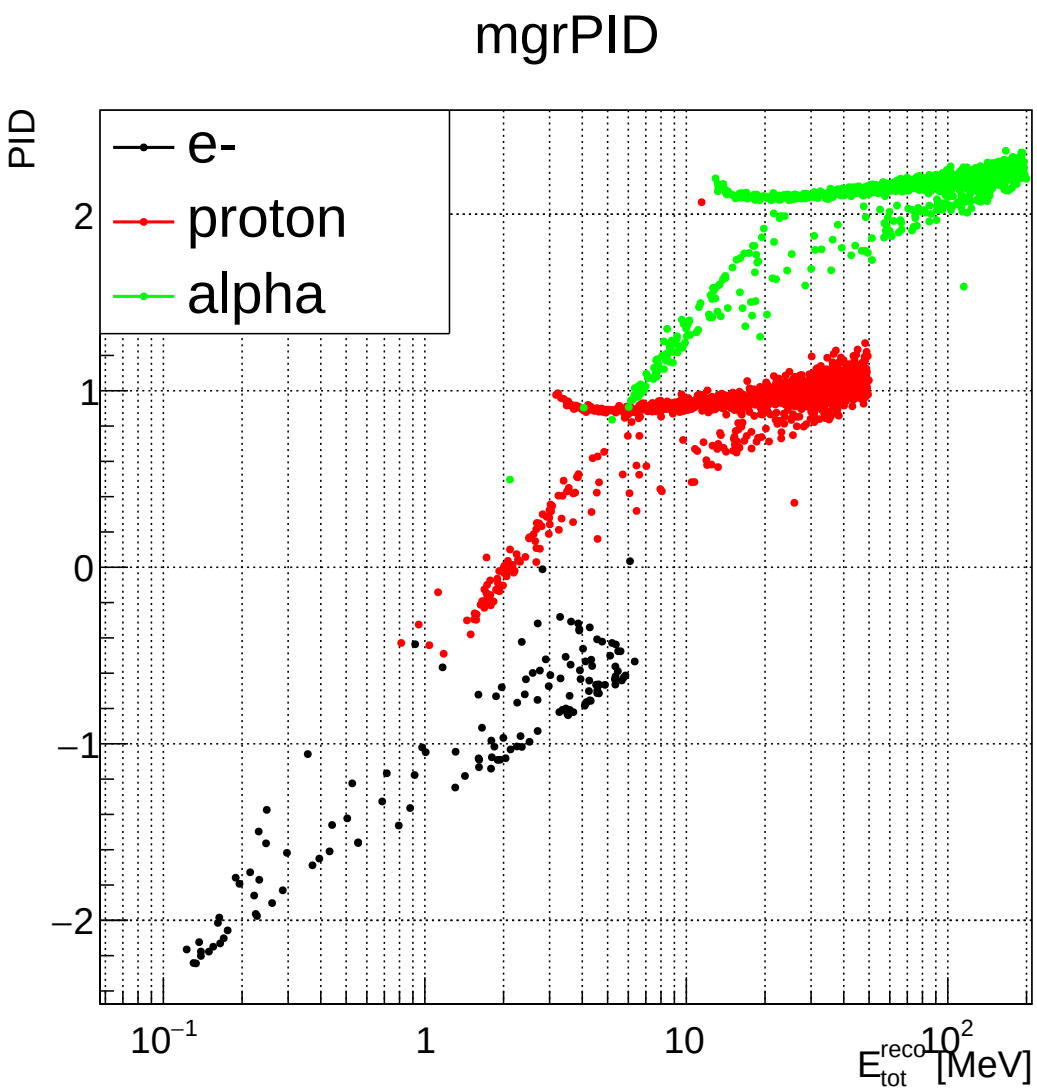


Figure: PID, Gaussian Smearing, Total Energy is the MC Energy, No Calorimeter.



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MC quantities for e-_t0

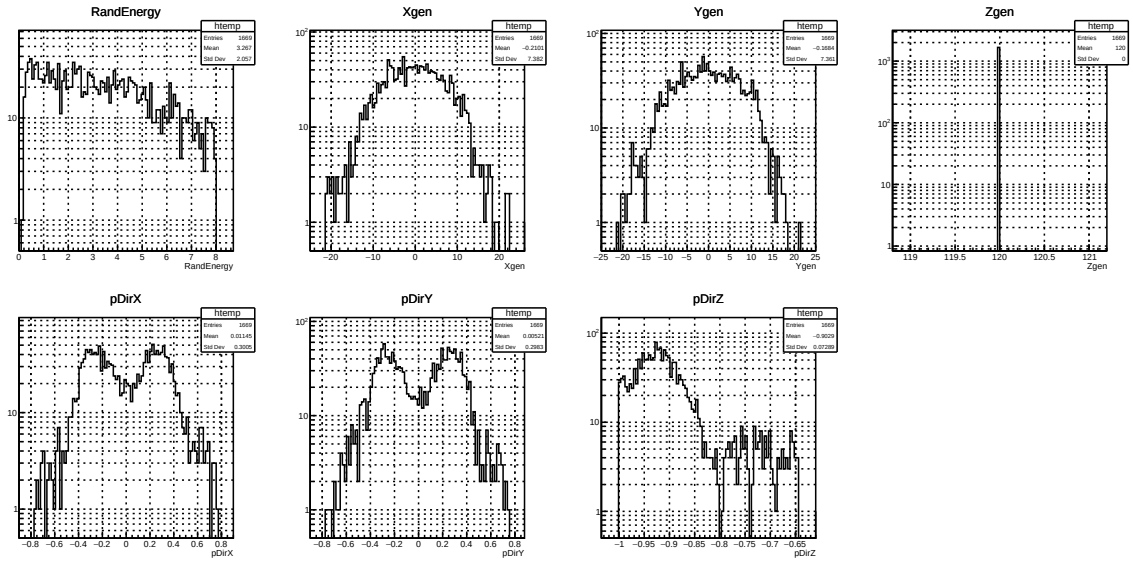
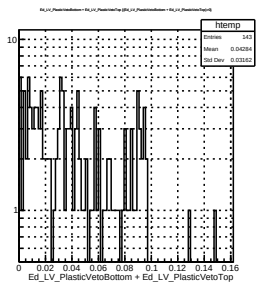
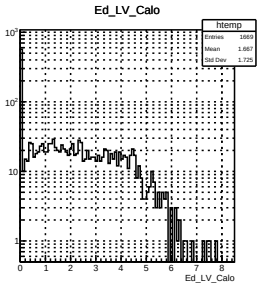
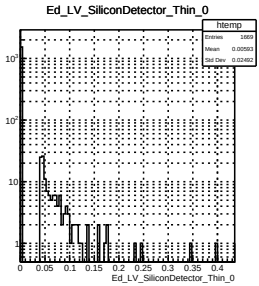


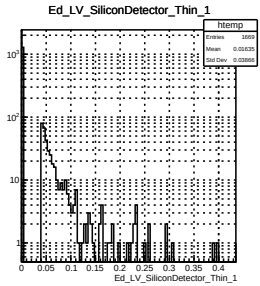
Figure: MC quantities

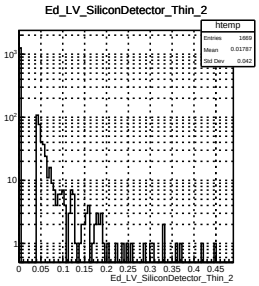
Energies distribution for e-

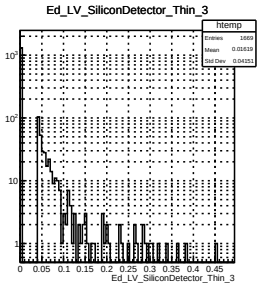


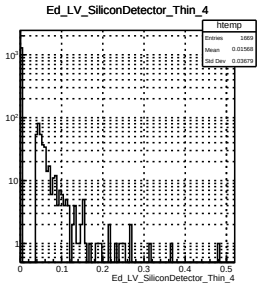


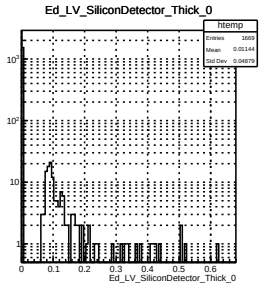


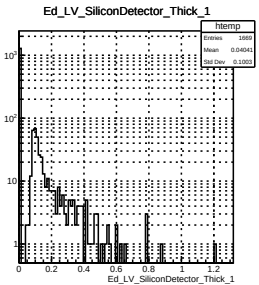


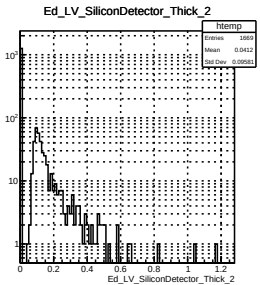


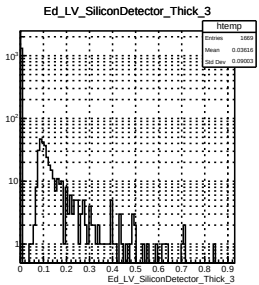












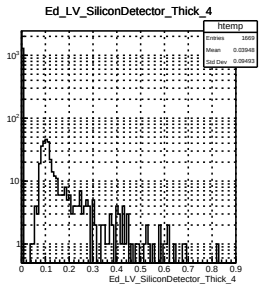


Figure: Detected energies

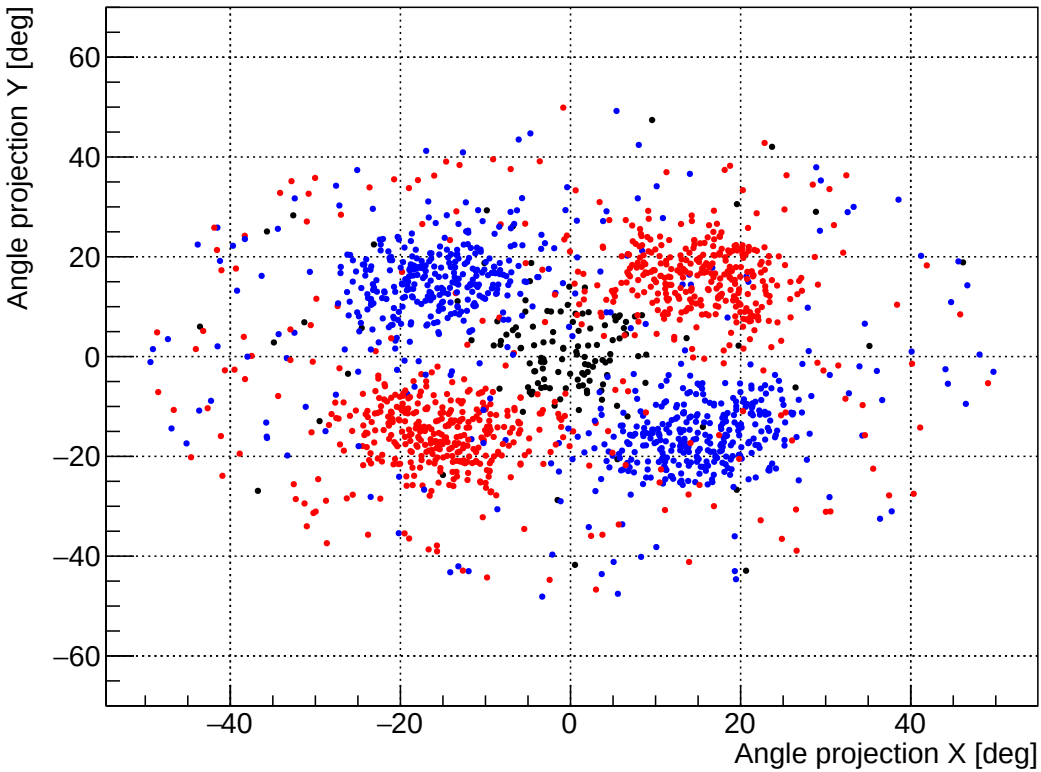
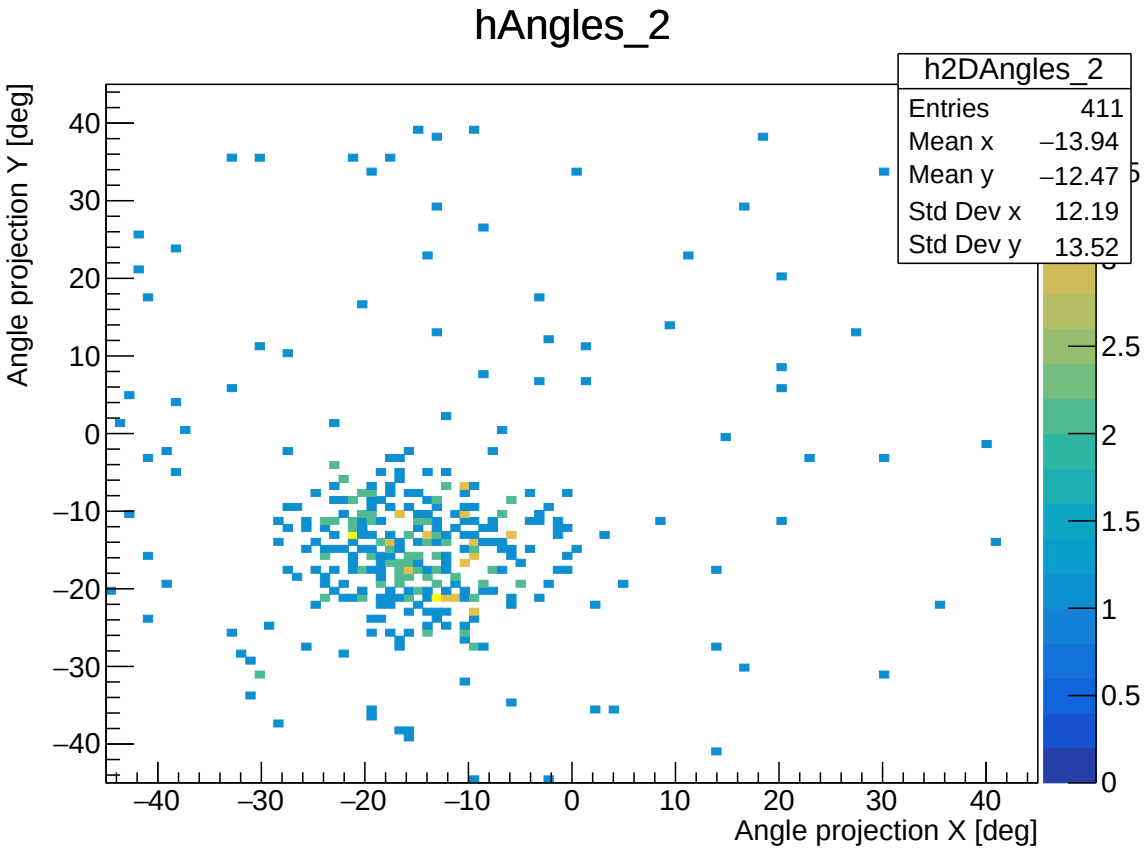


Figure: Angles distribution



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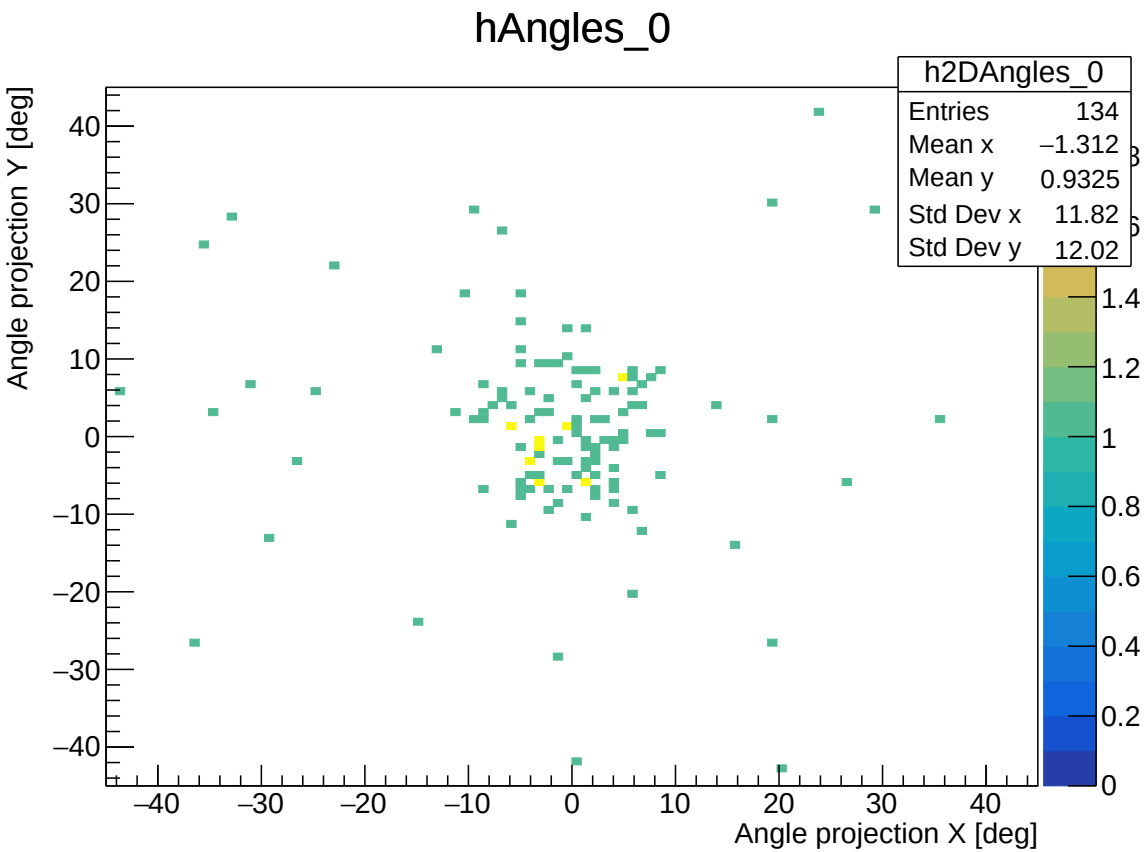

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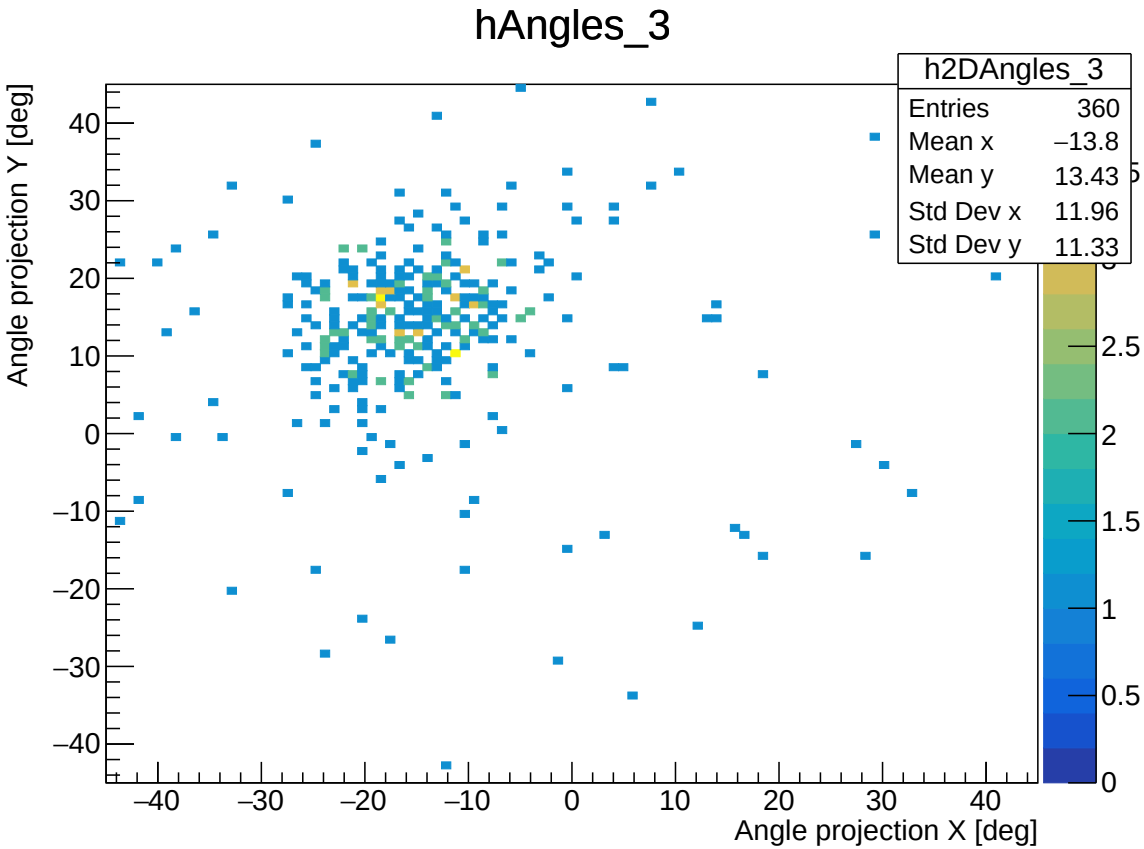

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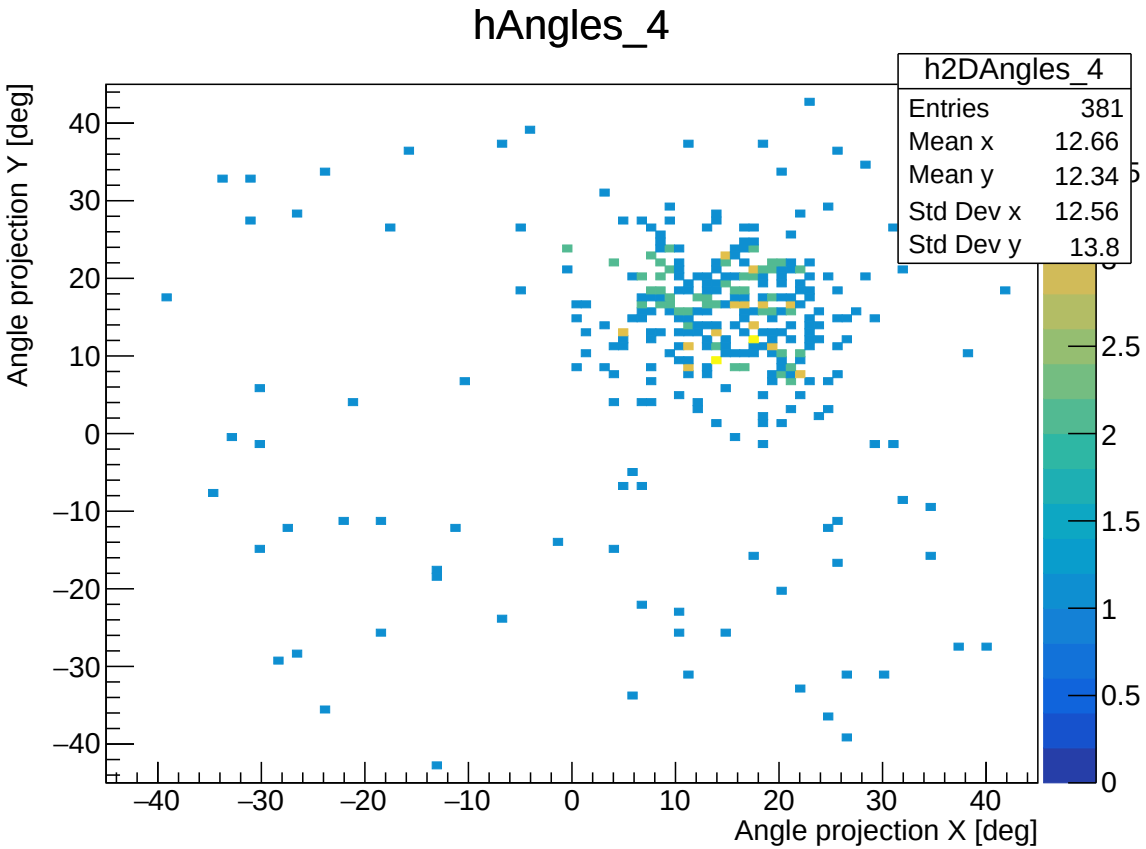

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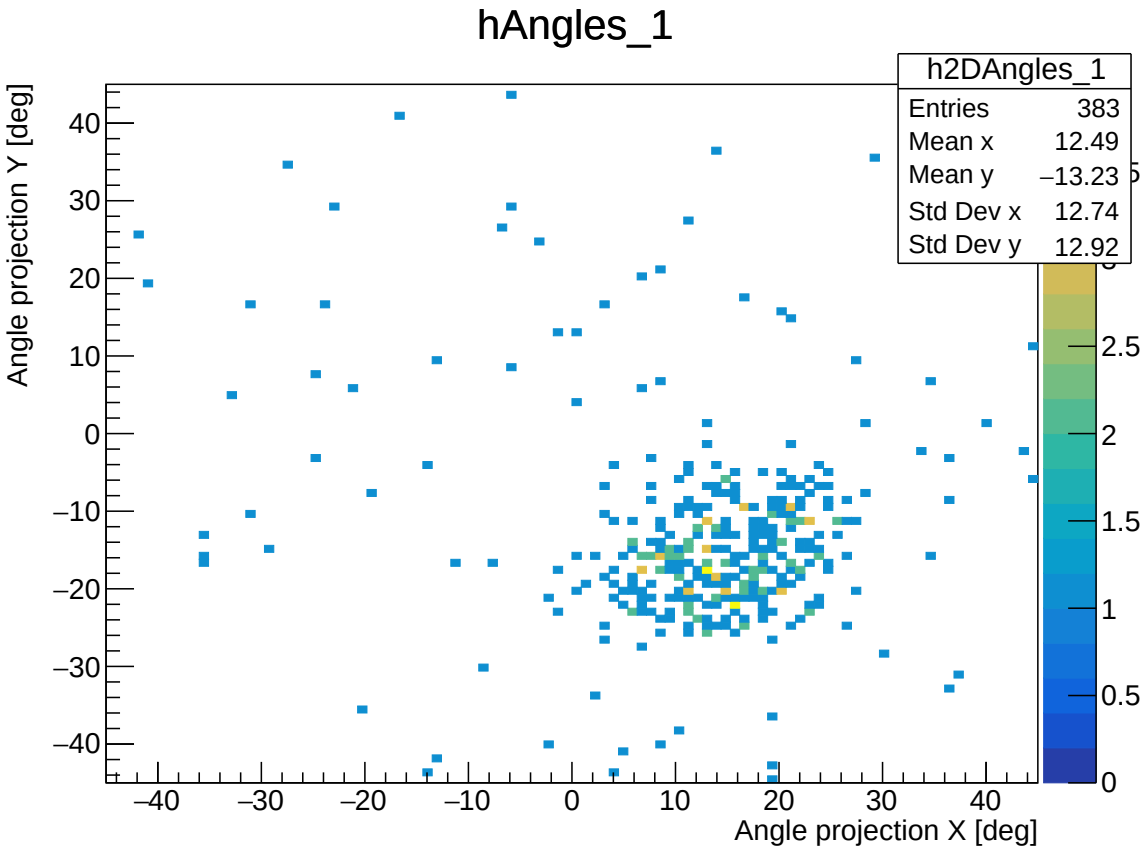

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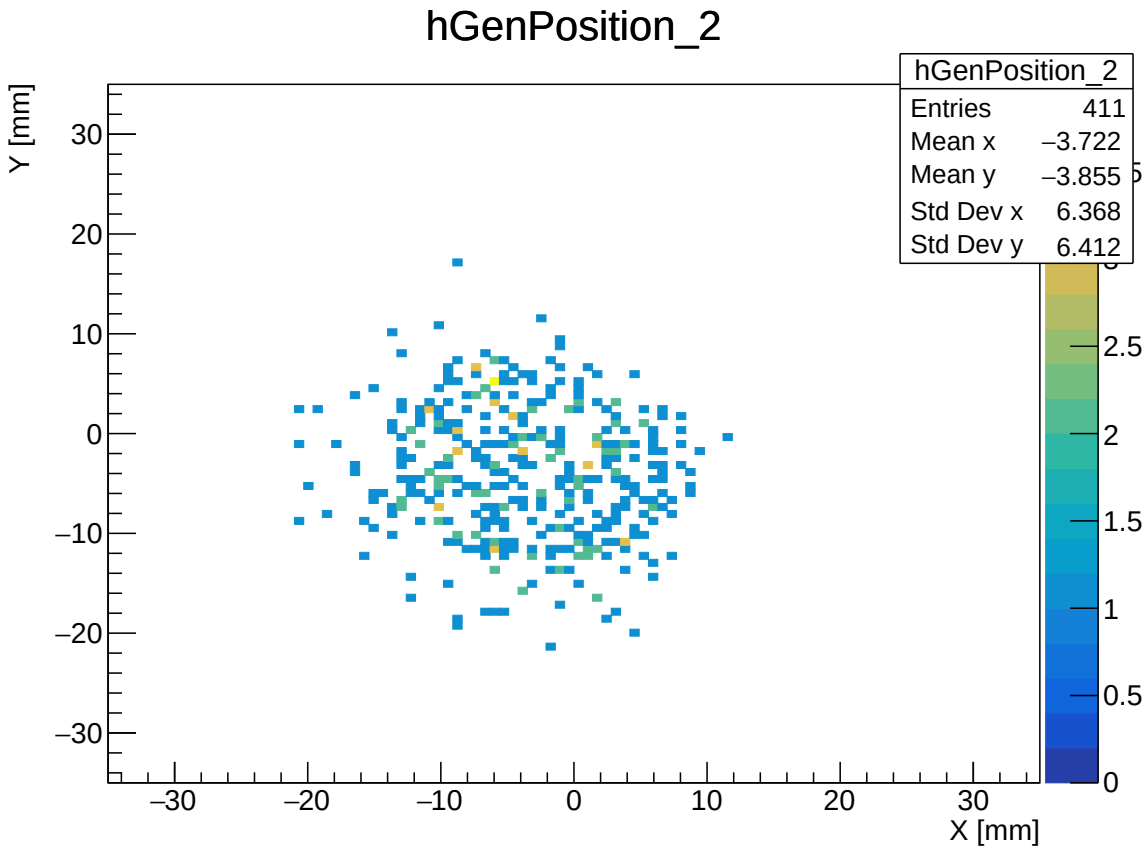
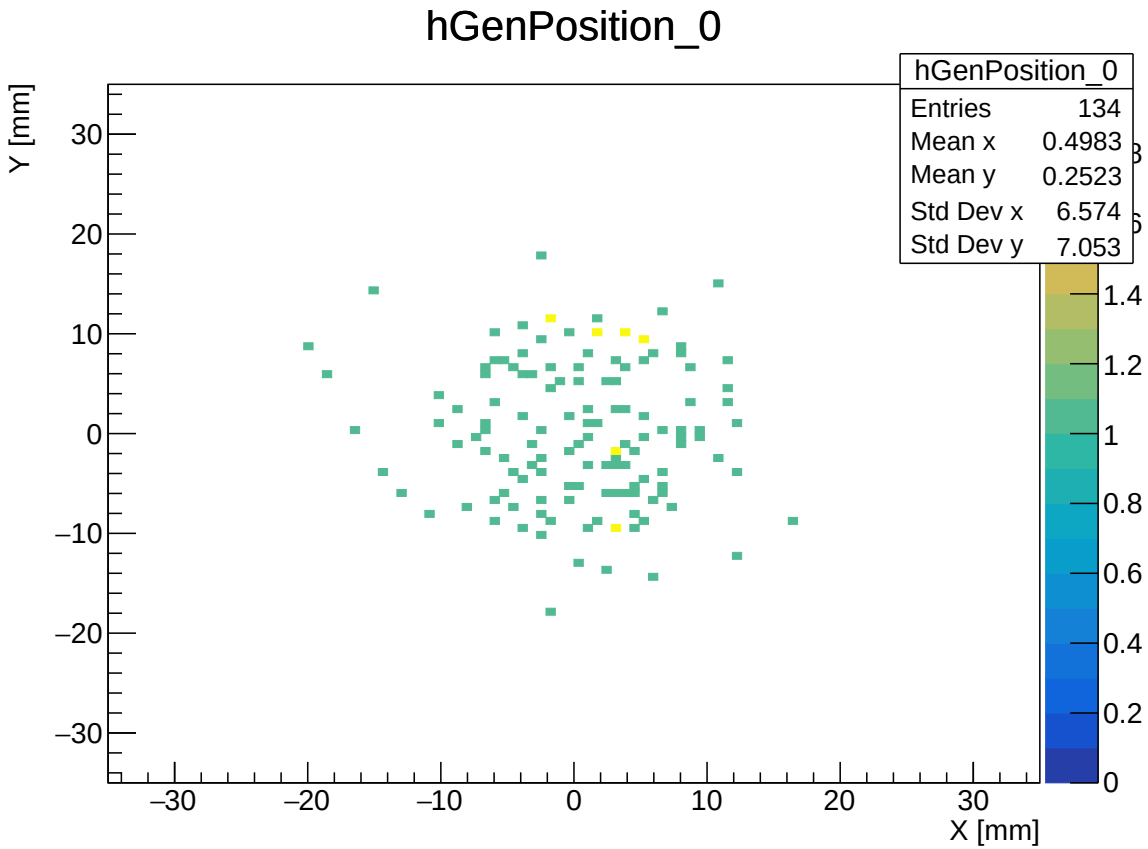


Figure: Generation Position



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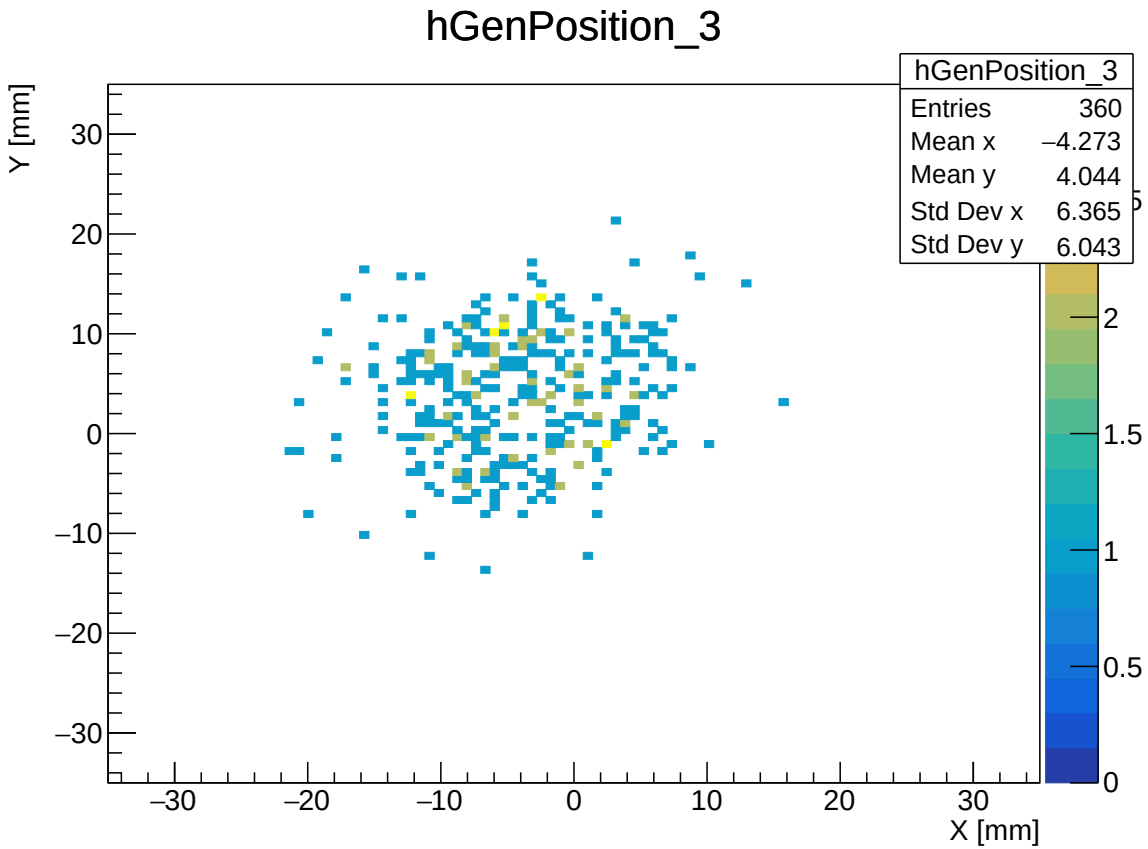

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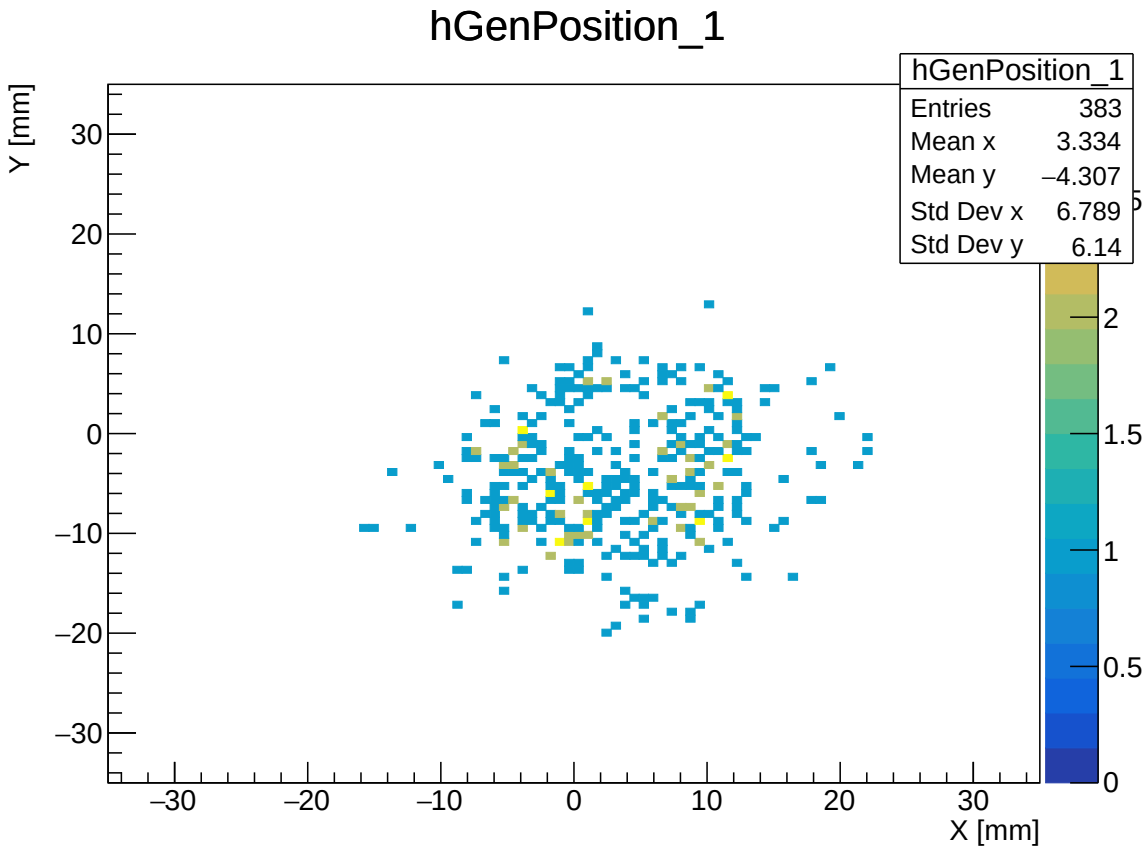

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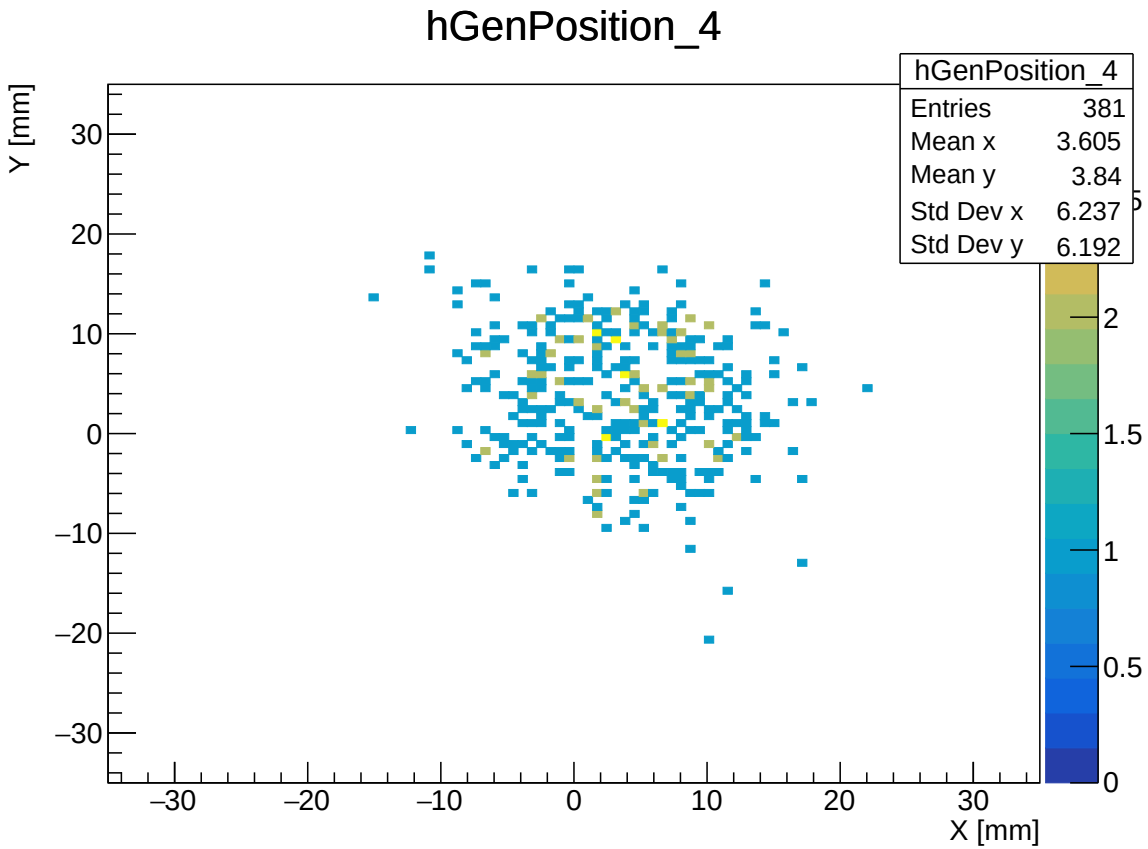

Figure: Generation Position

MC quantities for proton_t0

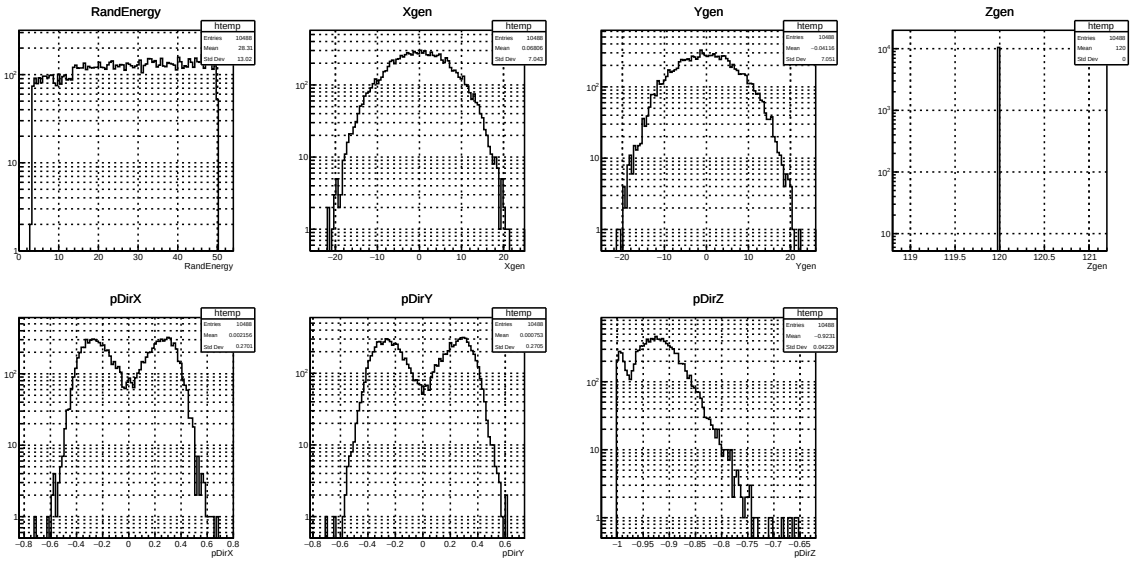

Figure: MC quantities

Energies distribution for proton

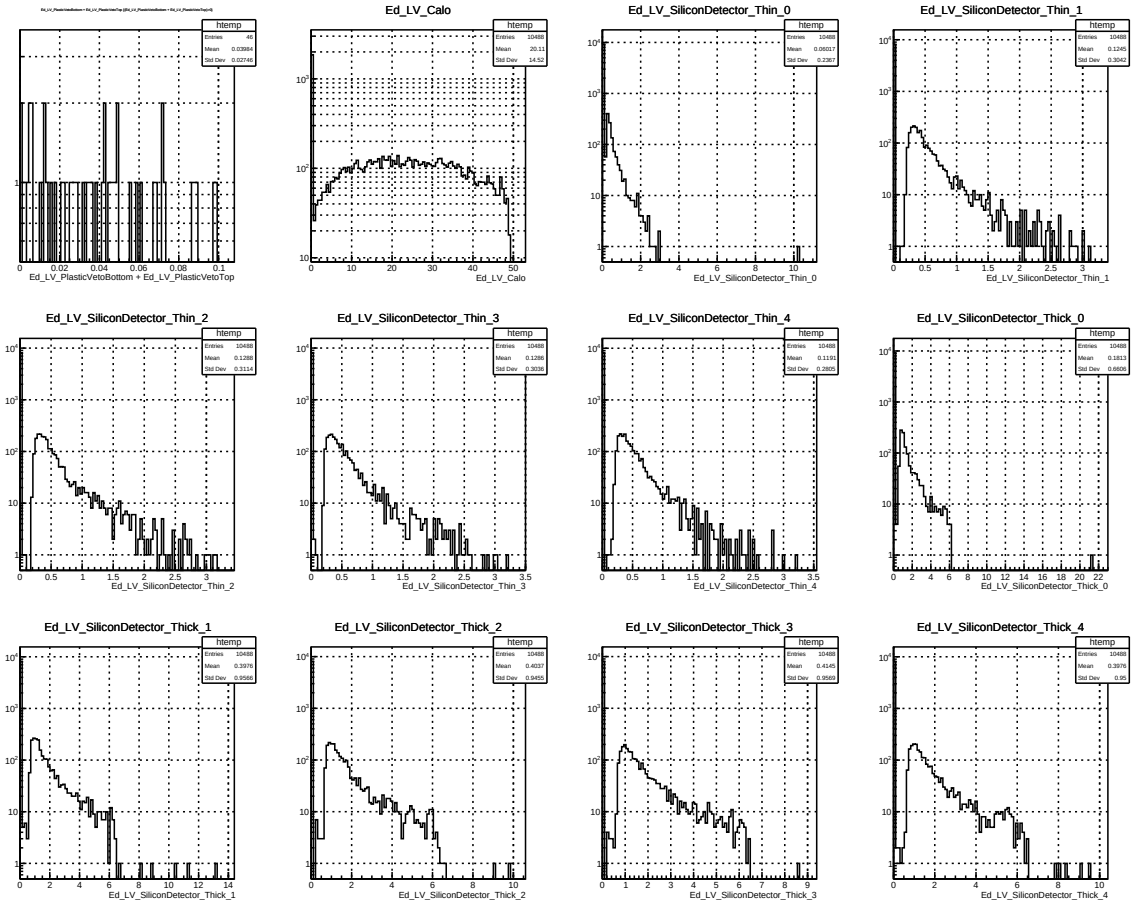

Figure: Detected energies

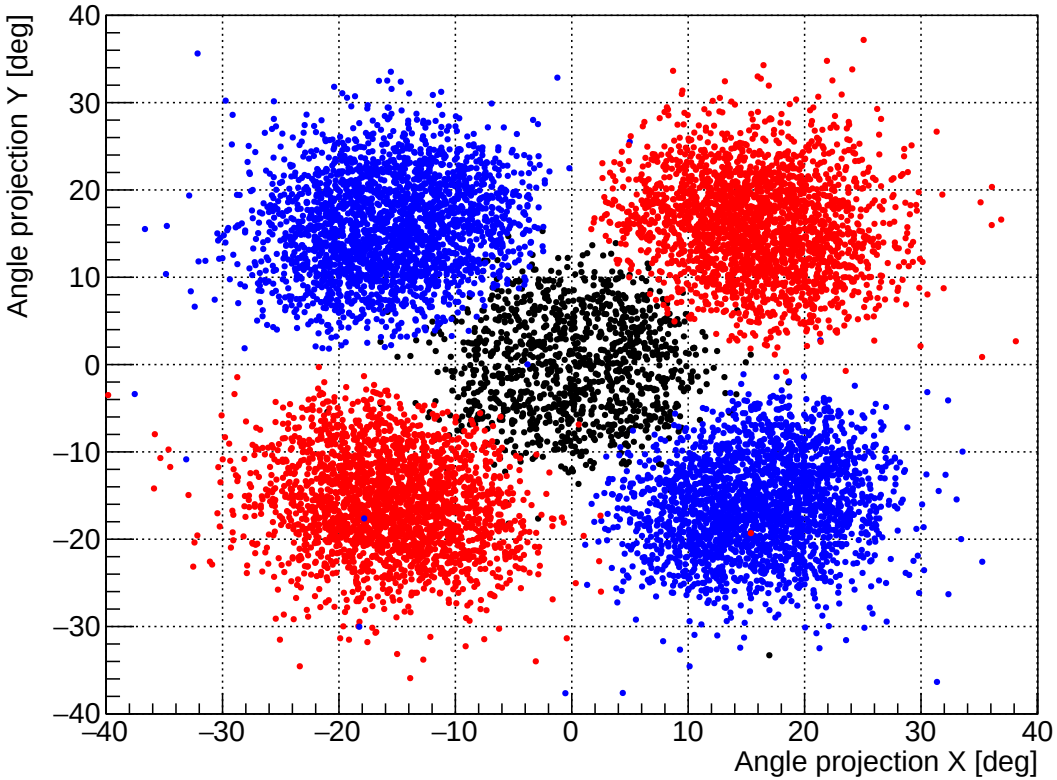

Figure: Angles distribution

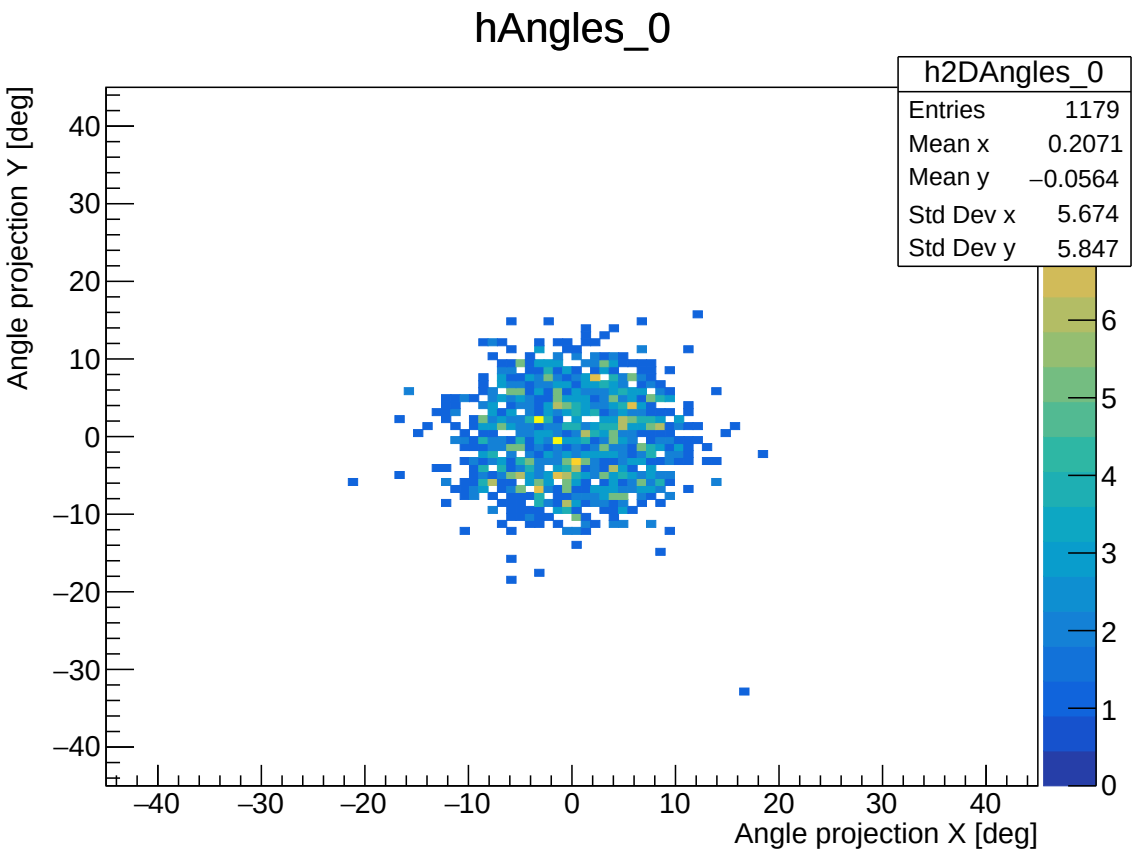

Figure: Angles distribution

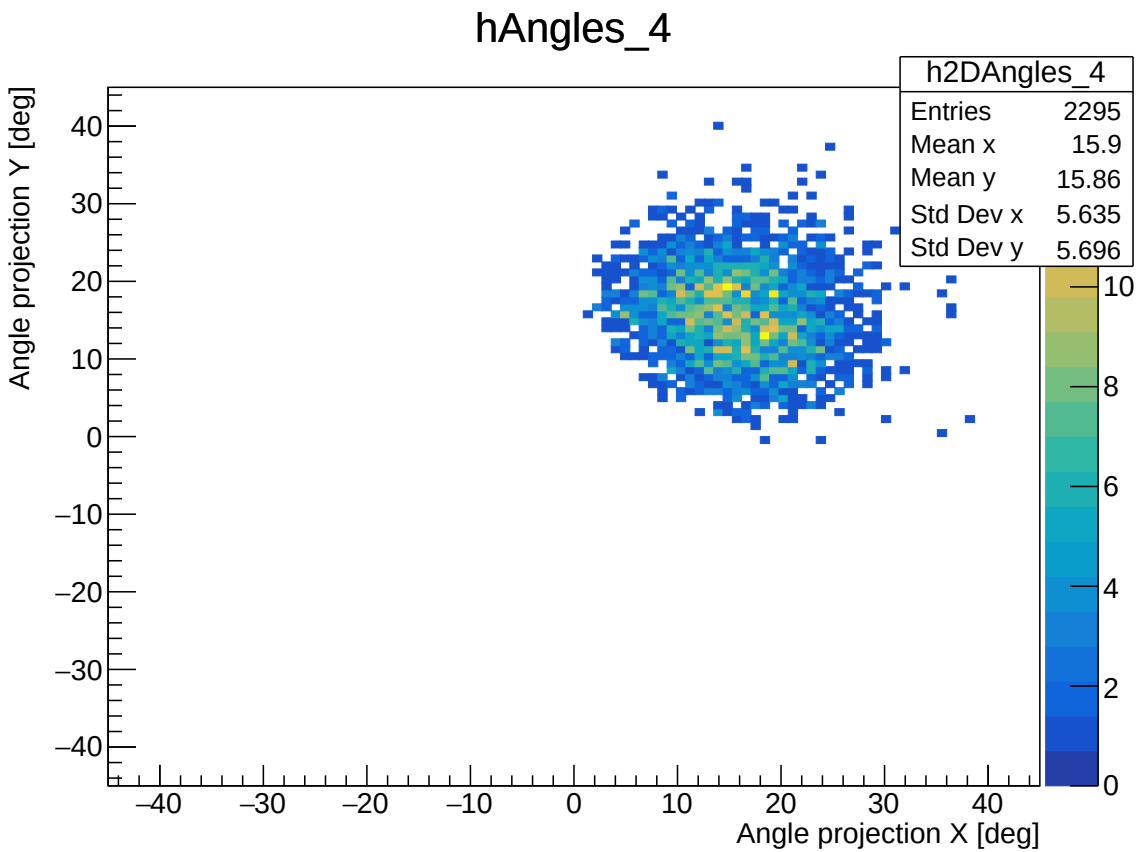

Figure: Angles distribution

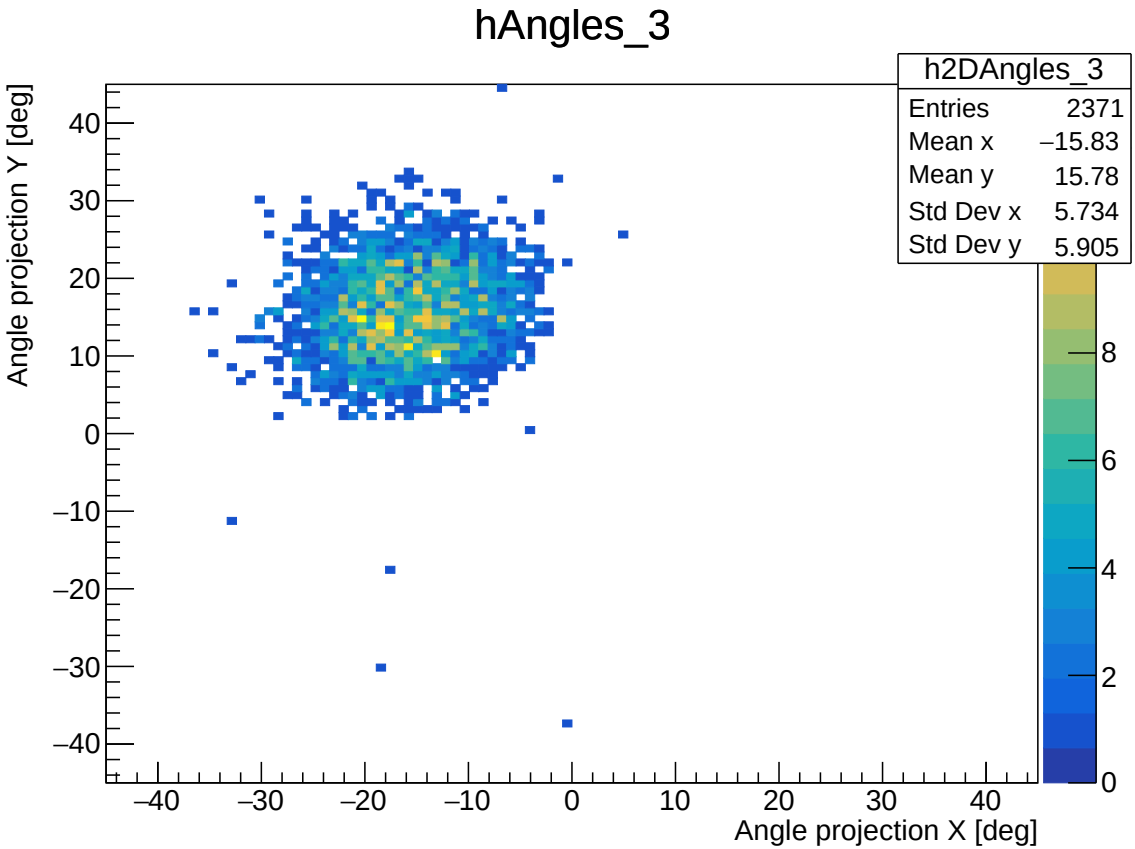

Figure: Angles distribution

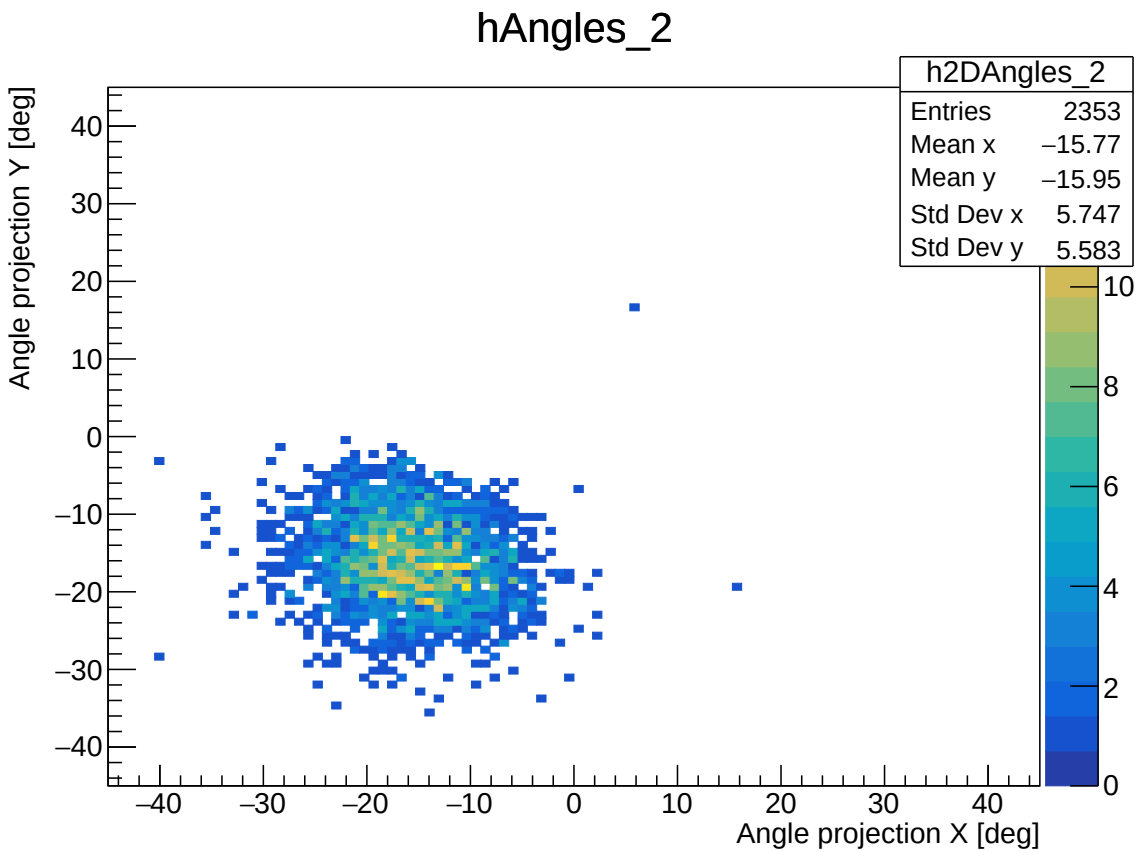

Figure: Angles distribution

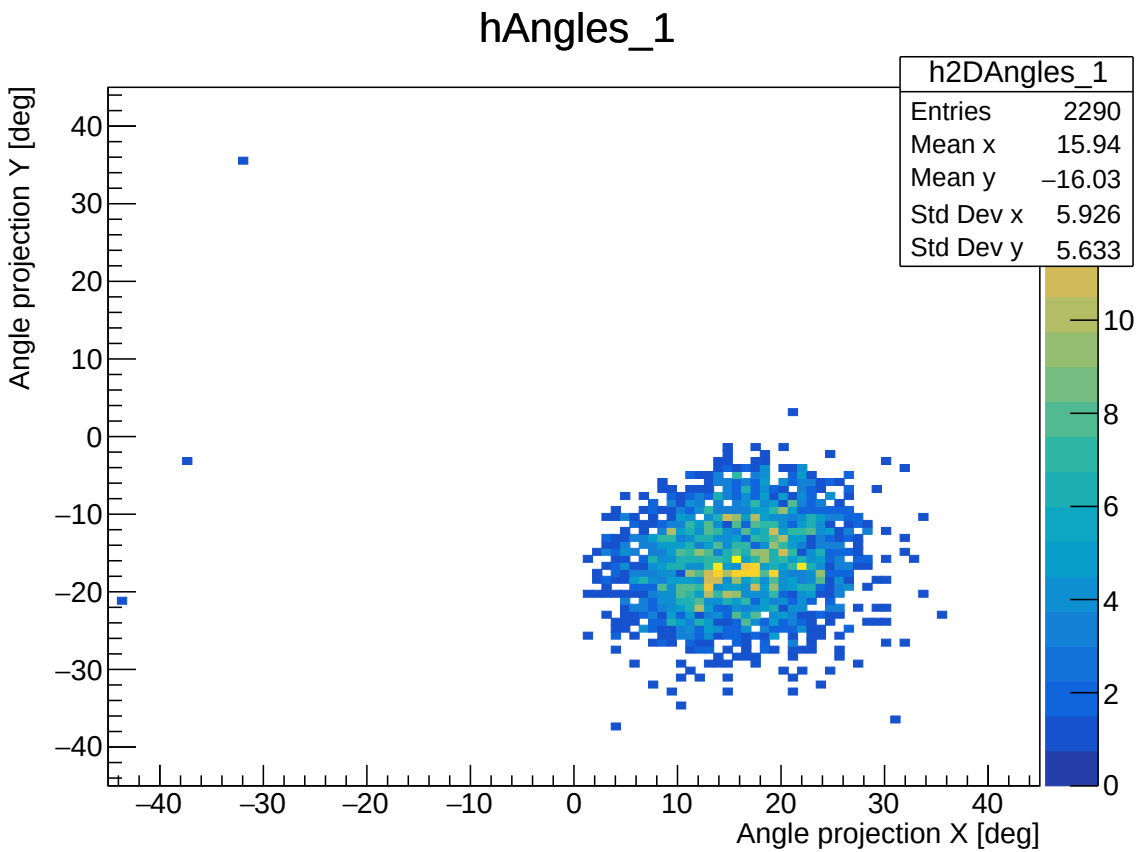

Figure: Angles distribution

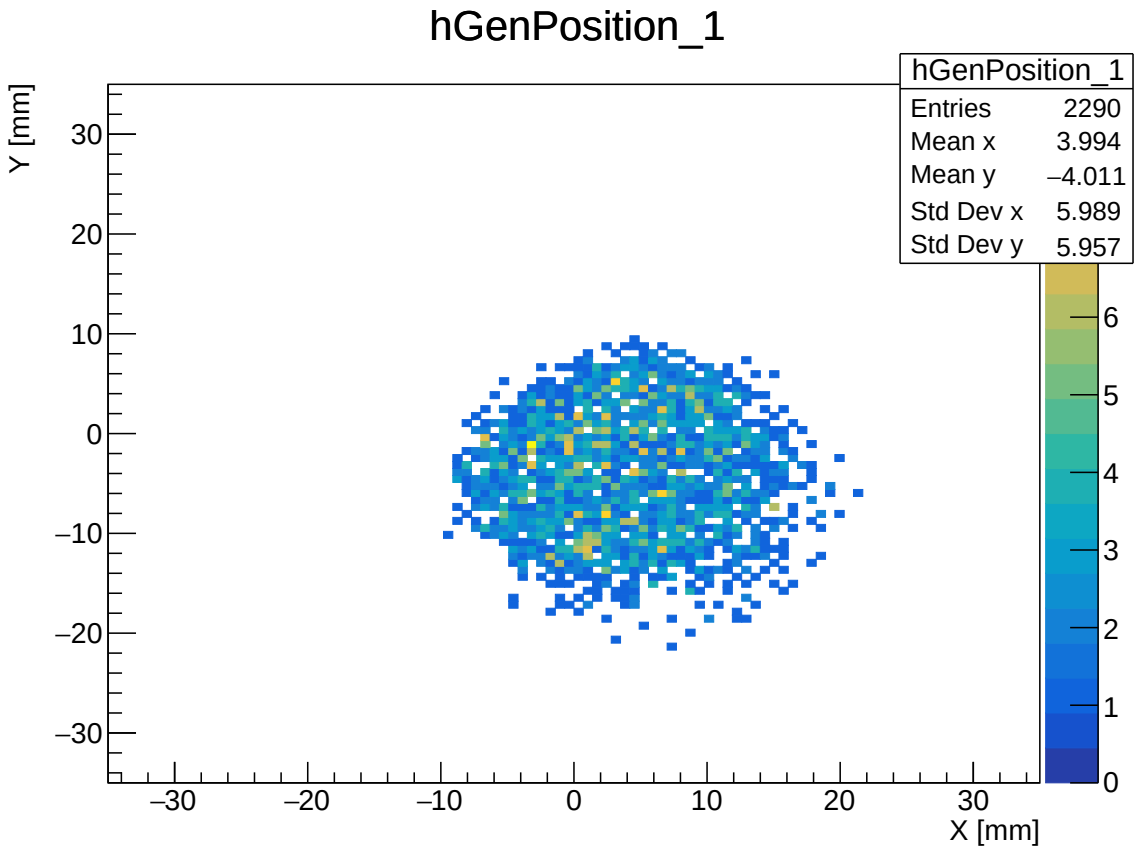

Figure: Generation Position

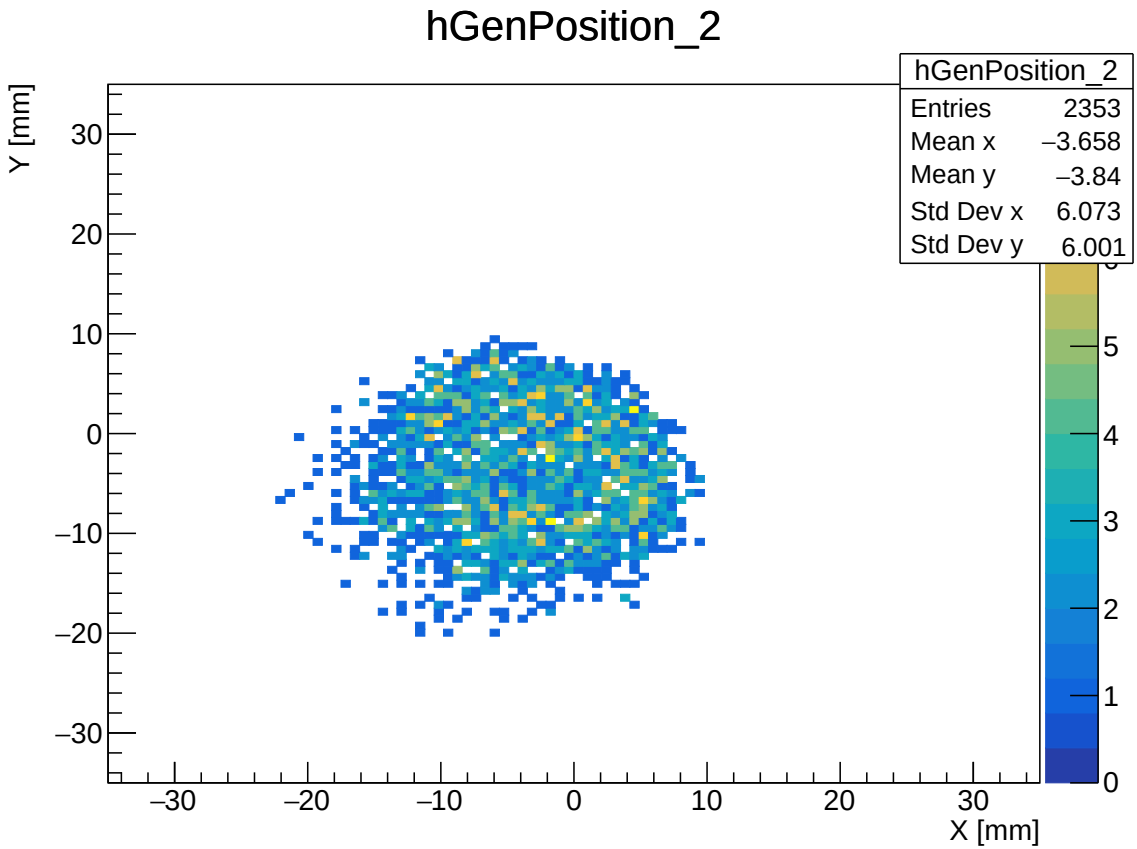

Figure: Generation Position

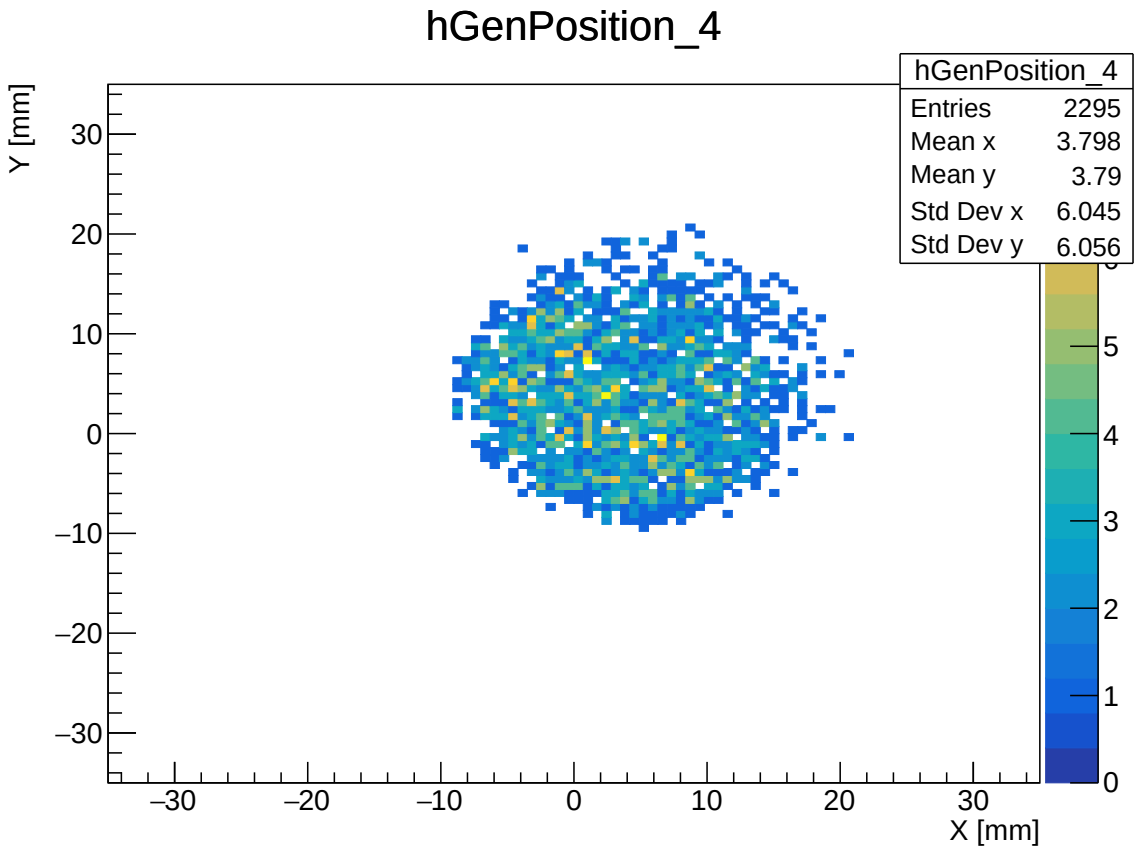

Figure: Generation Position

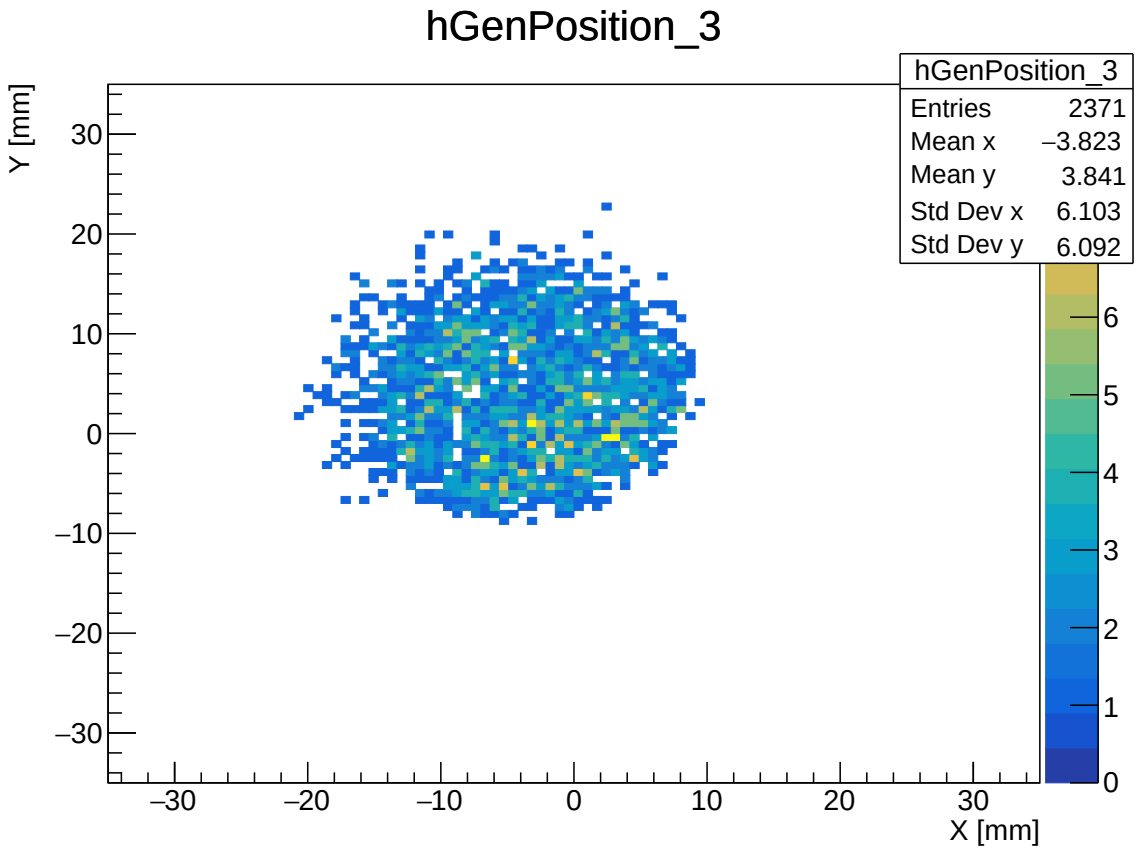

Figure: Generation Position

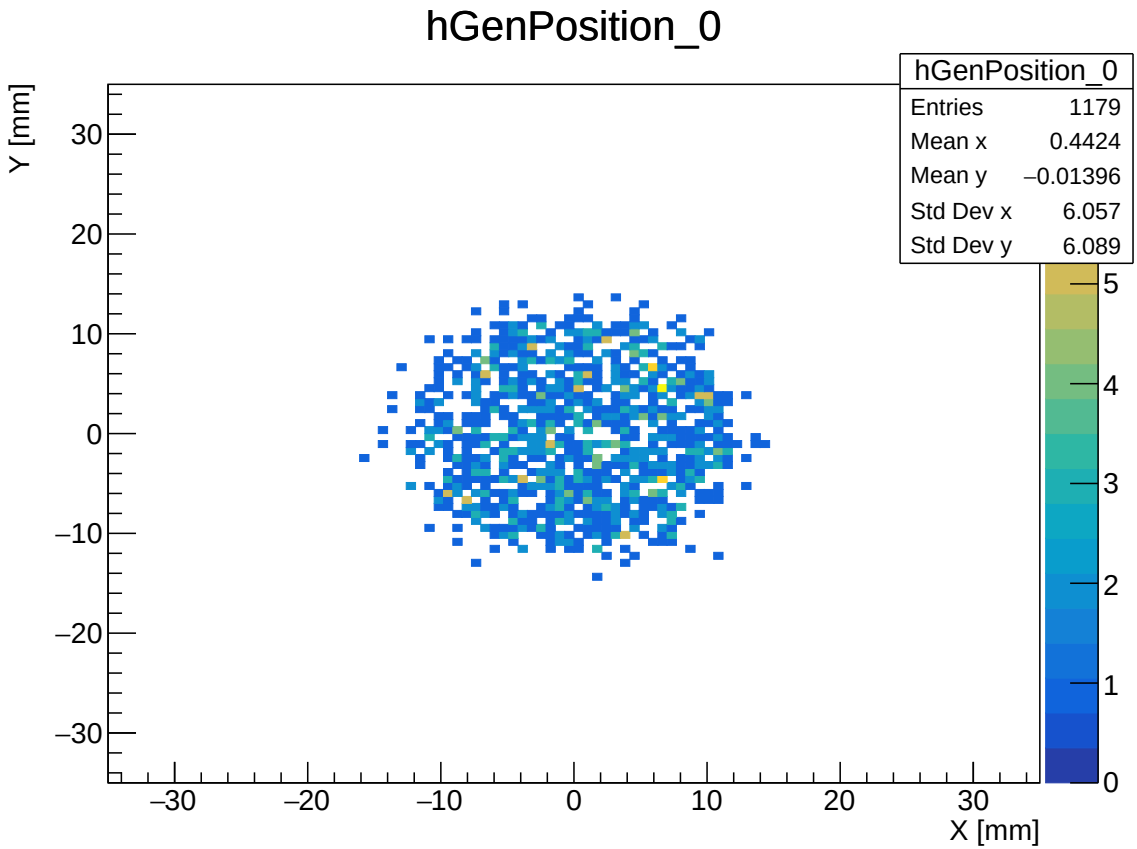

Figure: Generation Position

Geometric factors for proton

Geometric factors for proton

MC quantities for alpha_t0

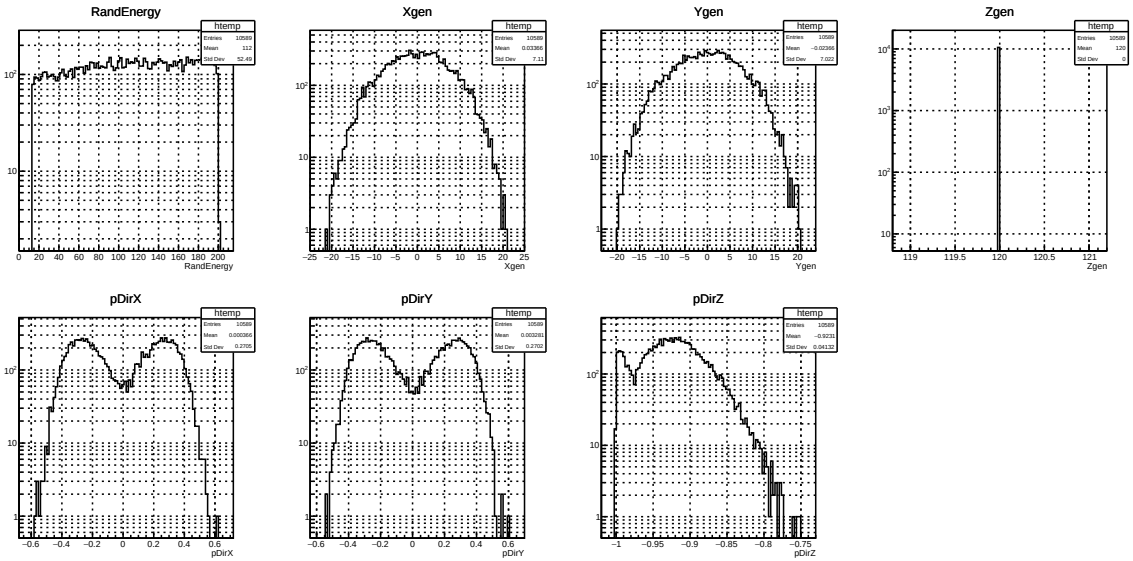

Figure: MC quantities

Energies distribution for alpha

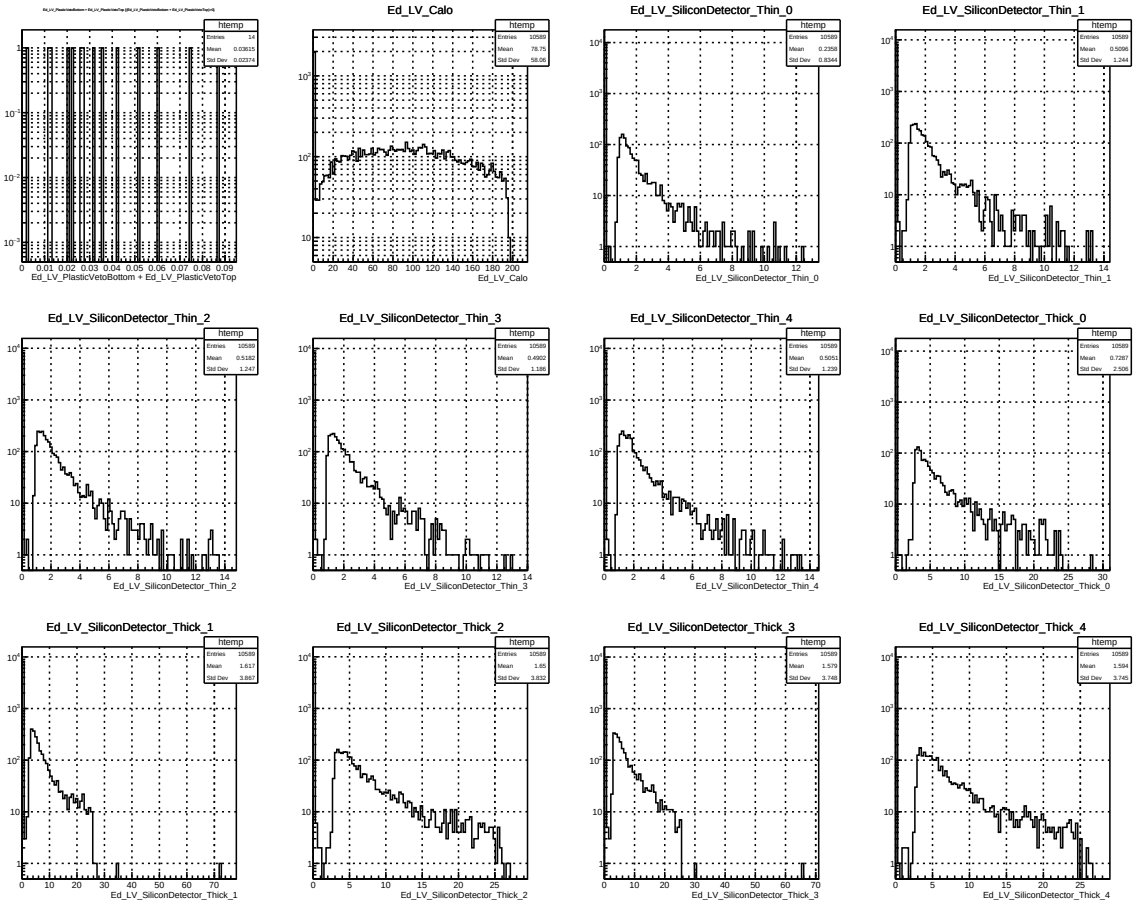

Figure: Detected energies

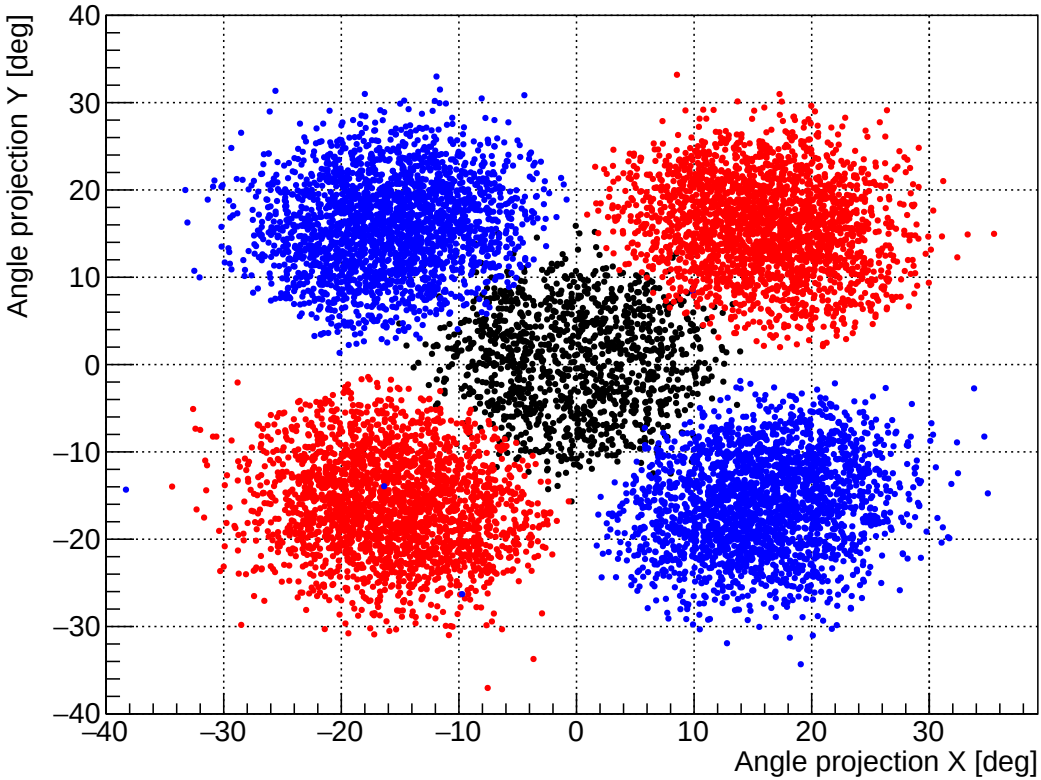

Figure: Angles distribution

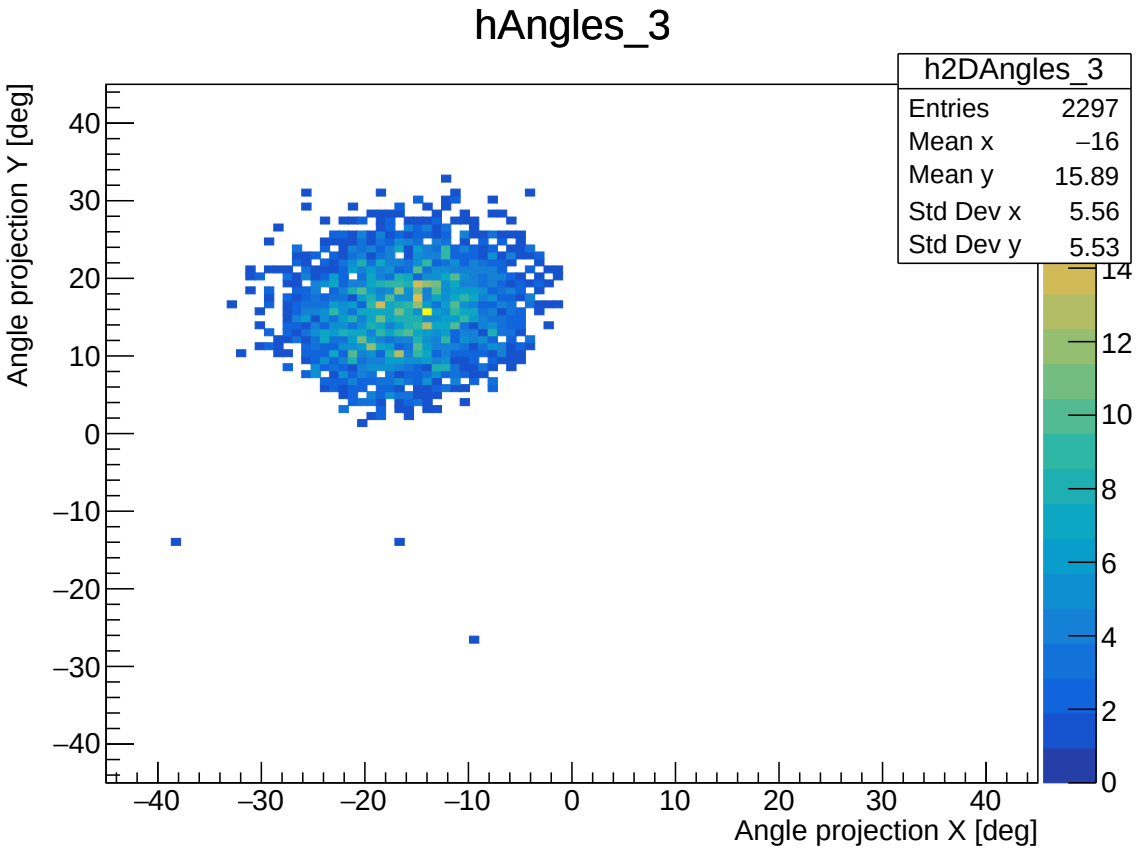

Figure: Angles distribution

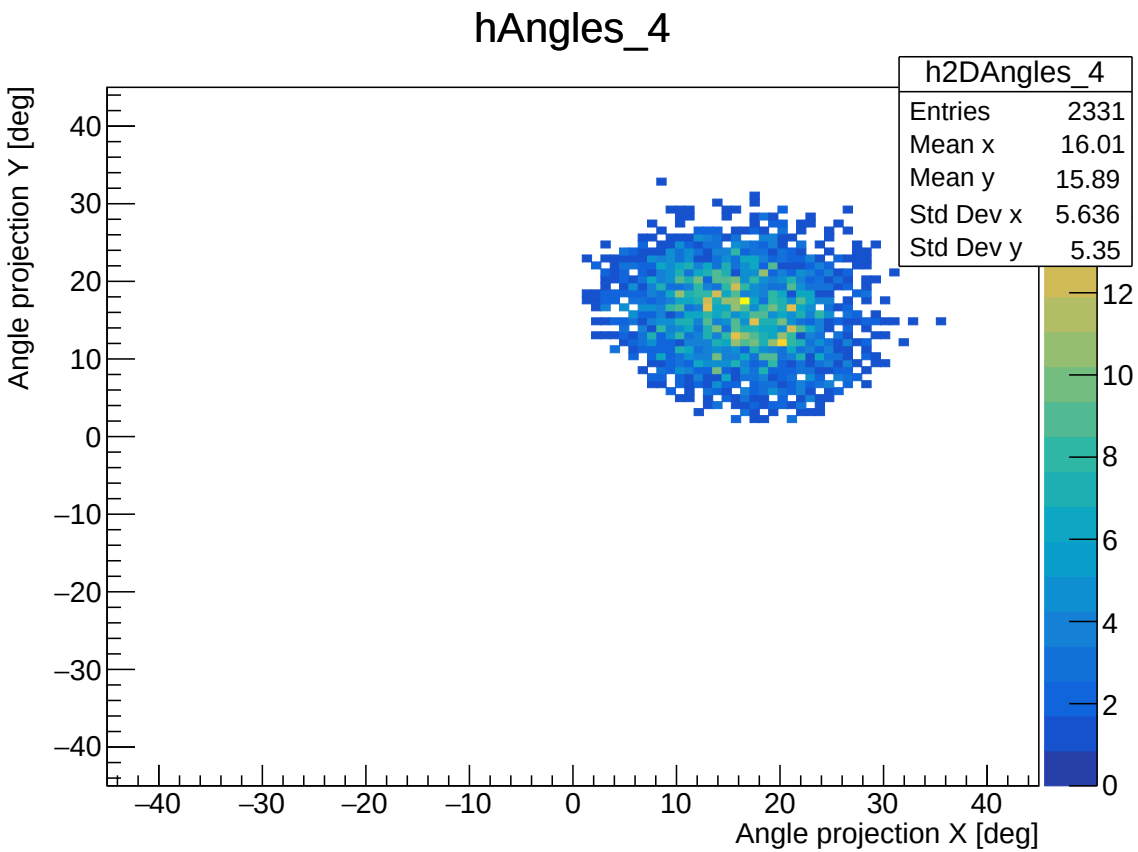

Figure: Angles distribution

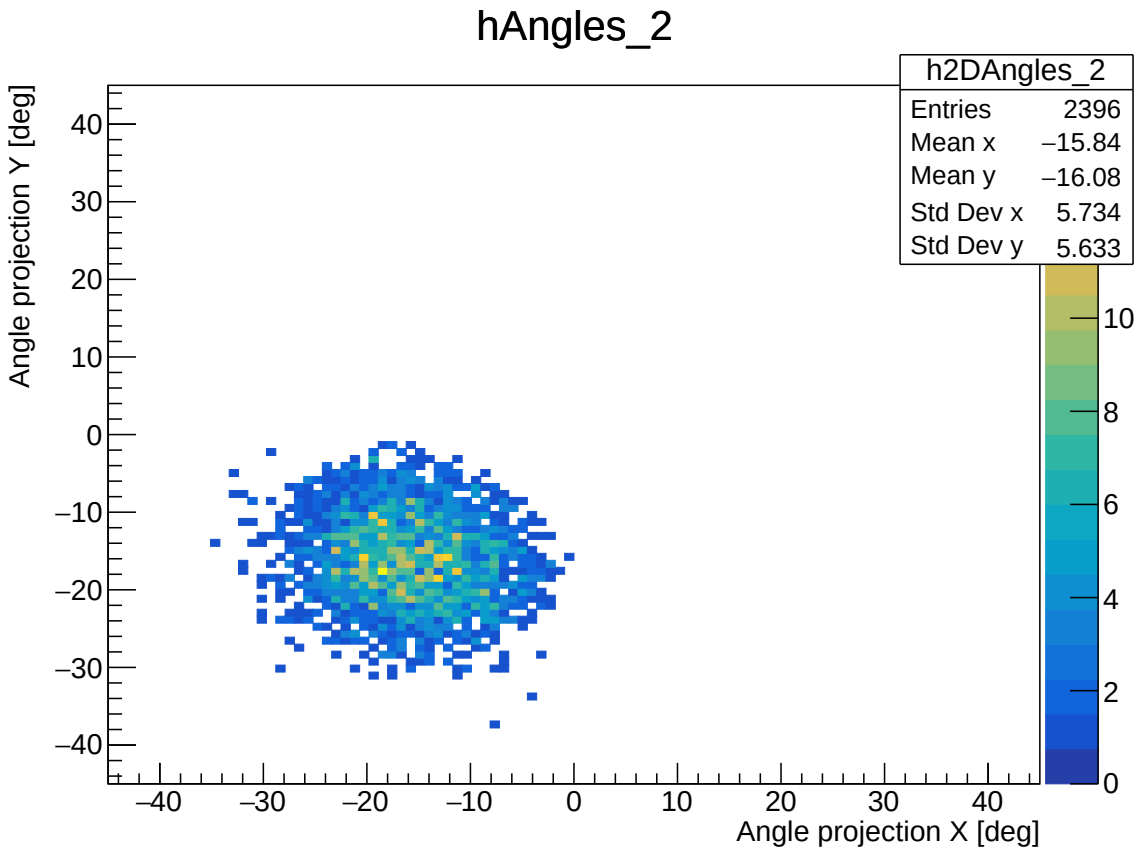

Figure: Angles distribution

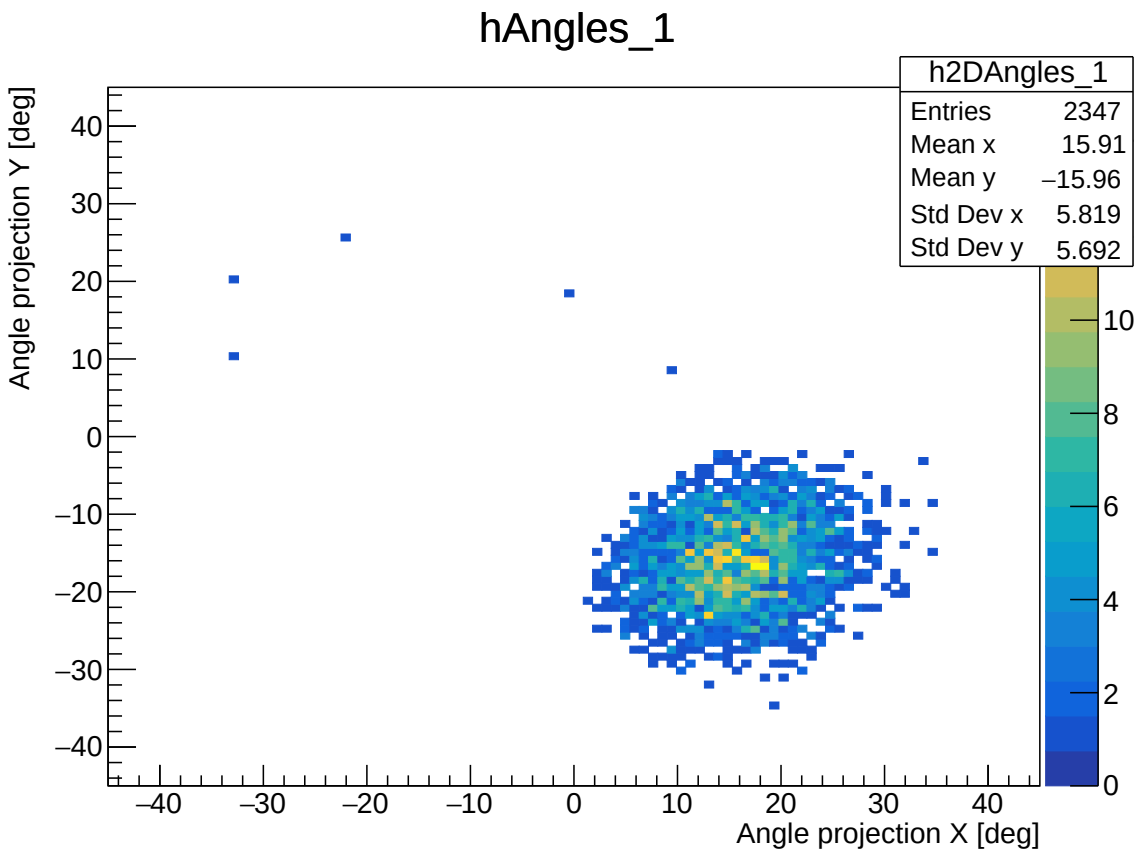

Figure: Angles distribution

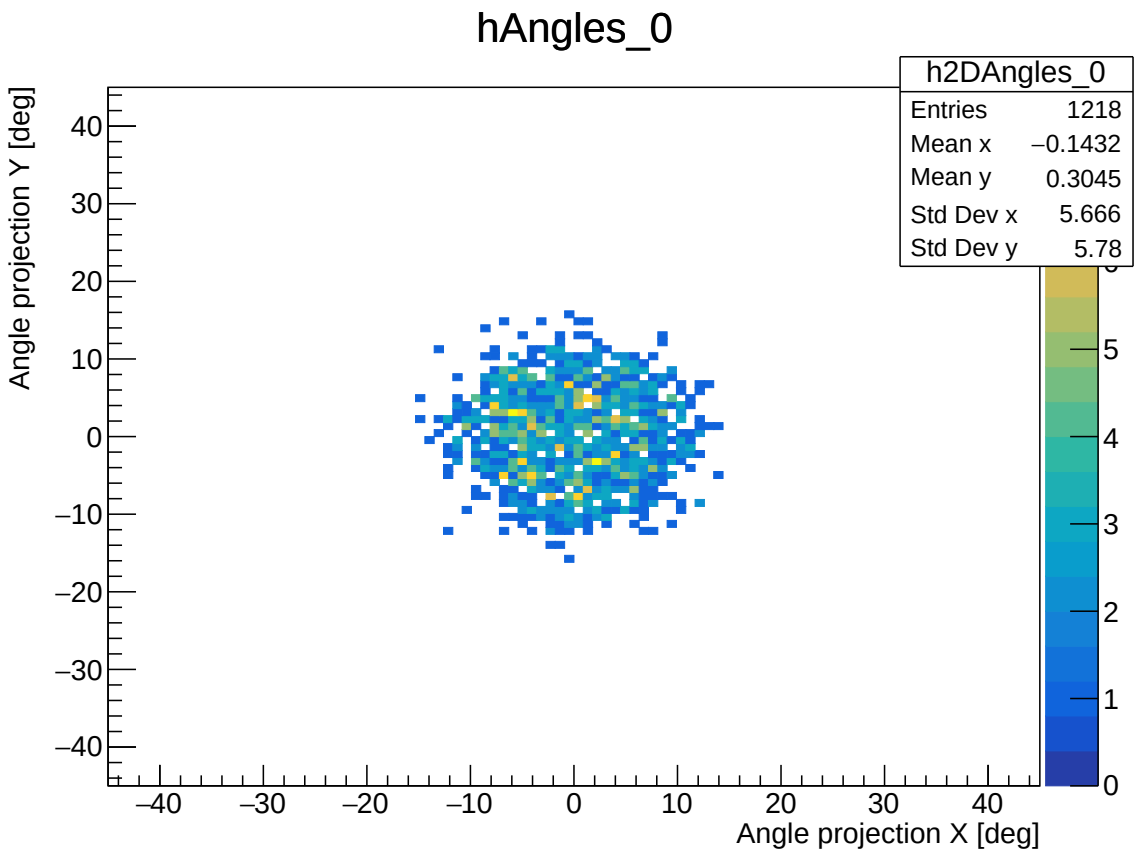

Figure: Angles distribution

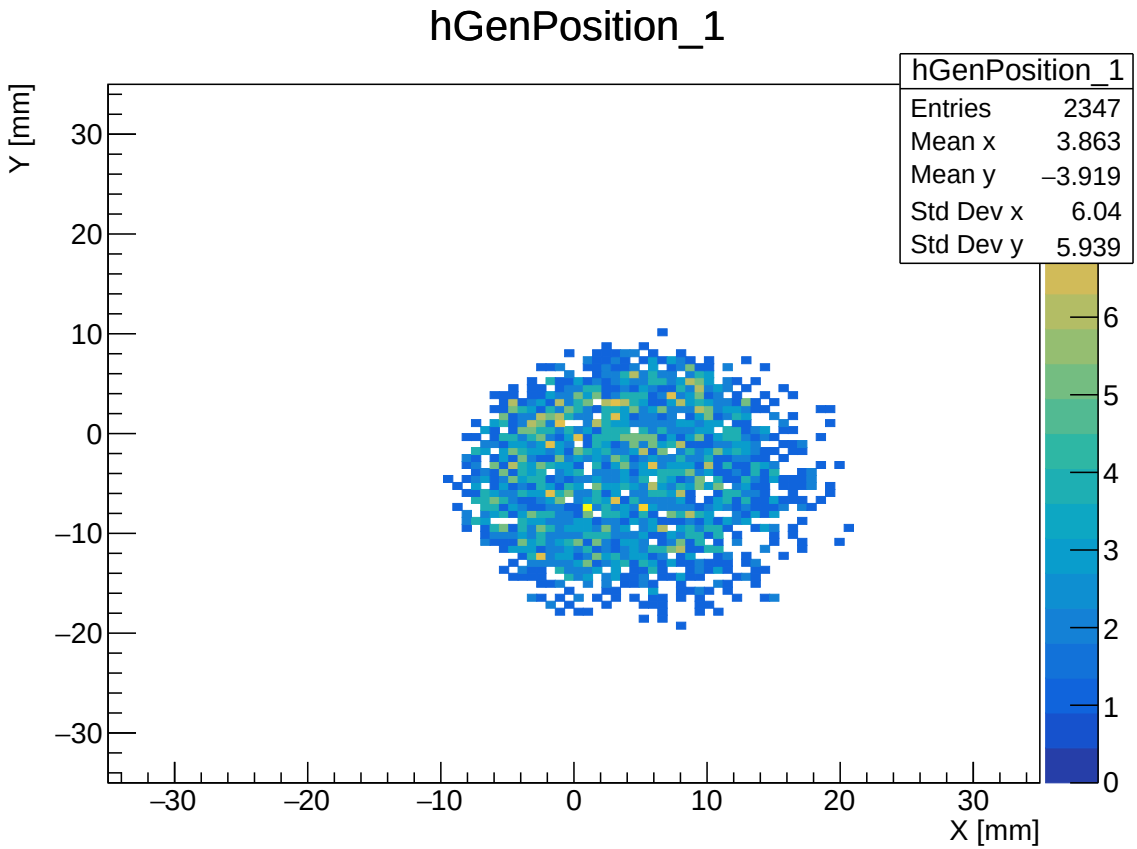

Figure: Generation Position

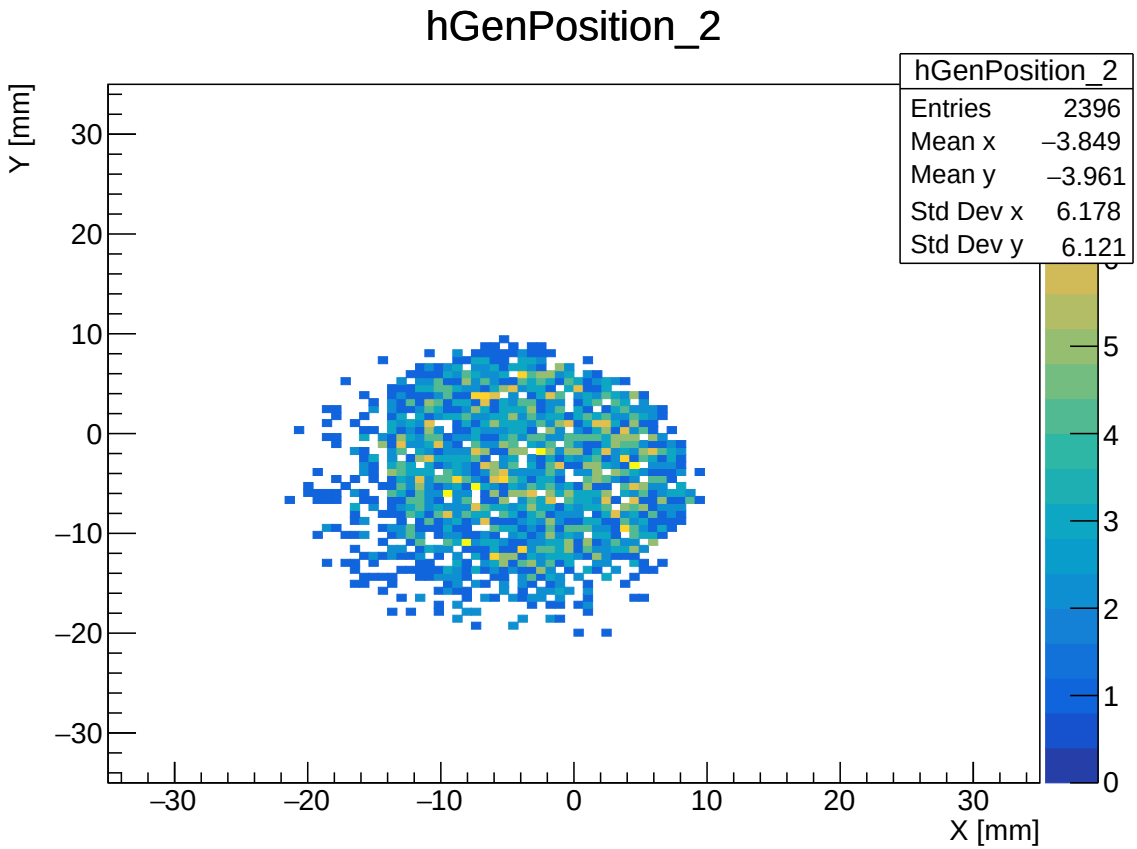

Figure: Generation Position

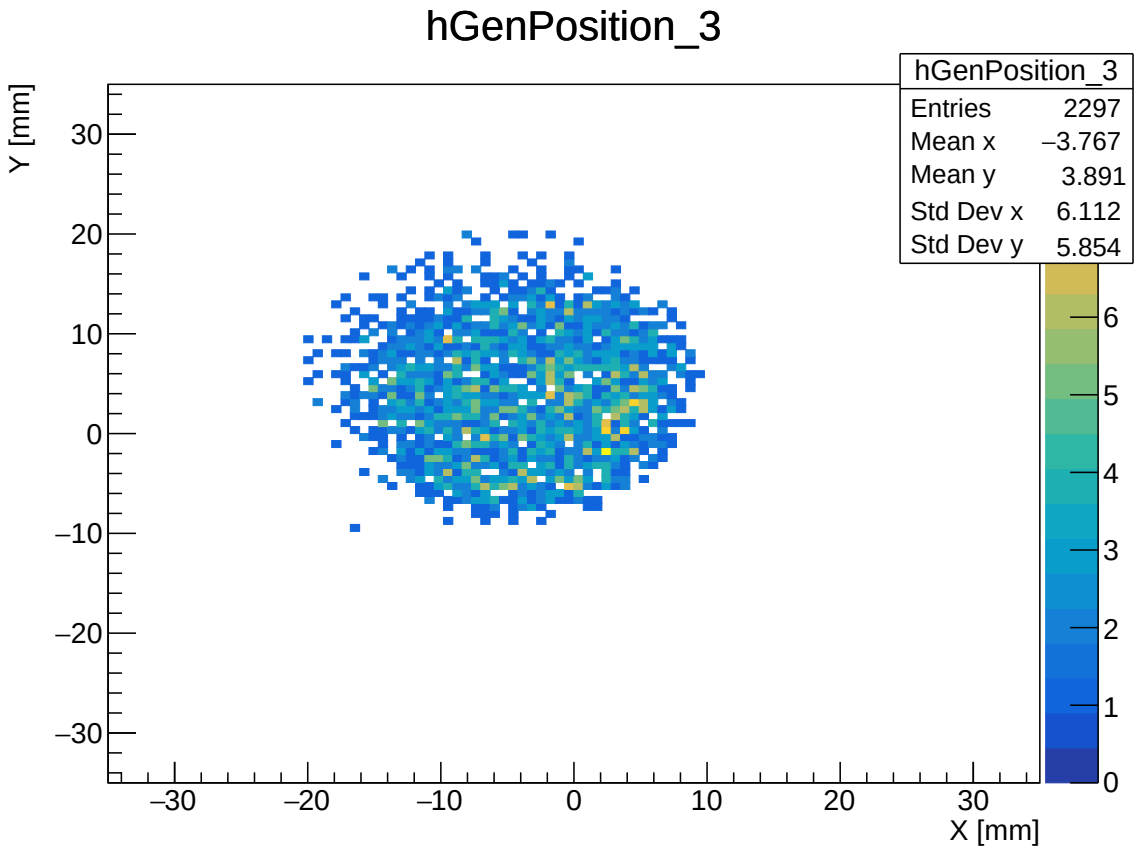

Figure: Generation Position

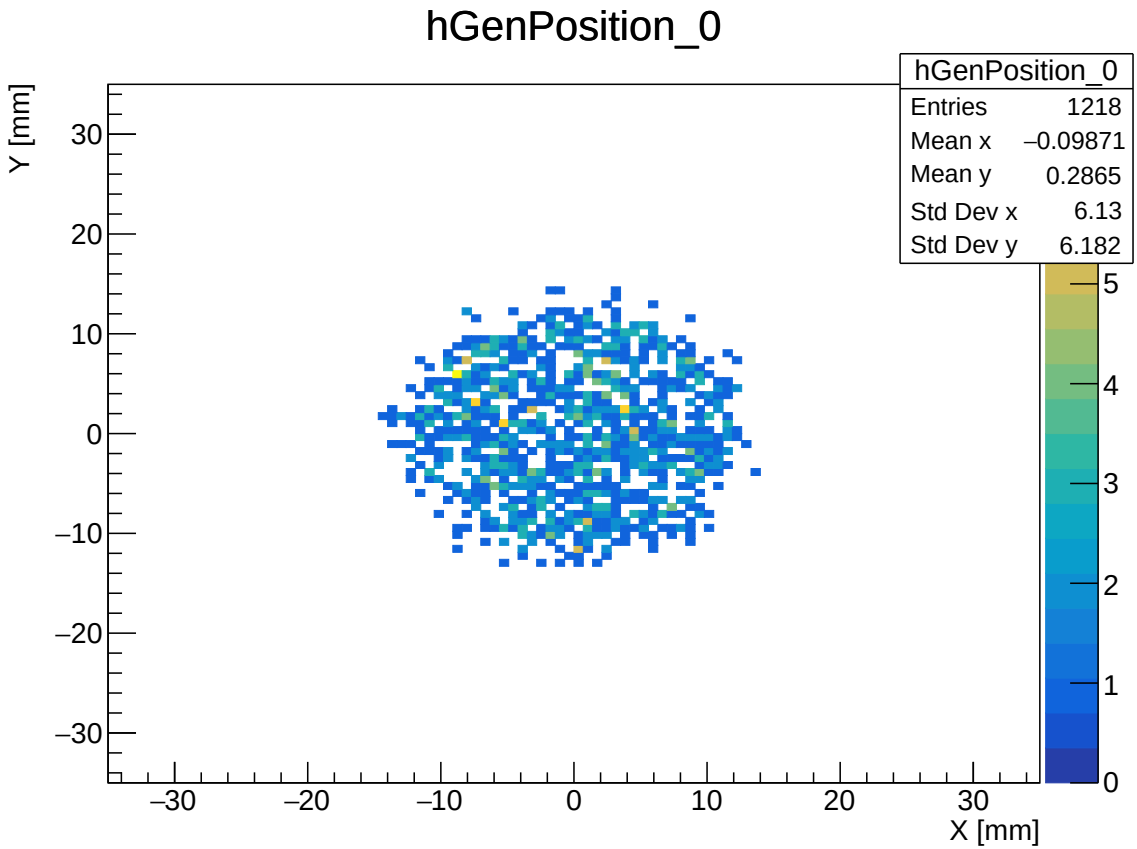

Figure: Generation Position

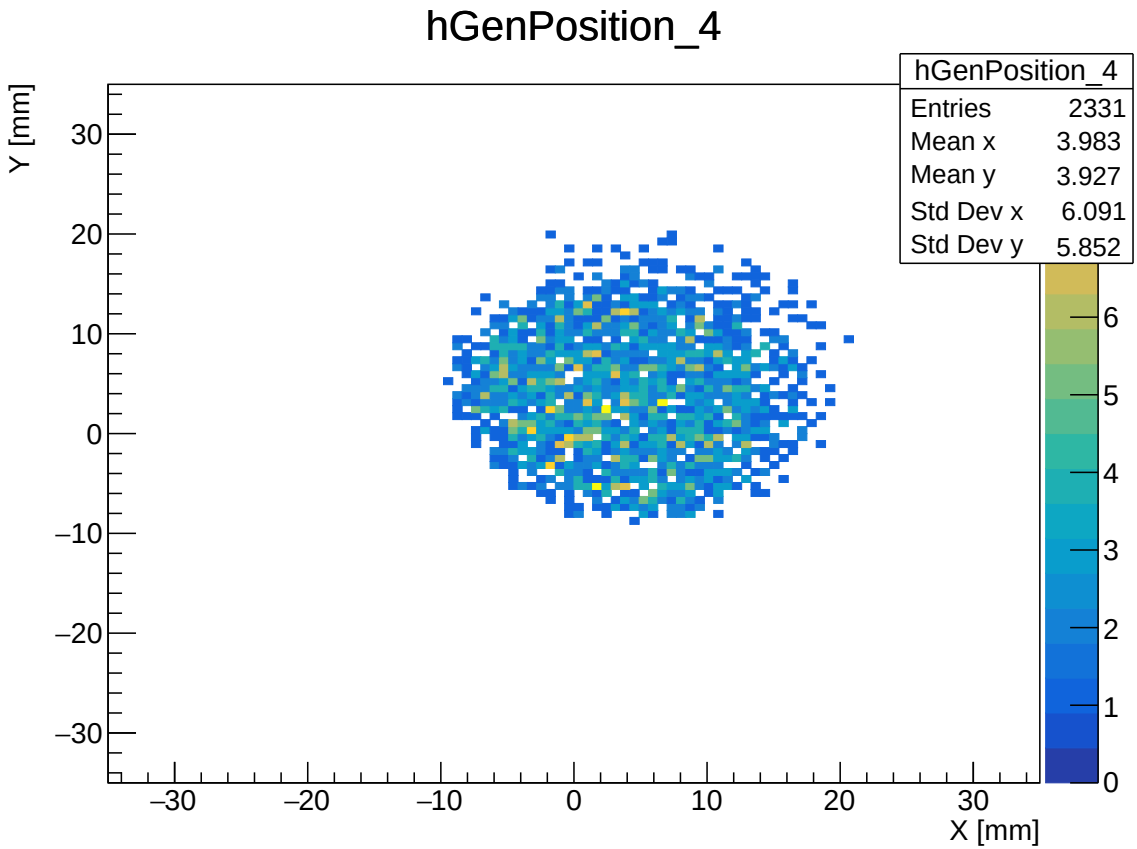

Figure: Generation Position

Geometric factors for alpha

Geometric factors for alpha

Geometric factors for all particles