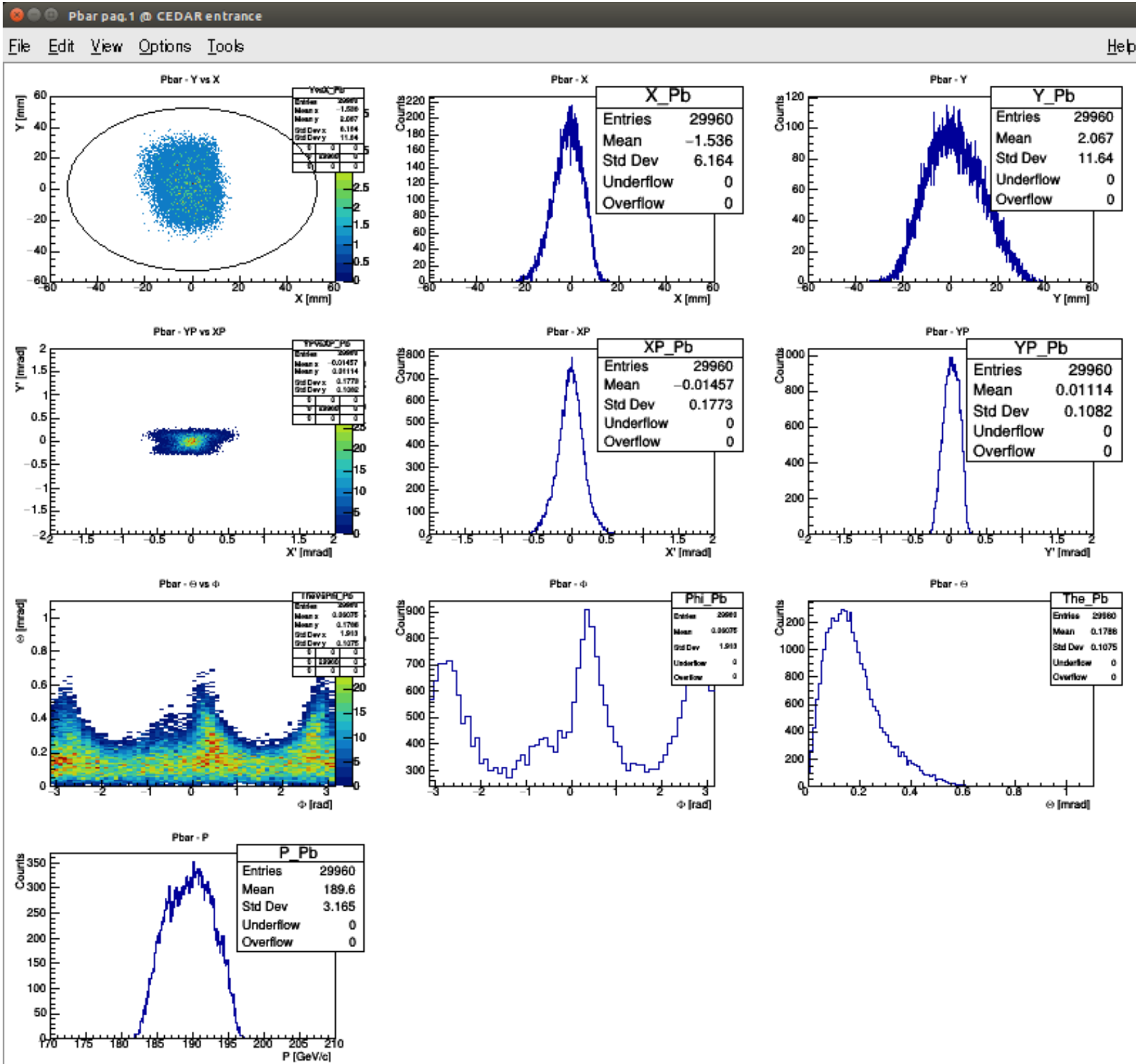
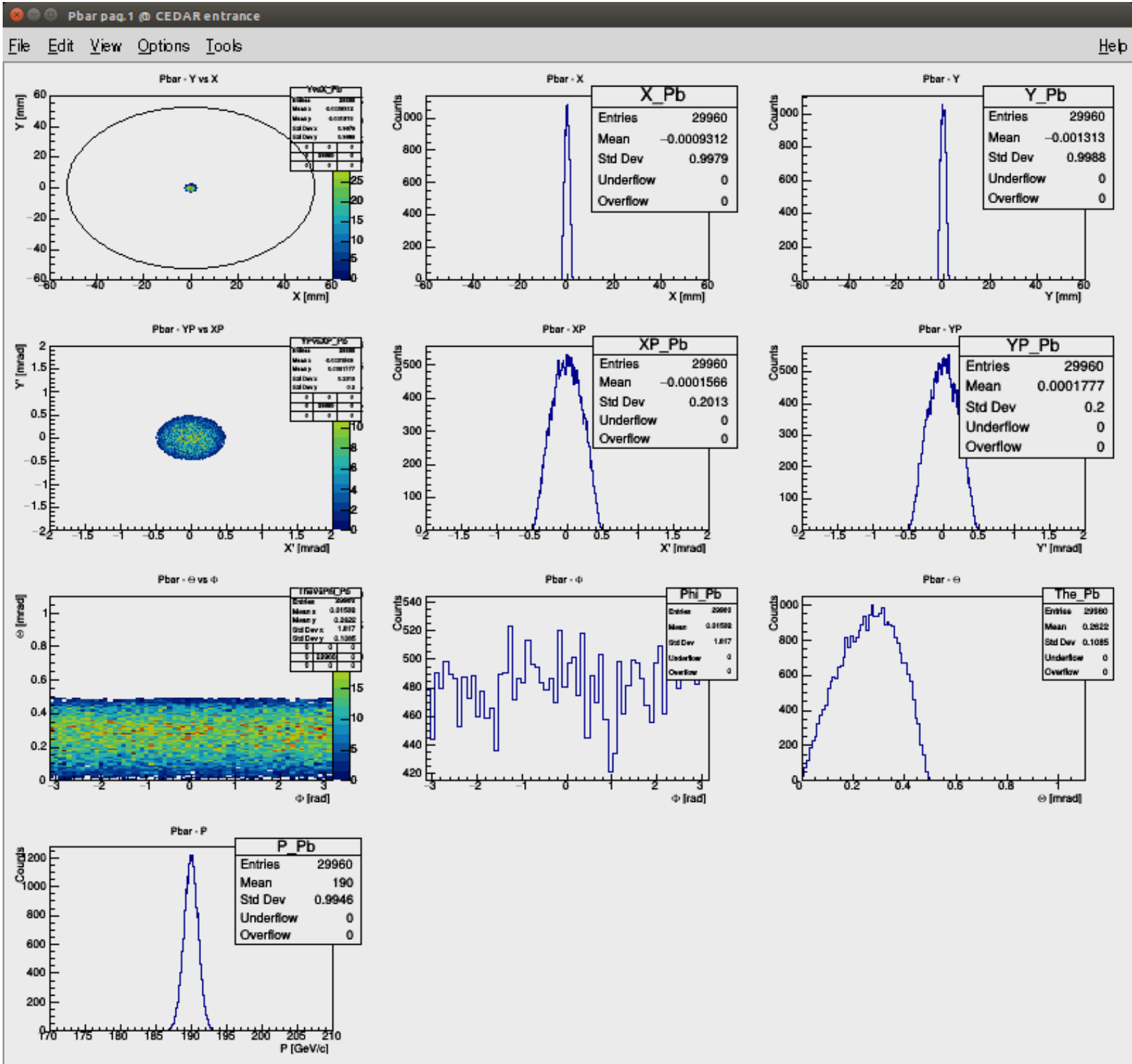


Series of pressure scans about the position of pbar, with the Light Diaphragm opening at 4.0mm and varying the beam divergence at constant beam size:
RMS = 1.0mm

X-Y beam sizes and divergences as from TURTLE
With beam file M2A.M2A.519



X-Y beam sizes and divergences as from MC generator according with CERN/Lab.II/EA/74-4 appendix A, section 5



LD = 4.0mm ; 10,000 tracks / pressure step of 10 mbar
 RMS_pos = 1.0mm, **RMS_div = 0.200 mrad**, RMS_mom = 1 GeV/c)

- | | | | |
|--|---|--|---|
| <input type="checkbox"/> CEDAR geomery | <input type="checkbox"/> Pion pag.1 @ CEDAR entrance | <input type="checkbox"/> Pion pag.2 @ CEDAR entrance | <input type="checkbox"/> Kaon pag.1 @ CEDAR entrance |
| <input type="checkbox"/> Kaon pag.2 @ CEDAR entrance | <input type="checkbox"/> Pbar pag.1 @ CEDAR entrance | <input type="checkbox"/> Pbar pag.2 @ CEDAR entrance | <input type="checkbox"/> EMI-9820QB Q.E. - EMI-9814 Dark Counts |
| <input type="checkbox"/> PMT Effic. _HV | <input type="checkbox"/> Optical characteristics of the media | <input type="checkbox"/> Mean No. Gener.Photons - PRscan | <input type="checkbox"/> Photon wavelengths - PRscan |
| <input type="checkbox"/> Photons emerging from Mirror - PRscan | <input type="checkbox"/> X-Y #gamma at LD entrance - PRscan | <input type="checkbox"/> R-Phi #gamma at LD entrance - PRscan | <input type="checkbox"/> Photons at PMT entrance - PRscan |
| <input type="checkbox"/> <Photons/track/PMT> - PRscan | <input type="checkbox"/> <NPE/track/PMT> - PRscan | <input type="checkbox"/> Fired PMT / track - PRscan | <input type="checkbox"/> Majorities/track - PRscan |
| <input type="checkbox"/> Majority/track - PRscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - PRscan | <input type="checkbox"/> Efficiencies _Contamination - PRscan | <input type="checkbox"/> Effic. _Contam./track - PRscan |
| <input type="checkbox"/> Mean No. Gener.Photons - LDscan | <input type="checkbox"/> Photon wavelengths - LDscan | <input type="checkbox"/> Photons emerging from Mirror - LDscan | <input type="checkbox"/> X-Y #gamma at LD entrance - LDscan |
| <input type="checkbox"/> R-Phi #gamma at LD entrance - LDscan | <input type="checkbox"/> Photons at PMT entrance - LDscan | <input type="checkbox"/> <Photons/track/PMT> - LDscan | <input type="checkbox"/> <NPE/track/PMT> - LDscan |
| <input type="checkbox"/> Fired PMT / track - LDscan | <input type="checkbox"/> Majorities/track - LDscan | <input type="checkbox"/> Majority/track - LDscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - LDscan |
| <input type="checkbox"/> Efficiencies _Contamination - LDscan | <input type="checkbox"/> Effic. _Contam./track - LDscan | | |

Choice of file with Pressure-scan data

../PressureScanCED2_2014_11_21.csv Reference file with pressure-scan data (Maj. 6-, 7-, 8-fold)

Pressure Scan Conditions

10.500	Pmin in CEDAR [bar] (Def.: 10.100)	10.700	Pmax in CEDAR [bar] (Def.: 10.800)	20	# pressure steps (Def.: 70.0)
22.6	T in CEDAR [C] (Def.: 22.6)	4.000	LD in CEDAR [mm] (Def.: 0.50)	10	No. generated particles / type [10^3] (Def.: 1)
240	LambaMin on PMT [nm] (Def.: 240)	630	LambaMax on PMT [nm] (Def.: 630)	1	wavelength step [nm] (Def.: 1)
<input checked="" type="checkbox"/> Mirror Reflectivity <input checked="" type="checkbox"/> Suprasil1 Transmittance <input checked="" type="checkbox"/> Cutoff Filter Transmittance					
0.00	Beam <X> [mm] (Def.: -1.52)	0.00	Beam <Y> [mm] (Def.: 2.20)	<input type="checkbox"/> Get Part. Pos. from TURTLE files <input type="checkbox"/> Use "Beam <X/Y>" as offset	
1.00	Beam RMS(X) [mm] (Def.: 6.19)	1.00	Beam RMS(Y) [mm] (Def.: 11.60)		
0.000	Beam <DivX> [mrad] (Def.: -0.013)	0.000	Beam <DivY> [mrad] (Def.: 0.009)	<input type="checkbox"/> Get Part. Dir. from TURTLE files <input type="checkbox"/> Use "Beam <DivX/DivY>" as offset	
0.200	Beam RMS(DivX) [mrad] (Def.: 0.177)	0.200	Beam RMS(DivY) [mrad] (Def.: 0.109)		
190.00	Beam Mom. Mean [GeV/c] (Def.: 189.66)	1.00	Beam Mom. RMS [GeV/c] (Def.: 3.18)	<input type="checkbox"/> Get Part. Mom. from TURTLE files	
<input checked="" type="checkbox"/> Multiple Scattering <input type="checkbox"/> Fix lambda to 300nm (MSC checks) 0 # PMT to be zoomed (Def.: 0)					
<input type="checkbox"/> Pile-up 0.1000 Beam Intesity [GHz] (Def.: 0.10) 20.0 L.E. discriminator width [ns] (Def.: 20.00)					
Majorities to be displayed : <input type="checkbox"/> 1-fold <input type="checkbox"/> 2-fold <input type="checkbox"/> 3-fold <input type="checkbox"/> 4-fold <input type="checkbox"/> 5-fold <input checked="" type="checkbox"/> 6-fold <input checked="" type="checkbox"/> 7-fold <input checked="" type="checkbox"/> 8-fold					

Light Diaphragm Scan Conditions

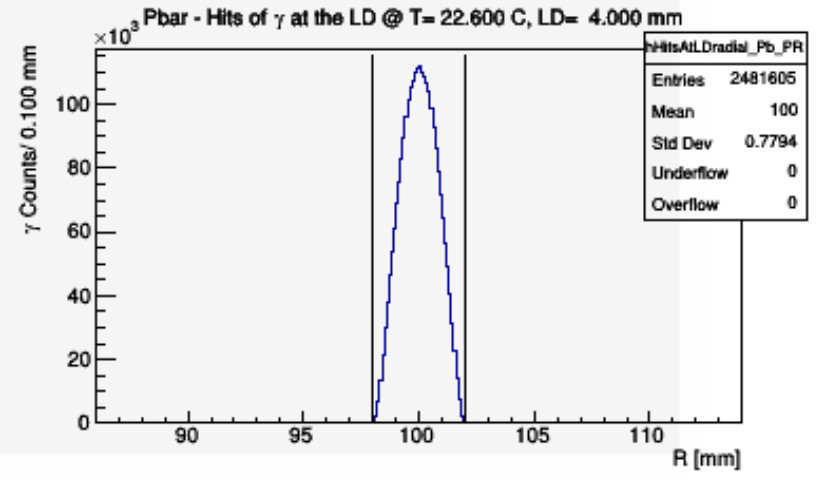
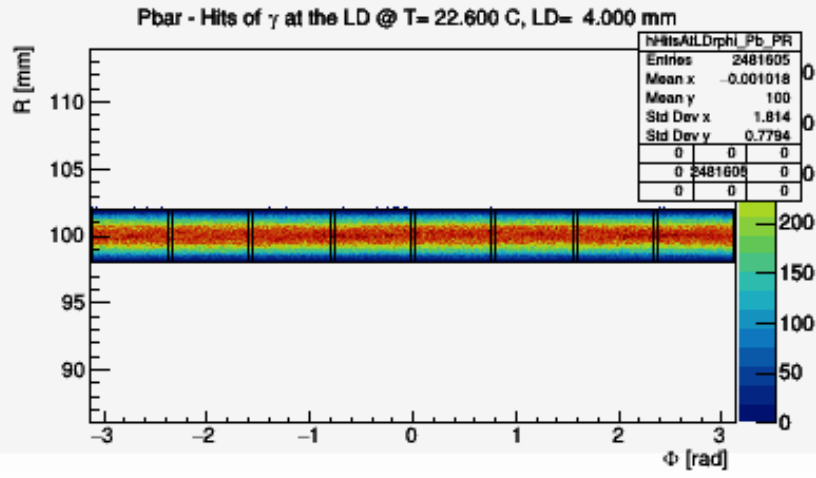
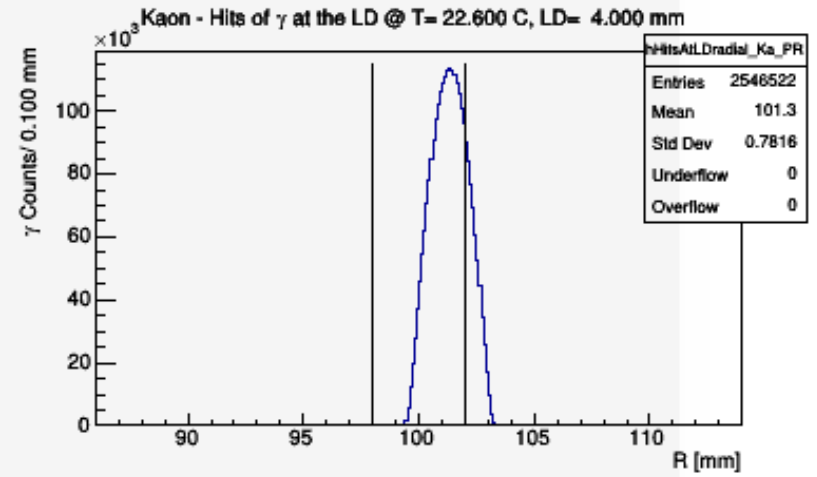
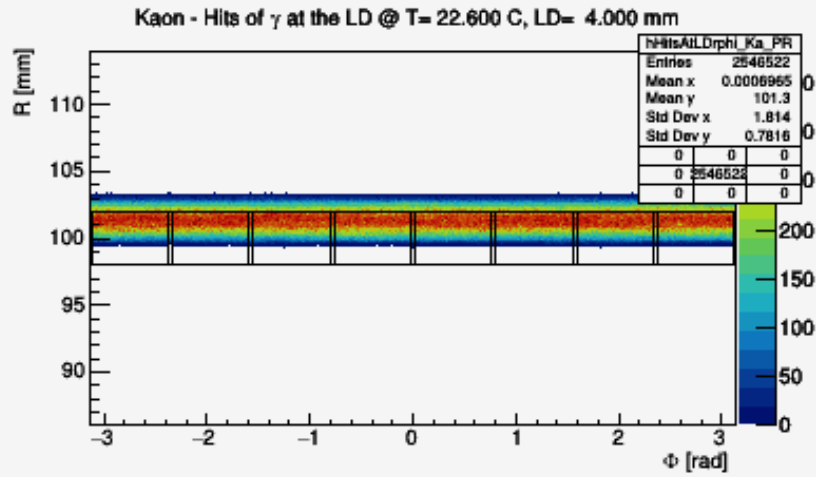
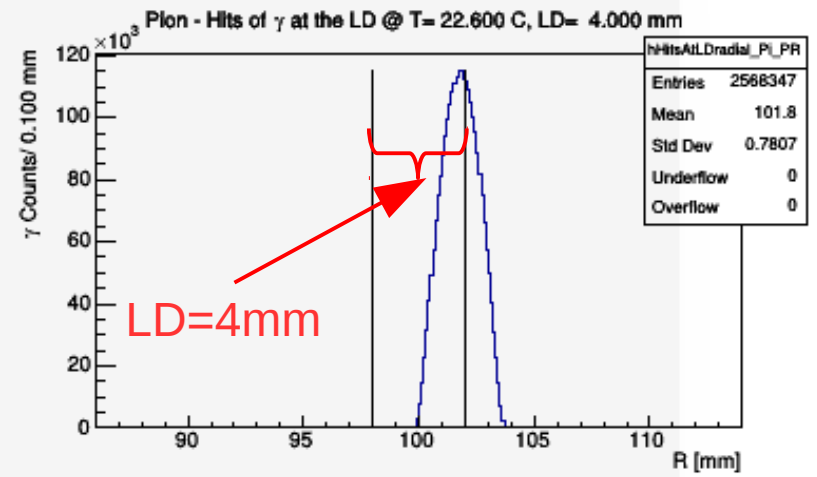
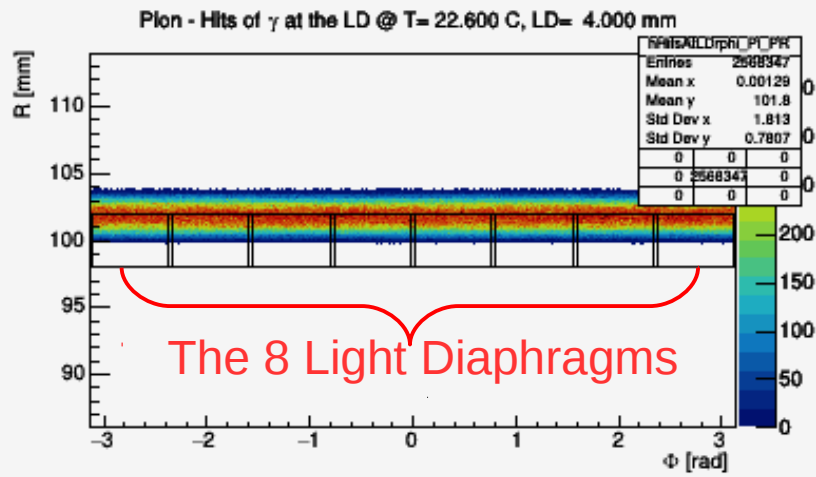
P values [bar] for LD scan
 10.239 pion (Def.: 10.239)
 10.303 kaon (Def.: 10.303)
 10.611 pbar (Def.: 10.611)

Particle for LD scan
 Kaon
 LD min [mm] (Def.: 0.050)
 0.050
 LD max [mm] (Def.: 6.000)
 6.000
 # LD steps (Def.: 120.000)
 120

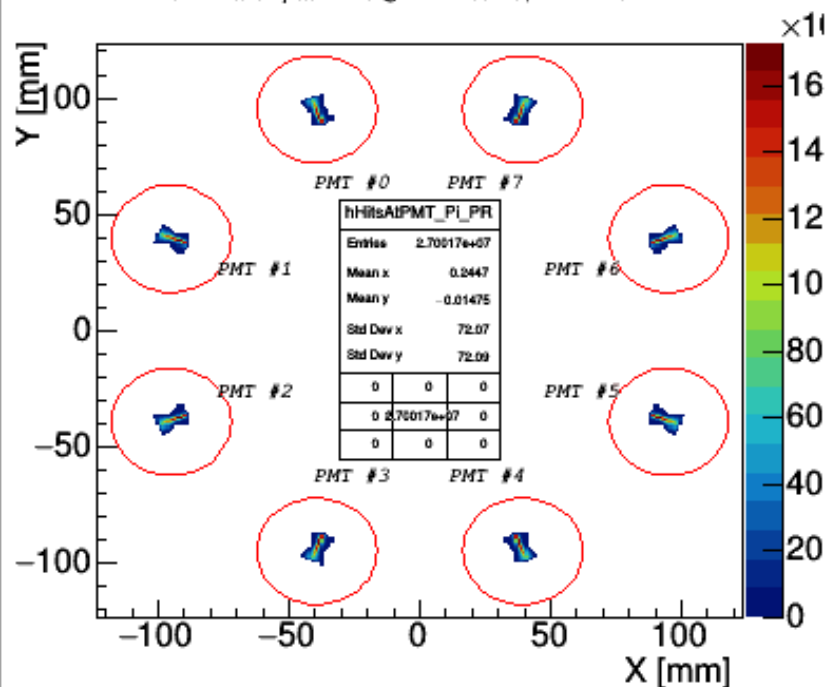
Tools

- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Dump Geometry data | <input type="checkbox"/> Dump PMT eff. _HV | <input type="checkbox"/> Update Particle Lists | <input type="checkbox"/> Refresh all TCanvas |
| <input type="checkbox"/> Toggle logY option for histos of X/Y coord.s | <input type="checkbox"/> Start new pressure scan | <input type="checkbox"/> Start new LD scan | <input type="checkbox"/> Draw Geometry without tracks |
| <input type="checkbox"/> Draw Tracks on top of Geometry | <input type="checkbox"/> Write Histos and TTree to ROOT file | <input type="checkbox"/> Write TCanvases to a PDF file | |

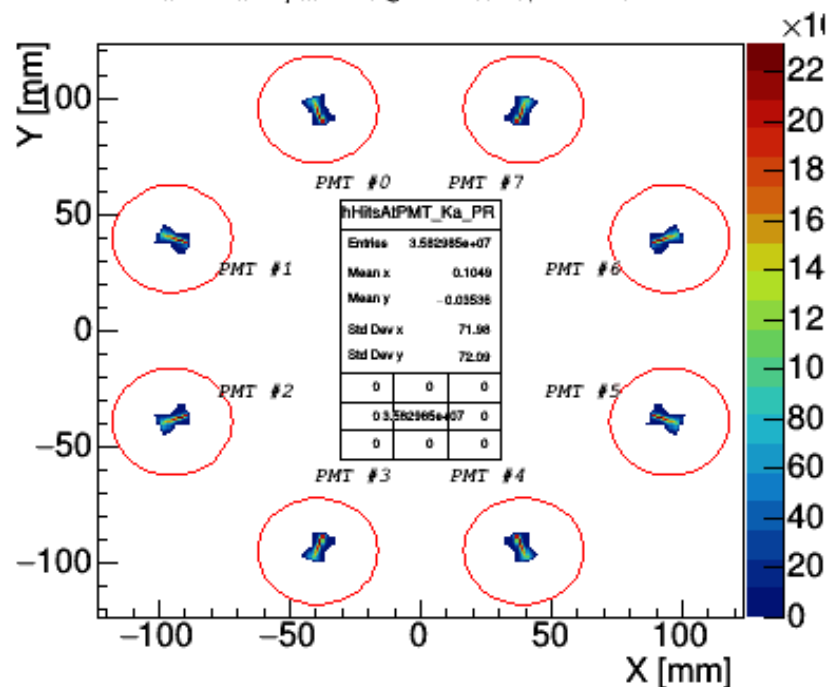
photon radial position
 mean [mm] RMS [mm]
 Pion 101.8 0.7807
 Kaon 101.3 0.7816
 Pbar 100.0 0.7794



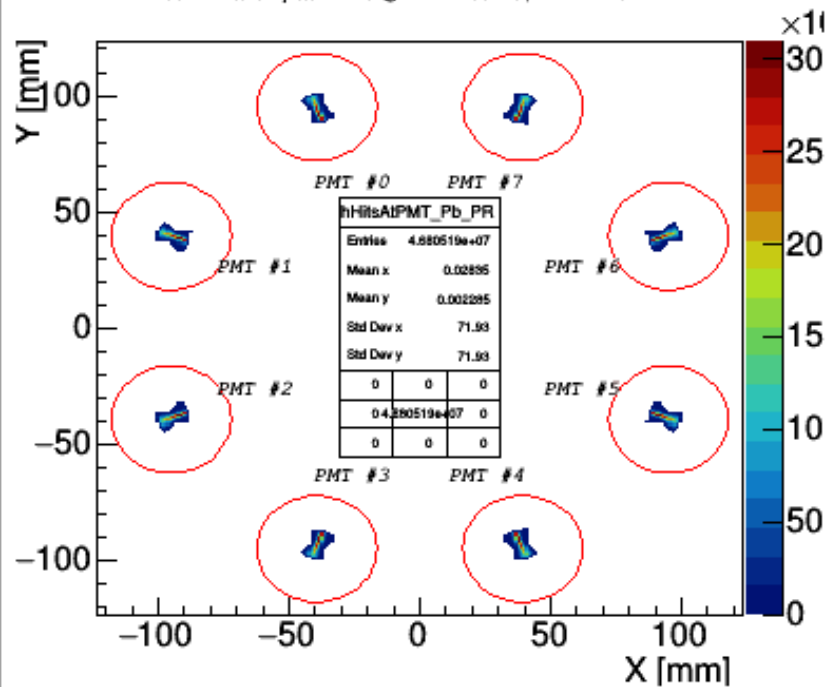
Pion - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



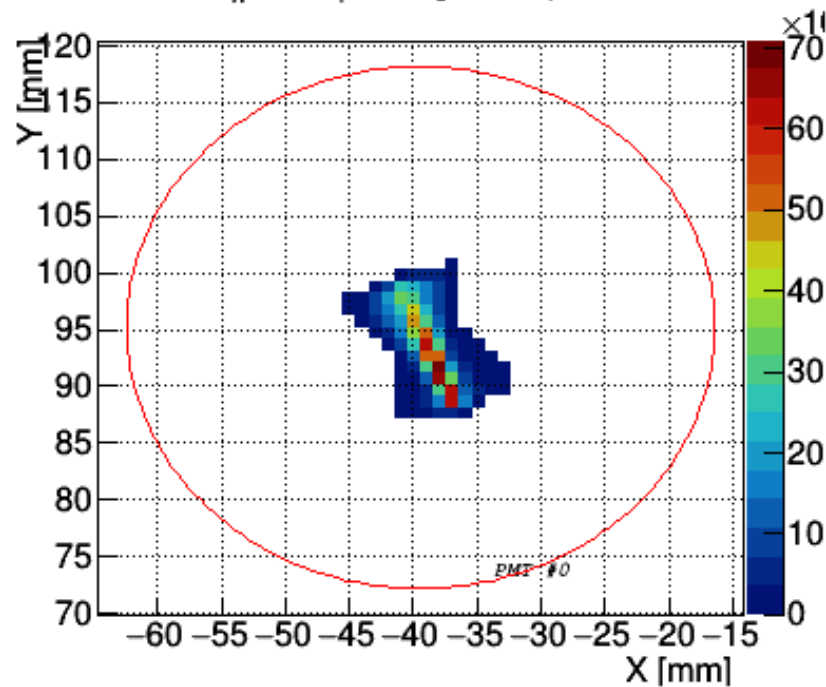
Kaon - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



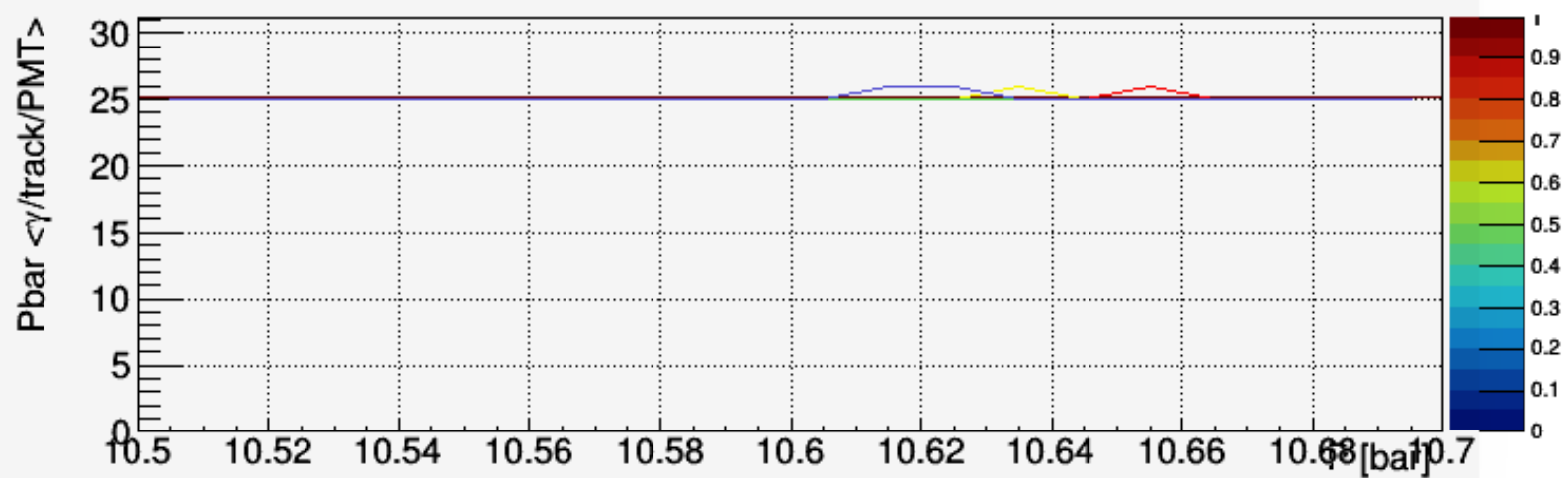
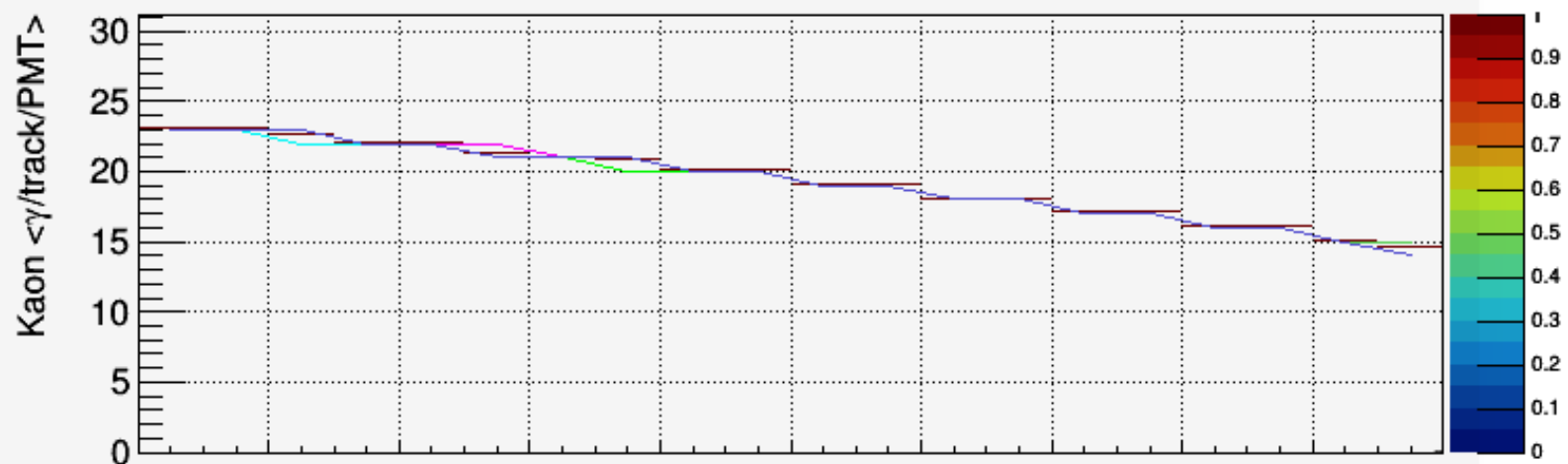
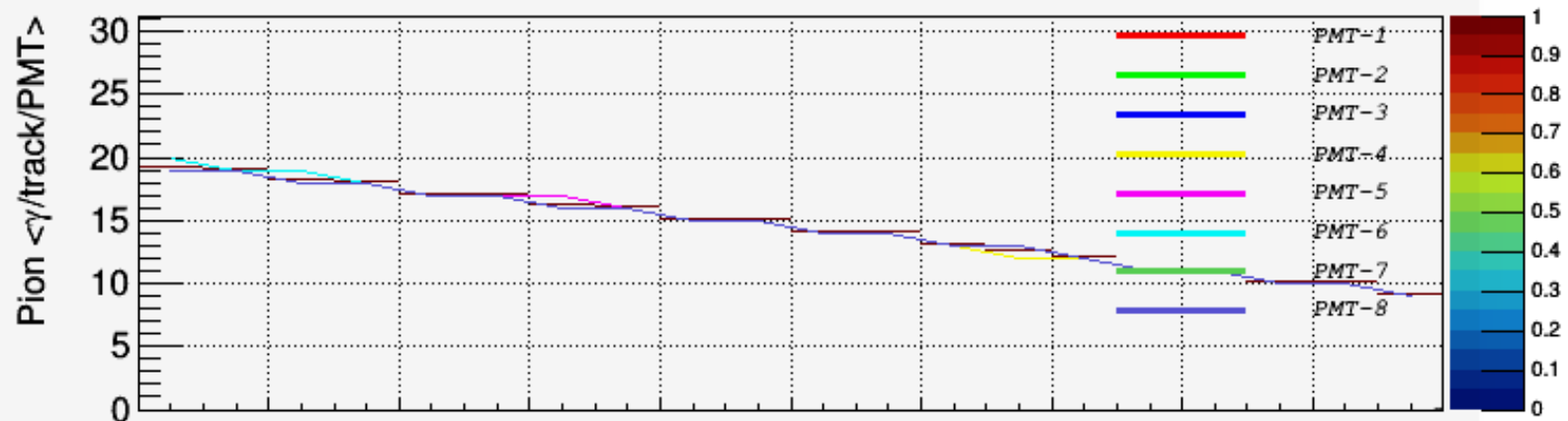
Pbar - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



All PartTypes - Hits of γ at PMT #0 @ T= 22.800 C, LD= 4.000 mm



Pion - $\langle \gamma/\text{track}/\text{PMT} \rangle$ w/out Pileup @ T= 22.600 C, LD= 4.000 mm



LD = 4.0mm ; 10,000 tracks / pressure step of 10 mbar
 RMS_pos = 1.0mm, **RMS_div = 0.100 mrad**, RMS_mom = 1 GeV/c)

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> CEDAR geomery | <input type="checkbox"/> Pion pag.1 @ CEDAR entrance | <input type="checkbox"/> Pion pag.2 @ CEDAR entrance | <input type="checkbox"/> Kaon pag.1 @ CEDAR entrance |
| <input type="checkbox"/> Kaon pag.2 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.1 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.2 @ CEDAR entrance | <input type="checkbox"/> EMI-9820QB Q.E. - EMI-9814 Dark Counts |
| <input type="checkbox"/> PMT Effic. _HV | <input type="checkbox"/> Optical characteristics of the media | <input type="checkbox"/> Mean No. Gener.Photons - PRscan | <input type="checkbox"/> Photon wavelengths - PRscan |
| <input type="checkbox"/> Photons emerging from Mirror - PRscan | <input type="checkbox"/> X-Y #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> R-Phi #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> Photons at PMT entrance - PRscan |
| <input checked="" type="checkbox"/> <Photons/track/PMT> - PRscan | <input type="checkbox"/> <NPE/track/PMT> - PRscan | <input type="checkbox"/> Fired PMT / track - PRscan | <input type="checkbox"/> Majorities/track - PRscan |
| <input type="checkbox"/> Majority/track - PRscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - PRscan | <input type="checkbox"/> Efficiencies _Contamination - PRscan | <input type="checkbox"/> Effic. _Contam./track - PRscan |
| <input type="checkbox"/> Mean No. Gener.Photons - LDscan | <input type="checkbox"/> Photon wavelengths - LDscan | <input type="checkbox"/> Photons emerging from Mirror - LDscan | <input type="checkbox"/> X-Y #gamma at LD entrance - LDscan |
| <input type="checkbox"/> R-Phi #gamma at LD entrance - LDscan | <input type="checkbox"/> Photons at PMT entrance - LDscan | <input type="checkbox"/> <Photons/track/PMT> - LDscan | <input type="checkbox"/> <NPE/track/PMT> - LDscan |
| <input type="checkbox"/> Fired PMT / track - LDscan | <input type="checkbox"/> Majorities/track - LDscan | <input type="checkbox"/> Majority/track - LDscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - LDscan |
| <input type="checkbox"/> Efficiencies _Contamination - LDscan | <input type="checkbox"/> Effic. _Contam./track - LDscan | | |

Choice of file with Pressure-scan data
 Reference file with pressure-scan data (Maj. 6-, 7-, 8-fold)

Pressure Scan Conditions

<input type="text" value="10.500"/> Pmin in CEDAR [bar] (Def.: 10.100)	<input type="text" value="10.700"/> Pmax in CEDAR [bar] (Def.: 10.800)	<input type="text" value="20"/> # pressure steps (Def.: 70.0)
<input type="text" value="22.6"/> T in CEDAR [C] (Def.: 22.6)	<input type="text" value="4.000"/> LD in CEDAR [mm] (Def.: 0.50)	<input type="text" value="10"/> No. generated particles / type [10^3] (Def.: 1)
<input type="text" value="240"/> LambdaMin on PMT [nm] (Def.: 240)	<input type="text" value="630"/> LambdaMax on PMT [nm] (Def.: 630)	<input type="text" value="1"/> wavelength step [nm] (Def.: 1)

Mirror Reflectivity Suprasil-1 Transmittance Cutoff Filter Transmittance

<input type="text" value="0.00"/> Beam <X> [mm] (Def.: -1.52)	<input type="text" value="0.00"/> Beam <Y> [mm] (Def.: 2.20)	<input type="checkbox"/> Get Part. Pos. from TURTLE files <input type="checkbox"/> Use "Beam <X/Y>" as offset
<input type="text" value="1.00"/> Beam RMS(X) [mm] (Def.: 6.19)	<input type="text" value="1.00"/> Beam RMS(Y) [mm] (Def.: 11.60)	
<input type="text" value="0.000"/> Beam <DivX> [mrad] (Def.: -0.013)	<input type="text" value="0.000"/> Beam <DivY> [mrad] (Def.: 0.009)	<input type="checkbox"/> Get Part. Dir. from TURTLE files <input type="checkbox"/> Use "Beam <DivX/DivY>" as offset
<input type="text" value="0.100"/> Beam RMS(DivX) [mrad] (Def.: 0.177)	<input type="text" value="0.100"/> Beam RMS(DivY) [mrad] (Def.: 0.109)	
<input type="text" value="190.00"/> Beam Mom. Mean [GeV/c] (Def.: 189.66)	<input type="text" value="1.00"/> Beam Mom. RMS [GeV/c] (Def.: 3.18)	<input type="checkbox"/> Get Part. Mom. from TURTLE files

Multiple Scattering Fix lambda to 300nm (MSC checks) # PMT to be zoomed (Def.: 0)

Pile-up Beam Intensity [GHz] (Def.: 0.10) L.E. discriminator width [ns] (Def.: 20.00)

Majorities to be displayed : 1-fold 2-fold 3-fold 4-fold 5-fold 6-fold 7-fold 8-fold

Light Diaphragm Scan Conditions

P values [bar] for LD scan	<input type="text" value="10.239"/> pion (Def.: 10.239)	<input type="text" value="10.303"/> kaon (Def.: 10.303)	<input type="text" value="10.611"/> pbar (Def.: 10.611)
Particle for LD scan	<input type="text" value="Kaon"/> LD min [mm] (Def.: 0.050)	<input type="text" value="0.050"/> LD max [mm] (Def.: 6.000)	<input type="text" value="6.000"/> # LD steps (Def.: 120.000) <input type="text" value="120"/>

- Tools
- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Dump Geometry data | <input type="checkbox"/> Dump PMT eff. _HV | <input type="checkbox"/> Update Particle Lists | <input type="checkbox"/> Refresh all TCanvas |
| <input type="checkbox"/> Toggle logY option for histos of X/Y coord.s | <input type="checkbox"/> Start new pressure scan | <input type="checkbox"/> Start new LD scan | <input type="checkbox"/> Draw Geometry without tracks |
| <input type="checkbox"/> Draw Tracks on top of Geometry | <input type="checkbox"/> Write Histos and TTree to ROOT file | <input type="checkbox"/> Write TCanvases to a PDF file | |

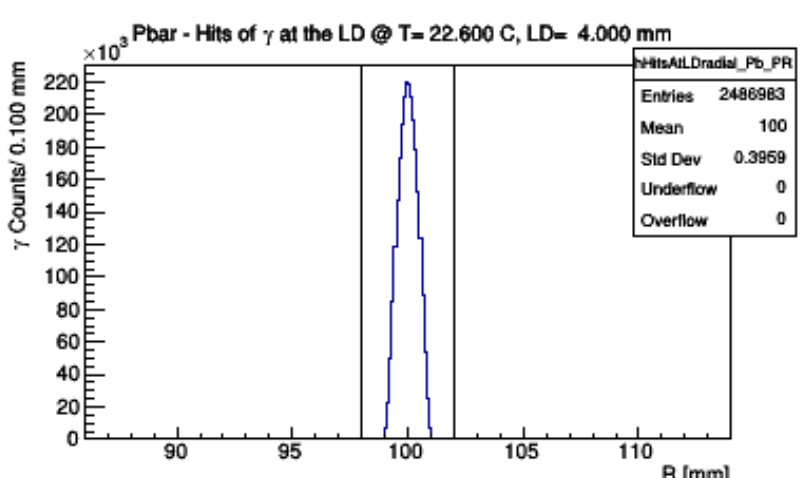
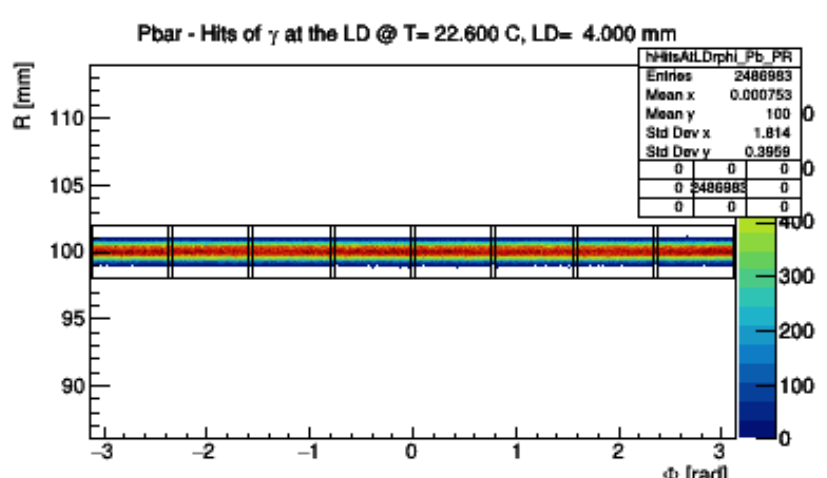
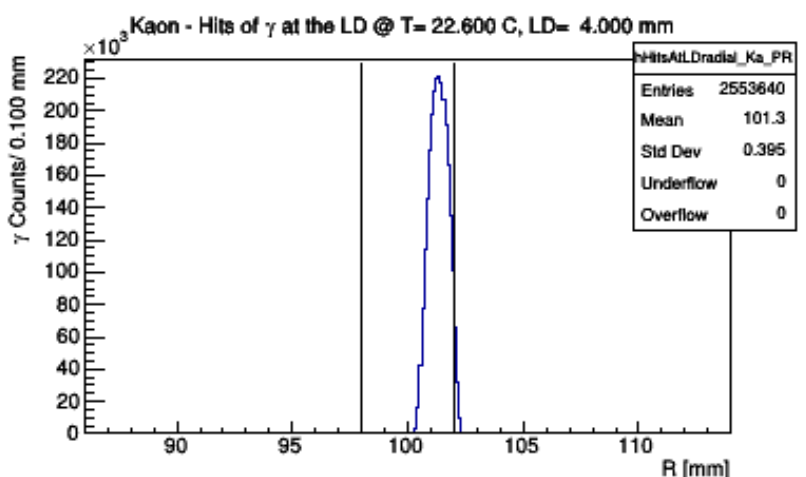
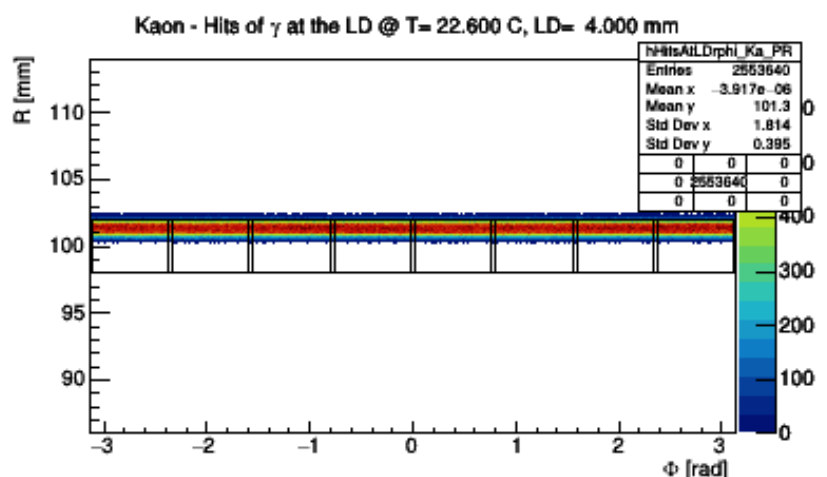
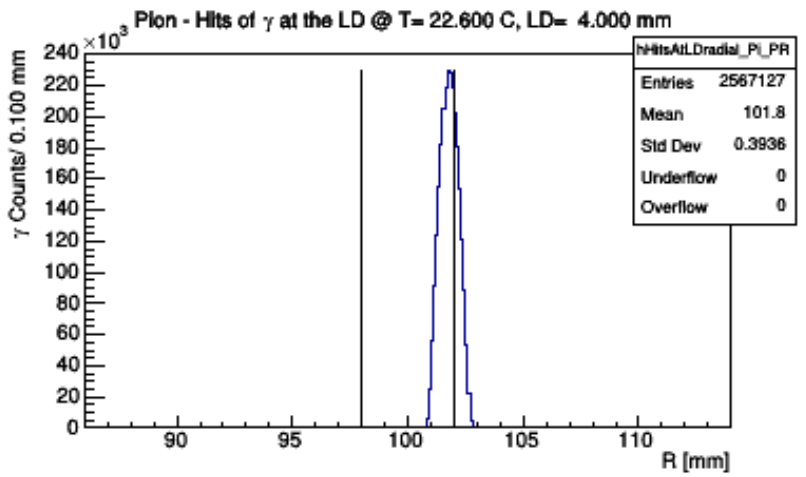
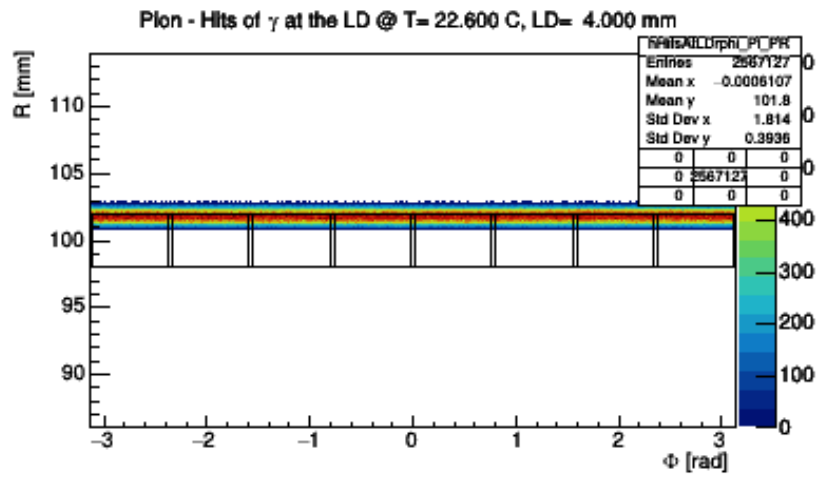
photon radial position

mean [mm] RMS [mm]

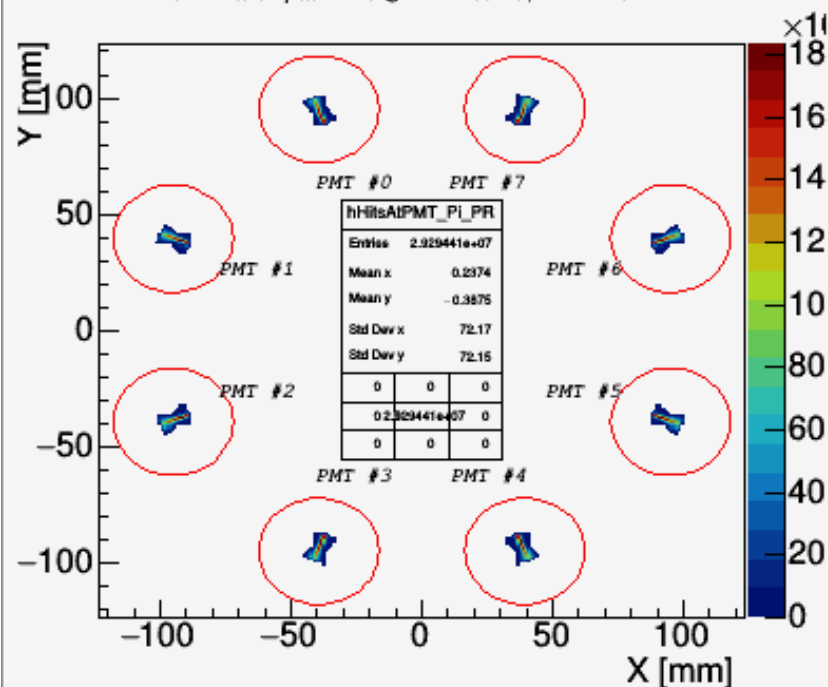
Pion 101.8 0.3936

Kaon 101.3 0.3950

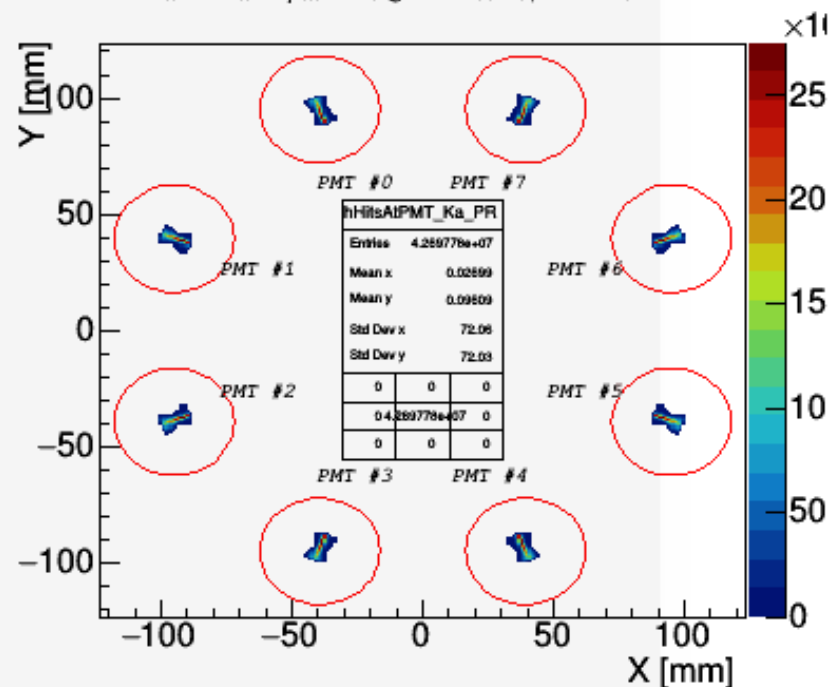
Pbar 100.0 0.3959



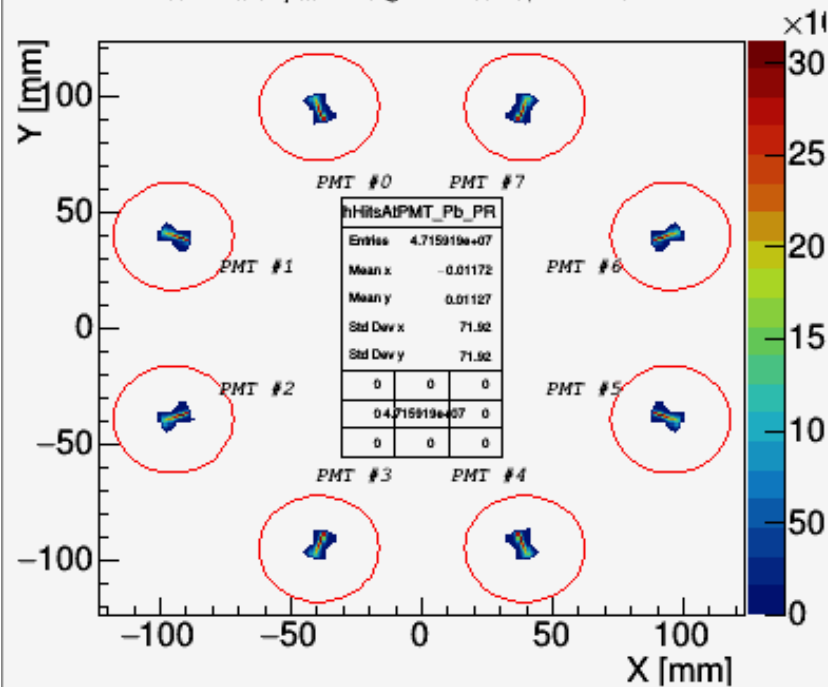
Pion - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



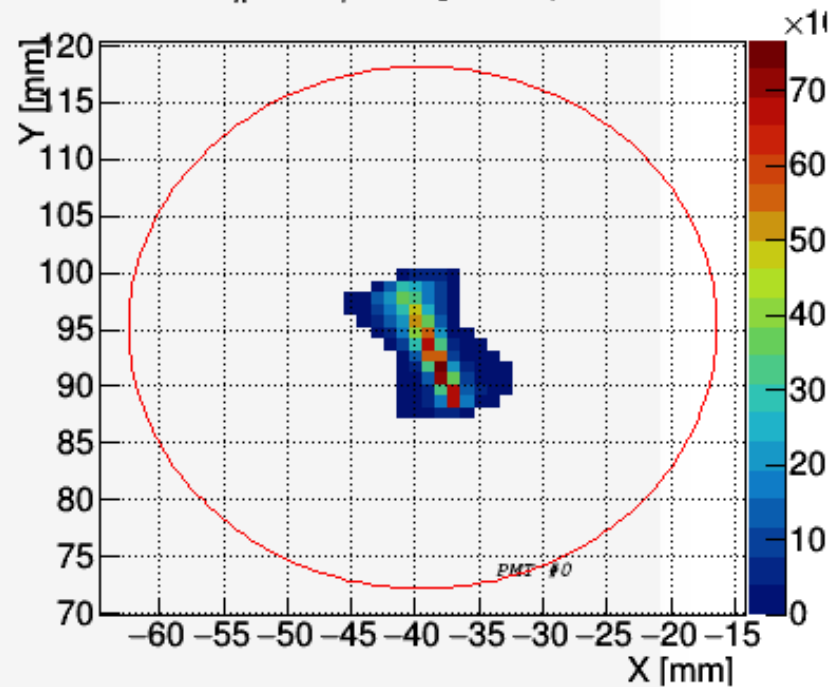
Kaon - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



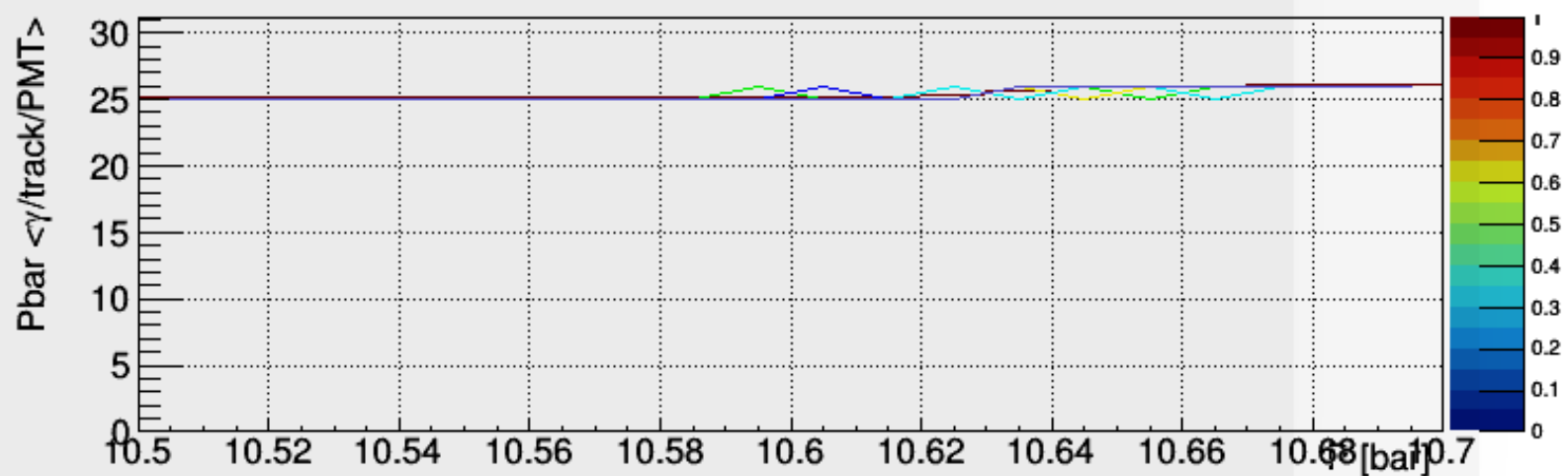
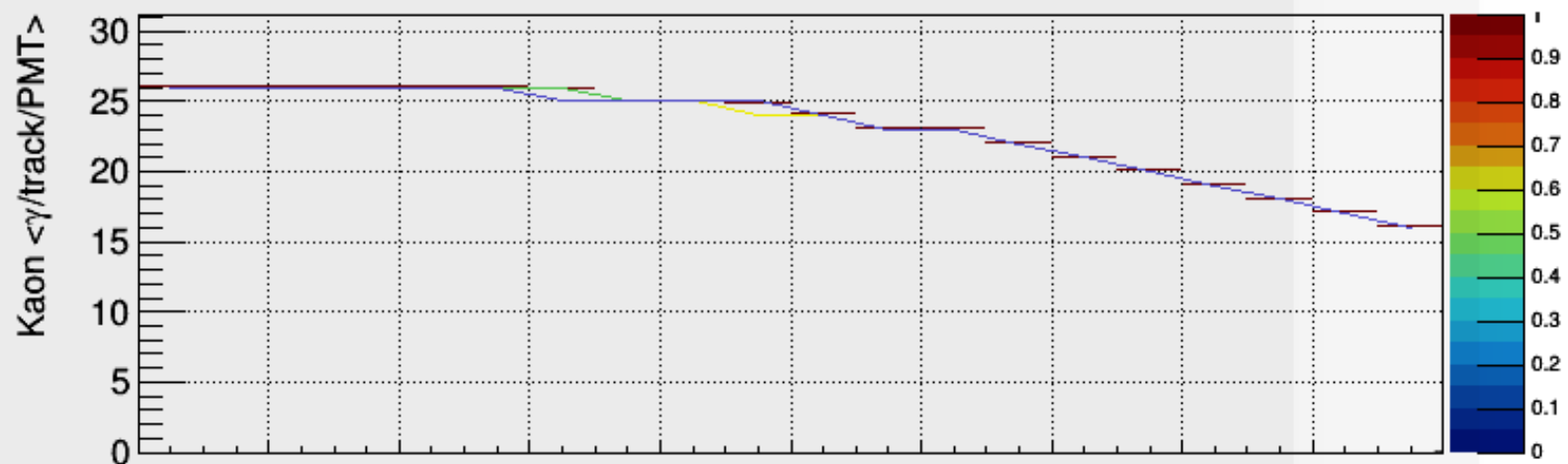
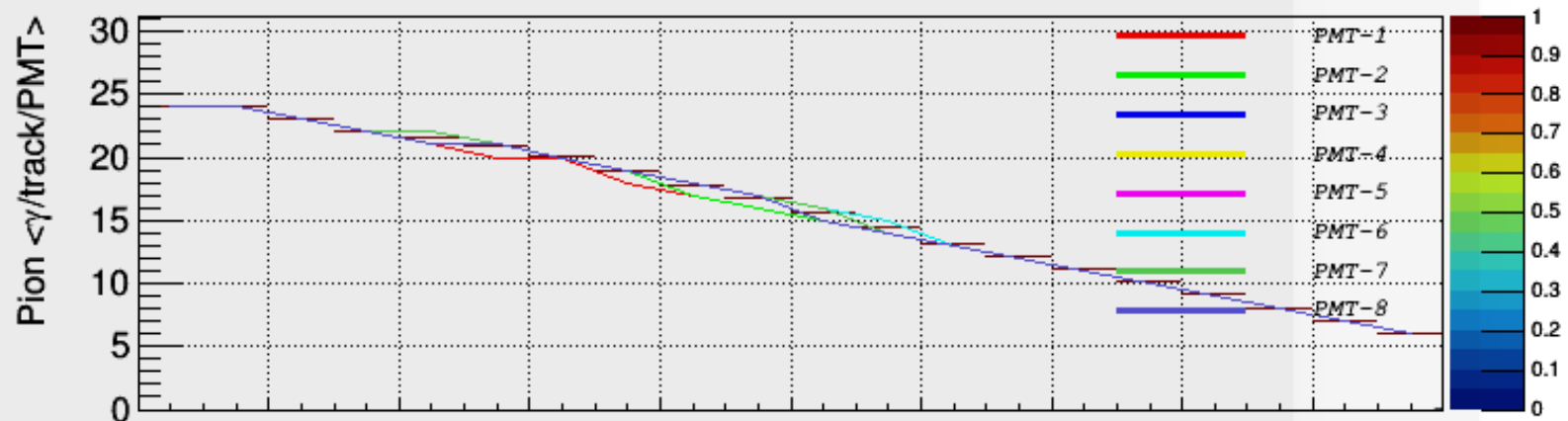
Pbar - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



All Part.Types - Hits of γ at PMT #0 @ T= 22.800 C, LD= 4.000 mm



Pion - $\langle \gamma/\text{track}/\text{PMT} \rangle$ w/out Pileup @ T= 22.600 C, LD= 4.000 mm



LD = 4.0mm ; 10,000 tracks / pressure step of 10 mbar
 RMS_pos = 1.0mm, **RMS_div = 0.050 mrad**, RMS_mom = 1 GeV/c)

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> CEDAR geomery | <input type="checkbox"/> Pion pag.1 @ CEDAR entrance | <input type="checkbox"/> Pion pag.2 @ CEDAR entrance | <input type="checkbox"/> Kaon pag.1 @ CEDAR entrance |
| <input type="checkbox"/> Kaon pag.2 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.1 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.2 @ CEDAR entrance | <input type="checkbox"/> EMI-9820QB Q.E. - EMI-9814 Dark Counts |
| <input type="checkbox"/> PMT Effic. _HV | <input type="checkbox"/> Optical characteristics of the media | <input type="checkbox"/> Mean No. Gener.Photons - PRscan | <input type="checkbox"/> Photon wavelengths - PRscan |
| <input type="checkbox"/> Photons emerging from Mirror - PRscan | <input type="checkbox"/> X-Y #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> R-Phi #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> Photons at PMT entrance - PRscan |
| <input checked="" type="checkbox"/> <Photons/track/PMT> - PRscan | <input type="checkbox"/> <NPE/track/PMT> - PRscan | <input type="checkbox"/> Fired PMT / track - PRscan | <input type="checkbox"/> Majorities/track - PRscan |
| <input type="checkbox"/> Majority/track - PRscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - PRscan | <input type="checkbox"/> Efficiencies _Contamination - PRscan | <input type="checkbox"/> Effic. _Contam./track - PRscan |
| <input type="checkbox"/> Mean No. Gener.Photons - LDscan | <input type="checkbox"/> Photon wavelengths - LDscan | <input type="checkbox"/> Photons emerging from Mirror - LDscan | <input type="checkbox"/> X-Y #gamma at LD entrance - LDscan |
| <input type="checkbox"/> R-Phi #gamma at LD entrance - LDscan | <input type="checkbox"/> Photons at PMT entrance - LDscan | <input type="checkbox"/> <Photons/track/PMT> - LDscan | <input type="checkbox"/> <NPE/track/PMT> - LDscan |
| <input type="checkbox"/> Fired PMT / track - LDscan | <input type="checkbox"/> Majorities/track - LDscan | <input type="checkbox"/> Majority/track - LDscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - LDscan |
| <input type="checkbox"/> Efficiencies _Contamination - LDscan | <input type="checkbox"/> Effic. _Contam./track - LDscan | | |

Choice of file with Pressure-scan data
 Reference file with pressure-scan data (Maj. 6-, 7-, 8-fold)

Pressure Scan Conditions

<input type="text" value="10.500"/> Pmin in CEDAR [bar] (Def.: 10.100)	<input type="text" value="10.700"/> Pmax in CEDAR [bar] (Def.: 10.800)	<input type="text" value="20"/> # pressure steps (Def.: 70.0)
<input type="text" value="22.6"/> T in CEDAR [C] (Def.: 22.6)	<input type="text" value="4.000"/> LD in CEDAR [mm] (Def.: 0.50)	<input type="text" value="10"/> No. generated particles / type [10^3] (Def.: 1)
<input type="text" value="240"/> LambdaMin on PMT [nm] (Def.: 240)	<input type="text" value="630"/> LambdaMax on PMT [nm] (Def.: 630)	<input type="text" value="1"/> wavelength step [nm] (Def.: 1)

Mirror Reflectivity Suprasil-1 Transmittance Cutoff Filter Transmittance

<input type="text" value="0.00"/> Beam <X> [mm] (Def.: -1.52)	<input type="text" value="0.00"/> Beam <Y> [mm] (Def.: 2.20)	<input type="checkbox"/> Get Part. Pos. from TURTLE files	<input type="checkbox"/> Use "Beam <X/Y>" as offset
<input type="text" value="1.00"/> Beam RMS(X) [mm] (Def.: 6.19)	<input type="text" value="1.00"/> Beam RMS(Y) [mm] (Def.: 11.60)		
<input type="text" value="0.000"/> Beam <DivX> [mrad] (Def.: -0.013)	<input type="text" value="0.000"/> Beam <DivY> [mrad] (Def.: 0.009)	<input type="checkbox"/> Get Part. Dir. from TURTLE files	<input type="checkbox"/> Use "Beam <DivX/DivY>" as offset
<input type="text" value="0.050"/> Beam RMS(DivX) [mrad] (Def.: 0.177)	<input type="text" value="0.050"/> Beam RMS(DivY) [mrad] (Def.: 0.109)		
<input type="text" value="190.00"/> Beam Mom. Mean [GeV/c] (Def.: 189.66)	<input type="text" value="1.00"/> Beam Mom. RMS [GeV/c] (Def.: 3.18)	<input type="checkbox"/> Get Part. Mom. from TURTLE files	

Multiple Scattering Fix lambda to 300nm (MSC checks) # PMT to be zoomed (Def.: 0)

Pile-up Beam Intensity [GHz] (Def.: 0.10) L.E. discriminator width [ns] (Def.: 20.00)

Majorities to be displayed : 1-fold 2-fold 3-fold 4-fold 5-fold 6-fold 7-fold 8-fold

Light Diaphragm Scan Conditions

P values [bar] for LD scan	<input type="text" value="10.239"/> pion (Def.: 10.239)	<input type="text" value="10.303"/> kaon (Def.: 10.303)	<input type="text" value="10.611"/> pbar (Def.: 10.611)
Particle for LD scan	<input type="text" value="Kaon"/> LD min [mm] (Def.: 0.050)	<input type="text" value="0.050"/> LD max [mm] (Def.: 6.000)	<input type="text" value="6.000"/> # LD steps (Def.: 120.000)
	<input type="text" value="120"/>		

- Tools
- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Dump Geometry data | <input type="checkbox"/> Dump PMT eff. _HV | <input type="checkbox"/> Update Particle Lists | <input type="checkbox"/> Refresh all TCanvas |
| <input type="checkbox"/> Toggle logY option for histos of X/Y coord.s | <input checked="" type="checkbox"/> Start new pressure scan | <input type="checkbox"/> Start new LD scan | <input type="checkbox"/> Draw Geometry without tracks |
| <input type="checkbox"/> Draw Tracks on top of Geometry | <input type="checkbox"/> Write Histos and TTree to ROOT file | <input type="checkbox"/> Write TCanvas to a PDF file | |

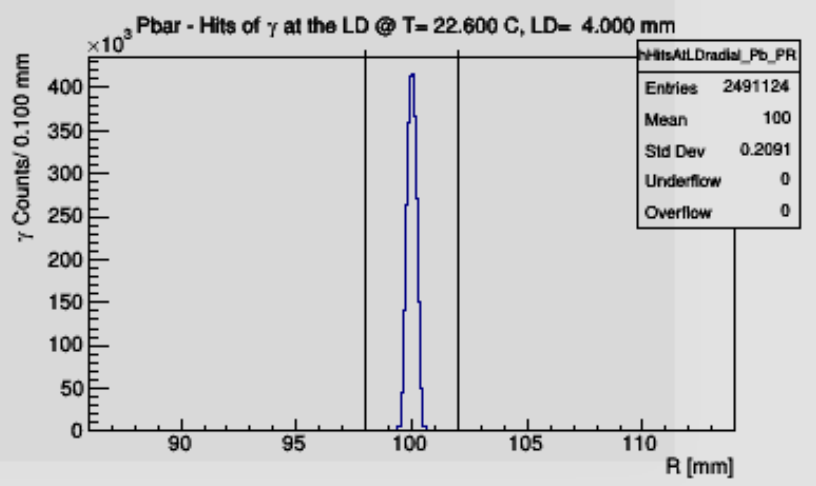
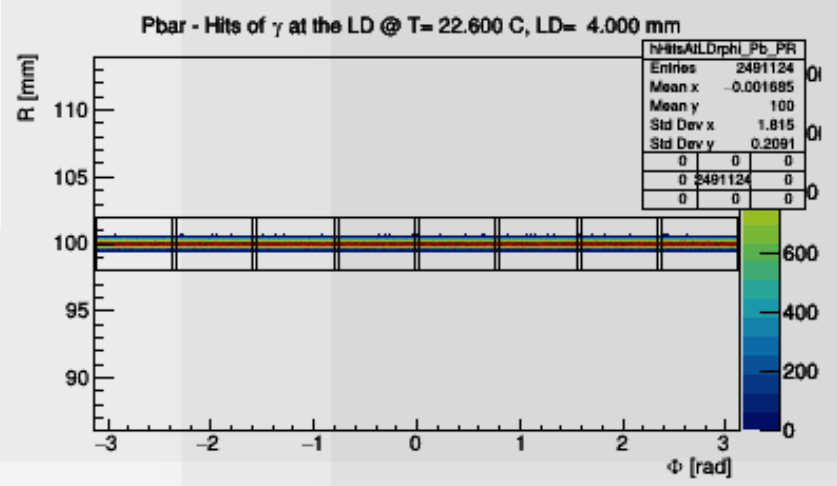
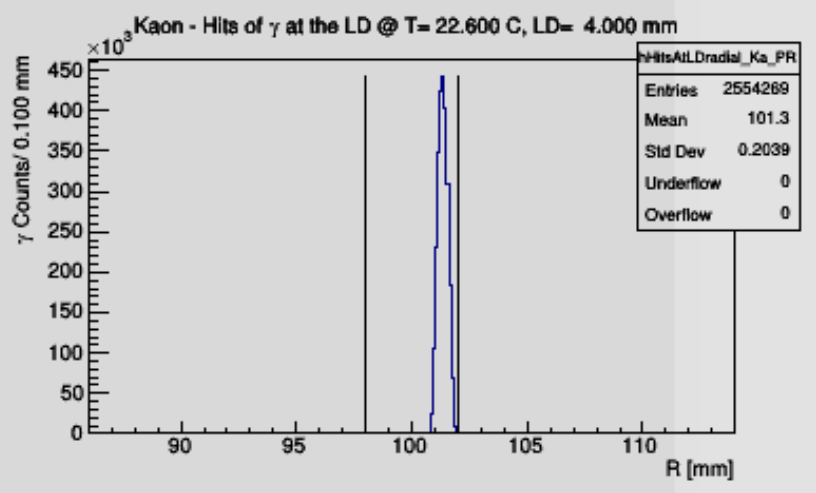
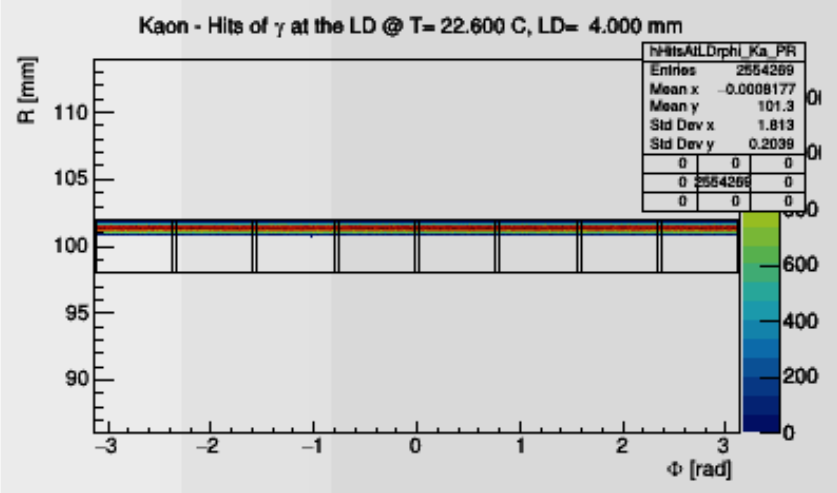
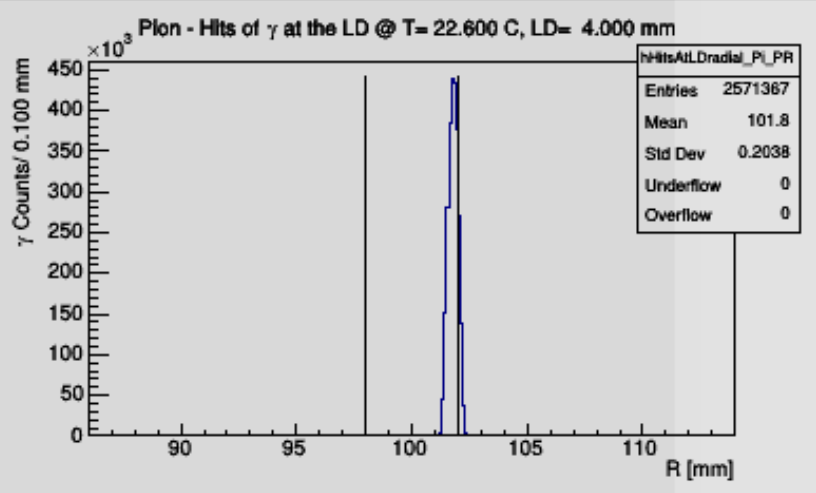
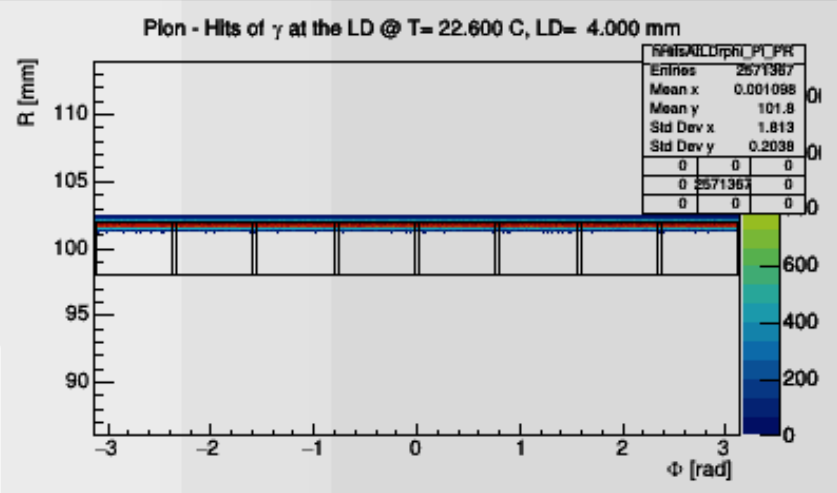
photon radial position

mean [mm] RMS [mm]

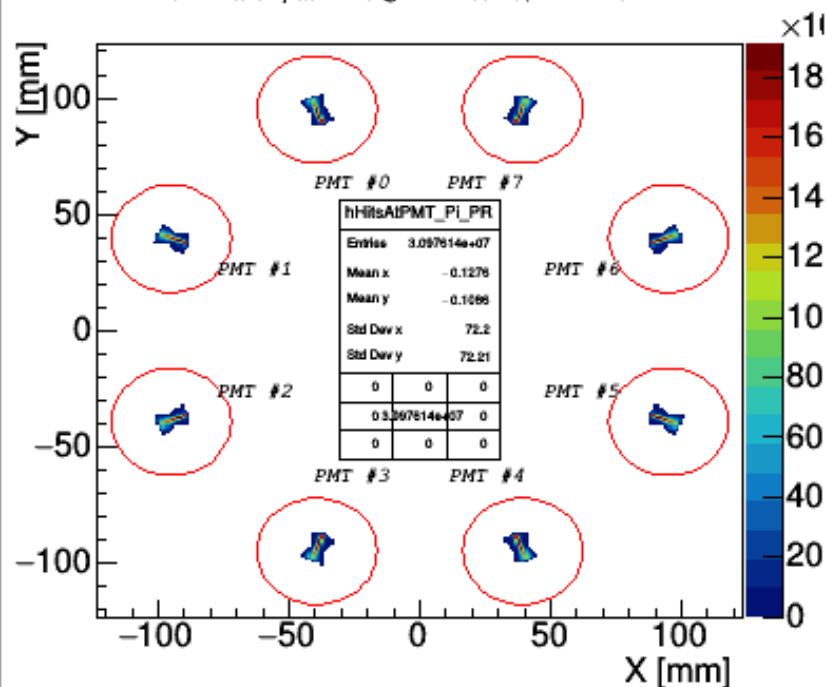
Pion 101.8 0.2038

Kaon 101.3 0.2039

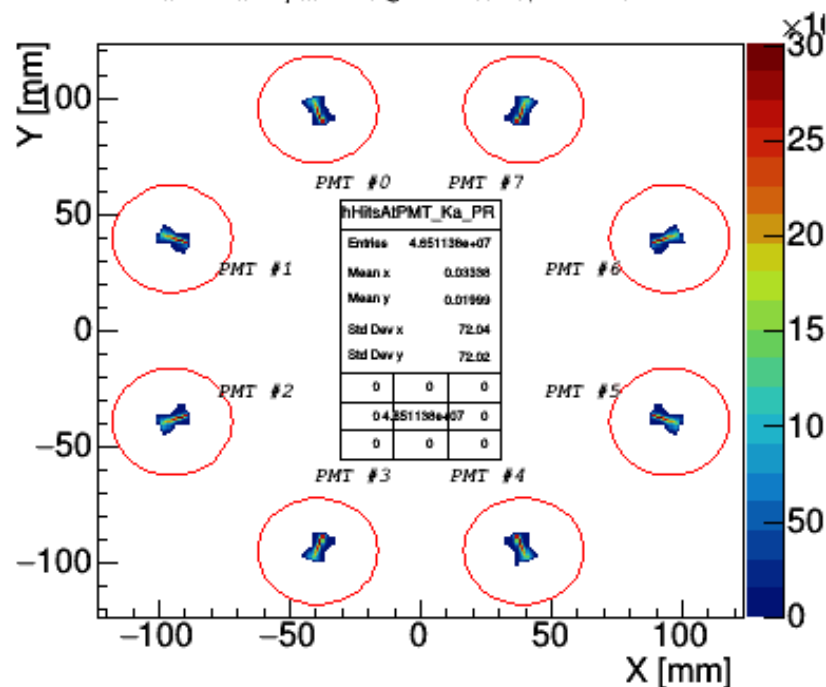
Pbar 100.0 0.2091



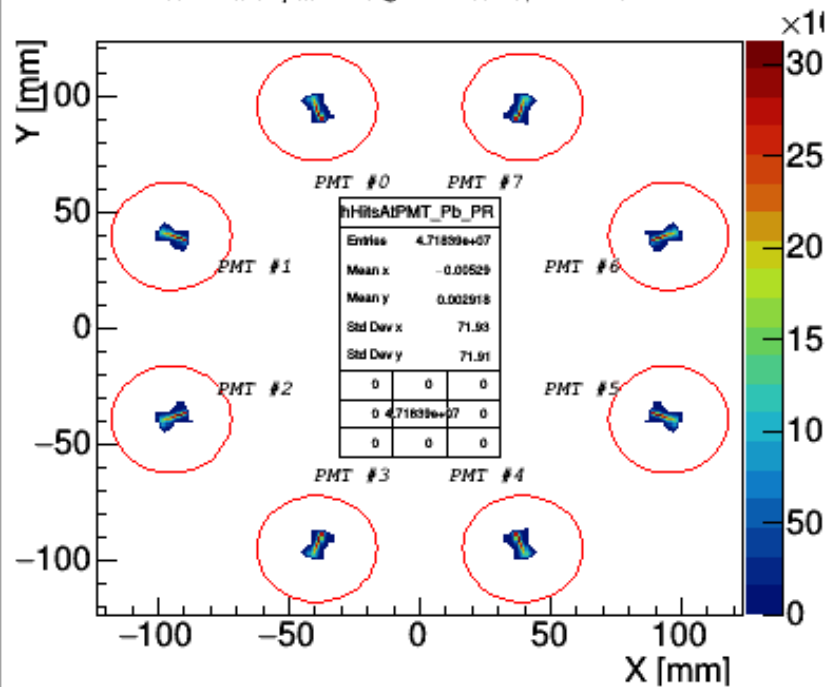
Pion - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



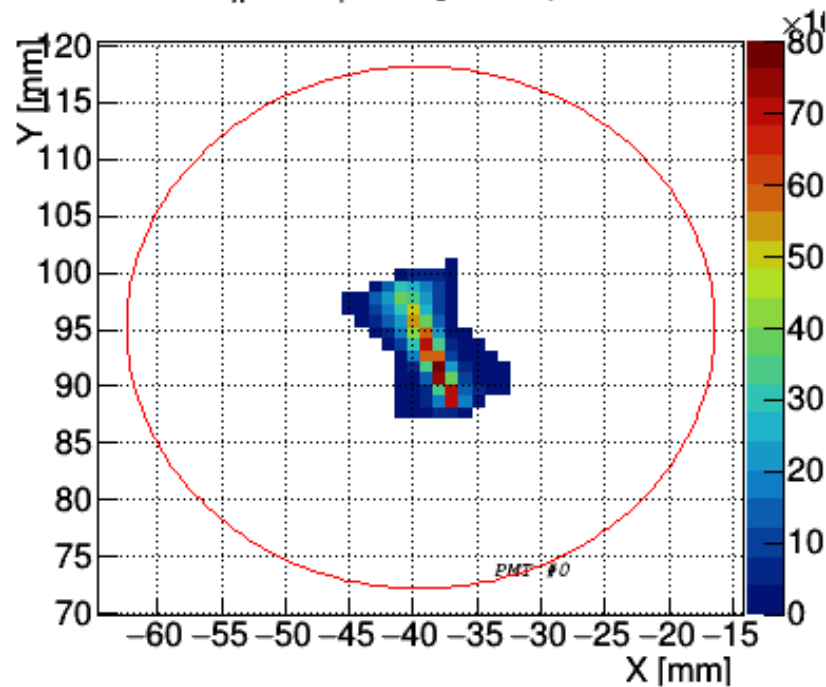
Kaon - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



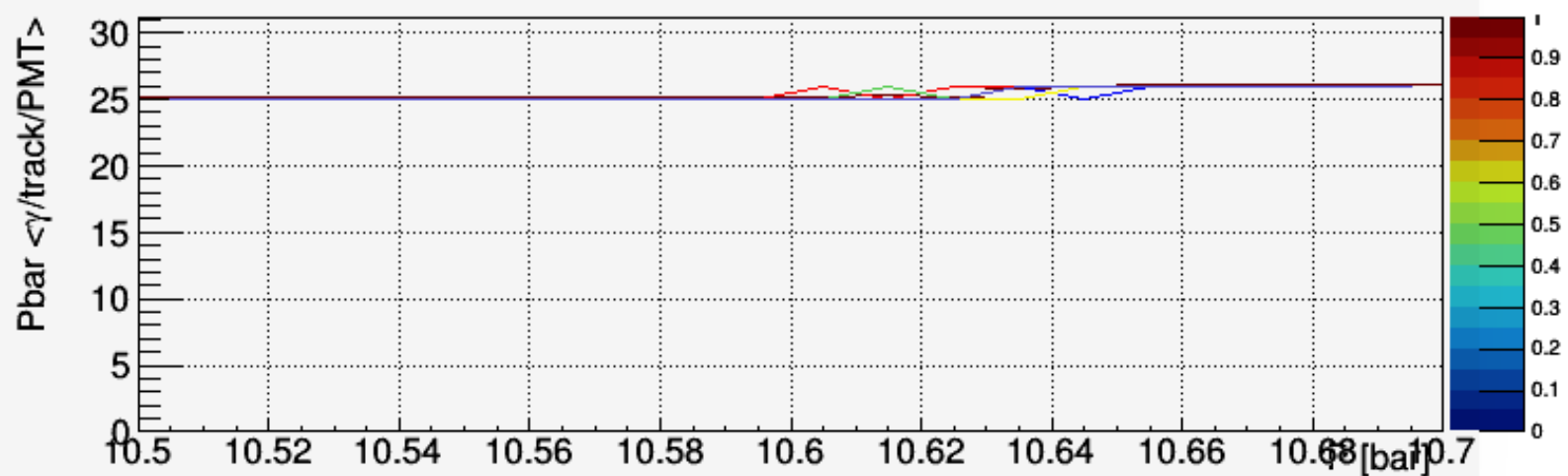
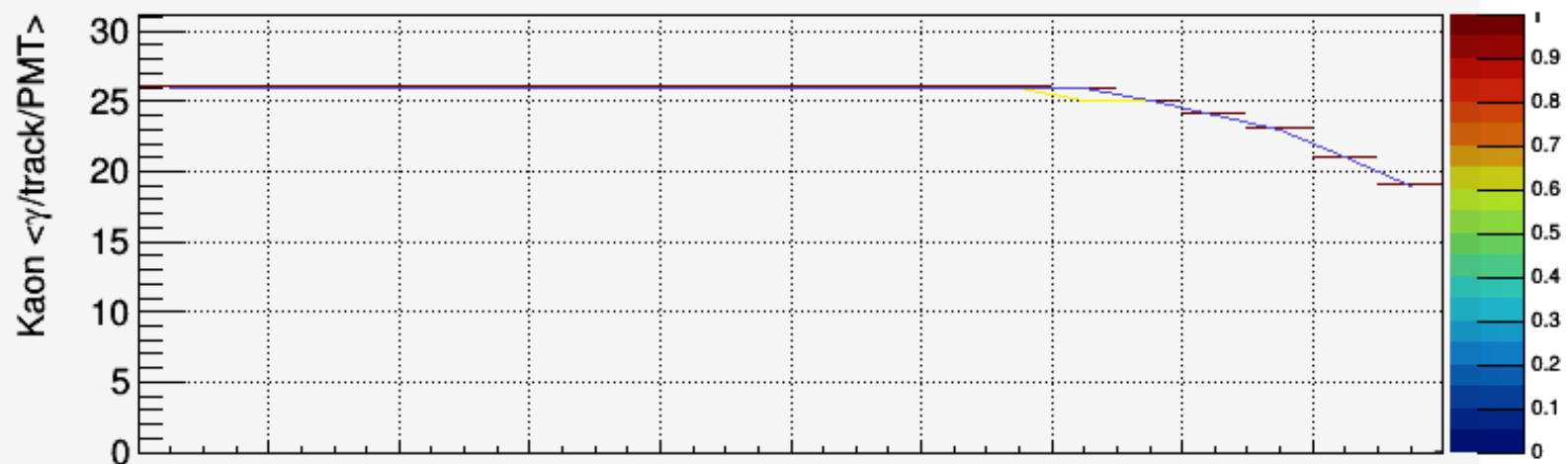
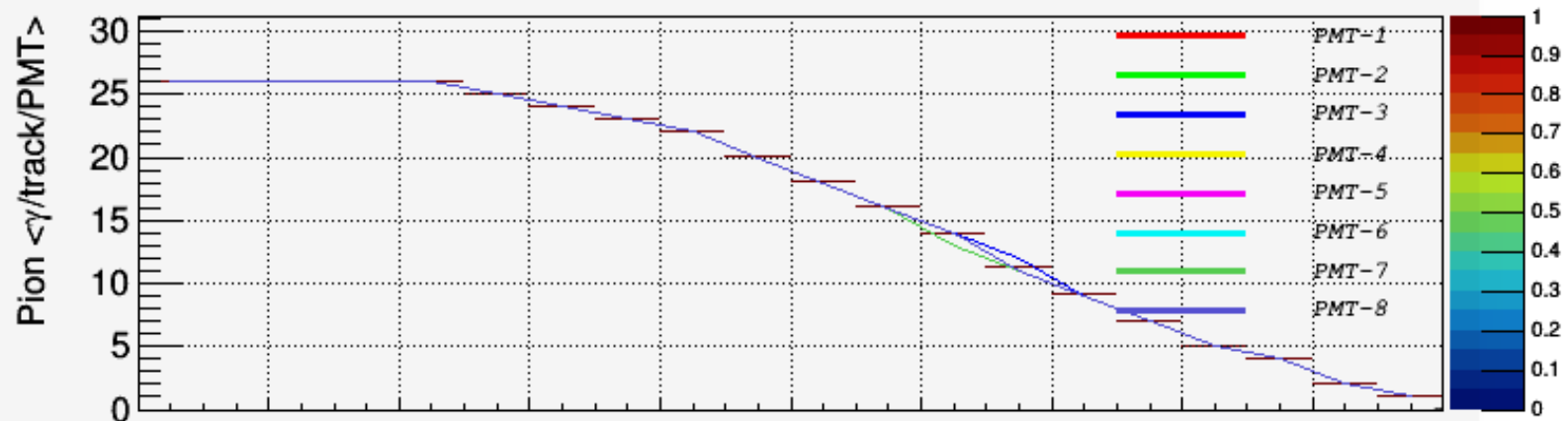
Pbar - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



All PartTypes - Hits of γ at PMT #0 @ T= 22.800 C, LD= 4.000 mm



Pion - $\langle \gamma/\text{track}/\text{PMT} \rangle$ w/out Pileup @ T= 22.600 C, LD= 4.000 mm



LD = 4.0mm ; 10,000 tracks / pressure step of 10 mbar
 RMS_pos = 1.0mm, **RMS_div = 0.025 mrad**, RMS_mom = 1 GeV/c)

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> CEDAR geomery | <input type="checkbox"/> Pion pag.1 @ CEDAR entrance | <input type="checkbox"/> Pion pag.2 @ CEDAR entrance | <input type="checkbox"/> Kaon pag.1 @ CEDAR entrance |
| <input type="checkbox"/> Kaon pag.2 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.1 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.2 @ CEDAR entrance | <input type="checkbox"/> EMI-9820QB Q.E. - EMI-9814 Dark Counts |
| <input type="checkbox"/> PMT Effic. _HV | <input type="checkbox"/> Optical characteristics of the media | <input type="checkbox"/> Mean No. Gener.Photons - PRscan | <input type="checkbox"/> Photon wavelengths - PRscan |
| <input type="checkbox"/> Photons emerging from Mirror - PRscan | <input type="checkbox"/> X-Y #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> R-Phi #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> Photons at PMT entrance - PRscan |
| <input checked="" type="checkbox"/> <Photons/track/PMT> - PRscan | <input type="checkbox"/> <NPE/track/PMT> - PRscan | <input type="checkbox"/> Fired PMT / track - PRscan | <input type="checkbox"/> Majorities/track - PRscan |
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| <input type="checkbox"/> Mean No. Gener.Photons - LDscan | <input type="checkbox"/> Photon wavelengths - LDscan | <input type="checkbox"/> Photons emerging from Mirror - LDscan | <input type="checkbox"/> X-Y #gamma at LD entrance - LDscan |
| <input type="checkbox"/> R-Phi #gamma at LD entrance - LDscan | <input type="checkbox"/> Photons at PMT entrance - LDscan | <input type="checkbox"/> <Photons/track/PMT> - LDscan | <input type="checkbox"/> <NPE/track/PMT> - LDscan |
| <input type="checkbox"/> Fired PMT / track - LDscan | <input type="checkbox"/> Majorities/track - LDscan | <input type="checkbox"/> Majority/track - LDscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - LDscan |
| <input type="checkbox"/> Efficiencies _Contamination - LDscan | <input type="checkbox"/> Effic. _Contam./track - LDscan | | |

Choice of file with Pressure-scan data
 ./PressureScanCED2_2014_11_21.csv Reference file with pressure-scan data (Maj. 6-, 7-, 8-fold)

Pressure Scan Conditions

10.500 Pmin in CEDAR [bar] (Def.: 10.100)	10.700 Pmax in CEDAR [bar] (Def.: 10.800)	20 # pressure steps (Def.: 70.0)
22.6 T in CEDAR [C] (Def.: 22.6)	4.000 LD in CEDAR [mm] (Def.: 0.50)	10 No. generated particles / type [10^3] (Def.: 1)
240 LambdaMin on PMT [nm] (Def.: 240)	630 LambdaMax on PMT [nm] (Def.: 630)	1 wavelength step [nm] (Def.: 1)

Mirror Reflectivity Suprasil-1 Transmittance Cutoff Filter Transmittance

0.00 Beam <X> [mm] (Def.: -1.52)	0.00 Beam <Y> [mm] (Def.: 2.20)	<input type="checkbox"/> Get Part. Pos. from TURTLE files <input type="checkbox"/> Use "Beam <X/Y>" as offset
1.00 Beam RMS(X) [mm] (Def.: 6.19)	1.00 Beam RMS(Y) [mm] (Def.: 11.60)	
0.000 Beam <DivX> [mrad] (Def.: -0.013)	0.000 Beam <DivY> [mrad] (Def.: 0.009)	<input type="checkbox"/> Get Part. Dir. from TURTLE files <input type="checkbox"/> Use "Beam <DivX/DivY>" as offset
0.025 Beam RMS(DivX) [mrad] (Def.: 0.177)	0.025 Beam RMS(DivY) [mrad] (Def.: 0.109)	
190.00 Beam Mom. Mean [GeV/c] (Def.: 189.66)	1.00 Beam Mom. RMS [GeV/c] (Def.: 3.18)	<input type="checkbox"/> Get Part. Mom. from TURTLE files

Multiple Scattering Fix lambda to 300nm (MSC checks) 0 # PMT to be zoomed (Def.: 0)

Pile-up 0.1000 Beam Intesity [GHz] (Def.: 0.10) 20.0 L.E. discriminator width [ns] (Def.: 20.00)

Majorities to be displayed: 1-fold 2-fold 3-fold 4-fold 5-fold 6-fold 7-fold 8-fold

Light Diaphragm Scan Conditions

P values [bar] for LD scan 10.239 pion (Def.: 10.239) 10.303 kaon (Def.: 10.303) 10.611 pbar (Def.: 10.611)

Particle for LD scan Kaon LD min [mm] (Def.: 0.050) 0.050 LD max [mm] (Def.: 6.000) 6.000 # LD steps (Def.: 120.000) 120

- Tools
- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Dump Geometry data | <input type="checkbox"/> Dump PMT eff. _HV | <input type="checkbox"/> Update Particle Lists | <input type="checkbox"/> Refresh all TCanvas |
| <input type="checkbox"/> Toggle logY option for histos of X/Y coord.s | <input checked="" type="checkbox"/> Start new pressure scan | <input type="checkbox"/> Start new LD scan | <input type="checkbox"/> Draw Geometry without tracks |
| <input type="checkbox"/> Draw Tracks on top of Geometry | <input type="checkbox"/> Write Histos and TTree to ROOT file | <input type="checkbox"/> Write TCanvases to a PDF file | |

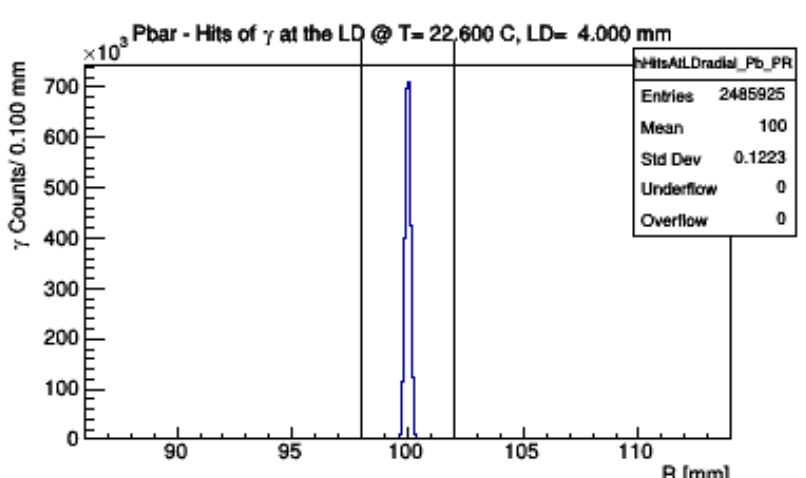
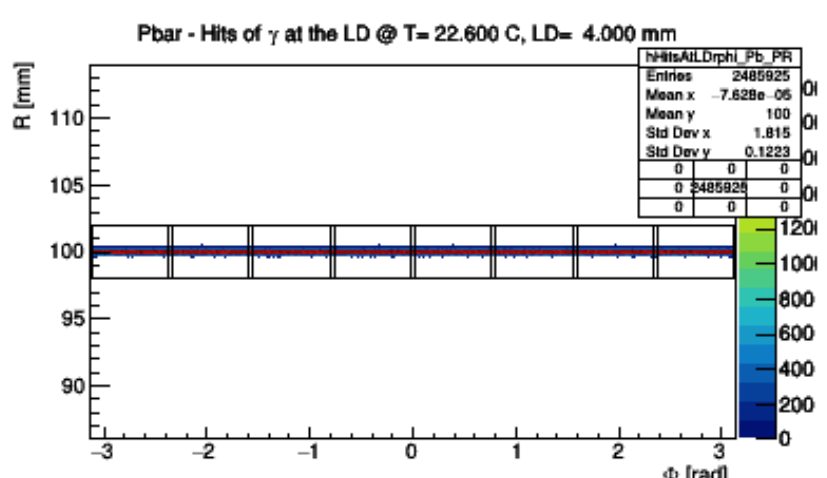
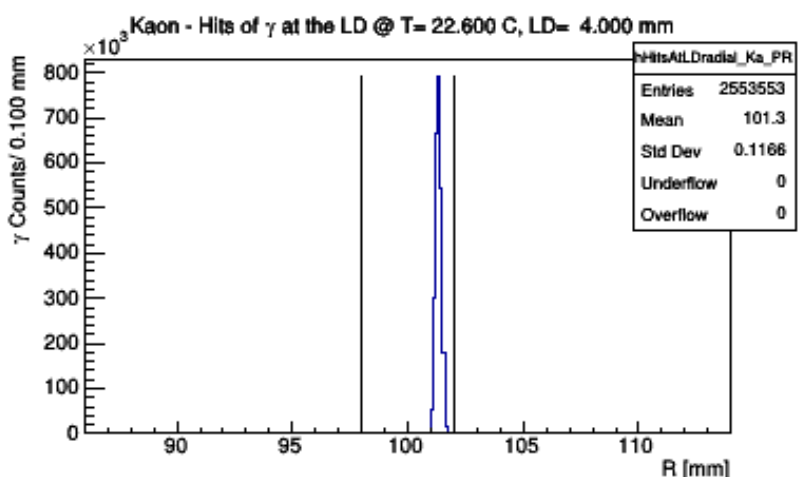
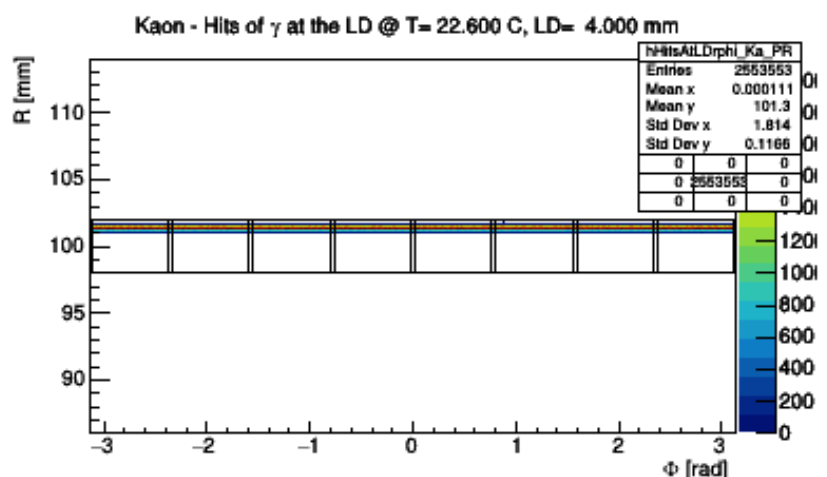
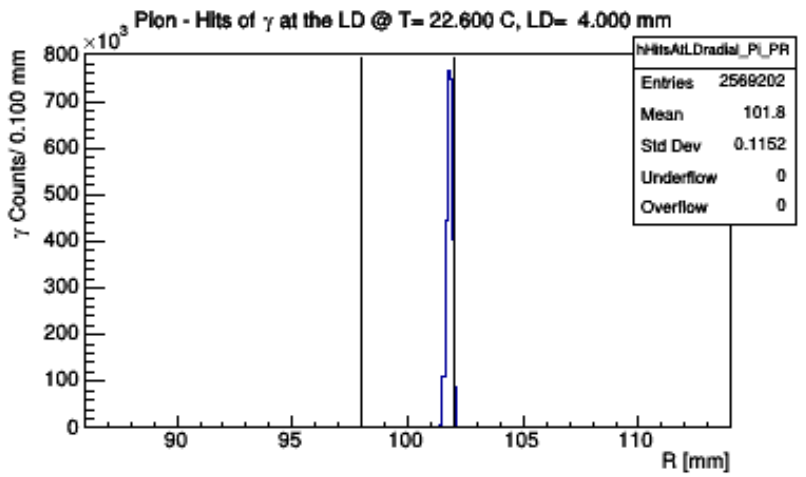
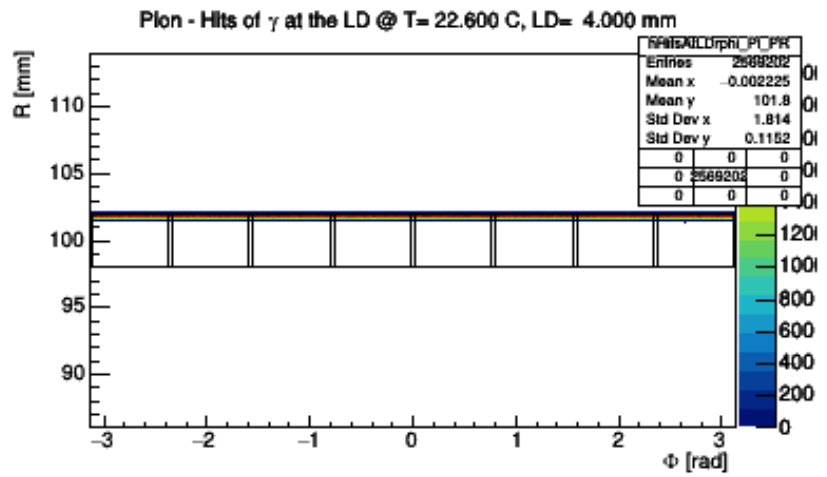
photon radial position

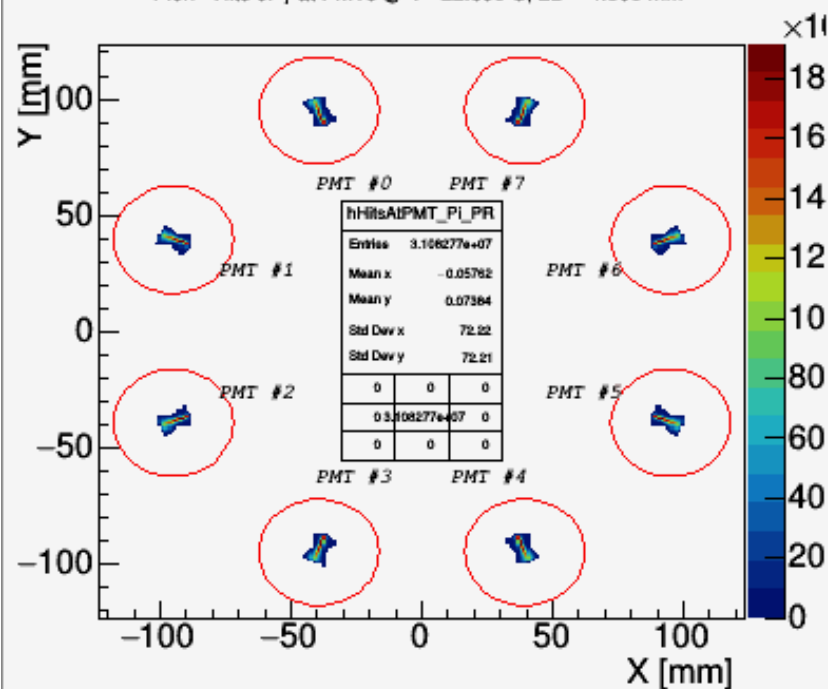
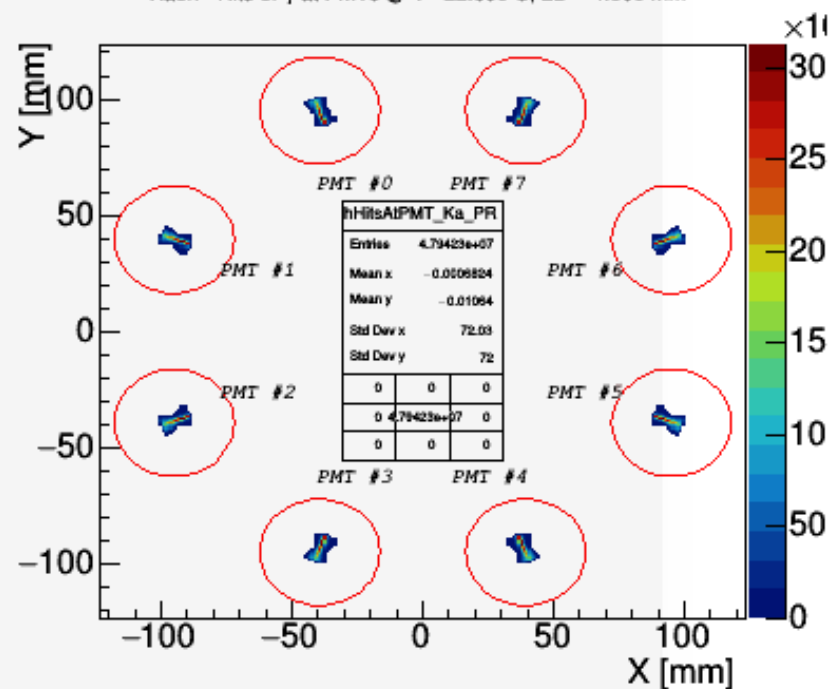
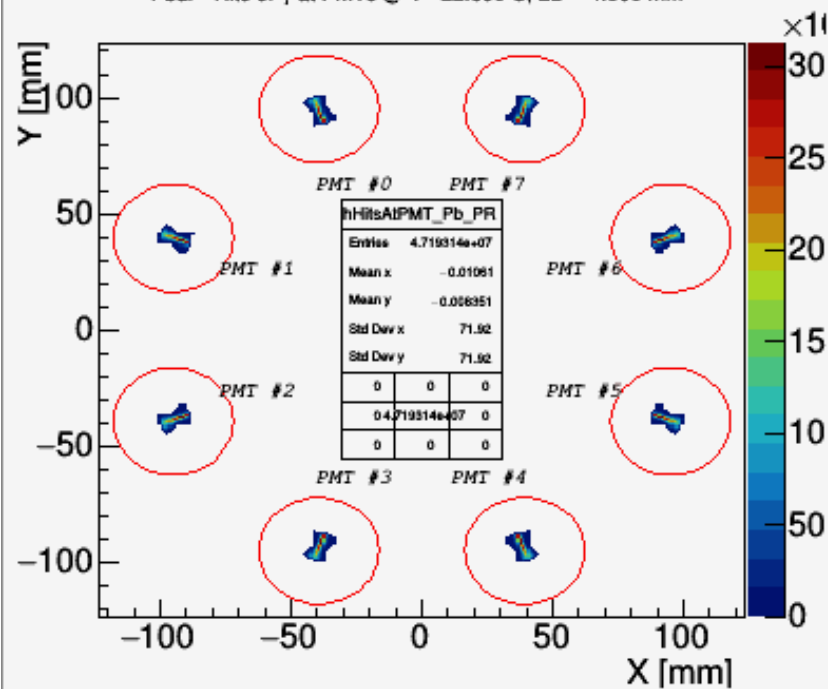
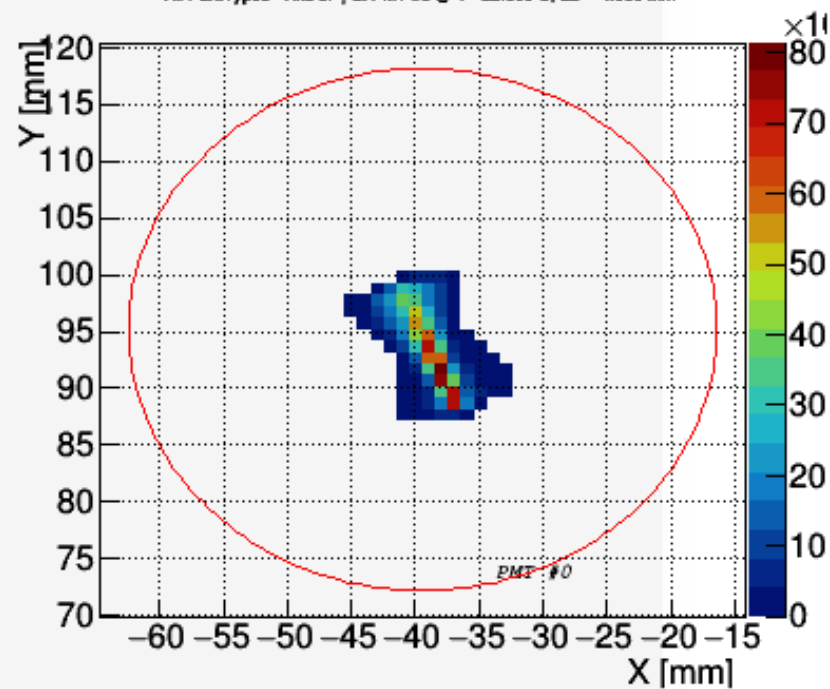
mean [mm] RMS [mm]

Pion 101.8 0.1152

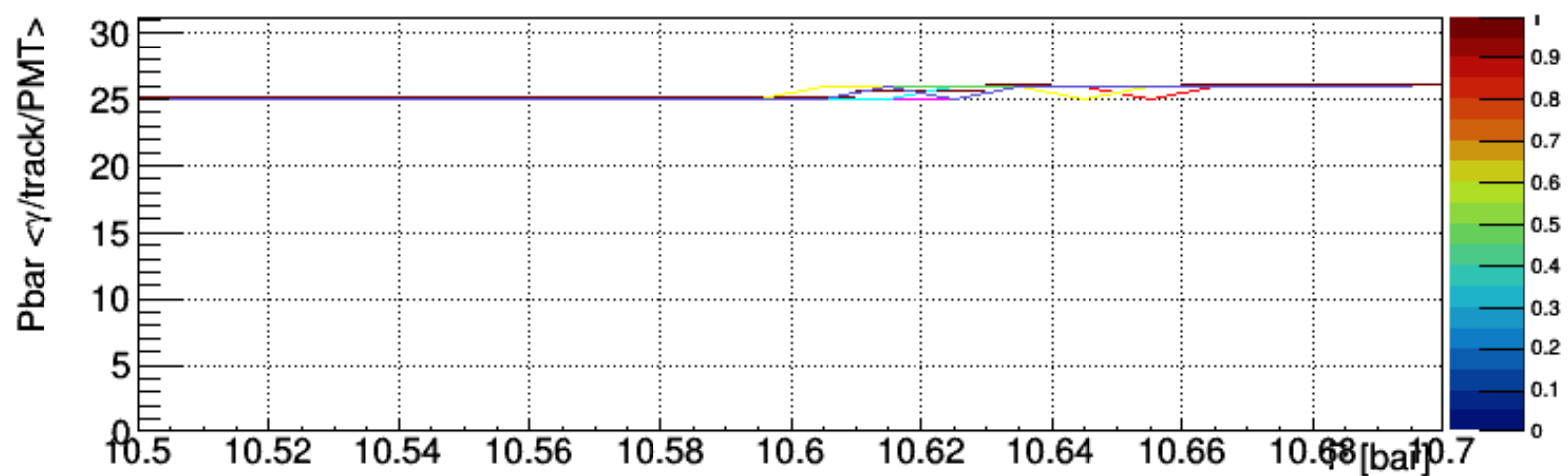
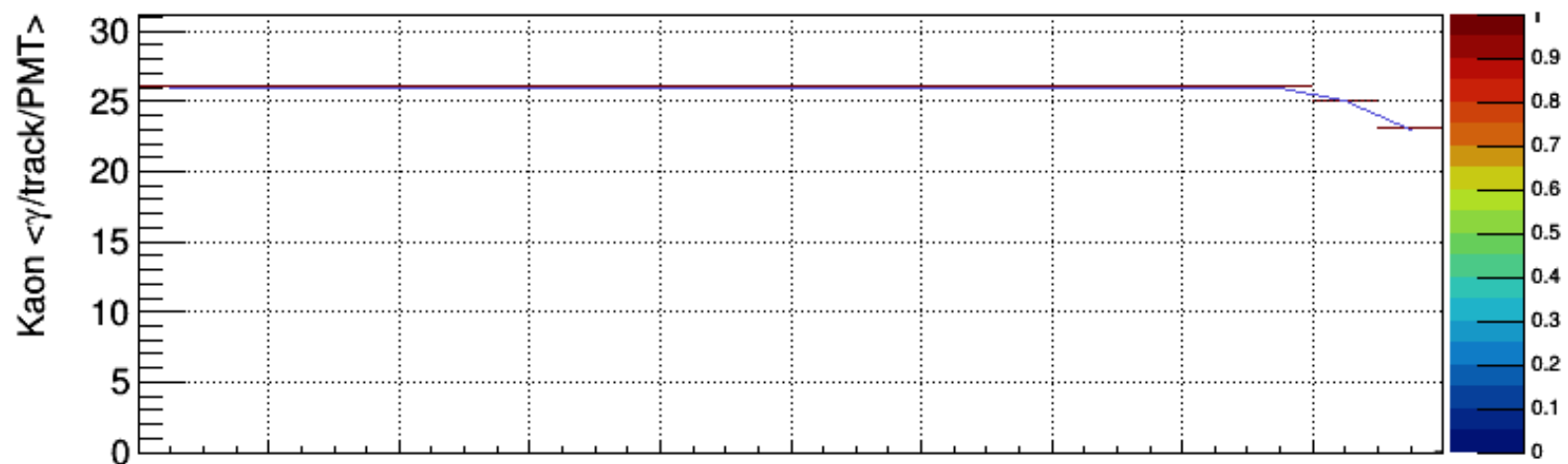
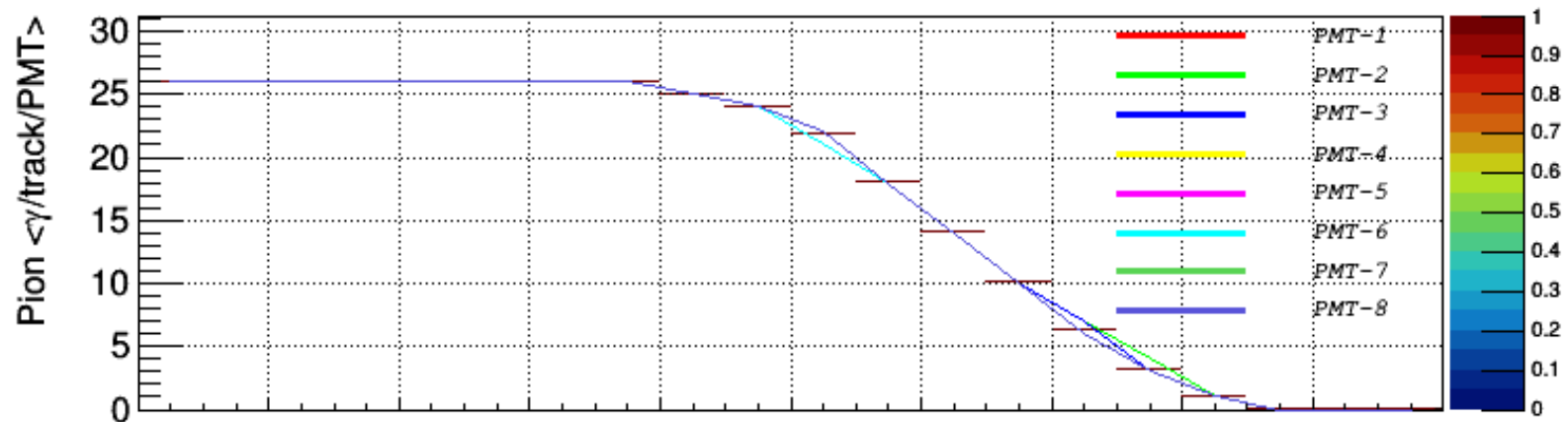
Kaon 101.3 0.1166

Pbar 100.0 0.1223

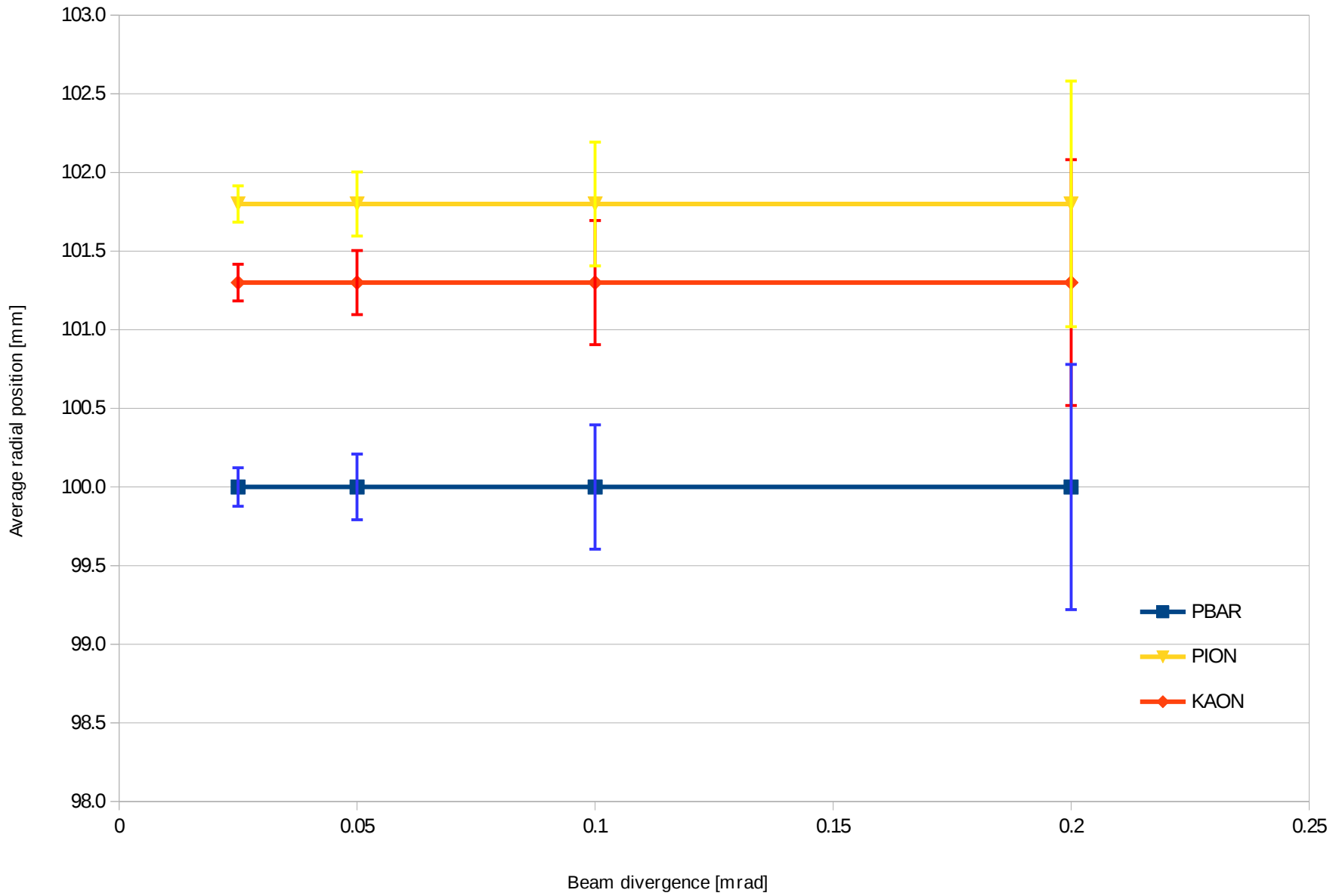


Pion - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mmKaon - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mmPbar - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mmAll Part.Types - Hits of γ at PMT #0 @ T= 22.800 C, LD= 4.000 mm

Pion - $\langle \gamma/\text{track}/\text{PMT} \rangle$ w/out Pileup @ T= 22.600 C, LD= 4.000 mm



Summary of radial position of the incident photon at the Light Diaphragm



Series of pressure scans about the position of pbar, with the Light Diaphragm opening at 4.0mm and varying the beam size at constant beam divergence:
RMS = 0.025mrad

LD = 4.0mm ; 10,000 tracks / pressure step of 10 mbar
RMS_pos = 3.0mm, RMS_div = 0.025 mrad, RMS_mom = 1 GeV/c)

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> CEDAR geomery | <input type="checkbox"/> Pion pag.1 @ CEDAR entrance | <input type="checkbox"/> Pion pag.2 @ CEDAR entrance | <input type="checkbox"/> Kaon pag.1 @ CEDAR entrance |
| <input type="checkbox"/> Kaon pag.2 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.1 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.2 @ CEDAR entrance | <input type="checkbox"/> EMI-9820QB Q.E. - EMI-9814 Dark Counts |
| <input type="checkbox"/> PMT Effic. _HV | <input type="checkbox"/> Optical characteristics of the media | <input type="checkbox"/> Mean No. Gener.Photons - PRscan | <input type="checkbox"/> Photon wavelengths - PRscan |
| <input type="checkbox"/> Photons emerging from Mirror - PRscan | <input type="checkbox"/> X-Y #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> R-Phi #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> Photons at PMT entrance - PRscan |
| <input checked="" type="checkbox"/> <Photons/track/PMT> - PRscan | <input type="checkbox"/> <NPE/track/PMT> - PRscan | <input type="checkbox"/> Fired PMT / track - PRscan | <input type="checkbox"/> Majorities/track - PRscan |
| <input type="checkbox"/> Majority/track - PRscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - PRscan | <input type="checkbox"/> Efficiencies _Contamination - PRscan | <input type="checkbox"/> Effic. _Contam./track - PRscan |
| <input type="checkbox"/> Mean No. Gener.Photons - LDscan | <input type="checkbox"/> Photon wavelengths - LDscan | <input type="checkbox"/> Photons emerging from Mirror - LDscan | <input type="checkbox"/> X-Y #gamma at LD entrance - LDscan |
| <input type="checkbox"/> R-Phi #gamma at LD entrance - LDscan | <input type="checkbox"/> Photons at PMT entrance - LDscan | <input type="checkbox"/> <Photons/track/PMT> - LDscan | <input type="checkbox"/> <NPE/track/PMT> - LDscan |
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| <input type="checkbox"/> Efficiencies _Contamination - LDscan | <input type="checkbox"/> Effic. _Contam./track - LDscan | | |

Choice of file with Pressure-scan data
 ../PressureScanCED2_2014_11_21.csv Reference file with pressure-scan data (Maj. 6-, 7-, 8-fold)

Pressure Scan Conditions

10.500	Pmin in CEDAR [bar] (Def.: 10.100)	10.700	Pmax in CEDAR [bar] (Def.: 10.800)	20	# pressure steps (Def.: 70.0)
22.6	T in CEDAR [C] (Def.: 22.6)	4.000	LD in CEDAR [mm] (Def.: 0.50)	10	No. generated particles / type [10^3] (Def.: 1)
240	LambdaMin on PMT [nm] (Def.: 240)	630	LambdaMax on PMT [nm] (Def.: 630)	1	wavelength step [nm] (Def.: 1)
<input checked="" type="checkbox"/>	Mirror Reflectivity	<input checked="" type="checkbox"/>	Suprasil-1 Transmittance	<input checked="" type="checkbox"/>	Cutoff Filter Transmittance
0.00	Beam <X> [mm] (Def.: -1.52)	0.00	Beam <Y> [mm] (Def.: 2.20)	<input type="checkbox"/>	Get Part. Pos. from TURTLE files
3.00	Beam RMS(X) [mm] (Def.: 6.19)	3.00	Beam RMS(Y) [mm] (Def.: 11.60)	<input type="checkbox"/>	Use "Beam <X/Y>" as offset
0.000	Beam <DivX> [mrad] (Def.: -0.013)	0.000	Beam <DivY> [mrad] (Def.: 0.009)	<input type="checkbox"/>	Get Part. Dir. from TURTLE files
0.025	Beam RMS(DivX) [mrad] (Def.: 0.177)	0.025	Beam RMS(DivY) [mrad] (Def.: 0.109)	<input type="checkbox"/>	Use "Beam <DivX/DivY>" as offset
190.00	Beam Mom. Mean [GeV/c] (Def.: 189.66)	1.00	Beam Mom. RMS [GeV/c] (Def.: 3.18)	<input type="checkbox"/>	Get Part. Mom. from TURTLE files
<input checked="" type="checkbox"/>	Multiple Scattering	<input type="checkbox"/>	Fix lambda to 300nm (MSC checks)	0	# PMT to be zoomed (Def.: 0)
<input type="checkbox"/>	Pile-up	0.1000	Beam Intensity [GHz] (Def.: 0.10)	20.0	L.E. discriminator width [ns] (Def.: 20.00)
Majorities to be displayed : <input type="checkbox"/> 1-fold <input type="checkbox"/> 2-fold <input type="checkbox"/> 3-fold <input type="checkbox"/> 4-fold <input type="checkbox"/> 5-fold <input checked="" type="checkbox"/> 6-fold <input checked="" type="checkbox"/> 7-fold <input checked="" type="checkbox"/> 8-fold					

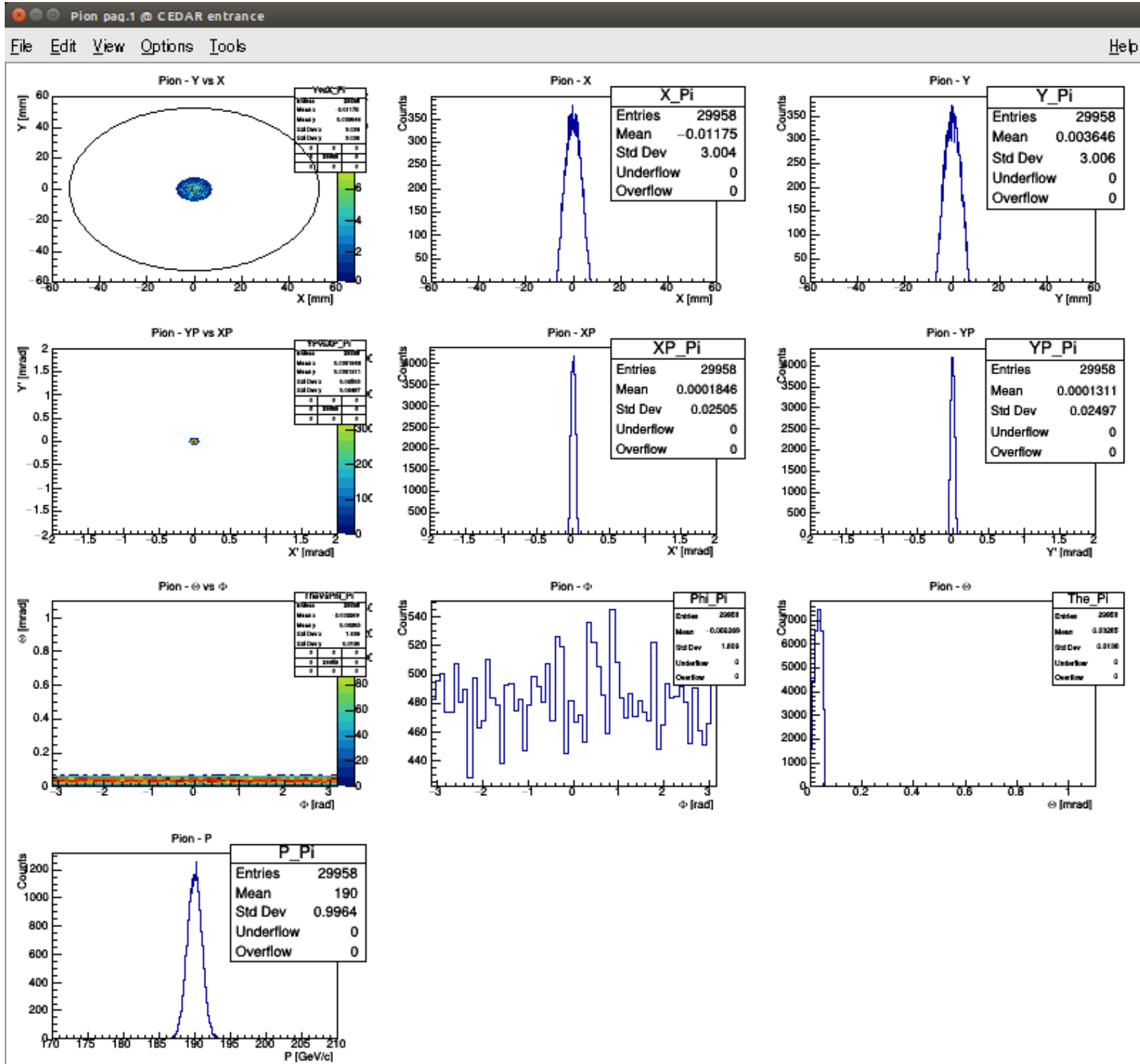
Light Diaphragm Scan Conditions

P values [bar] for LD scan	10.239	pion (Def.: 10.239)	10.303	kaon (Def.: 10.303)	10.611	pbar (Def.: 10.611)
Particle for LD scan	Kaon	LD min [mm] (Def.: 0.050)	0.050	LD max [mm] (Def.: 6.000)	6.000	# LD steps (Def.: 120.000)
						120

Tools

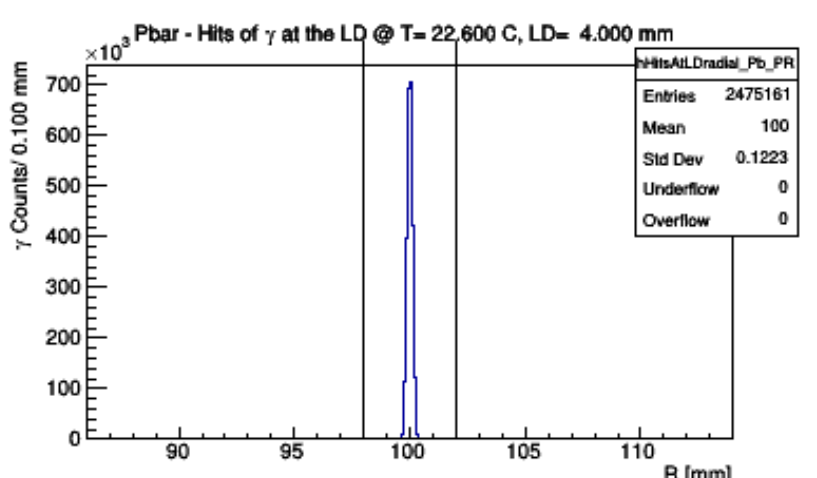
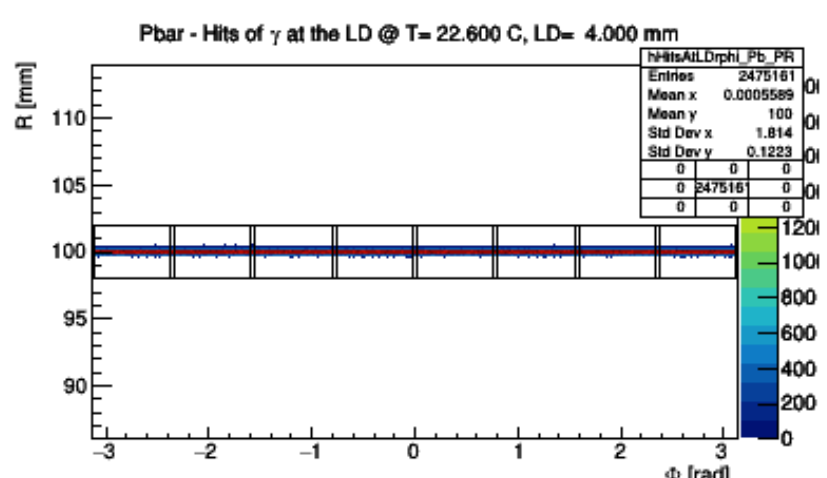
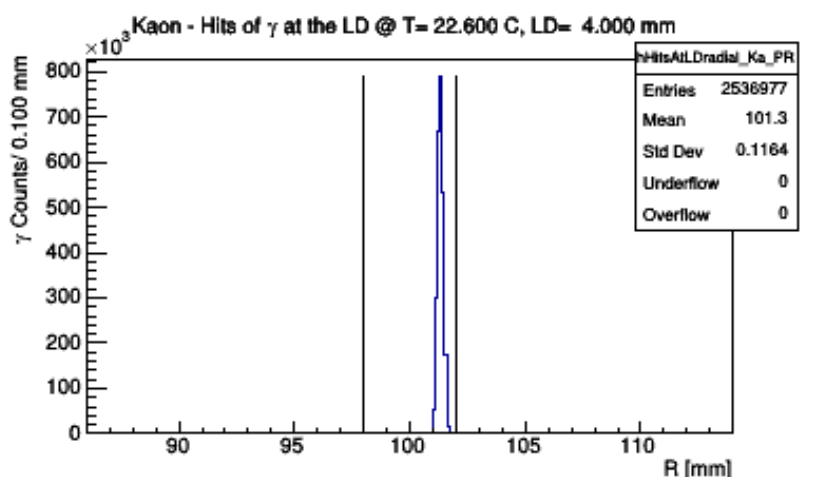
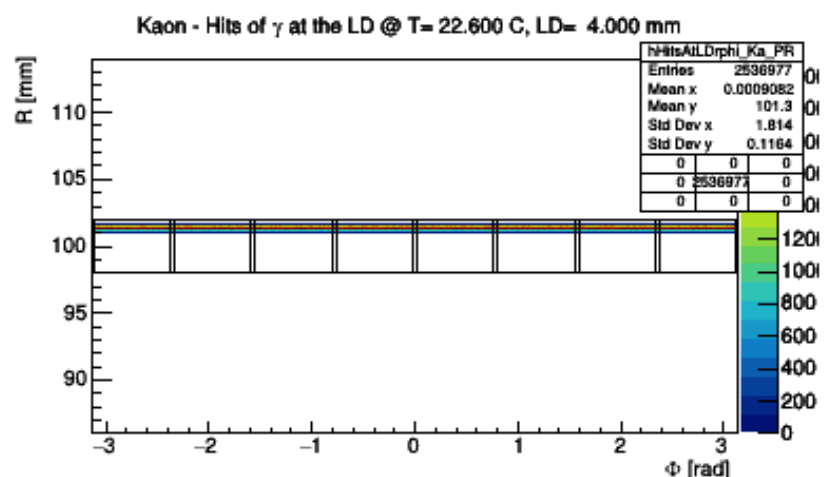
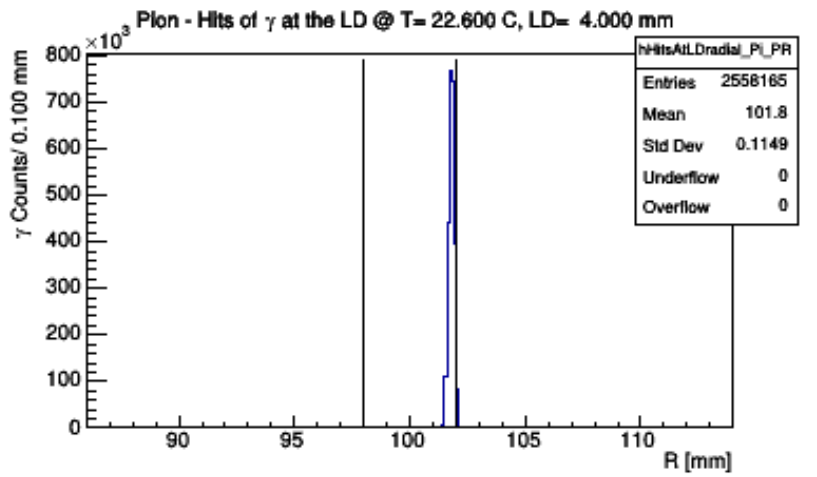
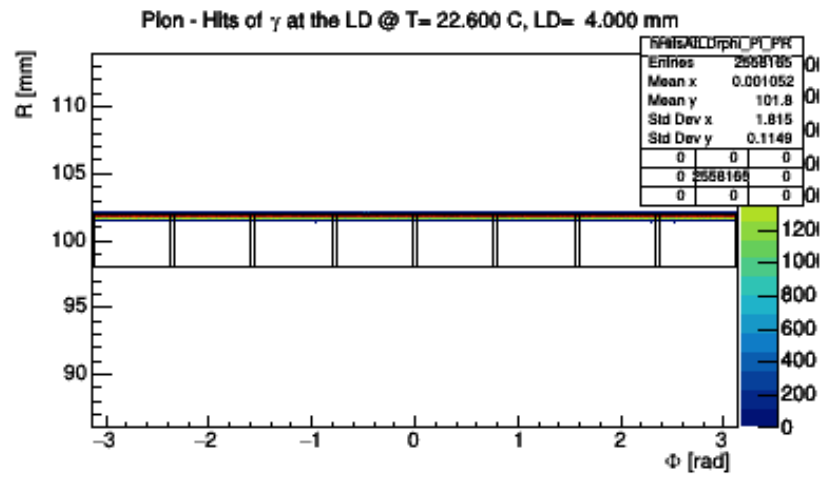
- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Dump Geometry data | <input type="checkbox"/> Dump PMT eff. _HV | <input type="checkbox"/> Update Particle Lists | <input type="checkbox"/> Refresh all TCanvas |
| <input type="checkbox"/> Toggle logY option for histos of X/Y coord.s | <input checked="" type="checkbox"/> Start new pressure scan | <input type="checkbox"/> Start new LD scan | <input type="checkbox"/> Draw Geometry without tracks |
| <input type="checkbox"/> Draw Tracks on top of Geometry | <input type="checkbox"/> Write Histos and TTree to ROOT file | <input type="checkbox"/> Write TCanvas to a PDF file | |

X-Y beam spot (RMS= 3.0 mm) and divergences (RMS= 0.025 mrad) as from MC generator according with CERN/Lab.II/EA/74-4 appendix A, section 5

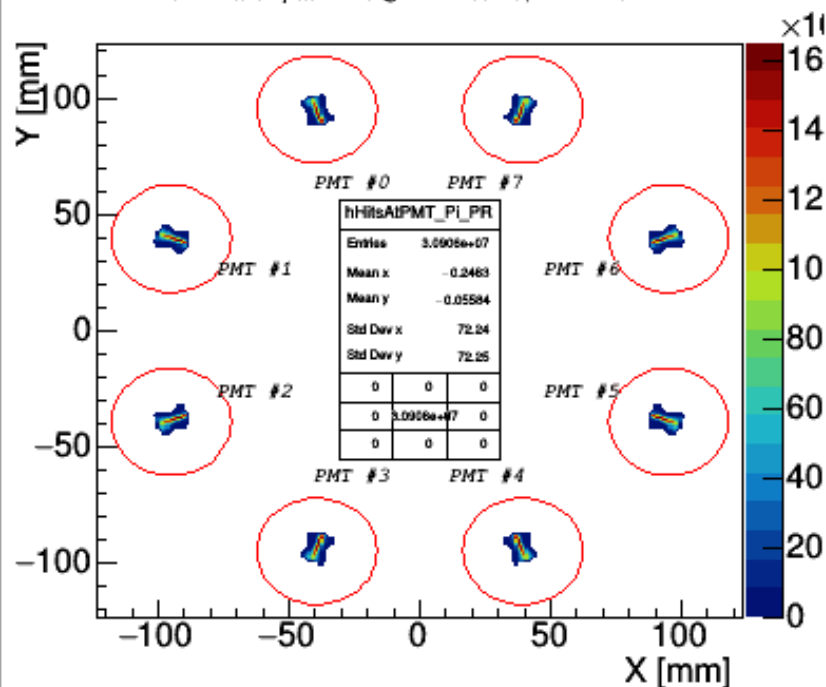


photon radial position

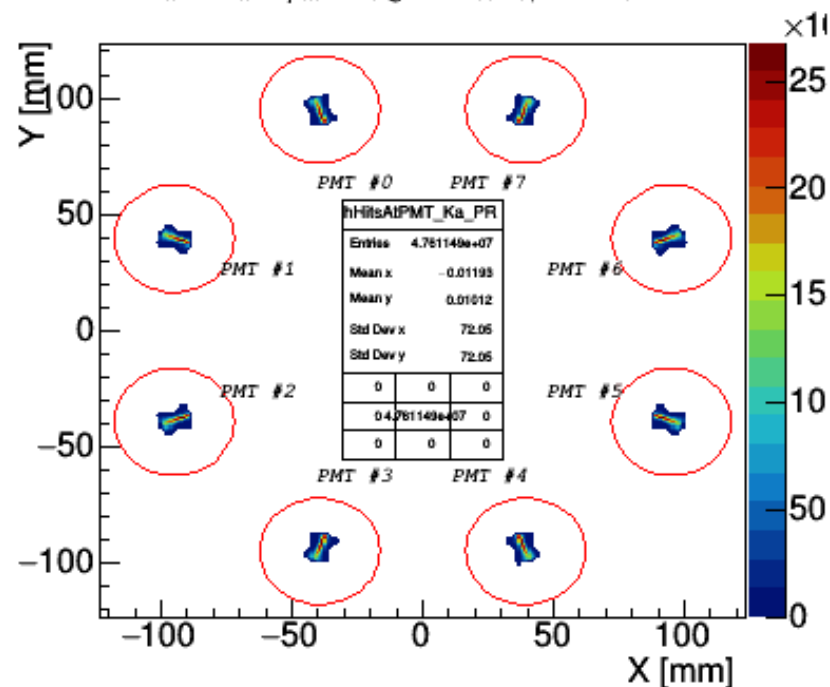
	mean [mm]	RMS [mm]
Pion	101.8	0.1149
Kaon	101.3	0.1164
Pbar	100.0	0.1223



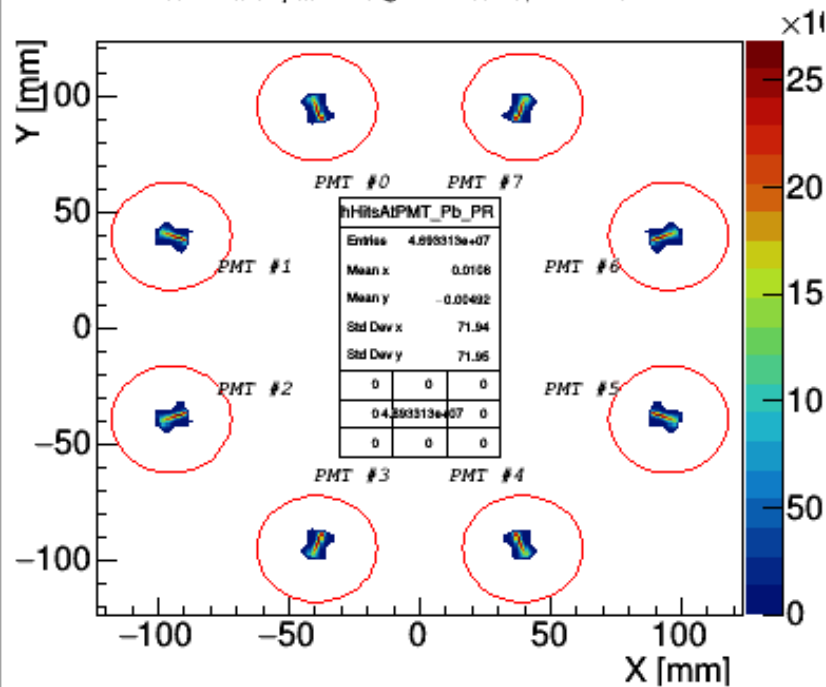
Pion - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



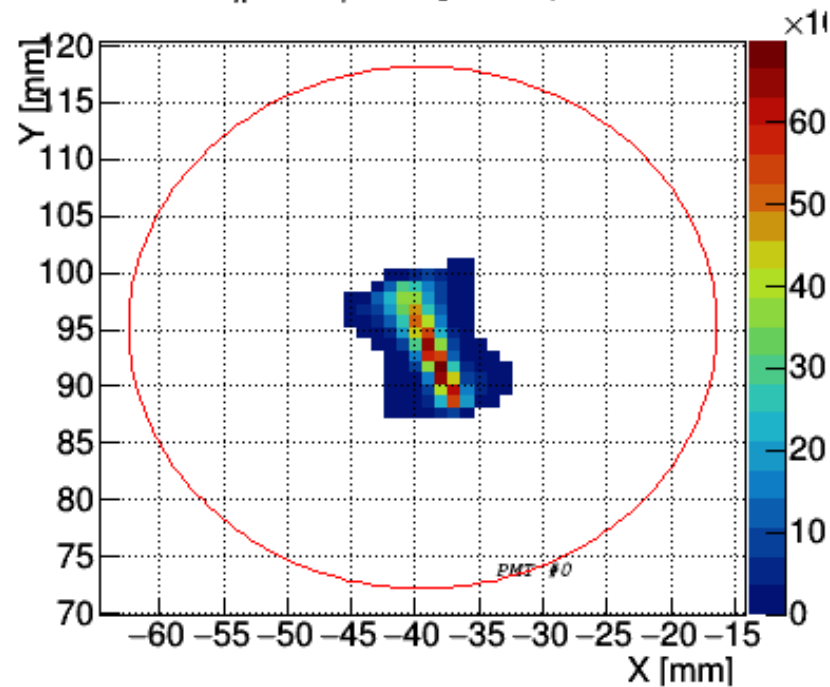
Kaon - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



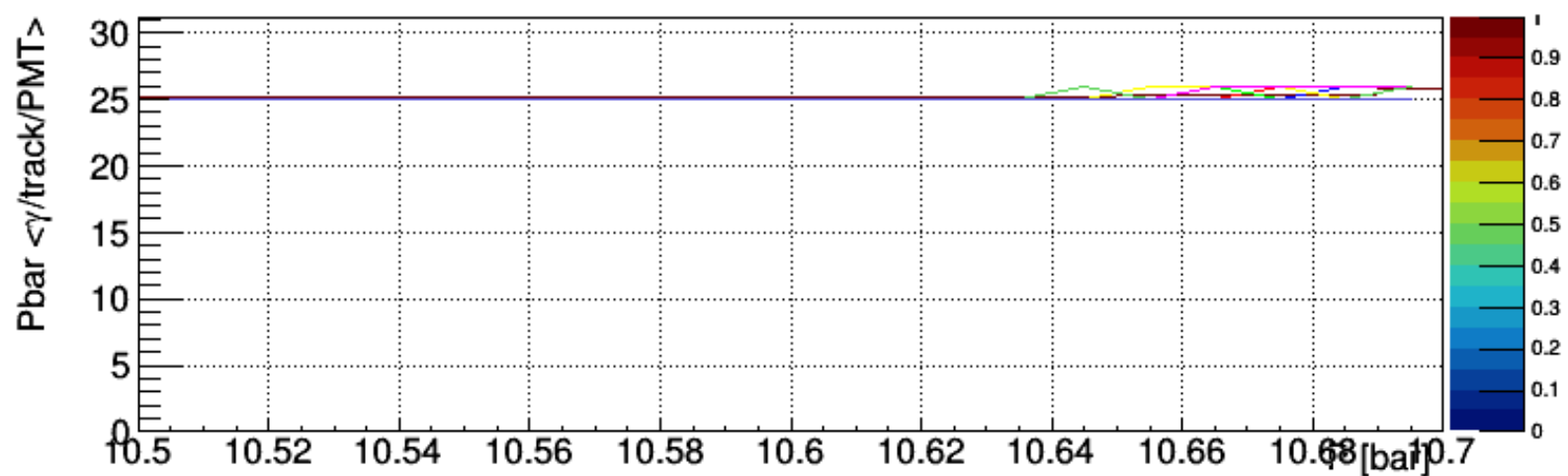
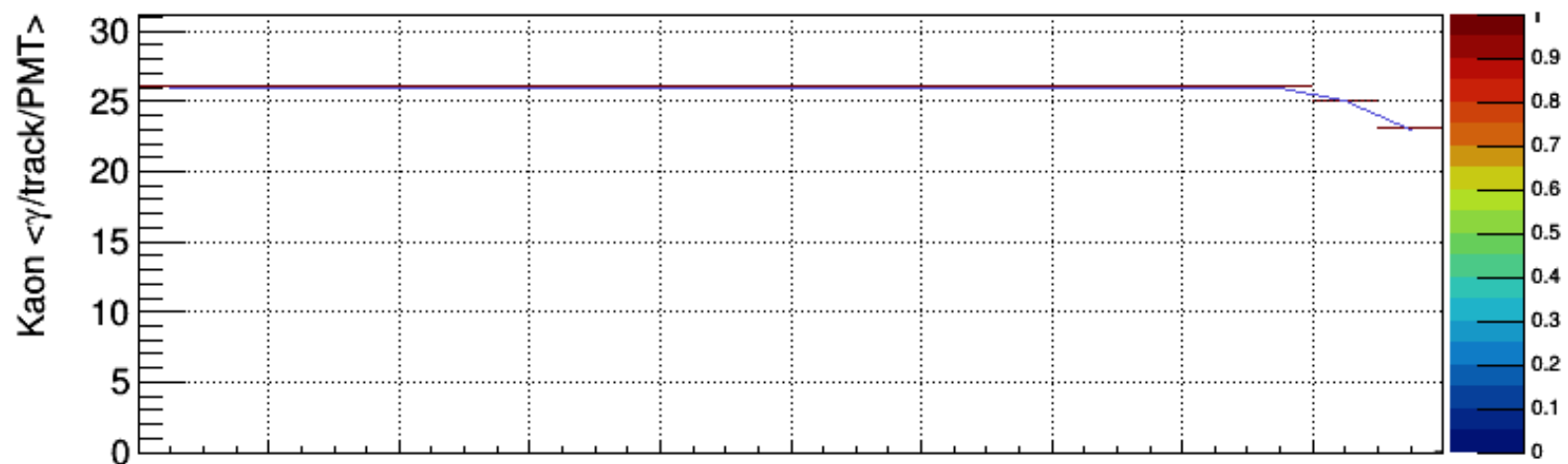
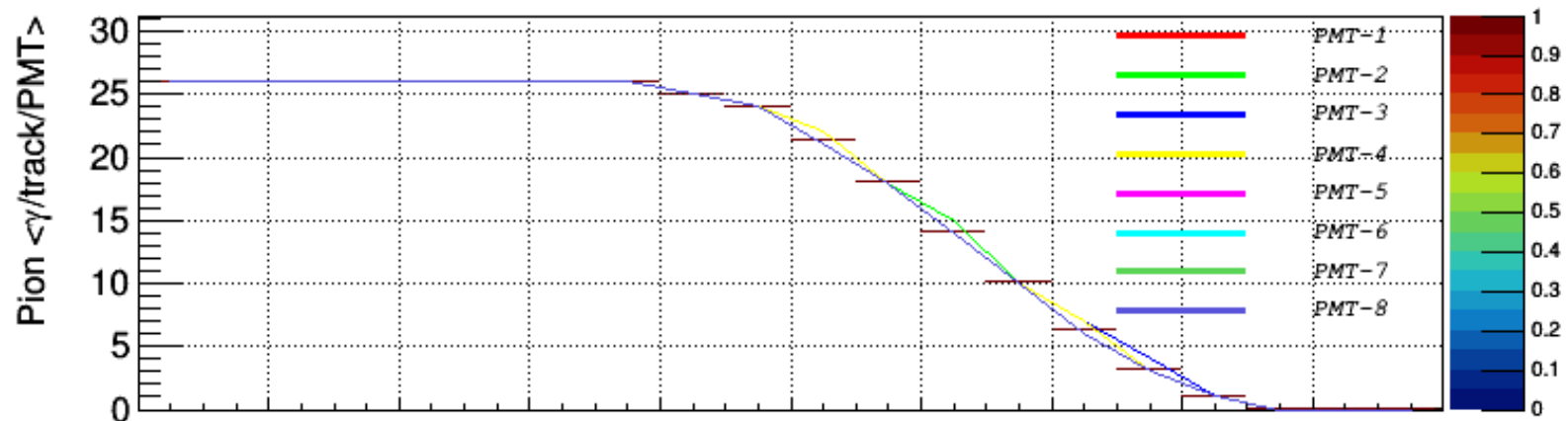
Pbar - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



All PartTypes - Hits of γ at PMT #0 @ T= 22.800 C, LD= 4.000 mm



Pion - $\langle \gamma/\text{track}/\text{PMT} \rangle$ w/out Pileup @ T= 22.600 C, LD= 4.000 mm



LD = 4.0mm ; 10,000 tracks / pressure step of 10 mbar
RMS_pos = 6.0mm, RMS_div = 0.025 mrad, RMS_mom = 1 GeV/c)

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> CEDAR geomery | <input type="checkbox"/> Pion pag.1 @ CEDAR entrance | <input type="checkbox"/> Pion pag.2 @ CEDAR entrance | <input type="checkbox"/> Kaon pag.1 @ CEDAR entrance |
| <input type="checkbox"/> Kaon pag.2 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.1 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.2 @ CEDAR entrance | <input type="checkbox"/> EMI-9820QB Q.E. - EMI-9814 Dark Counts |
| <input type="checkbox"/> PMT Effic. _HV | <input type="checkbox"/> Optical characteristics of the media | <input type="checkbox"/> Mean No. Gener.Photons - PRscan | <input type="checkbox"/> Photon wavelengths - PRscan |
| <input type="checkbox"/> Photons emerging from Mirror - PRscan | <input type="checkbox"/> X-Y #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> R-Phi #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> Photons at PMT entrance - PRscan |
| <input checked="" type="checkbox"/> <Photons/track/PMT> - PRscan | <input type="checkbox"/> <NPE/track/PMT> - PRscan | <input type="checkbox"/> Fired PMT / track - PRscan | <input type="checkbox"/> Majorities/track - PRscan |
| <input type="checkbox"/> Majority/track - PRscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - PRscan | <input type="checkbox"/> Efficiencies _Contamination - PRscan | <input type="checkbox"/> Effic. _Contam./track - PRscan |
| <input type="checkbox"/> Mean No. Gener.Photons - LDscan | <input type="checkbox"/> Photon wavelengths - LDscan | <input type="checkbox"/> Photons emerging from Mirror - LDscan | <input type="checkbox"/> X-Y #gamma at LD entrance - LDscan |
| <input type="checkbox"/> R-Phi #gamma at LD entrance - LDscan | <input type="checkbox"/> Photons at PMT entrance - LDscan | <input type="checkbox"/> <Photons/track/PMT> - LDscan | <input type="checkbox"/> <NPE/track/PMT> - LDscan |
| <input type="checkbox"/> Fired PMT / track - LDscan | <input type="checkbox"/> Majorities/track - LDscan | <input type="checkbox"/> Majority/track - LDscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - LDscan |
| <input type="checkbox"/> Efficiencies _Contamination - LDscan | <input type="checkbox"/> Effic. _Contam./track - LDscan | | |

Choice of file with Pressure-scan data
 ./PressureScanCED2_2014_11_21.csv Reference file with pressure-scan data (Maj. 6-, 7-, 8-fold)

Pressure Scan Conditions

10.500	Pmin in CEDAR [bar] (Def.: 10.100)	10.700	Pmax in CEDAR [bar] (Def.: 10.800)	20	# pressure steps (Def.: 70.0)
22.6	T in CEDAR [C] (Def.: 22.6)	4.000	LD in CEDAR [mm] (Def.: 0.50)	10	No. generated particles / type [10^3] (Def.: 1)
240	LambdaMin on PMT [nm] (Def.: 240)	630	LambdaMax on PMT [nm] (Def.: 630)	1	wavelength step [nm] (Def.: 1)
<input checked="" type="checkbox"/>	Mirror Reflectivity	<input checked="" type="checkbox"/>	Suprasil-1 Transmittance	<input checked="" type="checkbox"/>	Cutoff Filter Transmittance
0.00	Beam <X> [mm] (Def.: -1.52)	0.00	Beam <Y> [mm] (Def.: 2.20)	<input type="checkbox"/>	Get Part. Pos. from TURTLE files
6.00	Beam RMS(X) [mm] (Def.: 6.19)	6.00	Beam RMS(Y) [mm] (Def.: 11.60)	<input type="checkbox"/>	Use "Beam <X/Y>" as offset
0.000	Beam <DivX> [mrad] (Def.: -0.013)	0.000	Beam <DivY> [mrad] (Def.: 0.009)	<input type="checkbox"/>	Get Part. Dir. from TURTLE files
0.025	Beam RMS(DivX) [mrad] (Def.: 0.177)	0.025	Beam RMS(DivY) [mrad] (Def.: 0.109)	<input type="checkbox"/>	Use "Beam <DivX/DivY>" as offset
190.00	Beam Mom. Mean [GeV/c] (Def.: 189.66)	1.00	Beam Mom. RMS [GeV/c] (Def.: 3.18)	<input type="checkbox"/>	Get Part. Mom. from TURTLE files
<input checked="" type="checkbox"/>	Multiple Scattering	<input type="checkbox"/>	Fix lambda to 300nm (MSC checks)	0	# PMT to be zoomed (Def.: 0)
<input type="checkbox"/>	Pile-up	0.1000	Beam Intensity [GHz] (Def.: 0.10)	20.0	L.E. discriminator width [ns] (Def.: 20.00)
Majorities to be displayed : <input type="checkbox"/> 1-fold <input type="checkbox"/> 2-fold <input type="checkbox"/> 3-fold <input type="checkbox"/> 4-fold <input type="checkbox"/> 5-fold <input checked="" type="checkbox"/> 6-fold <input checked="" type="checkbox"/> 7-fold <input checked="" type="checkbox"/> 8-fold					

Light Diaphragm Scan Conditions

P values [bar] for LD scan	10.239	pion (Def.: 10.239)	10.303	kaon (Def.: 10.303)	10.611	pbar (Def.: 10.611)
Particle for LD scan	Kaon	LD min [mm] (Def.: 0.050)	0.050	LD max [mm] (Def.: 6.000)	6.000	# LD steps (Def.: 120.000)
						120

Tools

- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Dump Geometry data | <input type="checkbox"/> Dump PMT eff. _HV | <input type="checkbox"/> Update Particle Lists | <input type="checkbox"/> Refresh all TCanvas |
| <input type="checkbox"/> Toggle logY option for histos of X/Y coord.s | <input checked="" type="checkbox"/> Start new pressure scan | <input type="checkbox"/> Start new LD scan | <input type="checkbox"/> Draw Geometry without tracks |
| <input type="checkbox"/> Draw Tracks on top of Geometry | <input type="checkbox"/> Write Histos and TTree to ROOT file | <input type="checkbox"/> Write TCanvases to a PDF file | |

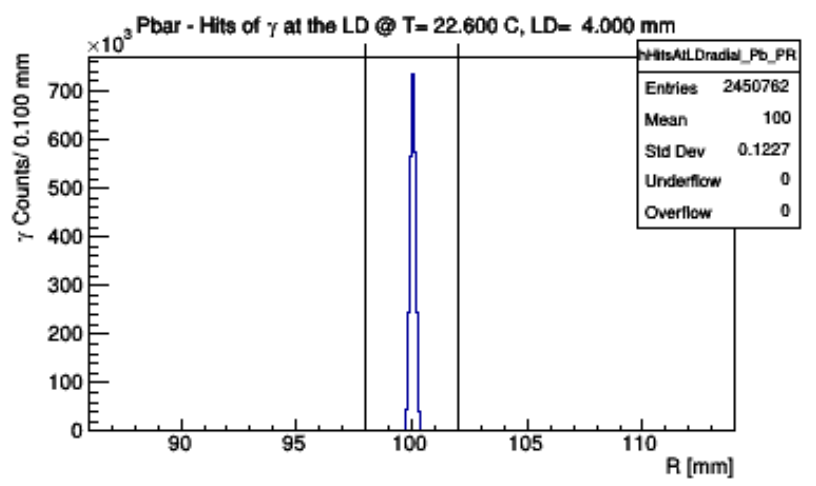
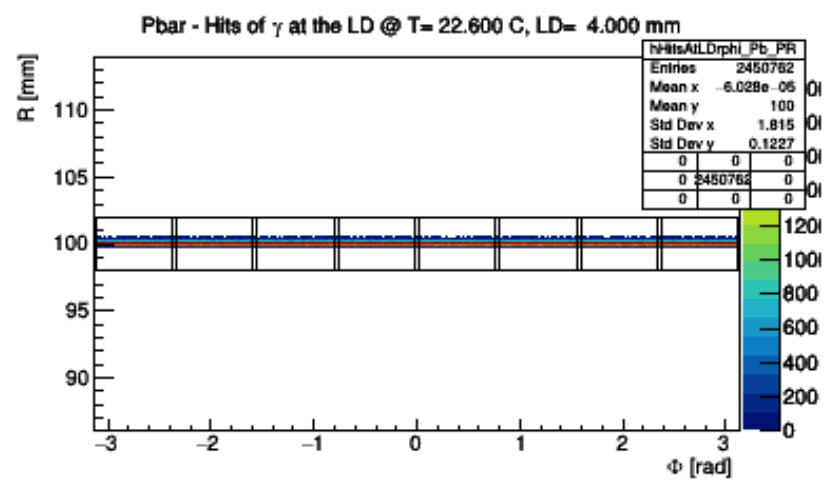
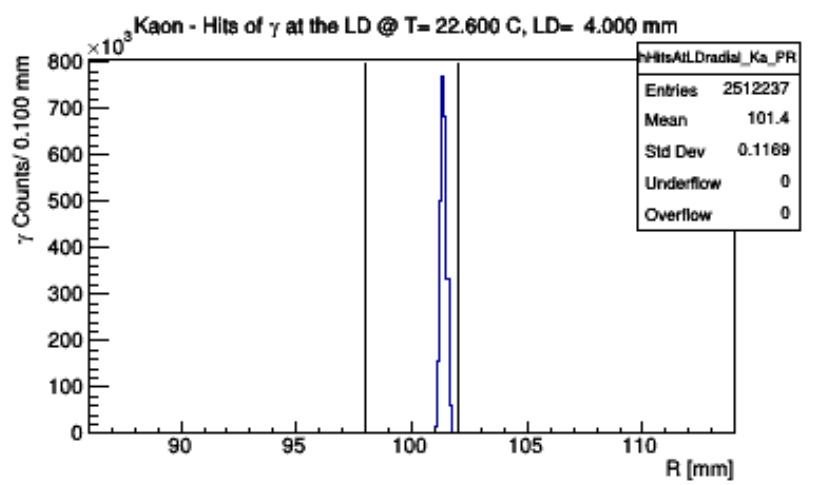
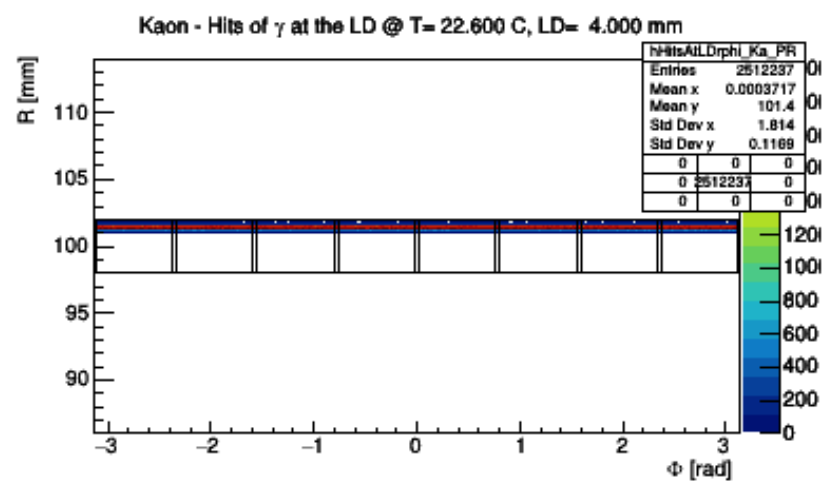
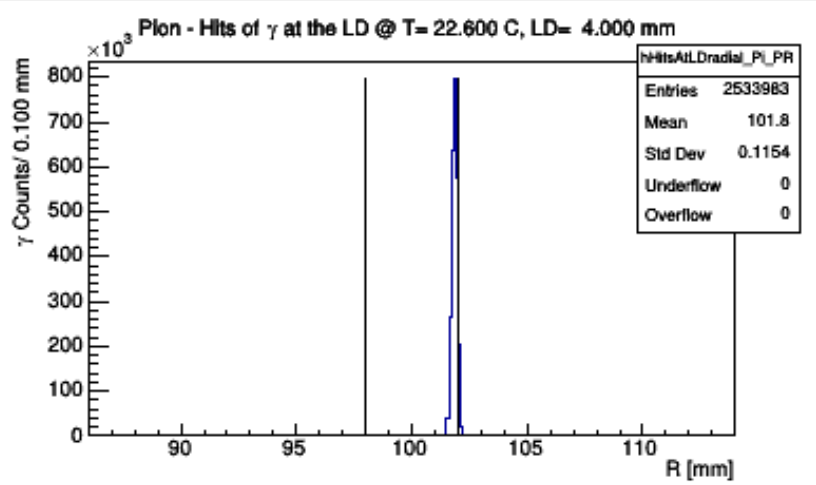
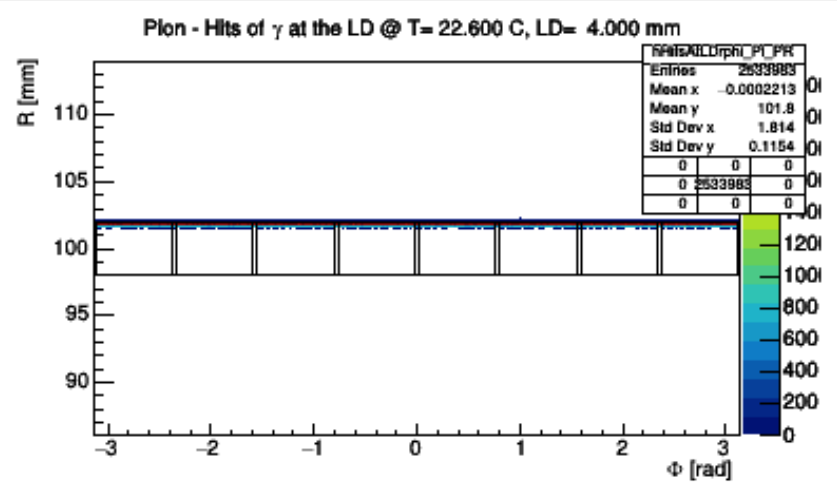
photon radial position

mean [mm] RMS [mm]

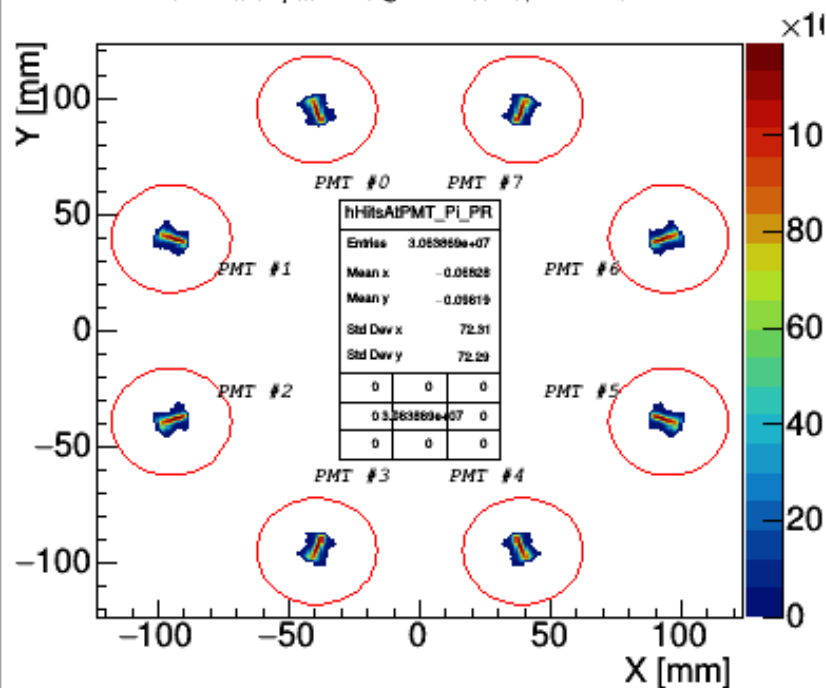
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Kaon 101.4 0.1169

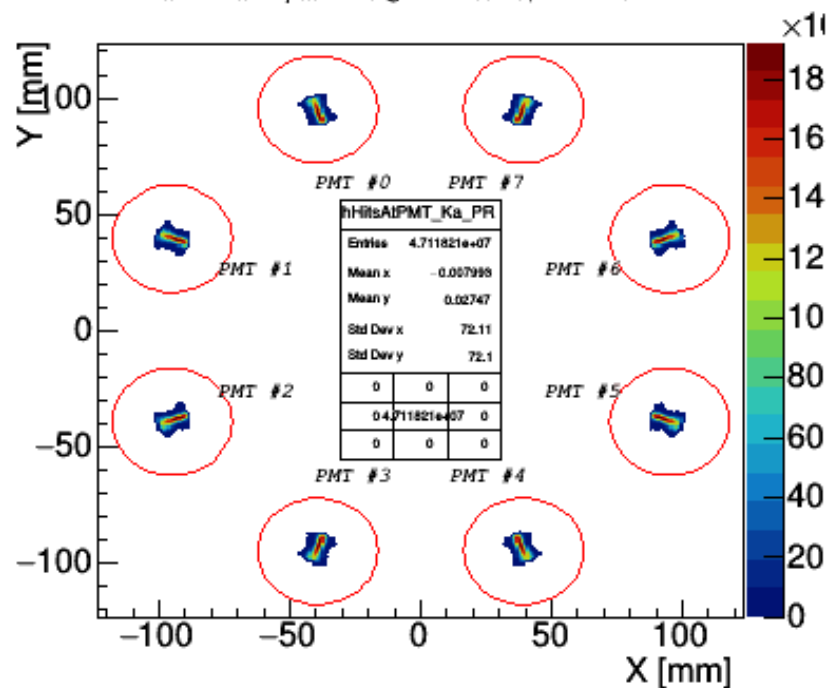
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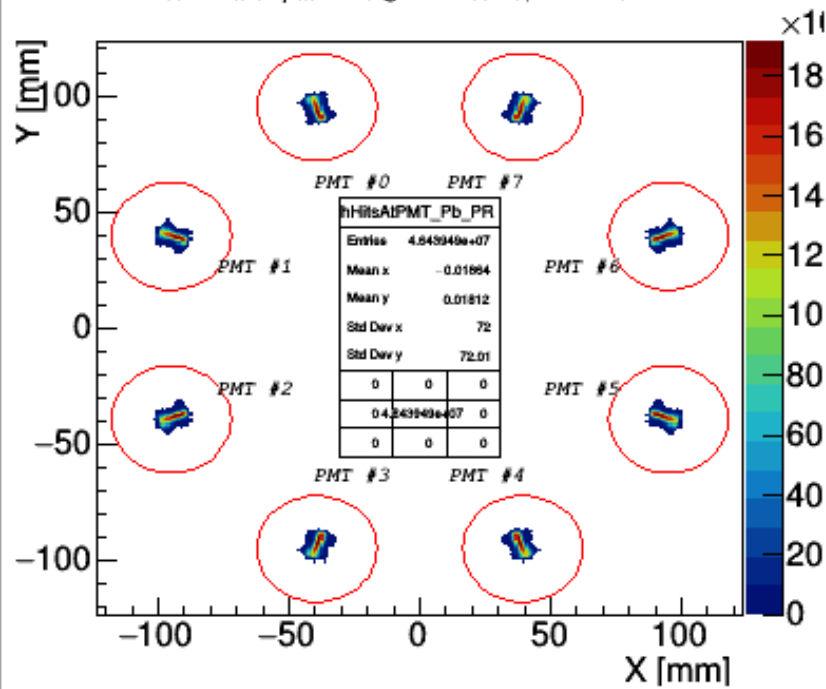
Pion - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



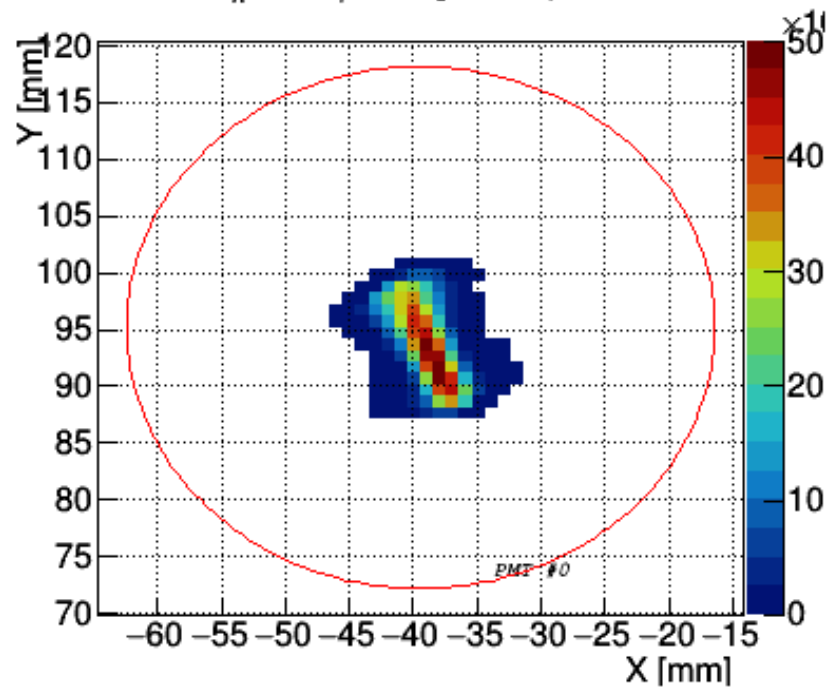
Kaon - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



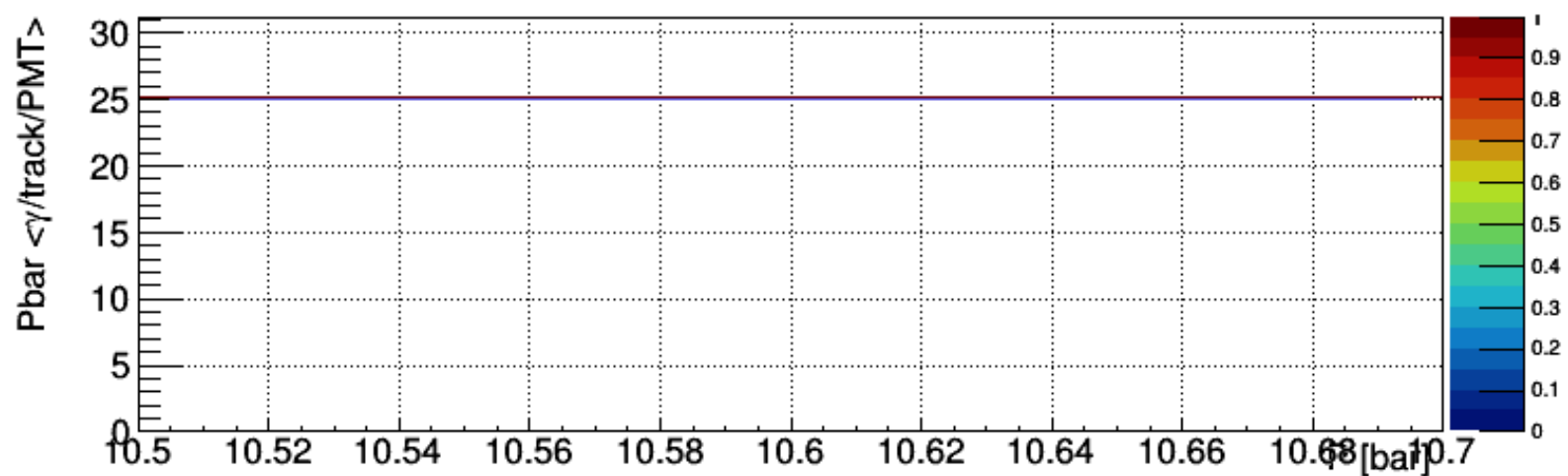
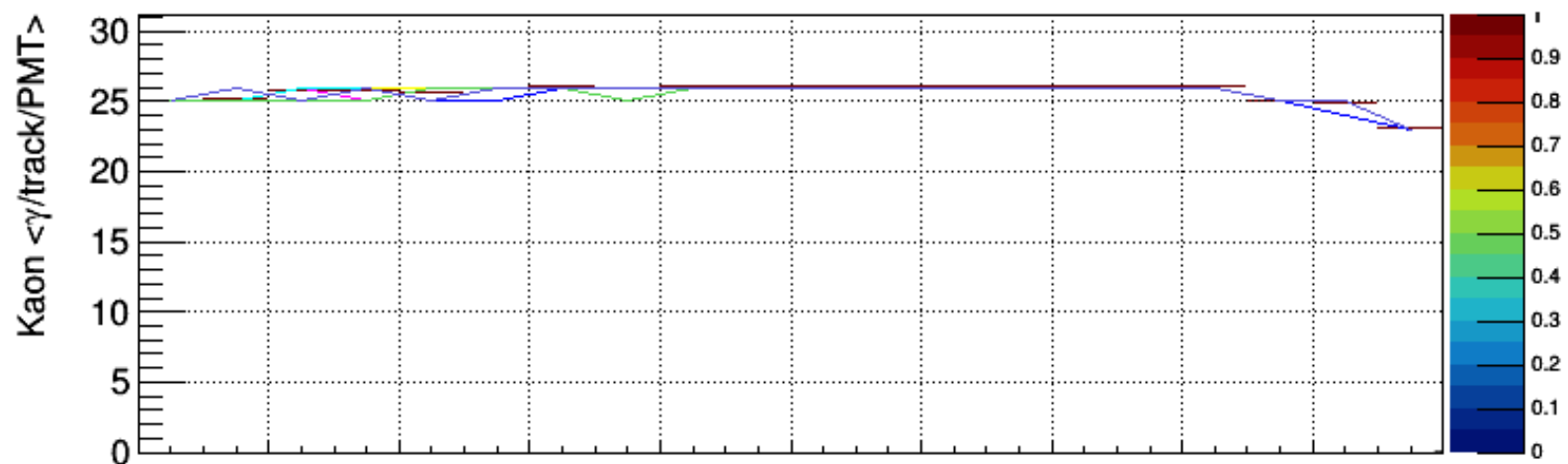
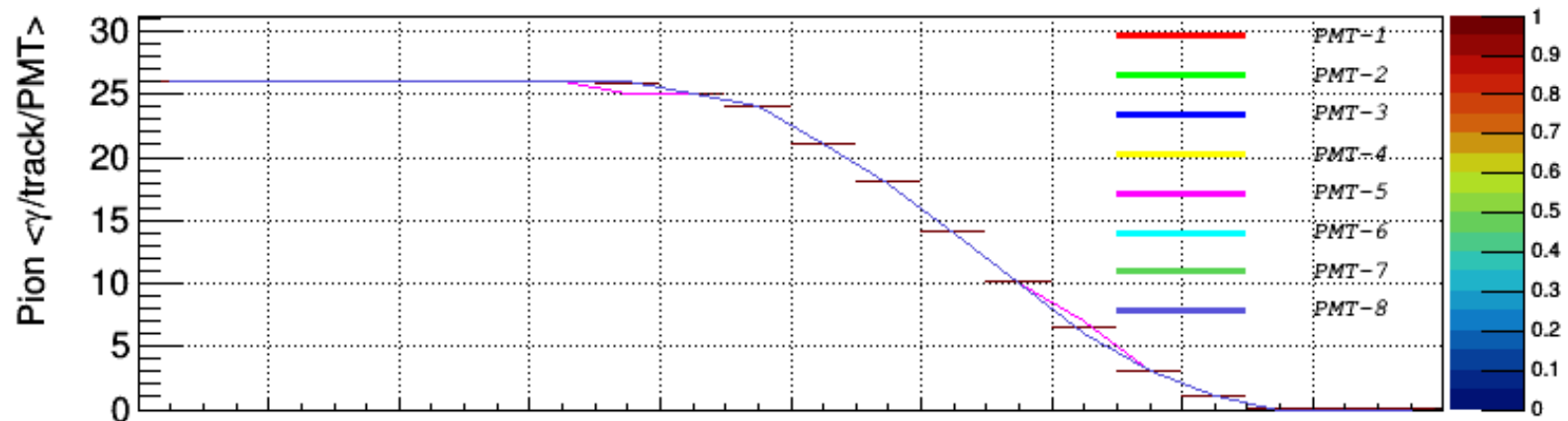
Pbar - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



All PartTypes - Hits of γ at PMT #0 @ T= 22.800 C, LD= 4.000 mm



Pion - $\langle \gamma/\text{track}/\text{PMT} \rangle$ w/out Pileup @ T= 22.600 C, LD= 4.000 mm



LD = 4.0mm ; 10,000 tracks / pressure step of 10 mbar
RMS_pos = 9.0mm, RMS_div = 0.025 mrad, RMS_mom = 1 GeV/c)

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> CEDAR geomery | <input type="checkbox"/> Pion pag.1 @ CEDAR entrance | <input type="checkbox"/> Pion pag.2 @ CEDAR entrance | <input type="checkbox"/> Kaon pag.1 @ CEDAR entrance |
| <input type="checkbox"/> Kaon pag.2 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.1 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.2 @ CEDAR entrance | <input type="checkbox"/> EMI-9820QB Q.E. - EMI-9814 Dark Counts |
| <input type="checkbox"/> PMT Effic. _HV | <input type="checkbox"/> Optical characteristics of the media | <input type="checkbox"/> Mean No. Gener.Photons - PRscan | <input type="checkbox"/> Photon wavelengths - PRscan |
| <input type="checkbox"/> Photons emerging from Mirror - PRscan | <input type="checkbox"/> X-Y #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> R-Phi #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> Photons at PMT entrance - PRscan |
| <input checked="" type="checkbox"/> <Photons/track/PMT> - PRscan | <input type="checkbox"/> <NPE/track/PMT> - PRscan | <input type="checkbox"/> Fired PMT / track - PRscan | <input type="checkbox"/> Majorities/track - PRscan |
| <input type="checkbox"/> Majority/track - PRscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - PRscan | <input type="checkbox"/> Efficiencies _Contamination - PRscan | <input type="checkbox"/> Effic. _Contam./track - PRscan |
| <input type="checkbox"/> Mean No. Gener.Photons - LDscan | <input type="checkbox"/> Photon wavelengths - LDscan | <input type="checkbox"/> Photons emerging from Mirror - LDscan | <input type="checkbox"/> X-Y #gamma at LD entrance - LDscan |
| <input type="checkbox"/> R-Phi #gamma at LD entrance - LDscan | <input type="checkbox"/> Photons at PMT entrance - LDscan | <input type="checkbox"/> <Photons/track/PMT> - LDscan | <input type="checkbox"/> <NPE/track/PMT> - LDscan |
| <input type="checkbox"/> Fired PMT / track - LDscan | <input type="checkbox"/> Majorities/track - LDscan | <input type="checkbox"/> Majority/track - LDscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - LDscan |
| <input type="checkbox"/> Efficiencies _Contamination - LDscan | <input type="checkbox"/> Effic. _Contam./track - LDscan | | |

Choice of file with Pressure-scan data
 ./PressureScanCED2_2014_11_21.csv Reference file with pressure-scan data (Maj. 6-, 7-, 8-fold)

Pressure Scan Conditions

10.500 Pmin in CEDAR [bar] (Def.: 10.100)	10.700 Pmax in CEDAR [bar] (Def.: 10.800)	20 # pressure steps (Def.: 70.0)
22.6 T in CEDAR [C] (Def.: 22.6)	4.000 LD in CEDAR [mm] (Def.: 0.50)	10 No. generated particles / type [10^3] (Def.: 1)
240 LambdaMin on PMT [nm] (Def.: 240)	630 LambdaMax on PMT [nm] (Def.: 630)	1 wavelength step [nm] (Def.: 1)

Mirror Reflectivity Suprasil-1 Transmittance Cutoff Filter Transmittance

0.00 Beam <X> [mm] (Def.: -1.52)	0.00 Beam <Y> [mm] (Def.: 2.20)	<input type="checkbox"/> Get Part. Pos. from TURTLE files <input type="checkbox"/> Use "Beam <X/Y>" as offset
9.00 Beam RMS(X) [mm] (Def.: 6.19)	9.00 Beam RMS(Y) [mm] (Def.: 11.60)	
0.000 Beam <DivX> [mrad] (Def.: -0.013)	0.000 Beam <DivY> [mrad] (Def.: 0.009)	<input type="checkbox"/> Get Part. Dir. from TURTLE files <input type="checkbox"/> Use "Beam <DivX/DivY>" as offset
0.025 Beam RMS(DivX) [mrad] (Def.: 0.177)	0.025 Beam RMS(DivY) [mrad] (Def.: 0.109)	
190.00 Beam Mom. Mean [GeV/c] (Def.: 189.66)	1.00 Beam Mom. RMS [GeV/c] (Def.: 3.18)	<input type="checkbox"/> Get Part. Mom. from TURTLE files

Multiple Scattering Fix lambda to 300nm (MSC checks) 0 # PMT to be zoomed (Def.: 0)

Pile-up 0.1000 Beam Intensity [GHz] (Def.: 0.10) 20.0 L.E. discriminator width [ns] (Def.: 20.00)

Majorities to be displayed: 1-fold 2-fold 3-fold 4-fold 5-fold 6-fold 7-fold 8-fold

Light Diaphragm Scan Conditions

P values [bar] for LD scan 10.239 pion (Def.: 10.239) 10.303 kaon (Def.: 10.303) 10.611 pbar (Def.: 10.611)

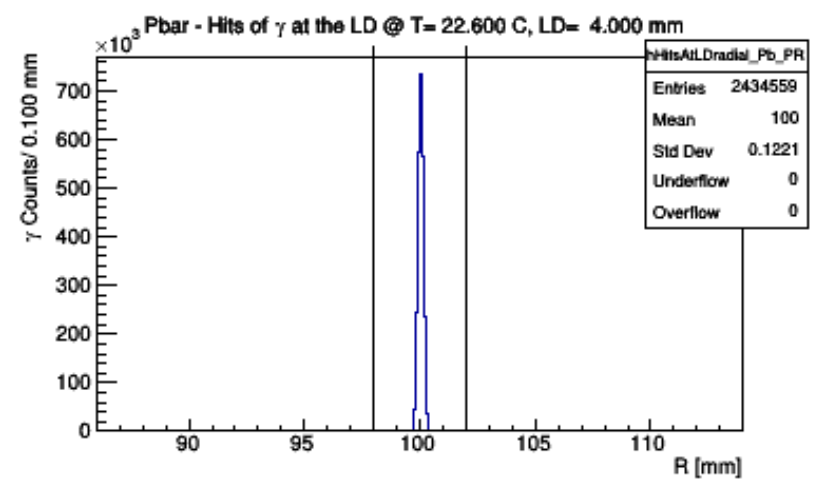
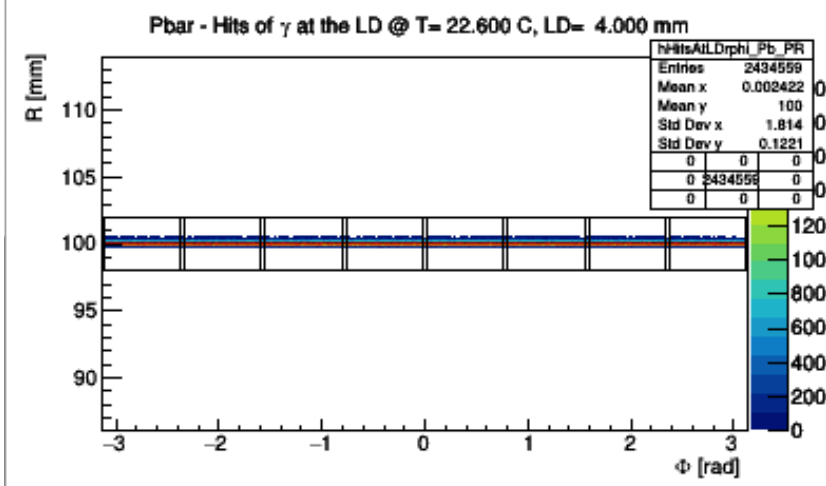
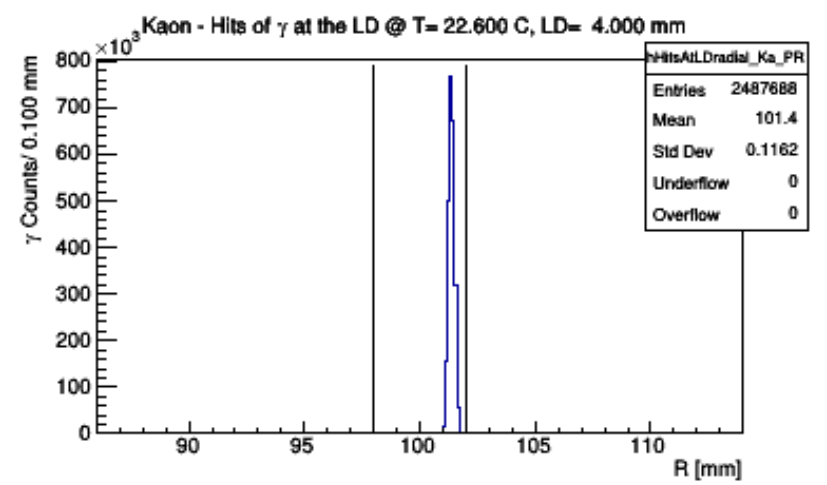
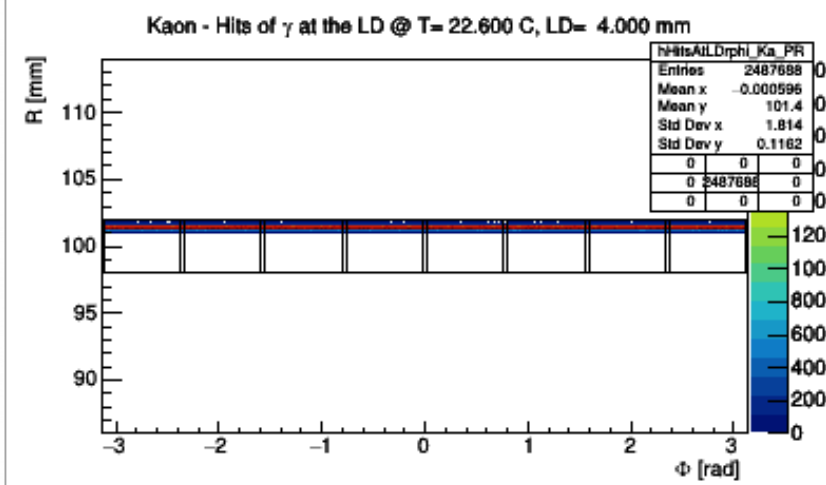
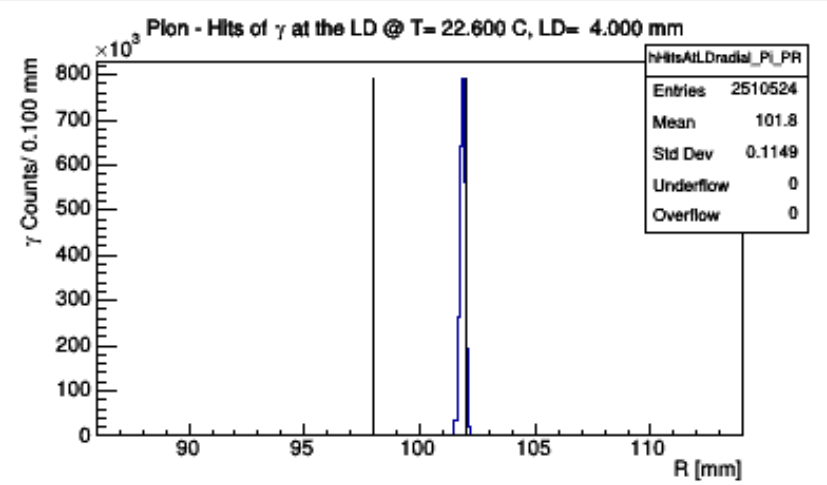
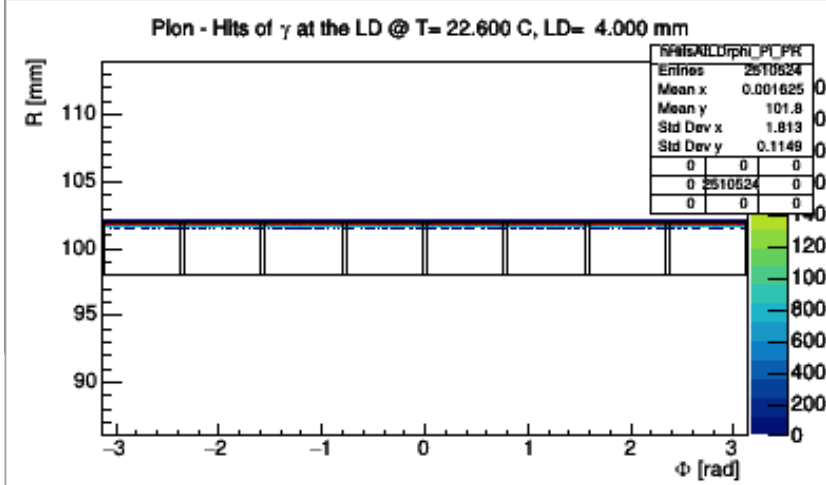
Particle for LD scan Kaon LD min [mm] (Def.: 0.050) 0.050 LD max [mm] (Def.: 6.000) 6.000 # LD steps (Def.: 120.000) 120

- Tools
- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Dump Geometry data | <input type="checkbox"/> Dump PMT eff. _HV | <input type="checkbox"/> Update Particle Lists | <input type="checkbox"/> Refresh all TCanvas |
| <input type="checkbox"/> Toggle logY option for histos of X/Y coord.s | <input checked="" type="checkbox"/> Start new pressure scan | <input type="checkbox"/> Start new LD scan | <input type="checkbox"/> Draw Geometry without tracks |
| <input type="checkbox"/> Draw Tracks on top of Geometry | <input type="checkbox"/> Write Histos and TTree to ROOT file | <input type="checkbox"/> Write TCanvases to a PDF file | |

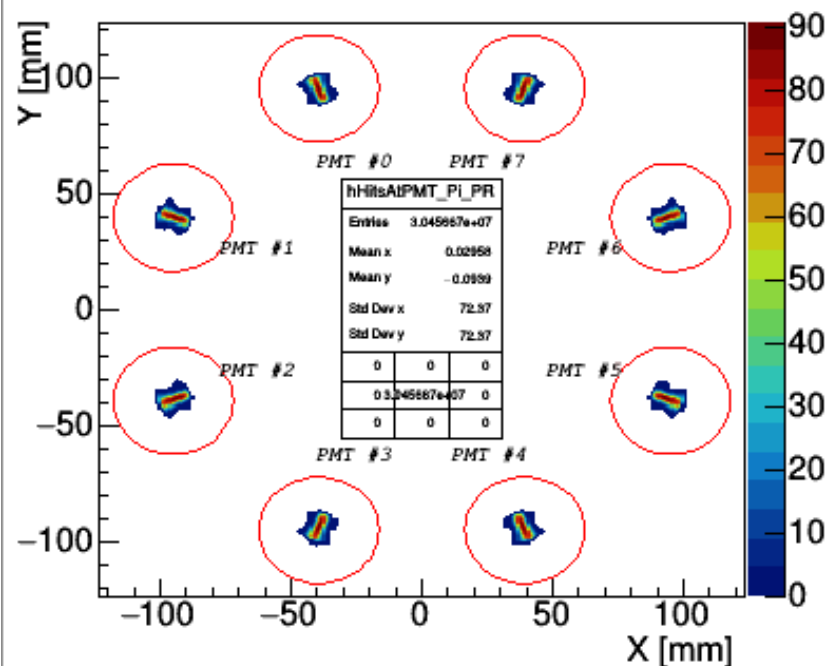
photon radial position

mean [mm]	RMS [mm]
101.8	0.1149
101.4	0.1162
100.0	0.1221

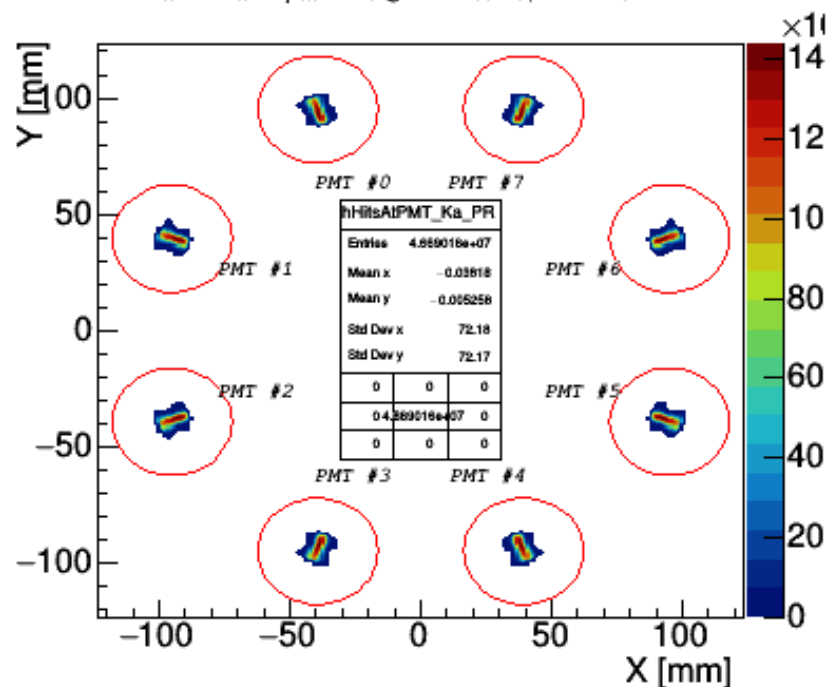
Pion
Kaon
Pbar



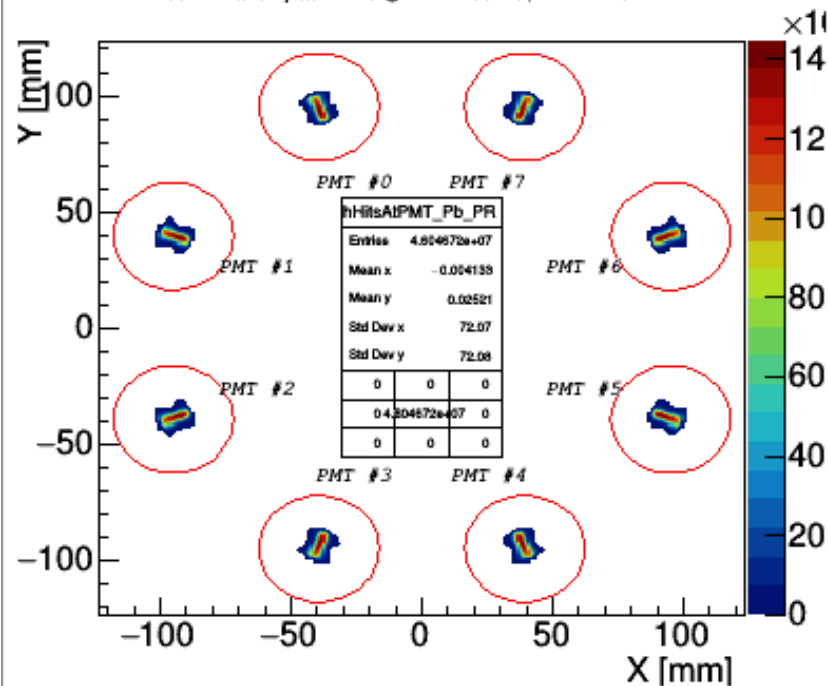
Pion - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



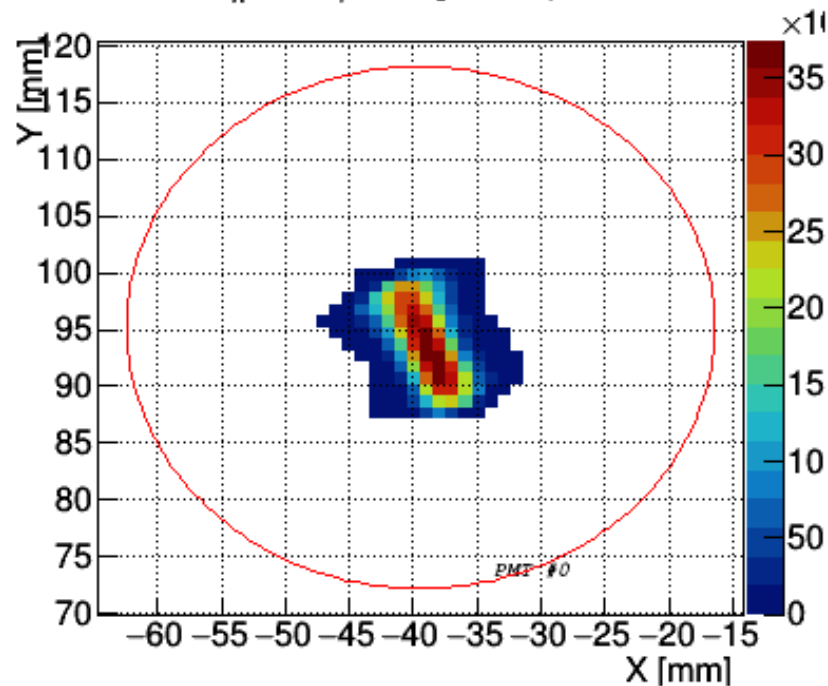
Kaon - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



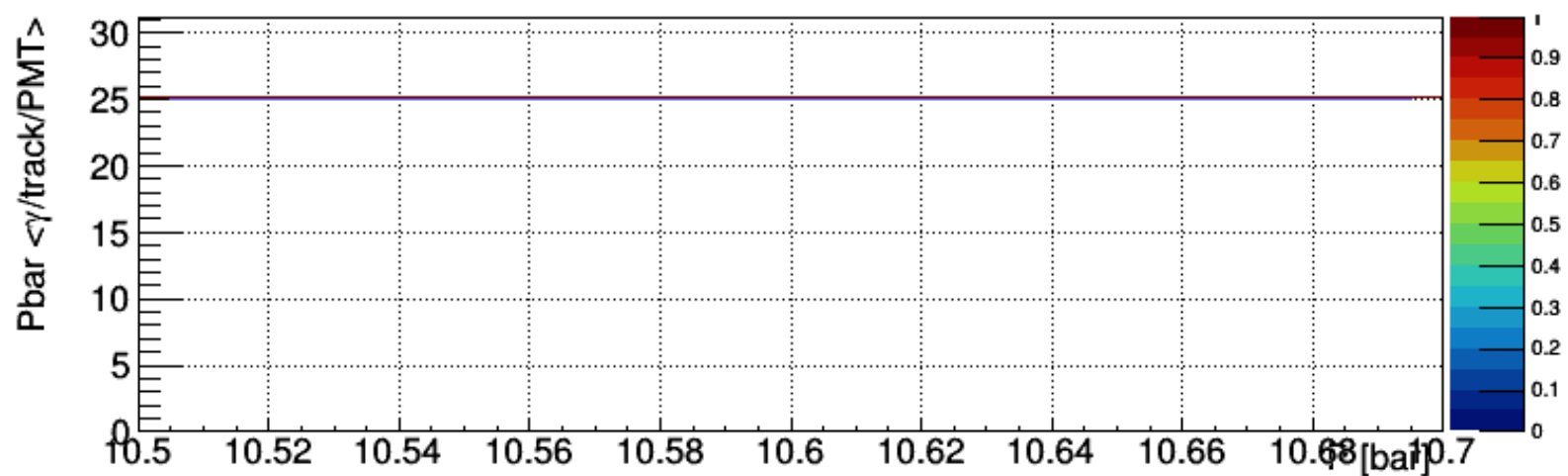
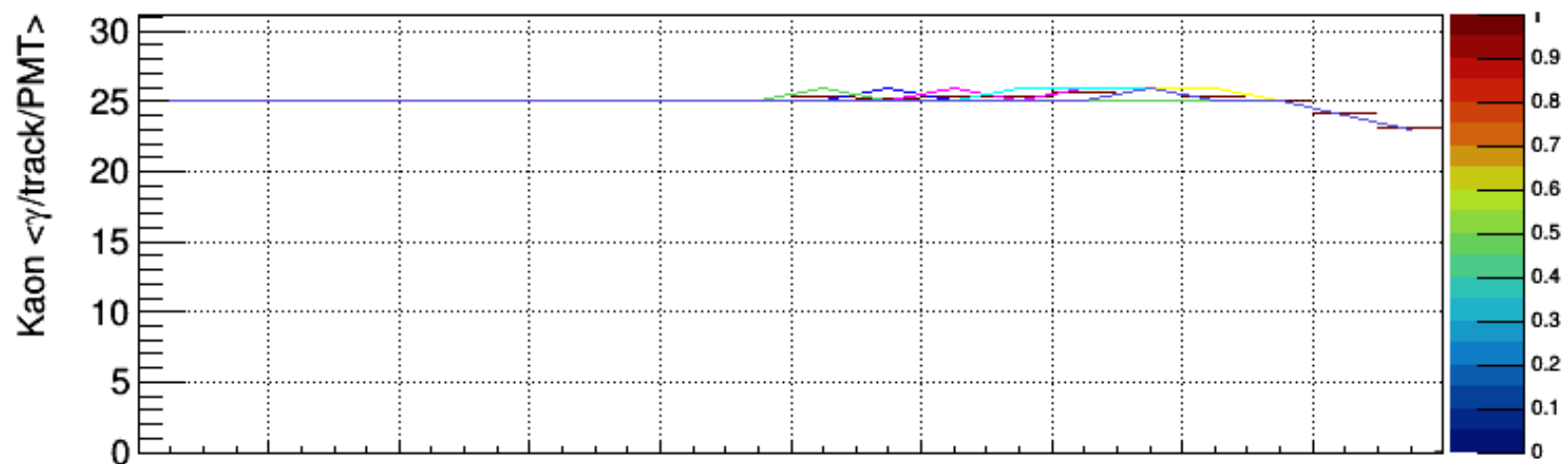
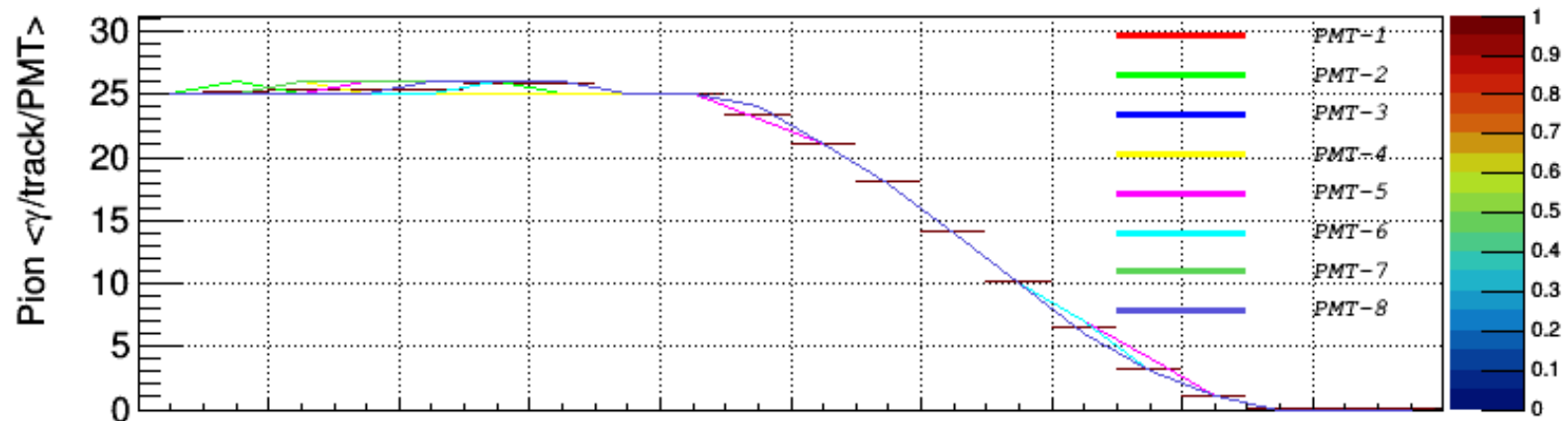
Pbar - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



All PartTypes - Hits of γ at PMT #0 @ T= 22.800 C, LD= 4.000 mm



Pion - $\langle \gamma/\text{track}/\text{PMT} \rangle$ w/out Pileup @ T= 22.600 C, LD= 4.000 mm



LD = 4.0mm ; 10,000 tracks / pressure step of 10 mbar
RMS_pos = 12.0mm, RMS_div = 0.025 mrad, RMS_mom = 1 GeV/c

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> CEDAR geomery | <input type="checkbox"/> Pion pag.1 @ CEDAR entrance | <input type="checkbox"/> Pion pag.2 @ CEDAR entrance | <input type="checkbox"/> Kaon pag.1 @ CEDAR entrance |
| <input type="checkbox"/> Kaon pag.2 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.1 @ CEDAR entrance | <input type="checkbox"/> Pbarpag.2 @ CEDAR entrance | <input type="checkbox"/> EMI-9820QB Q.E. - EMI-9814 Dark Counts |
| <input type="checkbox"/> PMT Effic. _HV | <input type="checkbox"/> Optical characteristics of the media | <input type="checkbox"/> Mean No. Gener.Photons - PRscan | <input type="checkbox"/> Photon wavelengths - PRscan |
| <input type="checkbox"/> Photons emerging from Mirror - PRscan | <input type="checkbox"/> X-Y #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> R-Phi #gamma at LD entrance - PRscan | <input checked="" type="checkbox"/> Photons at PMT entrance - PRscan |
| <input checked="" type="checkbox"/> <Photons/track/PMT> - PRscan | <input type="checkbox"/> <NPE/track/PMT> - PRscan | <input type="checkbox"/> Fired PMT / track - PRscan | <input type="checkbox"/> Majorities/track - PRscan |
| <input type="checkbox"/> Majority/track - PRscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - PRscan | <input type="checkbox"/> Efficiencies _Contamination - PRscan | <input type="checkbox"/> Effic. _Contam./track - PRscan |
| <input type="checkbox"/> Mean No. Gener.Photons - LDscan | <input type="checkbox"/> Photon wavelengths - LDscan | <input type="checkbox"/> Photons emerging from Mirror - LDscan | <input type="checkbox"/> X-Y #gamma at LD entrance - LDscan |
| <input type="checkbox"/> R-Phi #gamma at LD entrance - LDscan | <input type="checkbox"/> Photons at PMT entrance - LDscan | <input type="checkbox"/> <Photons/track/PMT> - LDscan | <input type="checkbox"/> <NPE/track/PMT> - LDscan |
| <input type="checkbox"/> Fired PMT / track - LDscan | <input type="checkbox"/> Majorities/track - LDscan | <input type="checkbox"/> Majority/track - LDscan | <input type="checkbox"/> <NPE/track/PMT> from Majorities - LDscan |
| <input type="checkbox"/> Efficiencies _Contamination - LDscan | <input type="checkbox"/> Effic. _Contam./track - LDscan | | |

Choice of file with Pressure-scan data
 ../PressureScanCED2_2014_11_21.csv Reference file with pressure-scan data (Maj. 6-, 7-, 8-fold)

Pressure Scan Conditions

10.500 Pmin in CEDAR [bar] (Def.: 10.100)	10.700 Pmax in CEDAR [bar] (Def.: 10.800)	20 # pressure steps (Def.: 70.0)
22.6 T in CEDAR [C] (Def.: 22.6)	4.000 LD in CEDAR [mm] (Def.: 0.50)	10 No. generated particles / type [10^3] (Def.: 1)
240 LambdaMin on PMT [nm] (Def.: 240)	630 LambdaMax on PMT [nm] (Def.: 630)	1 wavelength step [nm] (Def.: 1)

Mirror Reflectivity Suprasil-1 Transmittance Cutoff Filter Transmittance

0.00 Beam <X> [mm] (Def.: -1.52)	0.00 Beam <Y> [mm] (Def.: 2.20)	<input type="checkbox"/> Get Part. Pos. from TURTLE files <input type="checkbox"/> Use "Beam <X/Y>" as offset
12.00 Beam RMS(X) [mm] (Def.: 6.19)	12.00 Beam RMS(Y) [mm] (Def.: 11.60)	
0.000 Beam <DivX> [mrad] (Def.: -0.013)	0.000 Beam <DivY> [mrad] (Def.: 0.009)	<input type="checkbox"/> Get Part. Dir. from TURTLE files <input type="checkbox"/> Use "Beam <DivX/DivY>" as offset
0.025 Beam RMS(DivX) [mrad] (Def.: 0.177)	0.025 Beam RMS(DivY) [mrad] (Def.: 0.109)	
190.00 Beam Mom. Mean [GeV/c] (Def.: 189.66)	1.00 Beam Mom. RMS [GeV/c] (Def.: 3.18)	<input type="checkbox"/> Get Part. Mom. from TURTLE files

Multiple Scattering Fix lambda to 300nm (MSC checks) 0 # PMT to be zoomed (Def.: 0)

Pile-up 0.1000 Beam Intesity [GHz] (Def.: 0.10) 20.0 L.E. discriminator width [ns] (Def.: 20.00)

Majorities to be displayed: 1-fold 2-fold 3-fold 4-fold 5-fold 6-fold 7-fold 8-fold

Light Diaphragm Scan Conditions

P values [bar] for LD scan 10.239 pion (Def.: 10.239) 10.303 kaon (Def.: 10.303) 10.611 pbar (Def.: 10.611)

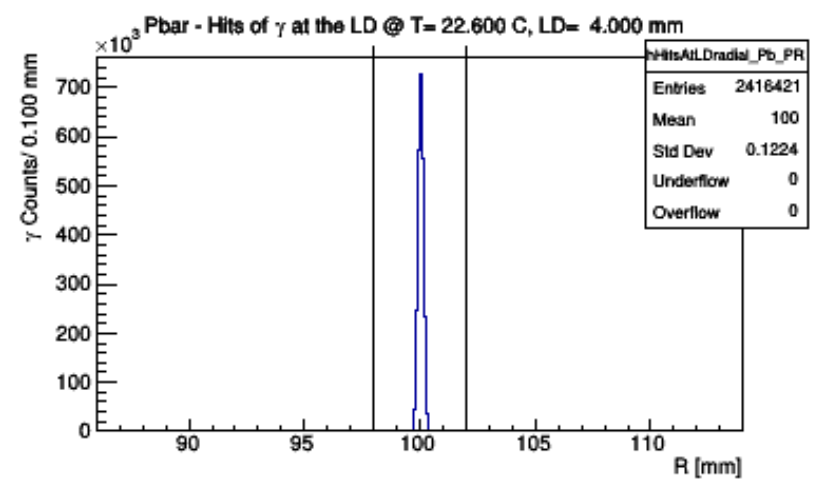
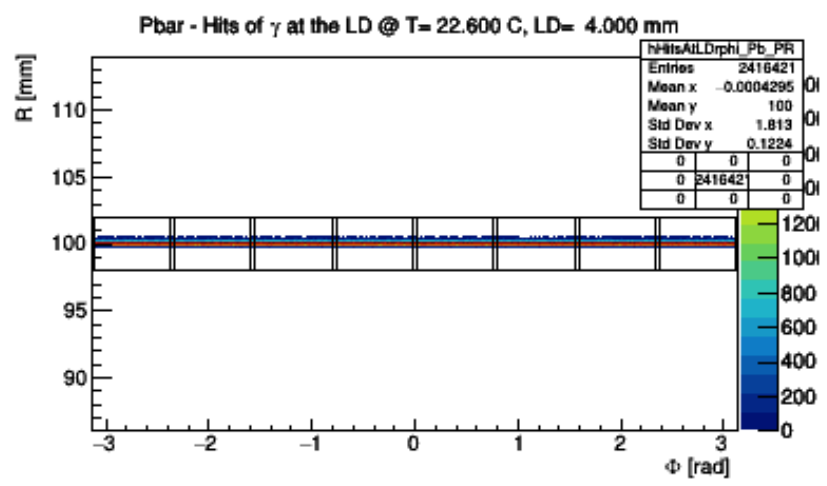
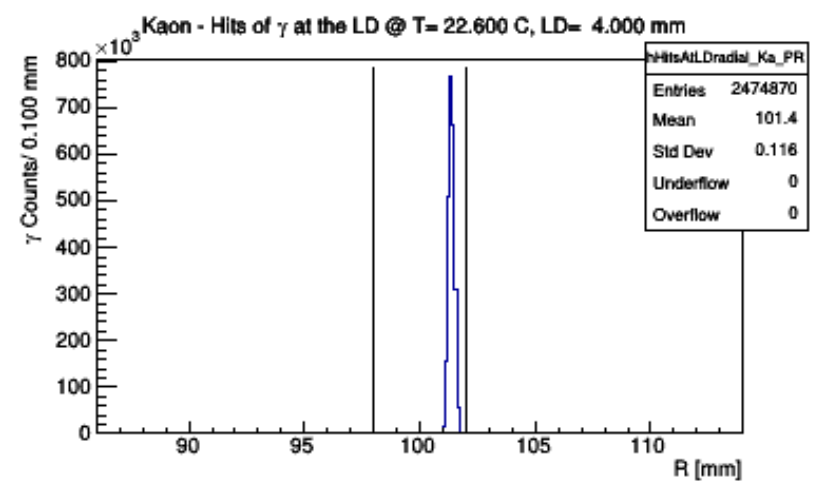
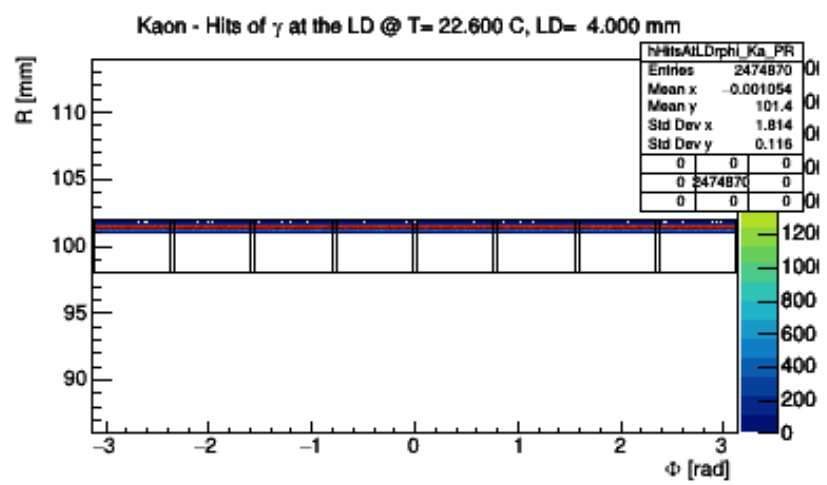
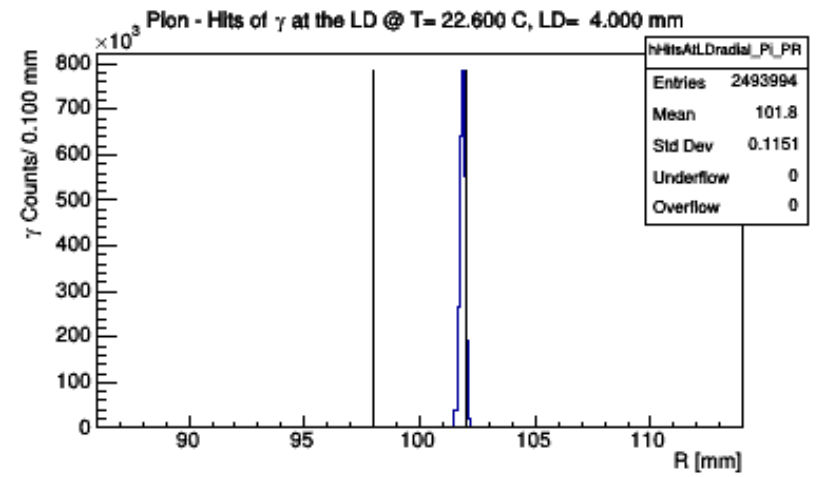
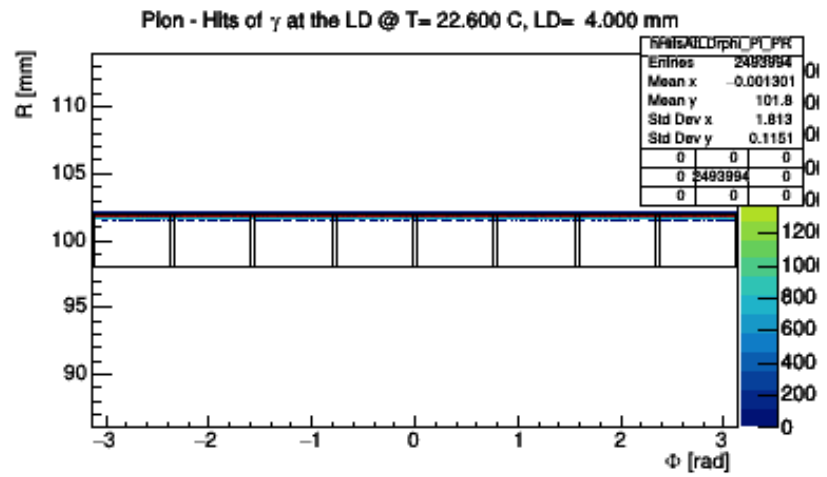
Particle for LD scan Kaon LD min [mm] (Def.: 0.050) 0.050 LD max [mm] (Def.: 6.000) 6.000 # LD steps (Def.: 120.000) 120

- Tools
- | | | | |
|---|--|--|---|
| <input type="checkbox"/> Dump Geometry data | <input type="checkbox"/> Dump PMT eff. _HV | <input type="checkbox"/> Update Particle Lists | <input type="checkbox"/> Refresh all TCanvas |
| <input type="checkbox"/> Toggle logY option for histos of X/Y coord.s | <input type="checkbox"/> Start new pressure scan | <input type="checkbox"/> Start new LD scan | <input type="checkbox"/> Draw Geometry without tracks |
| <input type="checkbox"/> Draw Tracks on top of Geometry | <input type="checkbox"/> Write Histos and TTree to ROOT file | <input type="checkbox"/> Write TCanvases to a PDF file | |

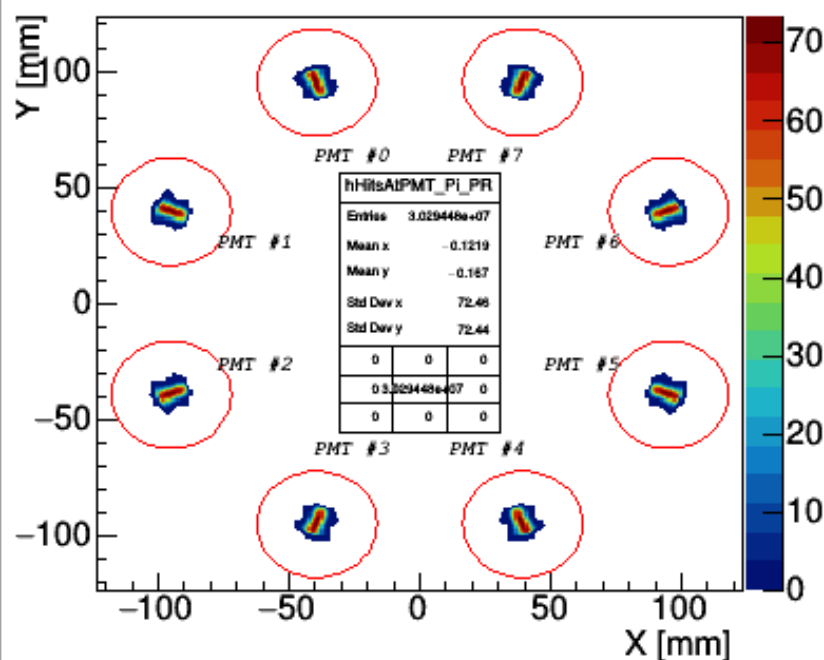
photon radial position

mean [mm]	RMS [mm]
101.8	0.1151
101.4	0.1160
100.0	0.1224

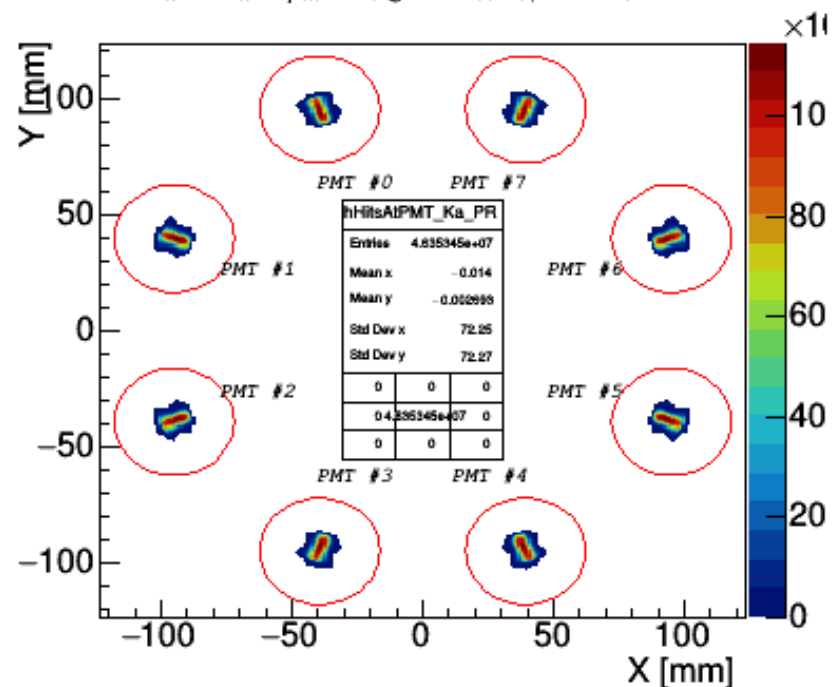
Pion
Kaon
Pbar



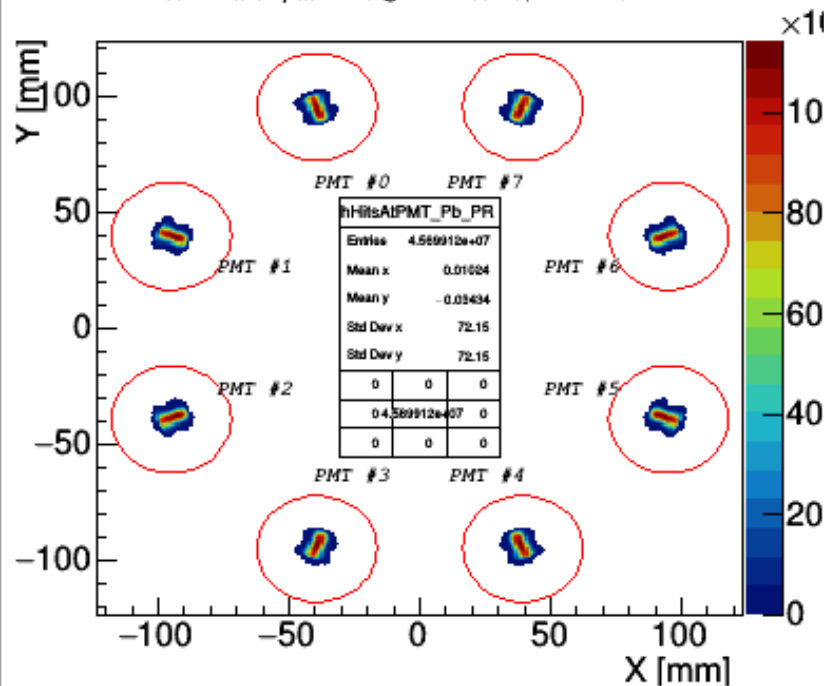
Pion - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



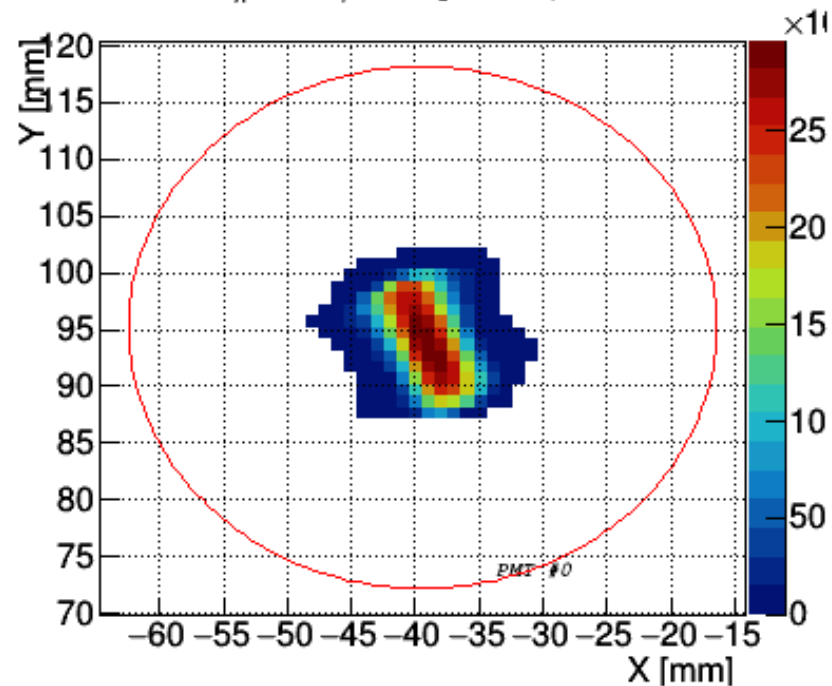
Kaon - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



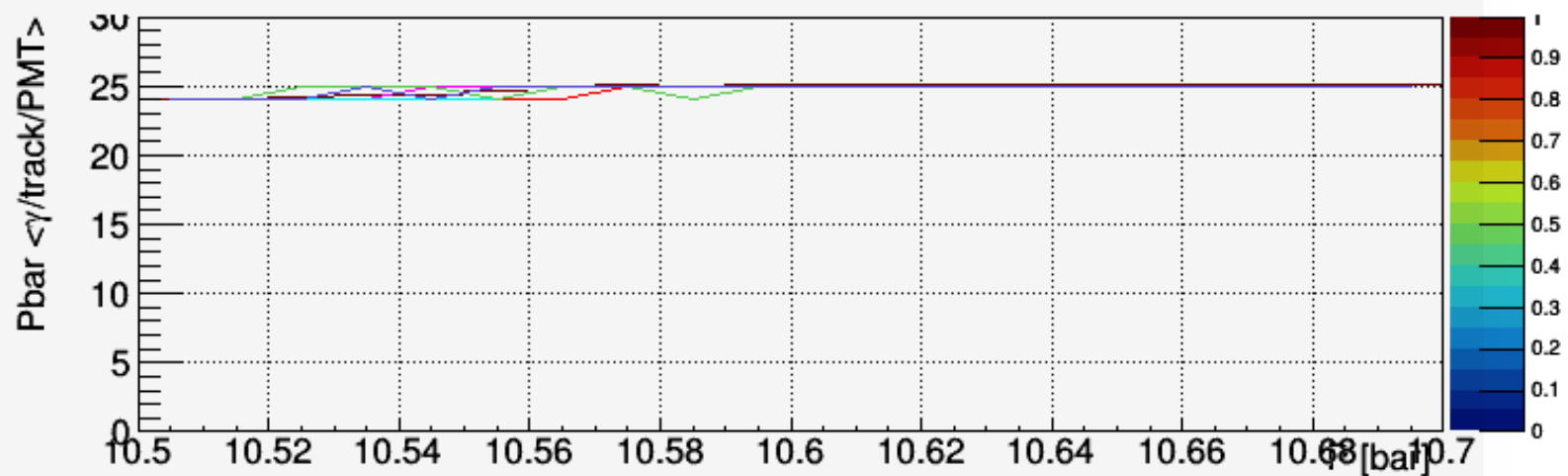
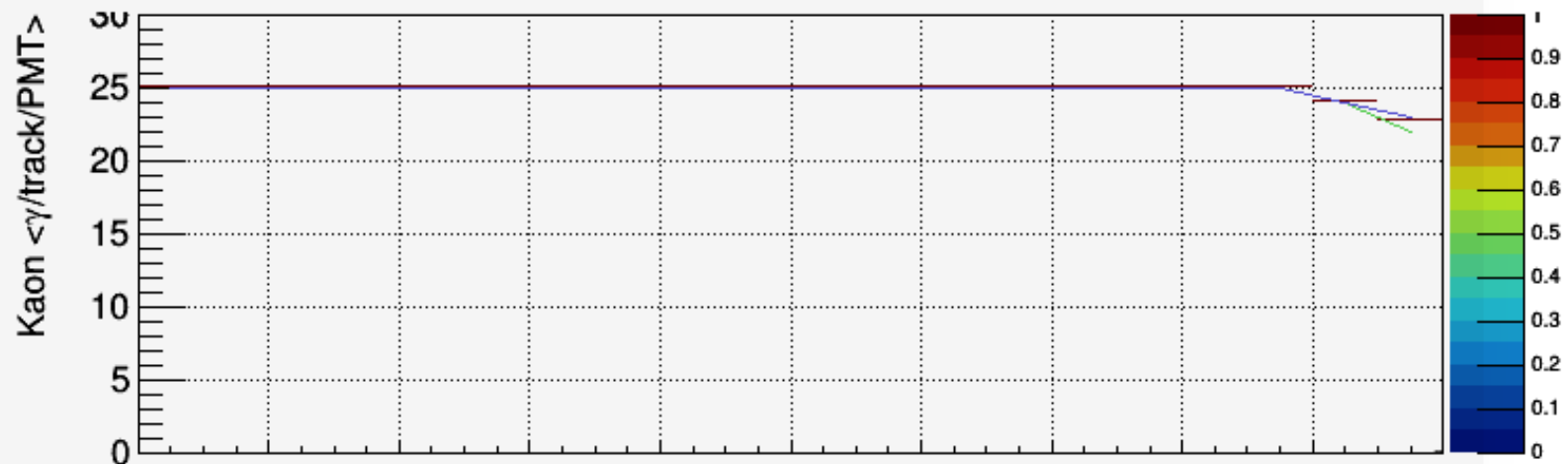
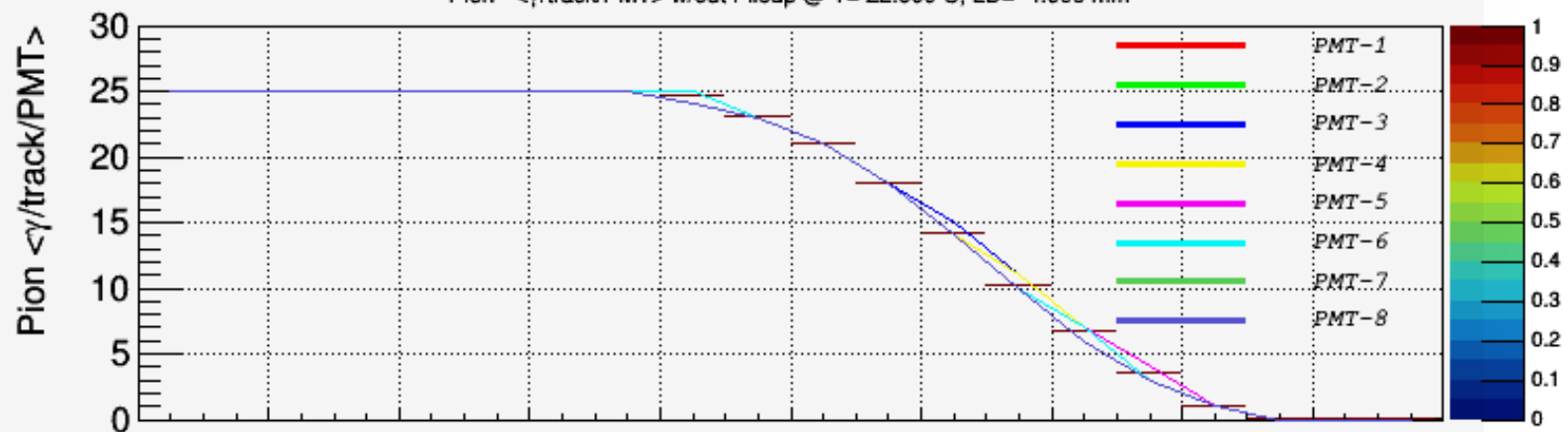
Pbar - Hits of γ at PMTs @ T= 22.600 C, LD= 4.000 mm



All PartTypes - Hits of γ at PMT #0 @ T= 22.600 C, LD= 4.000 mm



Pion - $\langle \gamma/\text{track}/\text{PMT} \rangle$ w/out Pileup @ T= 22.600 C, LD= 4.000 mm



From the tests above it is evident that the beam spot size has no effect on the radial distribution of the photons at the light diaphragm, at least up to beam RMS of 12 mm.

This could probably have been expected considering the size of the CEDAR mirror (diameter of 300mm, see Table 2 in CERN 82-13 p. 12).