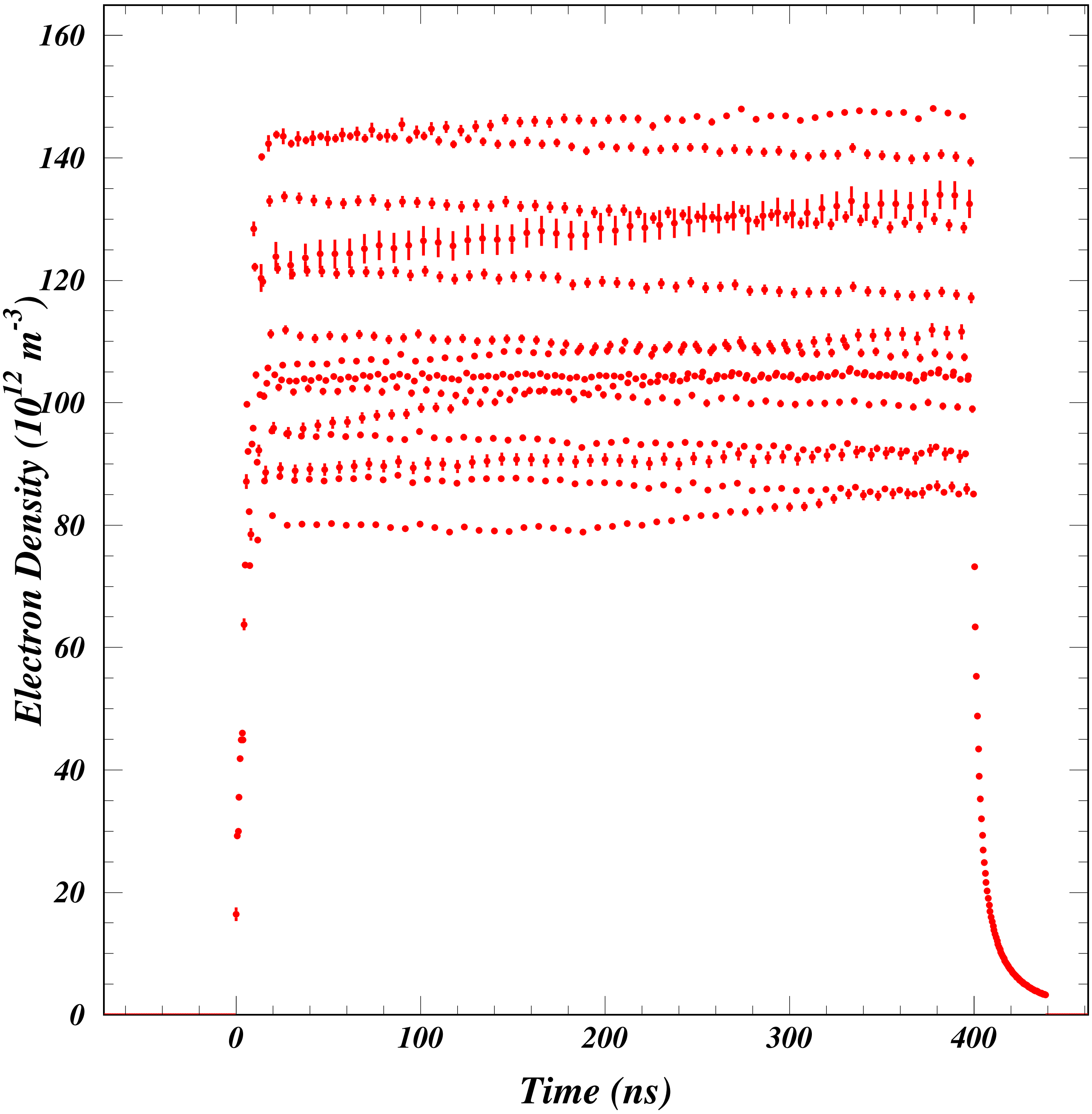
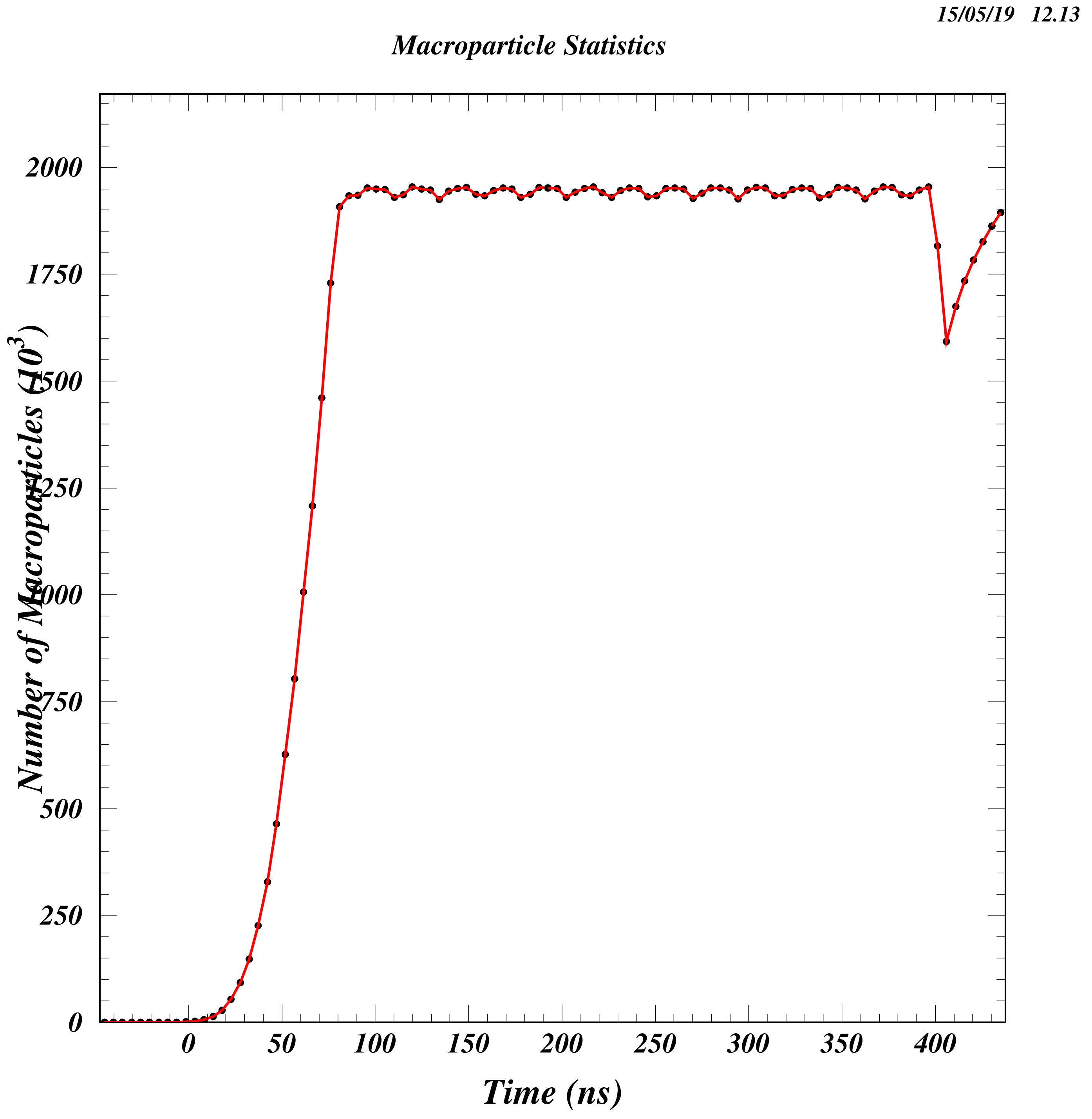
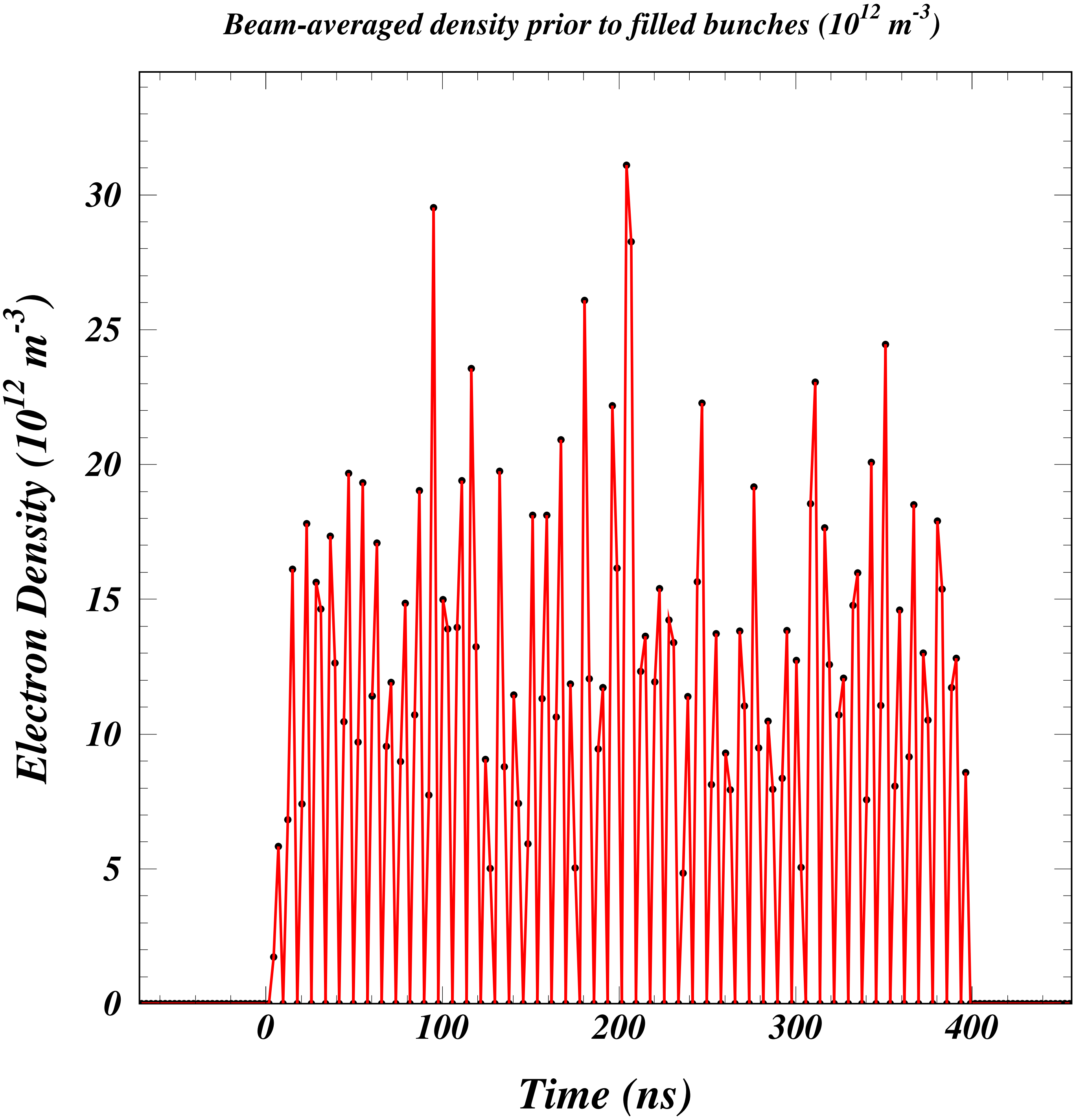
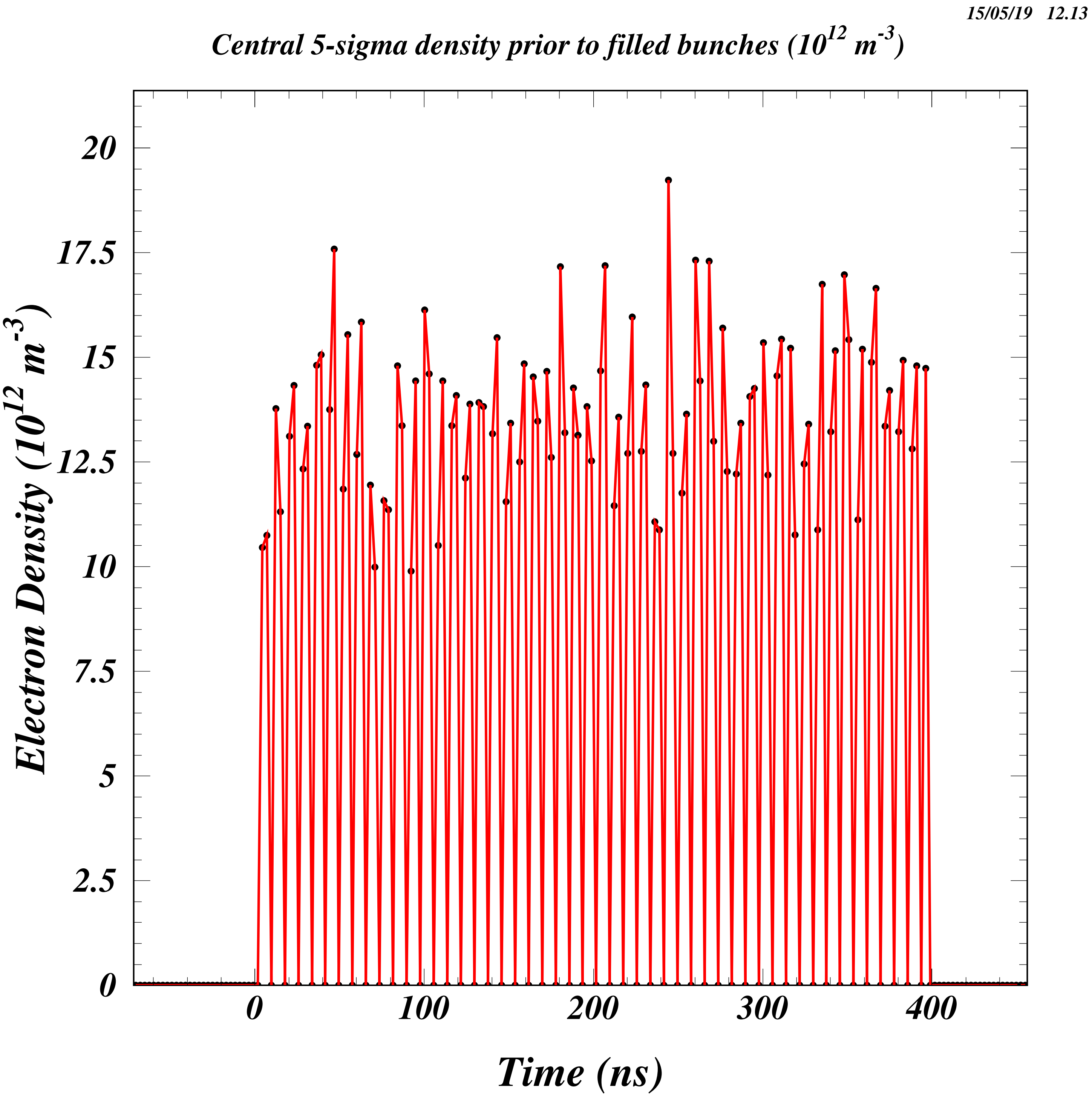
15/05/19 12.13

Job 39869: ECLOUD plots




15/05/19 12.13
Macroparticle Statistics
Number of Macroparticles (10^3)
0
250
500
750
1000
1250
1500
1750
2000
0
50
100
150
200
250
300
350
400
Time (ns)


Beam-averaged density prior to filled bunches (10^{12} m^{-3})
Electron Density (10^{12} m^{-3})
0
5
10
15
20
25
30
0
100
200
300
400
Time (ns)



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Central 5-sigma density prior to filled bunches (10^{12} m^{-3})
Electron Density (10^{12} m^{-3})
Time (ns)
0
2.5
5
7.5
10
12.5
15
17.5
20
0
100
200
300
400

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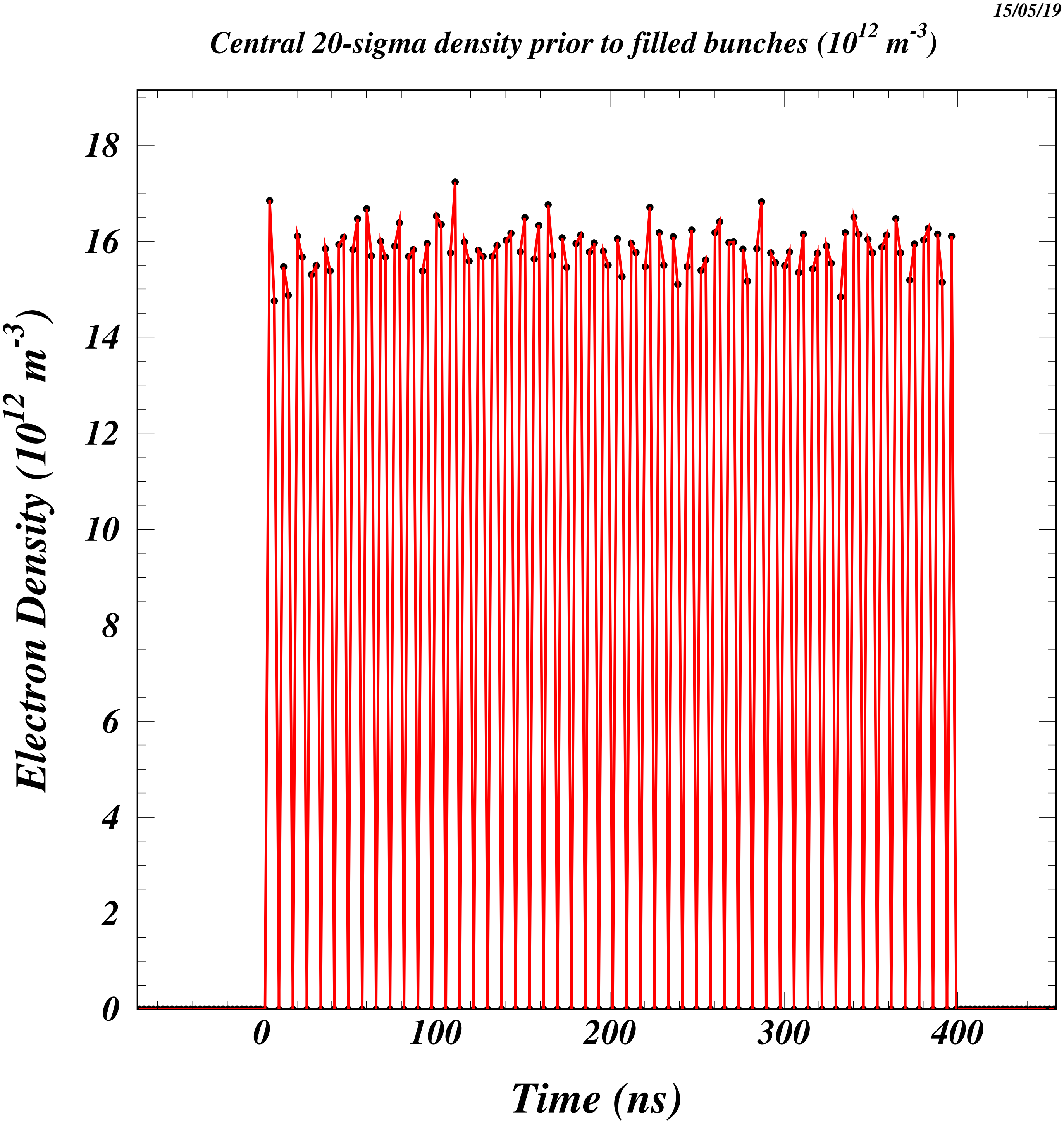
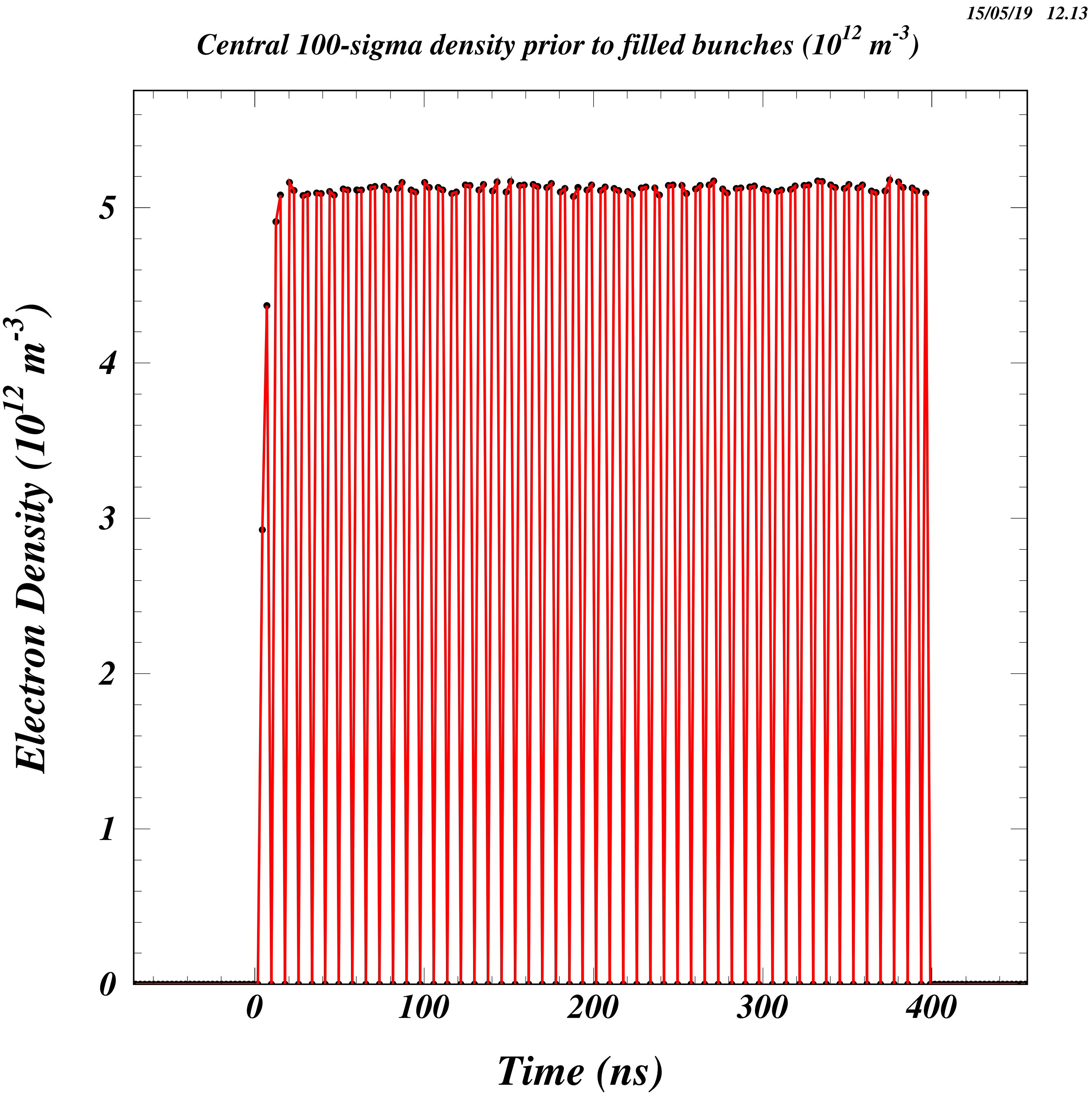


Central 20-sigma density prior to filled bunches (10^{12} m^{-3})
Electron Density (10^{12} m^{-3})
Time (ns)
0
2
4
6
8
10
12
14
16
18
0
100
200
300
400



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Central 100-sigma density prior to filled bunches (10^{12} m^{-3})
Electron Density (10^{12} m^{-3})
0
1
2
3
4
5
0
100
200
300
400
Time (ns)

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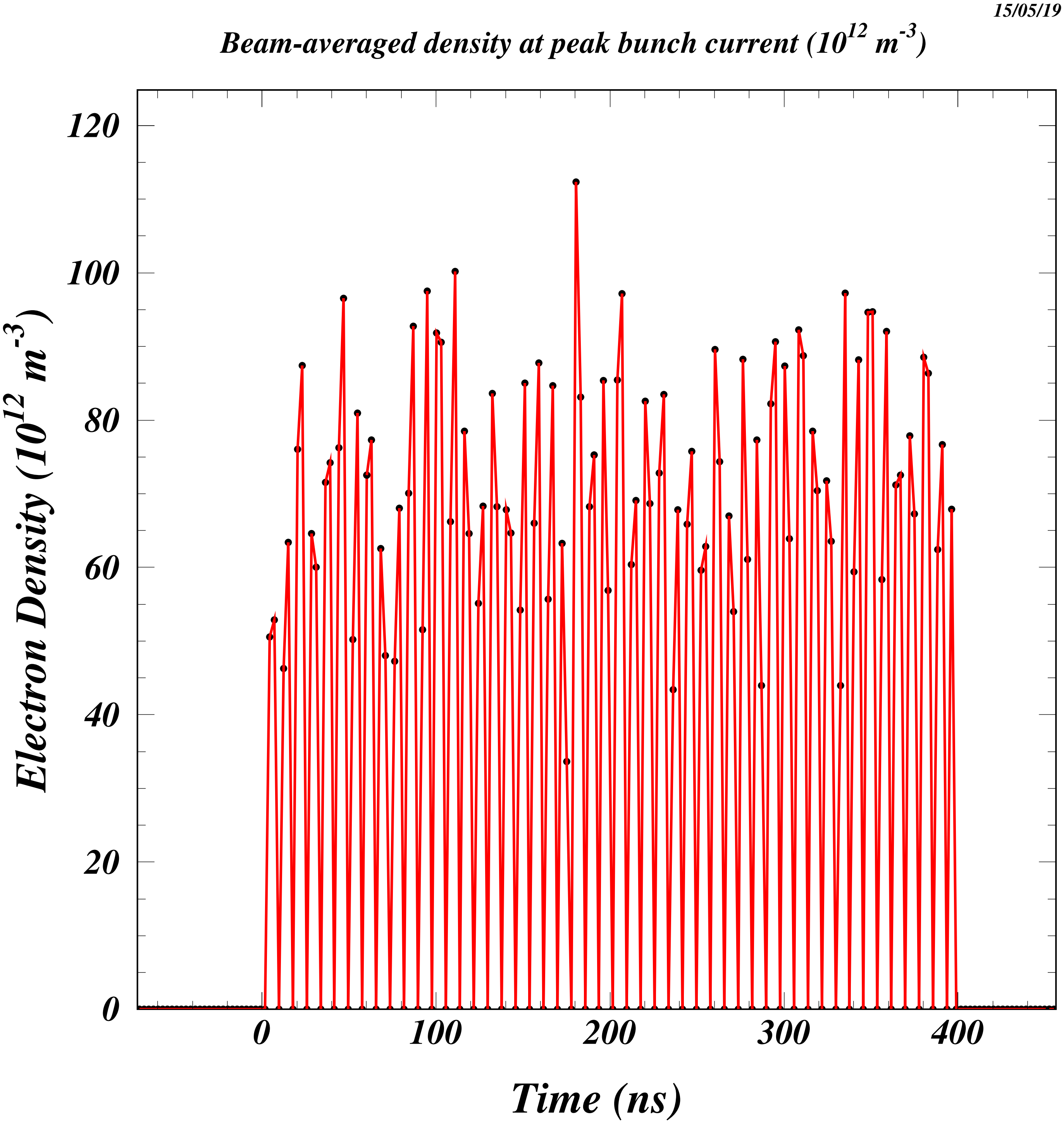
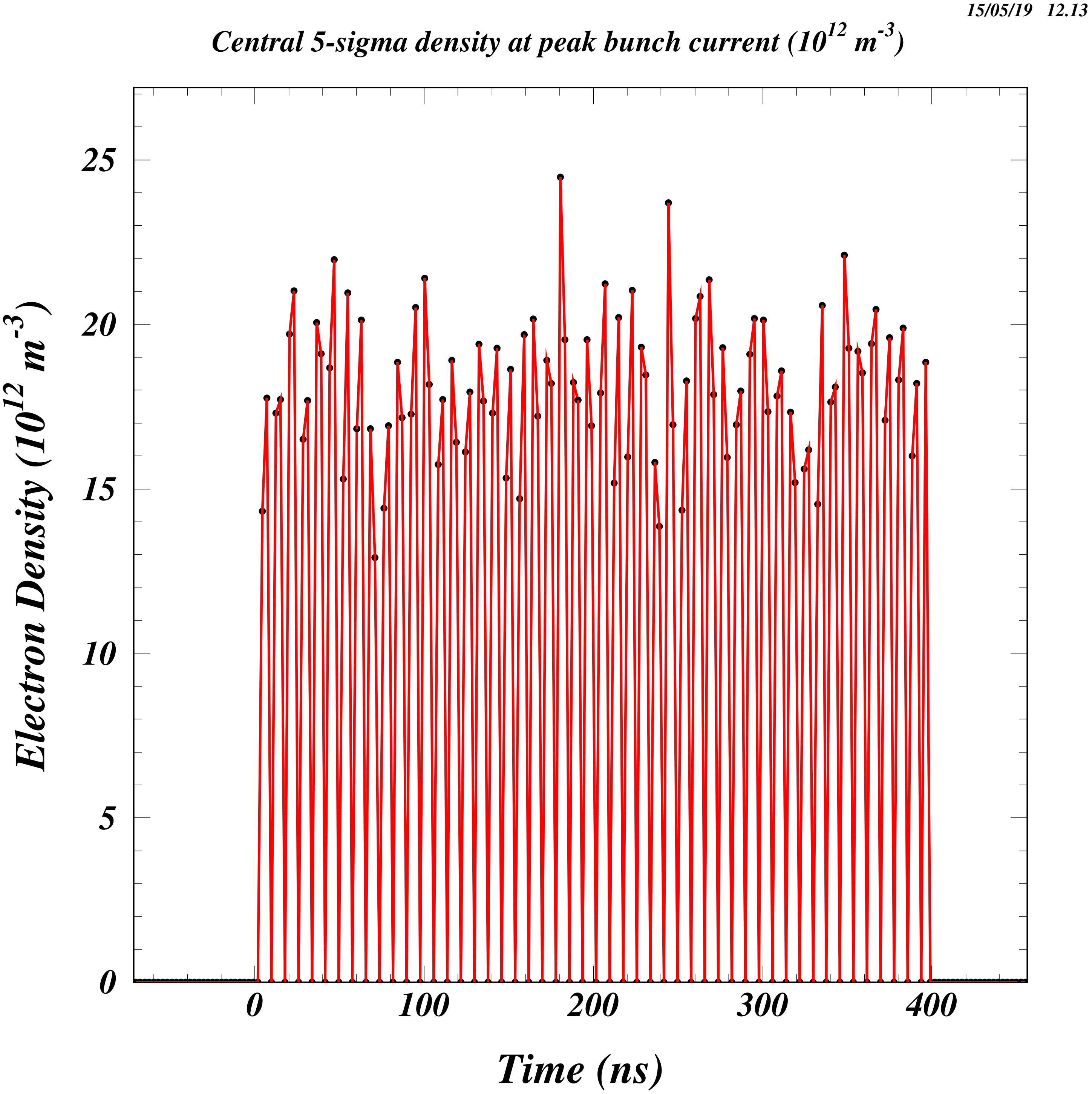
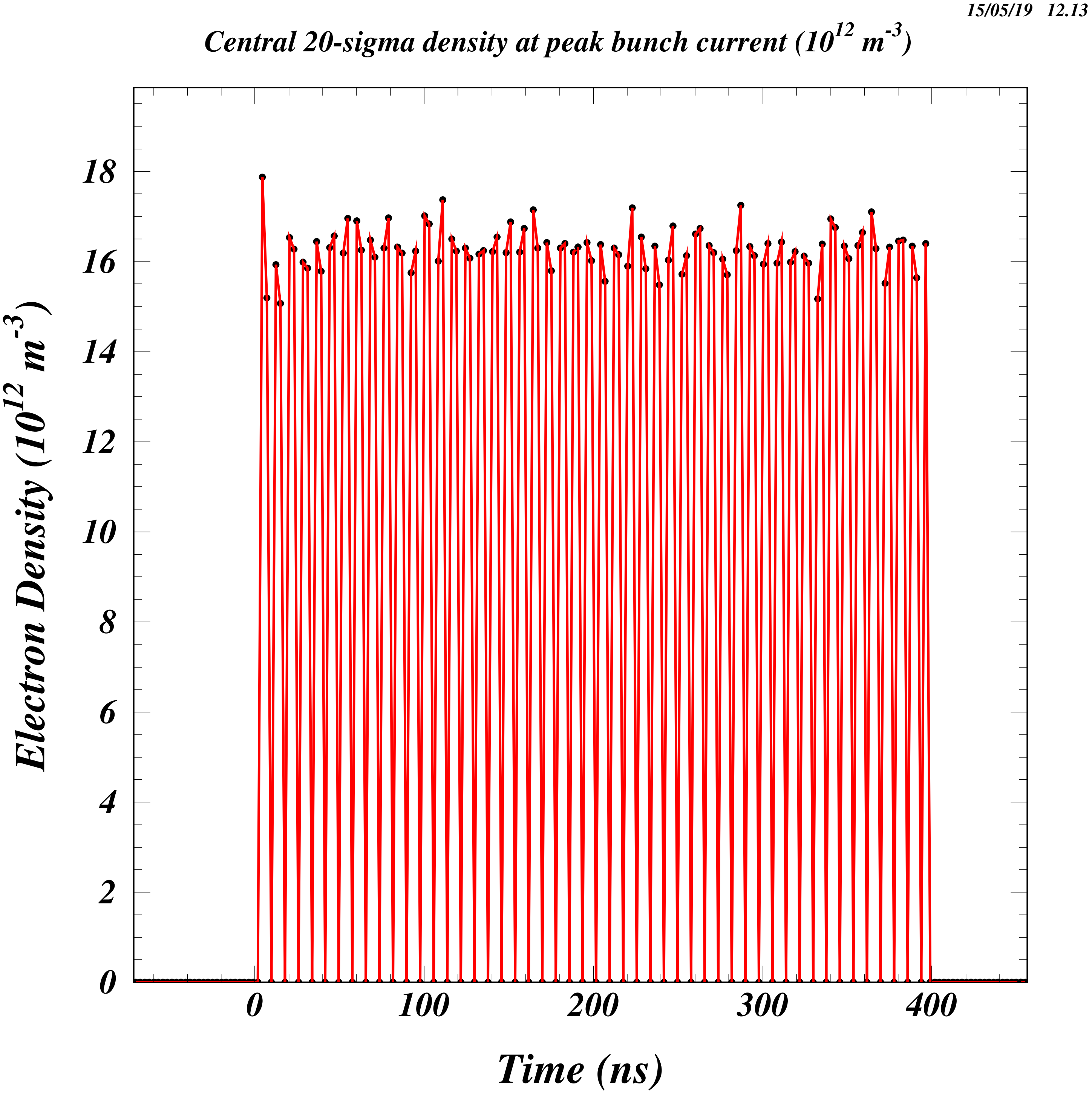
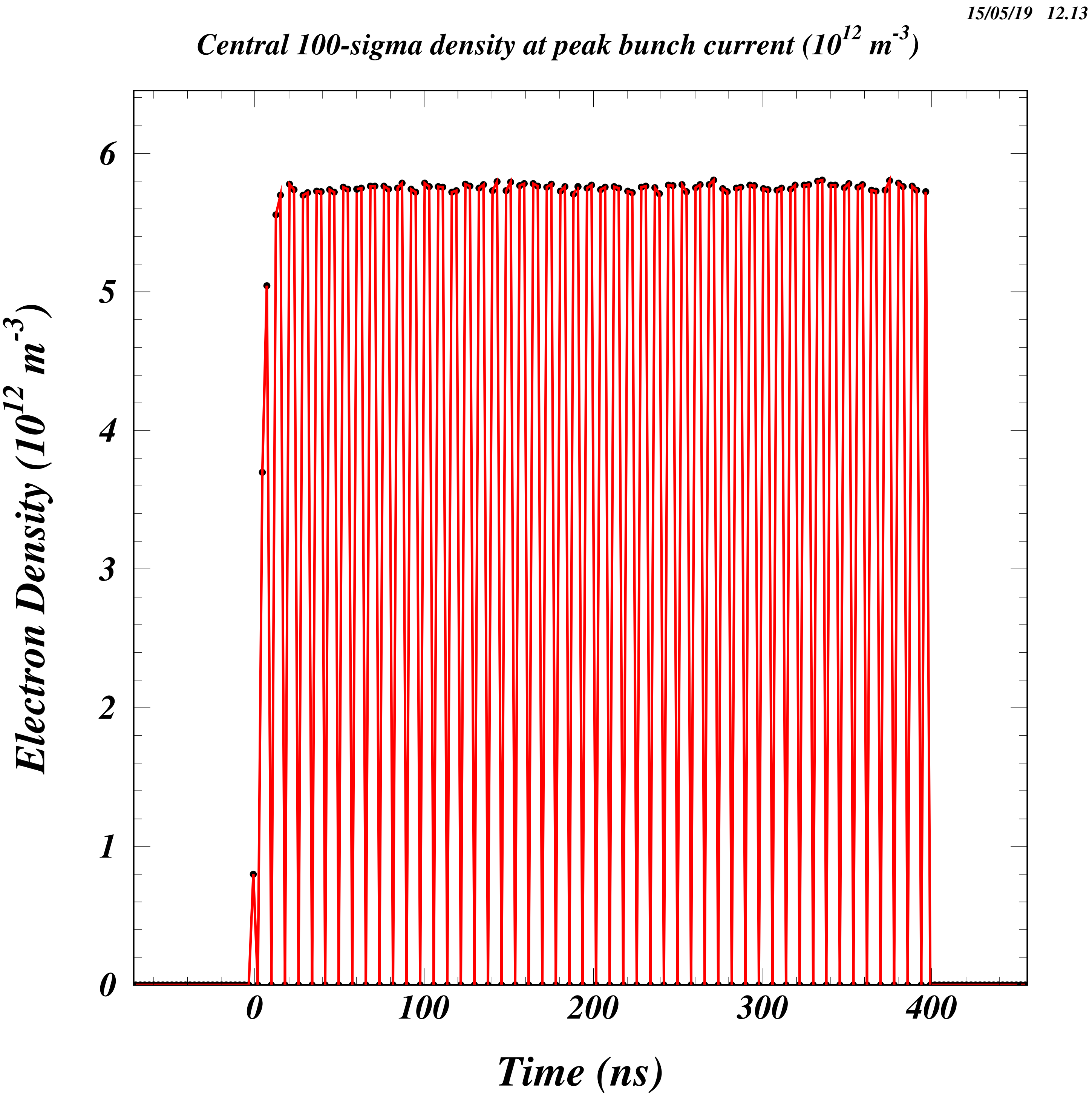


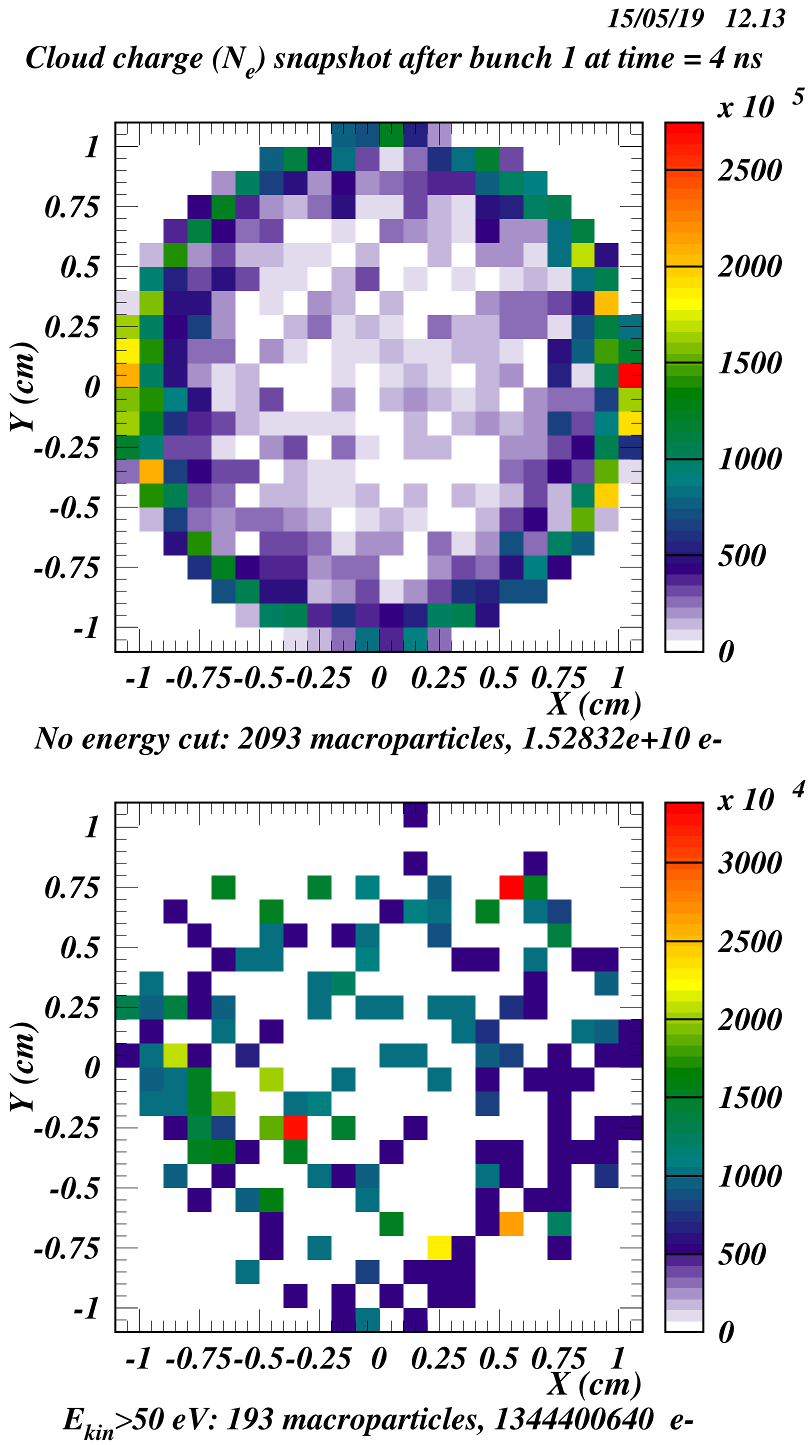
Beam-averaged density at peak bunch current (10^{12} m^{-3})
Electron Density (10^{12} m^{-3})
Time (ns)
0
20
40
60
80
100
120
0
100
200
300
400


15/05/19 12.13
Central 5-sigma density at peak bunch current (10^{12} m^{-3})
Electron Density (10^{12} m^{-3})
Time (ns)
0
5
10
15
20
25
0
100
200
300
400



15/05/19 12.13
Central 20-sigma density at peak bunch current (10^{12} m^{-3})
Electron Density (10^{12} m^{-3})
Time (ns)
0
2
4
6
8
10
12
14
16
18
0
100
200
300
400


15/05/19 12.13
Central 100-sigma density at peak bunch current (10^{12} m^{-3})
Electron Density (10^{12} m^{-3})
0
1
2
3
4
5
6
0
100
200
300
400
Time (ns)



15/05/19 12.13
Cloud charge (N_e) snapshot after bunch 1 at time = 4 ns
x 10 5
2500
2000
1500
1000
500
0
Y (cm)
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
X (cm)
No energy cut: 2093 macroparticles, 1.52832e+10 e-
x 10 4
3000
2500
2000
1500
1000
500
0
Y (cm)
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
X (cm)
E_{kin}>50 eV: 193 macroparticles, 1344400640 e-

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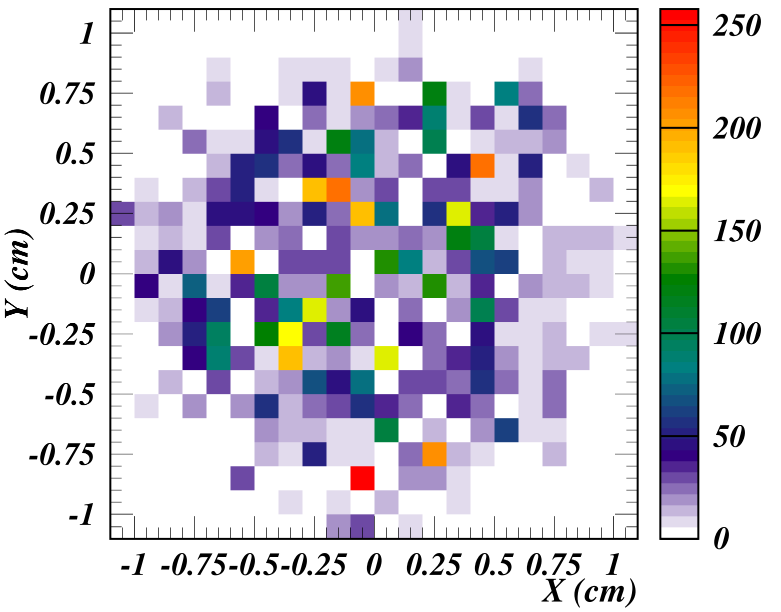
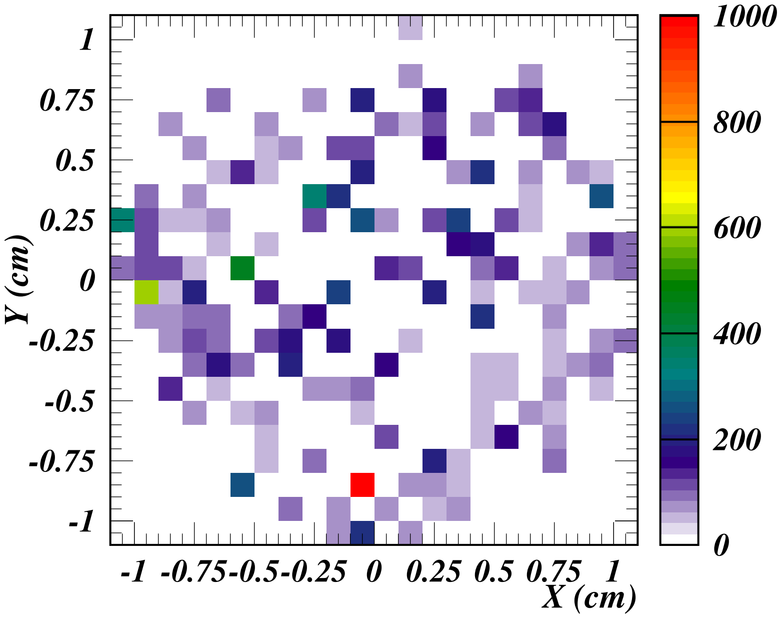
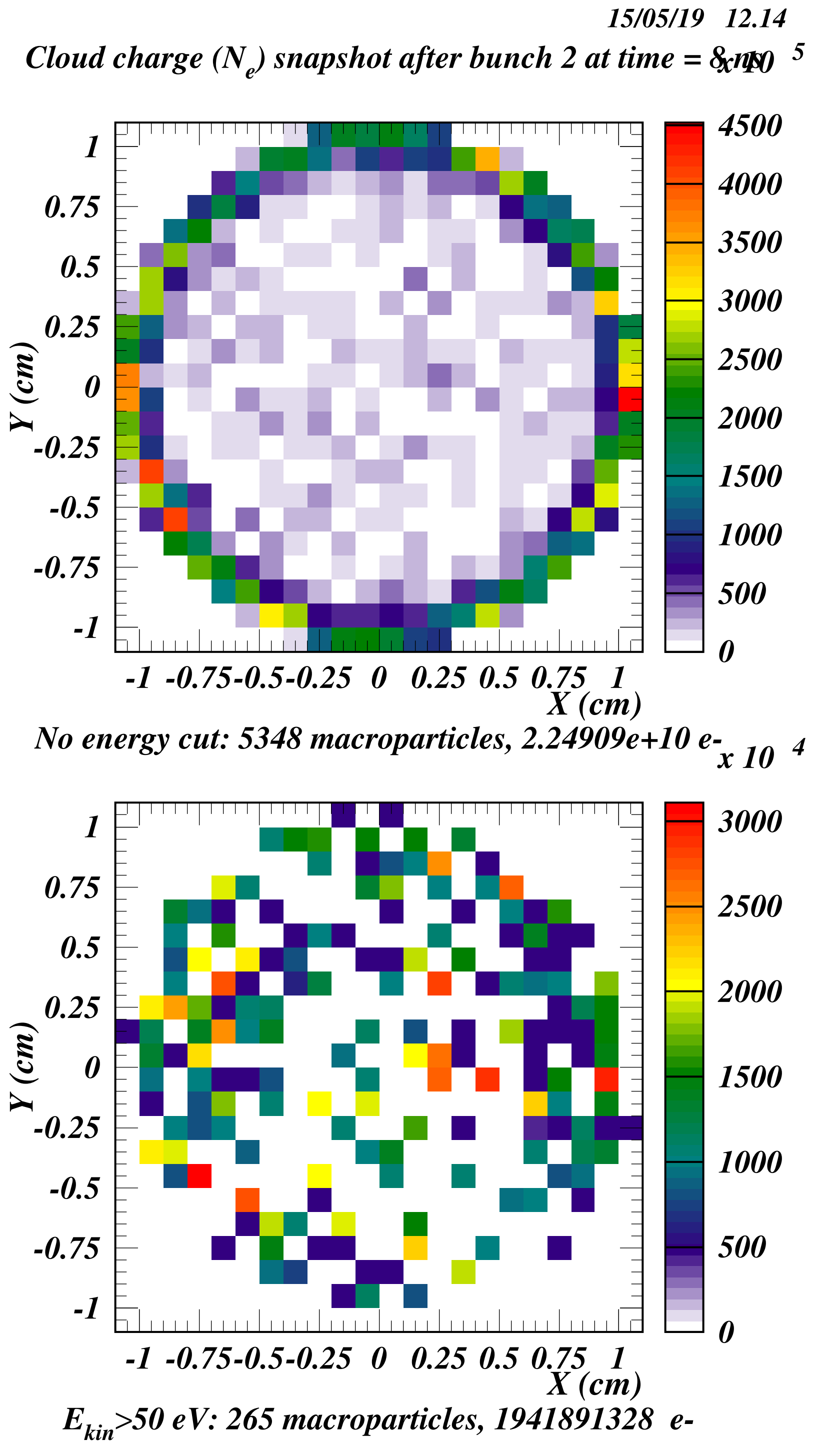
Cloud energy (eV) snapshot after bunch 1 at time = 4 ns



No energy cut: 2093 macroparticles, 1.52832e+10 e-



E_{kin}>50 eV: 193 macroparticles, 1344400640 e-


15/05/19 12.14
Cloud charge (N_e) snapshot after bunch 2 at time = 8 ns
x 10^5
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Y (cm)
X (cm)
No energy cut: 5348 macroparticles, 2.24909e+10 e-
x 10^4
3000
2500
2000
1500
1000
500
0
Y (cm)
X (cm)
E_kin>50 eV: 265 macroparticles, 1941891328 e-

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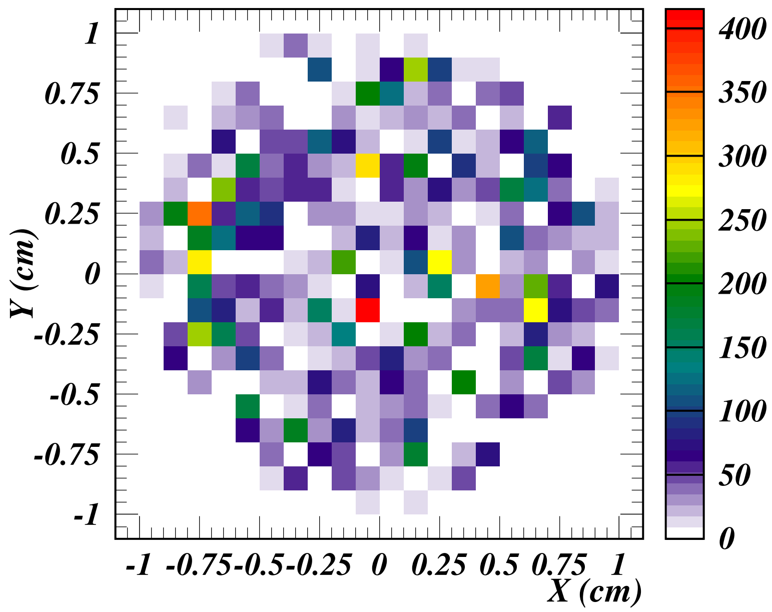
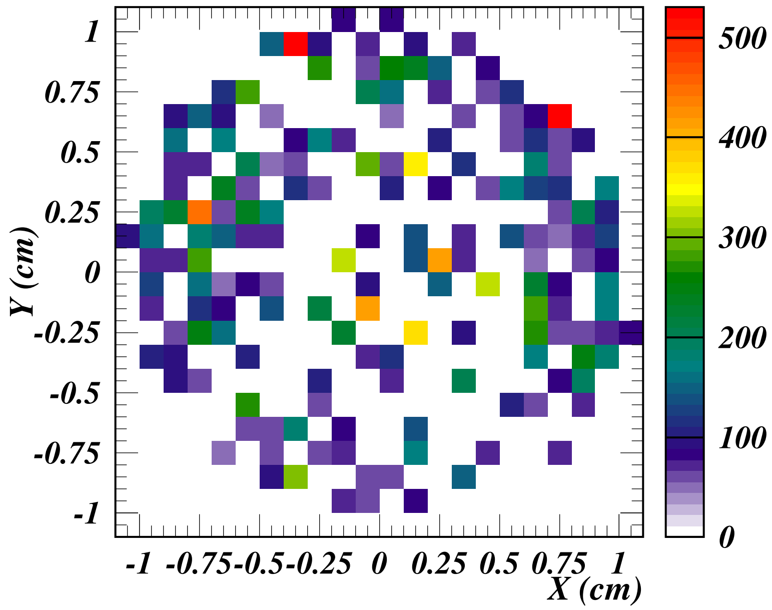
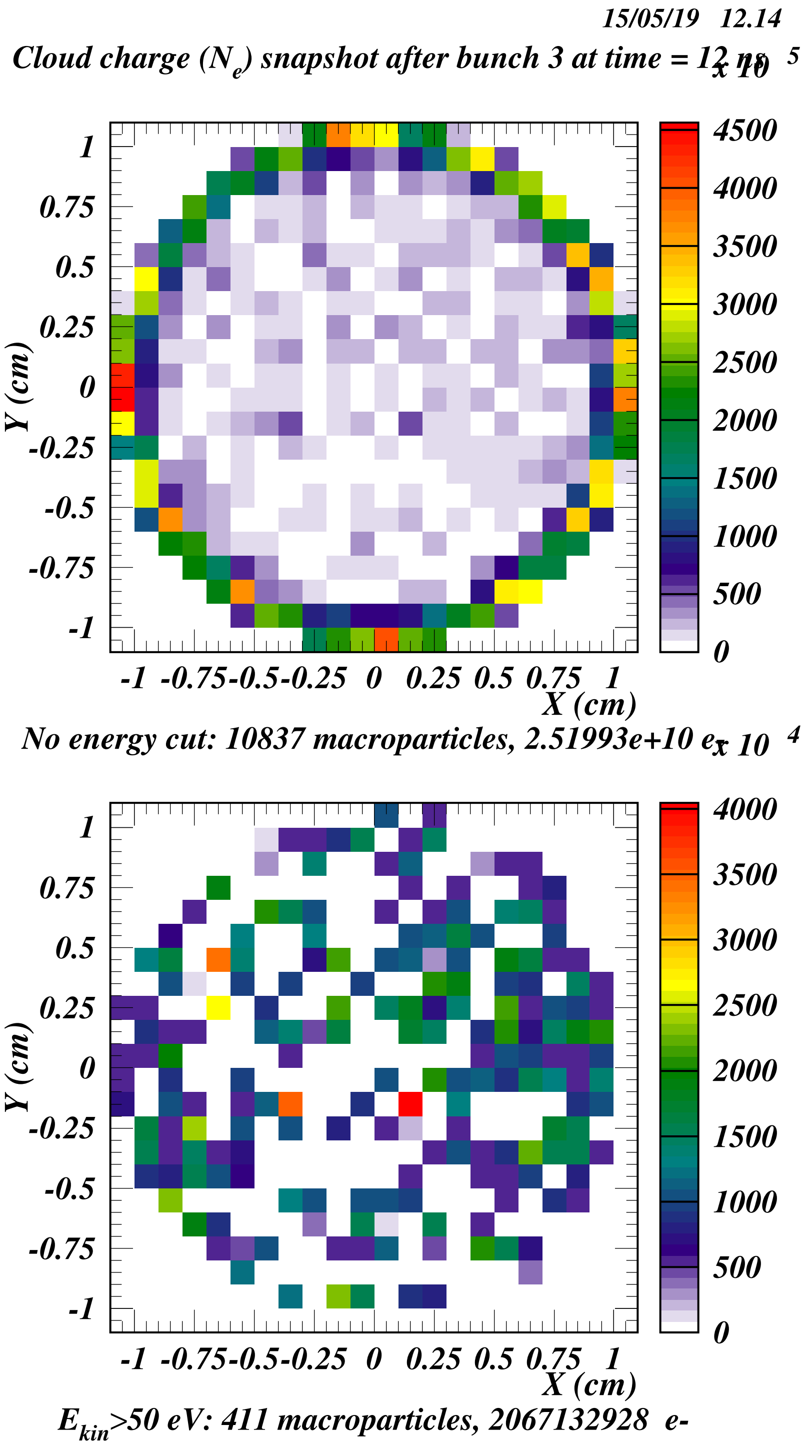
Cloud energy (eV) snapshot after bunch 2 at time = 8 ns



No energy cut: 5348 macroparticles, 2.24909e+10 e-

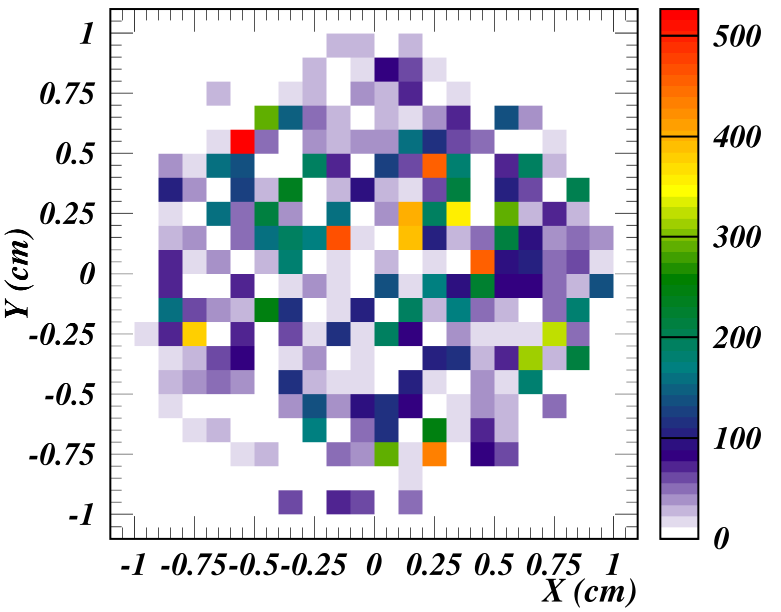


E_{kin}>50 eV: 265 macroparticles, 1941891328 e-

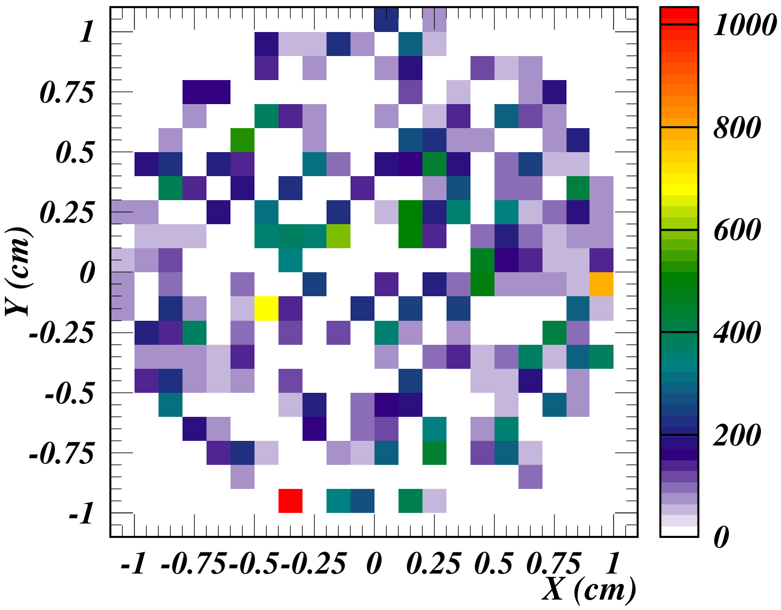

15/05/19 12.14
Cloud charge (N_e) snapshot after bunch 3 at time = 12 ns
x 10^5
Y (cm)
X (cm)
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
4500
4000
3500
3000
2500
2000
1500
1000
500
0
No energy cut: 10837 macroparticles, 2.51993e+10 e-
x 10^4
Y (cm)
X (cm)
4000
3500
3000
2500
2000
1500
1000
500
0
E_kin>50 eV: 411 macroparticles, 2067132928 e-

15/05/19 12.14

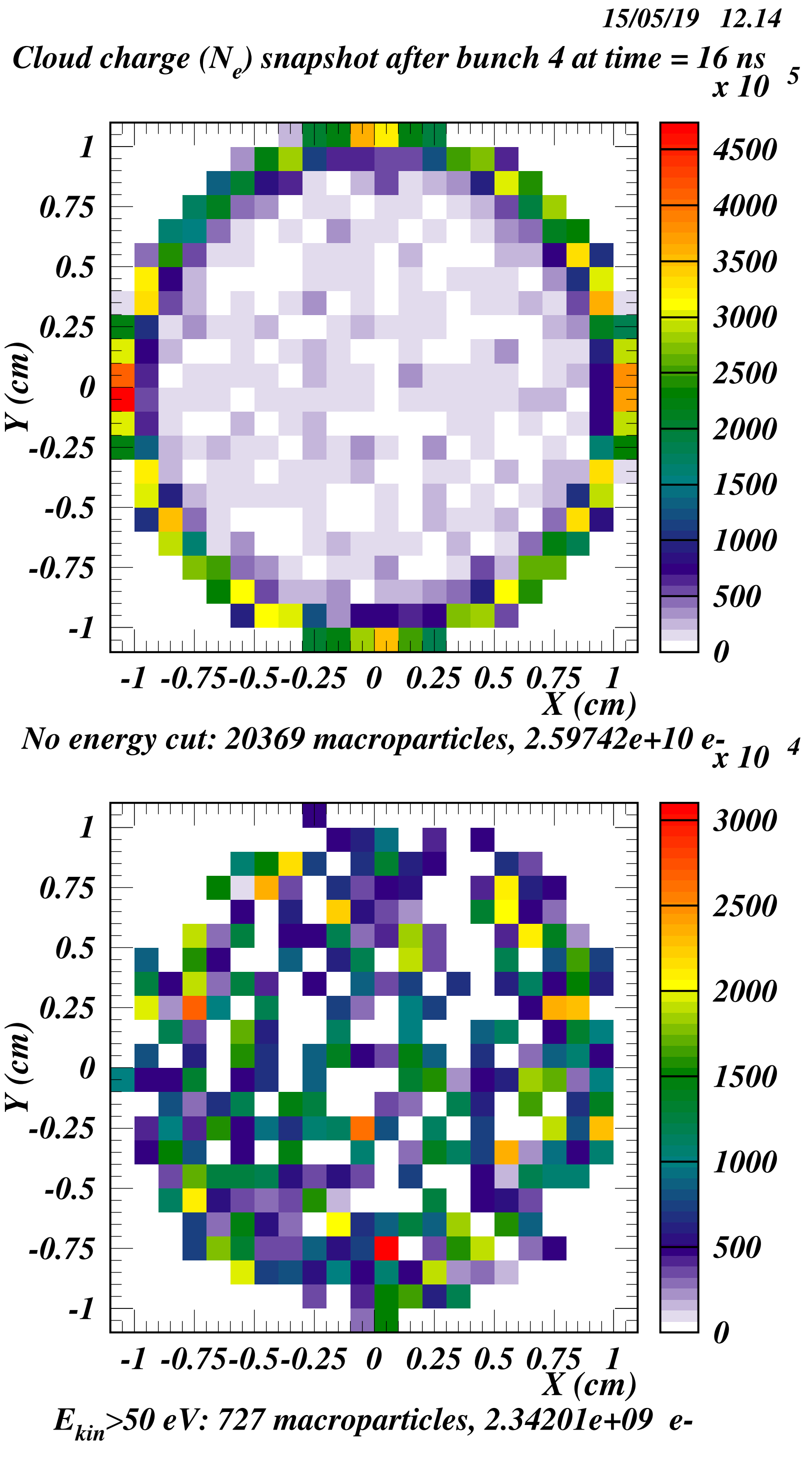
Cloud energy (eV) snapshot after bunch 3 at time = 12 ns



No energy cut: 10837 macroparticles, 2.51993e+10 e-



E_{kin}>50 eV: 411 macroparticles, 2067132928 e-


15/05/19 12.14
Cloud charge (N_e) snapshot after bunch 4 at time = 16 ns
x 10 5
Y (cm)
X (cm)
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
0 500 1000 1500 2000 2500 3000 3500 4000 4500
No energy cut: 20369 macroparticles, 2.59742e+10 e-
x 10 4
Y (cm)
X (cm)
0 500 1000 1500 2000 2500 3000
E_{kin}>50 eV: 727 macroparticles, 2.34201e+09 e-

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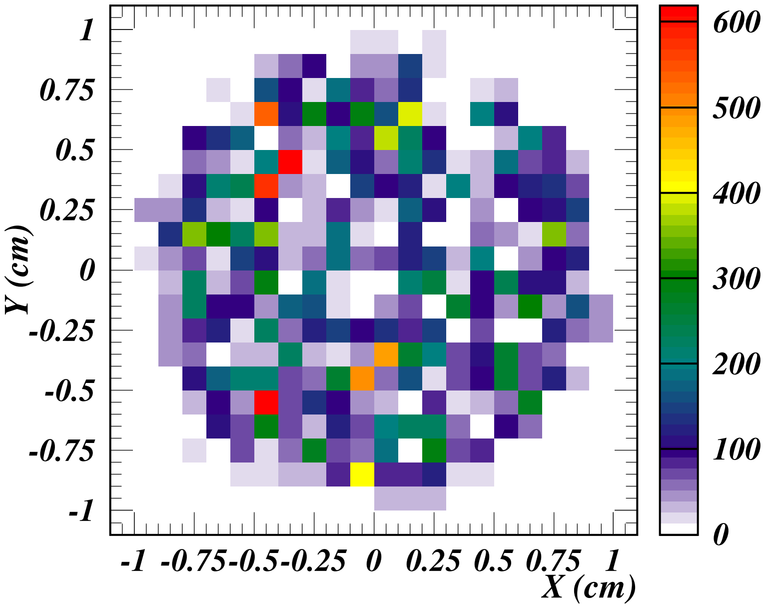
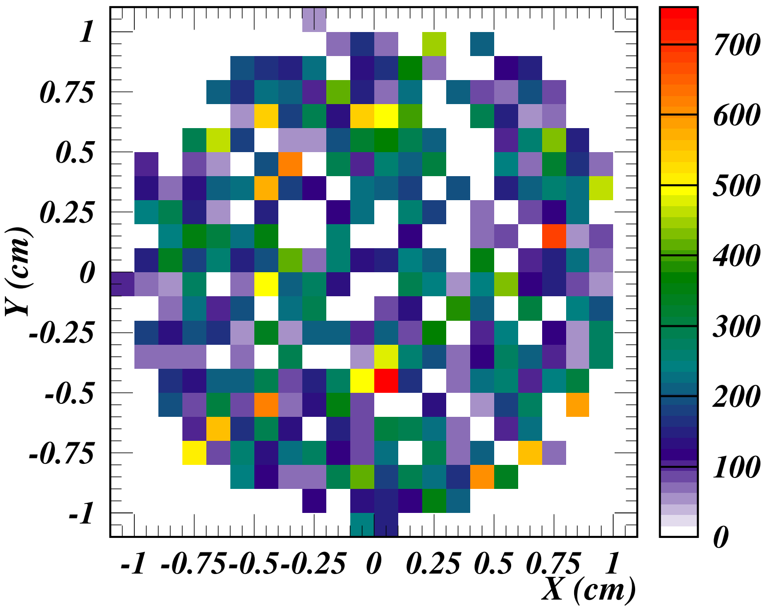
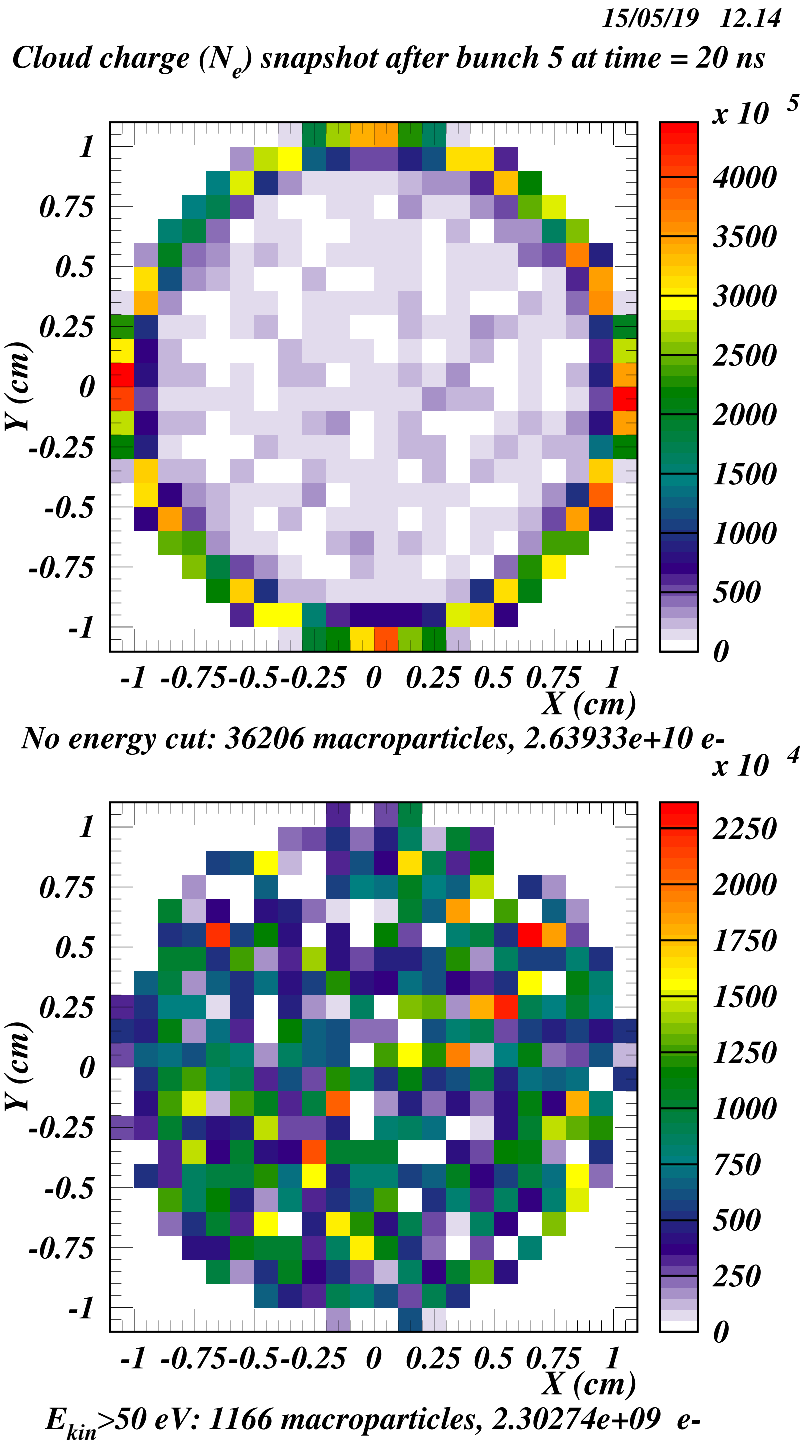
Cloud energy (eV) snapshot after bunch 4 at time = 16 ns



No energy cut: 20369 macroparticles, 2.59742e+10 e-



E_{kin}>50 eV: 727 macroparticles, 2.34201e+09 e-



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Cloud charge (N_e) snapshot after bunch 5 at time = 20 ns
x 10^5
4000
3500
3000
2500
2000
1500
1000
500
0
Y (cm)
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
X (cm)
No energy cut: 36206 macroparticles, 2.63933e+10 e-
x 10^4
2250
2000
1750
1500
1250
1000
750
500
250
0
Y (cm)
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
X (cm)
E_{kin}>50 eV: 1166 macroparticles, 2.30274e+09 e-

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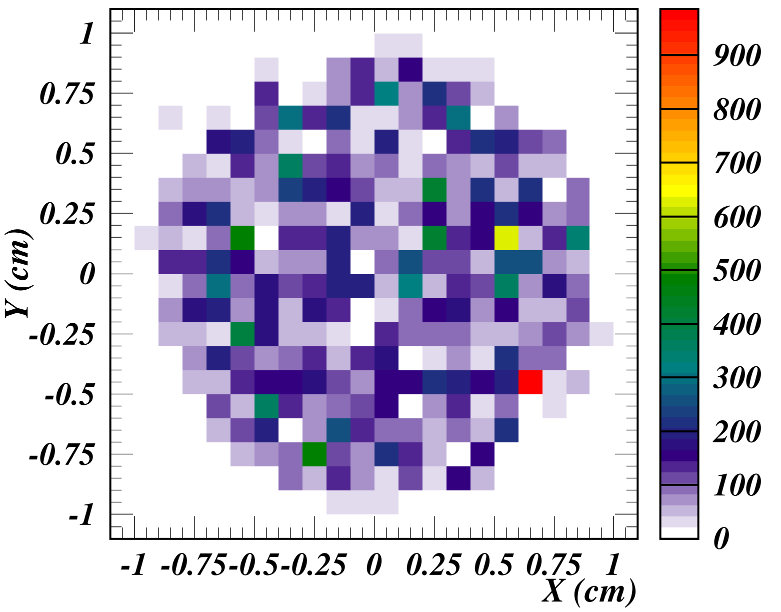
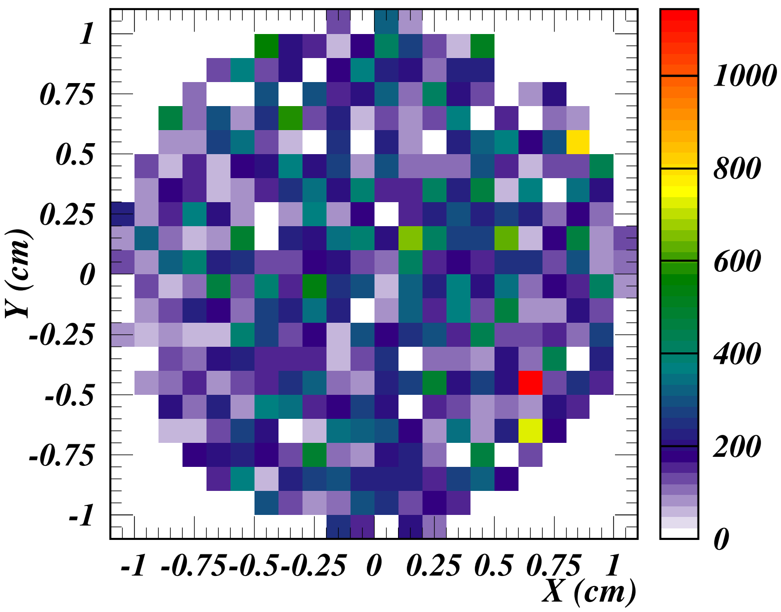
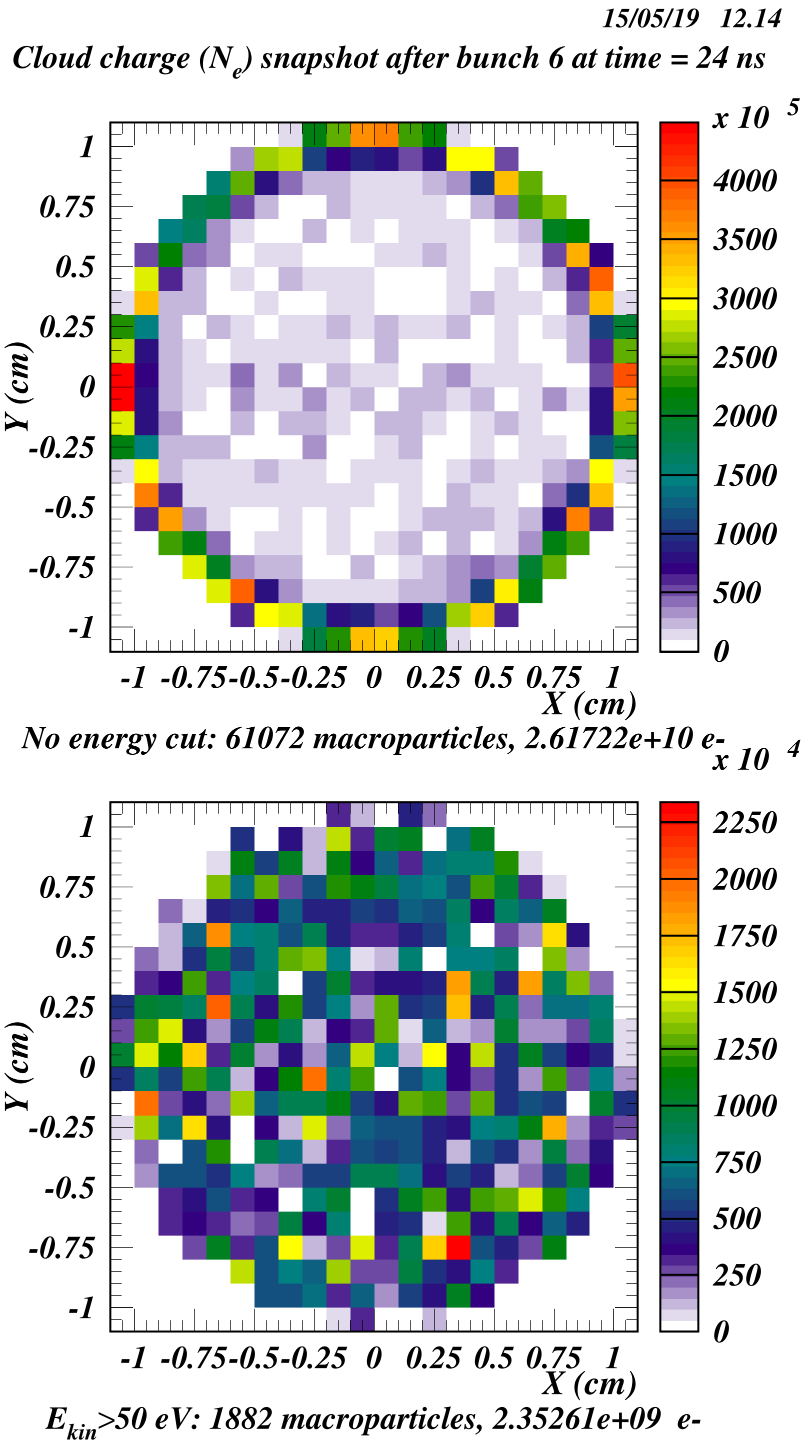
Cloud energy (eV) snapshot after bunch 5 at time = 20 ns



No energy cut: 36206 macroparticles, 2.63933e+10 e-



E_{kin}>50 eV: 1166 macroparticles, 2.30274e+09 e-


15/05/19 12.14
Cloud charge (N_e) snapshot after bunch 6 at time = 24 ns
x 10 5
4000
3500
3000
2500
2000
1500
1000
500
0
Y (cm)
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
X (cm)
No energy cut: 61072 macroparticles, 2.61722e+10 e-
x 10 4
2250
2000
1750
1500
1250
1000
750
500
250
0
Y (cm)
X (cm)
E_{kin}>50 eV: 1882 macroparticles, 2.35261e+09 e-

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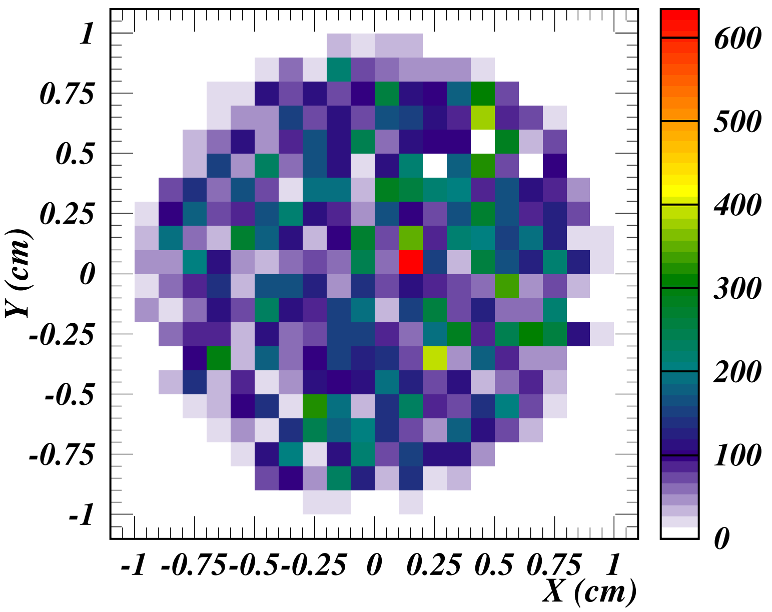
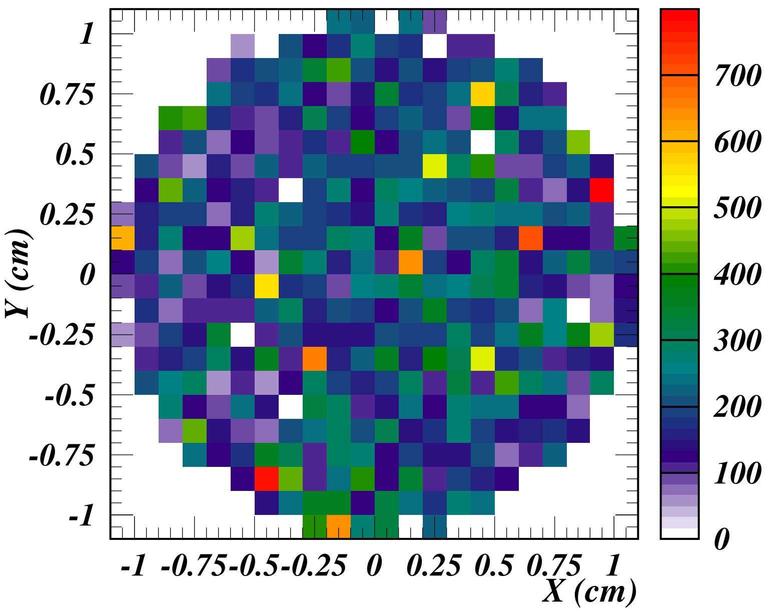
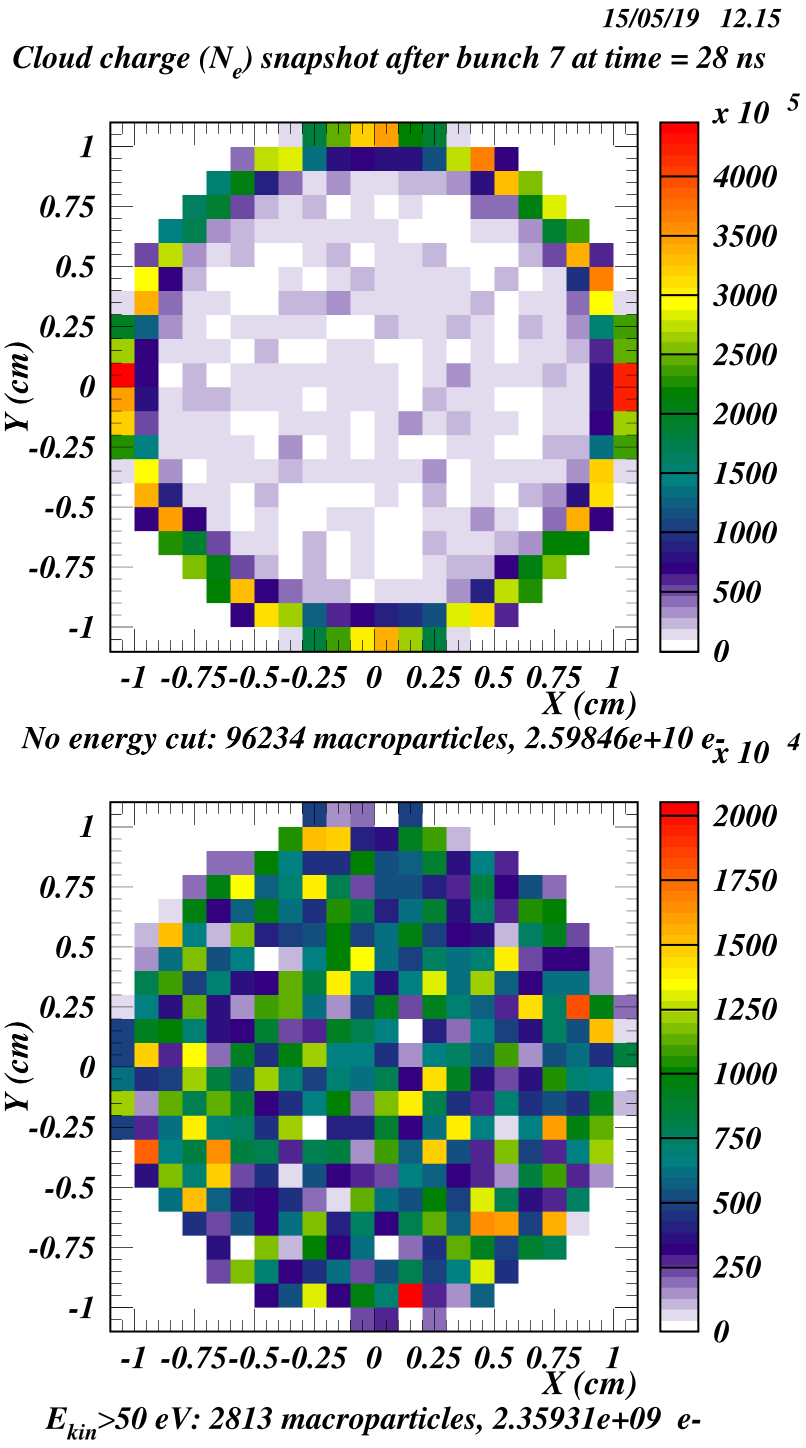
Cloud energy (eV) snapshot after bunch 6 at time = 24 ns



No energy cut: 61072 macroparticles, 2.61722e+10 e-



E_{kin}>50 eV: 1882 macroparticles, 2.35261e+09 e-


15/05/19 12.15
Cloud charge (N_e) snapshot after bunch 7 at time = 28 ns
x 10^5
Y (cm)
X (cm)
No energy cut: 96234 macroparticles, 2.59846e+10 e-
x 10^4
Y (cm)
X (cm)
E_{kin}>50 eV: 2813 macroparticles, 2.35931e+09 e-

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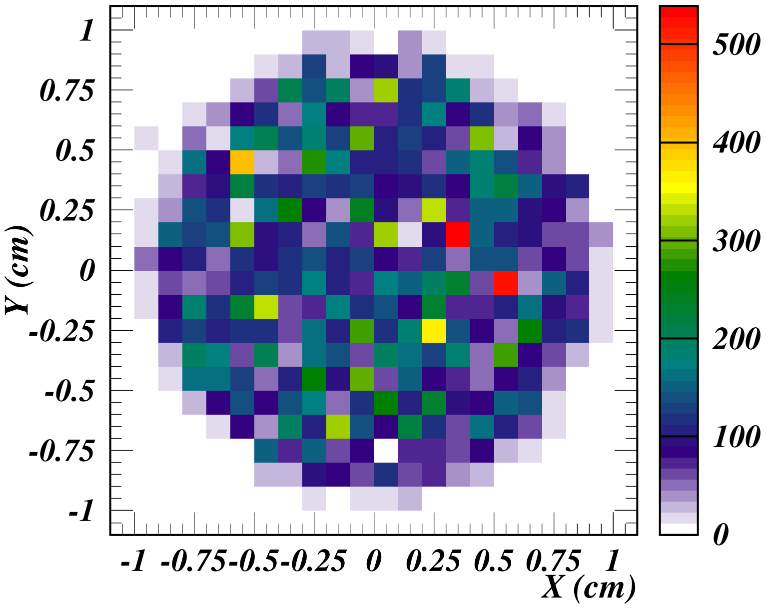
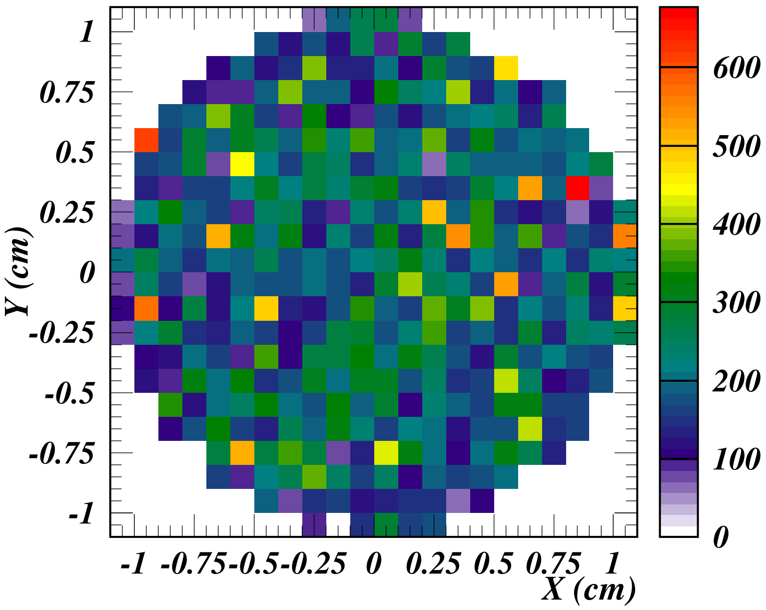
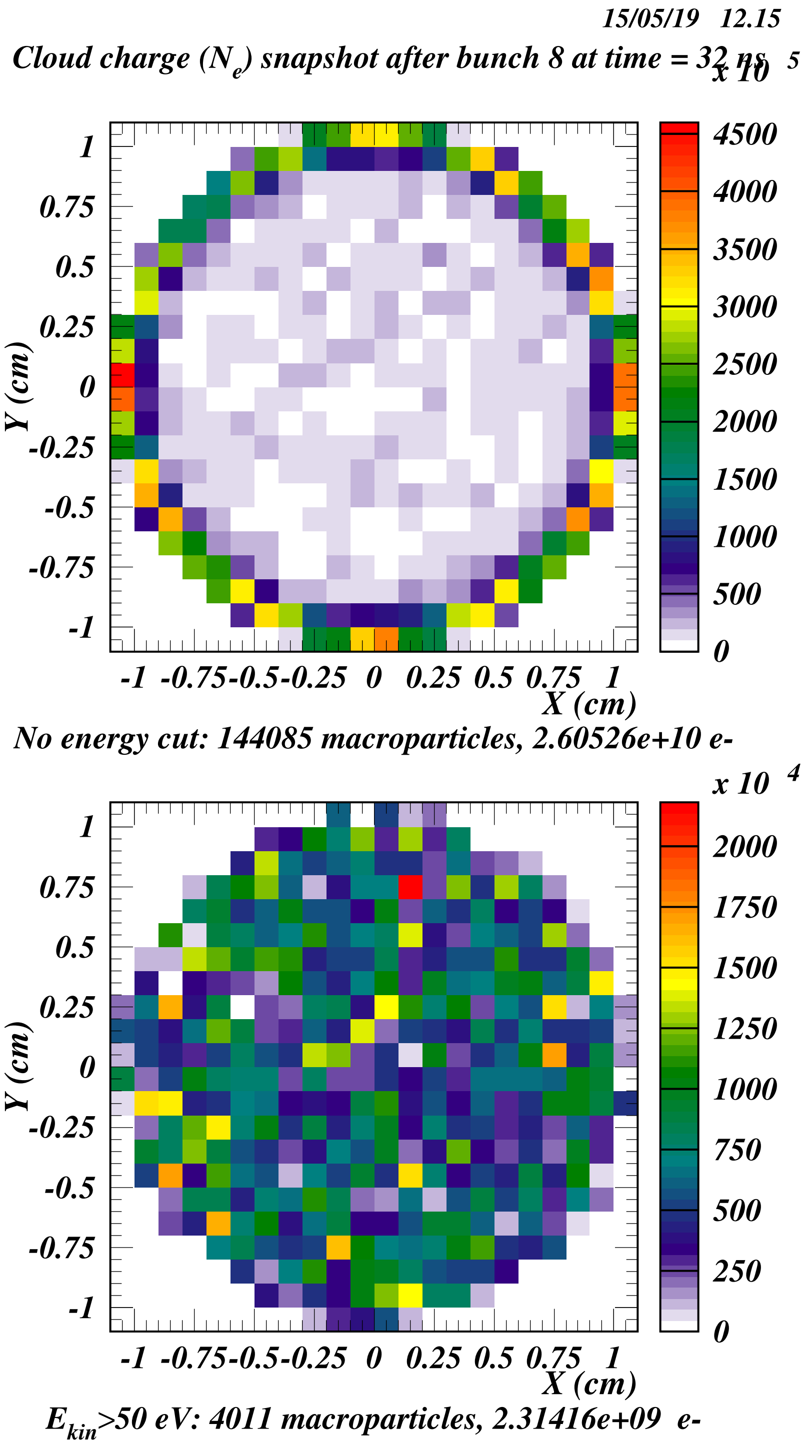
Cloud energy (eV) snapshot after bunch 7 at time = 28 ns



No energy cut: 96234 macroparticles, 2.59846e+10 e-



E_{kin}>50 eV: 2813 macroparticles, 2.35931e+09 e-


15/05/19 12.15
Cloud charge (N_e) snapshot after bunch 8 at time = 32 ns
x 10 5
4500
4000
3500
3000
2500
2000
1500
1000
500
0
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
Y (cm)
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
X (cm)
No energy cut: 144085 macroparticles, 2.60526e+10 e-
x 10 4
2000
1750
1500
1250
1000
750
500
250
0
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
Y (cm)
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
X (cm)
E_{kin}>50 eV: 4011 macroparticles, 2.31416e+09 e-

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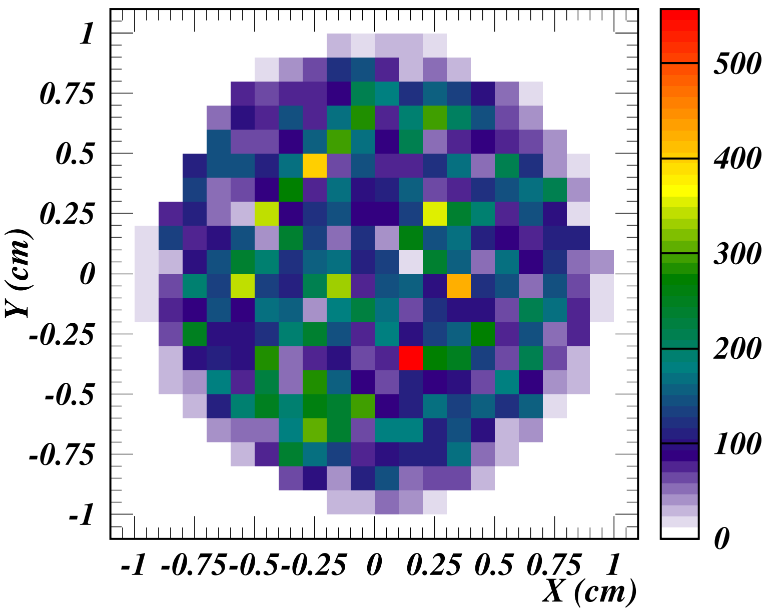
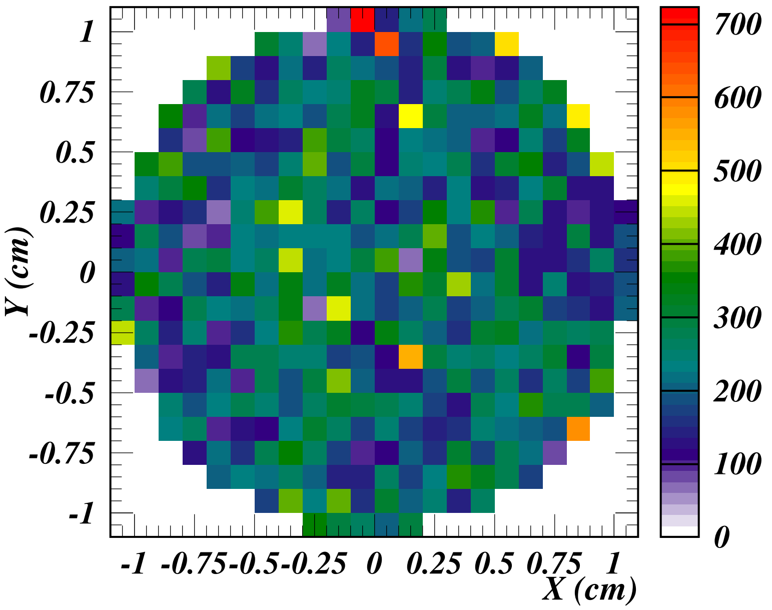
Cloud energy (eV) snapshot after bunch 8 at time = 32 ns



No energy cut: 144085 macroparticles, 2.60526e+10 e-



E_{kin}>50 eV: 4011 macroparticles, 2.31416e+09 e-

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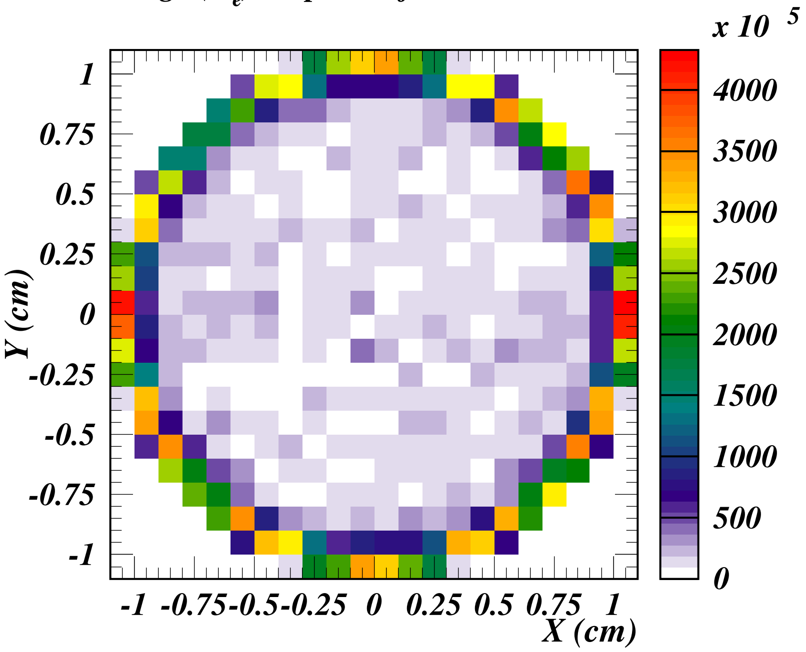
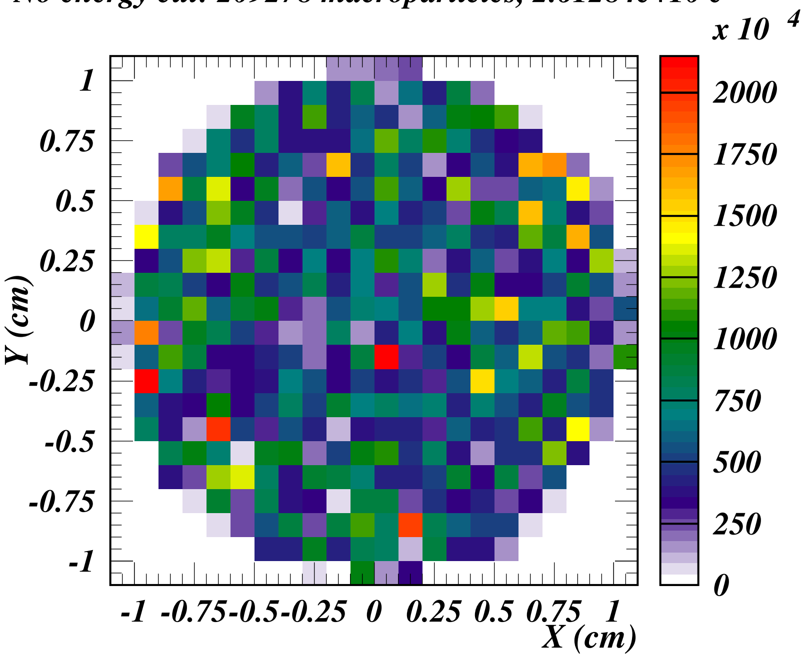
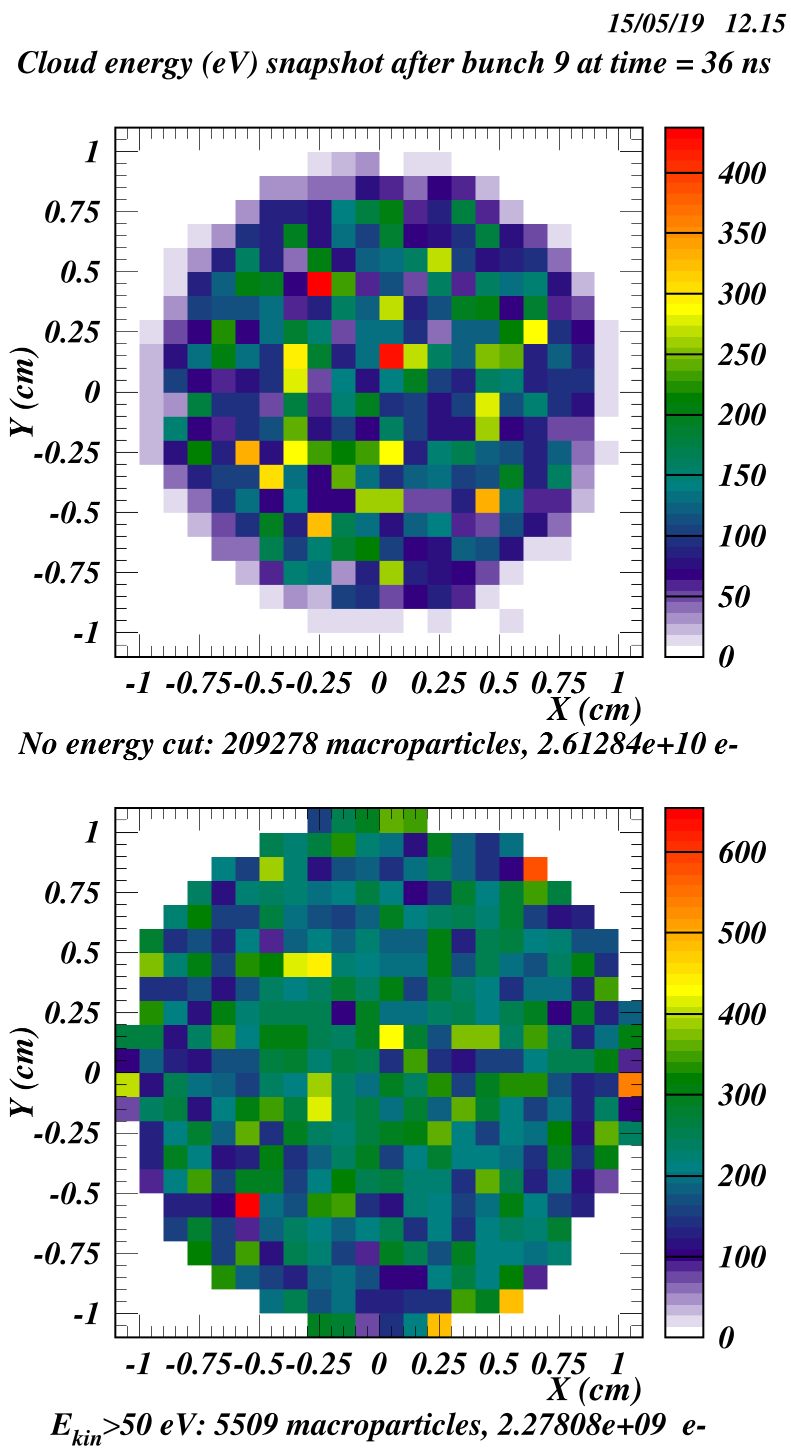
Cloud charge (N_e) snapshot after bunch 9 at time = 36 ns



No energy cut: 209278 macroparticles, 2.61284e+10 e-



E_{kin}>50 eV: 5509 macroparticles, 2.27808e+09 e-



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Cloud energy (eV) snapshot after bunch 9 at time = 36 ns
Y (cm)
X (cm)
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
0 50 100 150 200 250 300 350 400
No energy cut: 209278 macroparticles, 2.61284e+10 e-
Y (cm)
X (cm)
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
0 100 200 300 400 500 600
E_{kin}>50 eV: 5509 macroparticles, 2.27808e+09 e-

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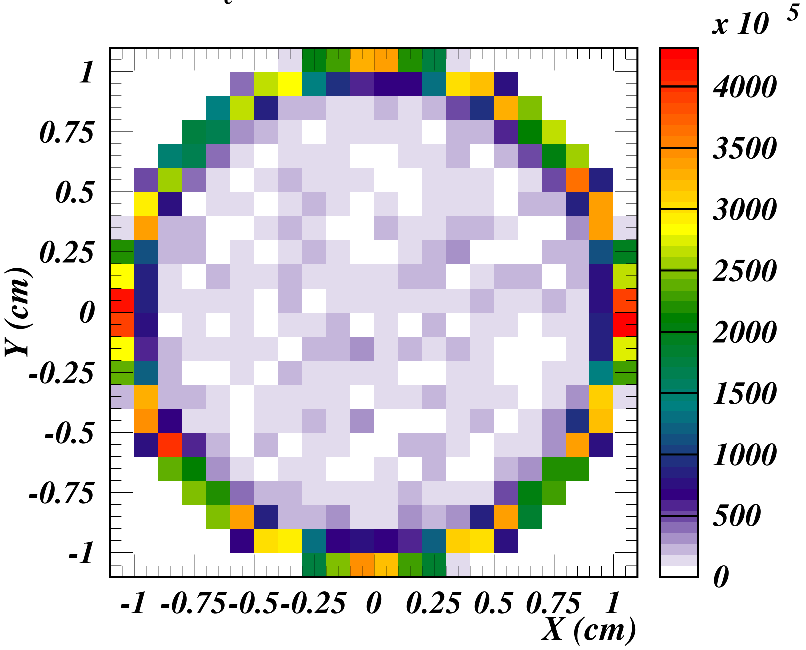
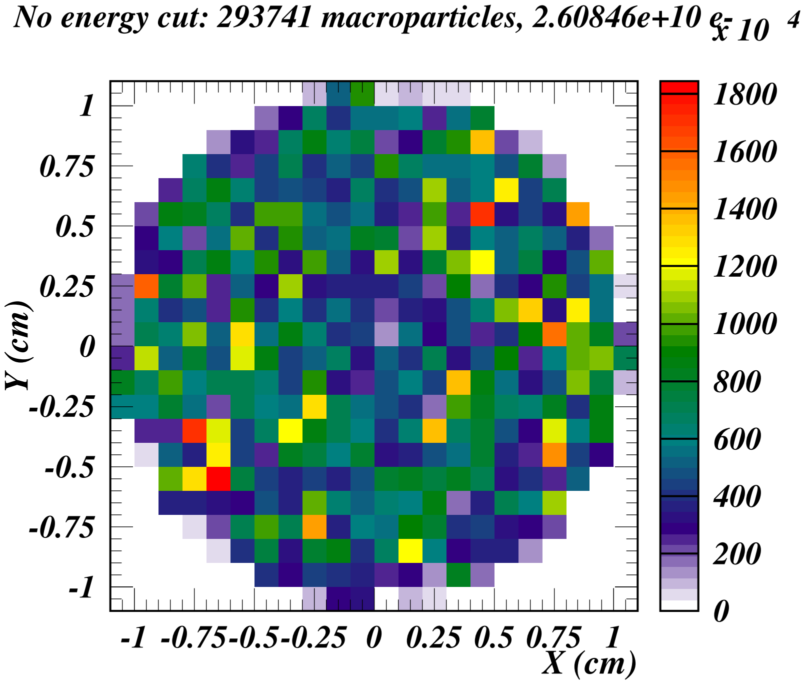
Cloud charge (N_e) snapshot after bunch 10 at time = 40 ns



No energy cut: 293741 macroparticles, 2.60846e+10 e-



E_{kin}>50 eV: 7777 macroparticles, 2.17692e+09 e-

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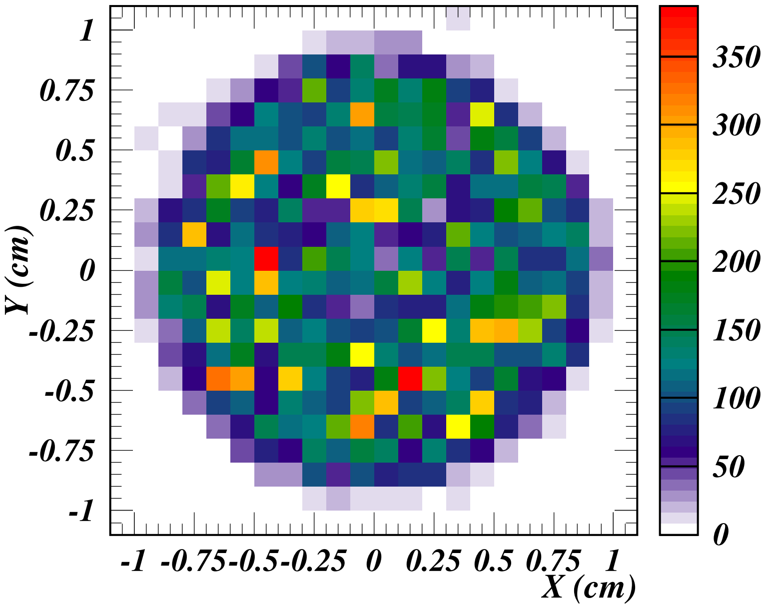
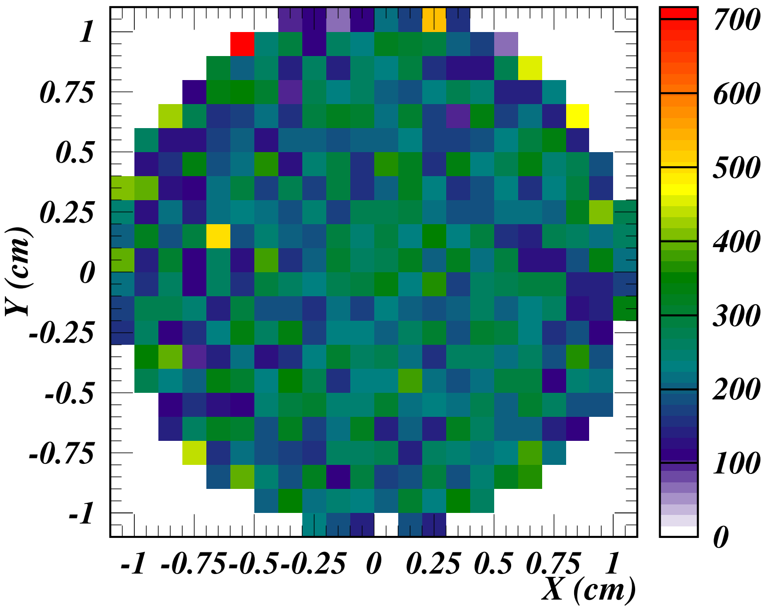
Cloud energy (eV) snapshot after bunch 10 at time = 40 ns



No energy cut: 293741 macroparticles, 2.60846e+10 e-



E_{kin}>50 eV: 7777 macroparticles, 2.17692e+09 e-

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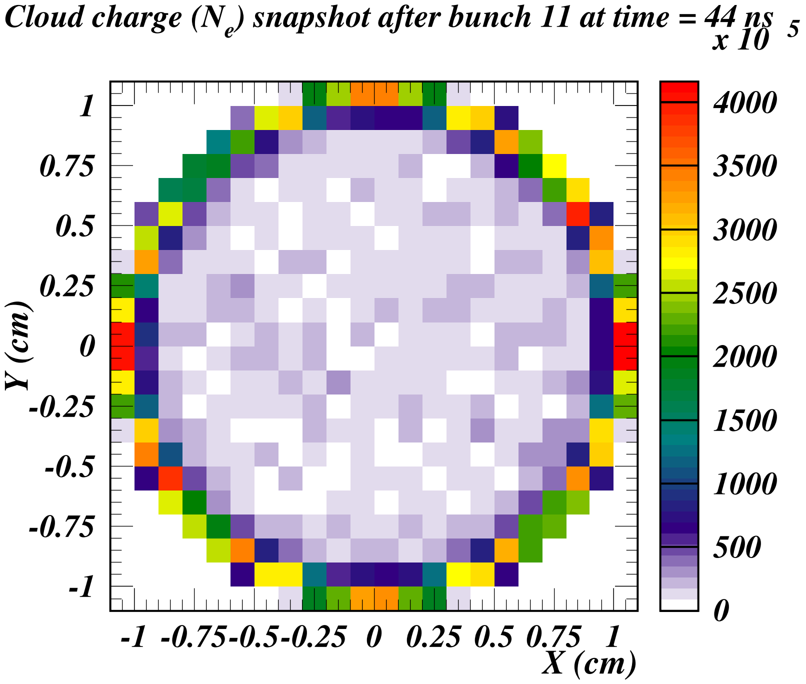
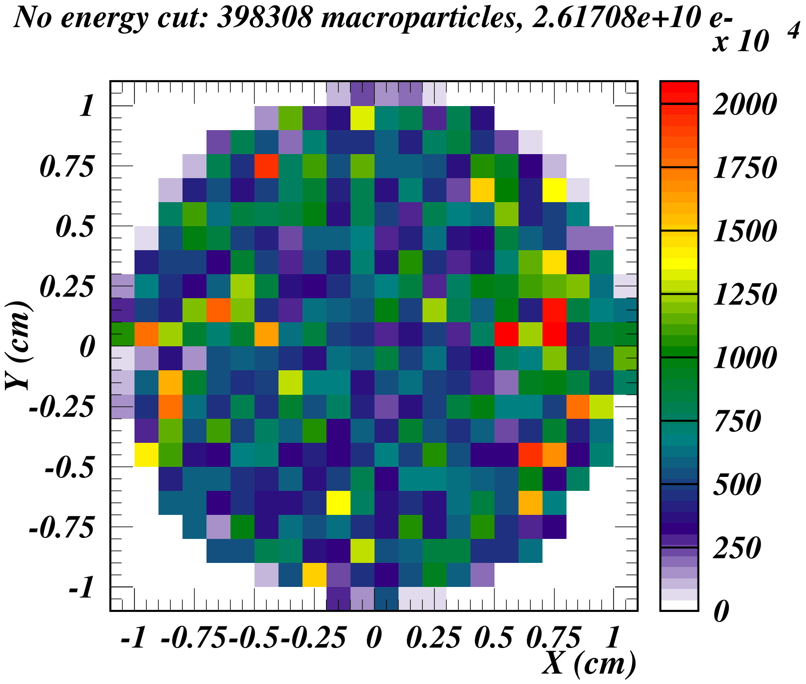
Cloud charge (N_e) snapshot after bunch 11 at time = 44 ns



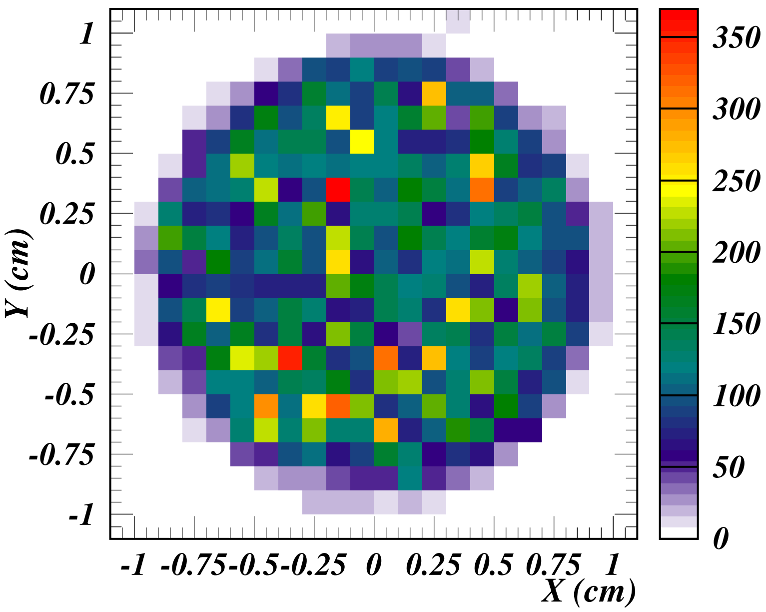
No energy cut: 398308 macroparticles, 2.61708e+10 e-



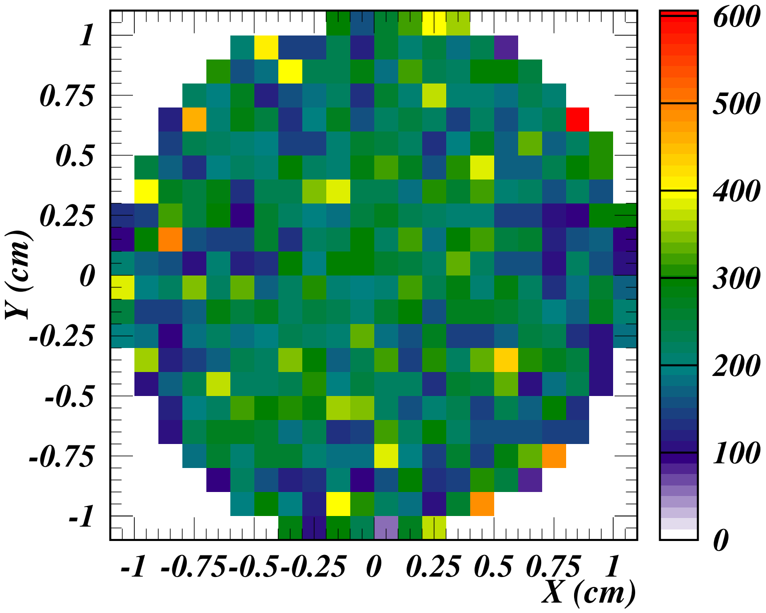
E_{kin}>50 eV: 10328 macroparticles, 2.37626e+09 e-

15/05/19 12.15

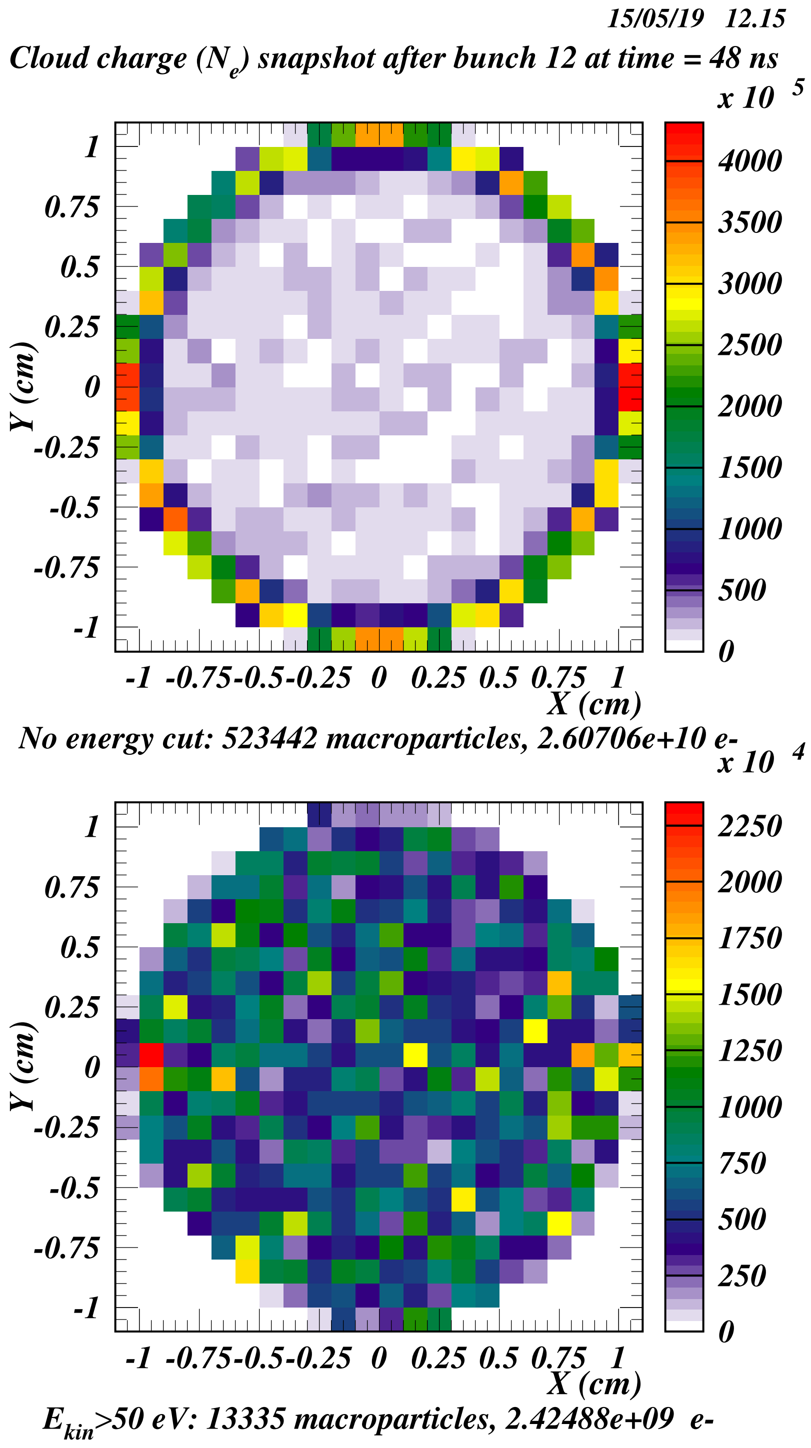
Cloud energy (eV) snapshot after bunch 11 at time = 44 ns



No energy cut: 398308 macroparticles, 2.61708e+10 e-

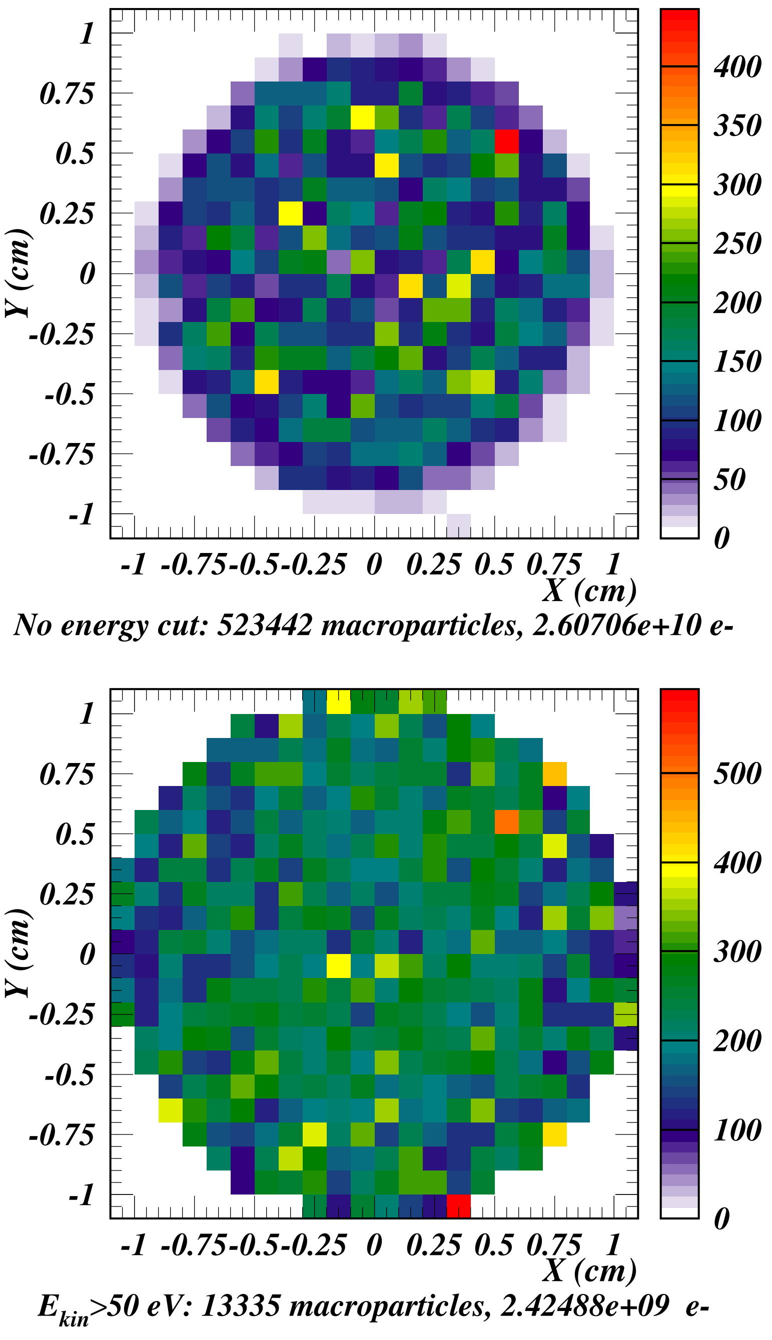


E_{kin}>50 eV: 10328 macroparticles, 2.37626e+09 e-


15/05/19 12.15
Cloud charge (N_e) snapshot after bunch 12 at time = 48 ns
x 10 5
4000
3500
3000
2500
2000
1500
1000
500
0
Y (cm)
X (cm)
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
No energy cut: 523442 macroparticles, 2.60706e+10 e-
x 10 4
2250
2000
1750
1500
1250
1000
750
500
250
0
Y (cm)
X (cm)
-1 -0.75 -0.5 -0.25 0 0.25 0.5 0.75 1
E_{kin}>50 eV: 13335 macroparticles, 2.42488e+09 e-

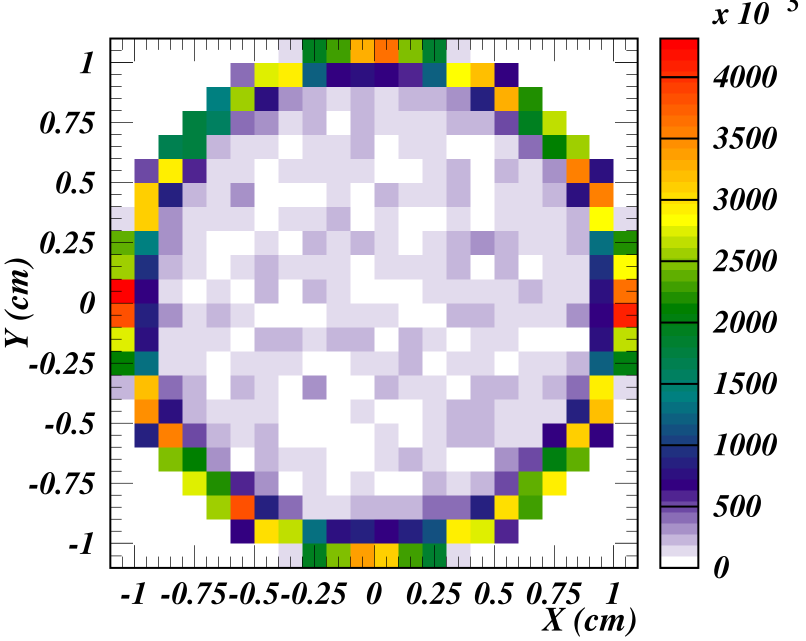
15/05/19 12.16

Cloud energy (eV) snapshot after bunch 12 at time = 48 ns

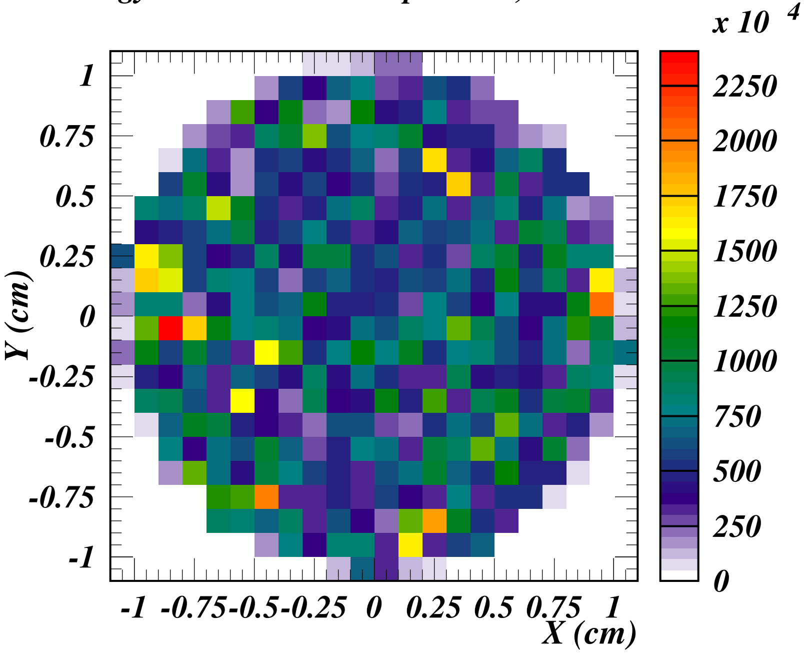


15/05/19 12.16

Cloud charge (N_e) snapshot after bunch 13 at time = 52 ns



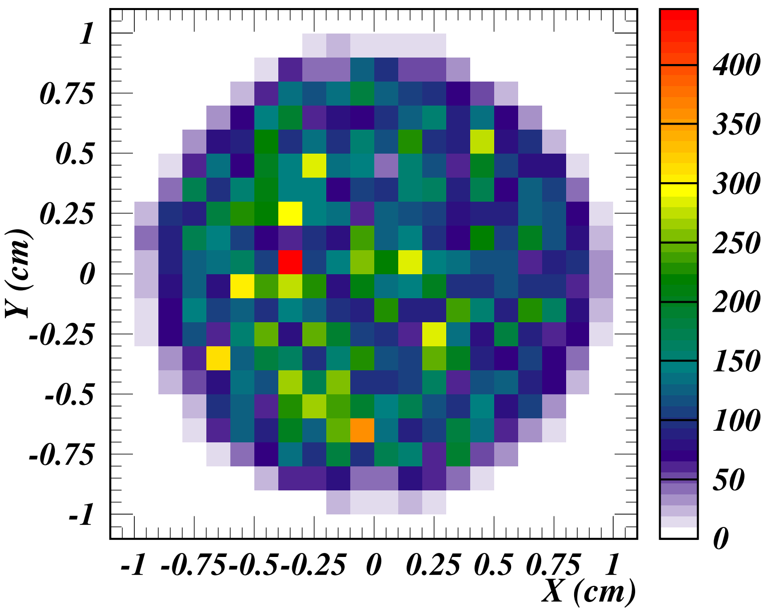
No energy cut: 667470 macroparticles, 2.62576e+10 e-



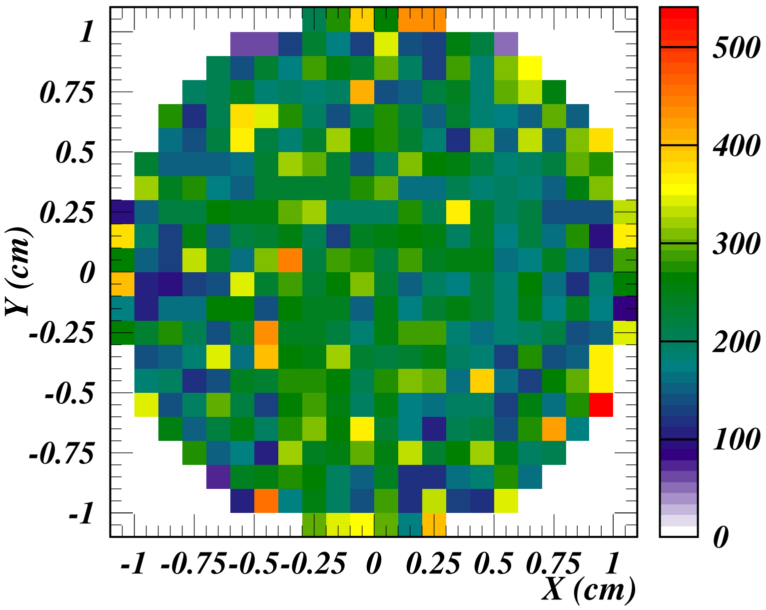
E_{kin}>50 eV: 16777 macroparticles, 2.35618e+09 e-

15/05/19 12.16

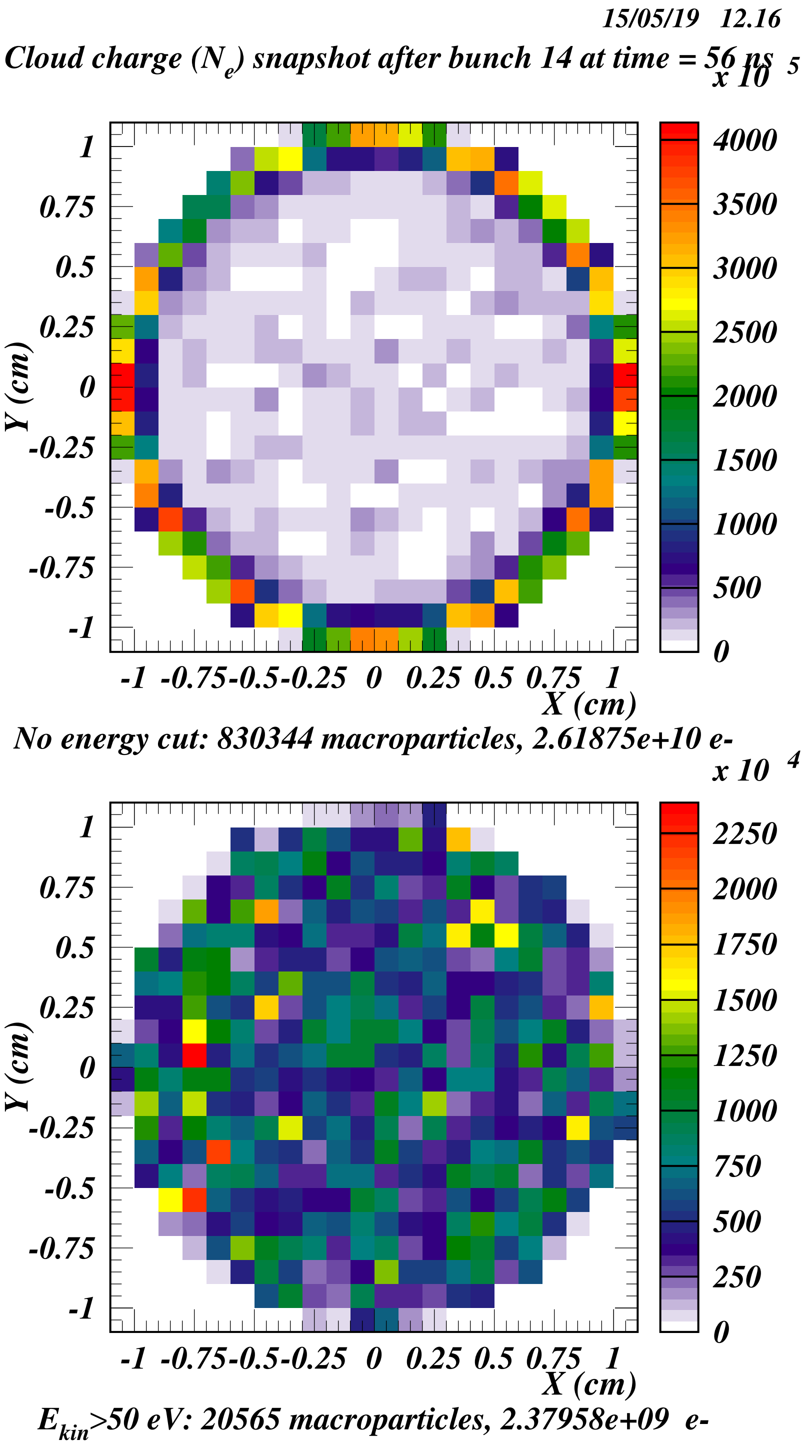
Cloud energy (eV) snapshot after bunch 13 at time = 52 ns



No energy cut: 667470 macroparticles, 2.62576e+10 e-

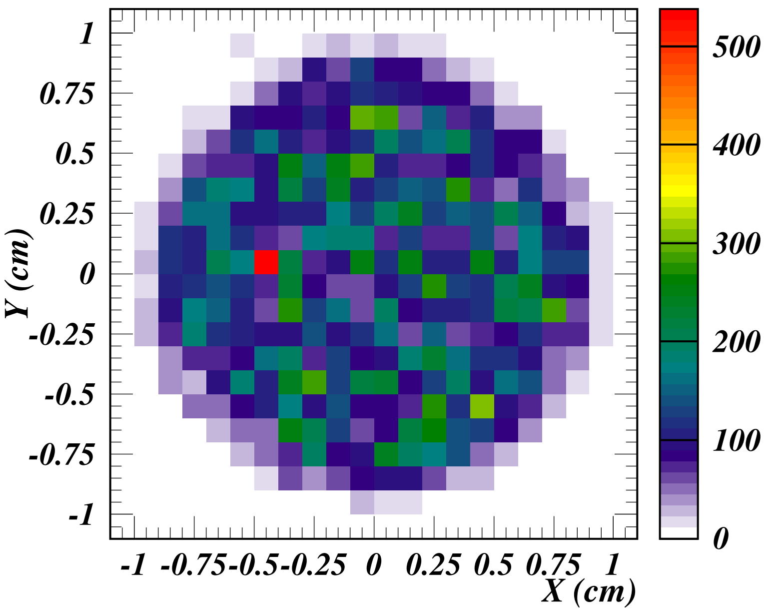


E_{kin}>50 eV: 16777 macroparticles, 2.35618e+09 e-

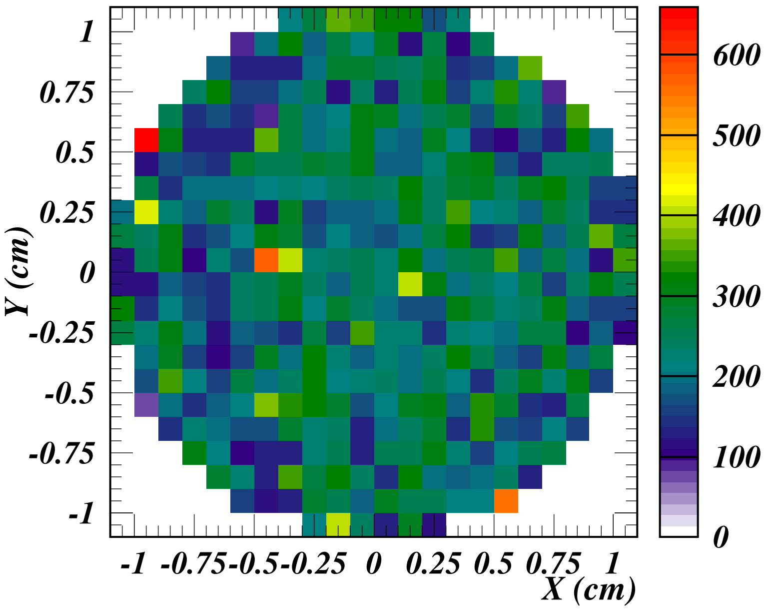

15/05/19 12.16
Cloud charge (N_e) snapshot after bunch 14 at time = 56 ns
x 10^5
Y (cm)
X (cm)
No energy cut: 830344 macroparticles, 2.61875e+10 e-
x 10^4
Y (cm)
X (cm)
E_{kin}>50 eV: 20565 macroparticles, 2.37958e+09 e-

15/05/19 12.16

Cloud energy (eV) snapshot after bunch 14 at time = 56 ns



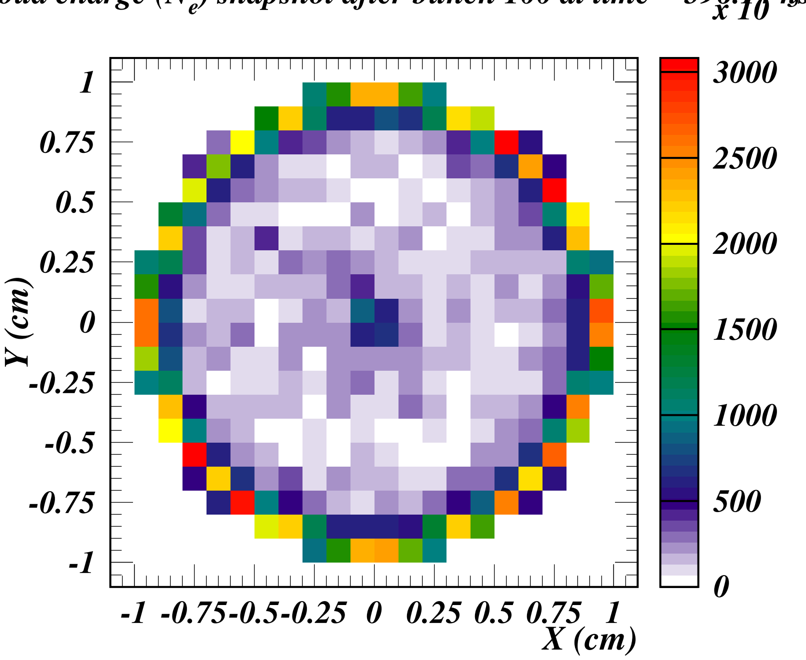
No energy cut: 830344 macroparticles, 2.61875e+10 e-



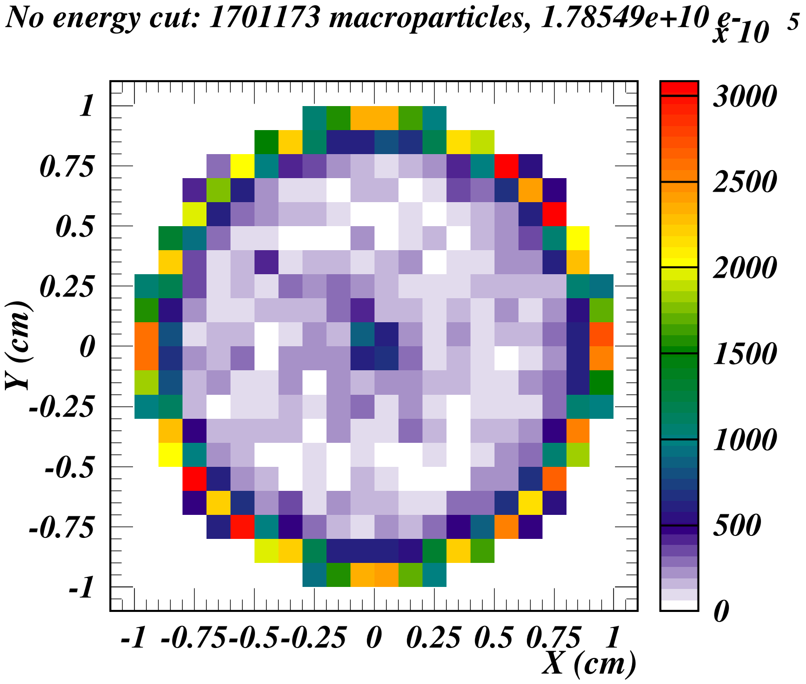
E_{kin}>50 eV: 20565 macroparticles, 2.37958e+09 e-

15/05/19 12.16

Cloud charge (N_e) snapshot after bunch 100 at time = 396.14 ns



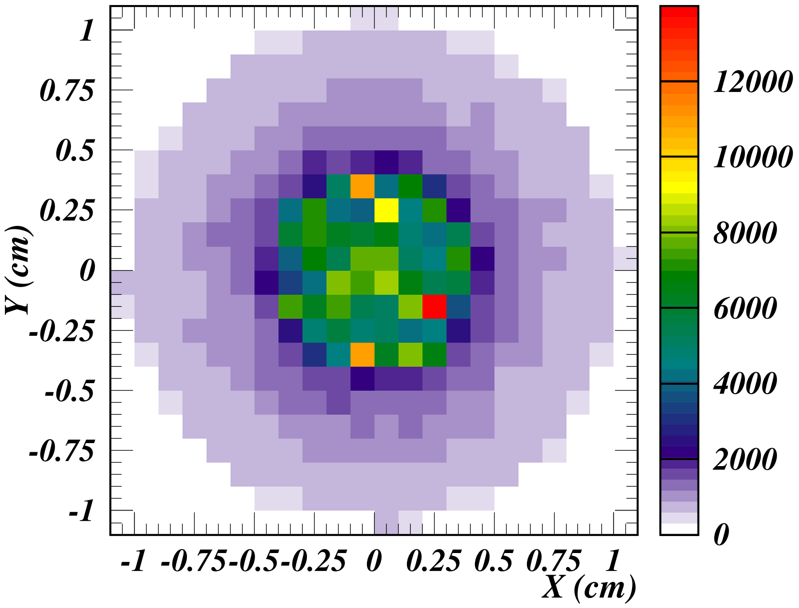
No energy cut: 1701173 macroparticles, 1.78549e+10 e-



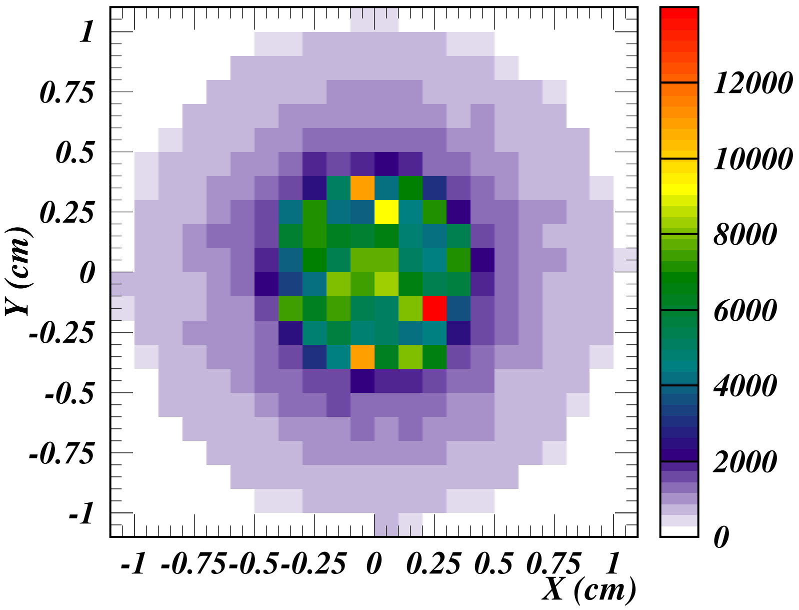
E_{kin}>50 eV: 1701139 macroparticles, 1.78538e+10 e-

15/05/19 12.16

Cloud energy (eV) snapshot after bunch 100 at time = 396.14 ns

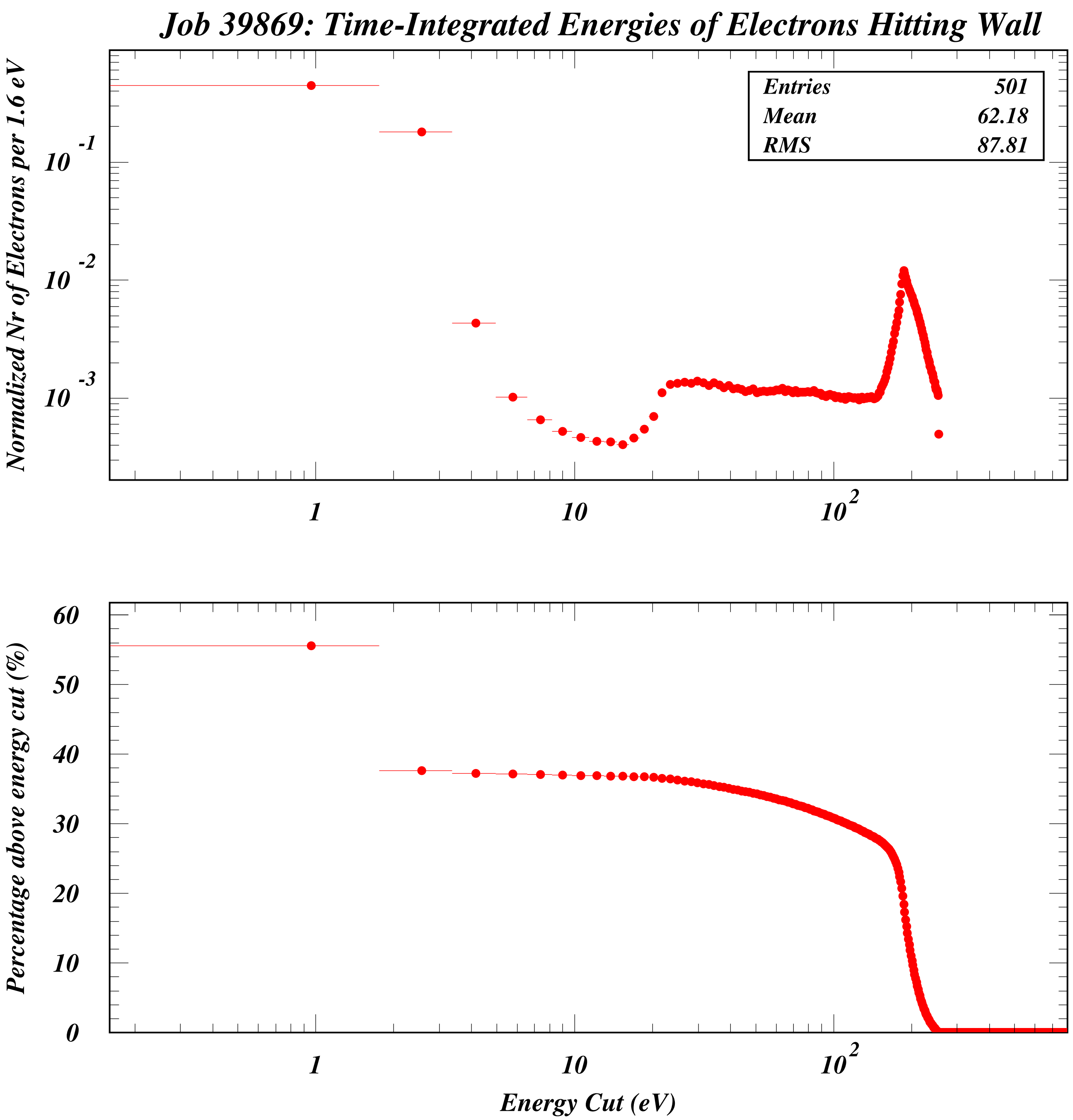


No energy cut: 1701173 macroparticles, 1.78549e+10 e-



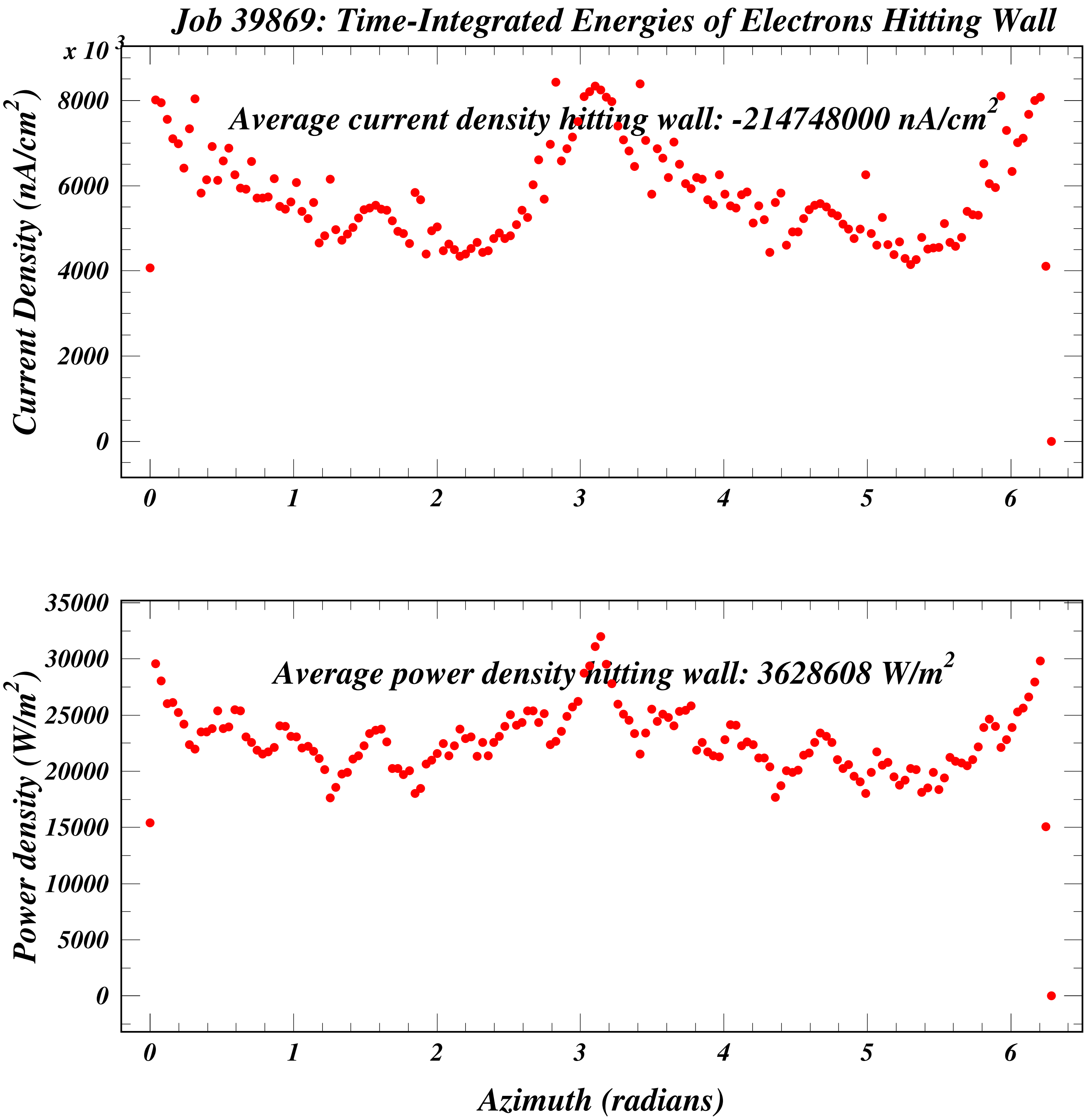
E_{kin}>50 eV: 1701139 macroparticles, 1.78538e+10 e-

15/05/19 12.16



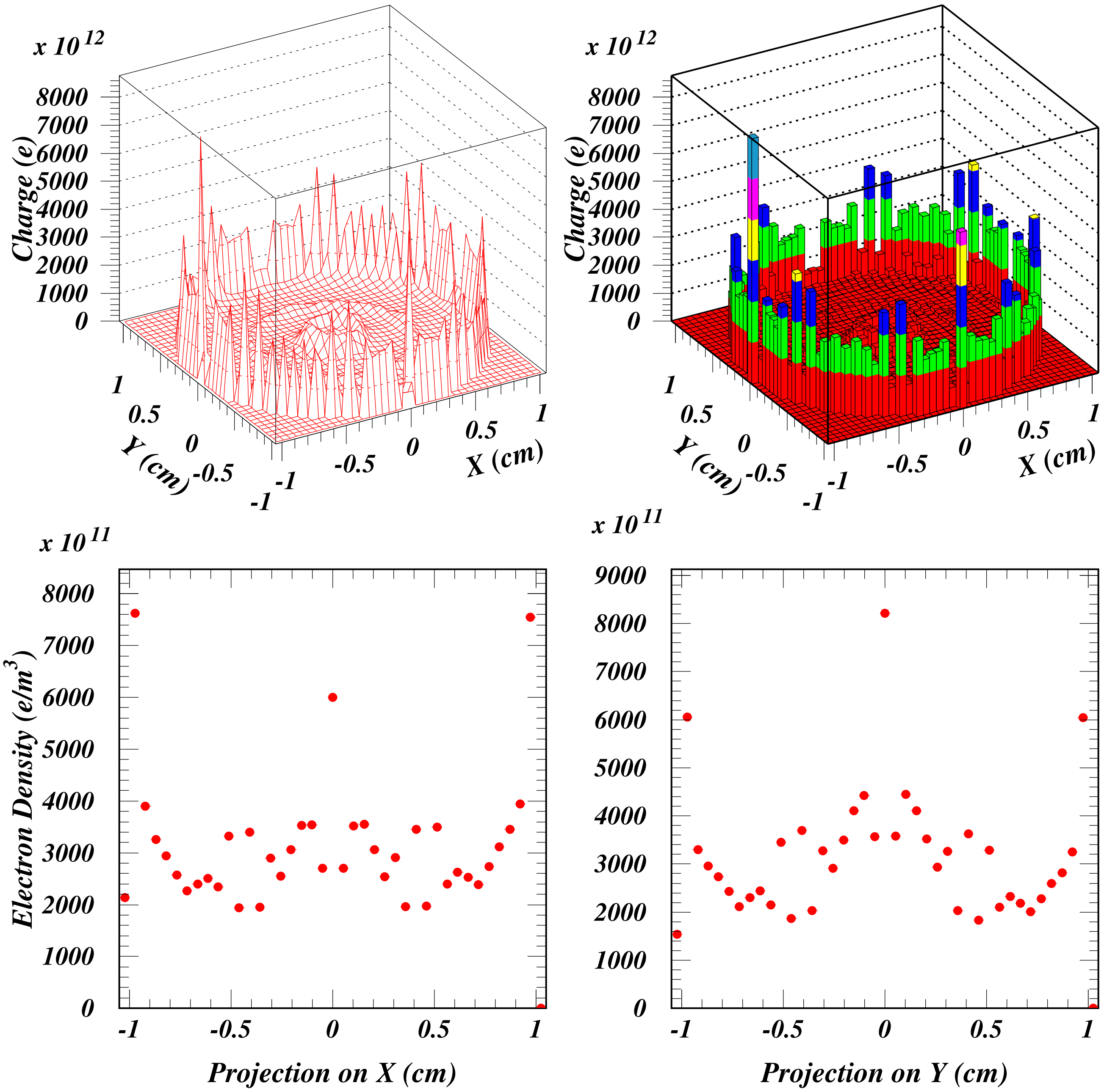
Job 39869: Time-Integrated Energies of Electrons Hitting Wall
Entries 501
Mean 62.18
RMS 87.81
Normalized Nr of Electrons per 1.6 eV
10 -1
10 -2
10 -3
1
10
10 2
60
50
40
30
20
10
0
Percentage above energy cut (%)
Energy Cut (eV)

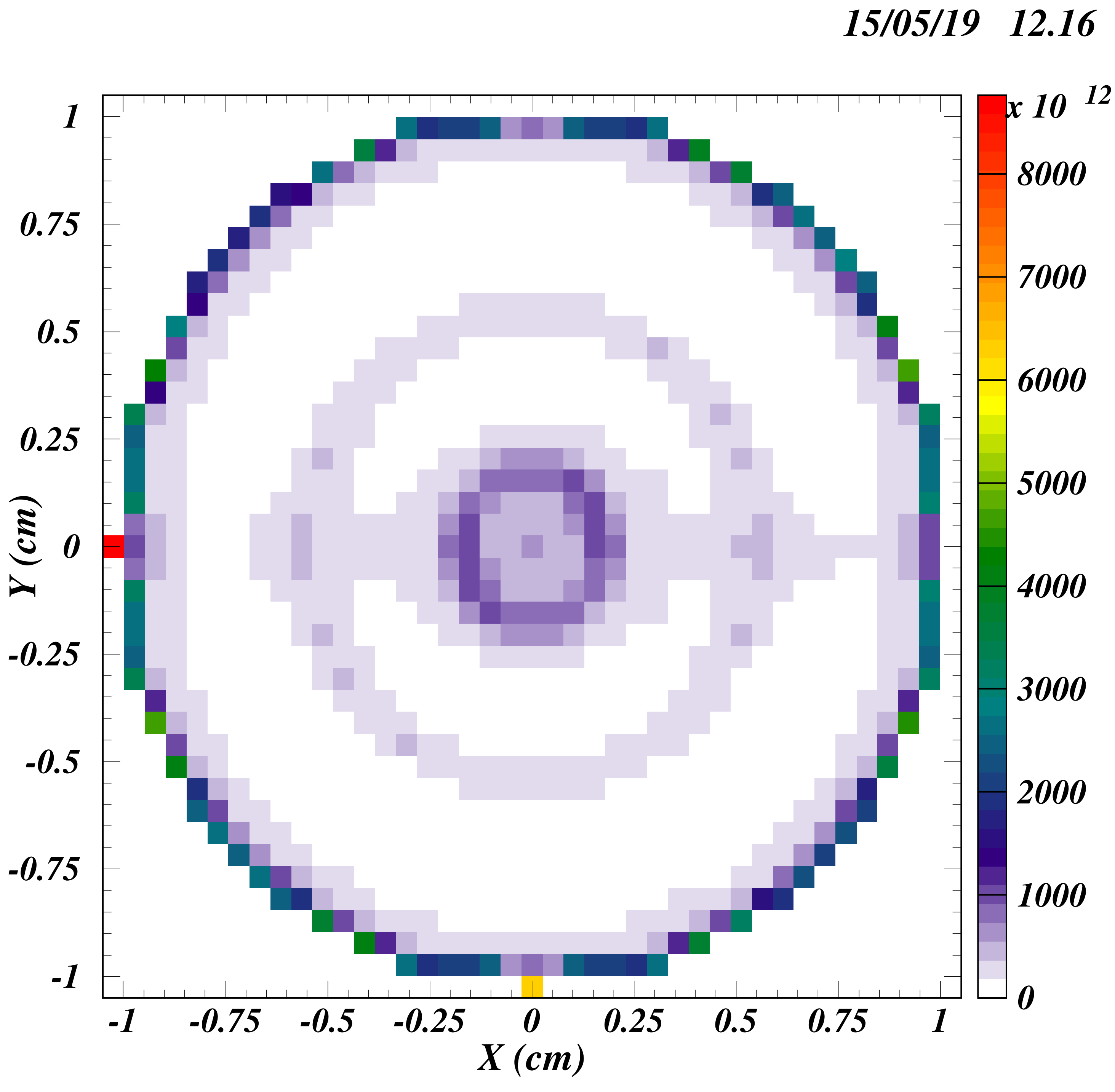
15/05/19 12.16



Job 39869: Time-Integrated Energies of Electrons Hitting Wall
x 10^3
Current Density (nA/cm^2)
Average current density hitting wall: -214748000 nA/cm^2
8000
6000
4000
2000
0
0
1
2
3
4
5
6
Power density (W/m^2)
Average power density hitting wall: 3628608 W/m^2
35000
30000
25000
20000
15000
10000
5000
0
Azimuth (radians)

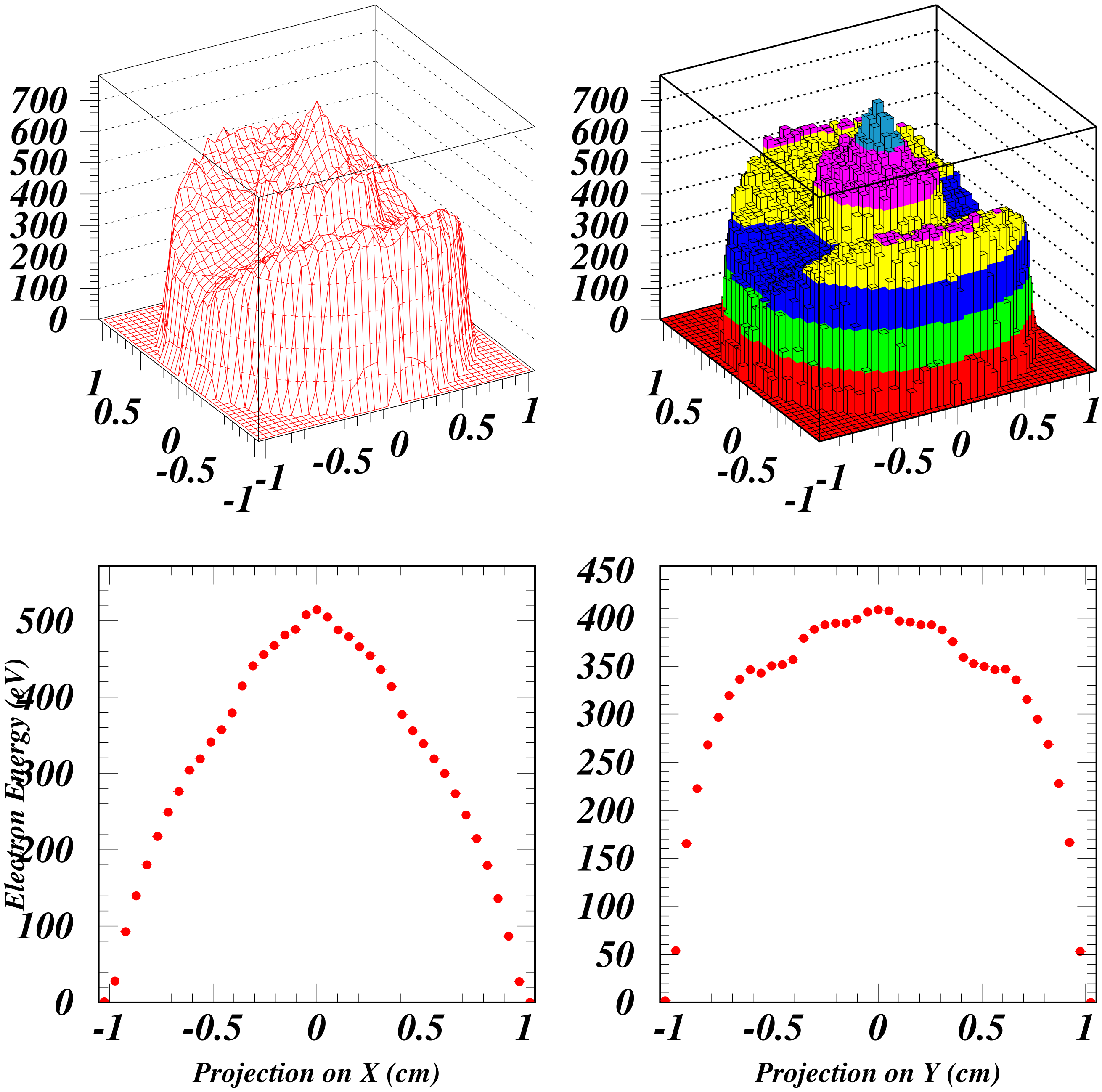
15/05/19   12.16

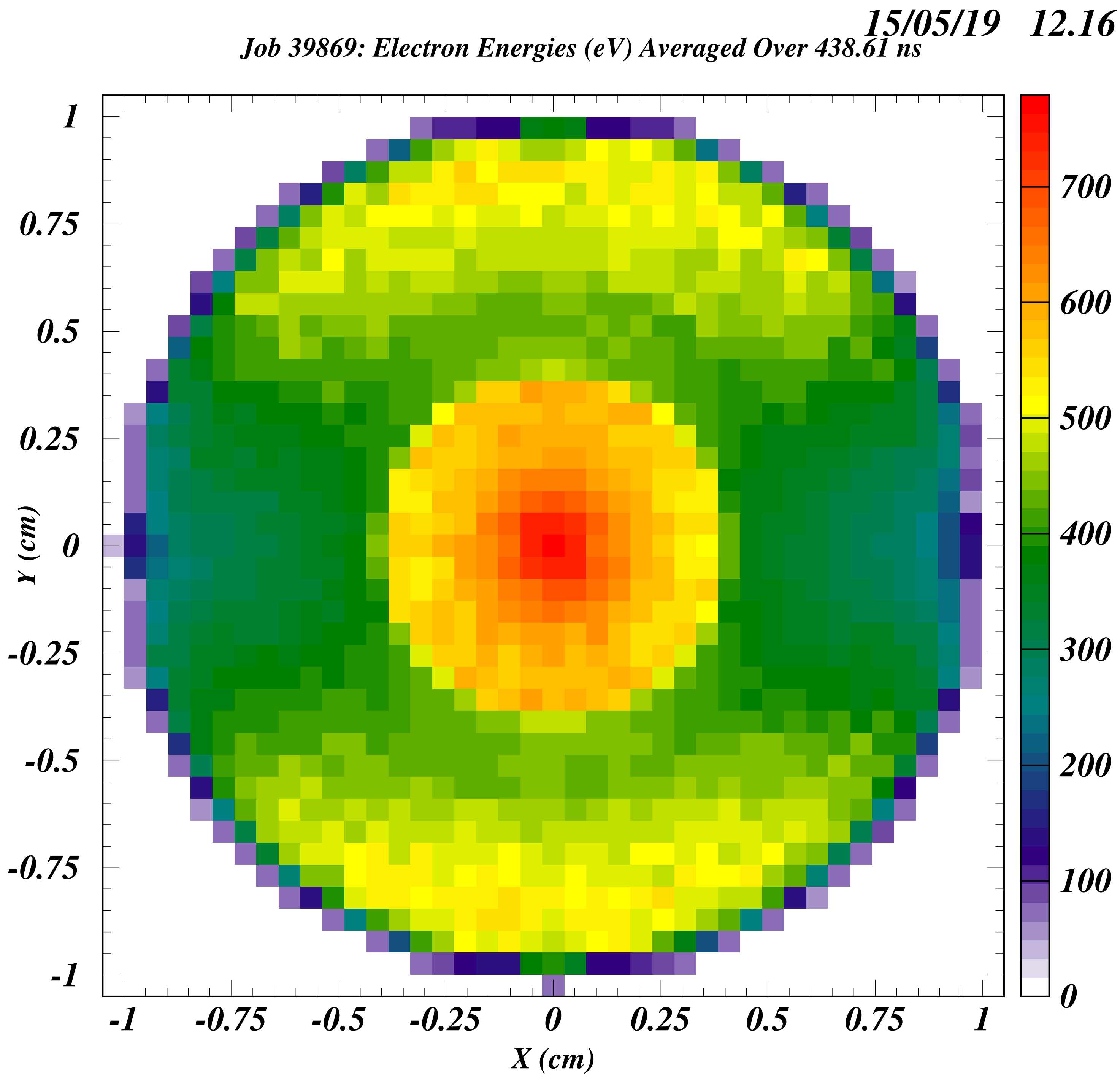

x 10^12
Charge (e)
0
1000
2000
3000
4000
5000
6000
7000
8000
Y (cm)
X (cm)
-1
-0.5
0
0.5
1
x 10^12
Charge (e)
Y (cm)
X (cm)
x 10^11
Electron Density (e/m^3)
Projection on X (cm)
x 10^11
9000
Projection on Y (cm)


15/05/19 12.16
x 10 12
8000
7000
6000
5000
4000
3000
2000
1000
0
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
Y (cm)
-1
-0.75
-0.5
-0.25
0
0.25
0.5
0.75
1
X (cm)

15/05/19 12.16

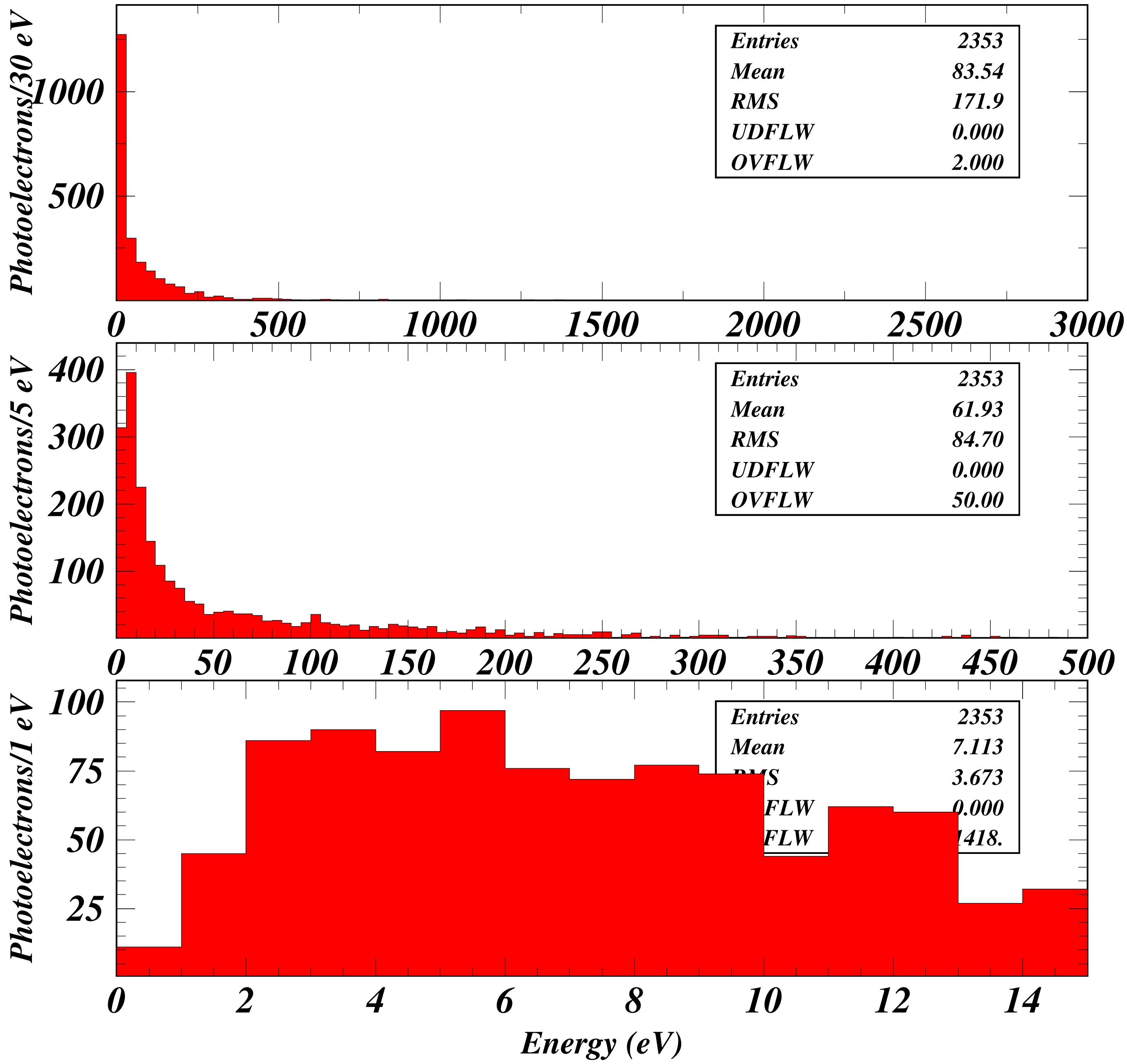
Job 39869: Electron Energies (eV) Averaged Over 438.61 ns

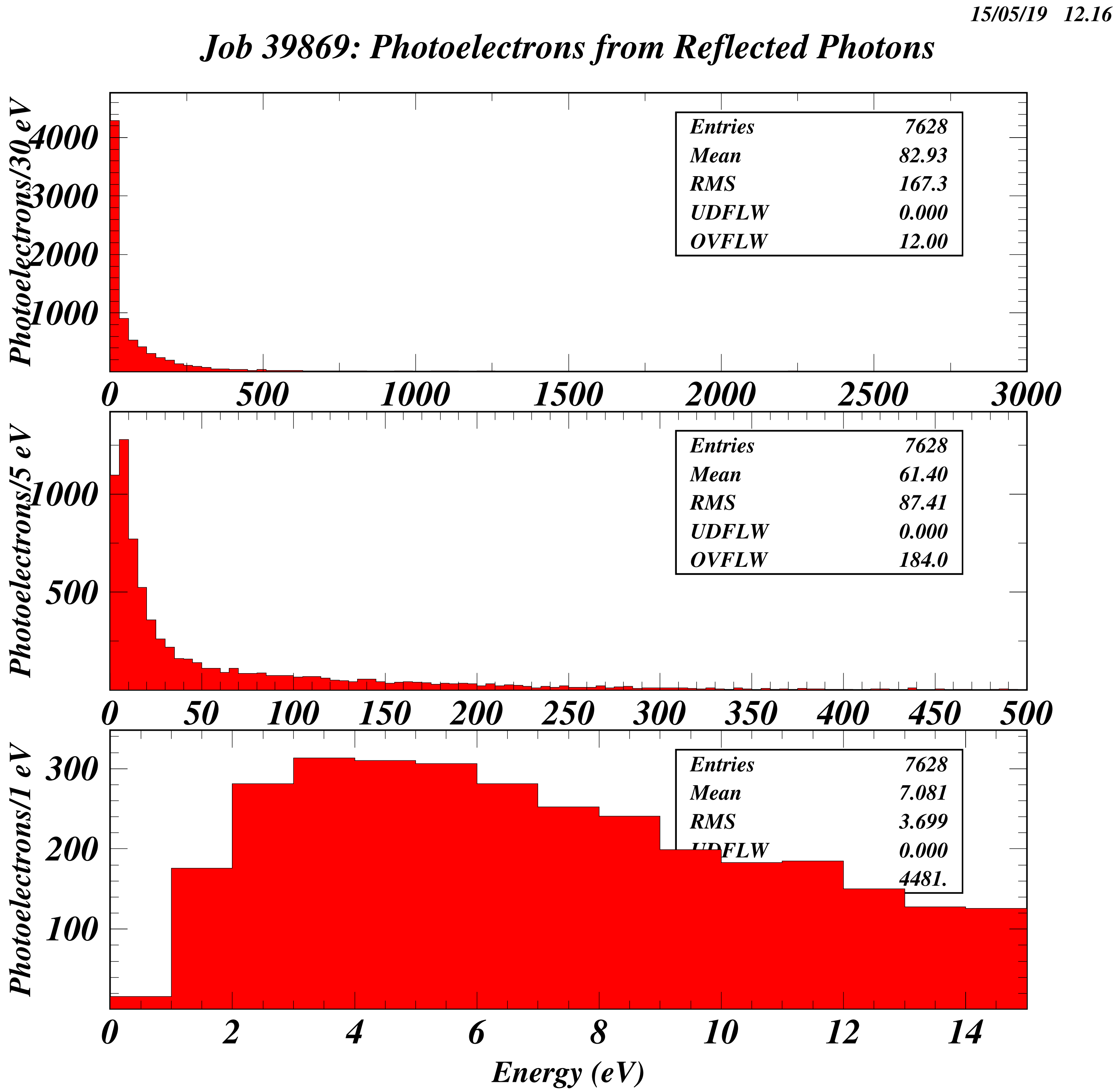



15/05/19 12.16
Job 39869: Electron Energies (eV) Averaged Over 438.61 ns
Y (cm)
X (cm)
1
0.75
0.5
0.25
0
-0.25
-0.5
-0.75
-1
700
600
500
400
300
200
100
0

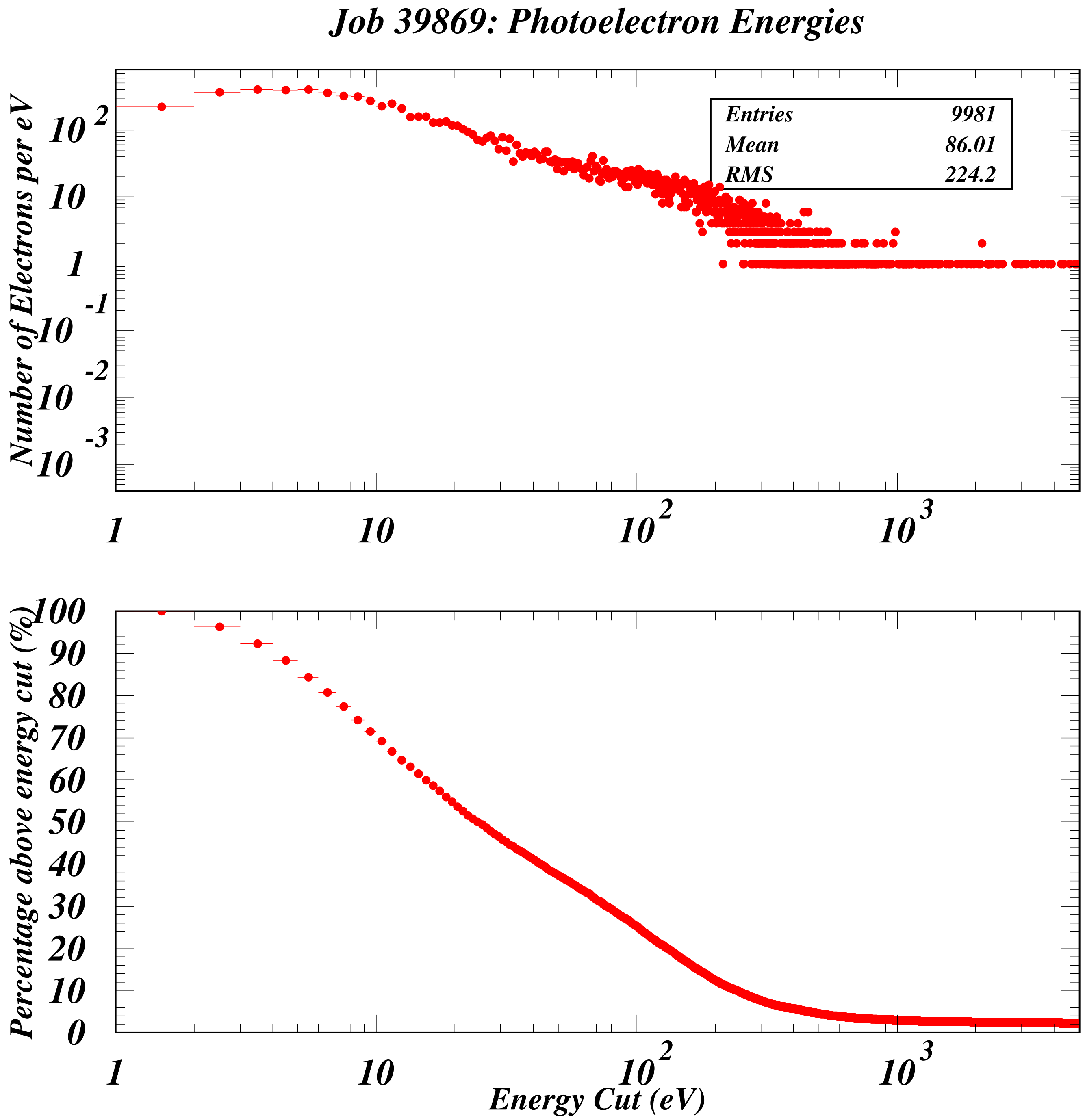
15/05/19 12.16

Job 39869: Photoelectrons from Direct Photons




15/05/19 12.16
Job 39869: Photoelectrons from Reflected Photons
Photoelectrons/30 eV
Entries 7628
Mean 82.93
RMS 167.3
UDFLW 0.000
OVFLW 12.00
0 500 1000 1500 2000 2500 3000
Photoelectrons/5 eV
Entries 7628
Mean 61.40
RMS 87.41
UDFLW 0.000
OVFLW 184.0
0 50 100 150 200 250 300 350 400 450 500
Photoelectrons/1 eV
Entries 7628
Mean 7.081
RMS 3.699
0.000
4481.
0 2 4 6 8 10 12 14
Energy (eV)

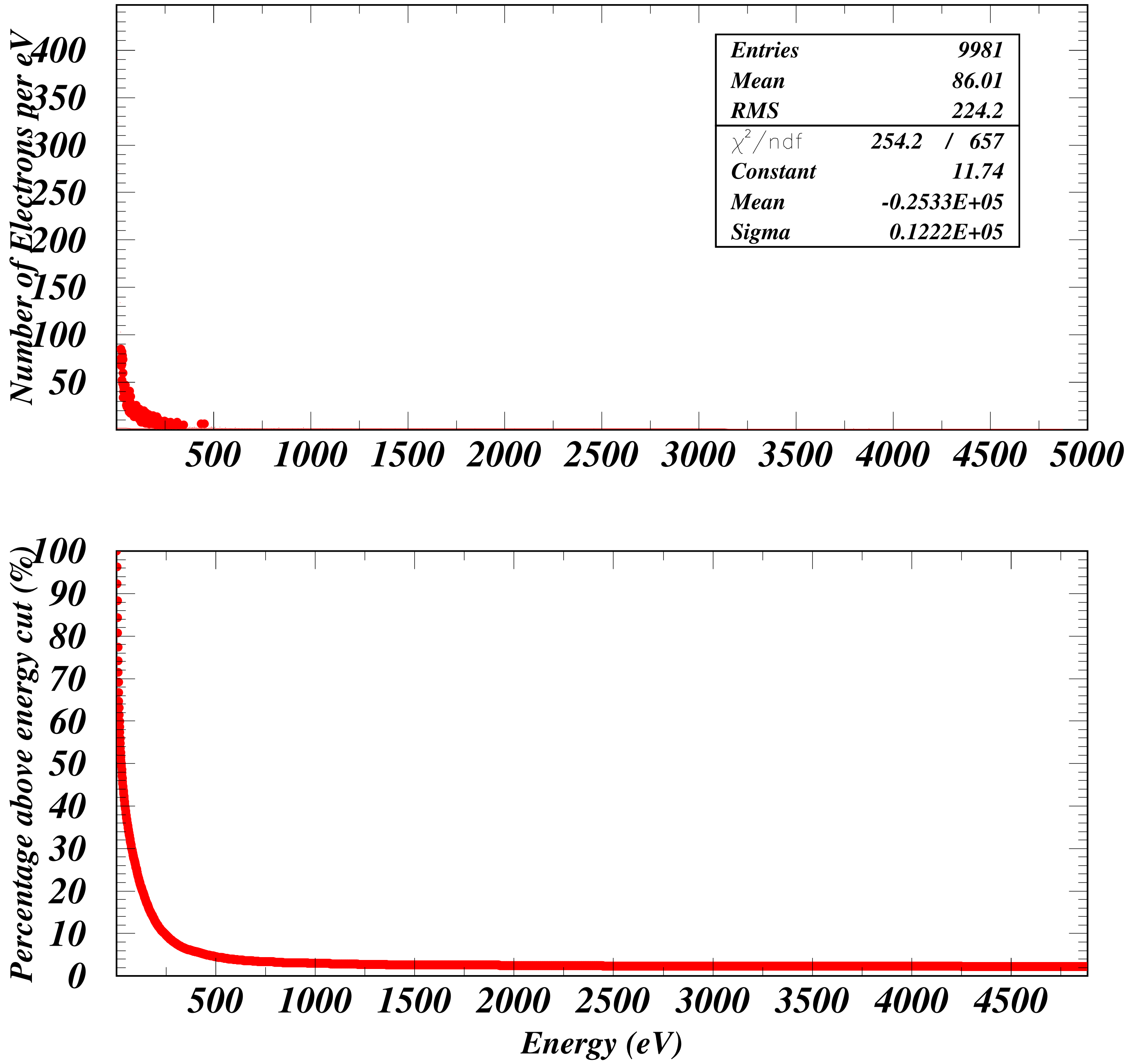
15/05/19 12.16



Job 39869: Photoelectron Energies
Number of Electrons per eV
Entries 9981
Mean 86.01
RMS 224.2
Percentage above energy cut (%)
Energy Cut (eV)

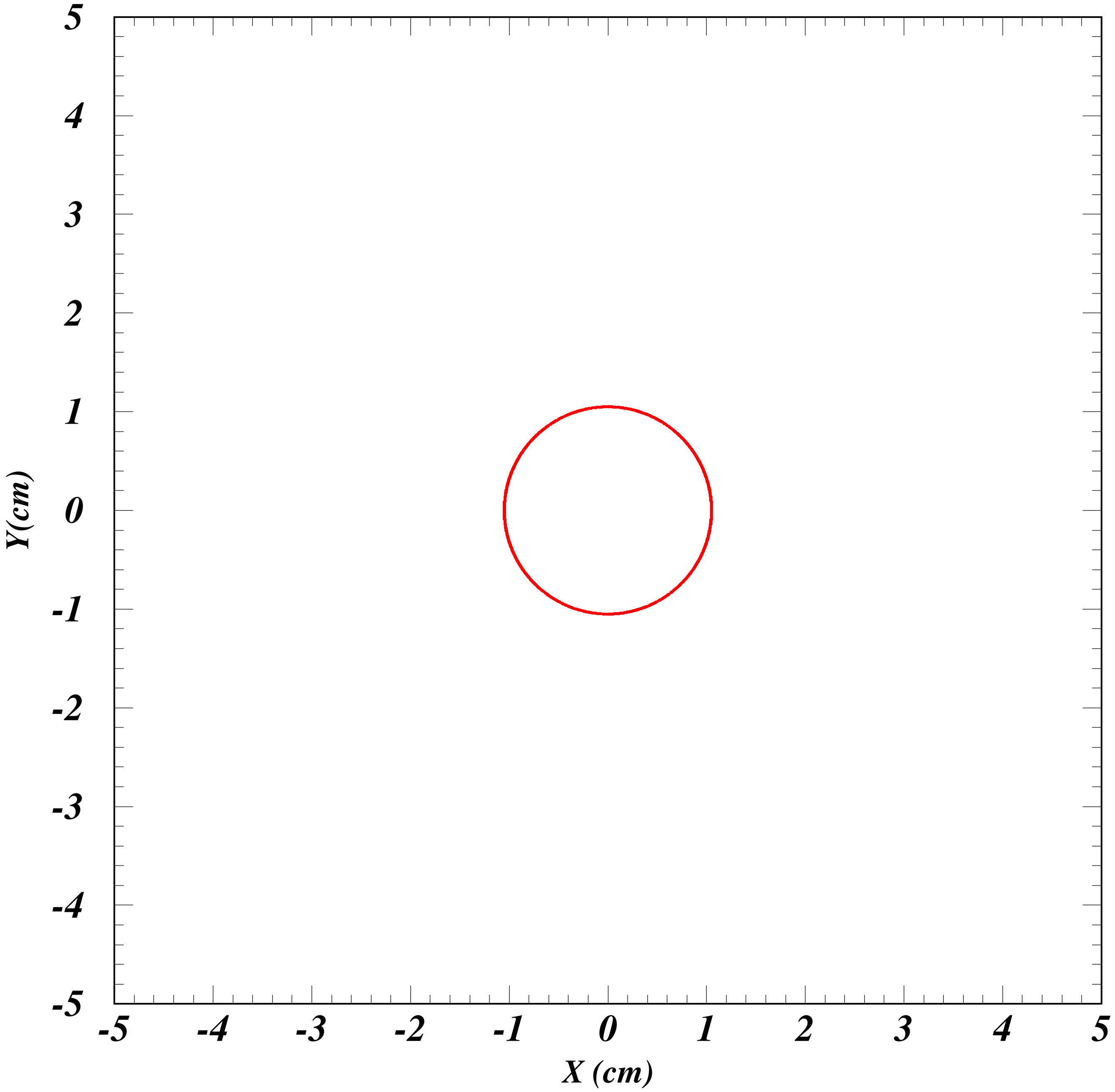
15/05/19 12.16

Job 39869: Photoelectron Energies



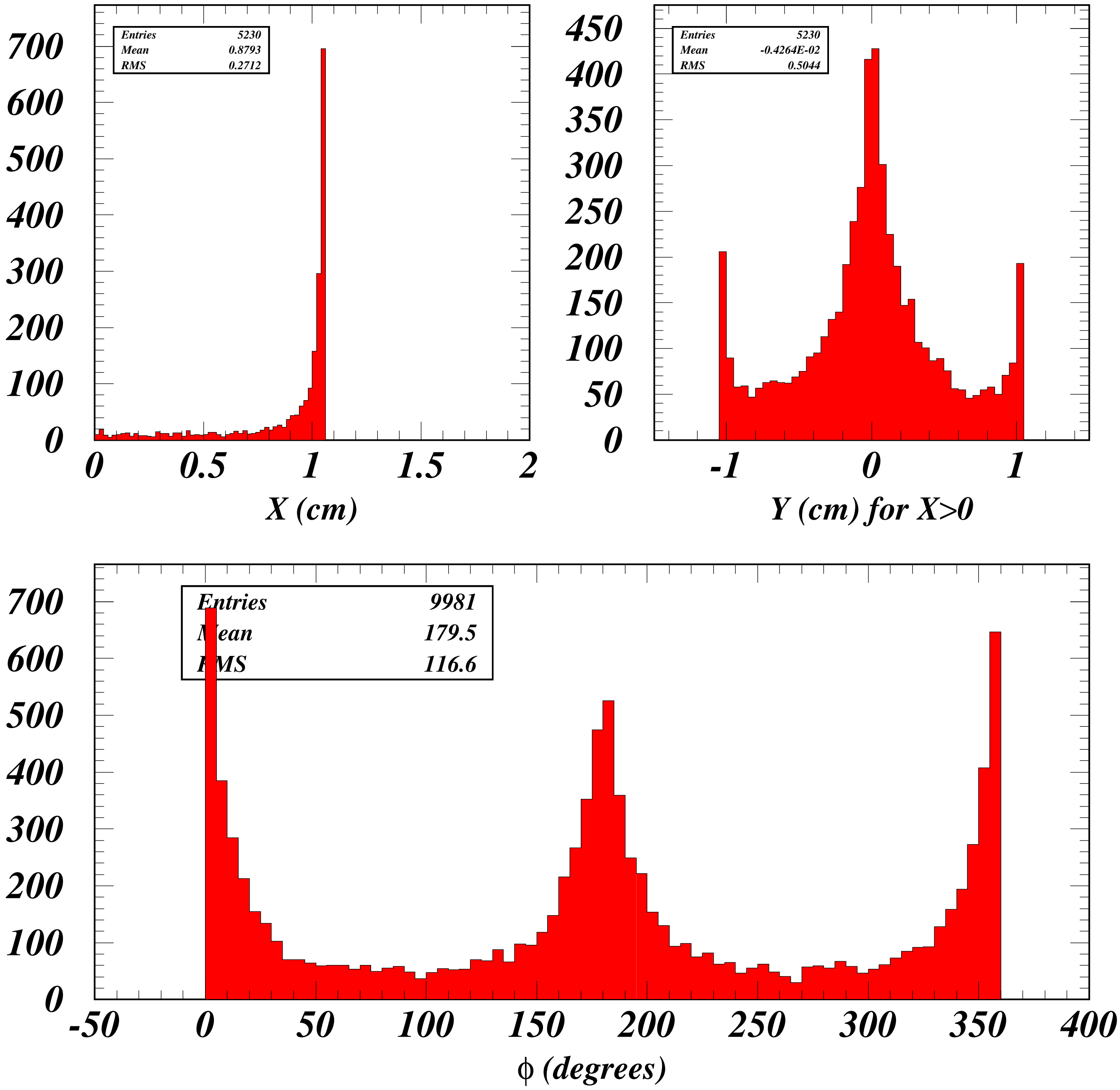
15/05/19 12.16

Job 39869: Photoelectron Production Distributions



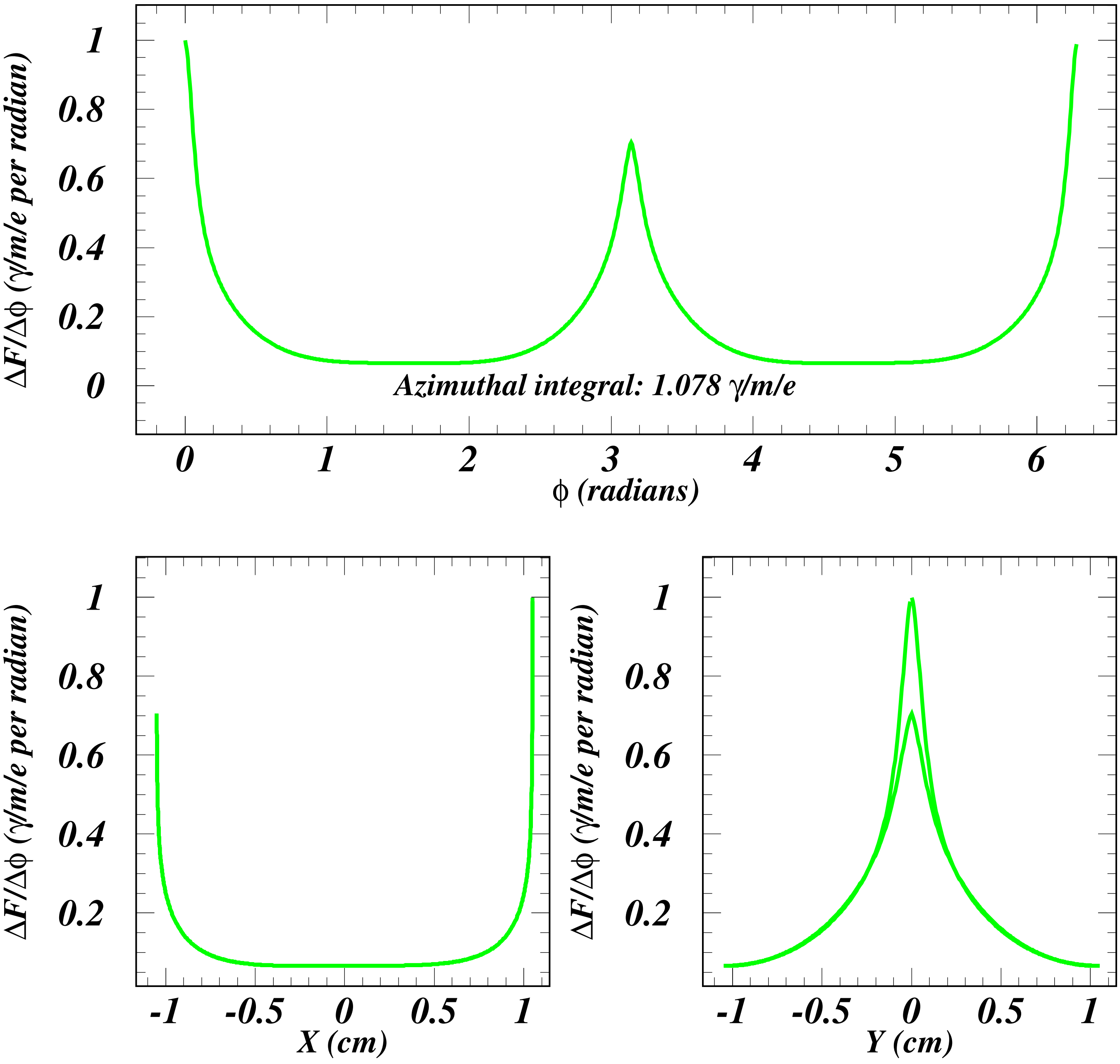
15/05/19 12.16

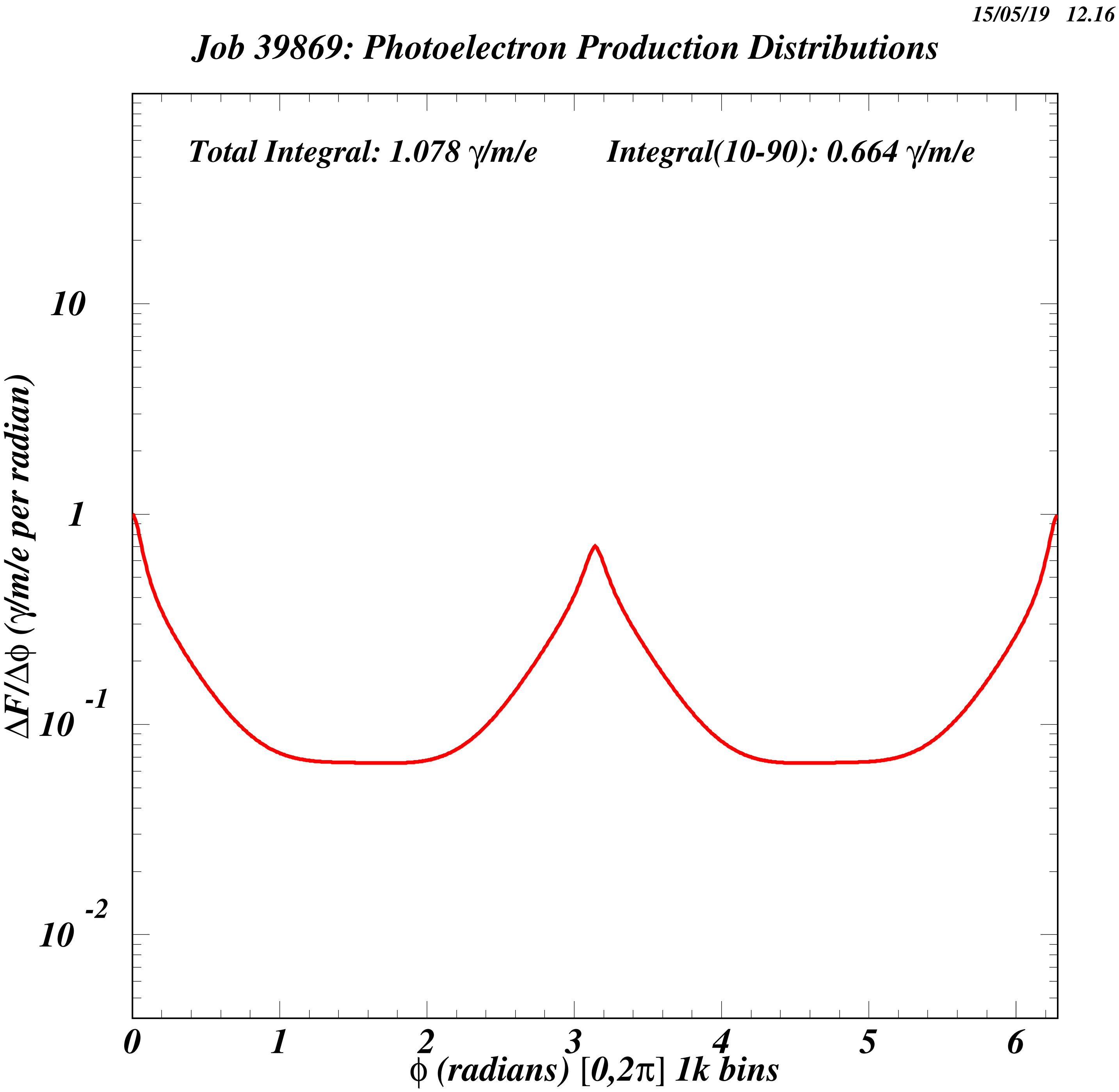
Job 39869: Photoelectron Production Distributions



15/05/19   12.16

Job 39869: Photoelectron Production Distributions





15/05/19 12.16
Job 39869: Photoelectron Production Distributions
Total Integral: 1.078 γ/m/e
Integral(10-90): 0.664 γ/m/e
10
1
10 -1
10 -2
ΔF/Δϕ (γ/m/e per radian)
0
1
2
3
4
5
6
ϕ (radians) [0,2π] 1k bins