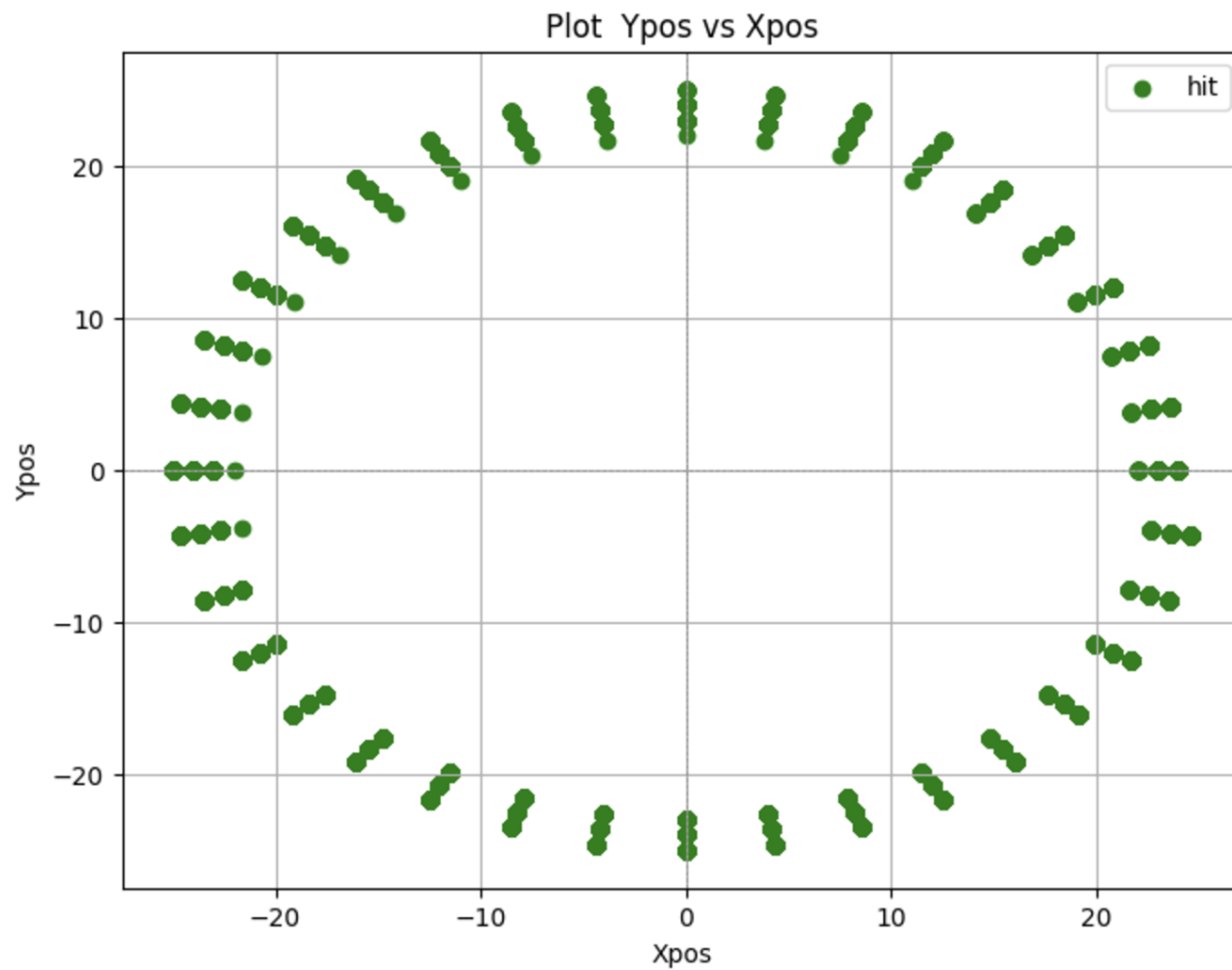


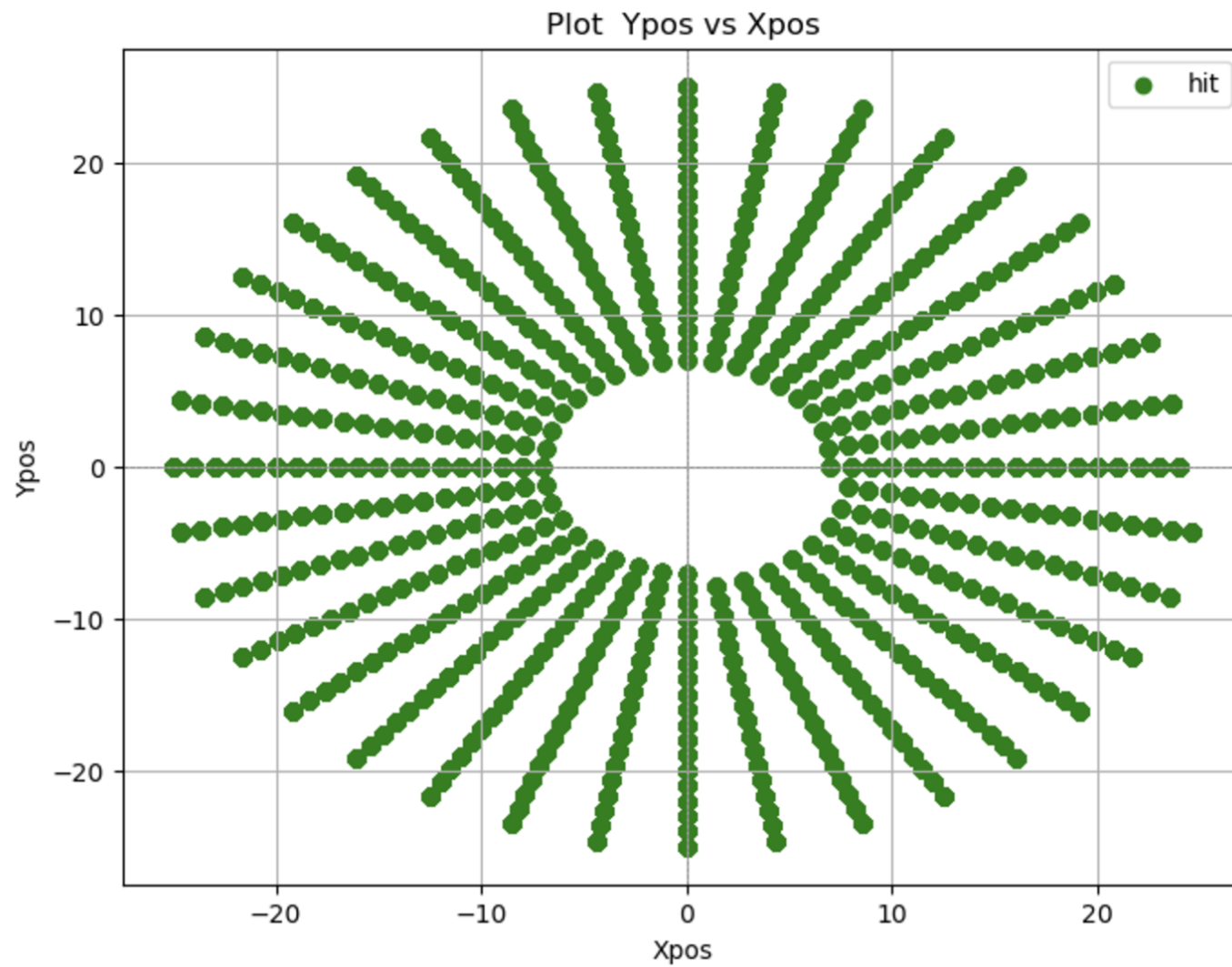
Faraday Cup: Geant4 Simulation

Hector Chinchay
December 6th 2024

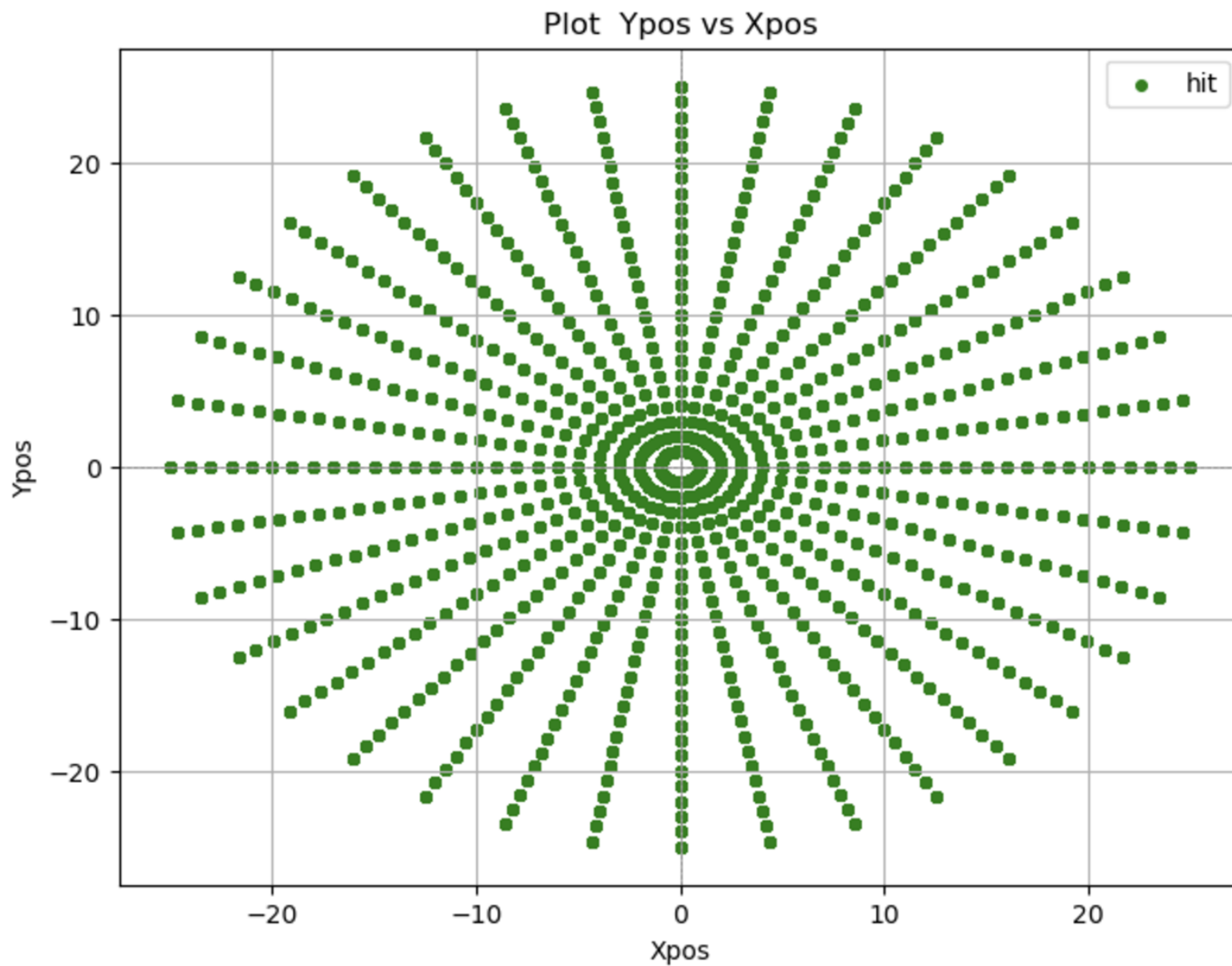
/gun/particle e-
/gun/energy 1 GeV
/run/beamOn/ 20 000



/gun/particle e-
/gun/energy 1 GeV
/run/beamOn/ 100 000



/gun/particle e-
/gun/energy 1 GeV
/run/beamOn/ 1 000 000



BY

DAVID RUTH

B.A. in Physics, McDaniel College, 2015

DISSERTATION

Submitted to the University of New Hampshire
in Partial Fulfillment of
the Requirements for the Degree of

<https://arxiv.org/pdf/2212.00763>

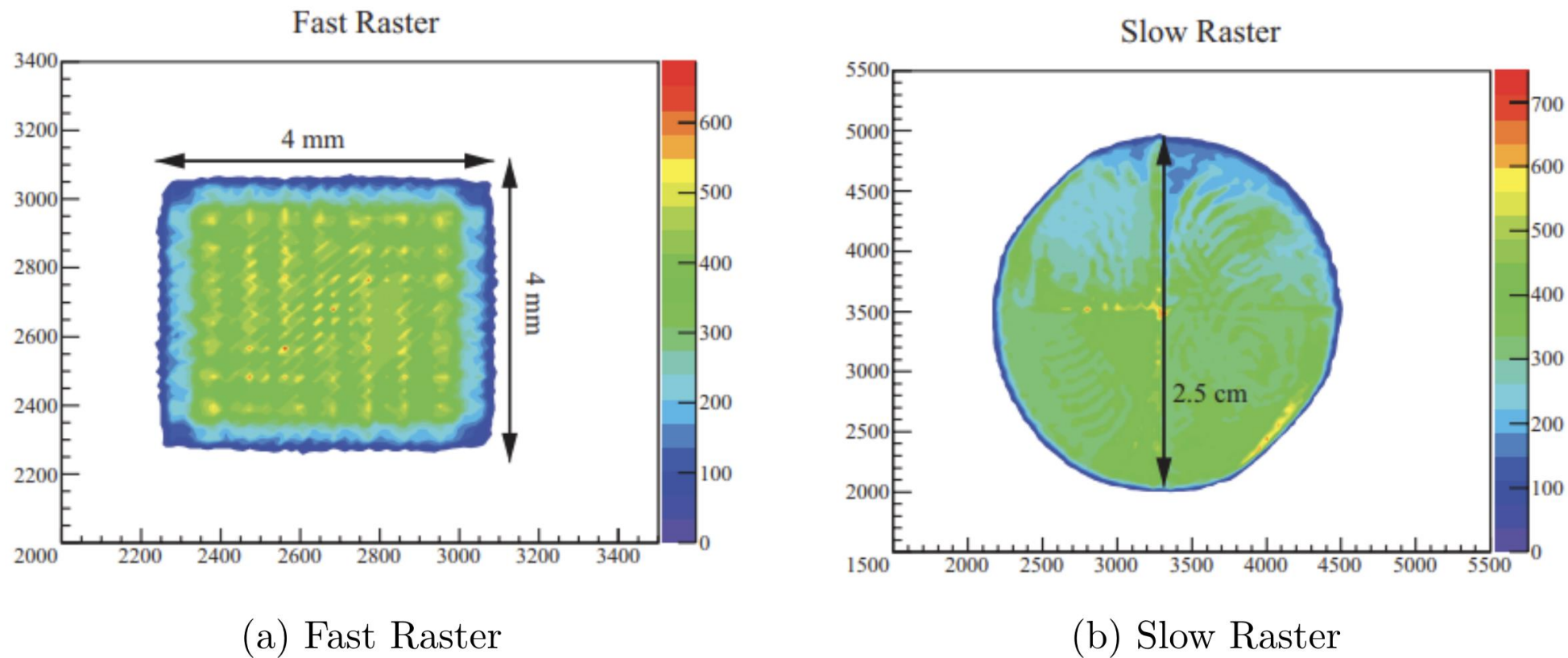


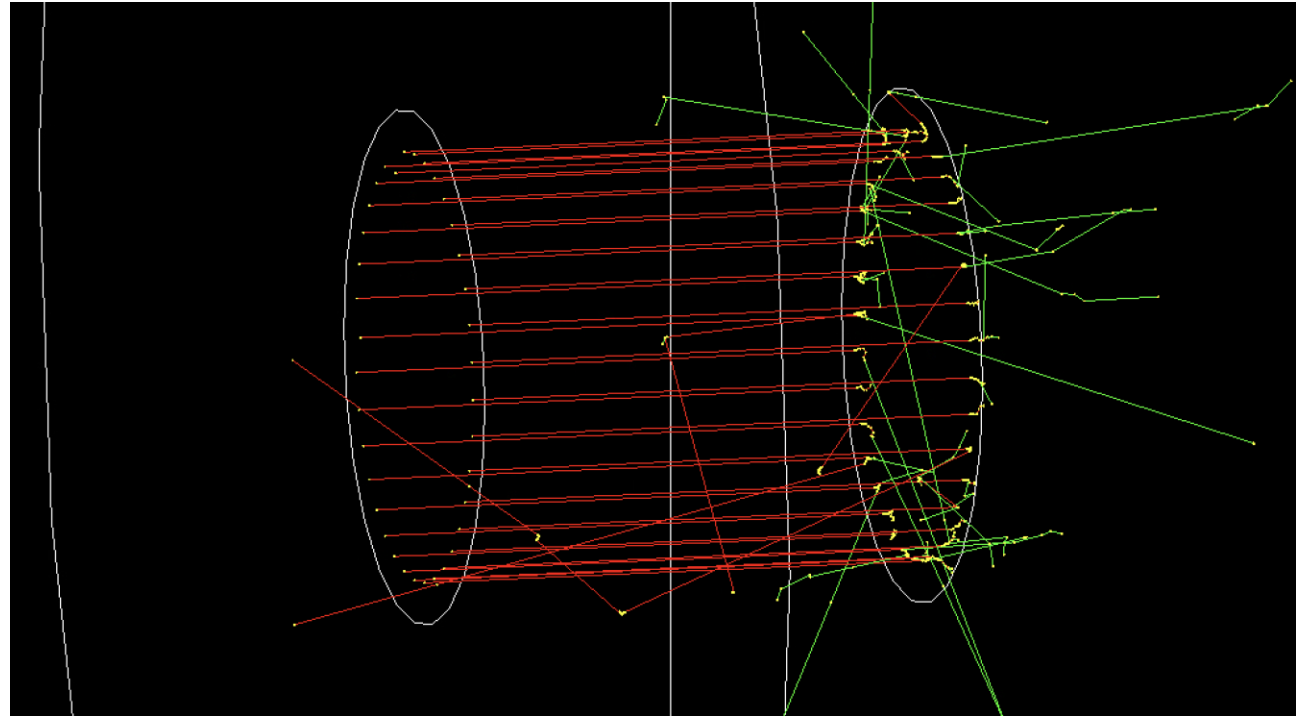
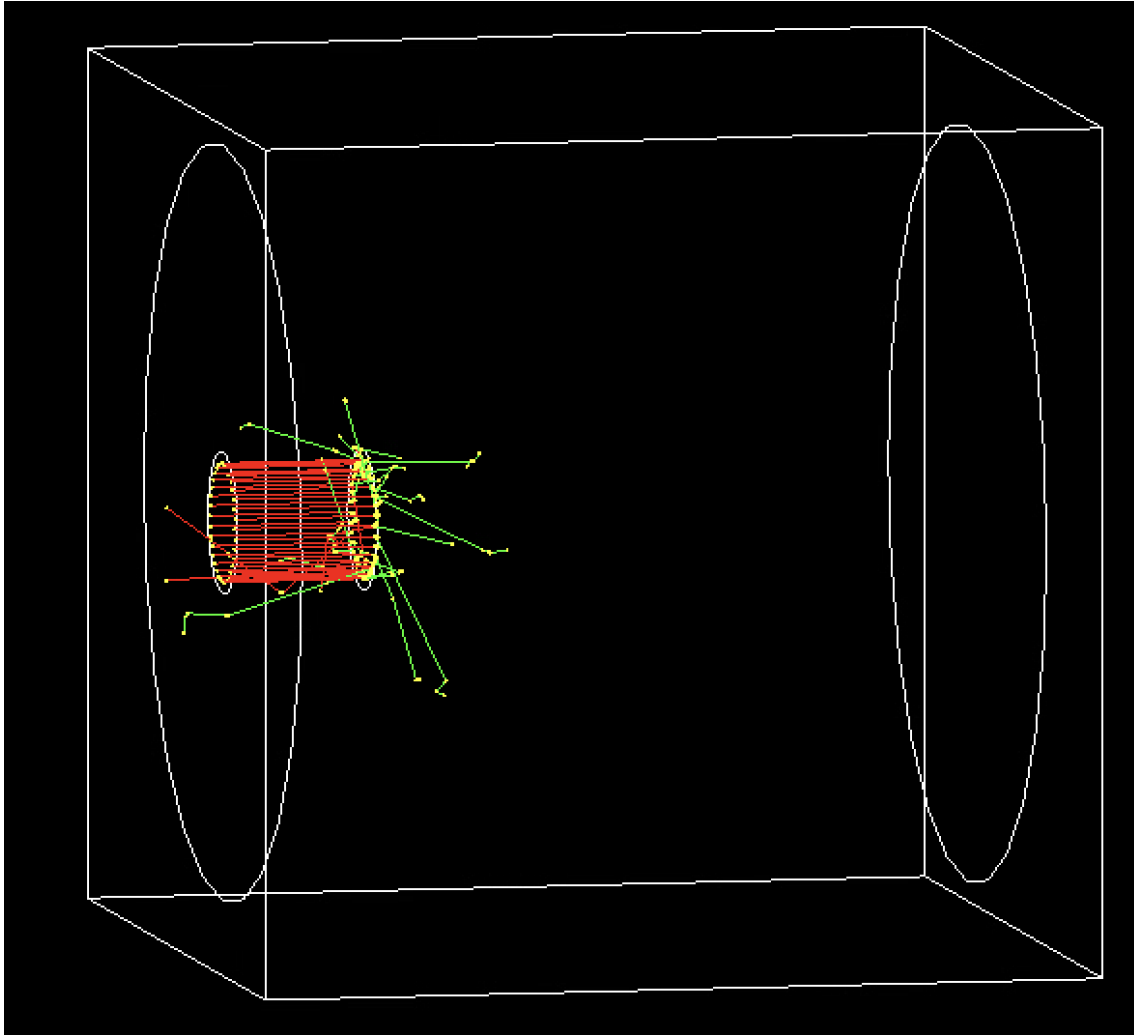
Figure 4.4: Raster swept beam profiles. Plots are a function of current in arbitrary units. Reproduced from Zielinski [2017]

TEST1

/gun/particle e-
/gun/energy 11 GeV
/run/beamOn/ 40

Cylinder: diameter and longitude = 16cm

Hole: diameter and longitude = 3cm

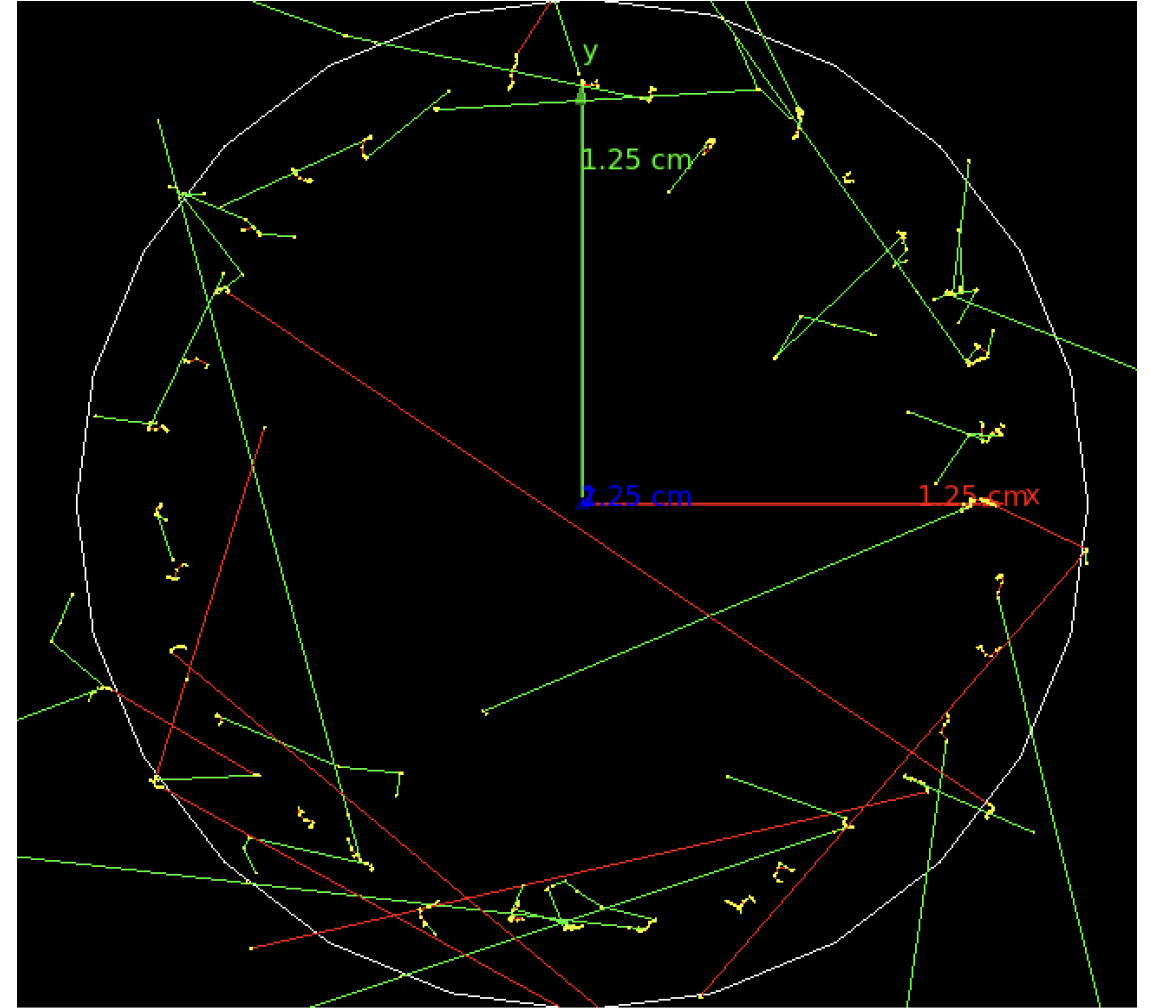
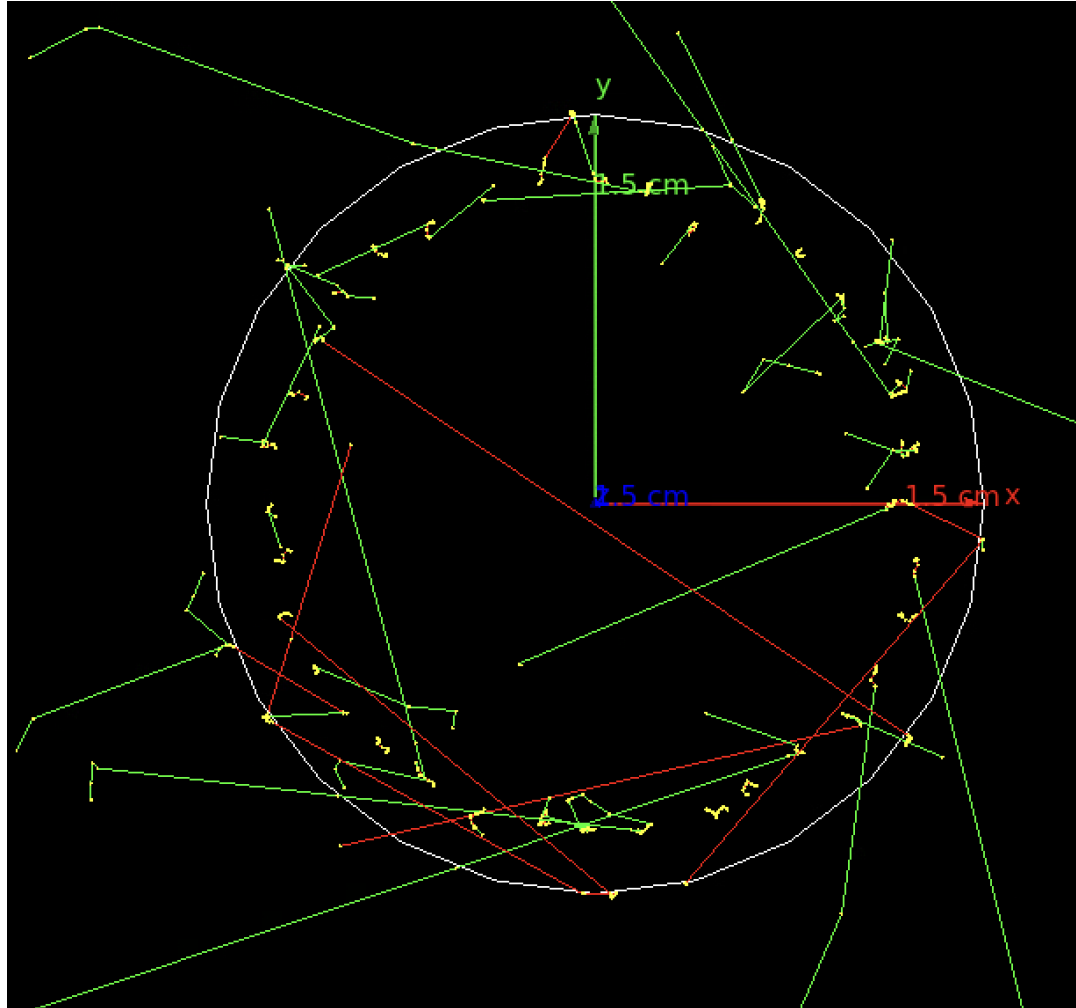


TEST1

/gun/particle e-
/gun/energy 11 GeV
/run/beamOn/ 40

Cylinder: diameter and longitude = 16cm

Hole: diameter and longitude = 3cm

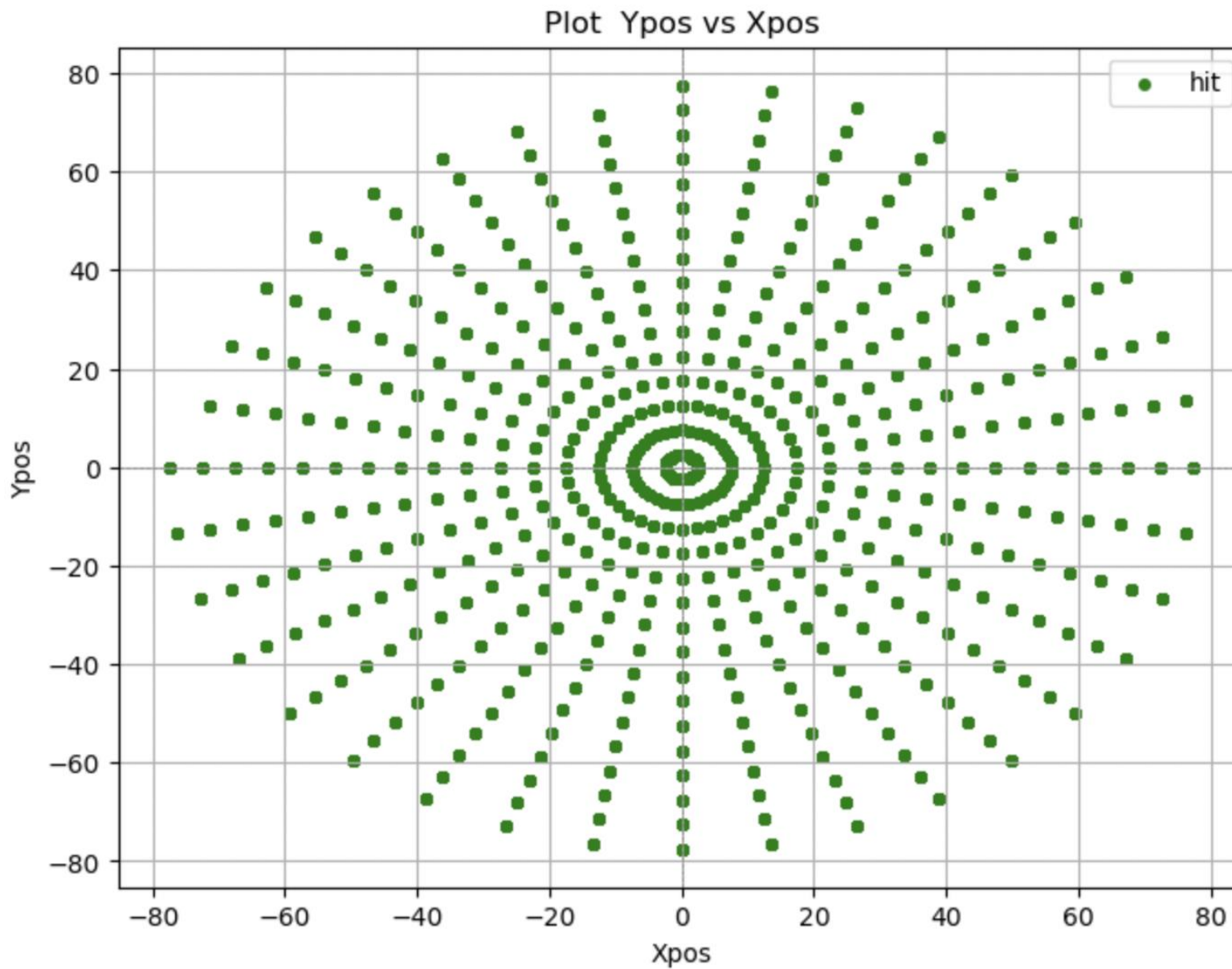


FINAL TEST

/gun/particle e-

/gun/energy 11 GeV

/run/beamOn/ 100 000



FINAL TEST

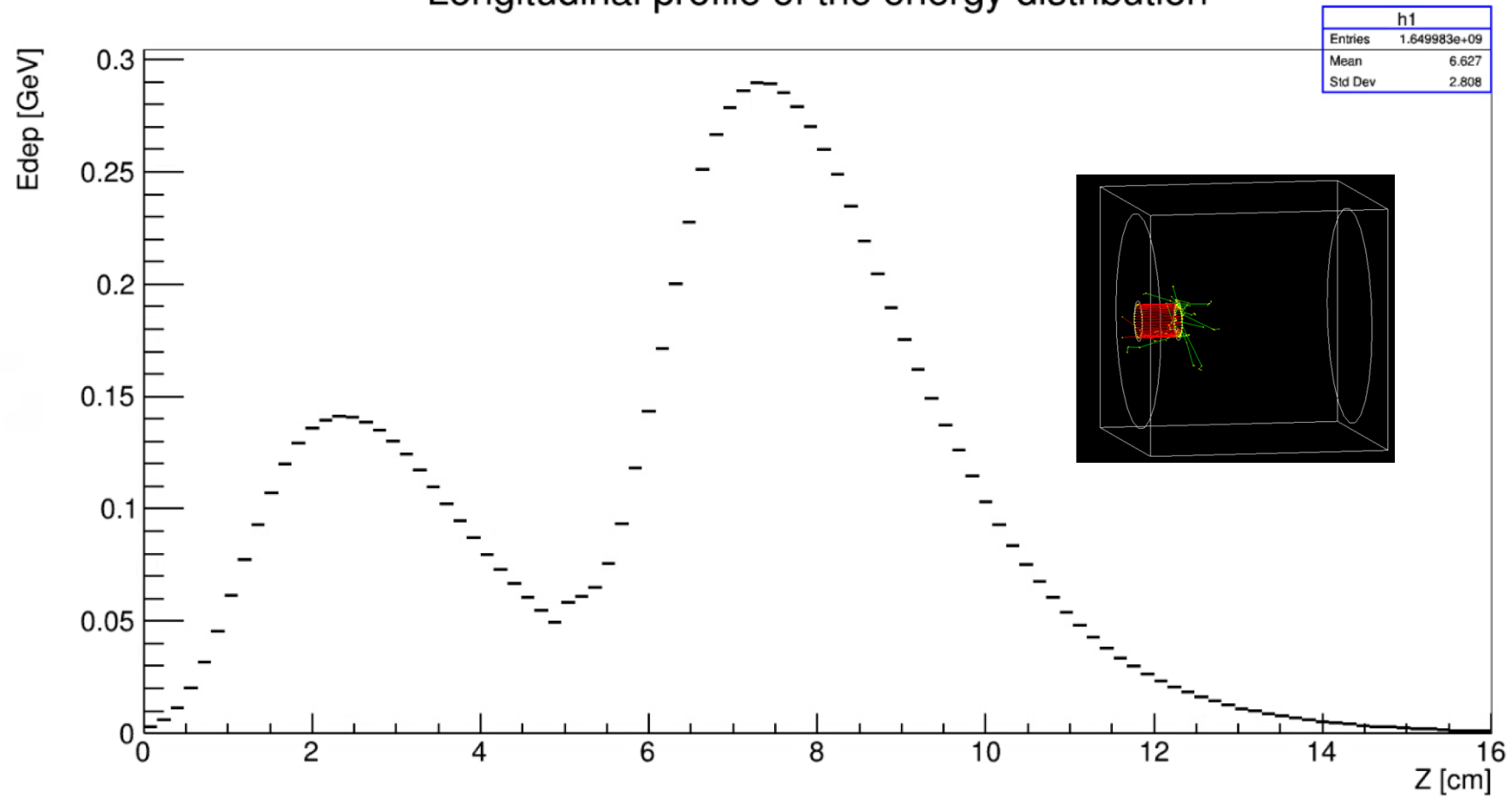
/gun/particle e-

/gun/energy 11 GeV

/run/beamOn/ 100 000

Area under the curve h1: 9.58657

Longitudinal profile of the energy distribution

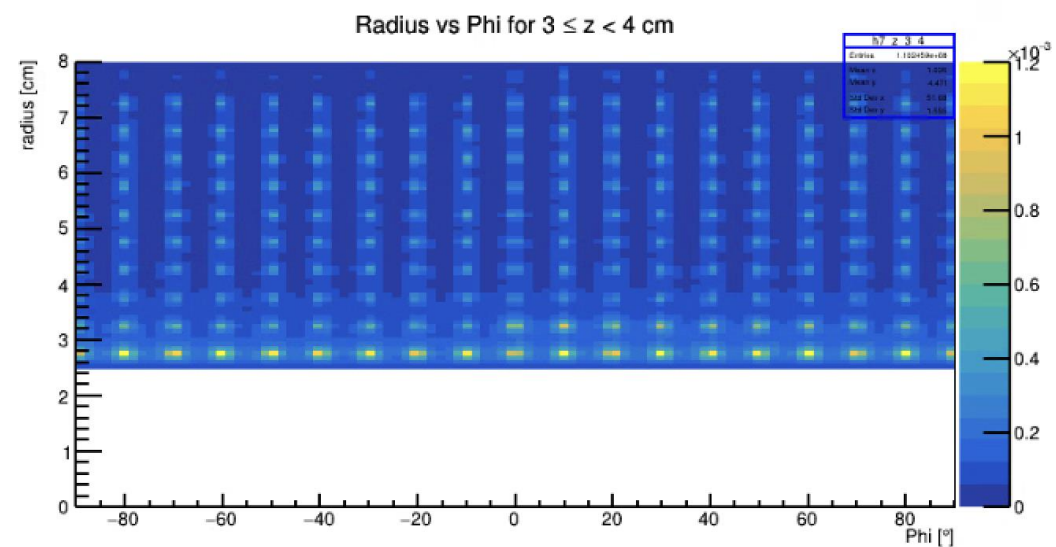
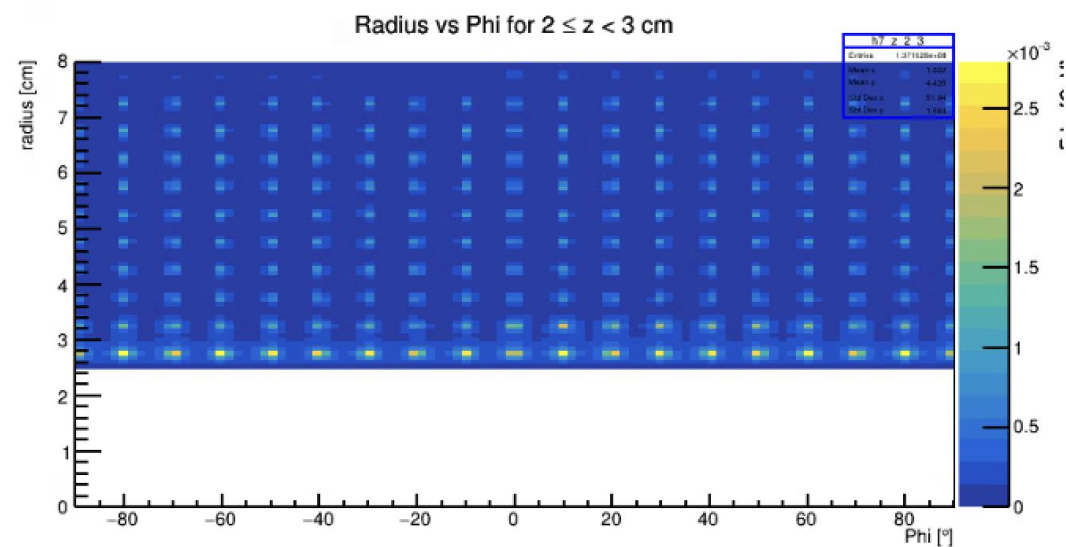
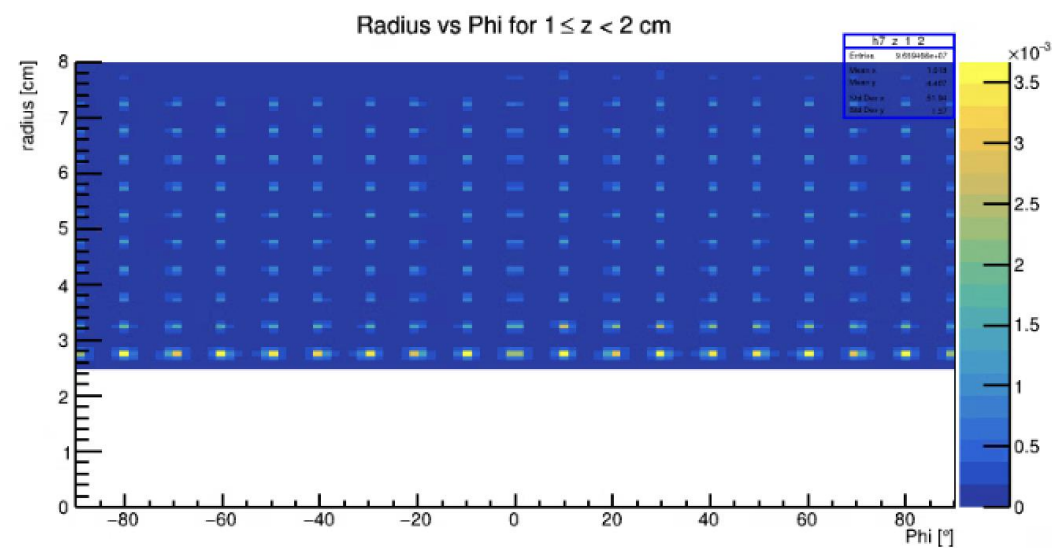
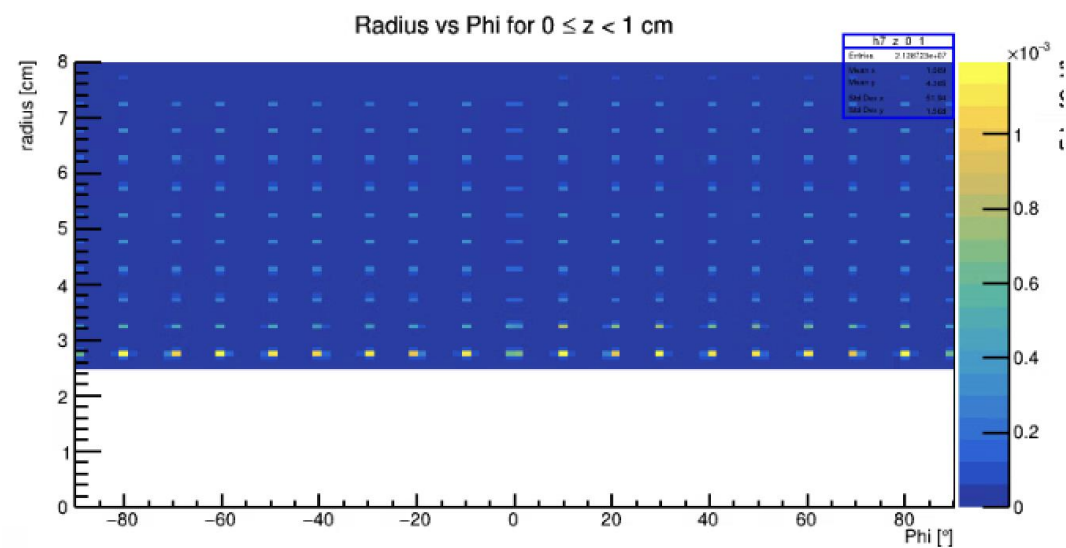


FINAL TEST

/gun/particle e-

/gun/energy 11 GeV

/run/beamOn/ 100 000

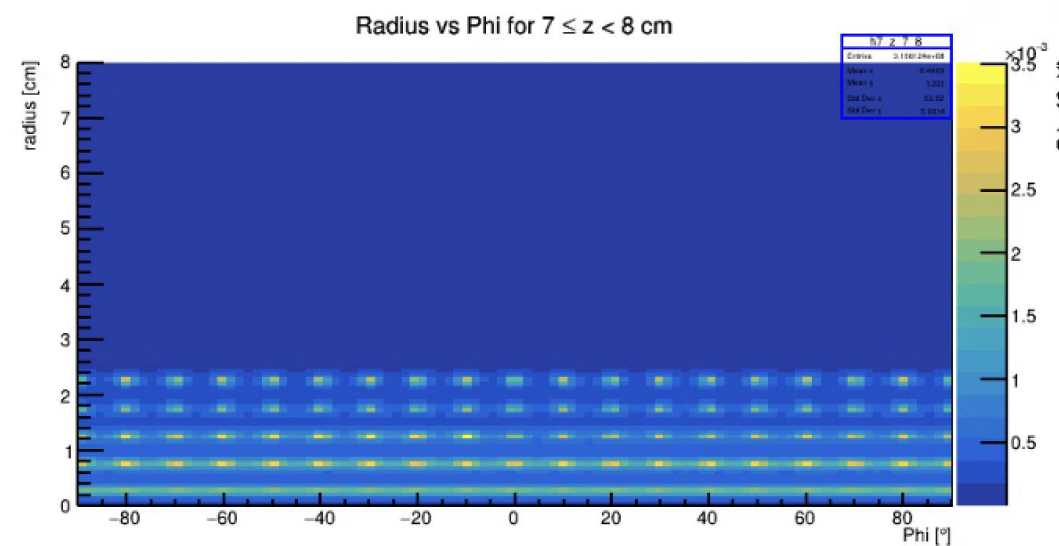
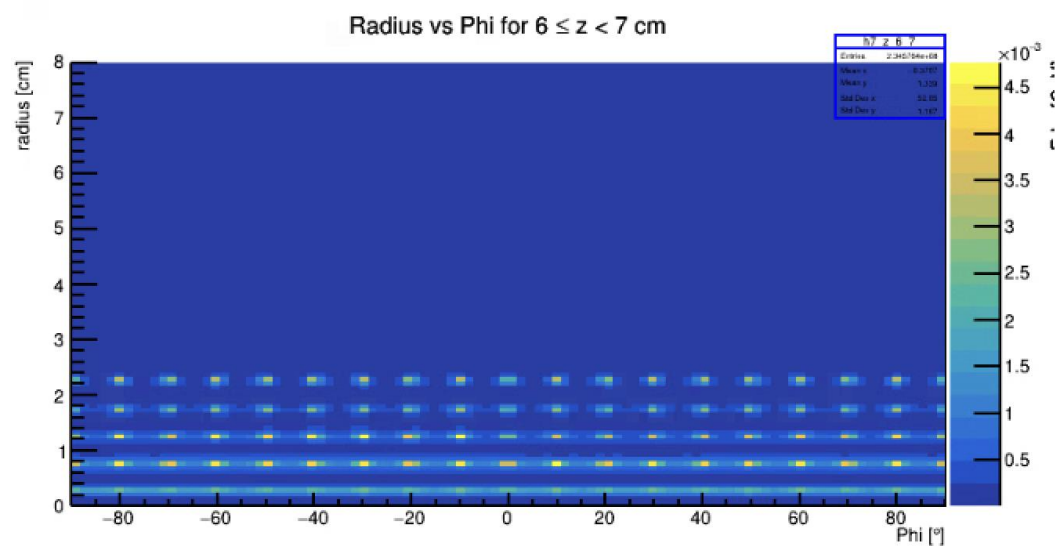
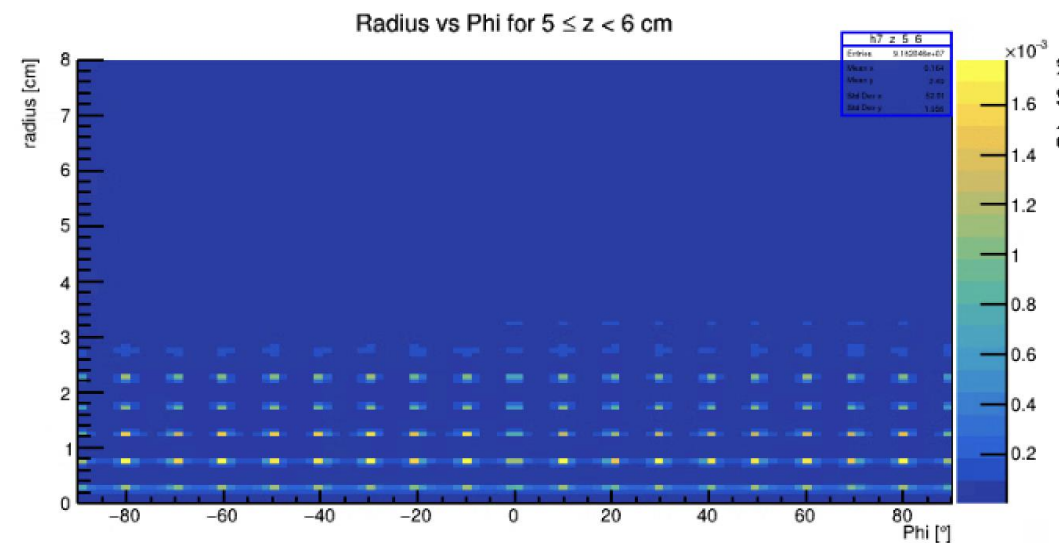
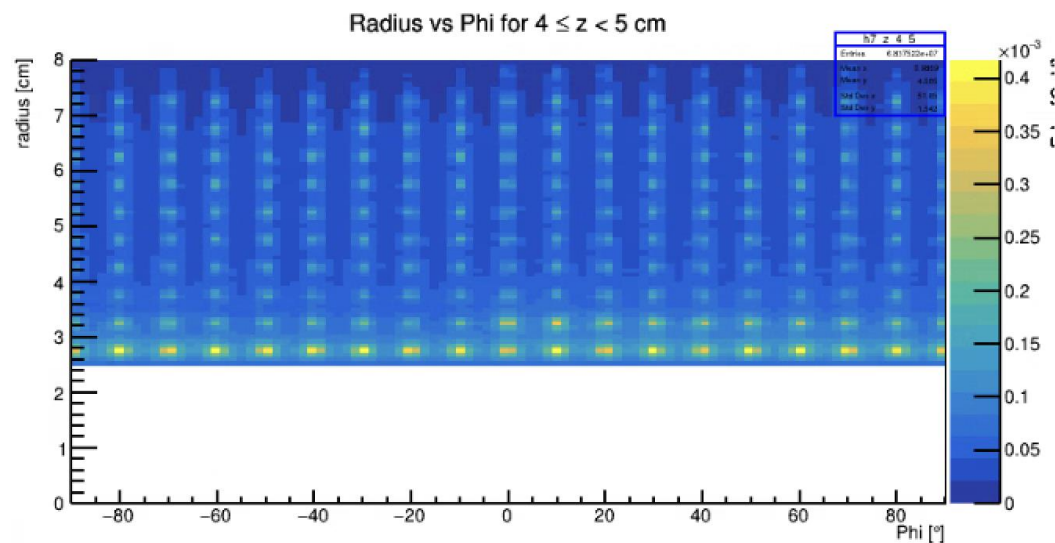


FINAL TEST

/gun/particle e-

/gun/energy 11 GeV

/run/beamOn/ 100 000



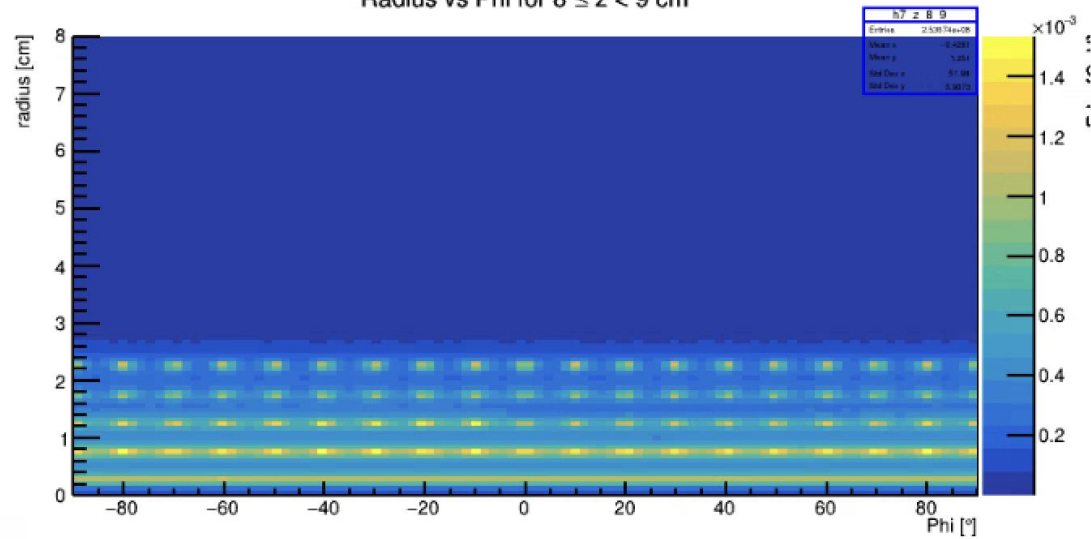
FINAL TEST

/gun/particle e-

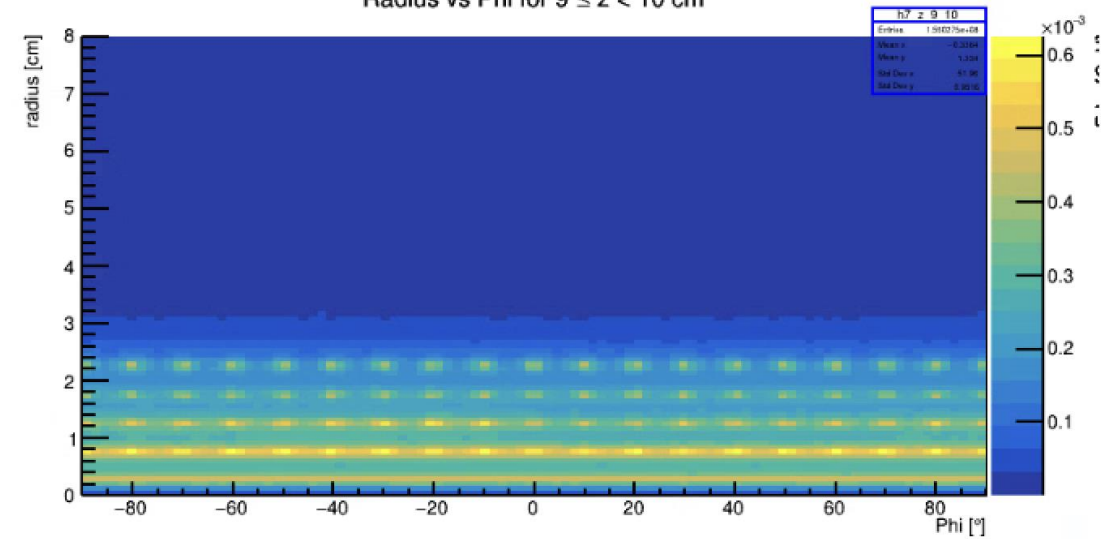
/gun/energy 11 GeV

/run/beamOn/ 100 000

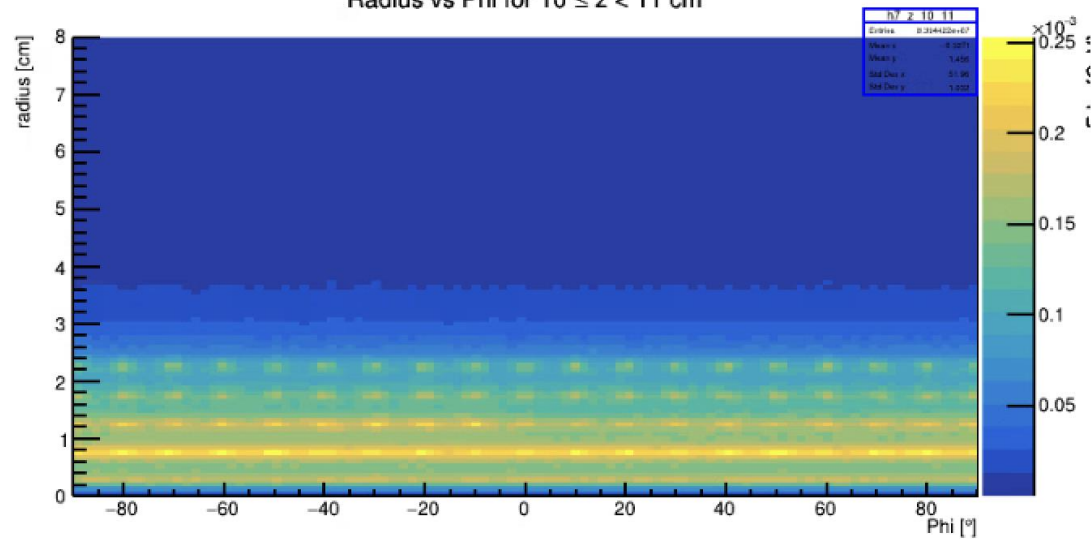
Radius vs Phi for $8 \leq z < 9$ cm



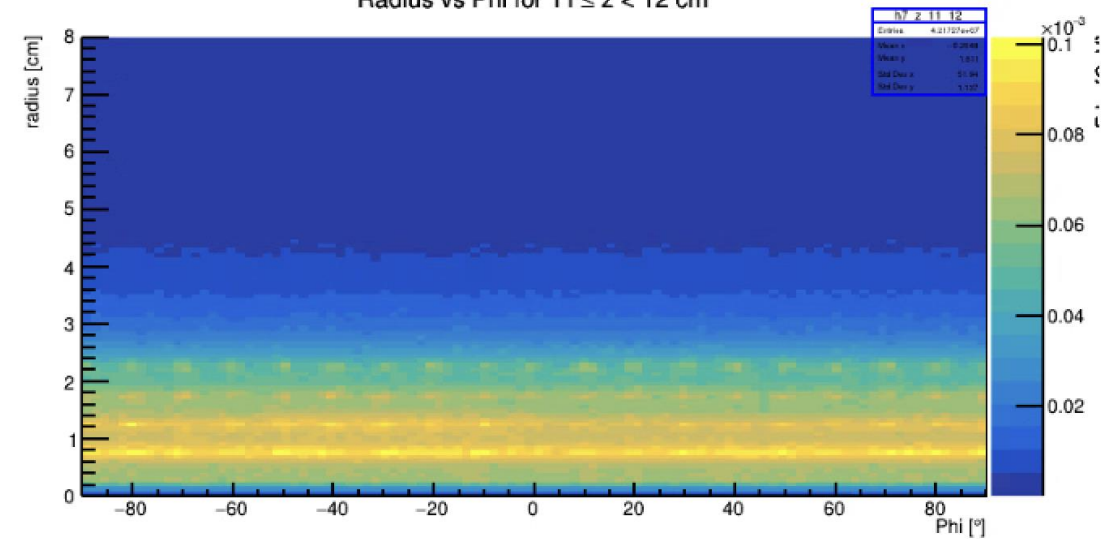
Radius vs Phi for $9 \leq z < 10$ cm



Radius vs Phi for $10 \leq z < 11$ cm



Radius vs Phi for $11 \leq z < 12$ cm

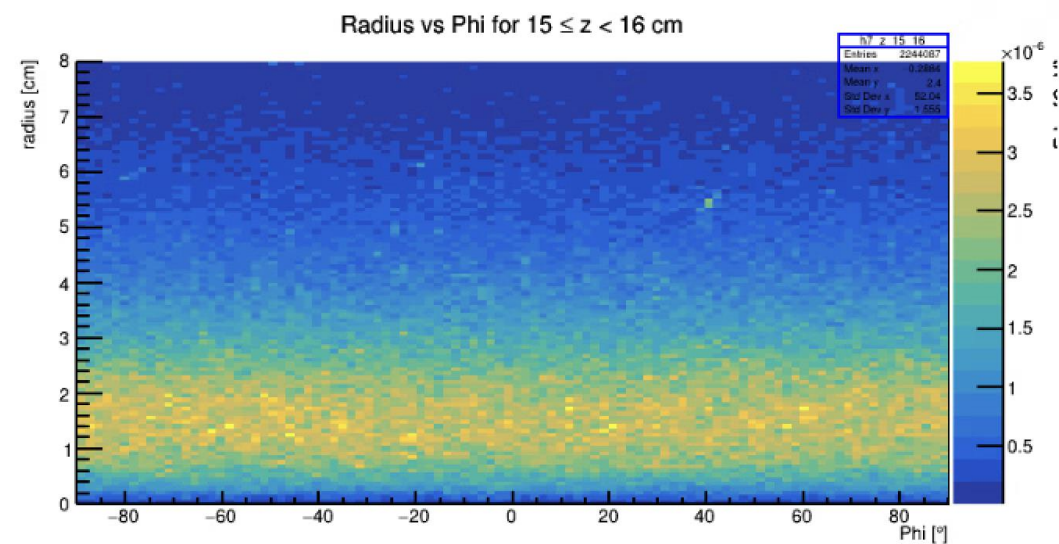
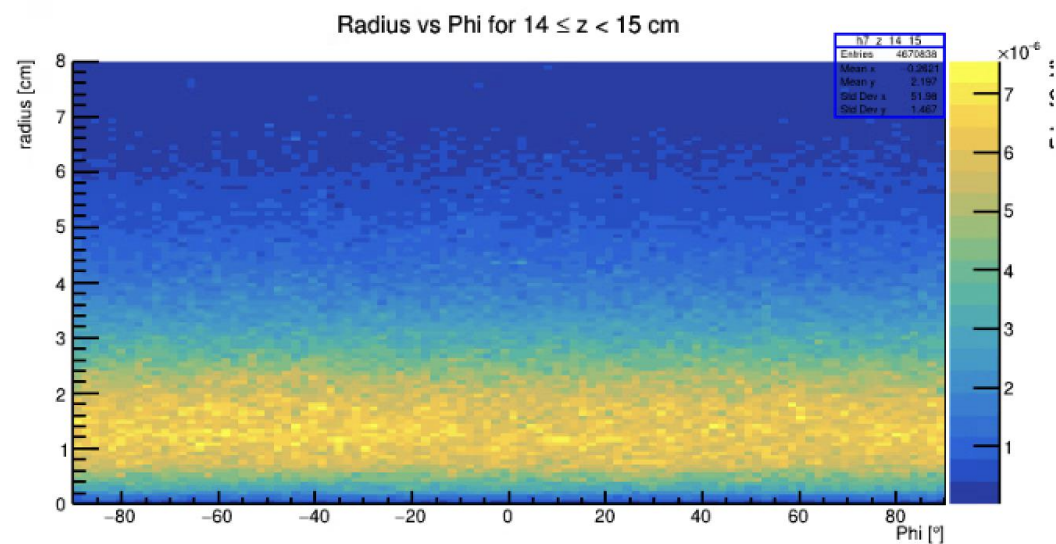
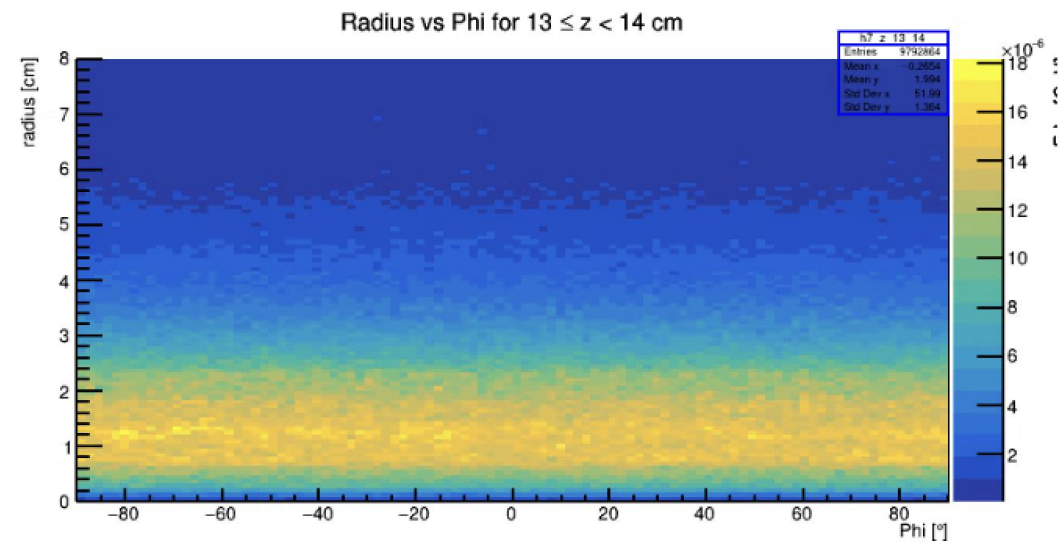
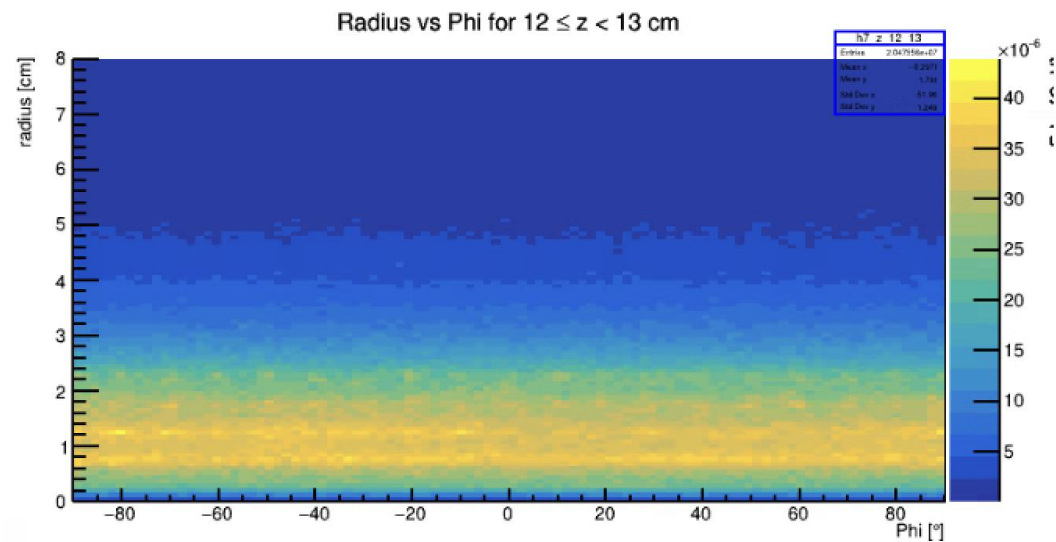


FINAL TEST

/gun/particle e-

/gun/energy 11 GeV

/run/beamOn/ 100 000



/gun/particle geantino
/gun/energy 11 GeV
/run/beamOn/ 100 000

