MG4 update – Sept. 17, 2015

Using the radial cut in the Monte Carlo QED calculation

1) radial cut on polar angle w.r.t z axis

2) MG4 radial calculation is 50 minutes shorter than the box cut calculation

3) The radial cut uses twice as many events generated by MG4 compared to box cut

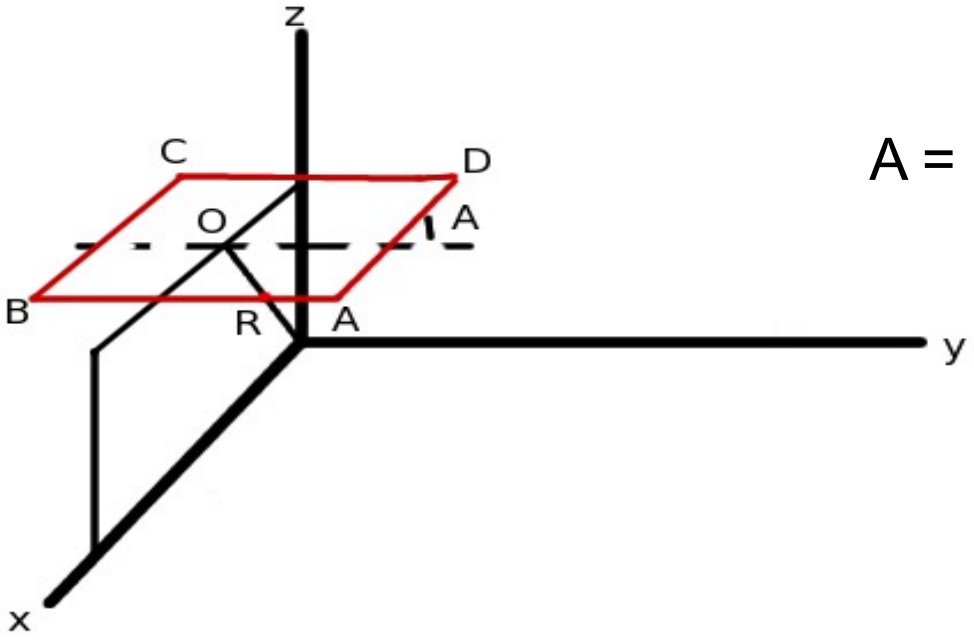
Generating Apertures

Criteria for valid aperture

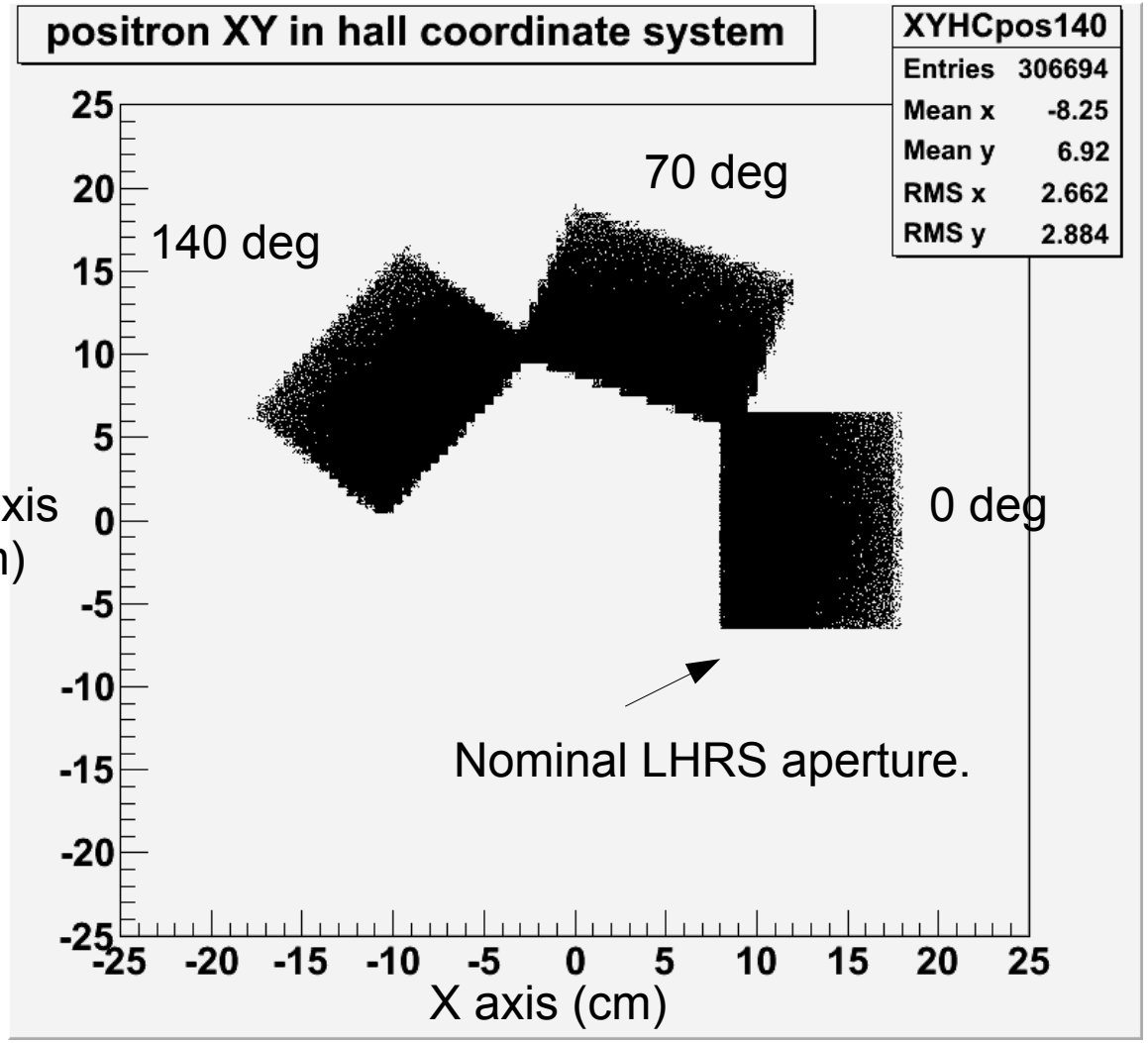
1) Use the septa magnet entrance apertures dimensions

2) How many non overlapping apertures can be generated around the z axis?

3) Every positron aperture must have an electron aperture at 180 degrees around z axis



A = 5 degrees, LHRS aperture



Hall A Coordinate System

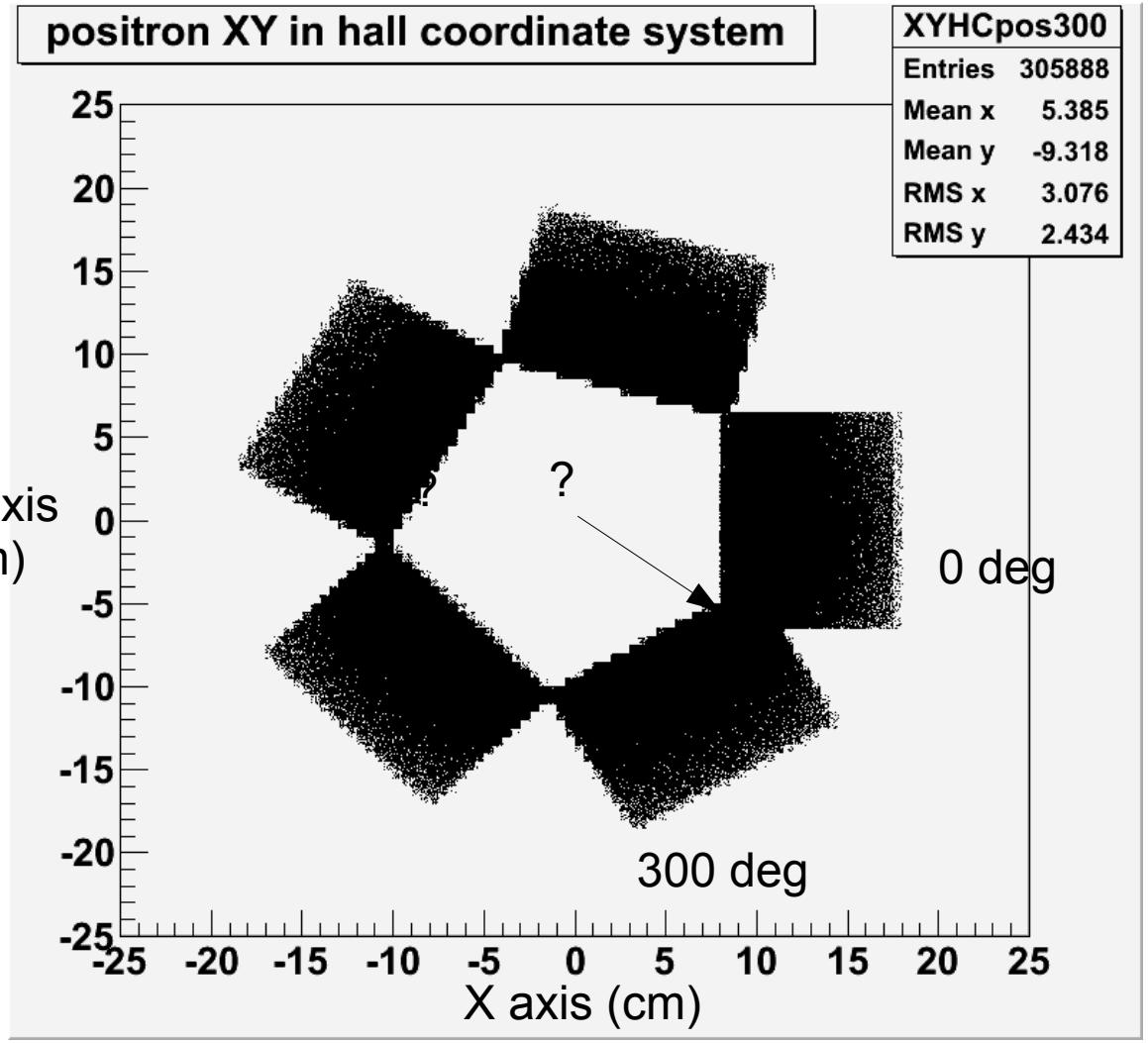
Setting apertures 70 degrees apart in phi.

There is a small overlap at the corners.

All plots require a good positron and good electron.

Good particle = (particle momentum in HRS acceptance)&&(particle enters correct aperture)

Projection of the apertures on the XY plane in HCS. Z axis is out of the page.

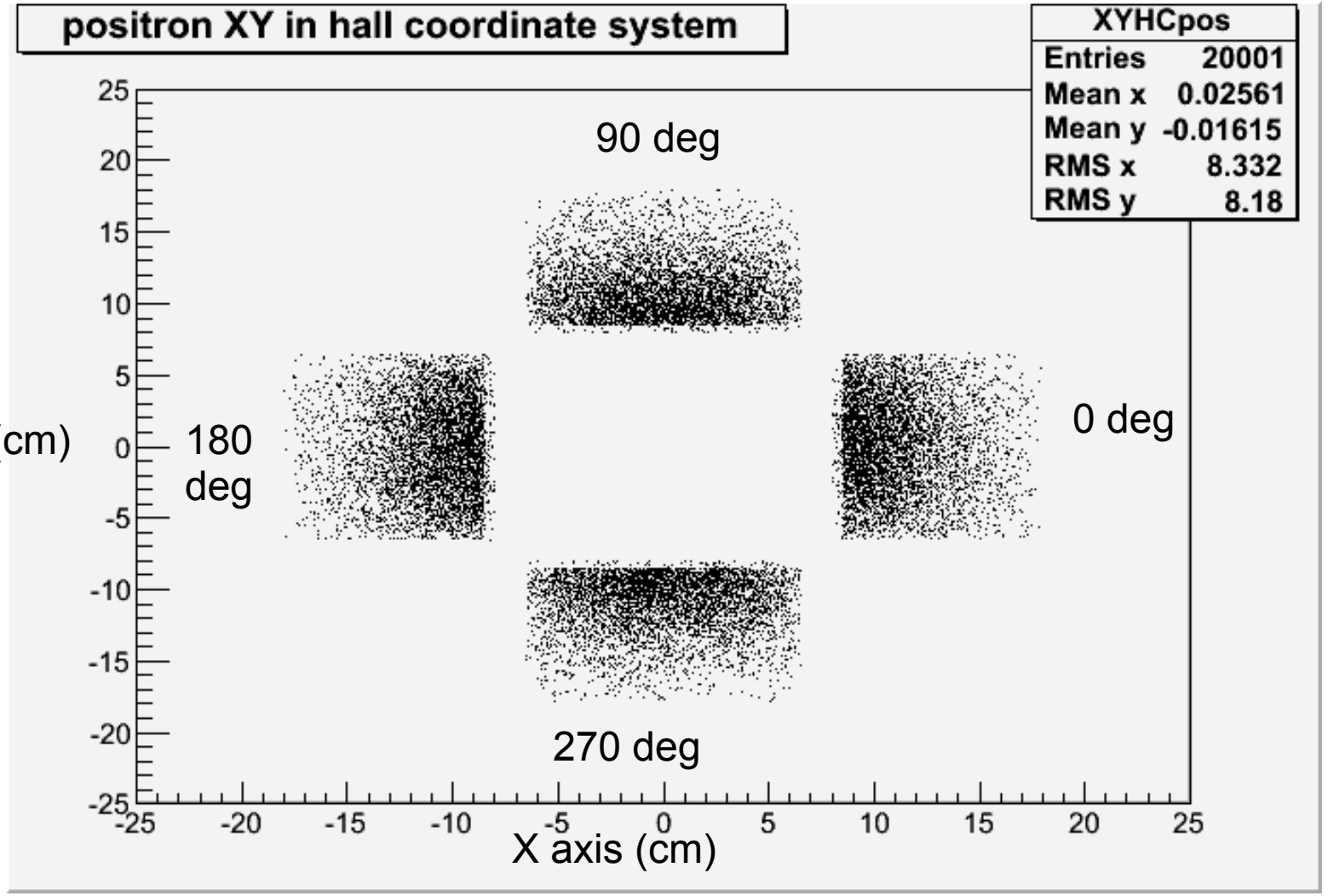


Using a separation of 75 degrees. The apertures at 300 and 0 degrees overlap.

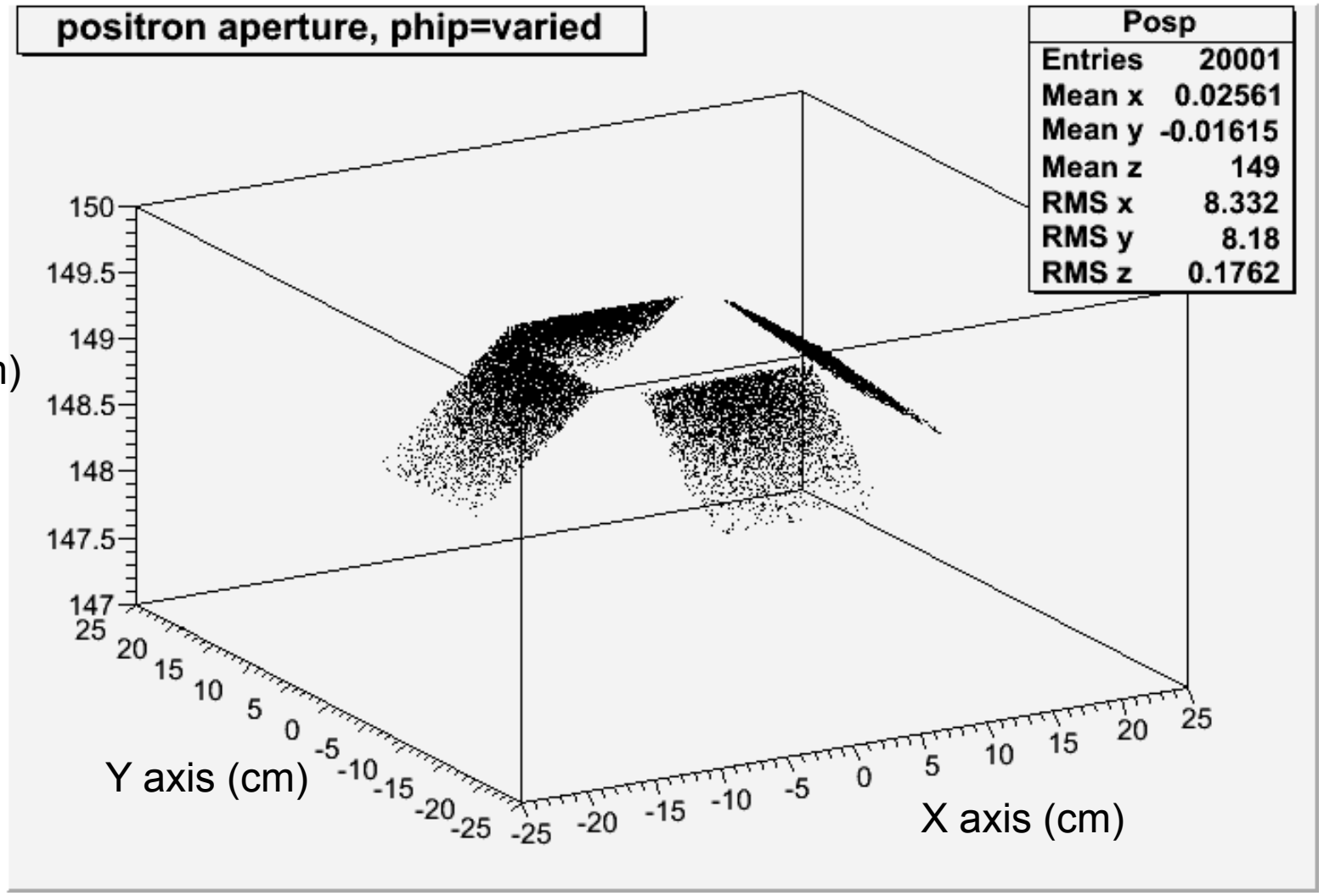
There is a Question of distortion of the invariant mass spectrum.

At the corners a positron can be in coincidence with an electron in an aperture at phi=180 deg or phi=480 deg.

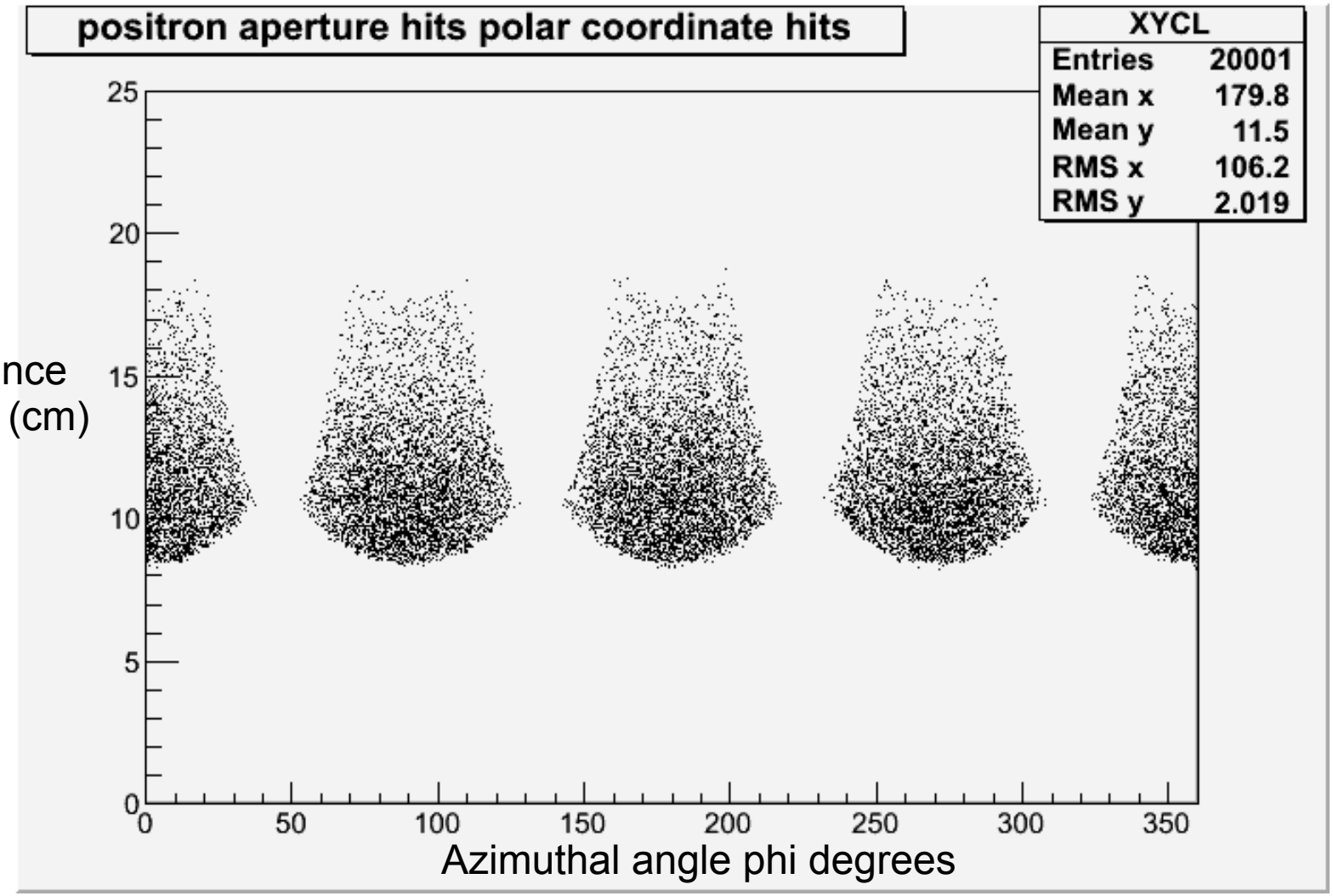
Use 4 apertures, 20K events, Hall A Cor. Sys.



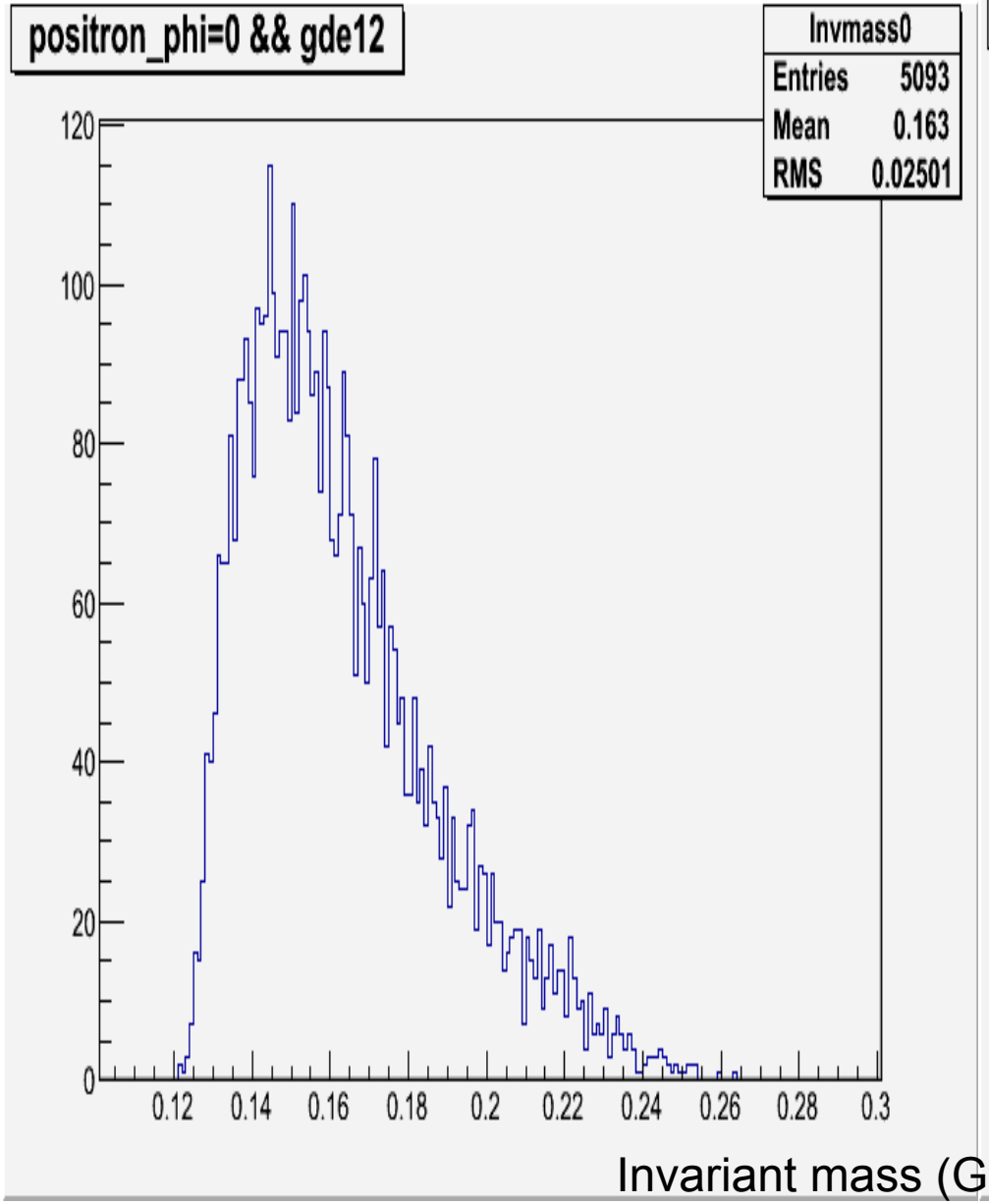
Use 4 apertures, 20K events, Hall A Cor. Sys.

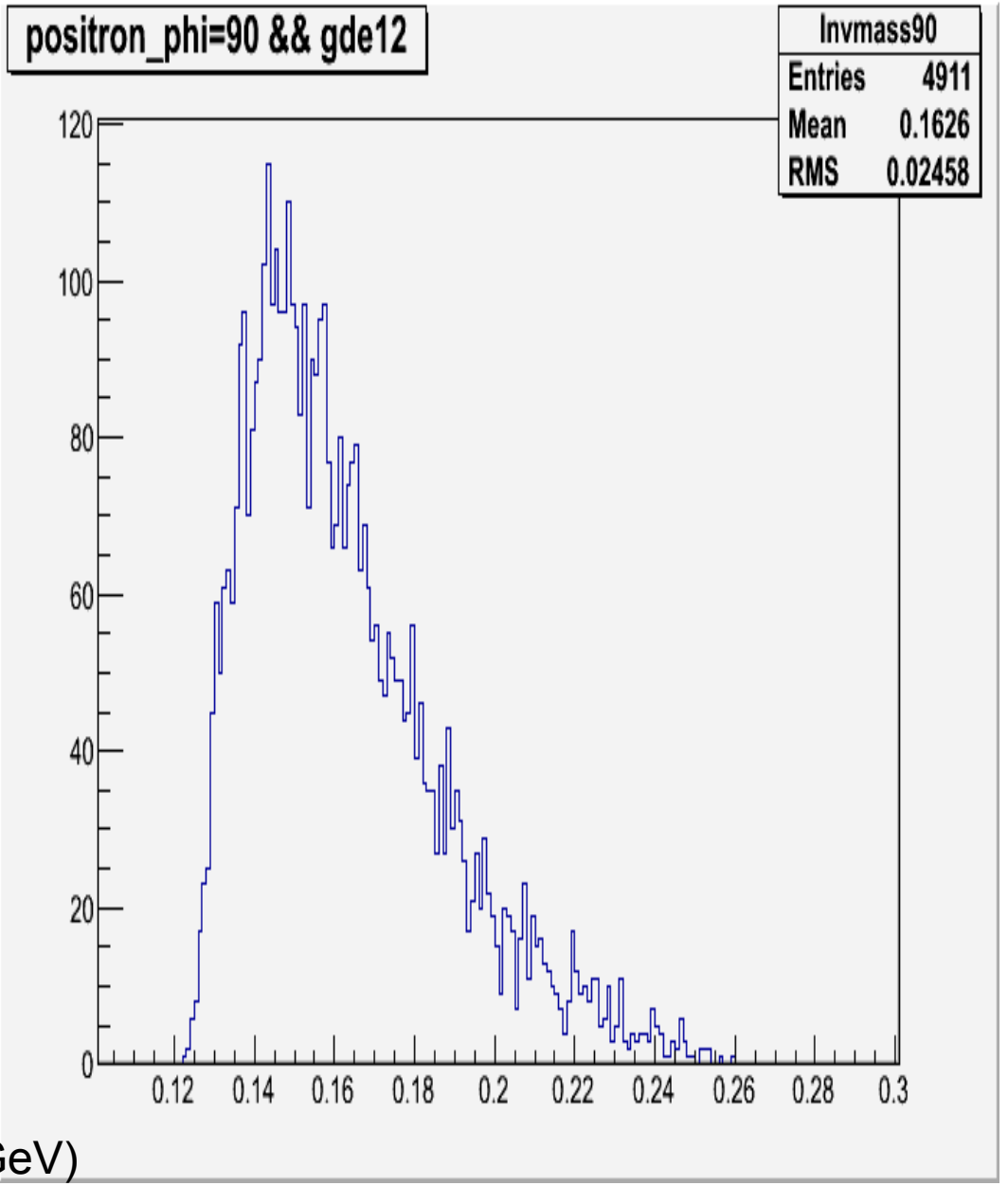


Use 4 apertures, 20K events, polar coordinates



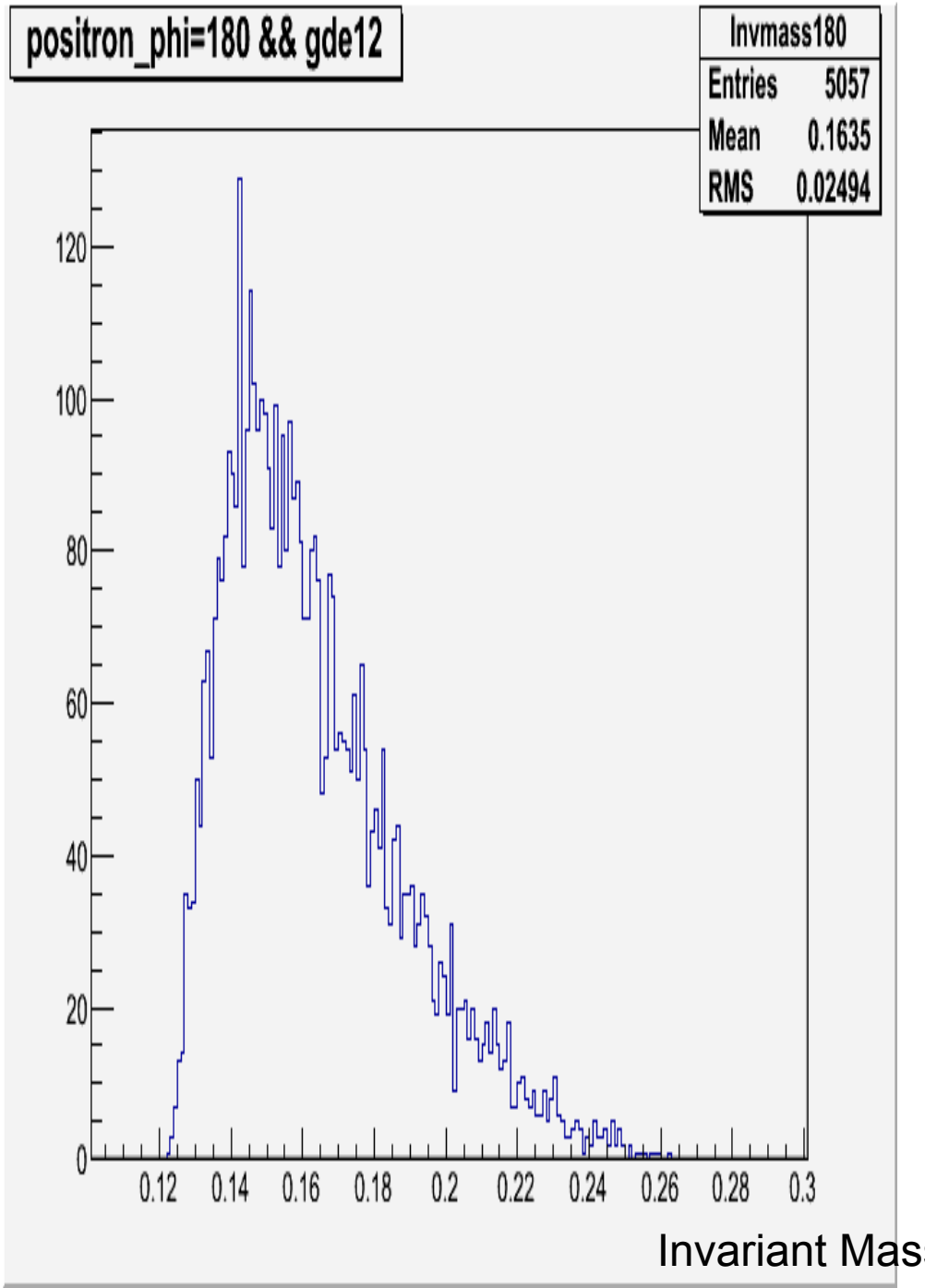
Invariant mass for positrons in 0 and 90 degree apertures

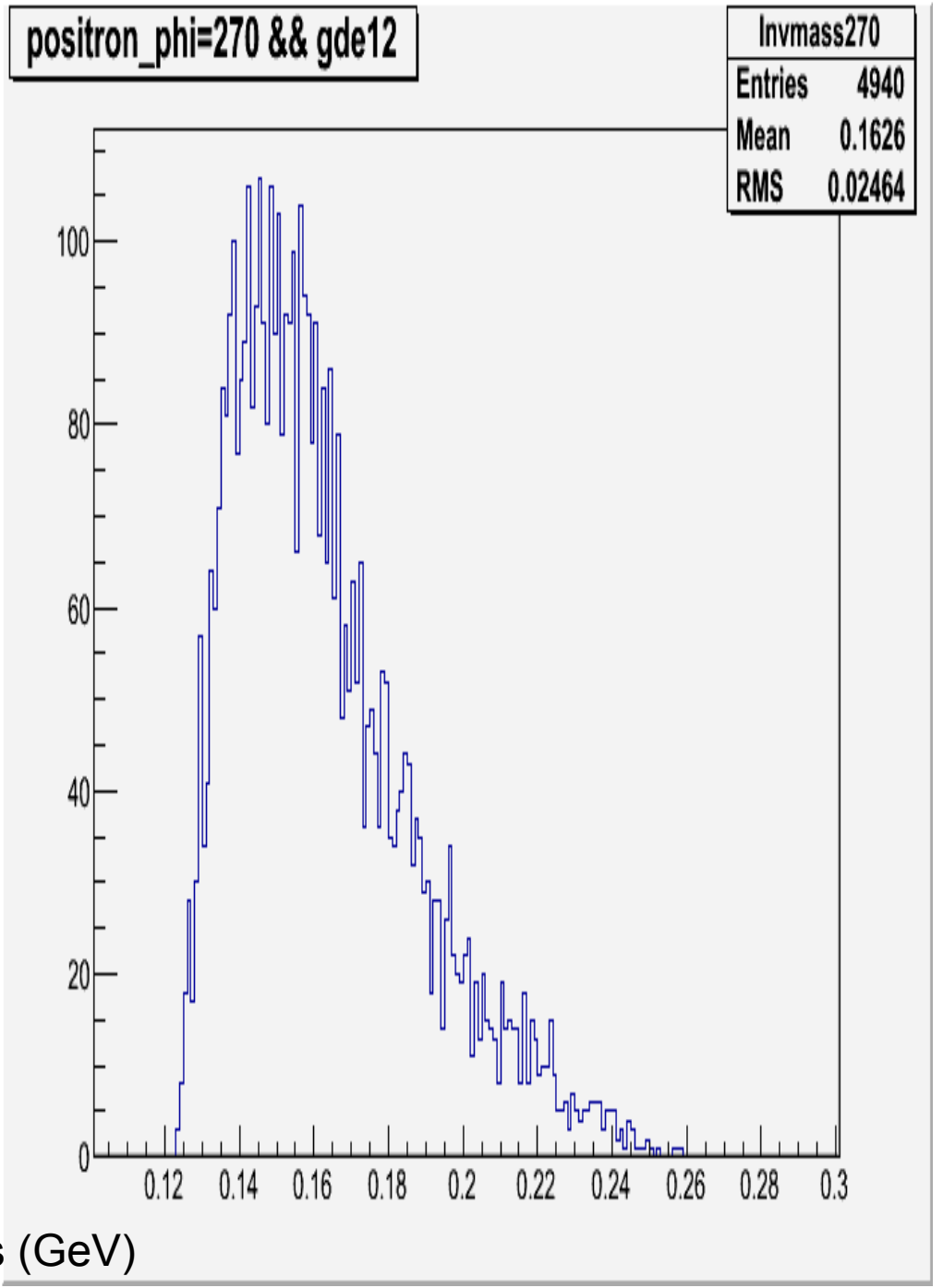




Invariant mass (GeV)

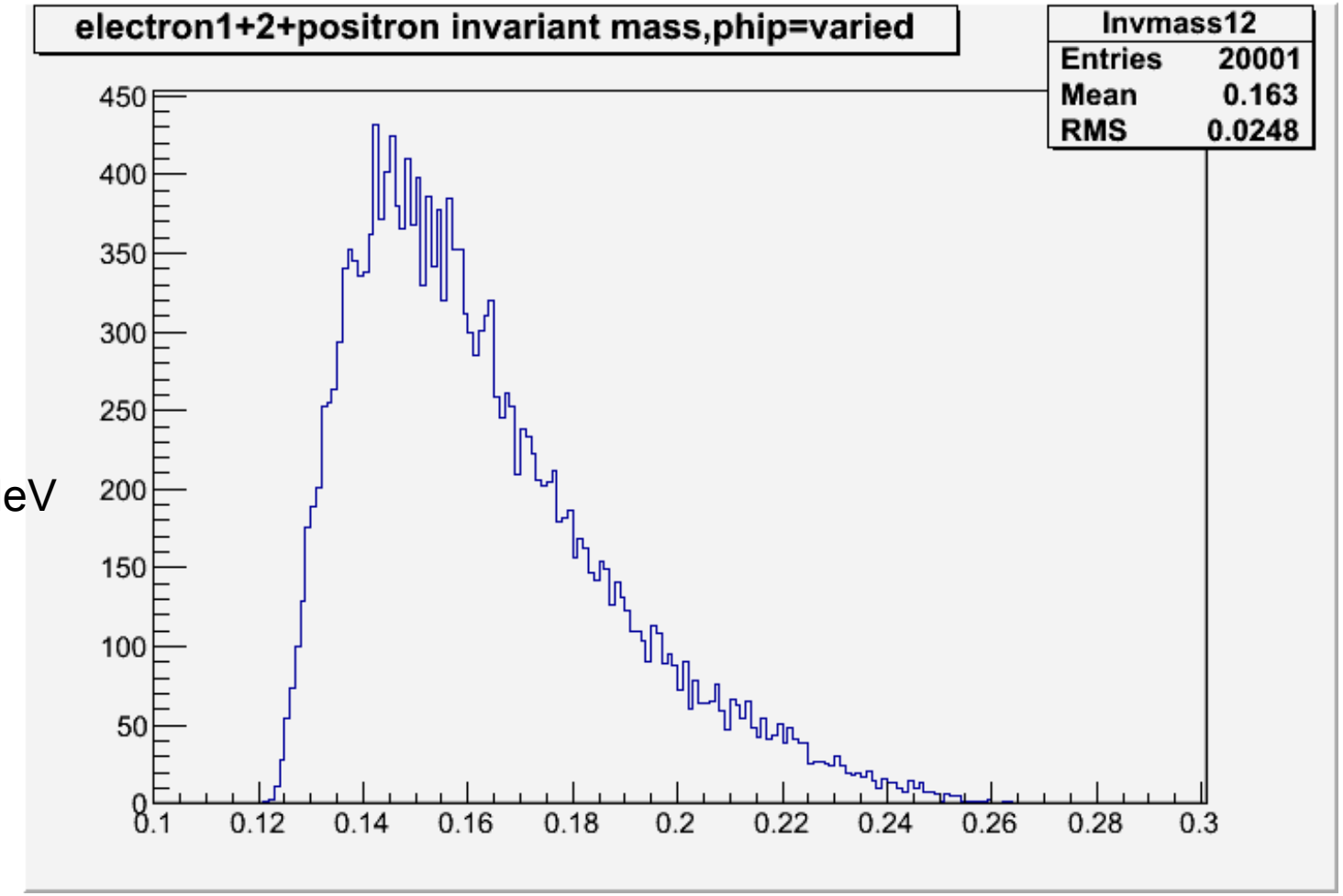
Invariant mass for positrons in 180 and 270 degree apertures



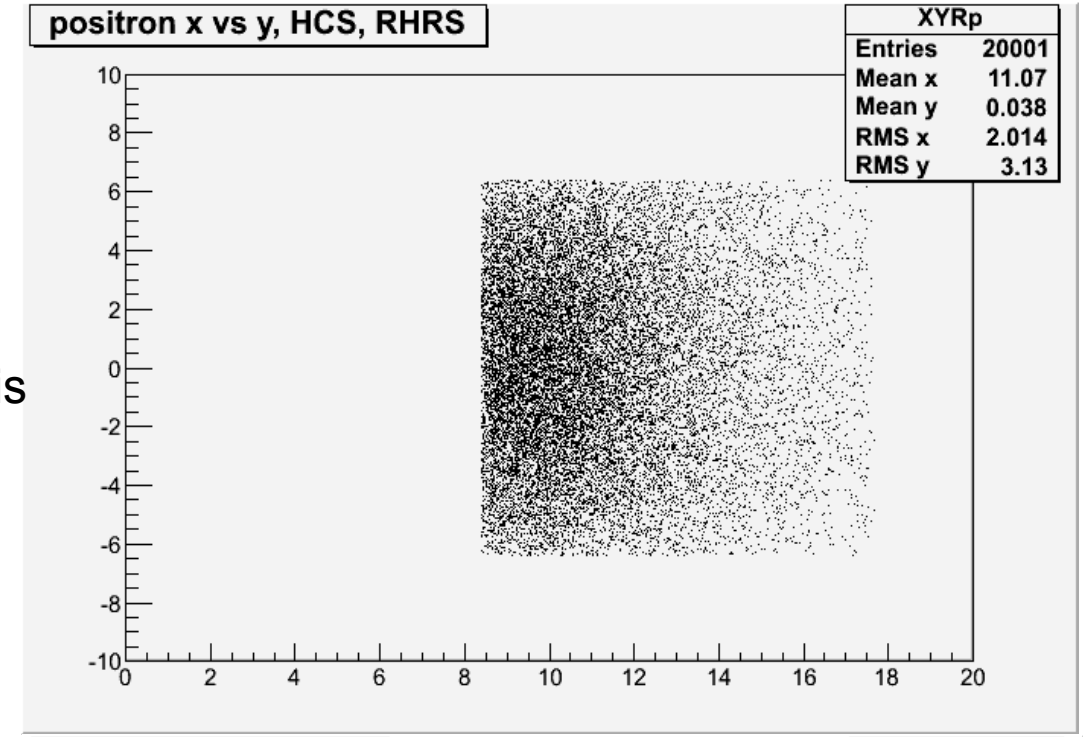


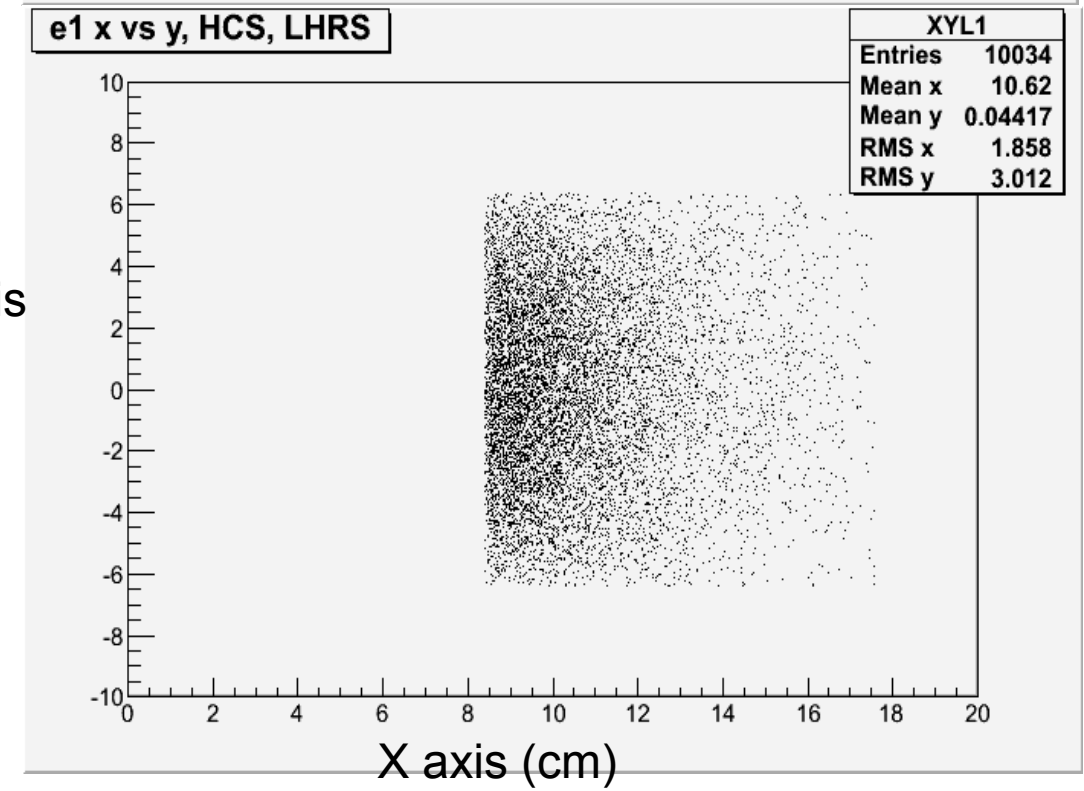
Invariant Mass (GeV)

Invariant mass for positrons into all 4 apertures



Distribution of hits in the apertures converted to the standard aperture.





Angle between the positron and electron radial momenta