Configuration for Ee = 16 MeV w/ quadrupol magnets Q8, Q9, and Q10.

Radiator placement:
Distance from the upstream part of flange FC3 (being pointed by an arrow in figure below) to the upstream side of the wall at the accelerator site is 77.0 cm;
Radiator placed 31 cm downstream the flange FC3 ;
We want to see +/-31 cm around the radiator placement;
Kicking beam left and right;
Targer dimension: cylinder with diameter 2 cm and hight 15 cm;

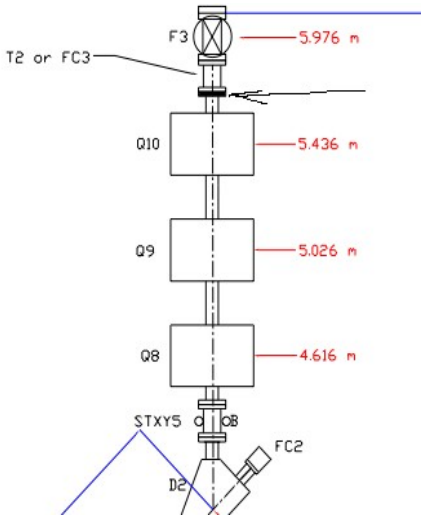


Fig. a. Electrons move from the bottom of the figure to the top.

Case A

Collimators geometry (the target placed at 200 cm away from downstream side of the wall in the experimental cell):
(x,y) = (0,0) position of the center of the undeflected electron beam in the plane perpendicular to the propagation of the beam ;
Calculated upstream collimator center placement (x,y,z) = (0,+1.47 cm, 46 cm); z is measured from the radiator position;

There is descrepancy 0.16 cm between the calculated position of the upstream collimator center and position of the center determined by geometrical pass nedeed to see +/-31 cm around the converter placement. So the actual position of the center of upstream collimator is at (x,y,z) = (0,+1.31 cm, 46 cm), however, here it is not important because the diameter of the upstream collimator hole is much larger and both centers are inside the collimator hole.

Upstream collimator diameter (to see +/-31 cm around the converter placement) 1.51 cm

Downstream collimator center placement (x,y,z) = (0,+5.3 cm, 166 cm); z is measured from the radiator position;

Downstream collimator diameter (to see +/-31 cm around the converter placement) 0.1908 cm

There is descrepancy of 0.09 cm between the calculated position of the downstream collimator center and position of the center determined by geometrical pass nedeed to see +/-31 cm around the converter placement. So the actual position of the center of the downstream collimator is at (x,y,z) = (0,+5.21 cm, 166 cm). The calculated center of the downstream collimator is still inside of the

actual geometrical pass, it is just right at the edge of the actual geometrical pass.

Upstream collimator Downstream collimator

Electron beam spot should be moved 1.47 cm left/right to get the polarization vector at +/-45 ^{0}.

Case B

Collimators geometry (the target placed at 50 cm away from downstream side of the wall in the experimental cell):

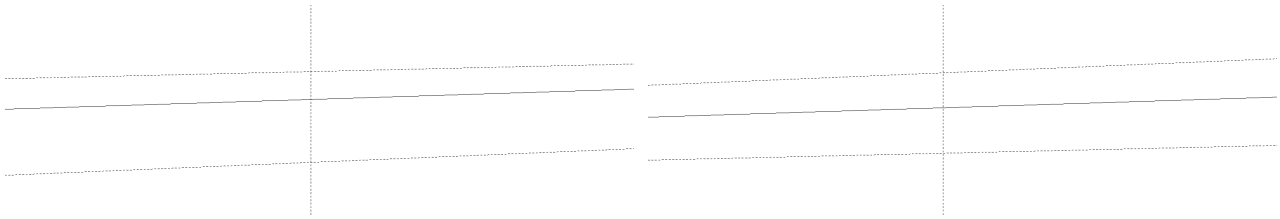
Calculated upstream collimator center placement (x,y,z) = (0,+1.47 cm, 46 cm); z is measured from the radiator position;

There is still descrepancy of about 0.23 cm between the calculated position of the upstream collimator center and position of the center determined by geometrical pass nedeed to see +/-31 cm around the converter placement. So the actual position of the center of upstream collimator is at (x,y,z) = (0,+1.24 cm, 46 cm), however, now it is not important because the diameter of the upstream collimator hole is much larger and both centers are inside the collimator hole.

Upstream collimator diameter (to see +/-31 cm around the converter placement) 1.2 cm.

Downstream collimator center placement (x,y,z) = (0,+5.3 cm, 166 cm); z is measured from the radiator position;
Downstream collimator diameter (to see +/-31 cm around the converter placement) 1.06 cm.

There is descrepancy of 0.07 cm between the calculated position of the downstream collimator center and position of the center determined by geometrical pass nedeed to see +/-31 cm around the converter placement. So the actual position of the center of downstream collimator is at (x,y,z) = (0,+5.23 cm, 46 cm), however, now it is not important because the diameter of the downstream collimator hole is much larger and both centers are inside the collimator hole.



Upstream collimator Downstream collimator

Electron beam spot should be moved 1.47 cm left/right to get the polarization vector at +/-45 ^{0}.

As a conclusion Case B is more preferrable than the Case A and it is better to keep the three quadrupole magnets at the place for the case electron energy 16 MeV.