

GEM geometry with longer endcap magnet (06/2020, Zhiwen Zhao, Weizhi Xiong)

id	Z (cm)	PVDIS target full			Area (m2)
		R_in (cm)	R_out (cm)	Length (cm)	
1	157.5	51	115	64	3.3
2	185.5	61	135	74	4.6
3	190	63	138	75	4.7
4	315	104	237	133	14.3
5	325	107	244	137	15.1
total					42

id	Z (cm)	SIDIS He3 target full/JPsi target center			Area (m2)
		R_in (cm)	R_out (cm)	Length (cm)	
1	-175	39	87	48	1.9
2	-150	21	98	77	2.9
3	-119	25	112	87	3.7
4	-68	32	135	103	5.4
5	5	42	99	57	2.5
6	92	53	122	69	3.8
total					20

GEM size defined here are active area

Note

- Solenoid coil center at z=0cm
- 2017 longer magnet layout
http://hallaweb.jlab.org/12GeV/SOLID/meeting_coll/2017_02_layout_magnet/solid_layout_magnet_zwzhao_201702.pdf
- 2013 GEM size slide has more details about GEM size for shorter endcap magnet in preCDR 2019
https://solid.jlab.org/files/sim/talk/solid_gem_zwzhao_20130913.pdf

- R_in and R_out determined by PVDIS full target
 - PVDIS 40cm long target with center at 10m, angle 22-35 degree
- Comparing to numbers for shorter endcap magnet in preCDR 2019, GEM4 and GEM5 moved 10cm downstream and enlarged
- Refer to Weizhi Xiong's study
 - https://solid.jlab.org/DocDB/0002/000275/002/SOLID_080320_20.pdf
- GEM 1,2,3 R_out is limited by magnet bore ~140cm

- R_out determined by SIDIS He3 target upstream end
 - SIDIS He3 40cm long target with center at -350cm, angle 7-14.7-24 degree
- R_in determined by JPsi target center
 - JPsi 15cm long target with center at -315cm, JPsi angle 7.5-15.7-28 degree accepted by EC
- Very close to numbers for shorter endcap magnet in preCDR 2019
- GEM4 and GEM6 can't move downstream further
- Don't extend R_in further to keep background small. R_out can be extended with no problem
- Beamline opening +-2deg