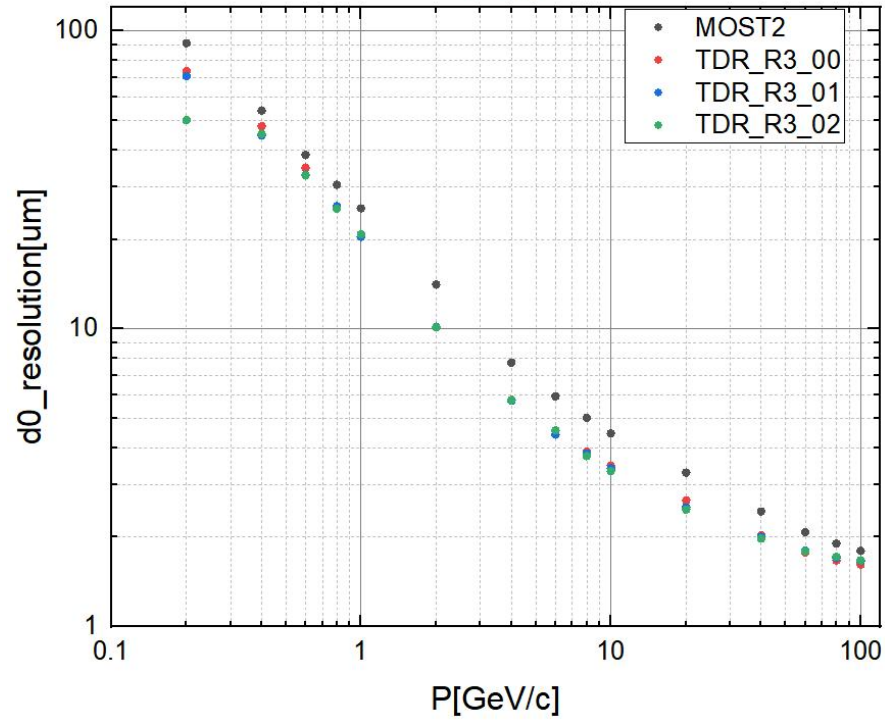


CEPCSW ----- VXT _Barrel section

Tianyuan Zhang
4/25/2024

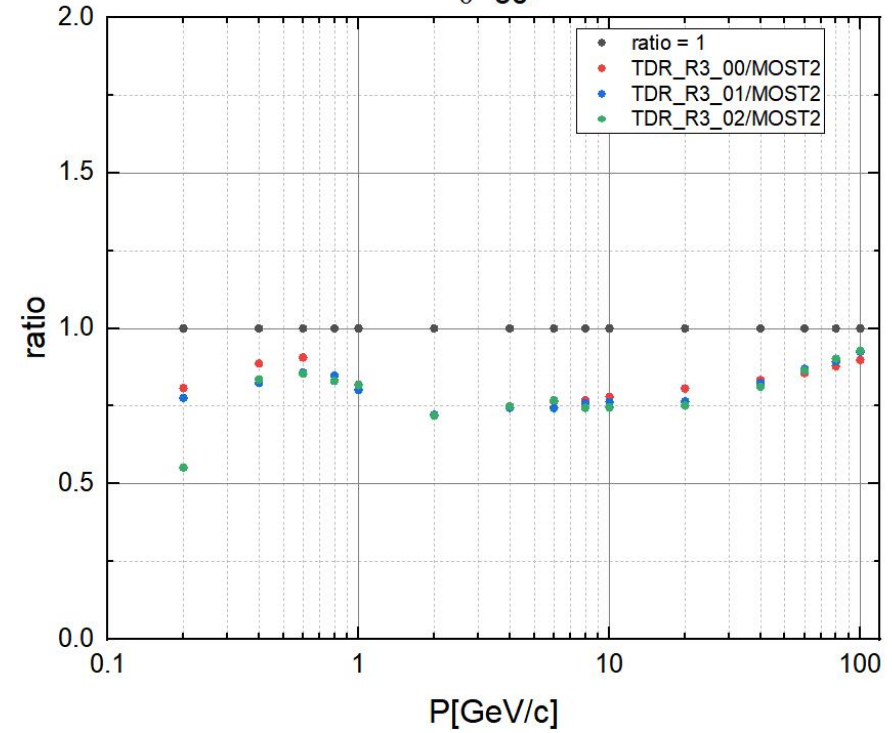
δd_0 随出射粒子动量的变化

$\theta=60^\circ$



δd_0 比值随出射粒子动量的变化

$\theta=60^\circ$

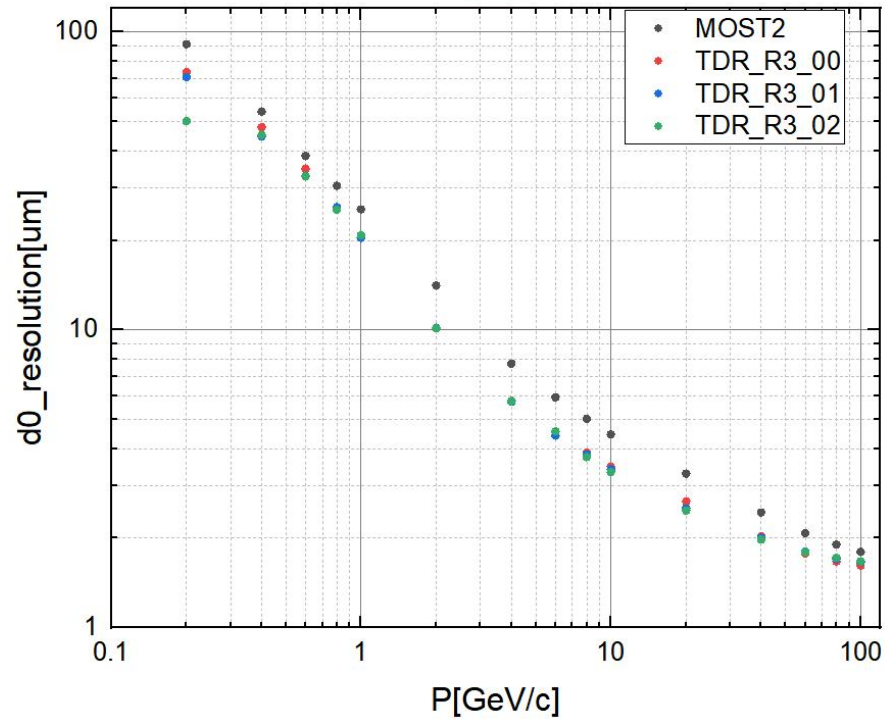


- TDR结构相比MOST2结构， d_0 的分辨率有了较大的提升；

	MOST2		TDR_R3_00	TDR_R3_01	TDR_R3_02
double-layer	r/mm	z/mm	r/mm	r/mm	r/mm
Layer 1	15.6	272.9	12.5	12.5	12.5
Layer 2	35.1	272.9	28.1	28.1	28.1
Layer 3	55.9	272.9	45.1	62.8	80.5

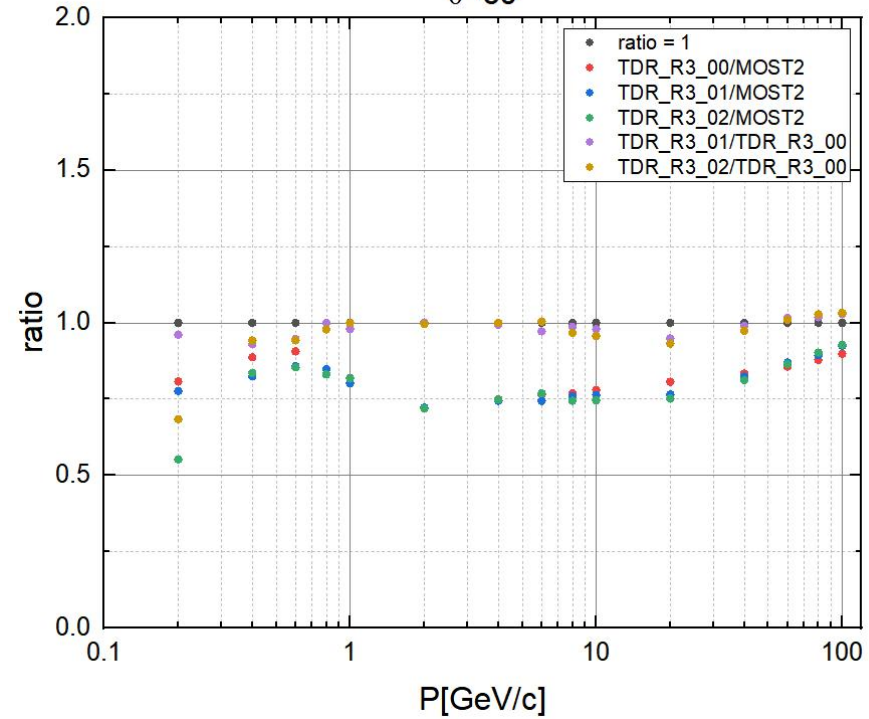
δd_0 随出射粒子动量的变化

$\theta=60^\circ$



δd_0 比值随出射粒子动量的变化

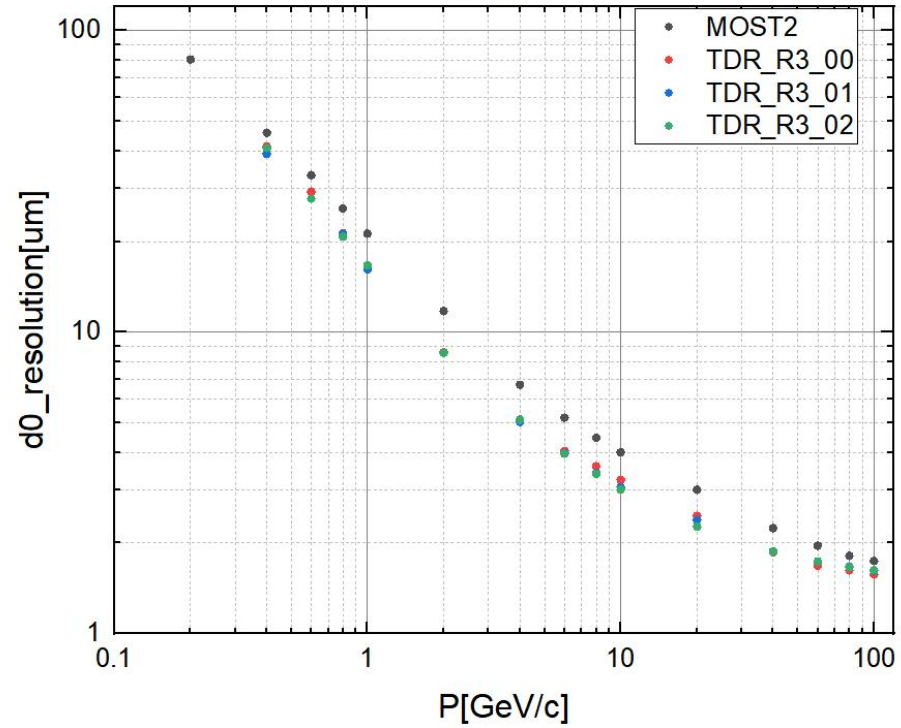
$\theta=60^\circ$



- TDR结构, 0.1~1GeV/c, 随着最外层半径的增大, d0的分辨率有改善;
- 8~40GeV/c, TDR_R3_02较TDR_R3_01提升并不明显;
- 60~100GeV/c, 随着最外层半径的增大, d0的分辨率变差;

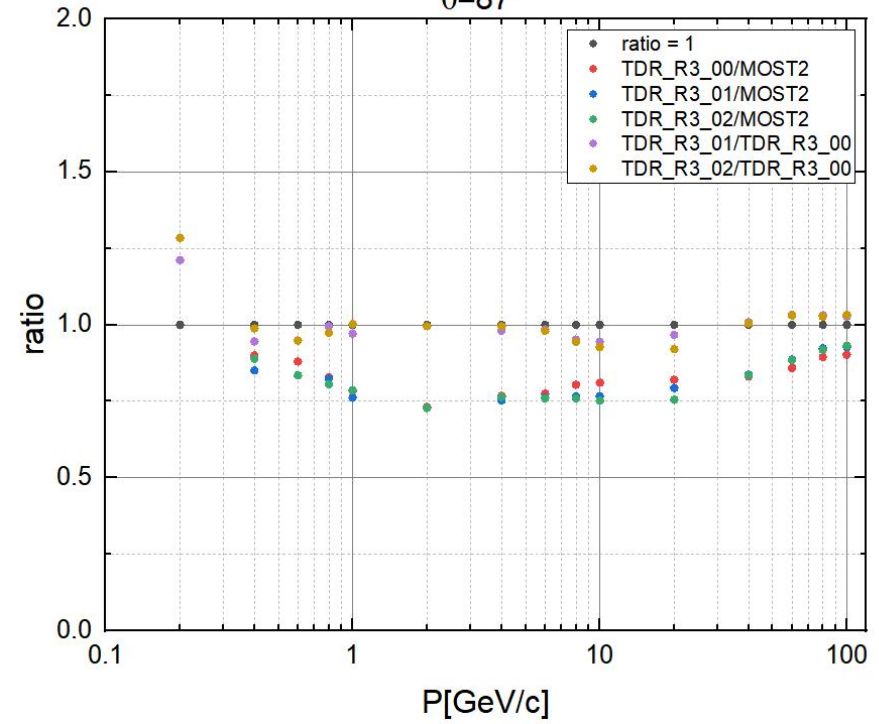
δd_0 随出射粒子动量的变化

$\theta=87^\circ$

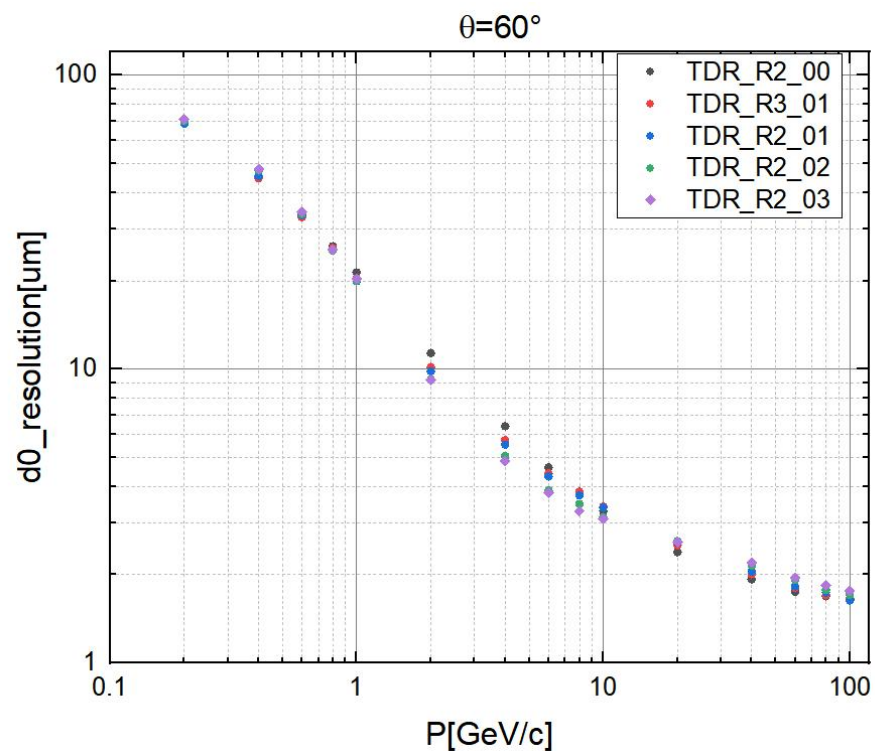


δd_0 比值随出射粒子动量的变化

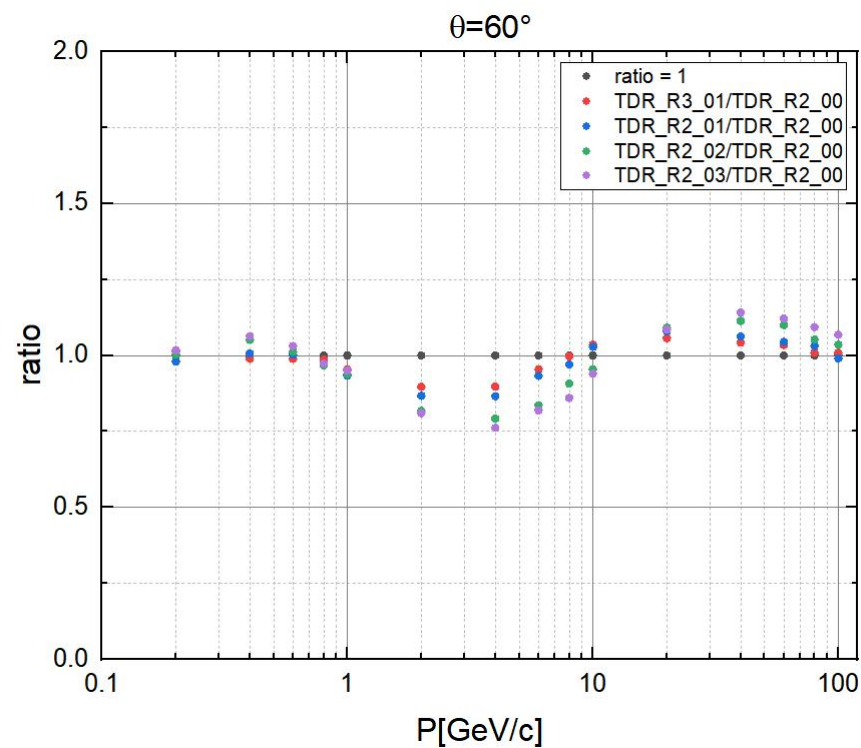
$\theta=87^\circ$



δd_0 随出射粒子动量的变化



δd_0 比值随出射粒子动量的变化

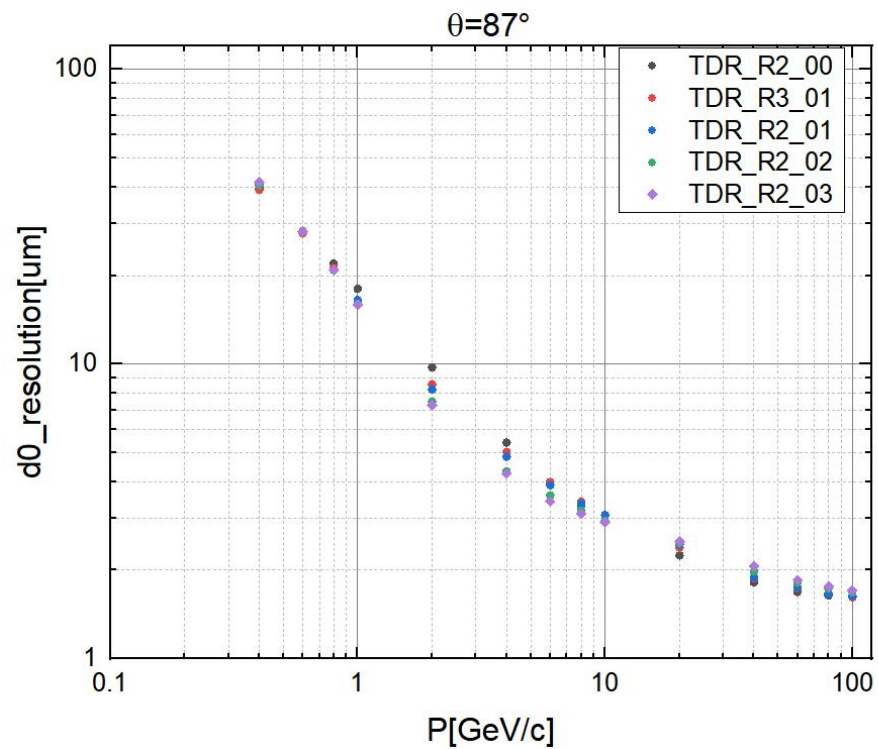


- 动量为1~100GeV/c的粒子，对第二层的半径较为敏感；
- 1~8GeV/c，第二层半径越小， d_0 的分辨越差；
- 20~100GeV/c，第二层半径越小， d_0 的分辨越好；

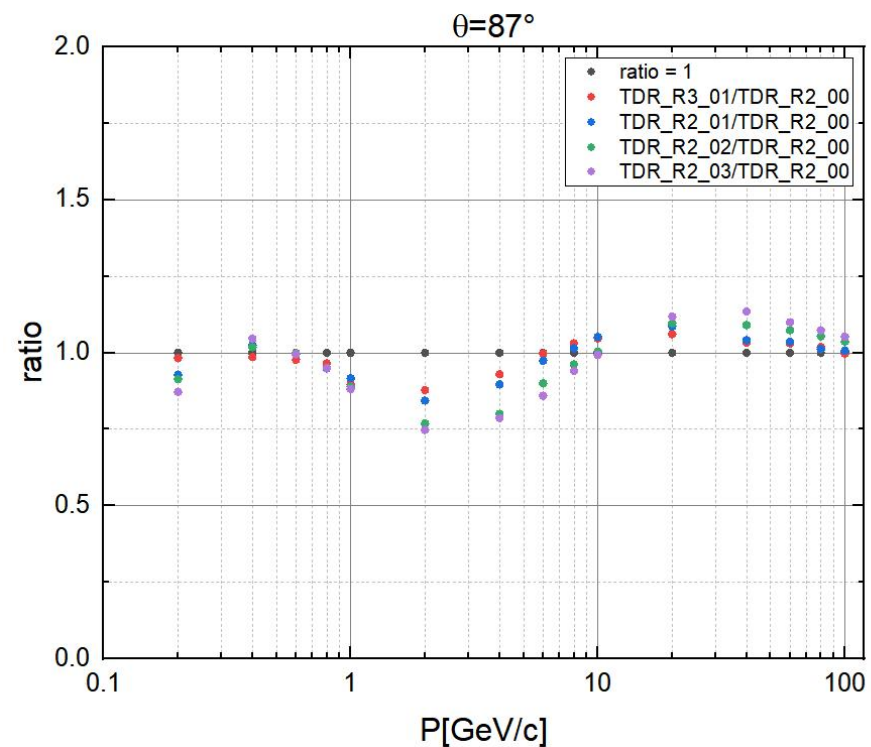
Layer2的半径

87°

δd_0 随出射粒子动量的变化



δd_0 比值随出射粒子动量的变化

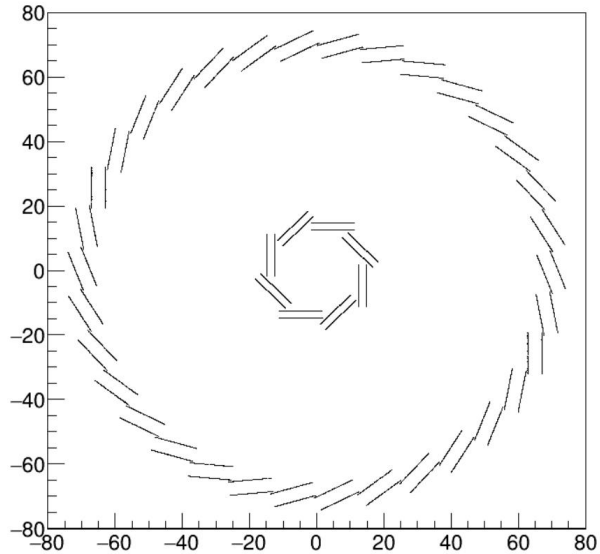


	TDR_R2_00	TDR_R3_01	TDR_R2_01	TDR_R2_02	TDR_R2_03
double-layer	r/mm	r/mm	r/mm	r/mm	r/mm
Layer 1	12.5	12.5	12.5	12.5	12.5
Layer 2	22.6	28.1	32.6	42.7	52.7
Layer 3	62.8	62.8	62.8	62.8	62.8

Layer的数目

TDR_L_00

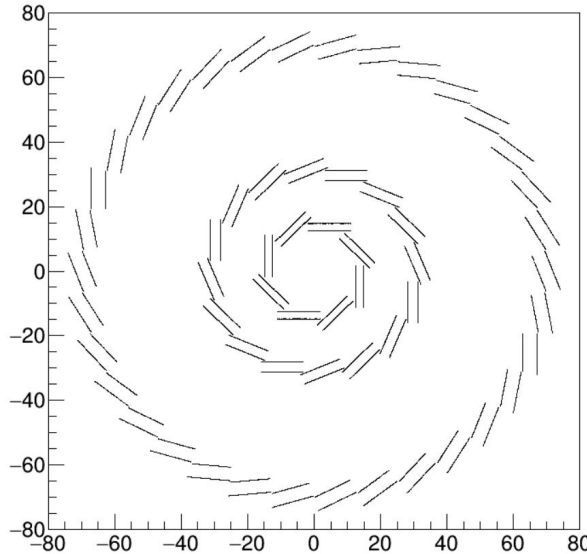
VXDCollection.position.y:VXDCollection.position.x



顶点探测器x-y平面视图

TDR_R3_01

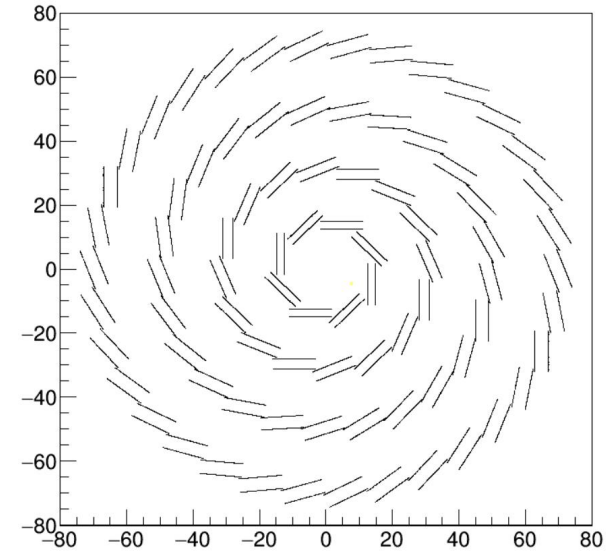
VXDCollection.position.y:VXDCollection.position.x



顶点探测器x-y平面视图

TDR_L_00

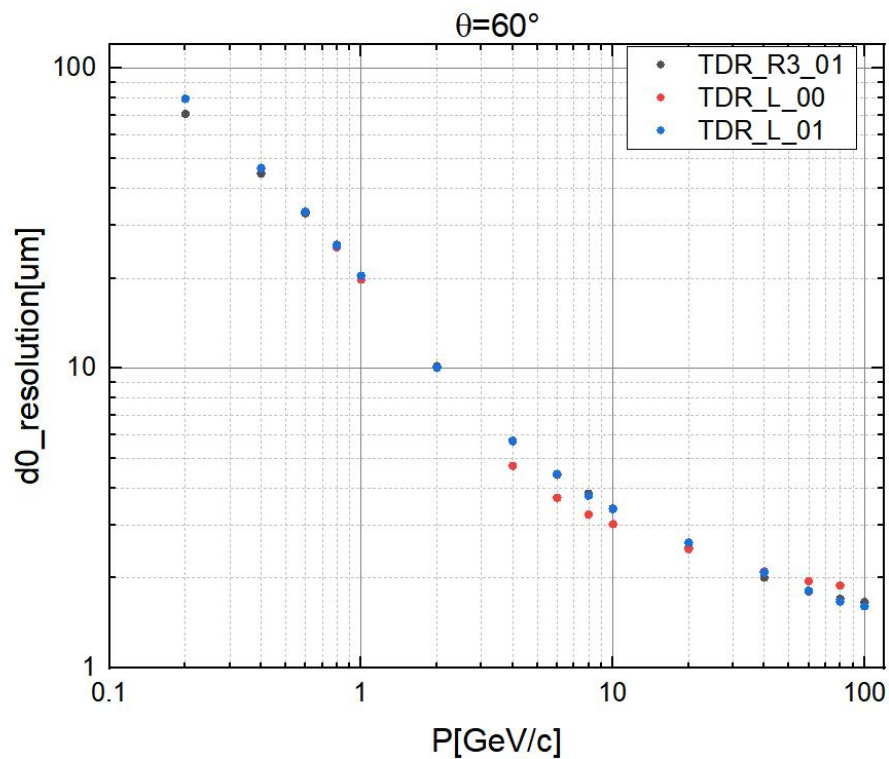
VXDCollection.position.y:VXDCollection.position.x



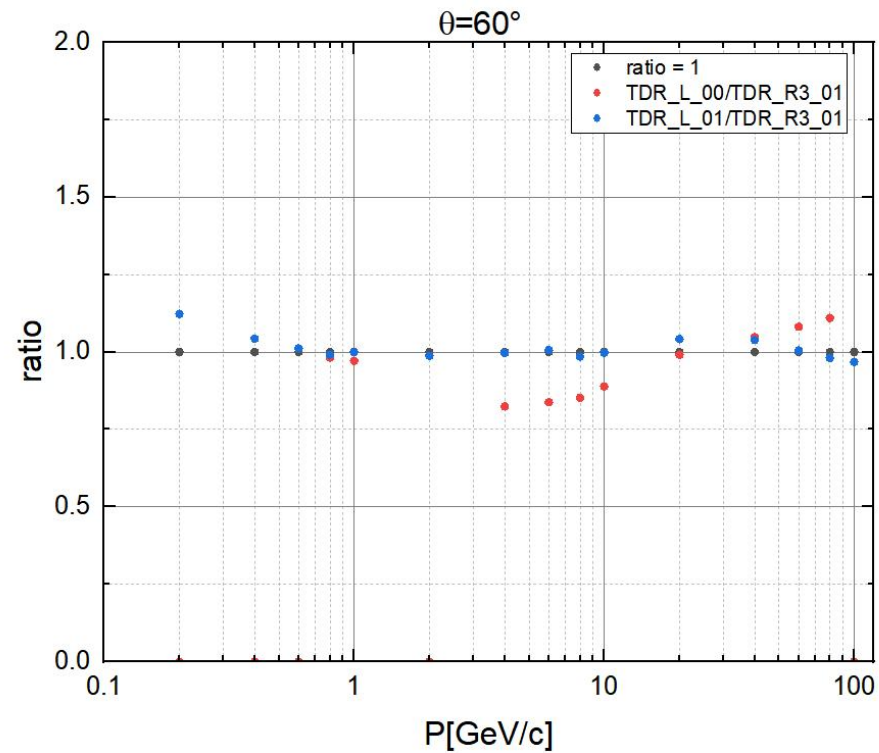
顶点探测器x-y平面视图

	TDR_L_00	TDR_R3_01	TDR_L_01
double-layer	r/mm	r/mm	r/mm
Layer 1	12.5	12.5	12.5
Layer 2	62.8	28.1	28.1
Layer 3		62.8	45.1
Layer 4			62.8

δd_0 随出射粒子动量的变化

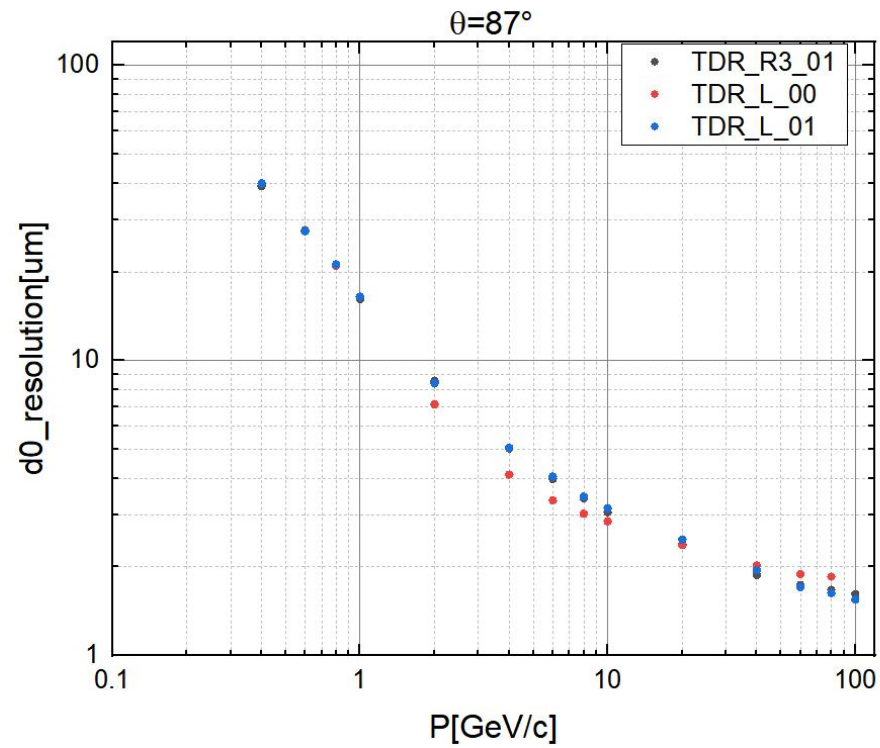


δd_0 比值随出射粒子动量的变化

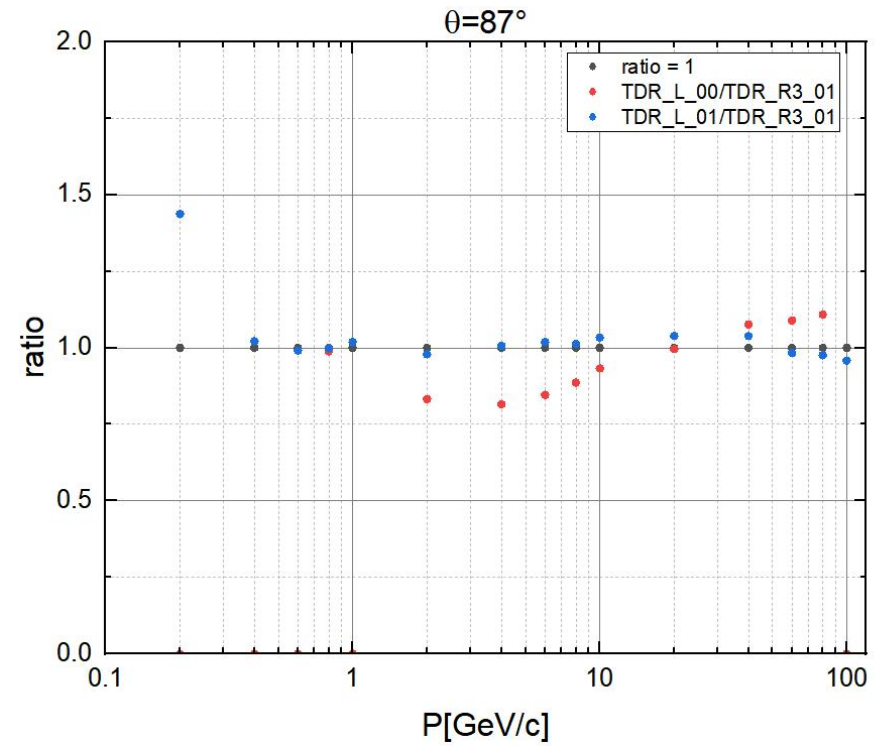


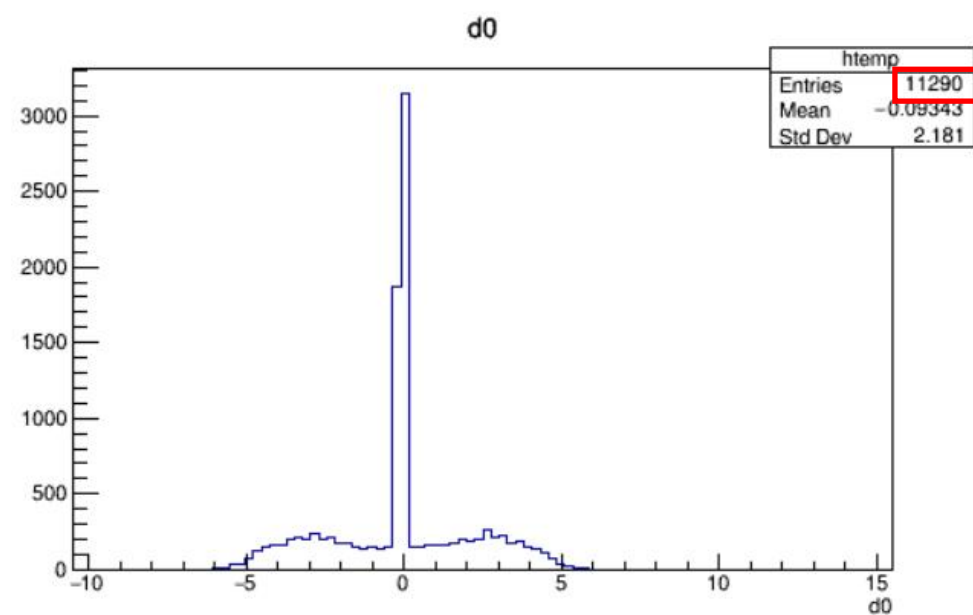
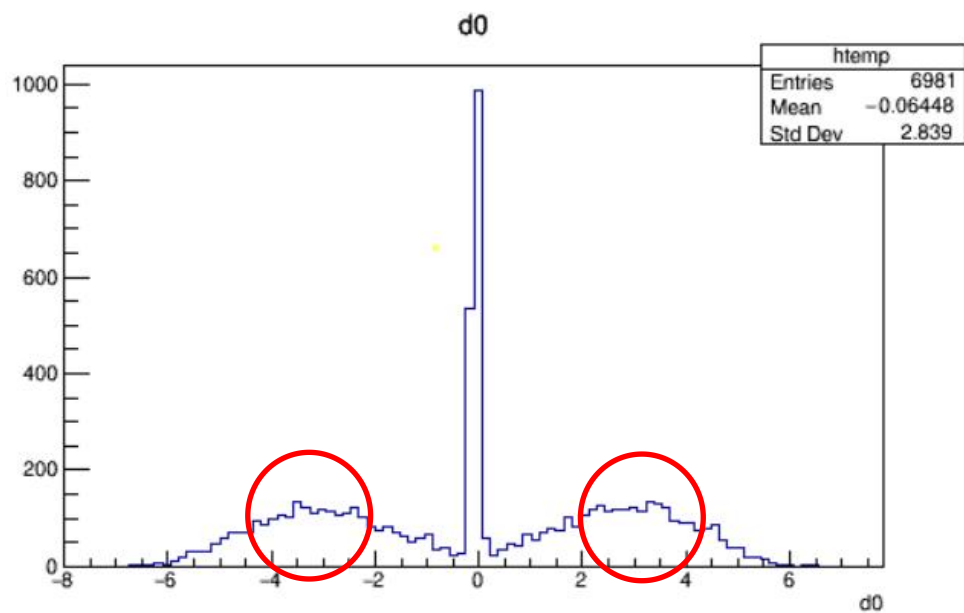
- 0.8~40GeV/c: 由于更小的物质质量, 具有两层Layer的VTX具有更好的d0分辨;
- 60~100GeV/c: 随着VTX层数的增多, d0分辨越好;

δd_0 随出射粒子动量的变化



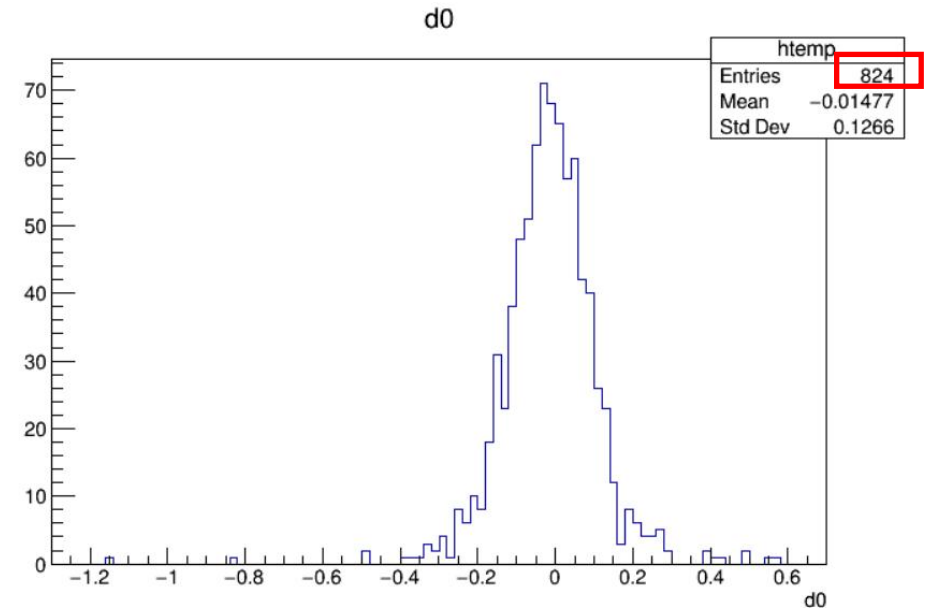
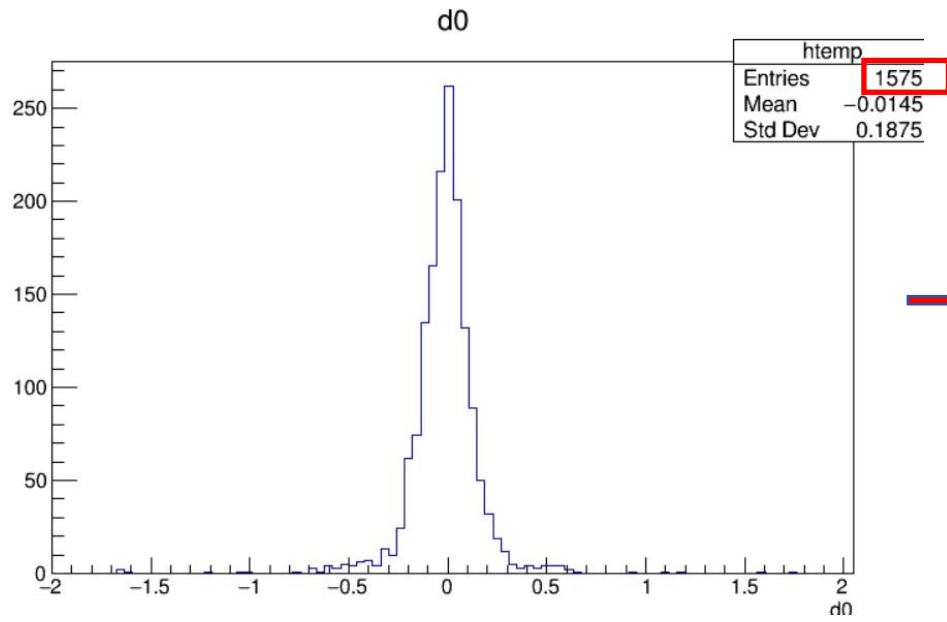
δd_0 比值随出射粒子动量的变化





问题:

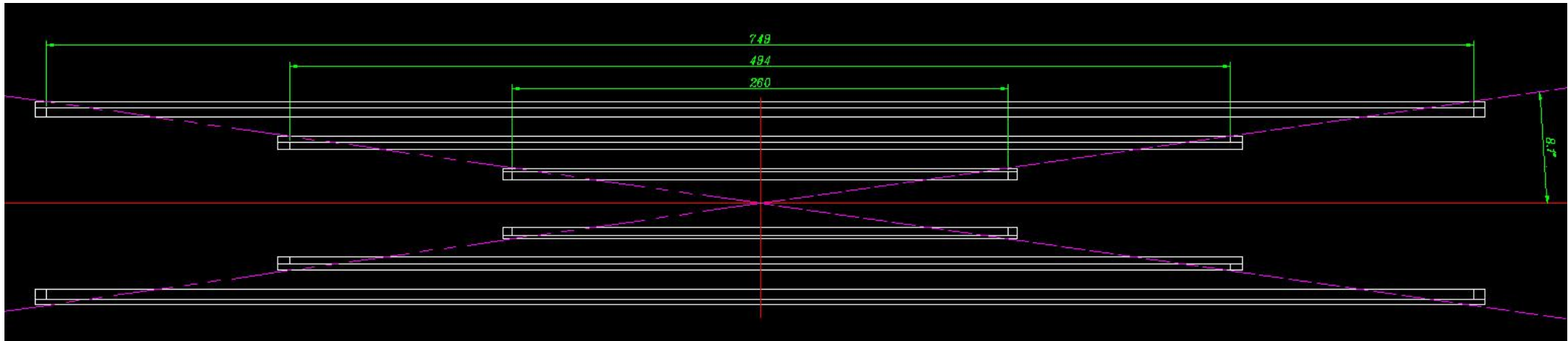
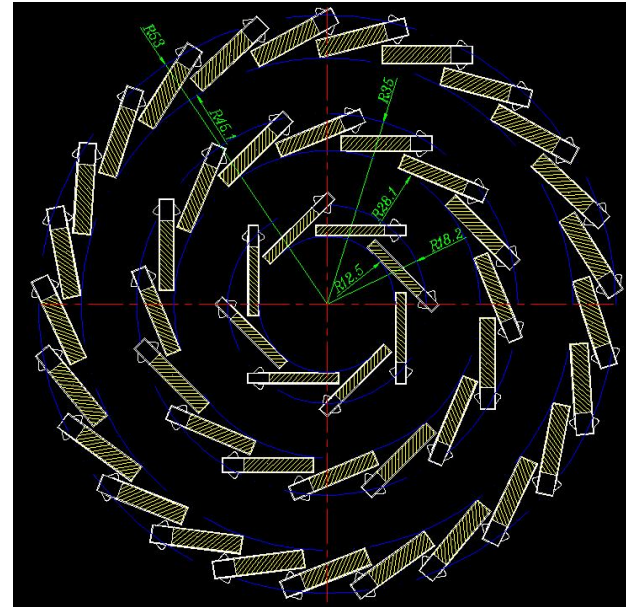
- 两侧有鼓包;
- 事例数增加;



问题：
探测效率小；

Backup-TDR_R3_00结构

layer	Size .mm (W x H x L mm)
inner	17.4x1.7x260
middle	17.4x2.5x486
outer	17.4x3.2 x749



Backup

	layerX	radius [mm]	Laddersupport _len[mm]	flex_thickness [um]	sensor_thickness [um]	ladder_num	sensor_num	offset	height
TDR_R3_00	layer1	12.5	260	258	50	8	10×2	7	1.7
	layer2	28.1	494	258	50	16	19×2	3.5(+8.4)	2.5
	layer3	45.1	749	258	50	25	29 ×2	10(+8.4)	3.2
TDR_R3_01	layer1	12.5	260	258	50	8	10×2	7	1.7
	layer2	28.1	494	258	50	16	19×2	3.5(+8.4)	2.5
	layer3	62.8	900	258	50	34	35×2	28	3.6
TDR_R3_02	layer1	12.5	260	258	50	8	10×2	7	1.7
	layer2	28.1	494	258	50	16	19×2	3.5(+8.4)	2.5
	layer3	80.5	1183	258	50	39	46×2	23.5(+8.4)	4.0
MOST2	layer1	15.6	272.9	763	50	10	10×2	1.5(+8.4)	2
	layer2	35.1	272.9	763	50	22	10×2	5(+8.4)	2
	layer3	55.9	272.9	763	50	32	10×2	9.6(+8.4)	2
TDR_R2_00	Layer1	12.5	260	258	50	8	10×2	7	1.7
	layer2	22.6	335	258	50	12	13×2	8.0	2.1
	layer3	62.8	900	258	50	34	35×2	28	3.6

Backup

	layerX	radius [mm]	Laddersupport _len[mm]	flex_thickness [um]	sensor_thickness [um]	ladder_num	sensor_num	offset	height
TDR_R2_01	layer1	12.5	260	258	50	8	10×2	7	1.7
	layer2	32.6	489	258	50	19	19×2	13	2.7
	layer3	62.8	900	258	50	34	35×2	28	3.6
TDR_R2_02	layer1	12.5	260	258	50	8	10×2	7	1.7
	layer2	42.7	643	258	50	22	25×2	8.4+9	3.1
	layer3	62.8	900	258	50	34	35×2	28	3.6
TDR_R2_03	layer1	12.5	260	258	50	8	10×2	7	1.7
	layer2	52.7	771	258	50	28	30×2	12+8.4	3.3
	layer3	62.8	900	258	50	34	35×2	28	3.6
TDR_L_00	layer1	12.5	260	258	50	8	10×2	7	1.7
	layer2	62.8	900	258	50	34	35×2	28	3.6
TDR_L_01	layer1	12.5	260	258	50	8	10×2	7	1.7
	layer2	28.1	494	258	50	16	19×2	3.5(+8.4)	2.5
	layer3	45.1	749	258	50	25	29 ×2	10(+8.4)	3.2
	layer4	62.8	900	258	50	34	35×2	28	3.6