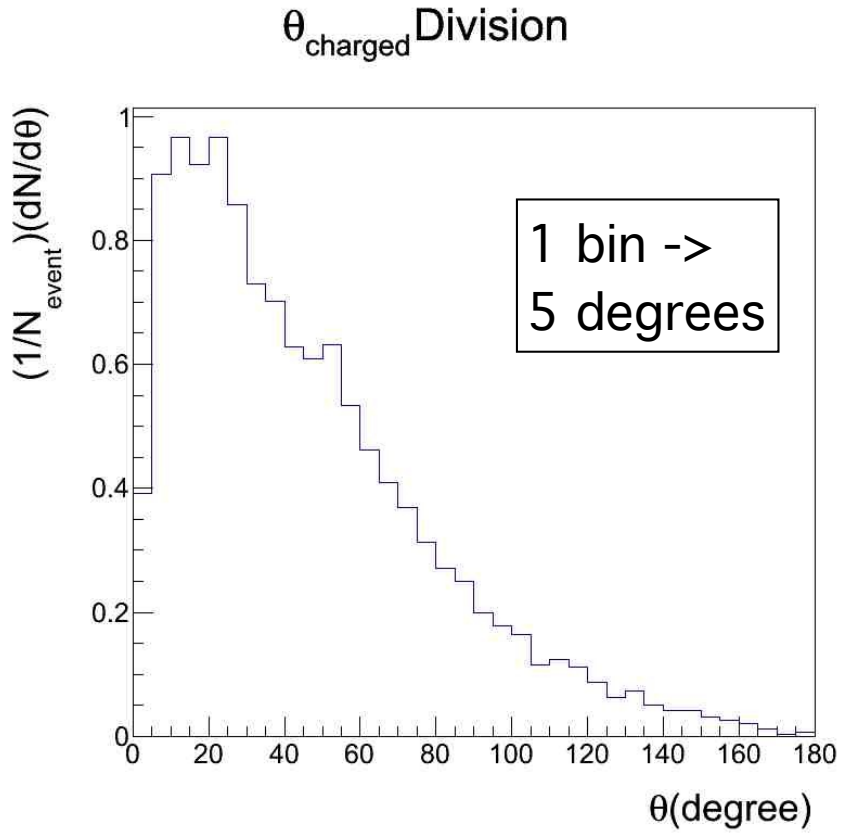
design of CHIMERA-like detector using AMD data

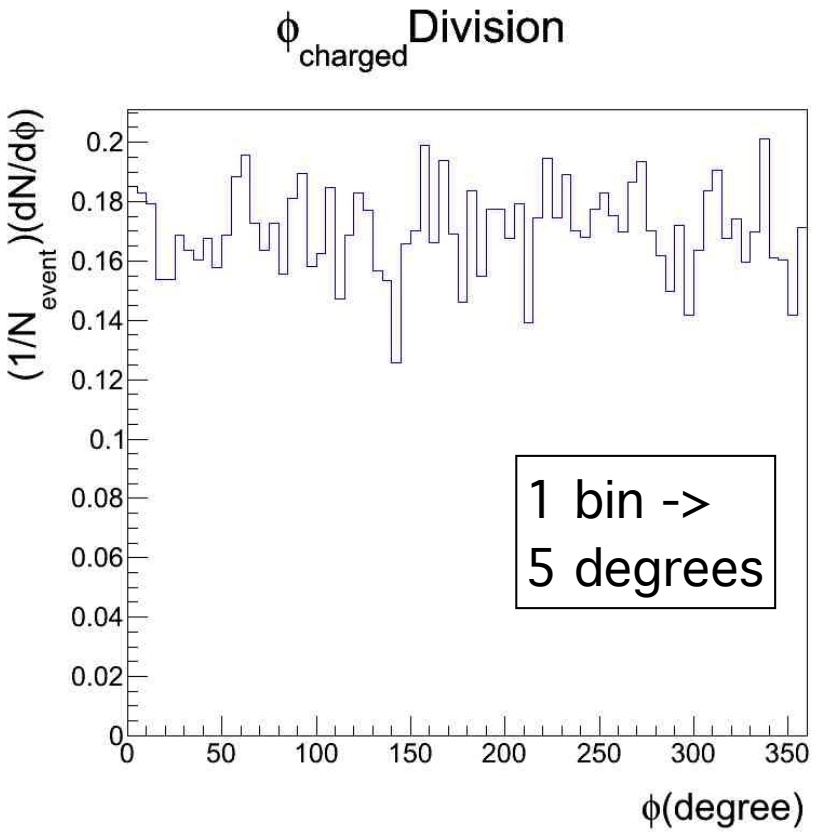
2014/ 03/ 21

Kim, ShinHyung

AMD data

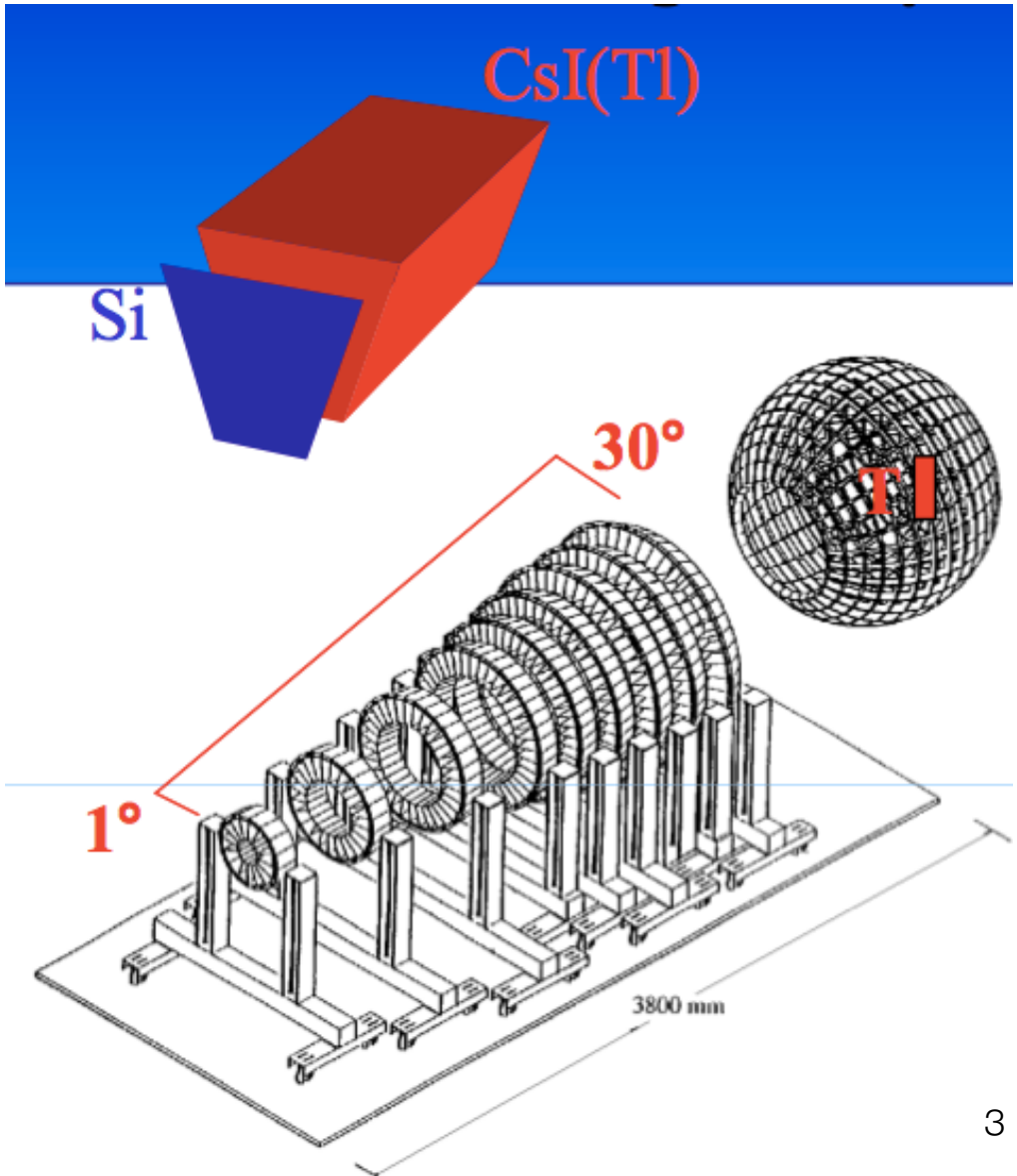
- beam: ^{132}Sn, 20 MeV/u
- target: ^{124}Sn





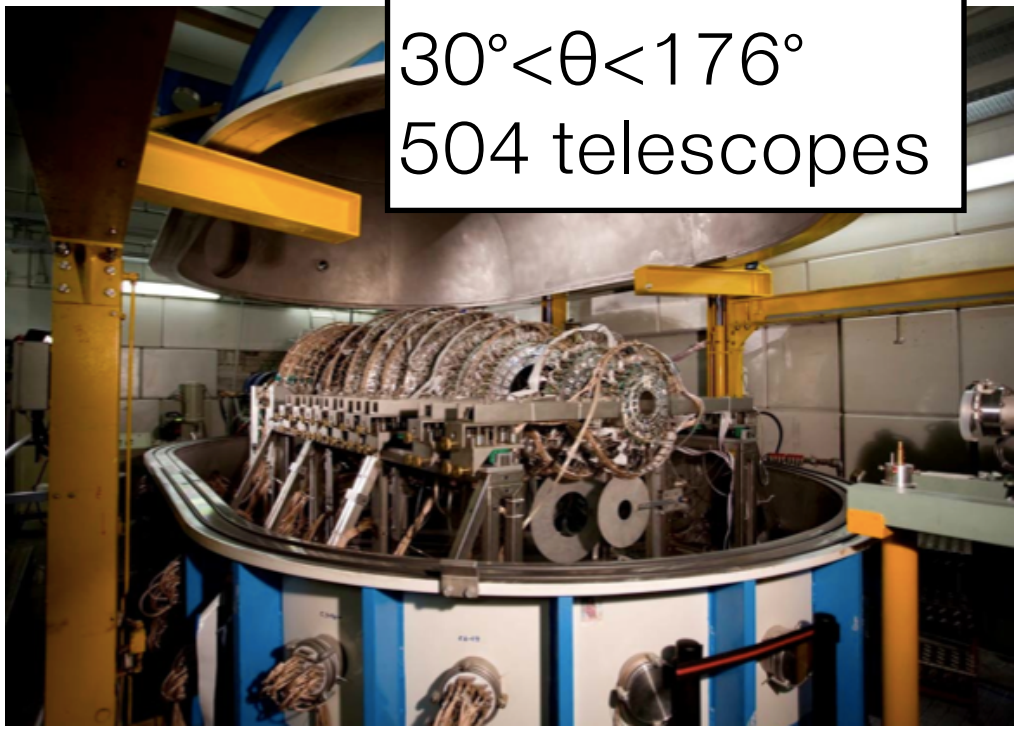
CHIMERA@LNS

(**C**harge **H**eavy **I**on **M**ass and **E**nergy **R**esolving **A**rray)

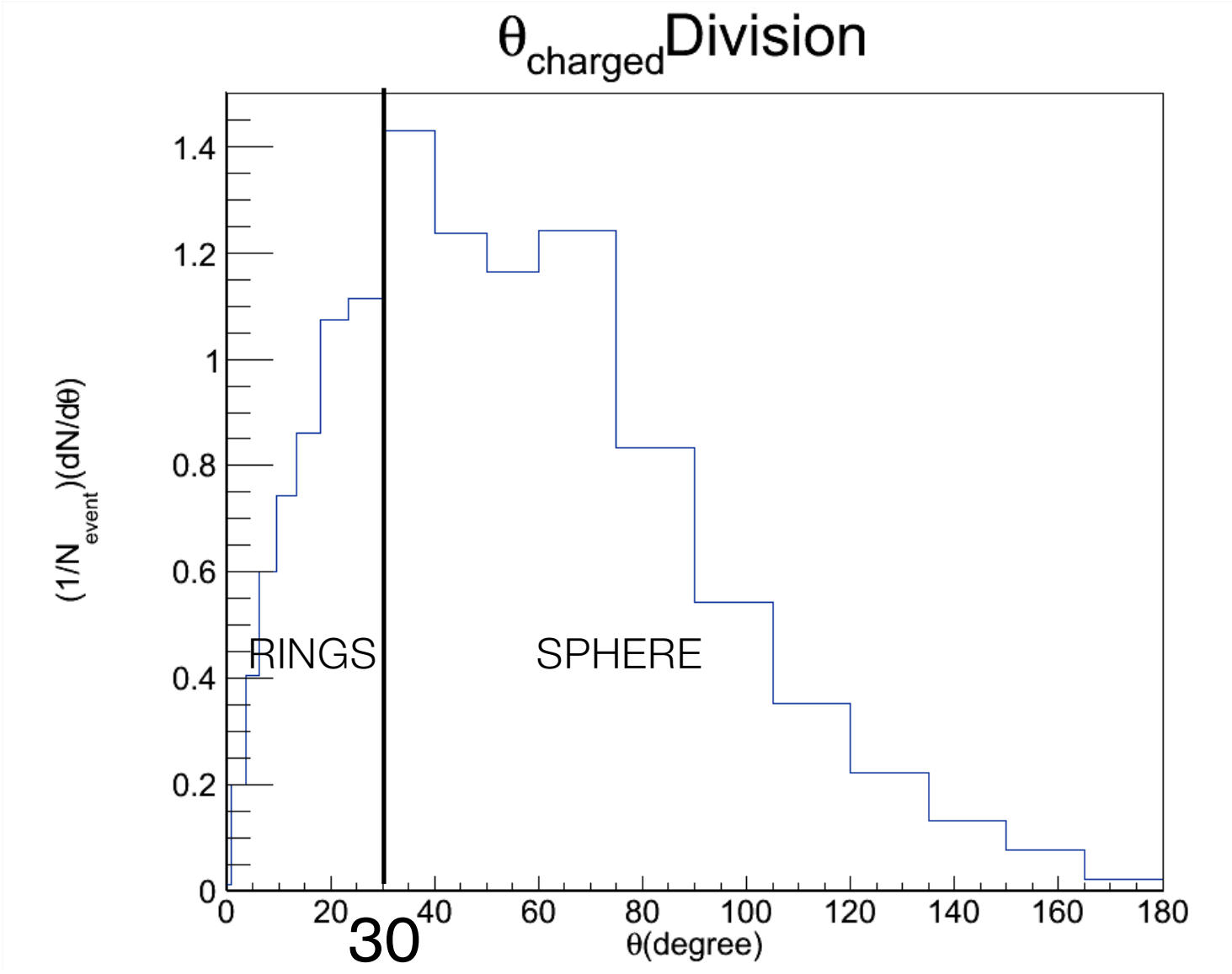


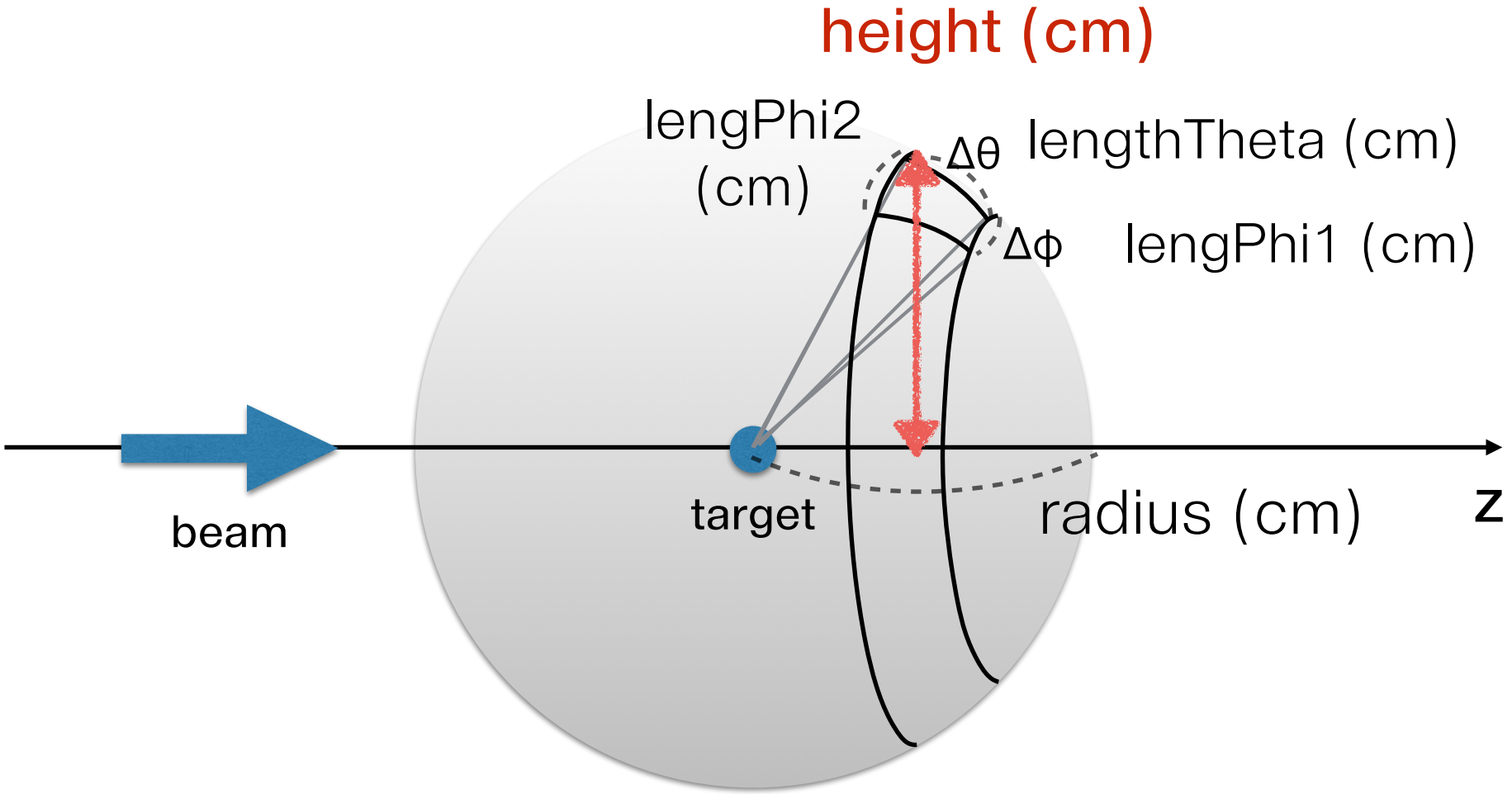
- **RINGS**:
1°<θ<30°
688 telescopes

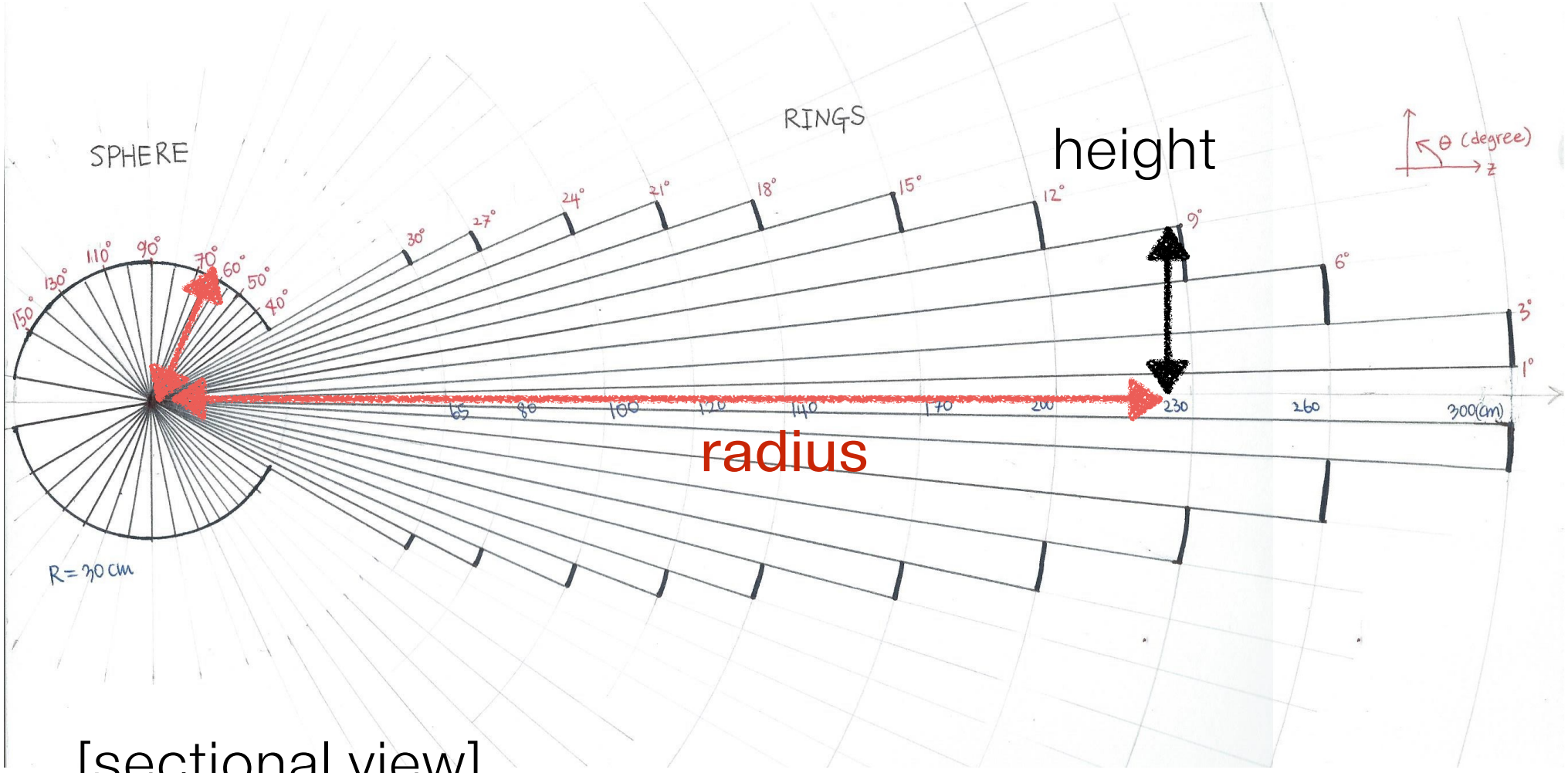
- **SPHERE**:
30°<θ<176°
504 telescopes



- take θ range of 1~165° (98.3% of 4π)




height (cm)
lengPhi2
(cm)
Δθ
lengthTheta (cm)
Δϕ
lengPhi1 (cm)
beam
target
radius (cm)
z

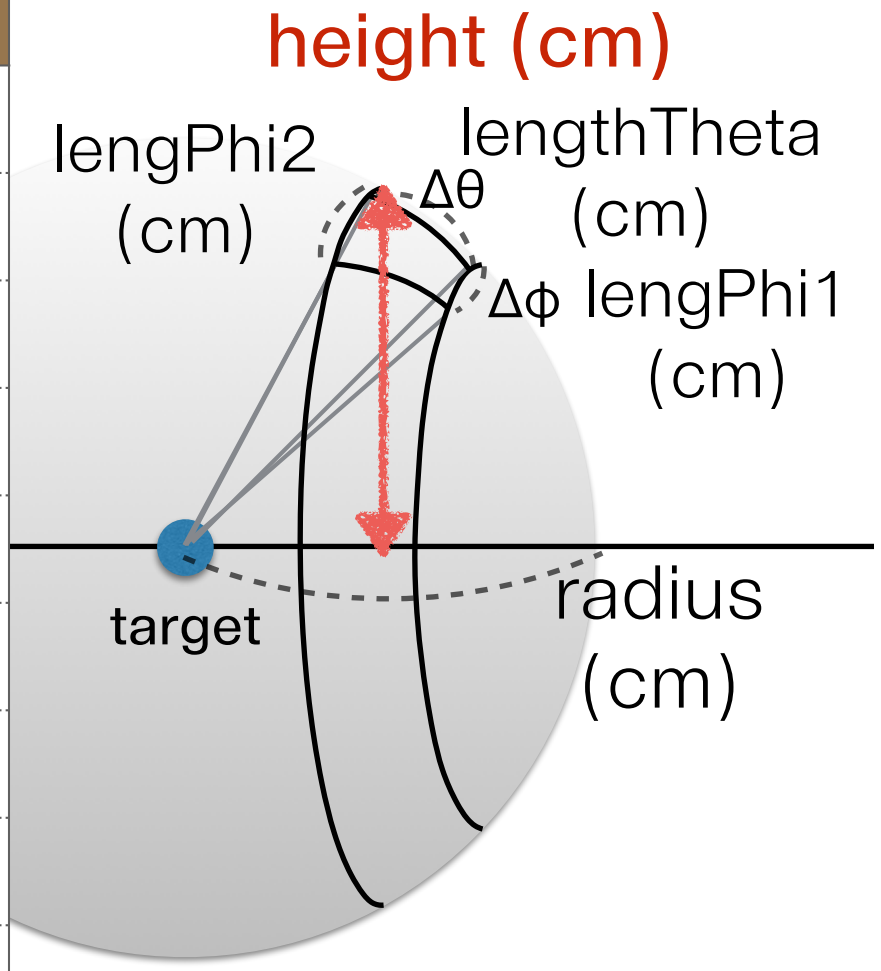


[sectional view]

(simply considered SiCsI detectors as bold lines)

SPHERE

theta (deg.)	#of det.	radius(cm)	lengTheta (cm)	lengPhi1 (cm)	lengPhi2 (cm)	occupancy (%)
30~40	18	20	3.49	3.49	4.49	7.95
40~50	24	20	3.49	3.37	4.01	5.15
50~60	28	20	3.49	3.44	3.89	4.16
60~75	21	20	5.24	5.18	5.78	5.91
75~90	24	20	5.24	5.06	5.24	3.48
90~105	24	20	5.24	5.24	5.06	2.26
105~120	21	20	5.24	5.78	5.18	1.67
120~135	17	20	5.24	6.40	5.23	1.31
135~150	12	20	5.24	7.40	5.24	1.11
150~165	7	20	5.24	8.98	4.65	1.11
~~165~180~~	~~1~~	~~20~~	~~5.24~~	~~32.52~~	~~0.00~~	~~2.19~~

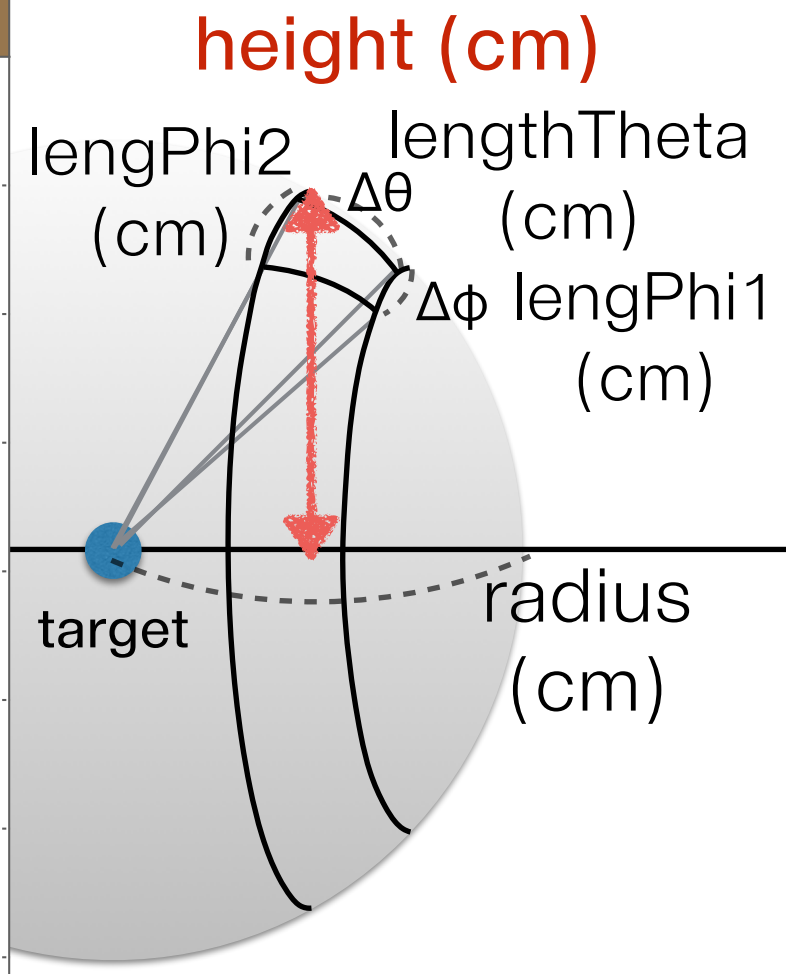


SPHERE (occupancy ~5%)

theta (deg.)	#of det.	radius (cm)	lengTheta (cm)	lengPhi 1 (cm)	lengPhi 2 (cm)	occupancy (%)
30~40	29	20	3.49	2.17	2.79	4.93
40~50	29	20	3.49	3.23	3.85	4.95
50~60	29	20	3.49	4.01	4.53	4.86
60~70	29	20	3.49	6.05	6.56	4.84
70~80	29	20	3.49	8.43	8.84	4.87
80~90	29	20	3.49	11.25	11.42	4.74
90~100	29	20	3.49	15.71	15.47	4.73
100~110	29	20	3.49	20.63	19.68	4.65
110~120	29	20	3.49	23.62	21.77	4.73
120~135	29	20	5.24	21.77	17.77	4.46
135~150	29	20	5.24	29.62	20.94	4.43
150~170	29	20	6.98	31.42	10.91	4.45
~~170~180~~	~~29~~	~~20~~	~~3.49~~	~~21.82~~	~~0.00~~	~~1.04~~

8 RINGS

theta (deg.)	#of det.	radius (cm)	length The (cm)	lengPh i1 (cm)	lengPh i2 (cm)	height (cm)	occup ancy (%)
~~0~1~~	~~1~~	~~200.~~	~~3.49~~	~~0.00~~	~~21.93~~	~~3.49~~	~~1.24~~
1~2.3	5	159.	3.49	3.49	7.88	6.27	1.43
2.3~4.6	6	84.7	3.49	3.49	7.14	6.82	4.15
4.6~7.3	11	75.9	3.49	3.49	5.47	9.58	4.04
7.3~10.5	14	61.6	3.49	3.49	5.04	11.23	4.36
10.5~14.4	17	51.8	3.49	3.49	4.75	12.85	4.28
14.4~18.8	20	44.8	3.49	3.49	4.54	14.46	4.24
18.8~23.9	23	39.6	3.49	3.49	4.38	16.03	4.35
23.9~30	24	32.9	3.49	3.49	4.31	16.44	4.33



back-up