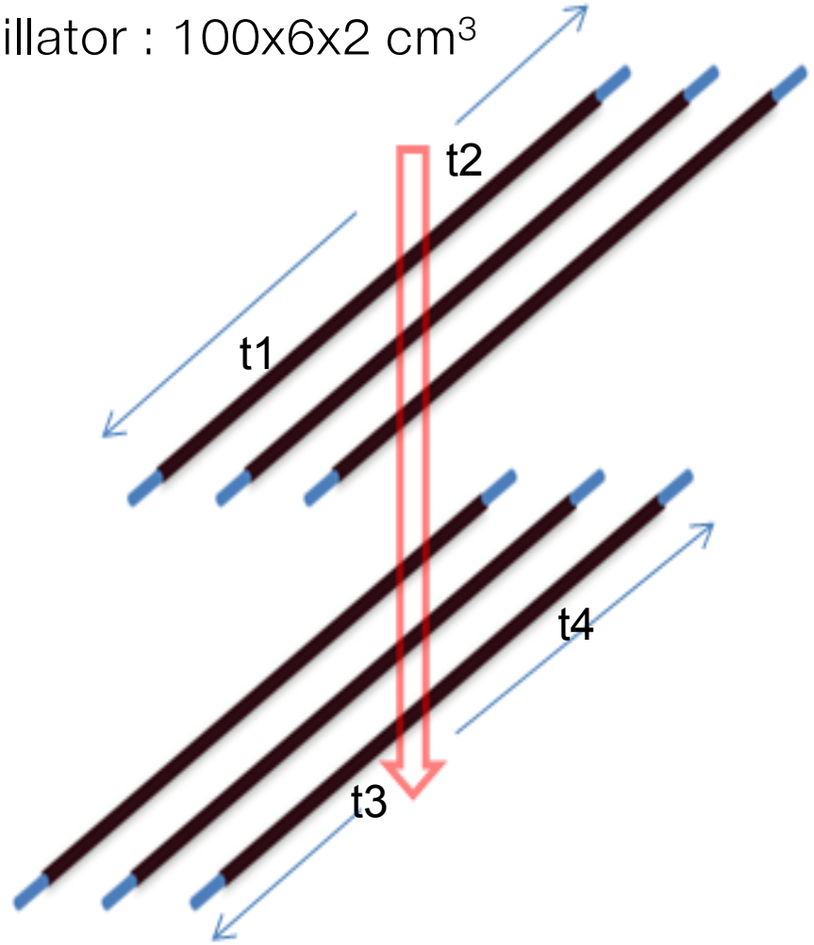
Group Meeting

Cosmic Test
LAMPS

Jaebeom

Cosmic Ray Test

Scintillator : 100x6x2 cm^3



1. Coincidence Trigger
2. 1set ≃ 10000 events data taken

- Calculate ToF, Position
- Calculate Energy, Momentum

Data Correction

1. Dark Current Cut

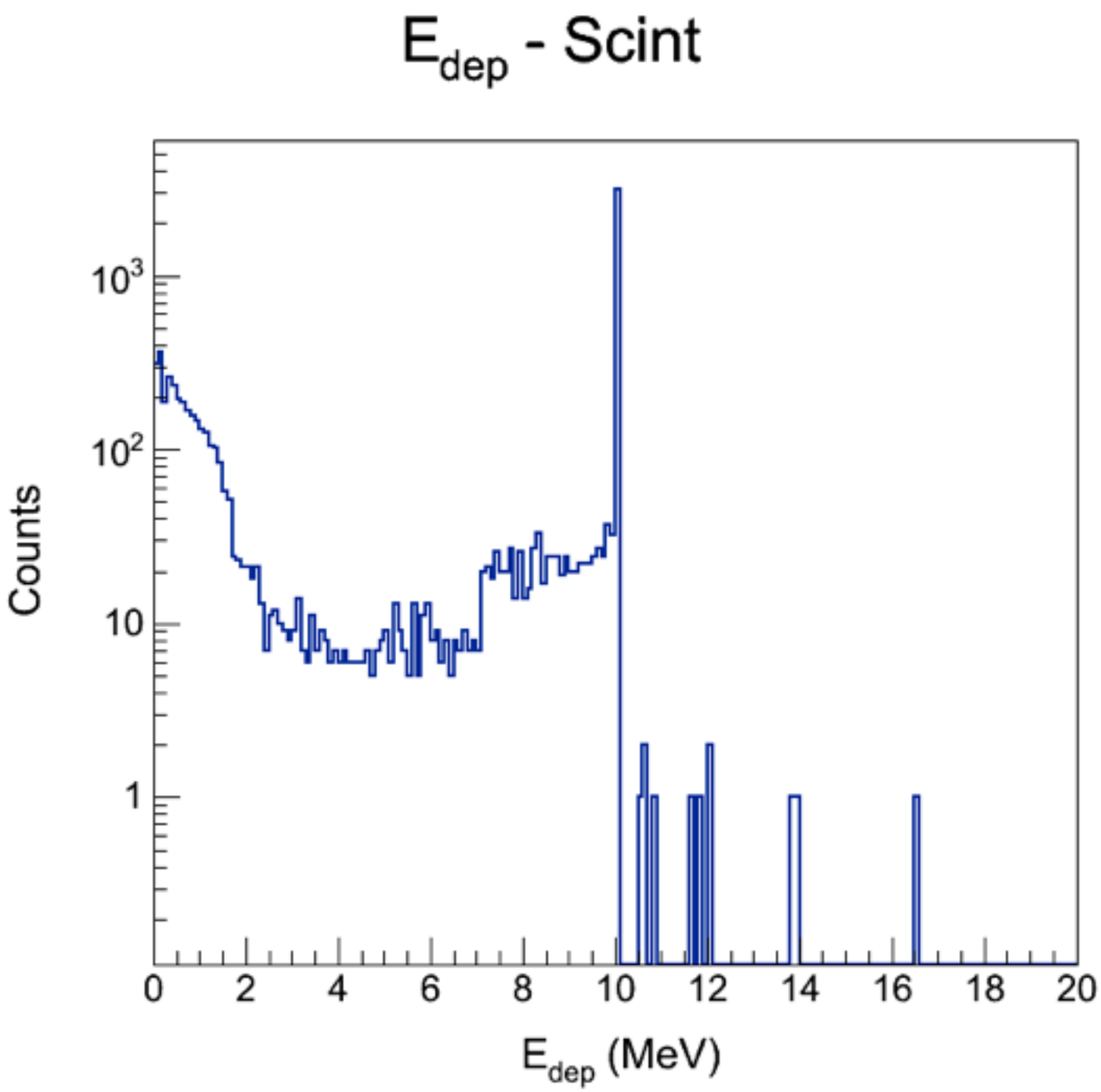
2. Slewing Correction

3. t_0 Calibration

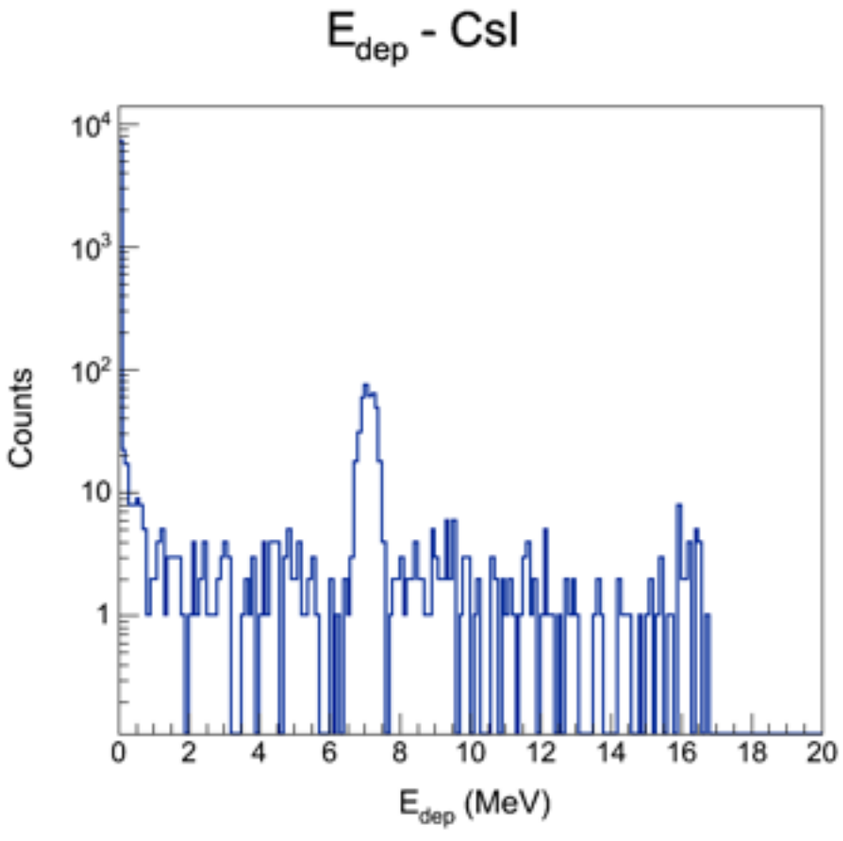
LAMPS

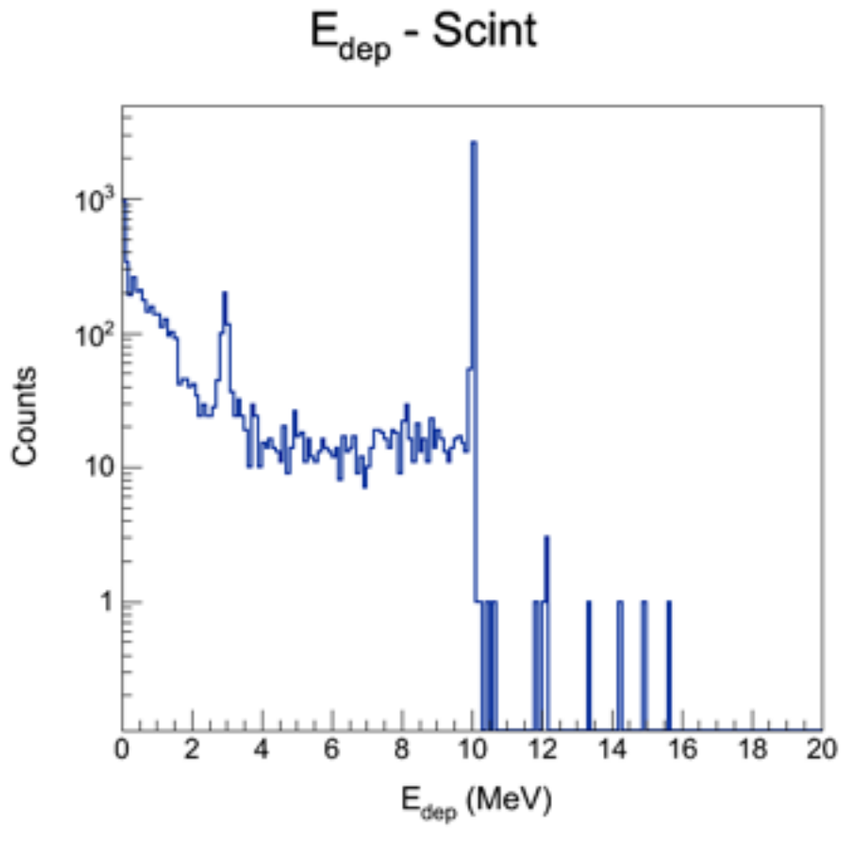
- Neutron Simulation
- Si-CsI mass fitting

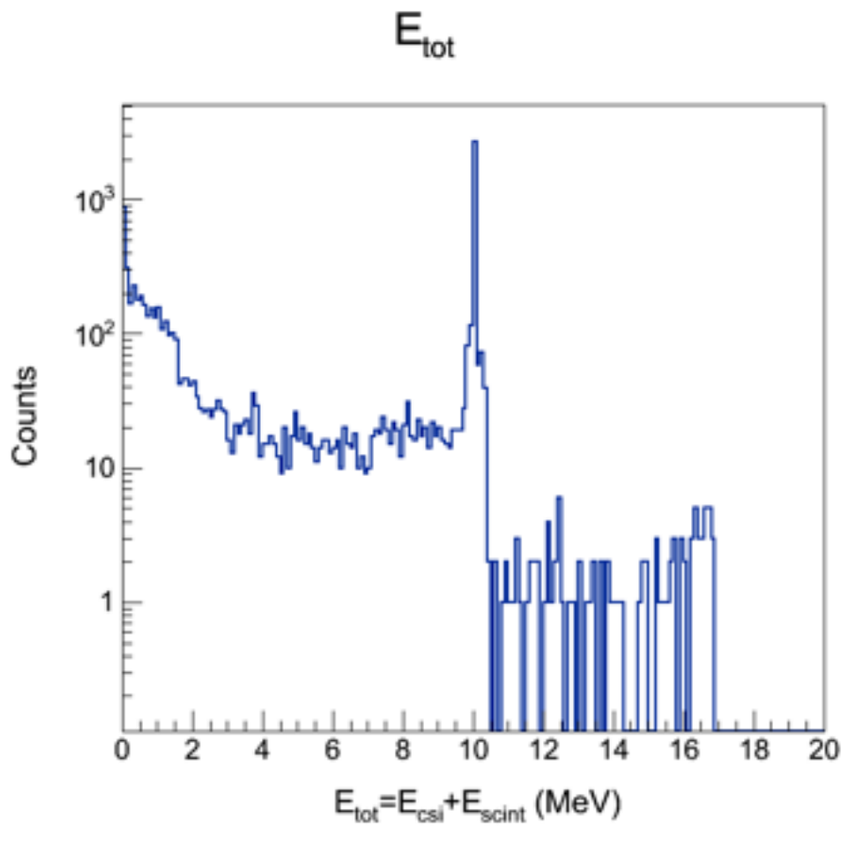
Neutron detector simulation without Si-CsI 10MeV neutron



Neutron detector simulation with Si-CsI 10MeV neutron

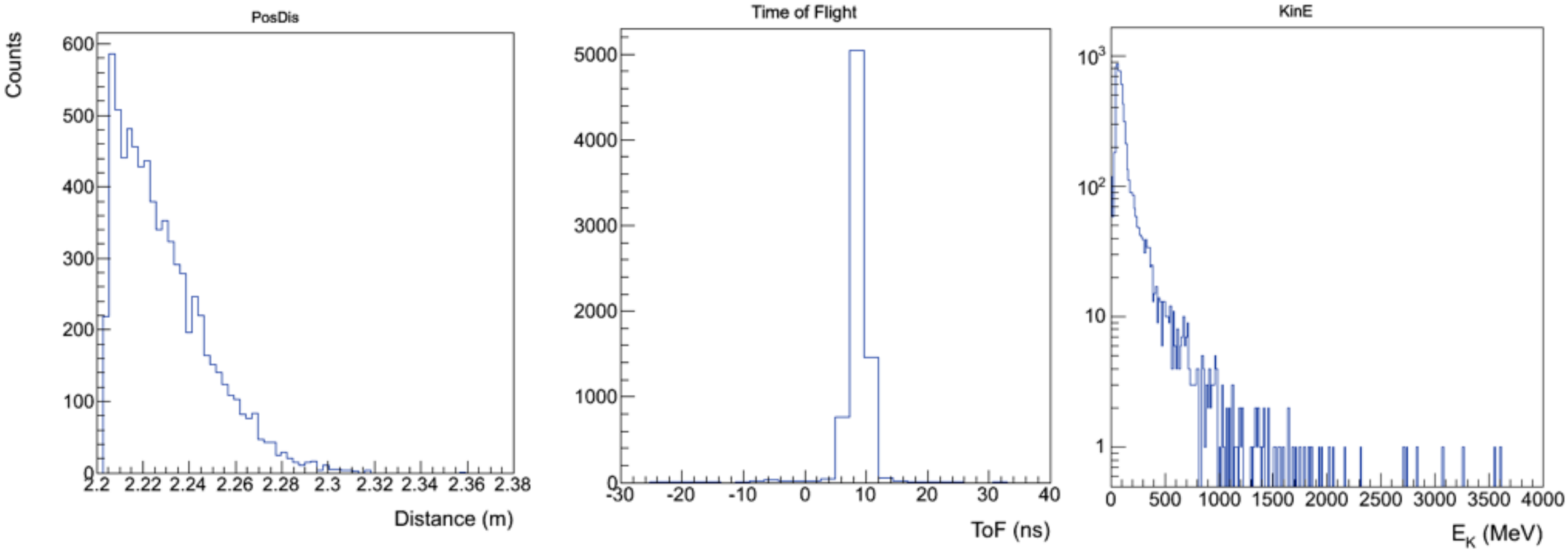






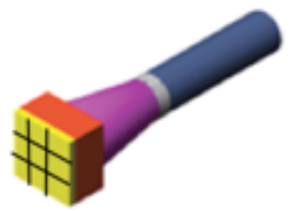
Back- up

Result

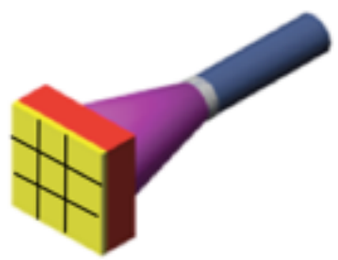

PosDis
Counts
600
500
400
300
200
100
0
2.2
2.22
2.24
2.26
2.28
2.3
2.32
2.34
2.36
2.38
Distance (m)
Time of Flight
5000
4000
3000
2000
1000
0
-30
-20
-10
0
10
20
30
40
ToF (ns)
KinE
10^3
10^2
10
1
0
500
1000
1500
2000
2500
3000
3500
4000
E_K (MeV)

SiCsI Geometry – with JI Kim

Total 58 detector units
($17.5^{o} < \theta_{lab} < 77.5^{o}$)
9 x 9 x 0.01 cm^3 Si (3 x 3 Pad)
9 x 9 x 5 cm^3 CsI (PMT readout)



Total 35 detector units
($78^{o} < \theta_{lab} < 150^{o}$)
15 x 15 x 0.01 cm^3 Si (3 x 3 Pad)
15 x 15 x 5 cm^3 CsI (PMT readout)

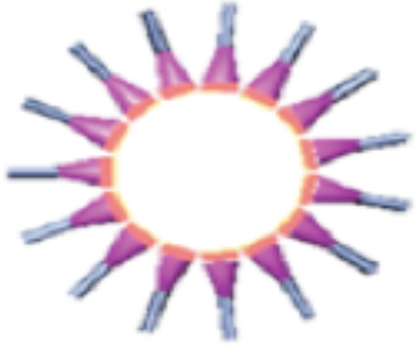


CsI(T1) cover polar angle 17.5° ~ 150°
17.5° ~ 77.5° : 4 detector pieces
(15° interval)

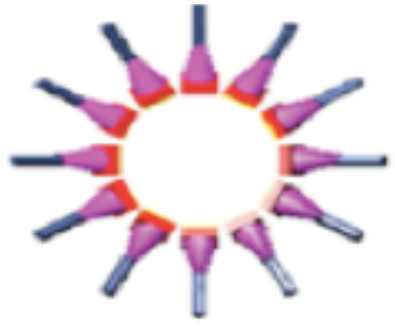
78° ~ 150° : 3 detector pieces
(24° interval)

8units **12units** **18units** **20units**
25° **40°** **55°** **70°**

15units
90°



12units
114°

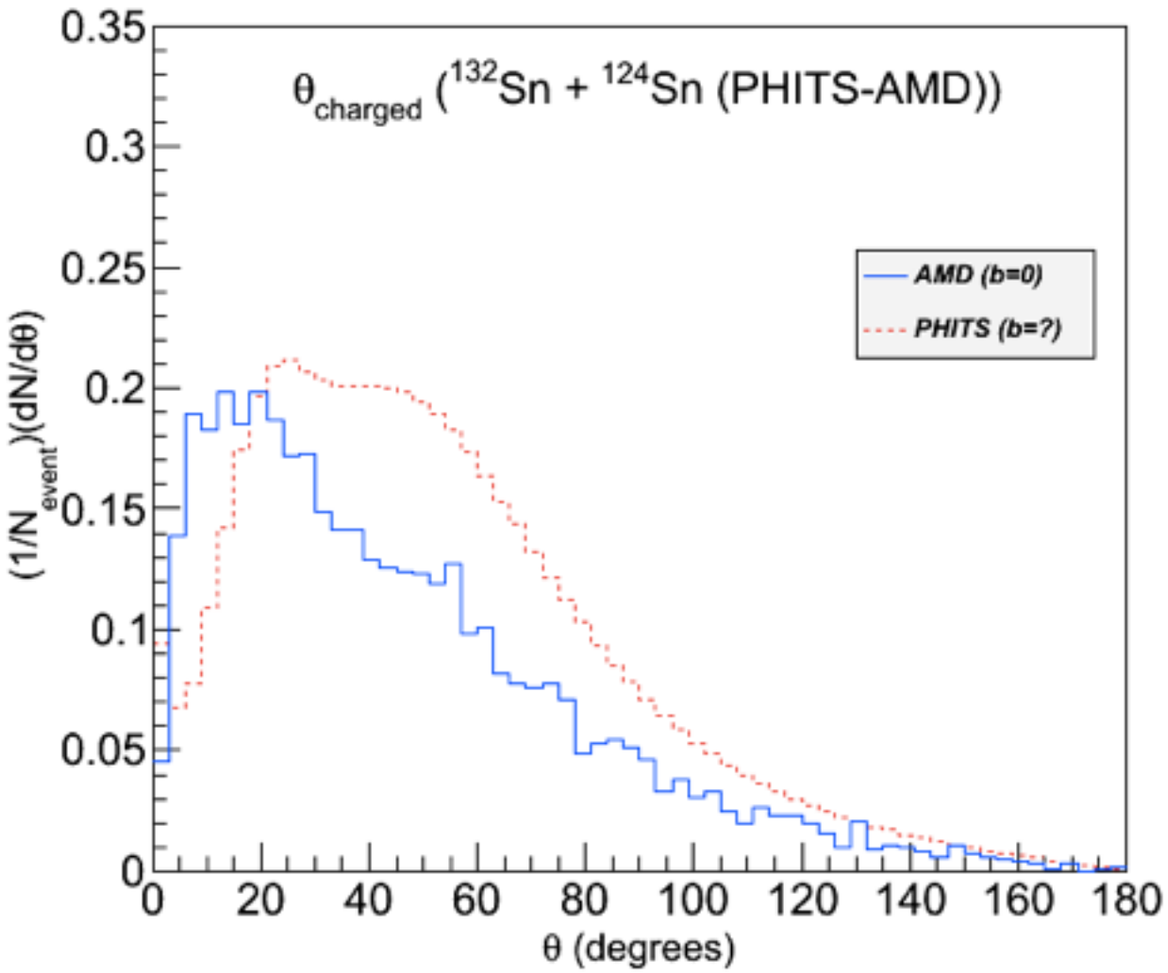


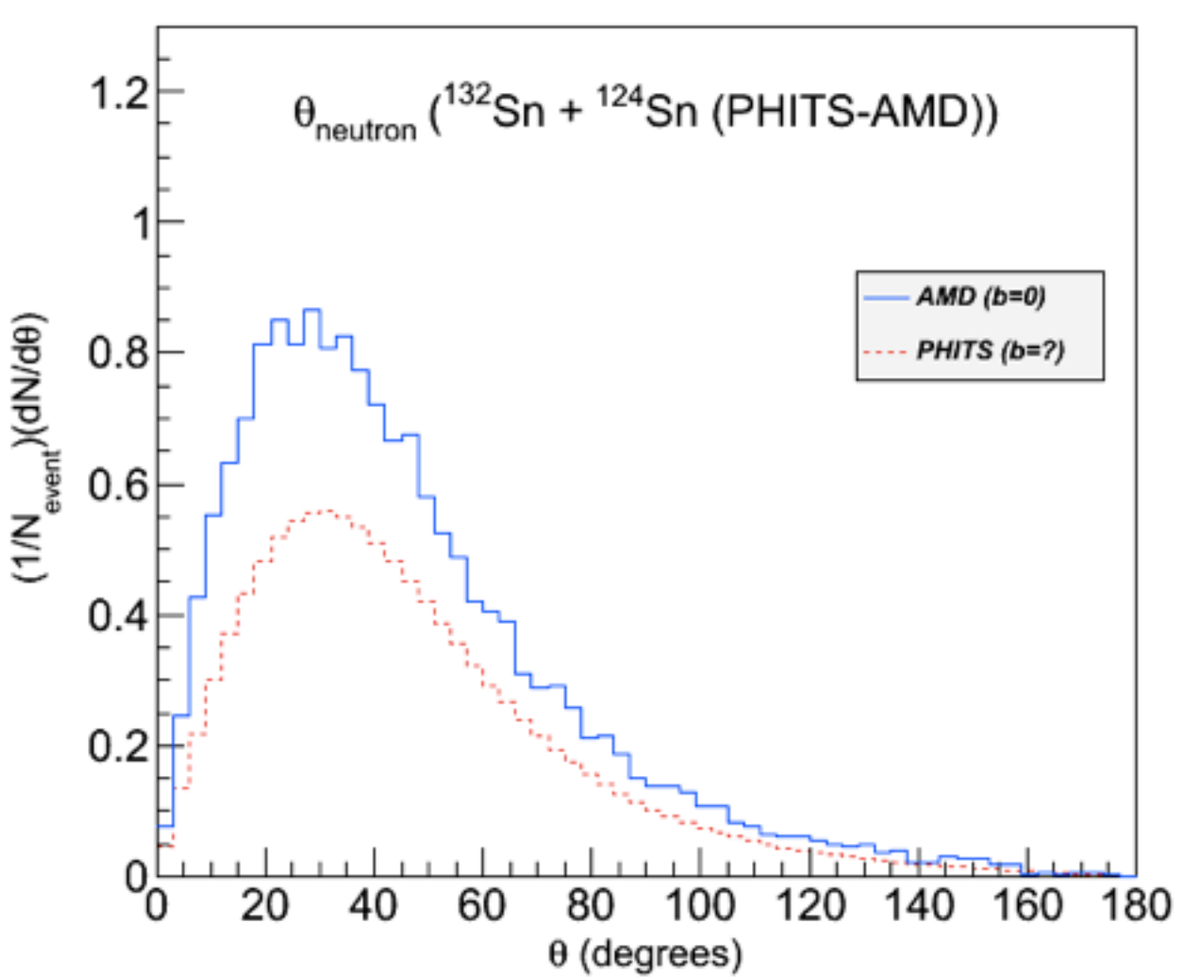
8units
138°

Det.CoverRange

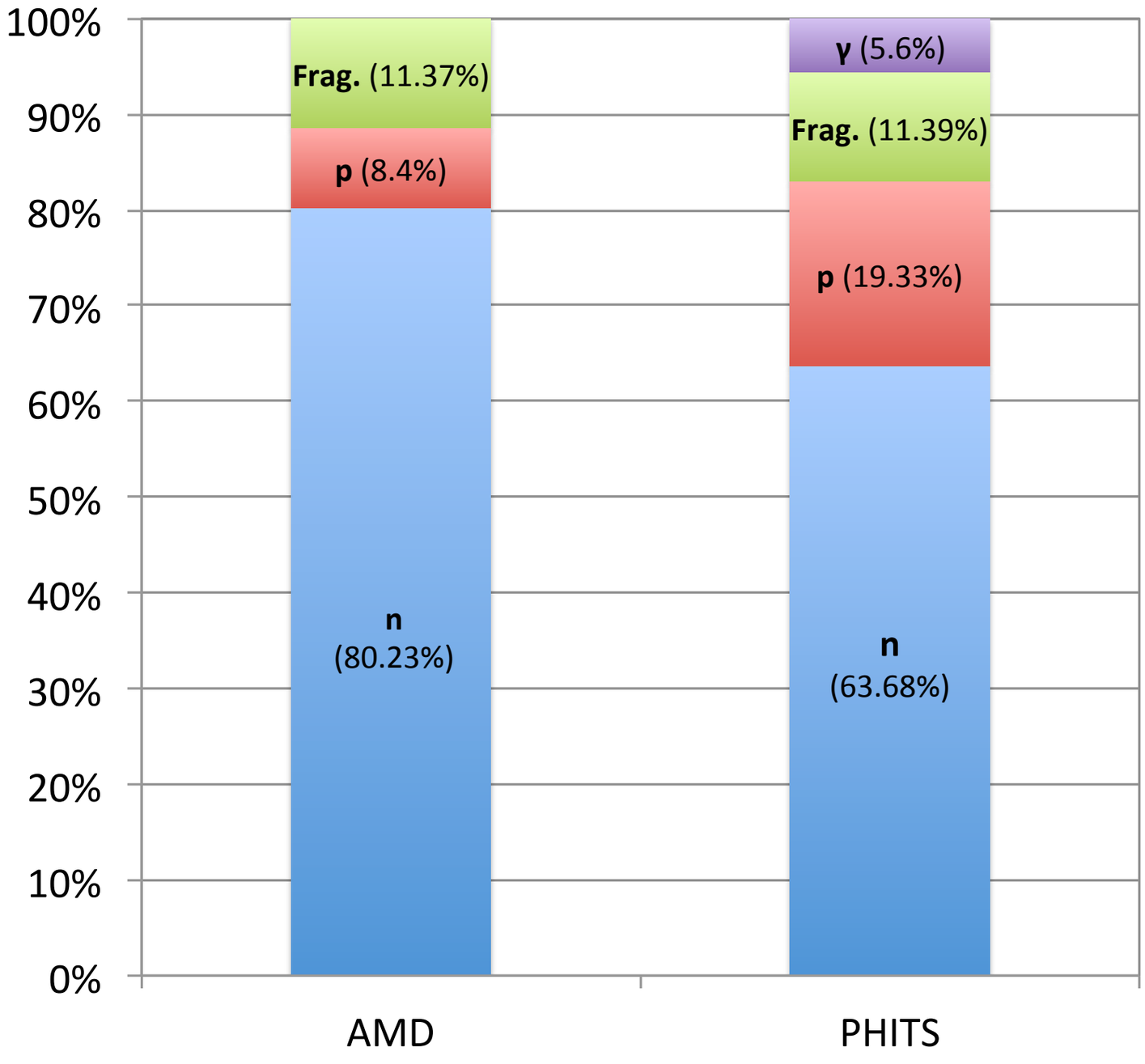
	N_gen(△θ)	N_det(△θ)	Det.CovRange (%) (simulation)	Det.CovRange (%) (geometrical)	# of particle/ Det.cell/event	Occupancy
1 : (17.5°<θ<32.5°)	2.67	1.53	57.25	58.43	0.191	0.0156
2 : (32.5°<θ<47.5°)	1.98	1.14	57.56	57.62	0.095	0.0077
3 : (47.5°<θ<62.5°)	1.71	1.14	66.88	67.81	0.063	0.0052
4 : (62.5°<θ<77.5°)	1.17	0.73	62.33	65.69	0.037	0.0030
5 : (77.5°<θ<102°)	1.10	0.84	76.36	79.11	0.056	0.0046
6 : (102°<θ<126°)	0.56	0.37	67.47	70.70	0.031	0.0025
7 : (126°<θ<150°)	0.25	0.14	57.03	64.35	0.018	0.0014

AMD&PHITS – Theta Distribution (Charged/Neutron)





AMD & PHITS



AMD : $^{132}Sn + ^{124}Sn$ - (20 MeV/u)
impact parameter : b = 0
N_{event}=2010

PHITS : $^{132}Sn + ^{124}Sn$ - (18.5 MeV/u)
impact parameter : wide
N_{event}=272018