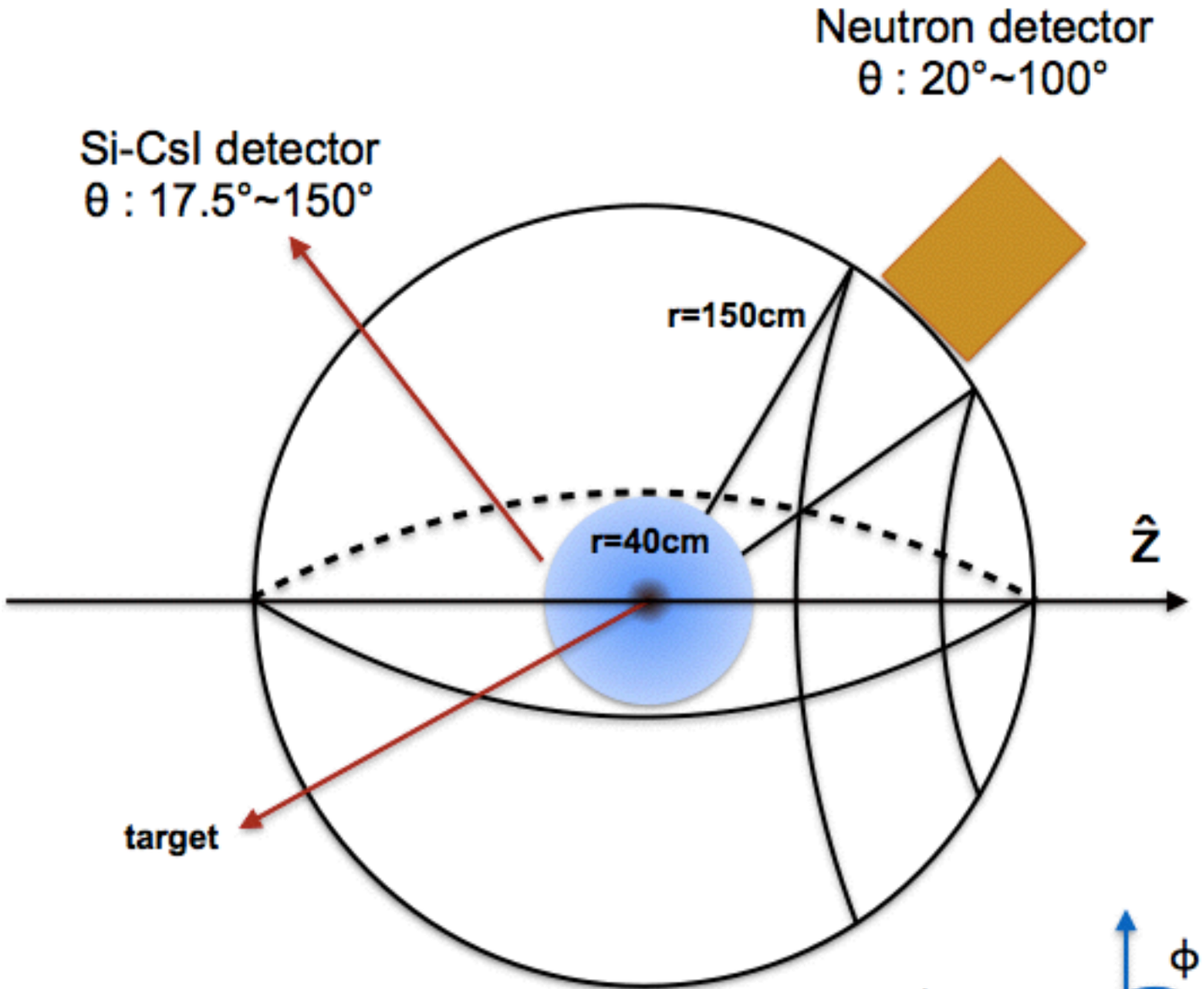
Group Meeting

Status of LAMPS-low simulation

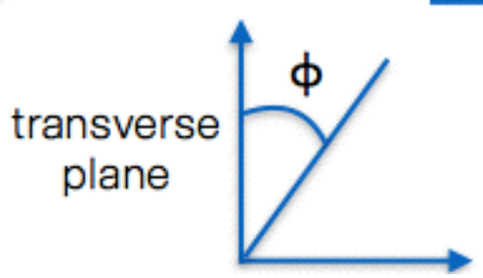
Jaebeom, Jaehee

Neutron detector geometry



Neutron detecter size : 15x15x20cm^3

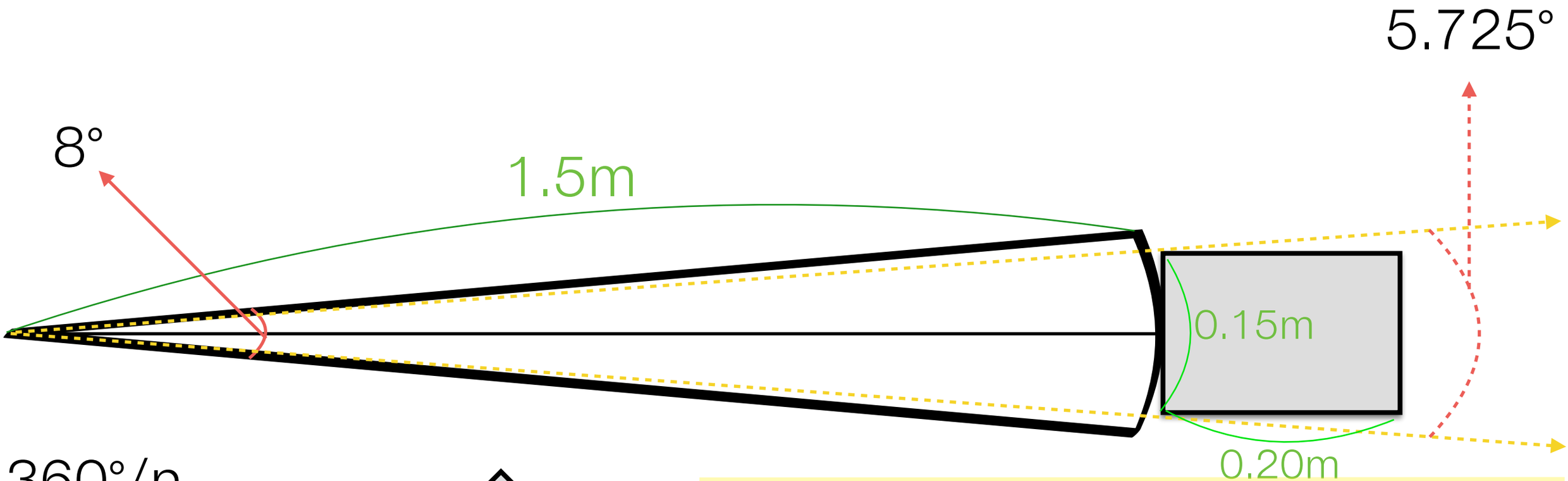
	# of Det.
ring 1 : 20° ~ 28°	20
ring 2 : 28° ~ 36°	30
ring 3 : 36° ~ 44°	36
ring 4 : 44° ~ 52°	43
ring 5 : 52° ~ 60°	49
ring 6 : 60° ~ 68°	53
ring 7 : 68° ~ 76°	57
ring 8 : 76° ~ 84°	60
ring 9 : 84° ~ 92°	61
ring 10 : 92° ~ 100°	61
all	470

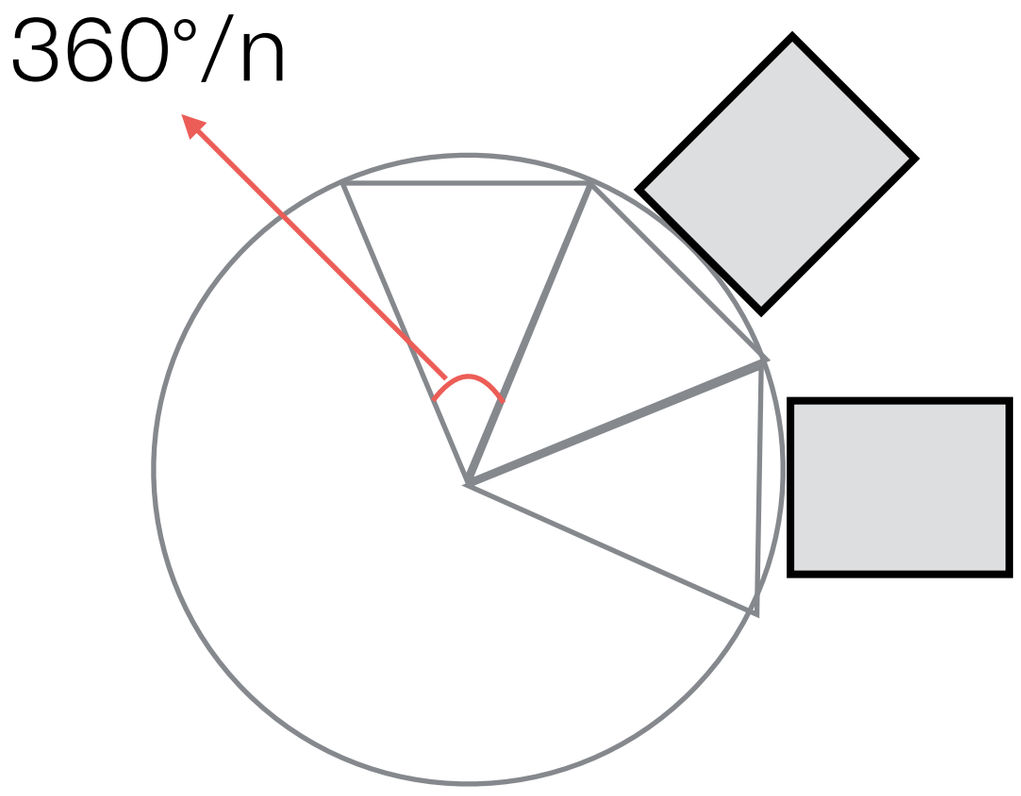


Non-realistic design - just to see the scattering of neutrons in CsI detector

Realistic : $\phi = \pm(45° \sim 135°)$

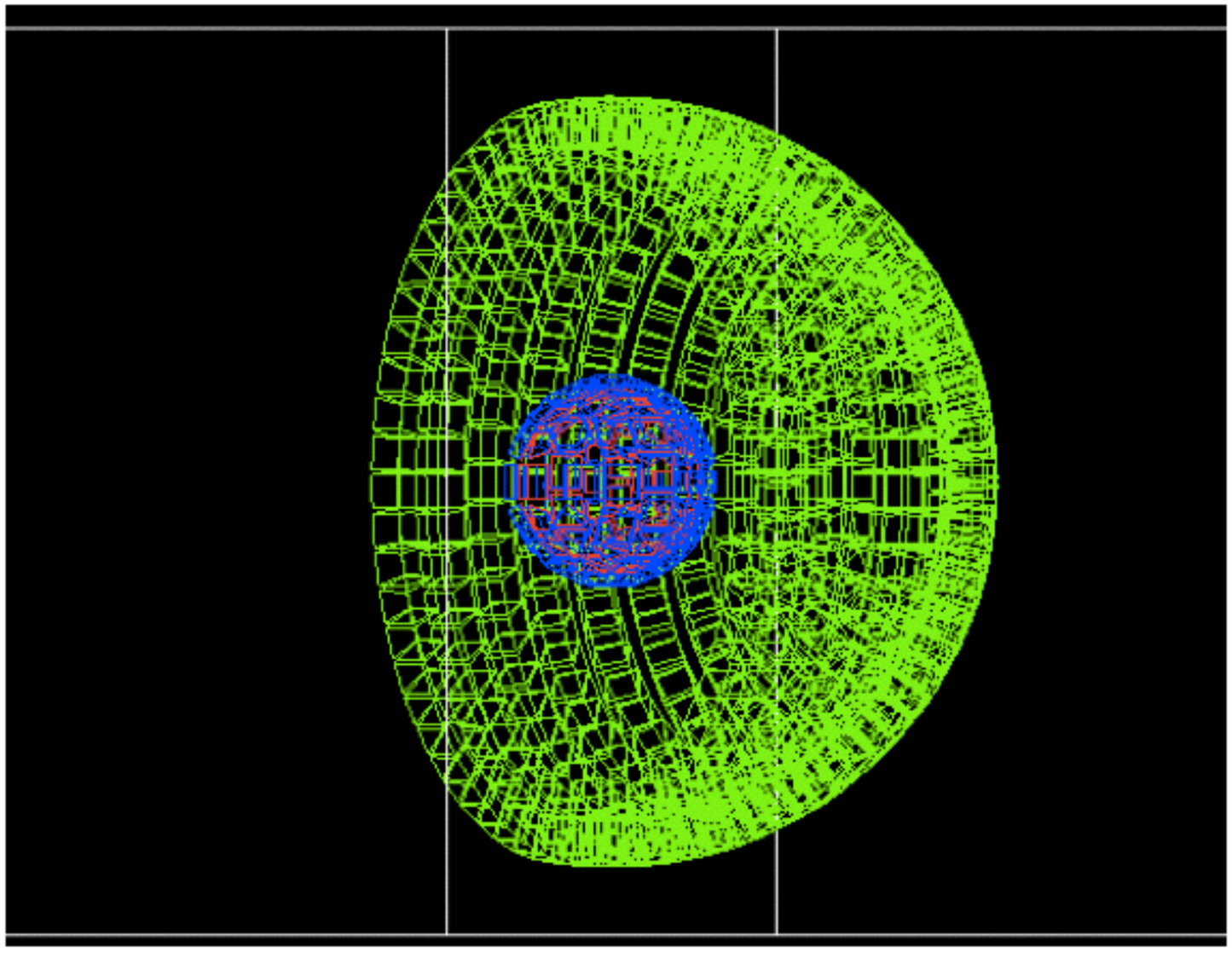
Neutron detector geometry





- Area of detector :
  $470 \times 0.225 m^2 = 10.58\ m^2$
- Area of surface between
  $\theta = 20° \sim 100° : 15.74\ m^2$
- $(10.58/15.74) \times 100\% = 67.22\%$

LAMPS-low detector geometry



View in Geant4

red : Si detector
blue : CsI detector
green : Neutron detector

Neutron detector geometry

Time of Flight

$E_K = E_0[(1-v^2/c^2)^{-1/2} - 1]$, E_0 : rest mass

$$E_K = E_0[(1-L^2/\triangle t^2 c^2)^{-1/2} - 1]$$

Plan

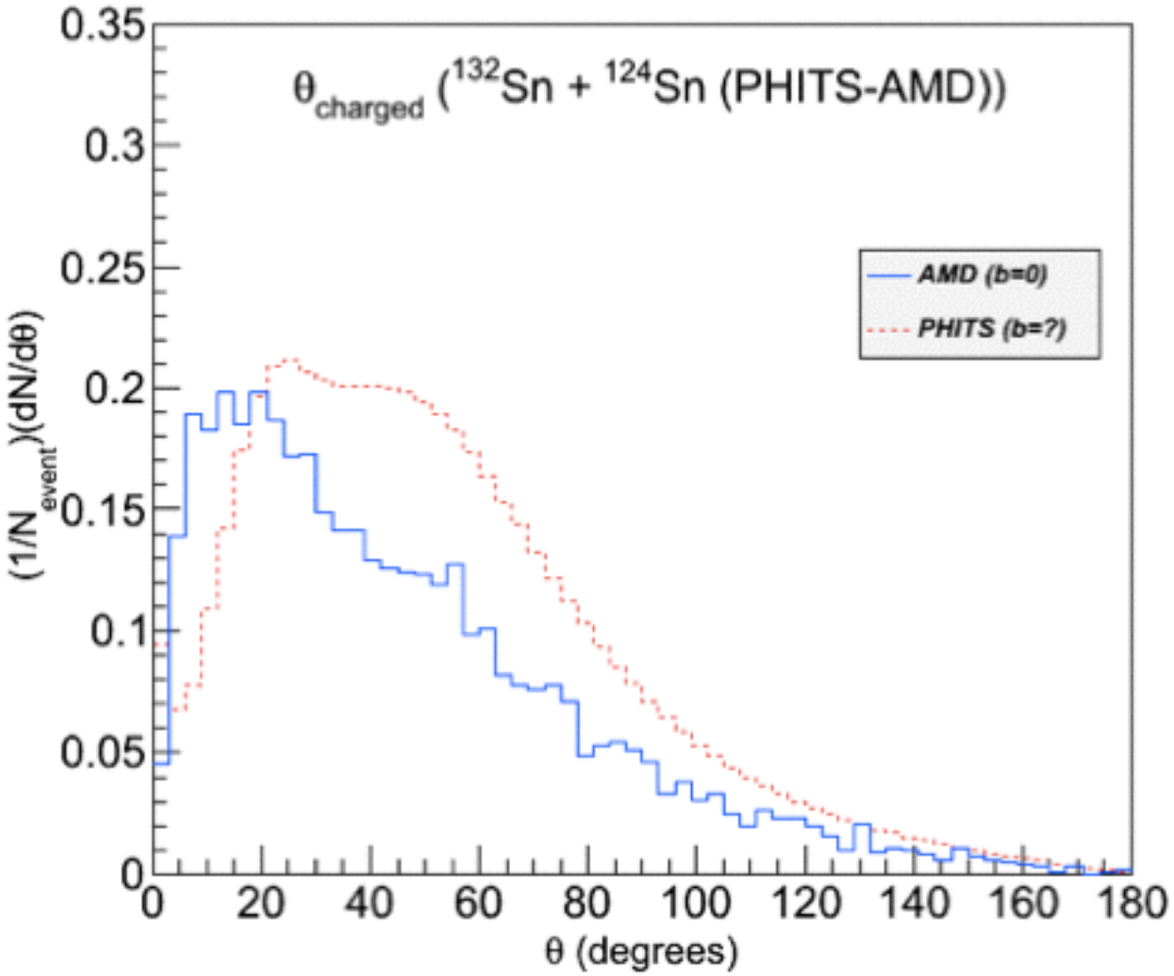
1. Neutron detector geometry cross check - (jaebeom & jaehee)
   - numbering, placement, size, distance etc.

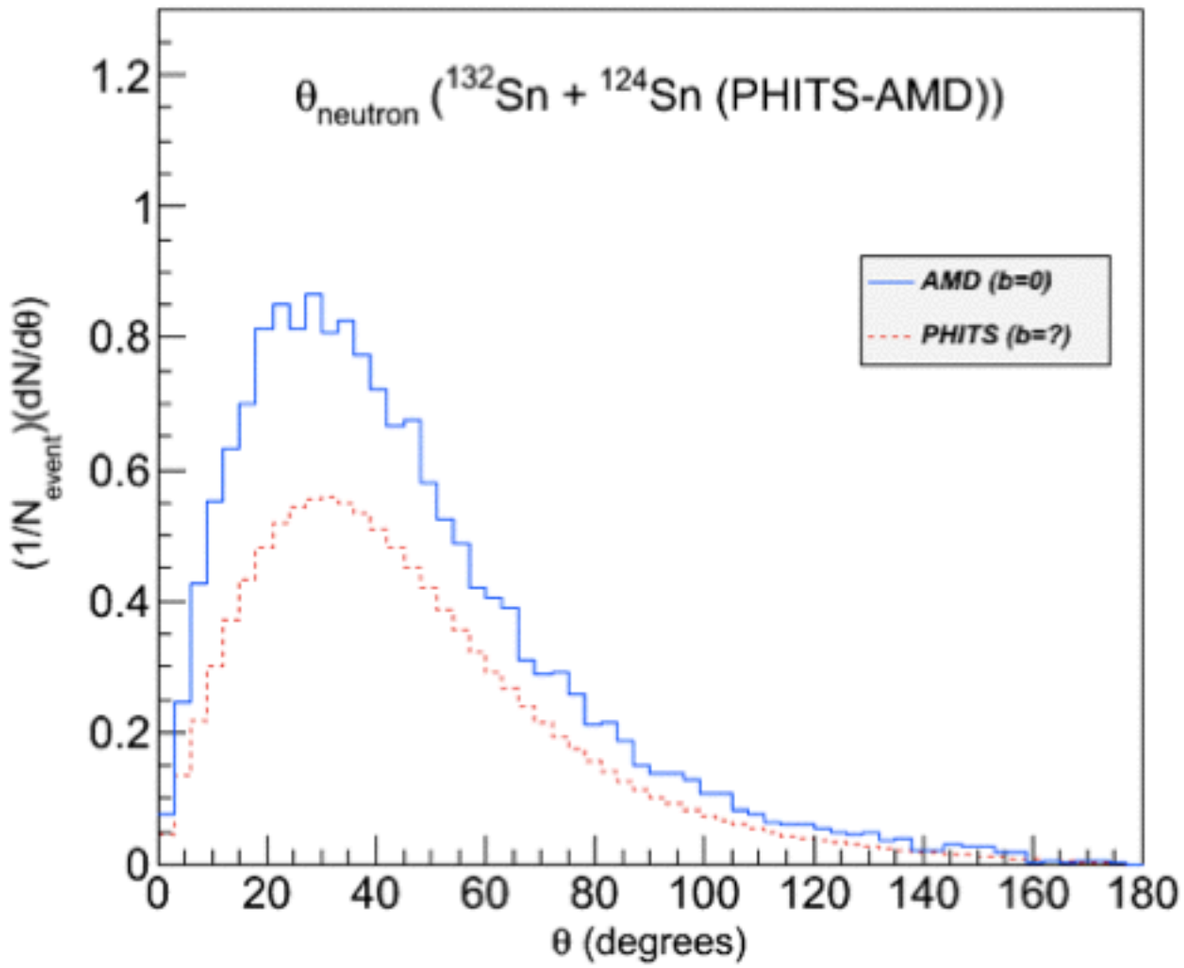
2. Neutron detector Geant4 simulation
   - Different energy region 3~7 MeV, 7~13 MeV, 13~18 MeV, 18~25 MeV, 25~35MeV, 35~50MeV
   - All AMD events simulation
   - Different CsI thickness 5cm -> 3cm
   - All steps with and without Si-CsI detector

3. Si-CsI mass distribution fitting study - details in A&M and LNS

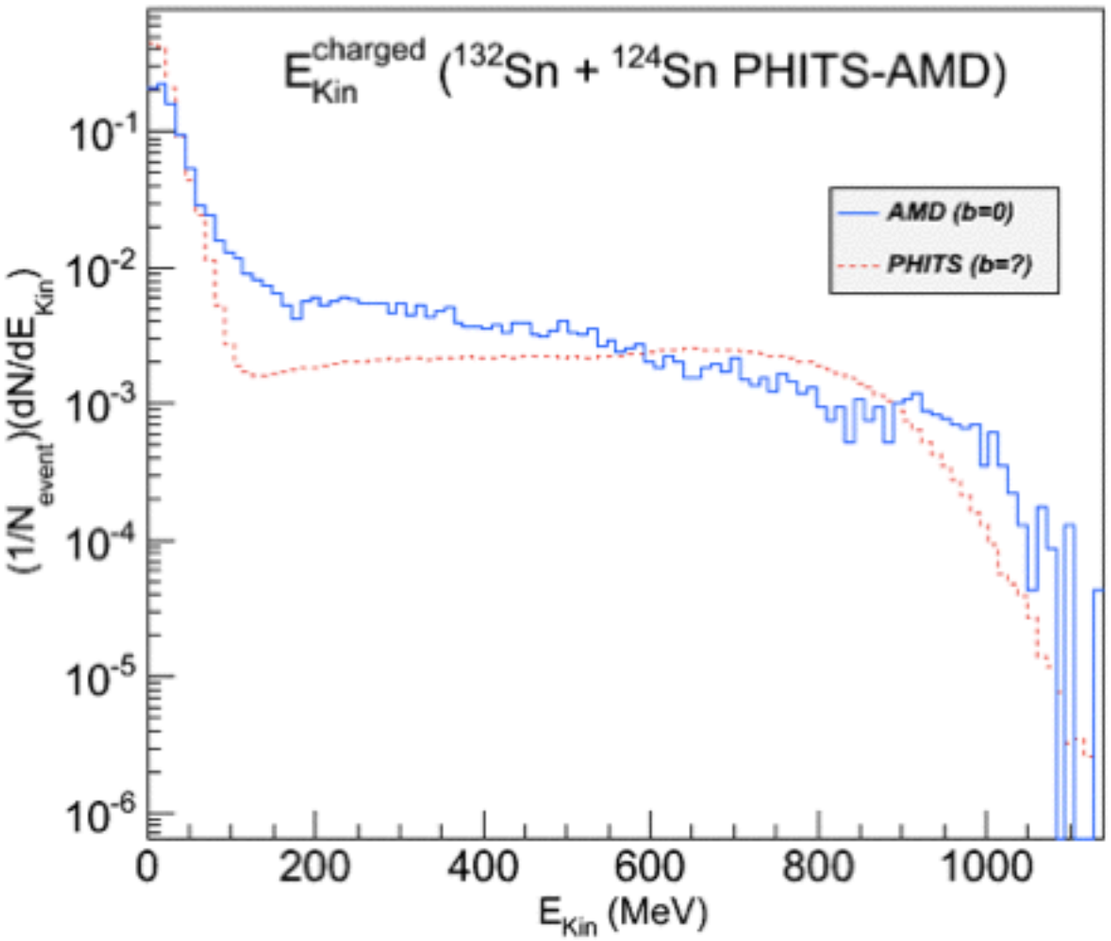
Back - up

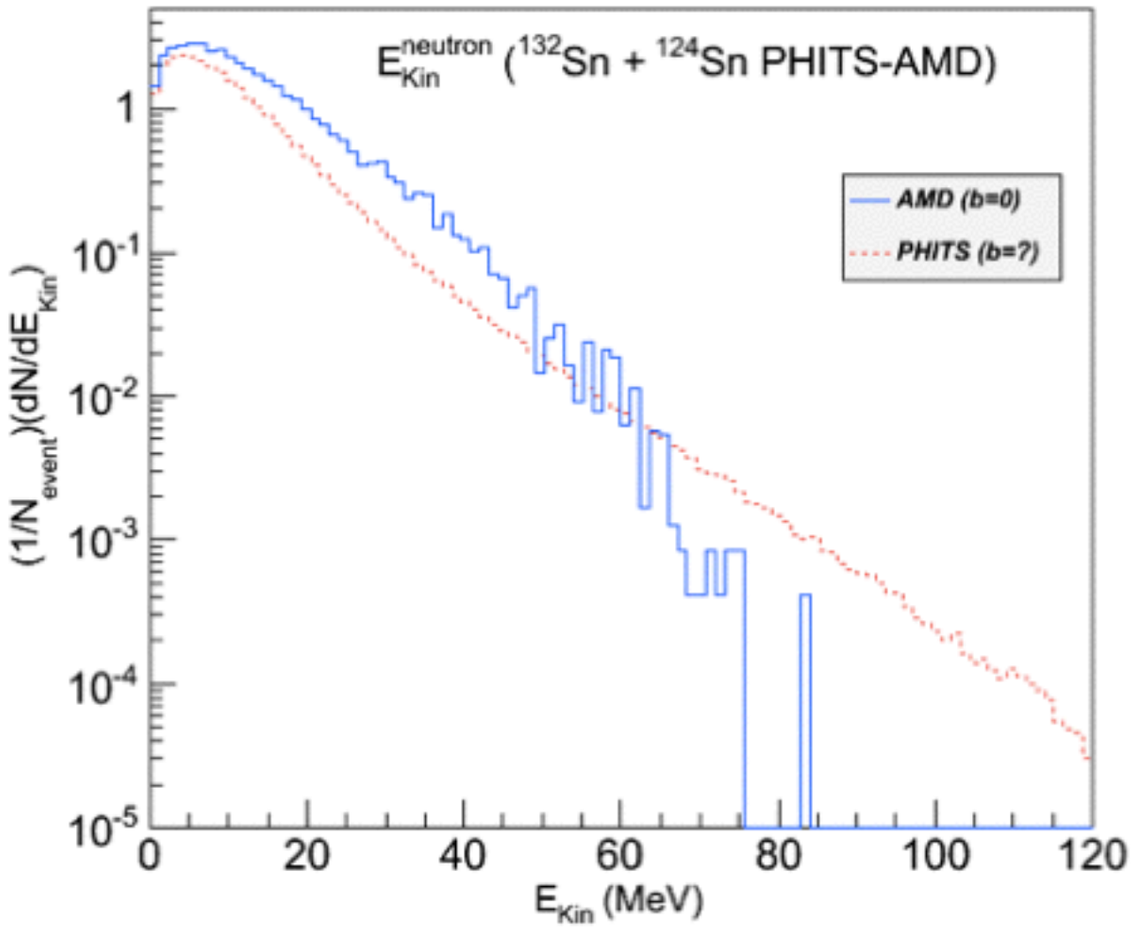
AMD&PHITS – Theta Distribution (Charged/Neutron)





(Charged/Neutron)





Neutron detector geometry