

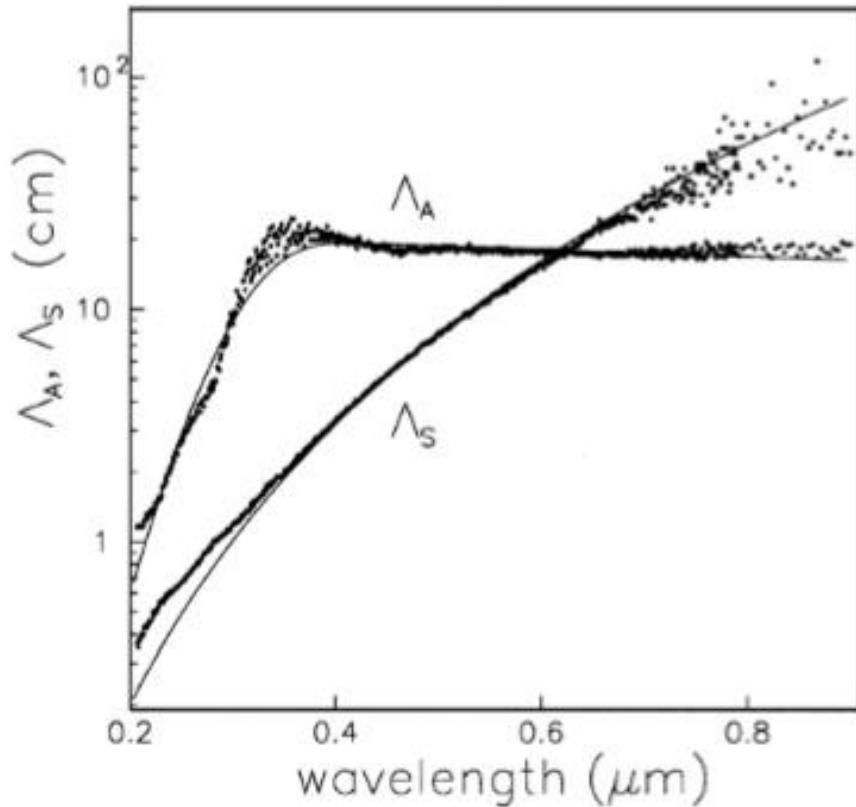
Geant4 simulation report

2019.02.19

양현민

Aerogel Optical Properties

Optical characterization of $n = 1.03$ silica aerogel used as radiator in the RICH of HERMES



Scattering Length

: Fit result from article

$$\lambda_{\text{scat}} = \frac{313.39}{E_p^4} \text{ (cm)}$$

Absorption Length

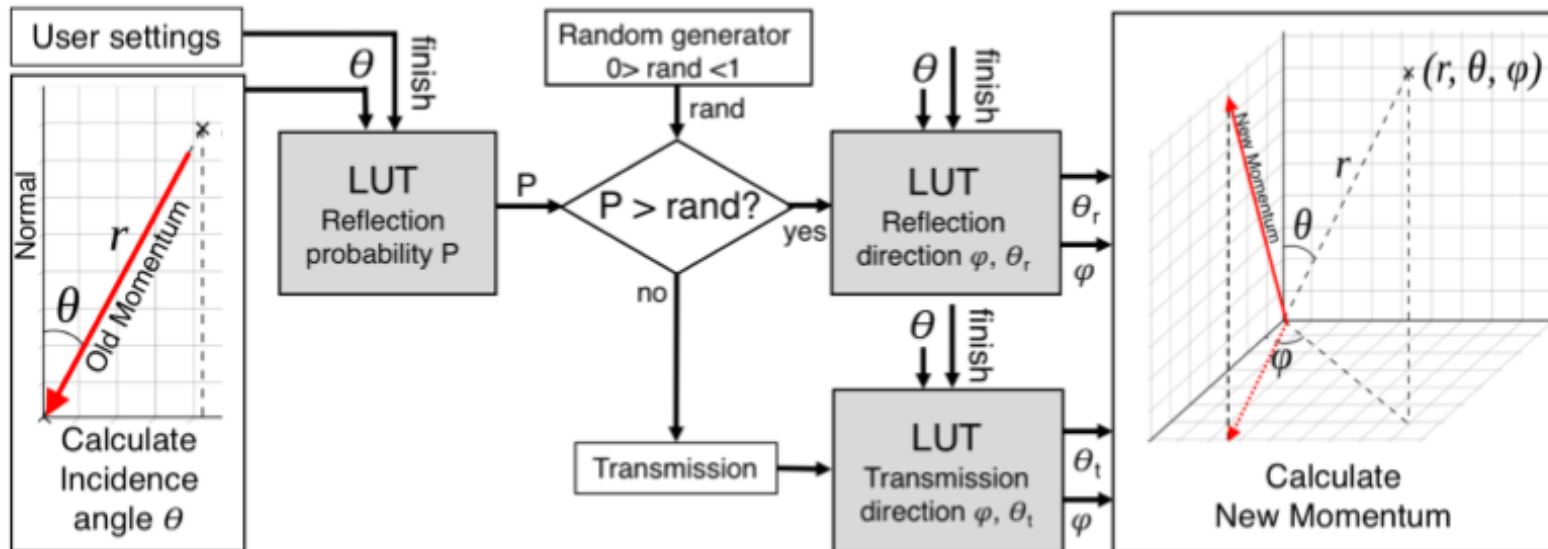
: Data points extracted from graph (Engauge Digitizer program)

Reflector implementation

Optical Boundary Setting	
Type	: dielectric_LUTDAVIS
Model	: DAVIS

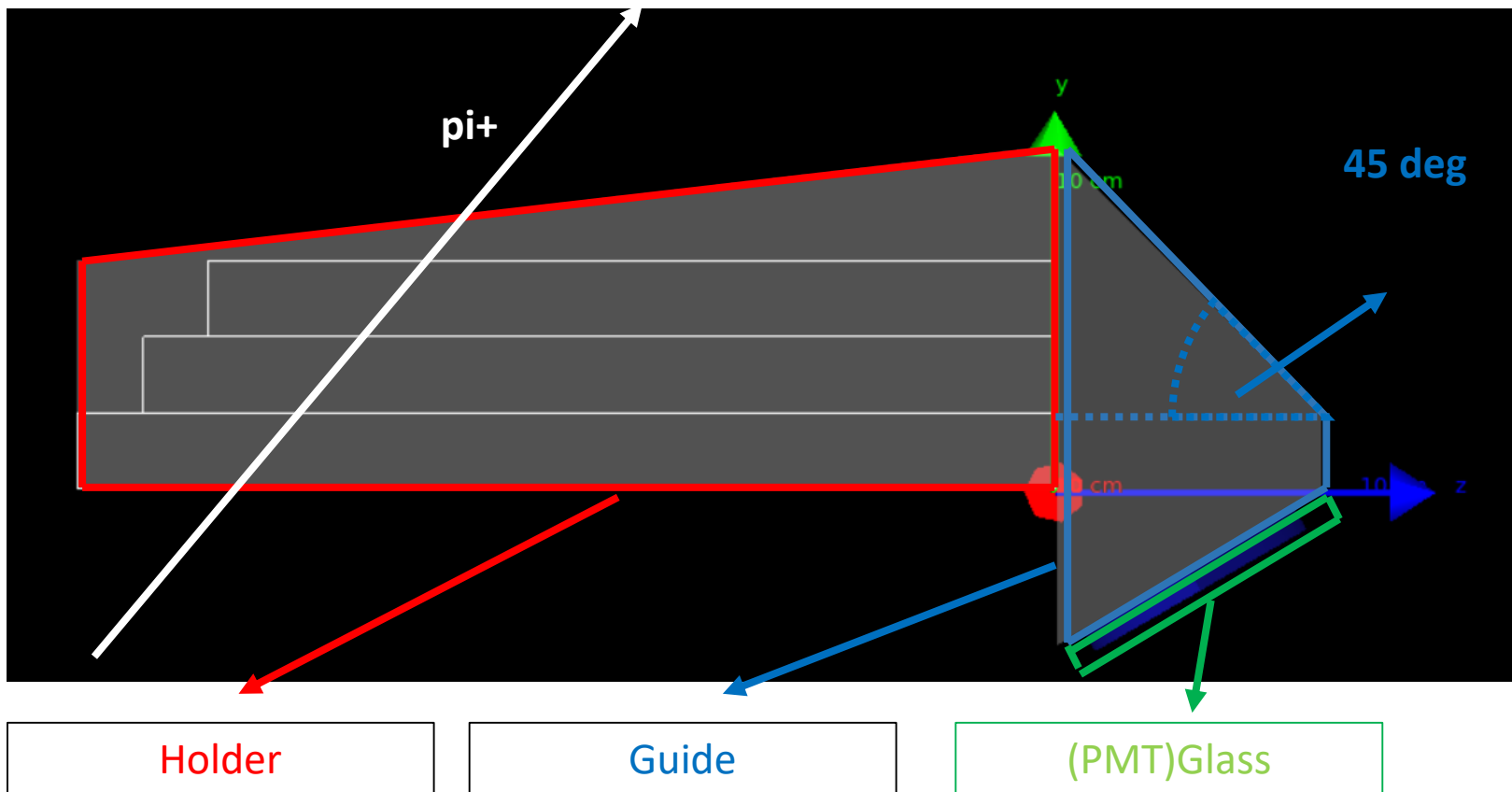
ESR reflector Finish : PolishedESR_LUT	diffusive reflector Finish : RoughTeflon_LUT
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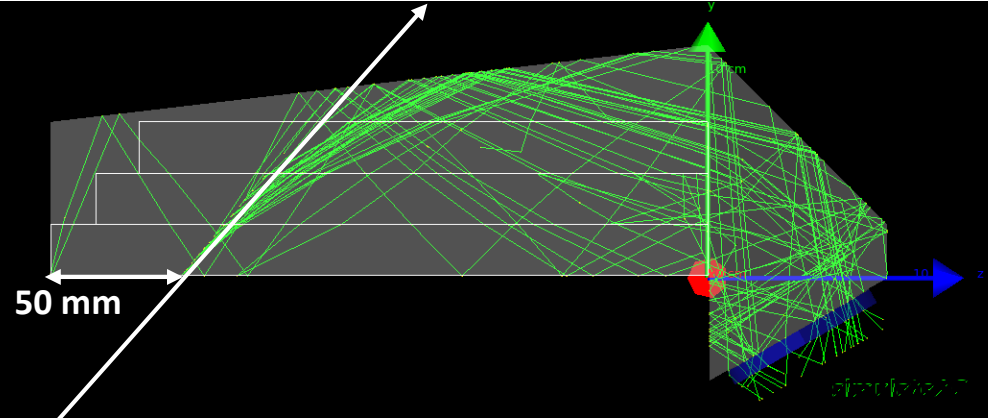
ROUGH : $R_a = 0.48\mu\text{m}$, $\sigma = 0.57\mu\text{m}$, $R_{pv} = 3.12\mu\text{m}$
 POLISHED : $R_a = 20.8\text{ nm}$, $\sigma = 26.2\text{ nm}$, $R_{pv} = 34.7\text{ nm}$



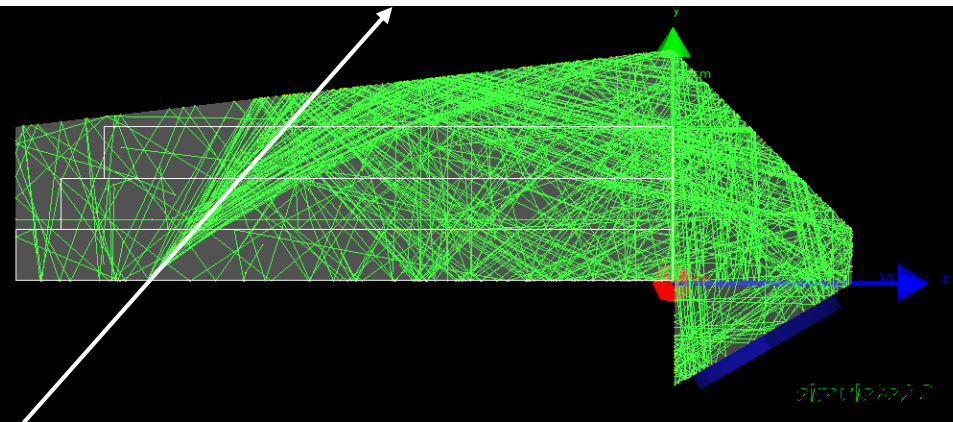
AC1(TYPEA) geometry

- Particle : π^+
- Momentum : 1.0 GeV/c
- Incident Angle : 40 degrees

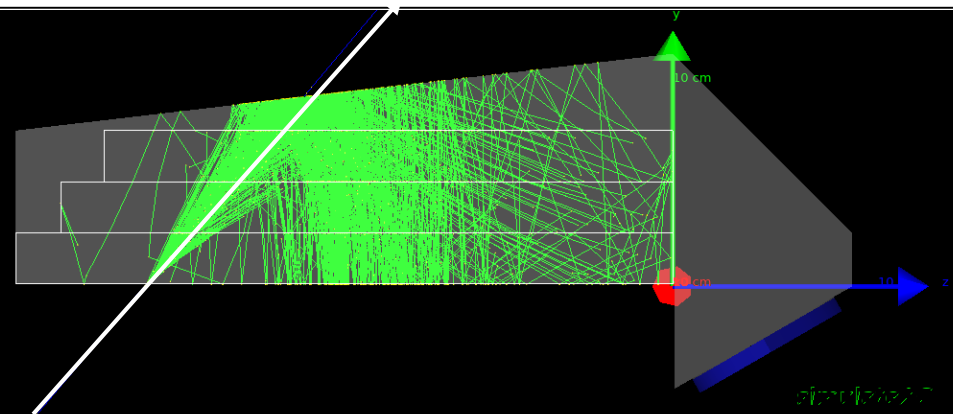




Touching PMT Glass

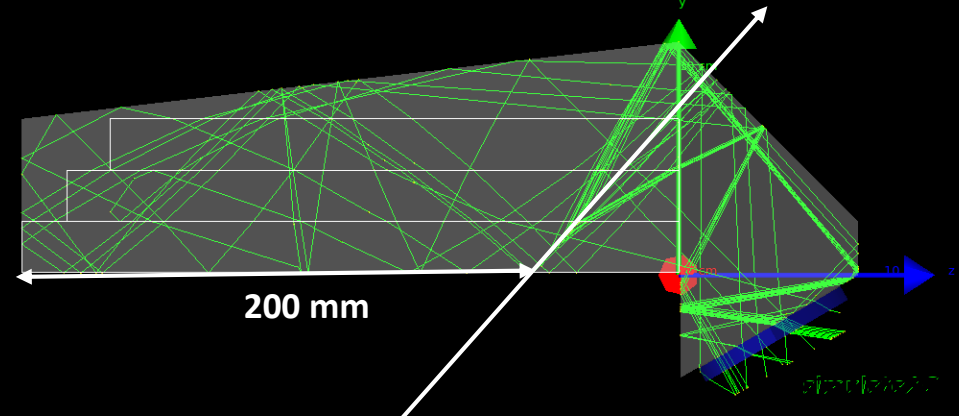


(Not touching PMT Glass) and (Touching reflector of Guide)

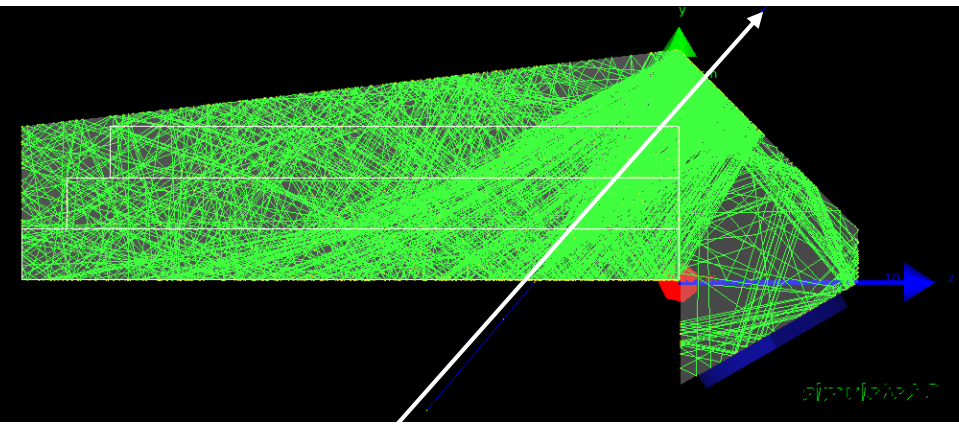


(Not touching PMT Glass) and (Not touching reflector of Guide)

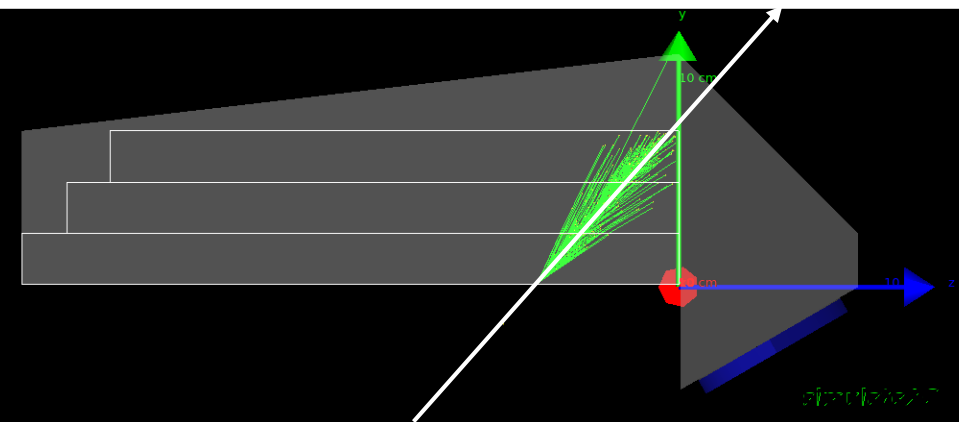
- Incident Position
: 50 mm
- Reflector
Holder : ESR
Guide : ESR



Touching PMT Glass

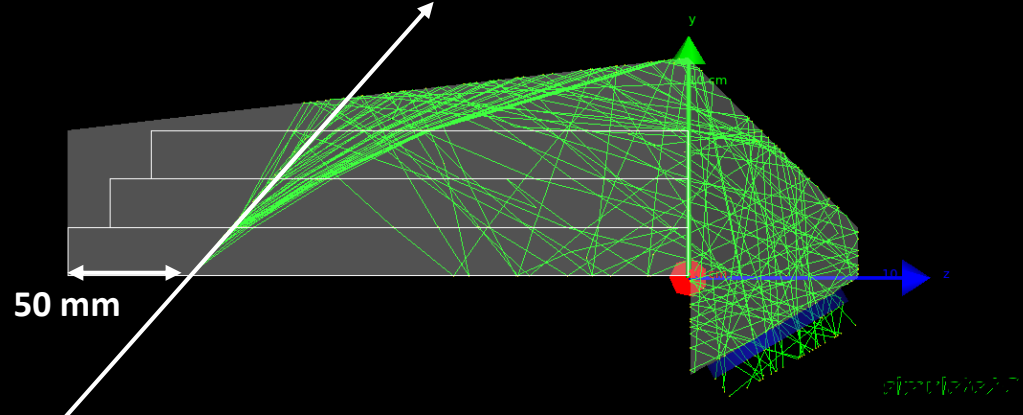


(Not touching PMT Glass) and (Touching reflector of Guide)

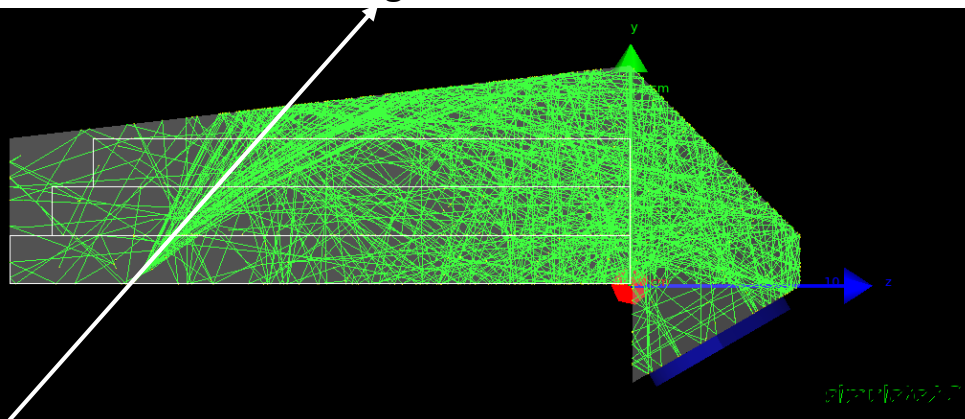


(Not touching PMT Glass) and (Not touching reflector of Guide)

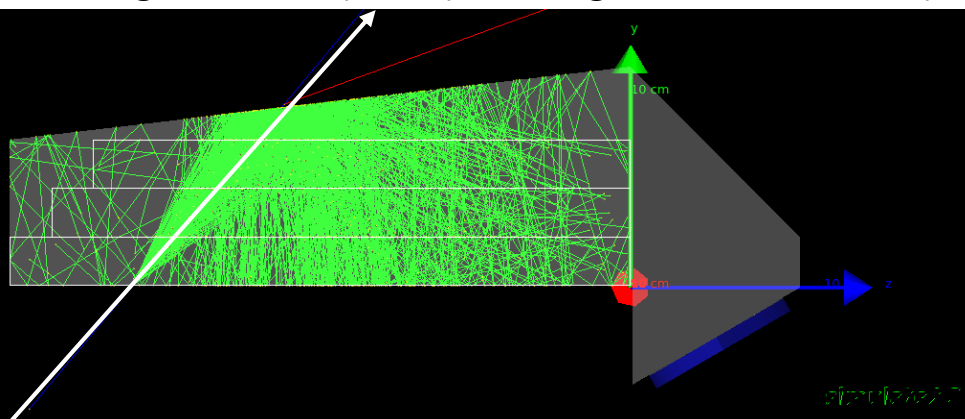
- Incident Position
: 200 mm
- Reflector
Holder : ESR
Guide : ESR



Touching PMT Glass

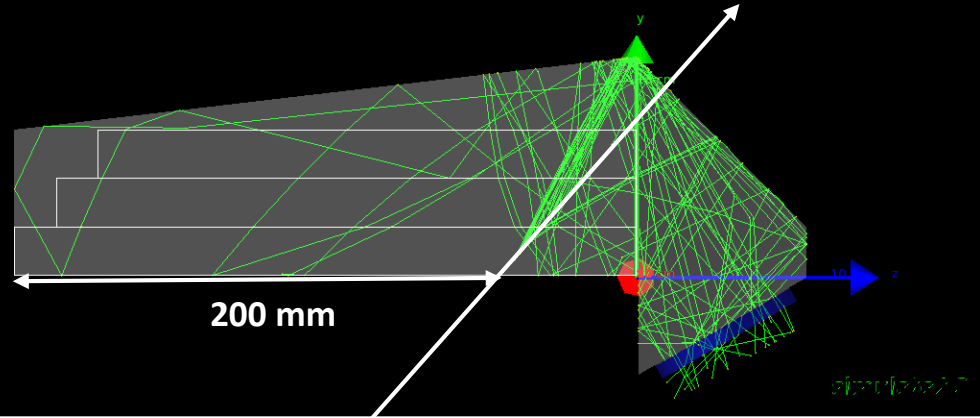


(Not touching PMT Glass) and (Touching reflector of Guide)

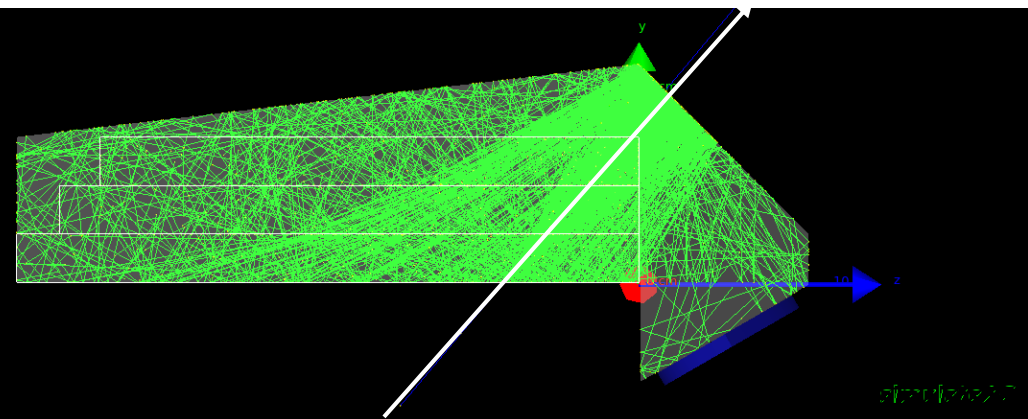


(Not touching PMT Glass) and (Not touching reflector of Guide)

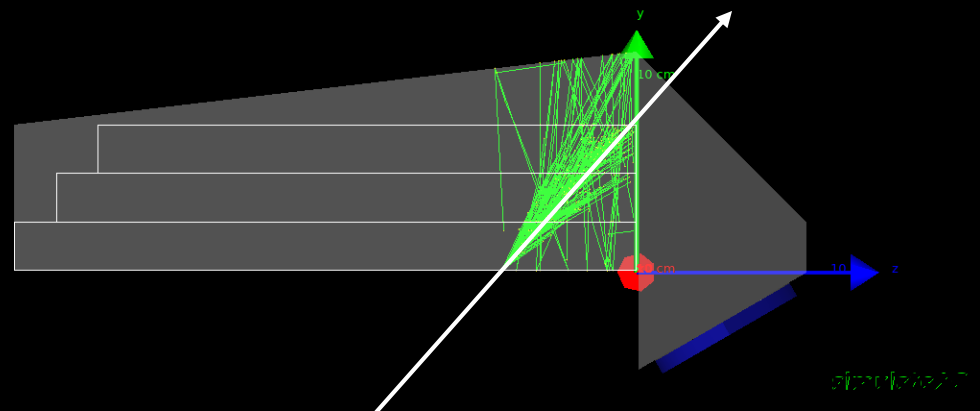
- Incident Position : 50 mm
- Reflector Holder : TEFLON
- Guide : ESR



Touching PMT Glass



(Not touching PMT Glass) and (Touching reflector of Guide)



(Not touching PMT Glass) and (Not touching reflector of Guide)

- Incident Position : 200 mm
- Reflector Holder : TEFLON
- Guide : ESR