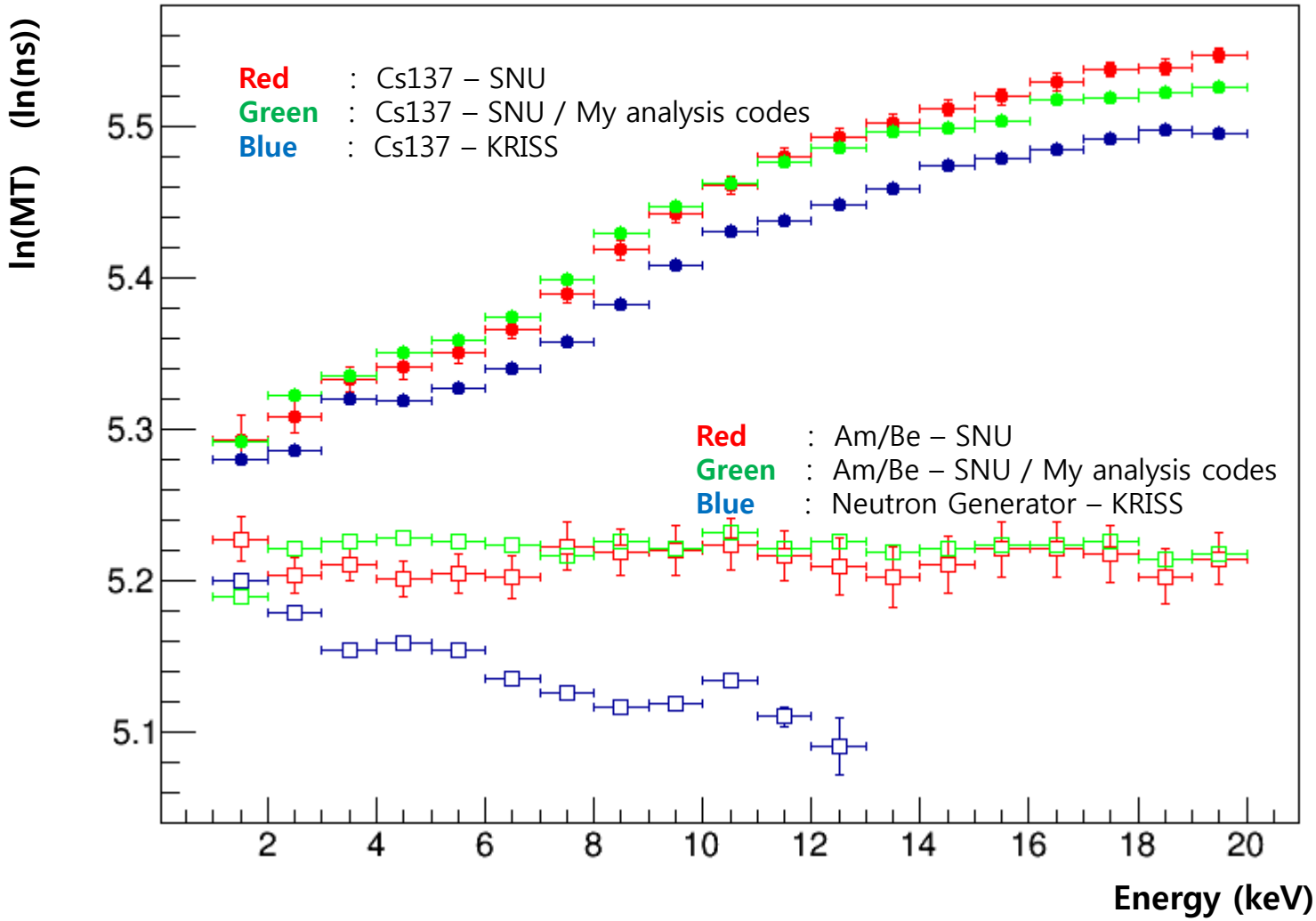
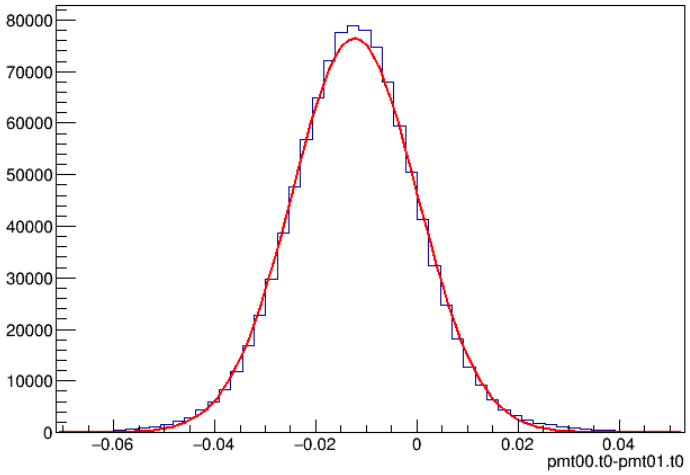
ln(MT) summary (previous)



*For neutron generator data, generator was operated about 45 hours.
-> ~ 1,000 events/keV in 1~9 keV region

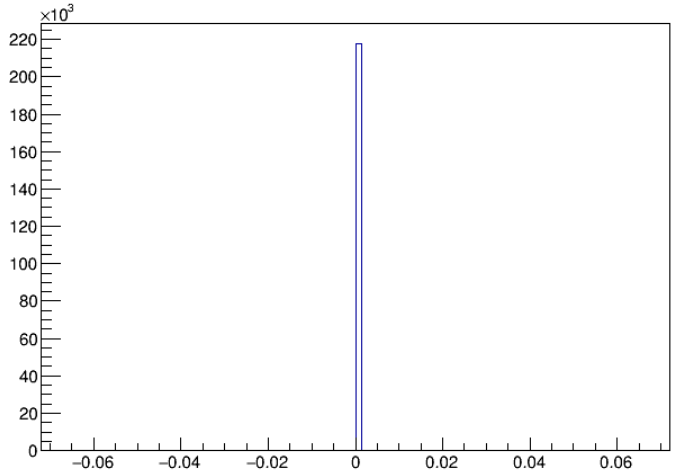
Mistakes in correction of time difference between PMTs

in SNU AmBe data,
pmt1 signal was faster than pmt0 signal (avg. 12.3 ns)

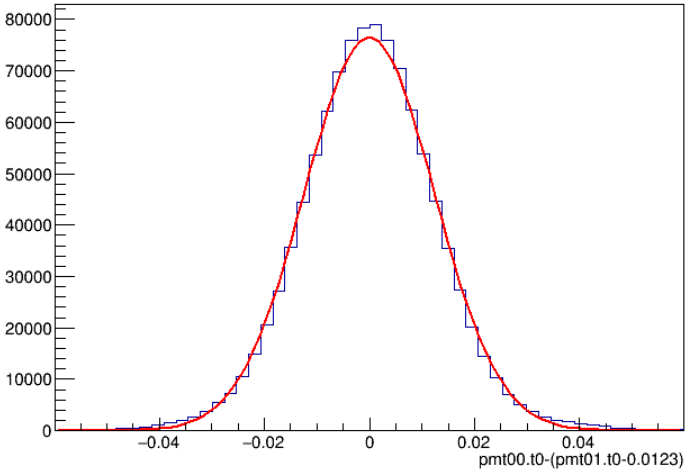


Mean : -0.0123 us
Sigma : 0.0124 us

Wrong correction (previous)

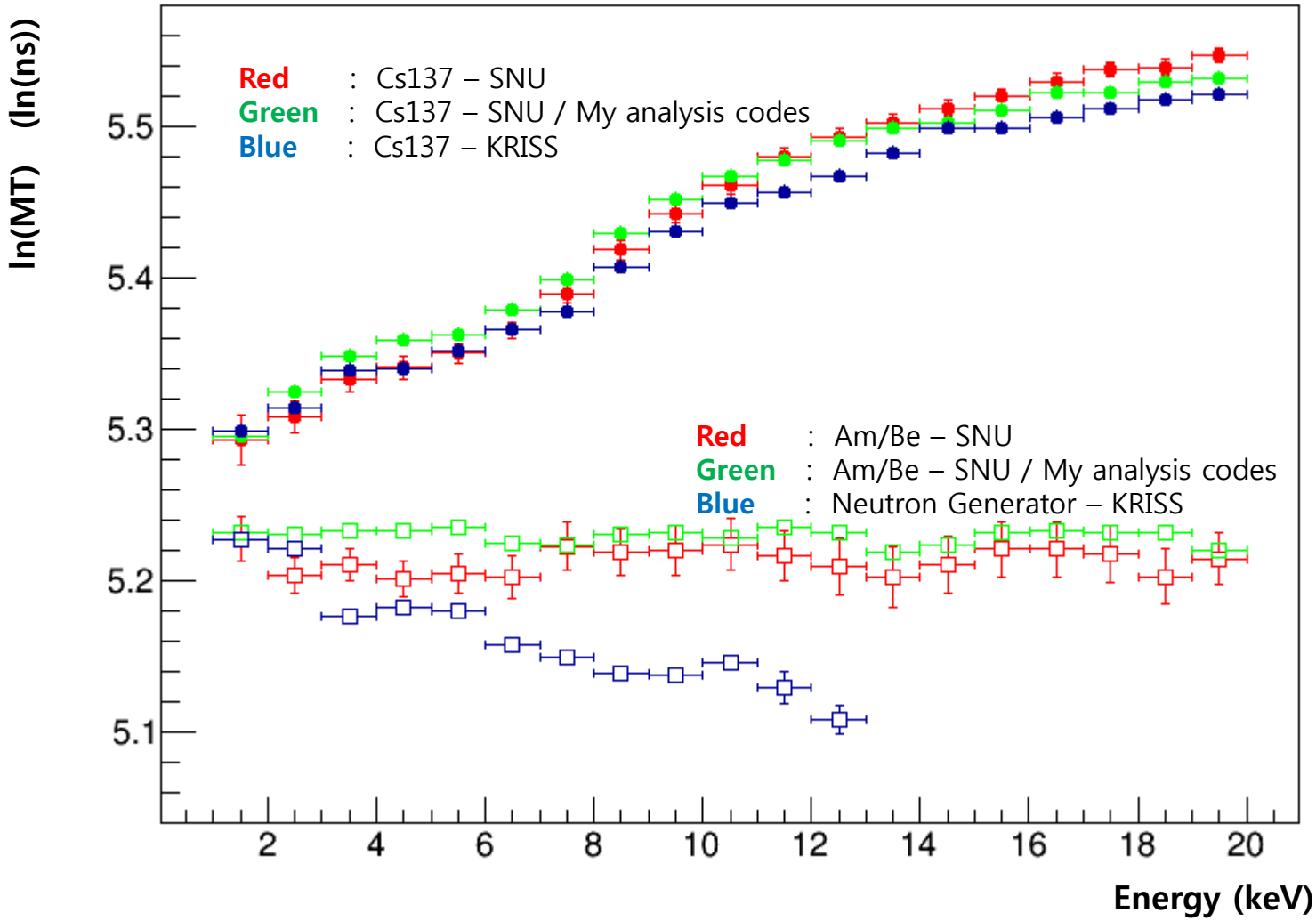


Fixed



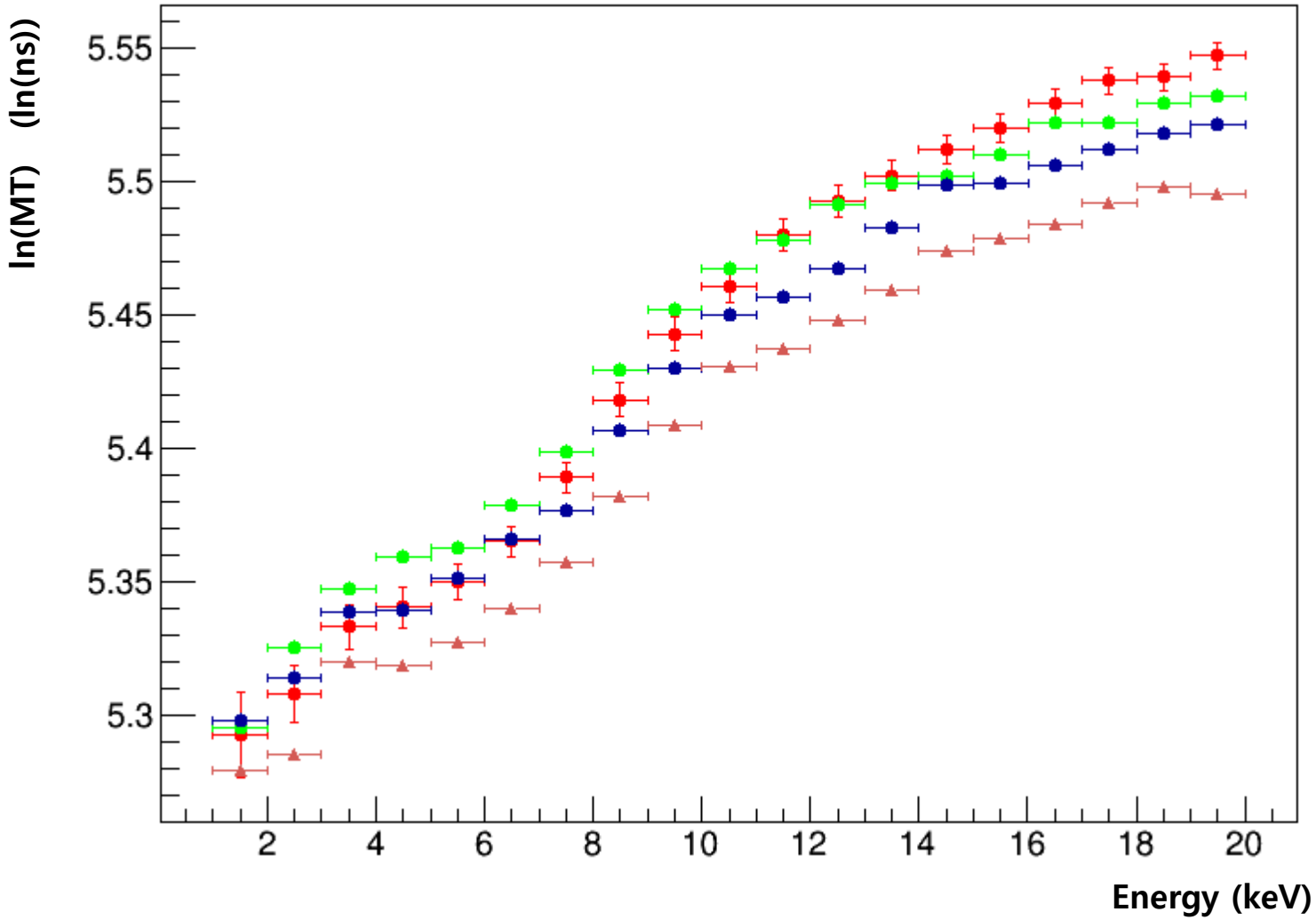
X axis : Time difference between PMTs

ln(MT) summary (fixed)



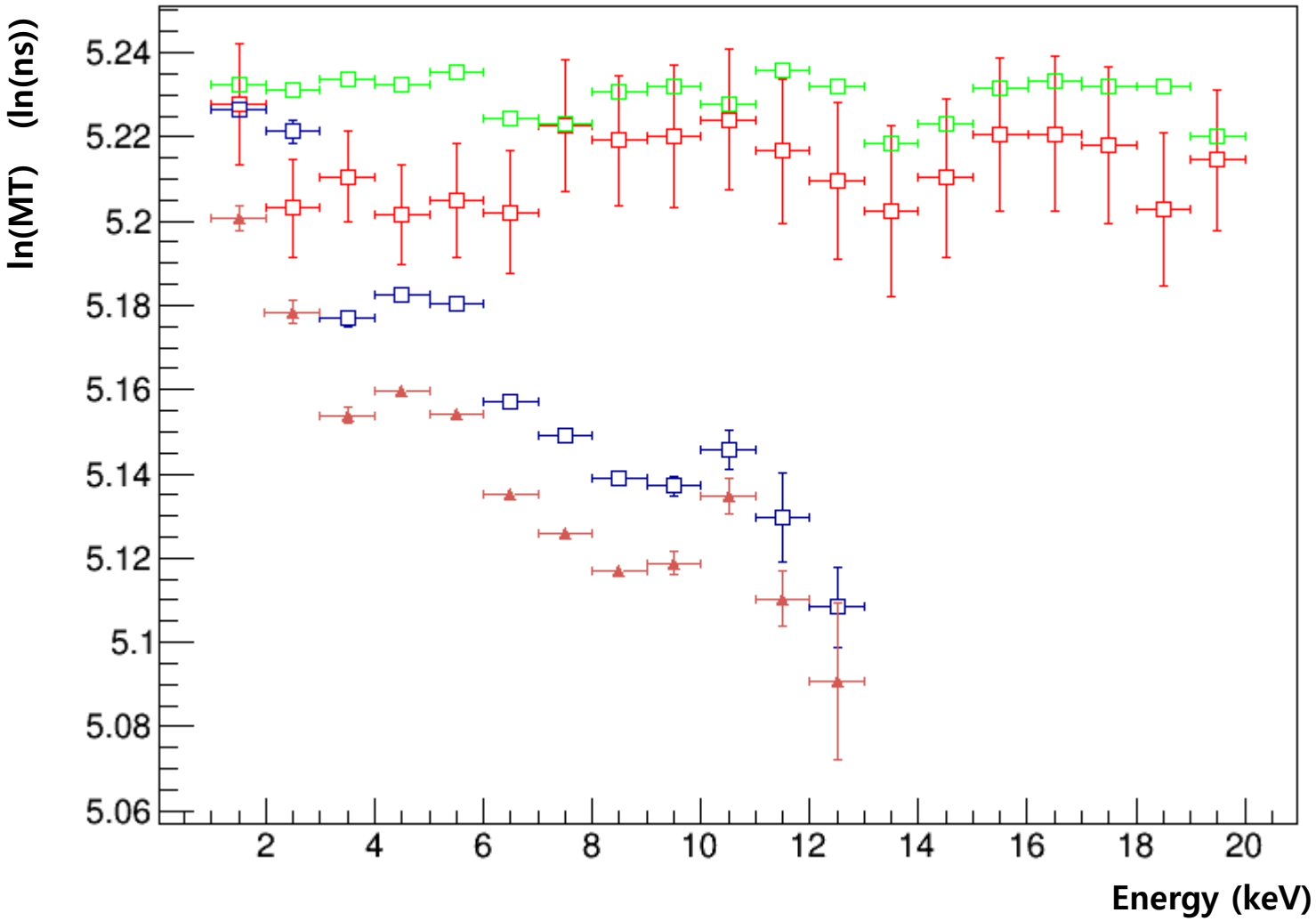
*For neutron generator data, generator was operated about 45 hours.
-> ~ 1,000 events/keV in 1~9 keV region

ln(MT) – Electron recoil events (fixed)



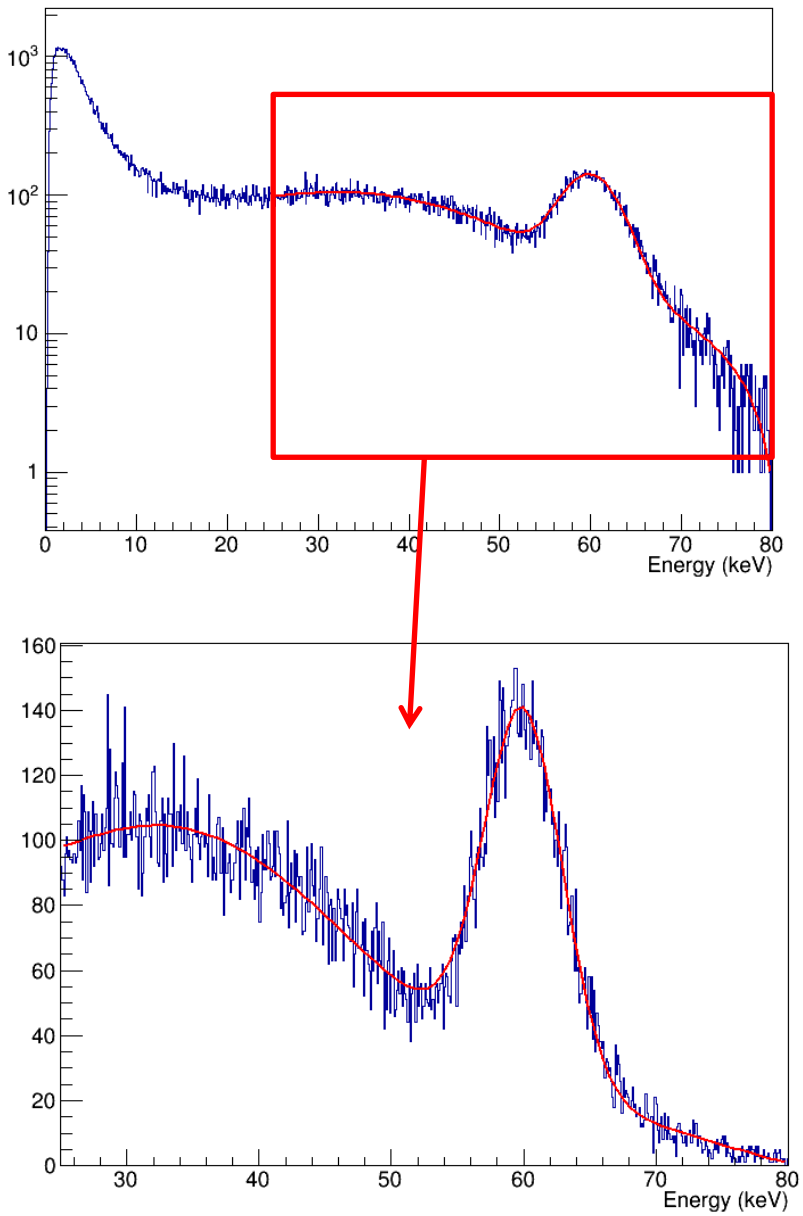
Red : Cs137 – SNU
Green : Cs137 – SNU / My analysis codes
Blue : Cs137 – KRISS (Fixed)
Brown : Cs137 – KRISS (Previous)

ln(MT) – Nuclear recoil events (fixed)



Red : Am/Be – SNU
Green : Am/Be – SNU / My analysis codes
Blue : Neutron Generator – KRISS (Fixed)
Brown : Neutron Generator – KRISS (Previous)

Number of 60 keV gamma events in AmBe data

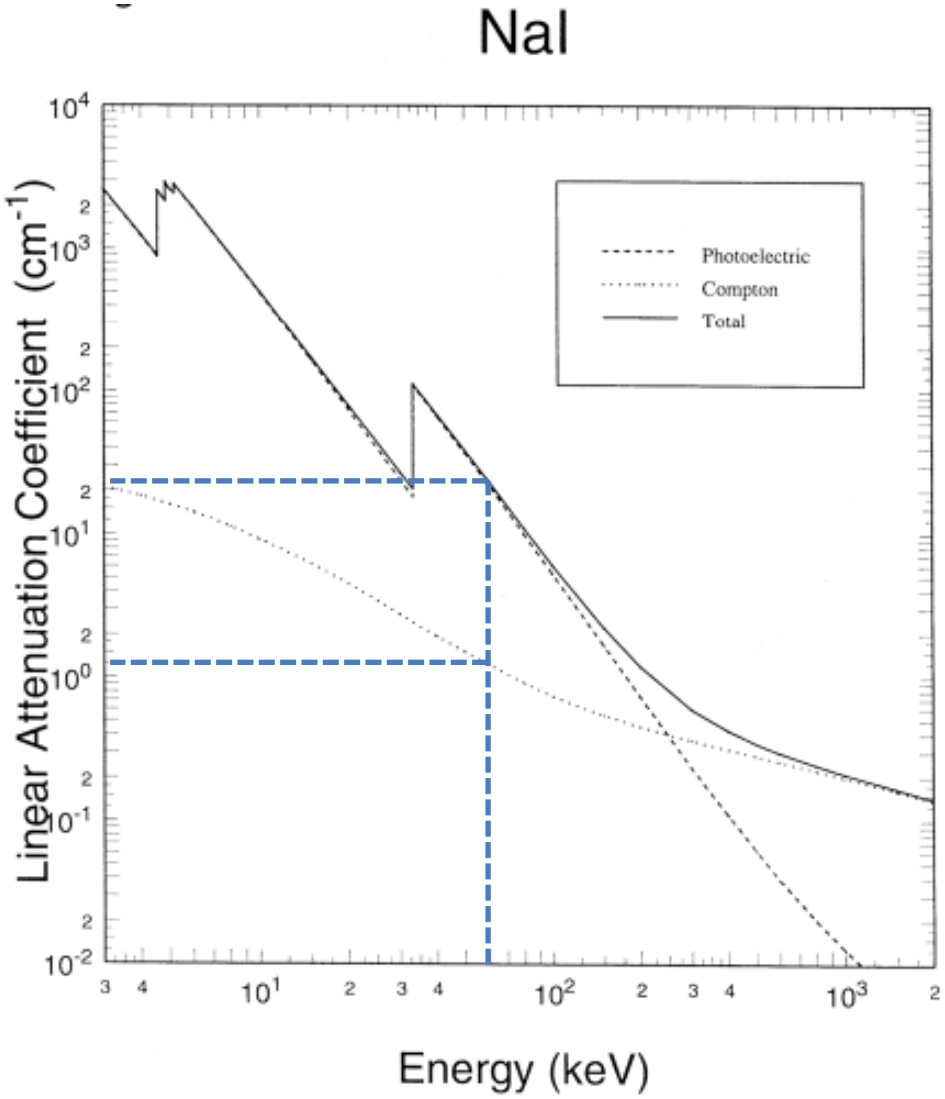


Fitting Function (Linear + two gaussian)
: **p0** + **p1** * x
+ **p2** * Gaus(**p3**, **p4**)
+ **p5** * Gaus(**p6**, **p7**)

p0 : 90.30
p1 : - 1.12
p2 : 52.12
p3 : 35.28
p4 : 11.77
p5 : 119.28
p6 : 59.98
p7 : 2.99

Estimated number of 60keV gamma events from alpha-decay of Am source (by integration of gaussian function)
: ~9,000 events

Gamma ray absorption in NaI



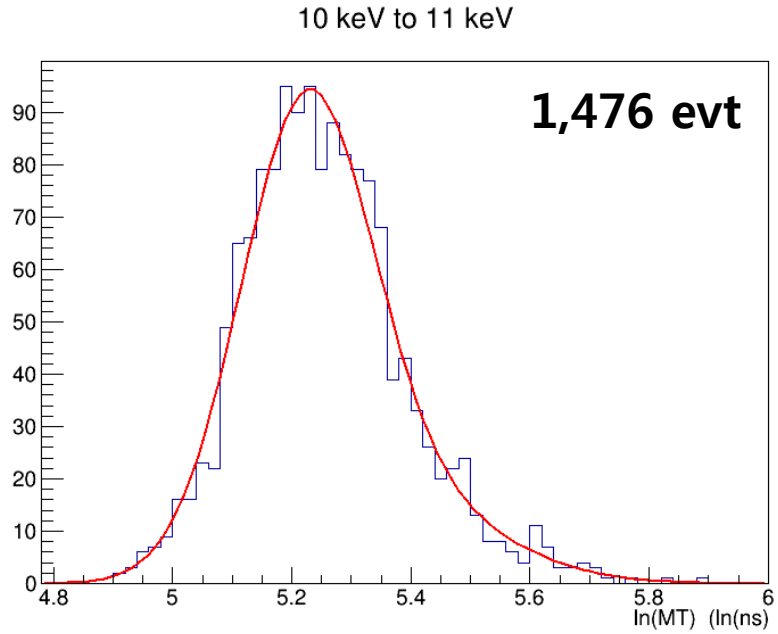
Compton : ~5% of Photoelectric

& assuming scattered gamma is uniformly distributed in 0~40 keV

-> There are only 11 gamma events per 1 keV (9,000 * 0.05 * 0.025)

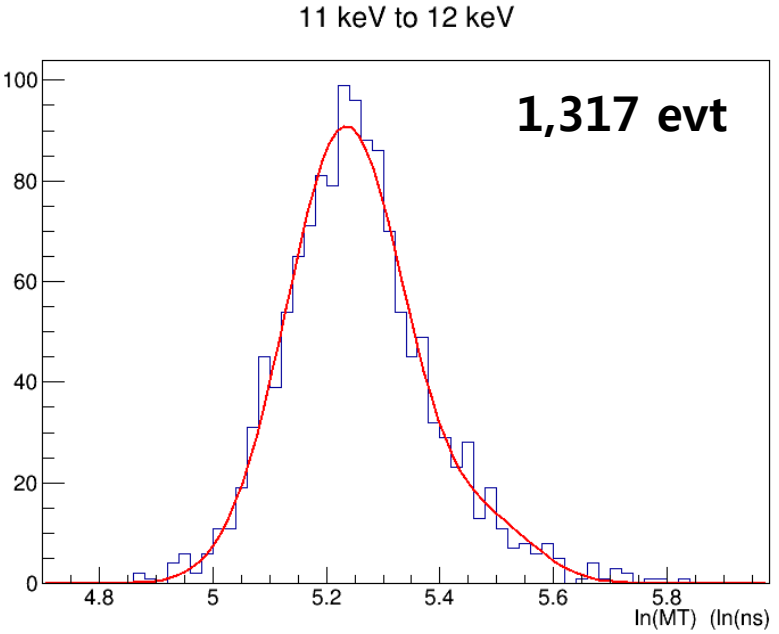
Not sufficient to explain difference in SNU and KRISS result

Fit ln(MT) with two gaussian function



Fitting Function (Two gaussian)
: **p0** * Gaus(**p1**, **p2**)
+ **p3** * Gaus(**p4**, **p5**)

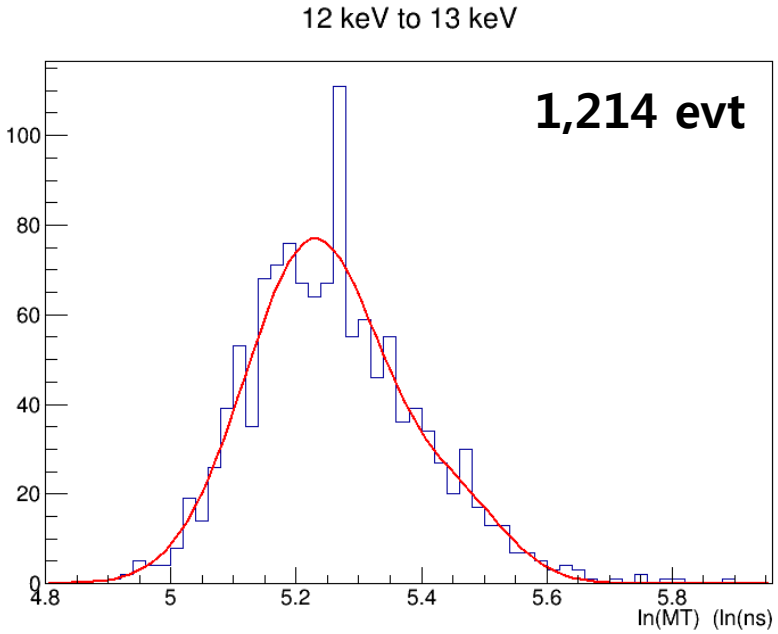
p0 : 87.16
p1 : 5.22 (AmBe : 5.22)
p2 : 0.11
p3 : 13.03
p4 : 5.40 (Cs137 : 5.46)
p5 : 0.16



Fitting Function (Two gaussian)
: **p0** * Gaus(**p1**, **p2**)
+ **p3** * Gaus(**p4**, **p5**)

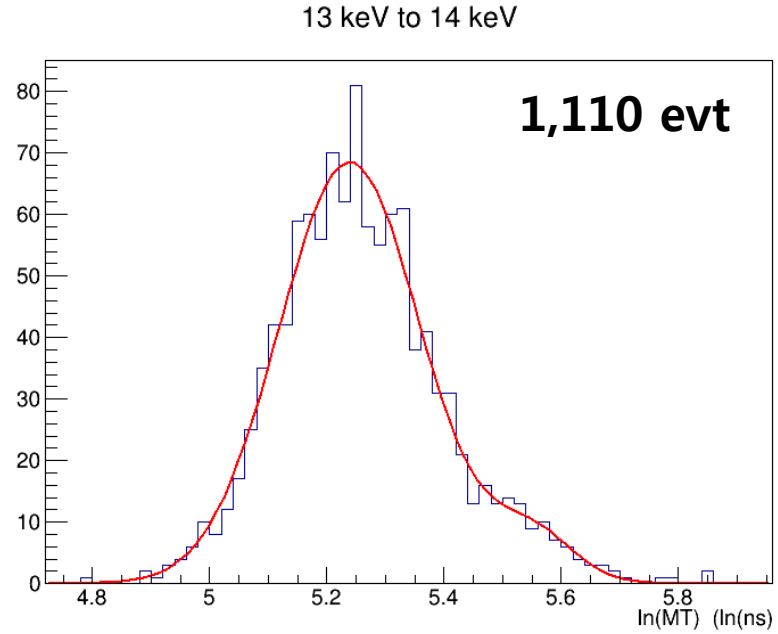
p0 : 90.90
p1 : 5.23 (AmBe : 5.22)
p2 : 0.11
p3 : 10.18
p4 : 5.49 (Cs137 : 5.48)
p5 : 0.08

Fit ln(MT) with two gaussian function



Fitting Function (Two gaussian)
: **p0** * Gaus(**p1**, **p2**)
+ **p3** * Gaus(**p4**, **p5**)

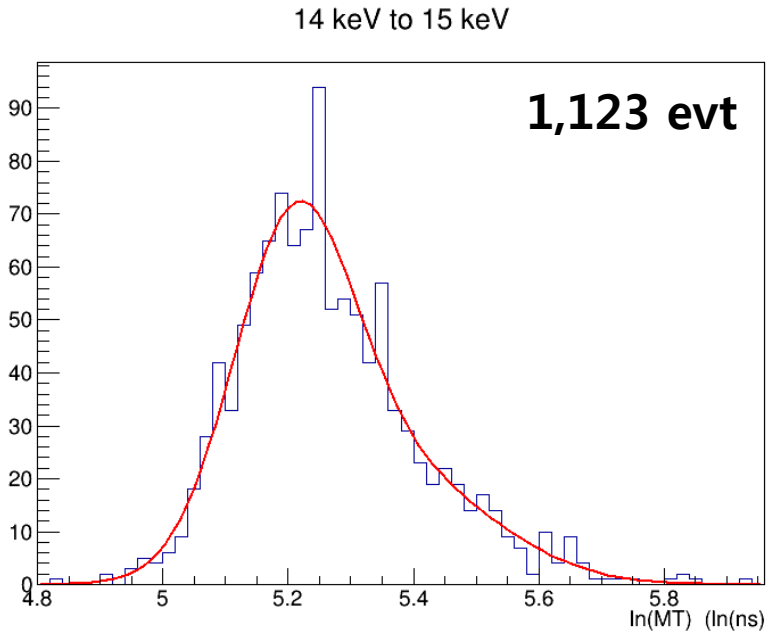
p0 : 76.80
p1 : 5.23 (AmBe : 5.20)
p2 : 0.11
p3 : 14.74
p4 : 5.46 (Cs137 : 5.49)
p5 : 0.08



Fitting Function (Two gaussian)
: **p0** * Gaus(**p1**, **p2**)
+ **p3** * Gaus(**p4**, **p5**)

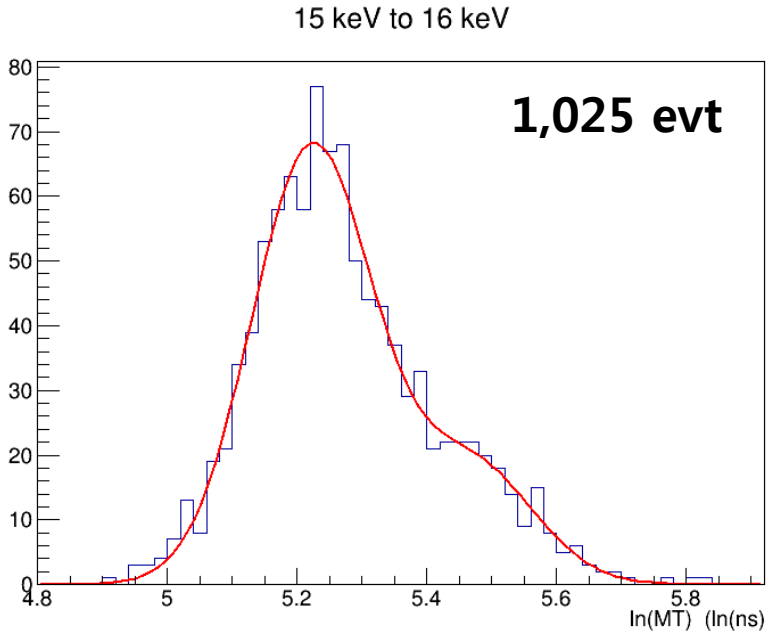
p0 : 68.48
p1 : 5.24 (AmBe : 5.20)
p2 : 0.012
p3 : 8.01
p4 : 5.55 (Cs137 : 5.50)
p5 : 0.07

Fit ln(MT) with two gaussian function



Fitting Function (Two gaussian)
: **p0** * Gaus(**p1**, **p2**)
+ **p3** * Gaus(**p4**, **p5**)

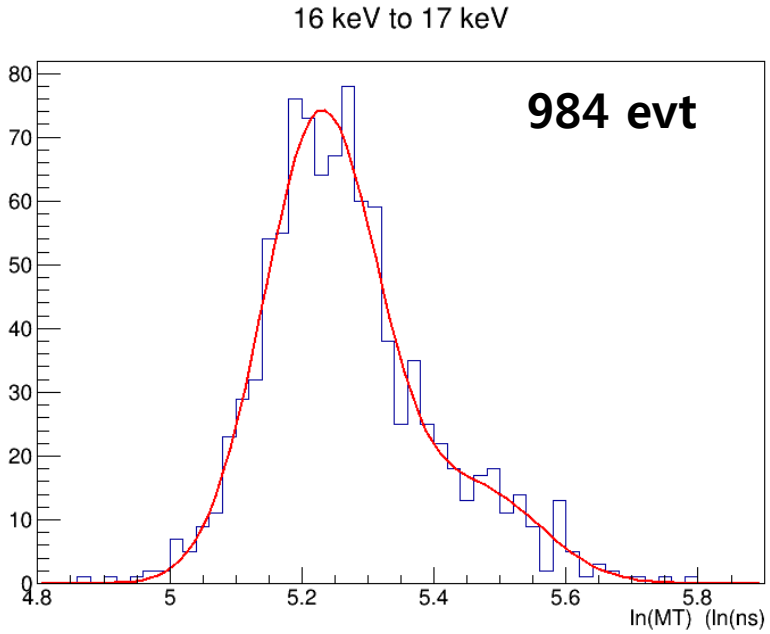
p0 : 60.37
p1 : 5.21 (AmBe : 5.22)
p2 : 0.10
p3 : 20.08
p4 : 5.37 (Cs137 : 5.51)
p5 : 0.16



Fitting Function (Two gaussian)
: **p0** * Gaus(**p1**, **p2**)
+ **p3** * Gaus(**p4**, **p5**)

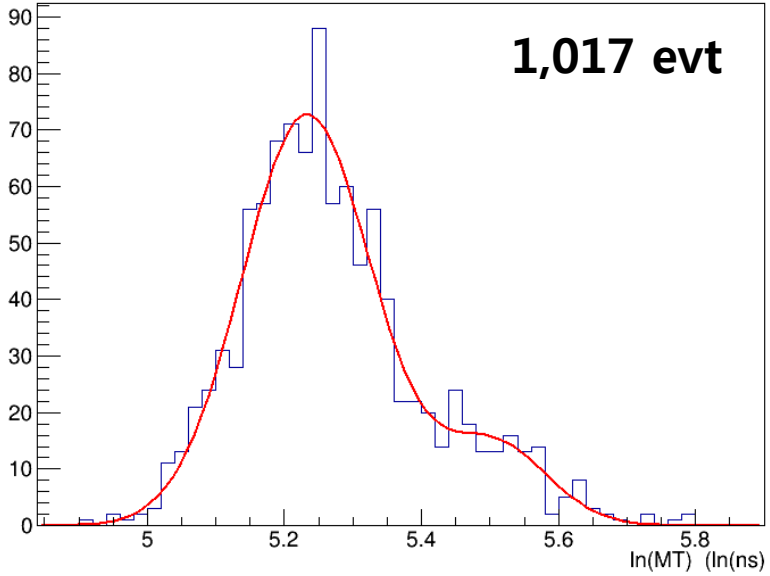
p0 : 67.54
p1 : 5.22 (AmBe : 5.23)
p2 : 0.09
p3 : 18.60
p4 : 5.47 (Cs137 : 5.52)
p5 : 0.10

Fit ln(MT) with two gaussian function



Fitting Function (Two gaussian)
: **p0** * Gaus(**p1**, **p2**)
+ **p3** * Gaus(**p4**, **p5**)

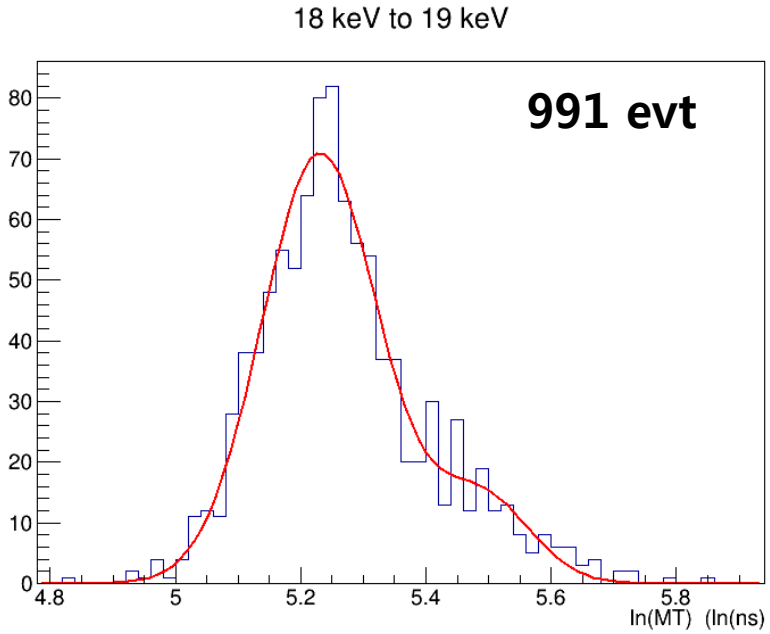
p0 : 73.71
p1 : 5.23 (AmBe : 5.23
p2 : 0.09
p3 : 14.12
p4 : 5.47 (Cs137 : 5.53)
p5 : 0.09



Fitting Function (Two gaussian)
: **p0** * Gaus(**p1**, **p2**)
+ **p3** * Gaus(**p4**, **p5**)

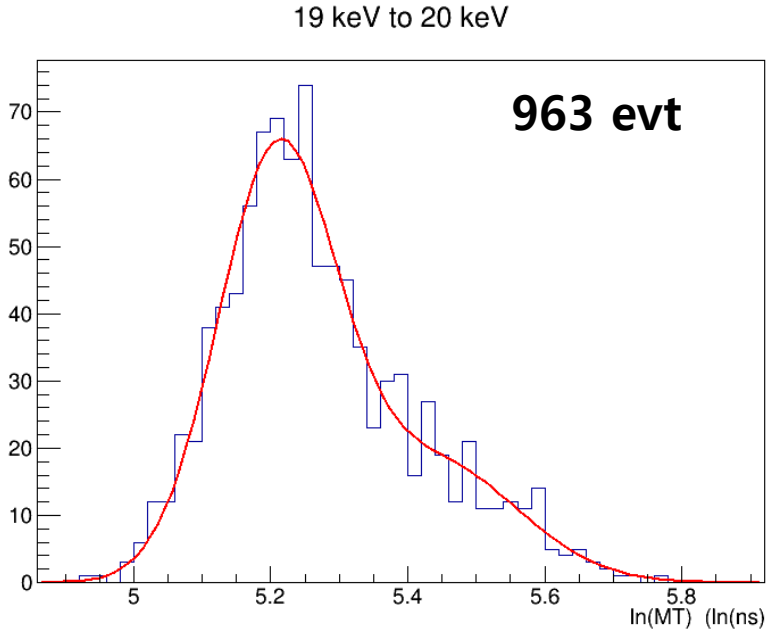
p0 : 72.71
p1 : 5.23 (AmBe : 5.23)
p2 : 0.09
p3 : 14.51
p4 : 5.50 (Cs137 : 5.54)
p5 : 0.08

Fit ln(MT) with two gaussian function



Fitting Function (Two gaussian)
: **p0** * Gaus(**p1**, **p2**)
+ **p3** * Gaus(**p4**, **p5**)

p0 : 70.89
p1 : 5.23 (AmBe : 5.23)
p2 : 0.09
p3 : 14.54
p4 : 5.49 (Cs137 : 5.54)
p5 : 0.08



Fitting Function (Two gaussian)
: **p0** * Gaus(**p1**, **p2**)
+ **p3** * Gaus(**p4**, **p5**)

p0 : 62.70
p1 : 5.21 (AmBe : 5.22)
p2 : 0.08
p3 : 17.68
p4 : 5.44 (Cs137 : 5.54)
p5 : 0.12

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