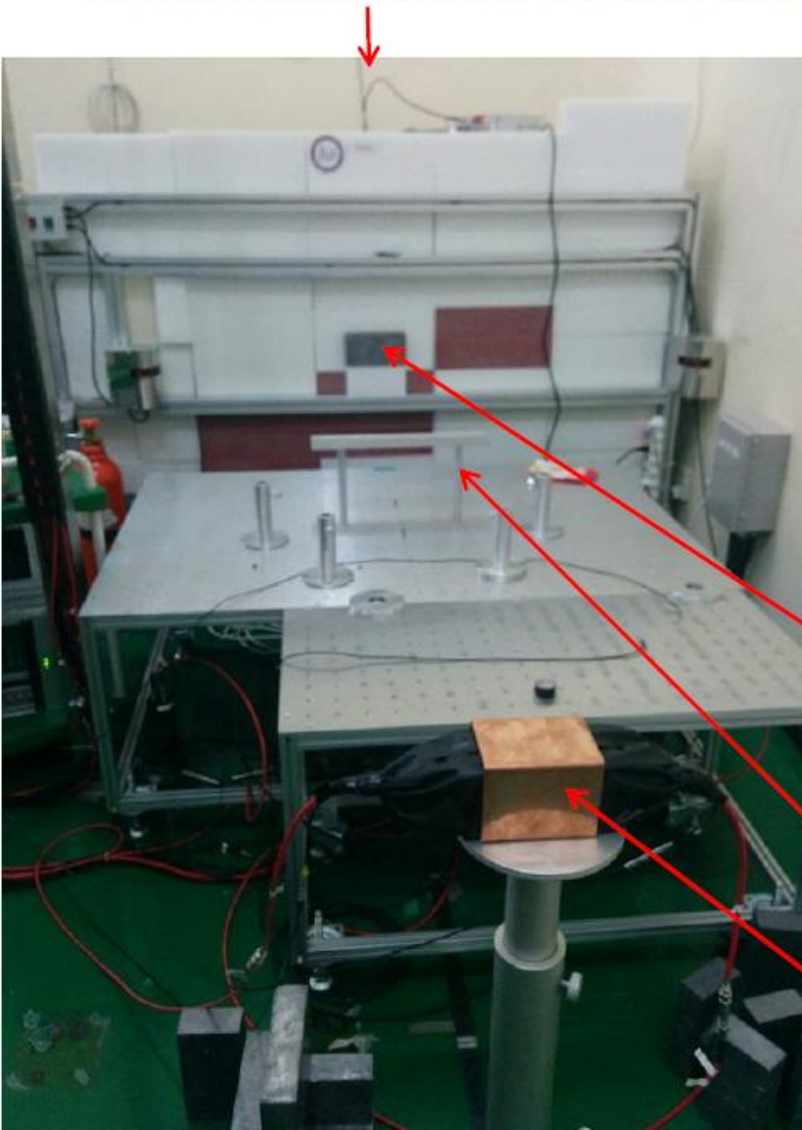


Install NaI crystal at 3 m from neutron generator

Monitor neutron rate with SP9 (3He-filled spherical proportional counter)



	n rate	Single rate	Single / n
5mm lead 1.5 m	129.6	3,119.7	24.1
50mm lead 1.5 m	137.4	2,598.9	18.9
5mm lead 3.0 m	147.4	600.3	4.1
50mm lead 3.0 m	142.5	462.7	3.2

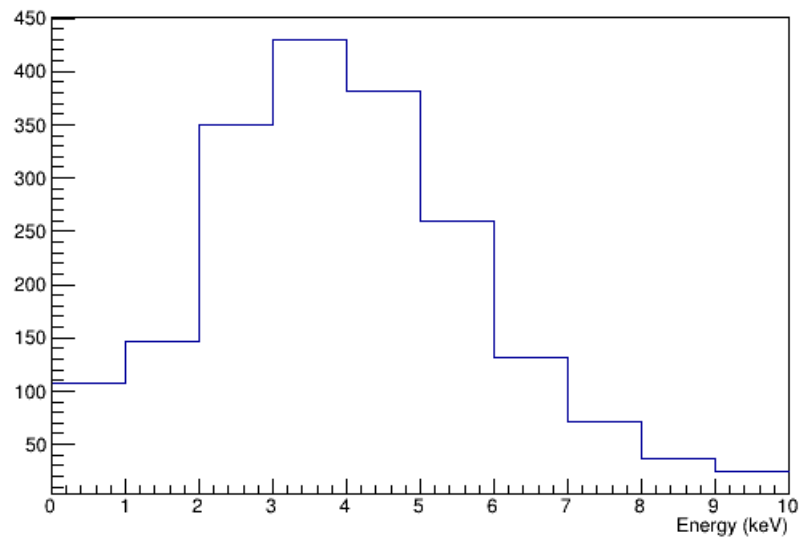
5 or 50 mm lead block
(5 mm : mainly for reduce X-ray from the generator
50 mm : mainly for reduce neutron rate)

1.5 m from neutron generator (D target)

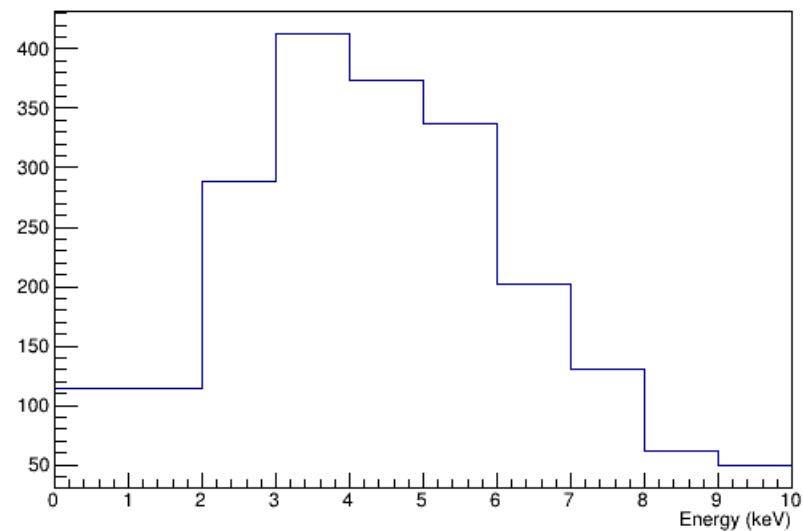
3 m from neutron generator (D target)

NaI deposit energy vs mean time

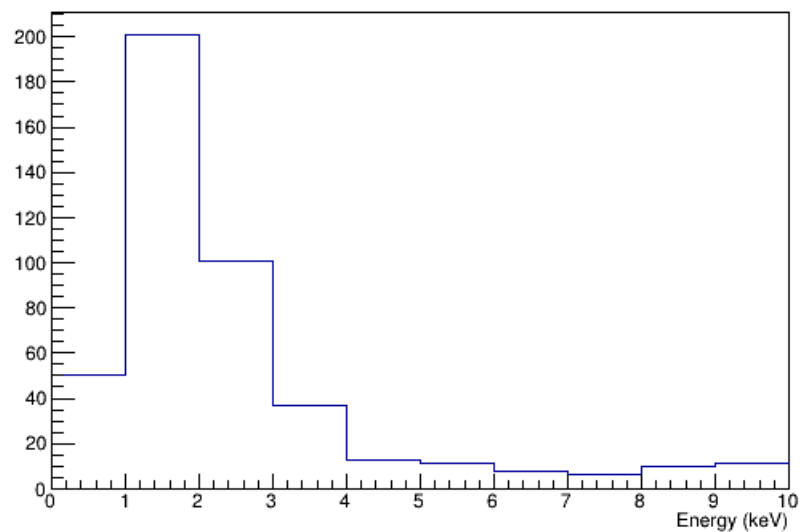
ND1



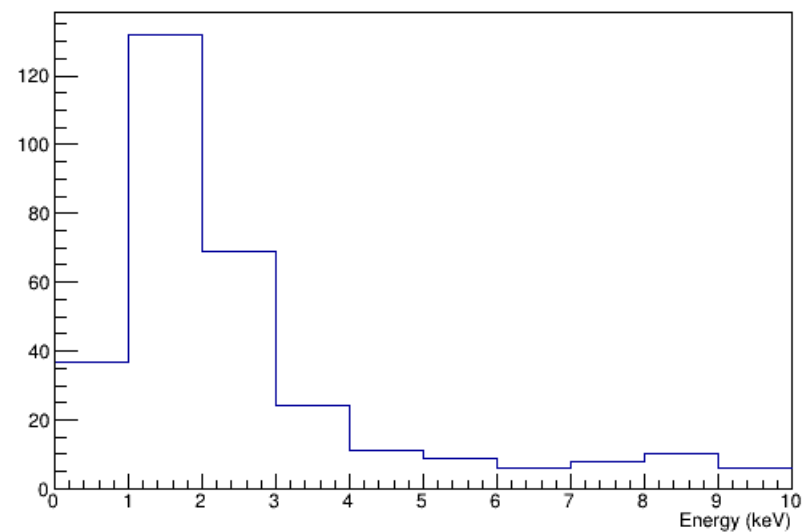
ND2



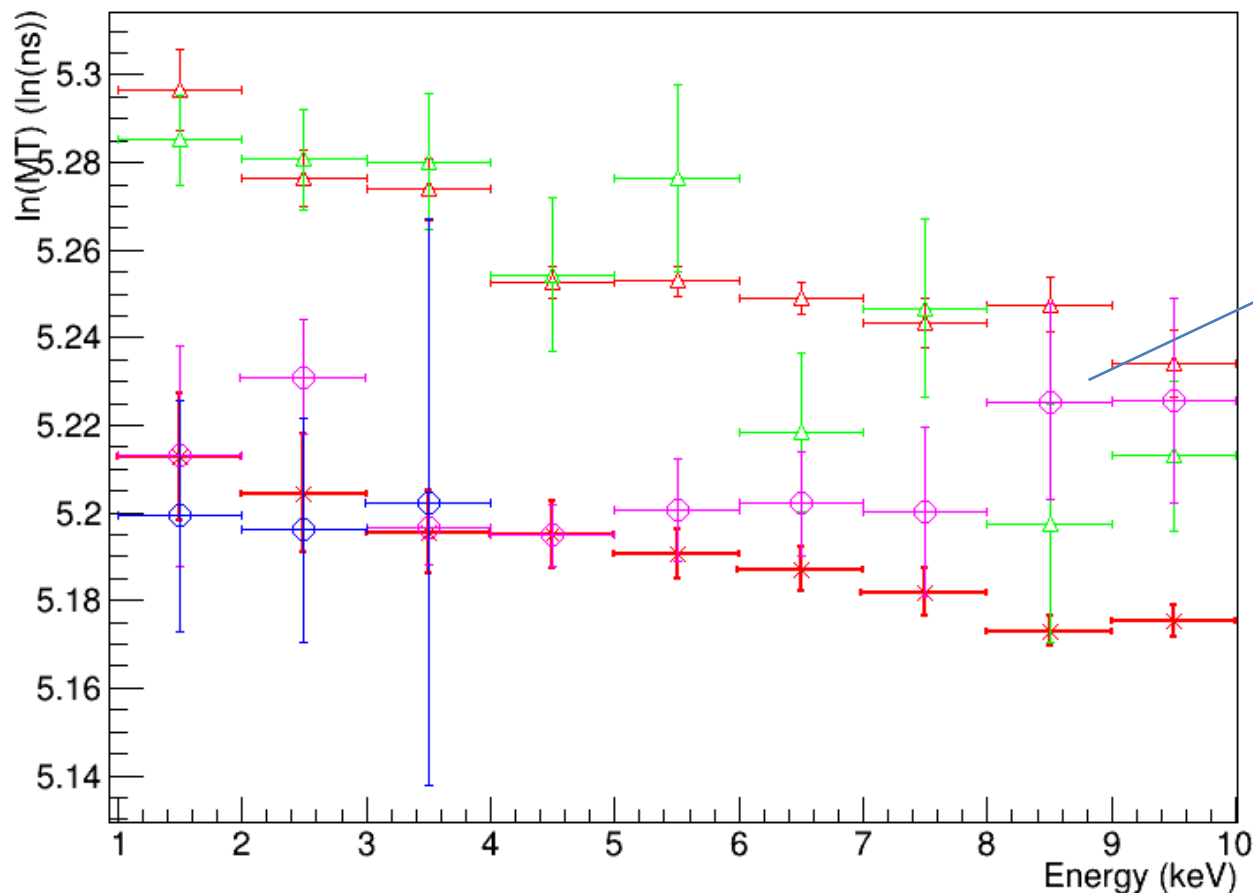
ND3



ND4



ln(Mean time) vs NaI deposit energy (for nuclear recoils)



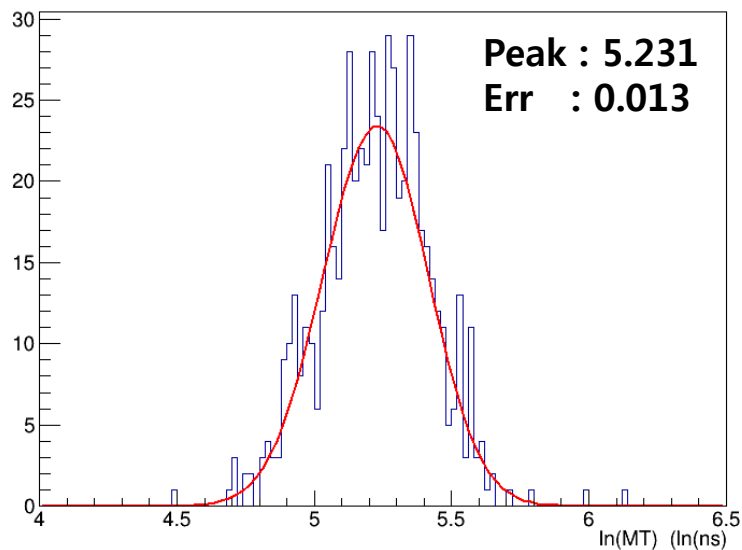
Because of
low statistics?
(1~200 evts)

or contamination
of gamma events?

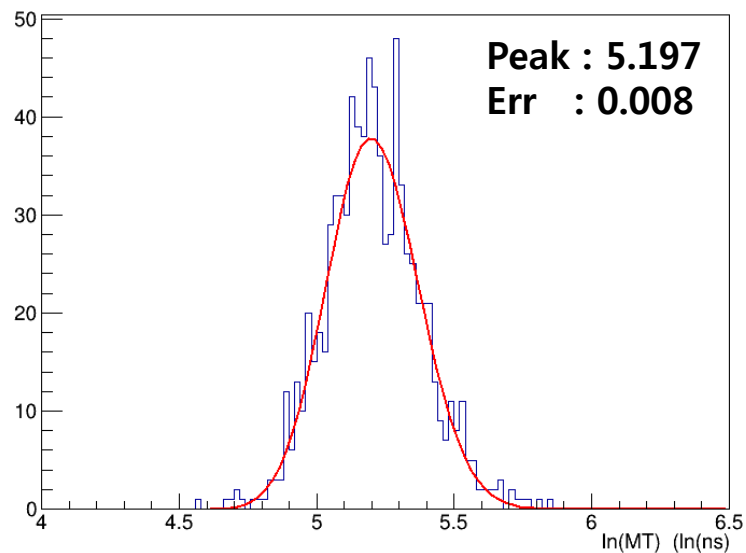
- Red cross** : 400 MHz FADC, low NG power
- Red square** : 500 MHz FADC, high NG power, Na recoil
- Green square** : 500 MHz FADC, high NG power, I recoil
- Pink circle** : 500 MHz FADC, low NG power, Na recoil
- Blue circle** : 500 MHz FADC, low NG power, I recoil

ln(Mean time)

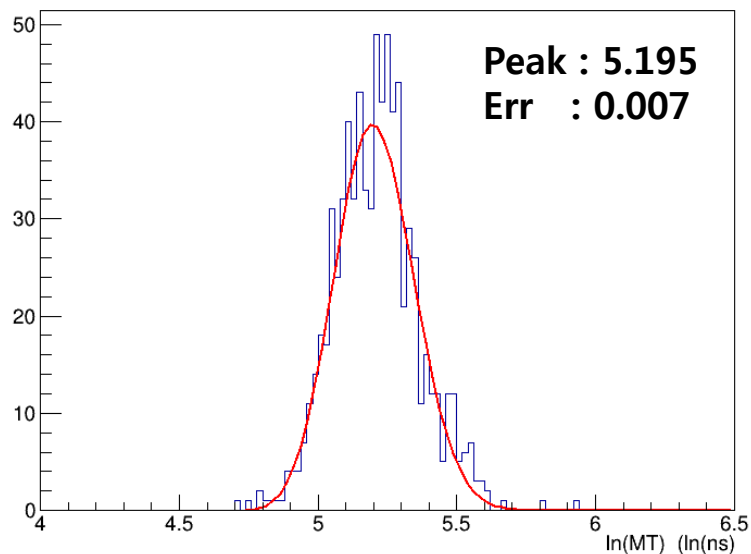
(2 keV to 3 keV)



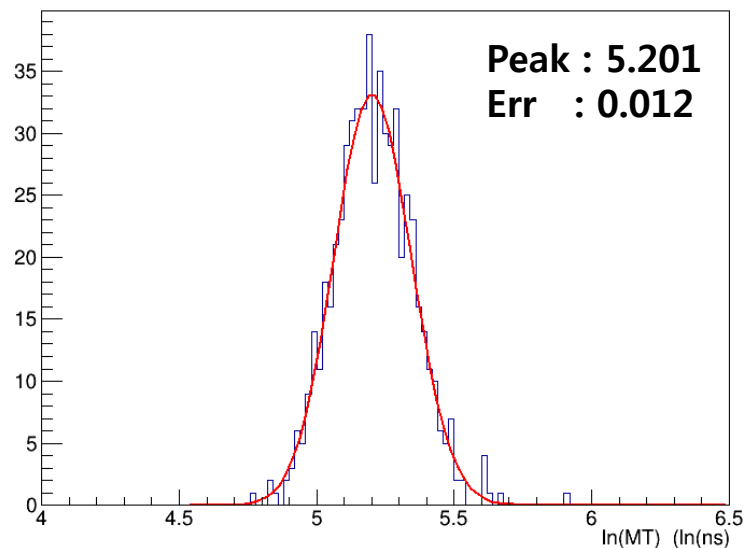
(3 keV to 4 keV)



(4 keV to 5 keV)

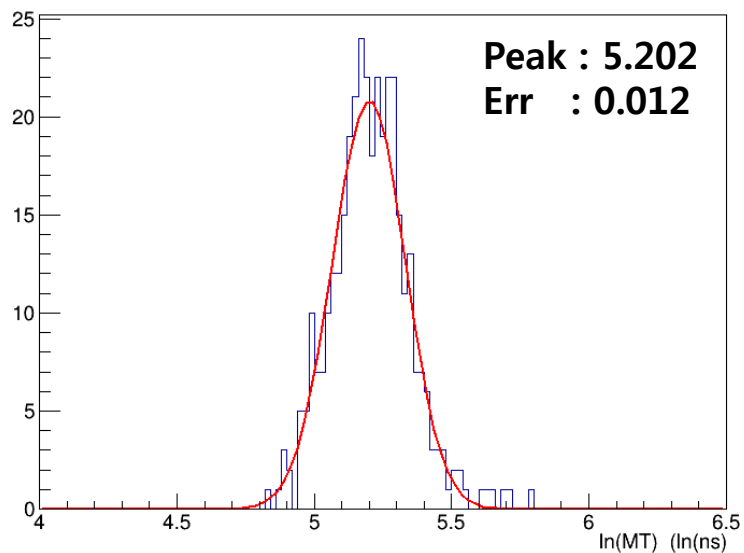


(5 keV to 6 keV)

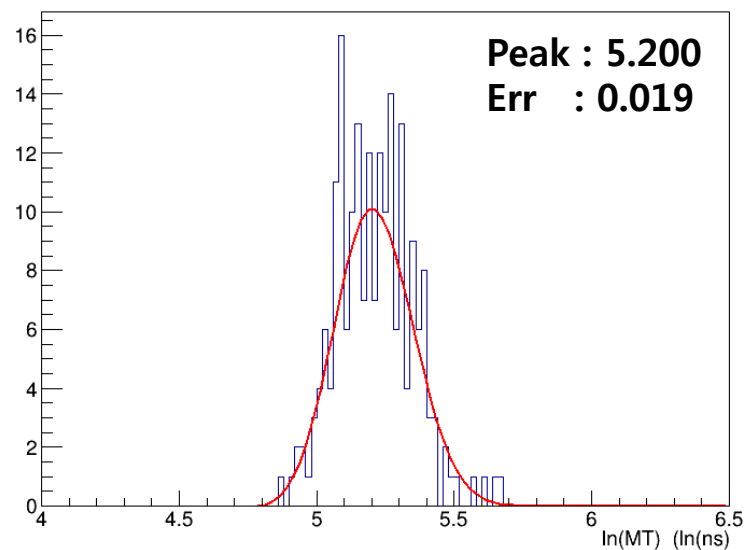


In(Mean time)

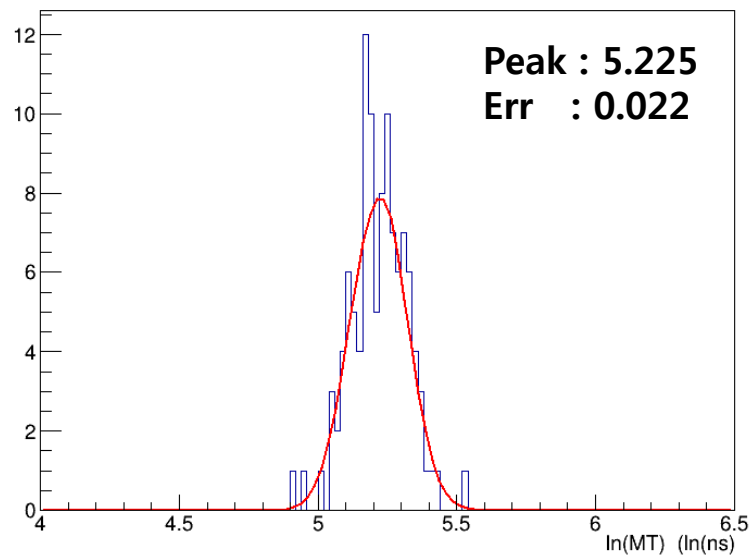
(6 keV to 7 keV)



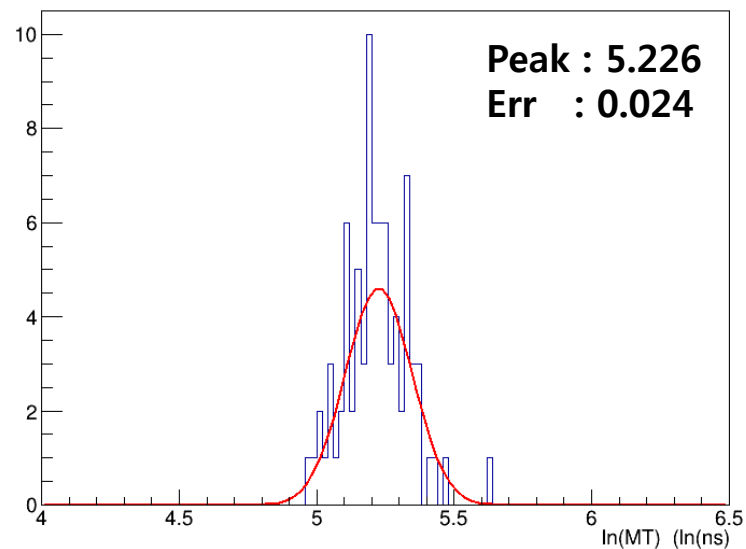
(7 keV to 8 keV)



(8 keV to 9 keV)

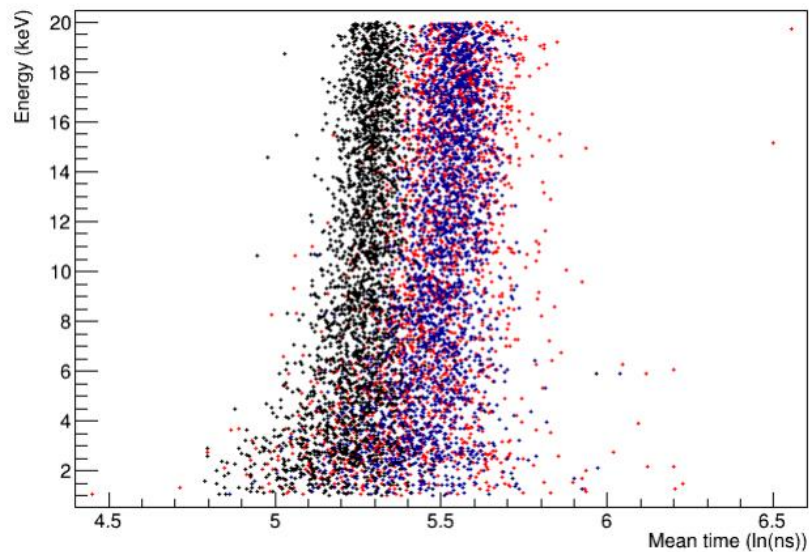


(9 keV to 10 keV)

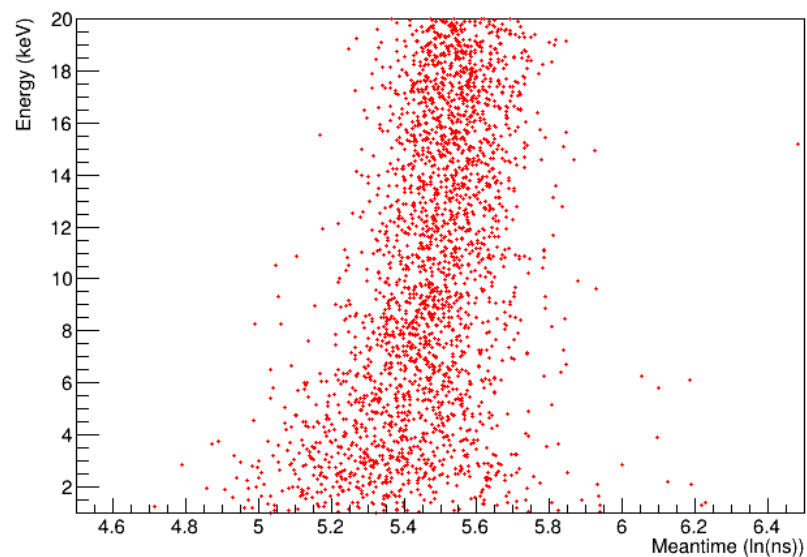


NaI deposit energy vs mean time

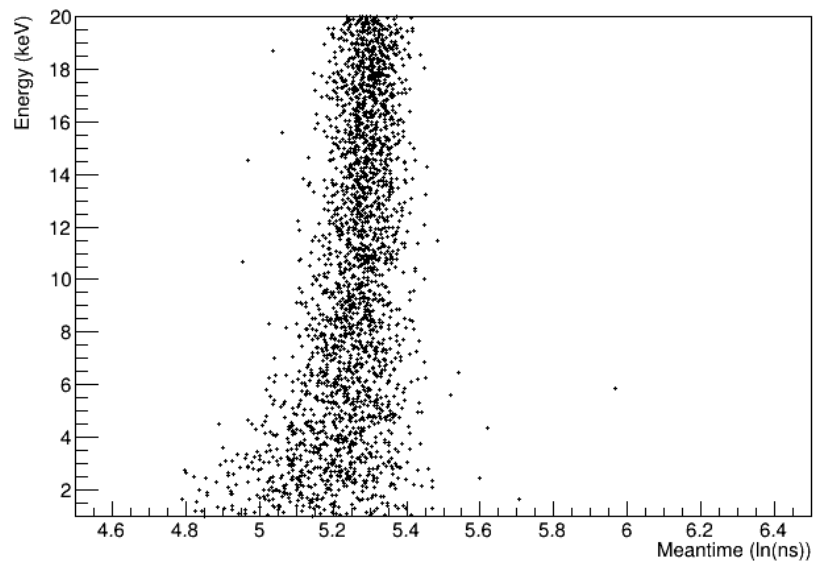
Sum



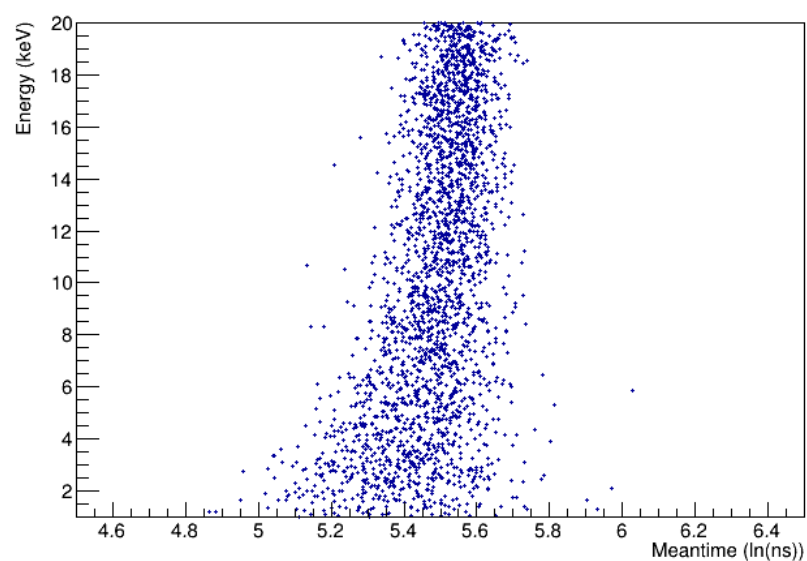
ln(MT)



ln(nmt500)

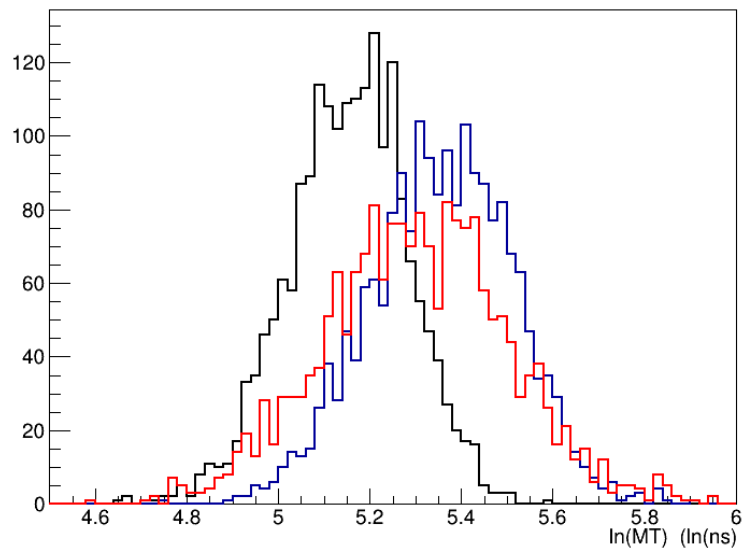


ln(nmt)

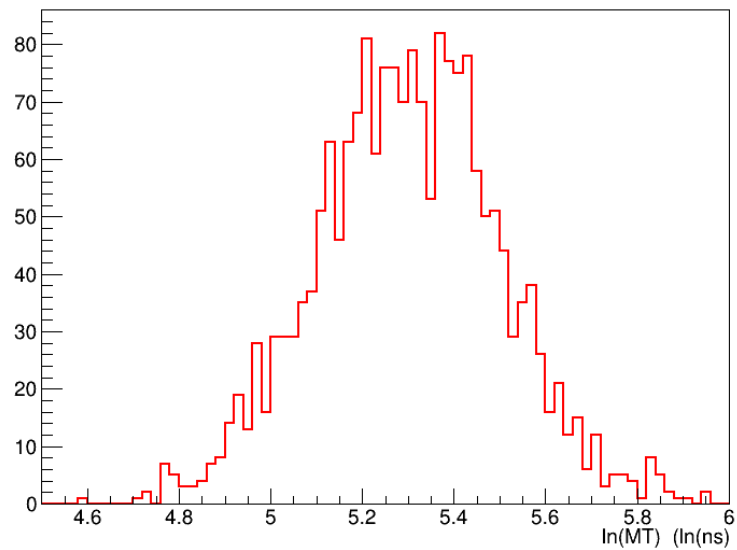


Meantime distribution (Cs137 data, 2~3 keV)

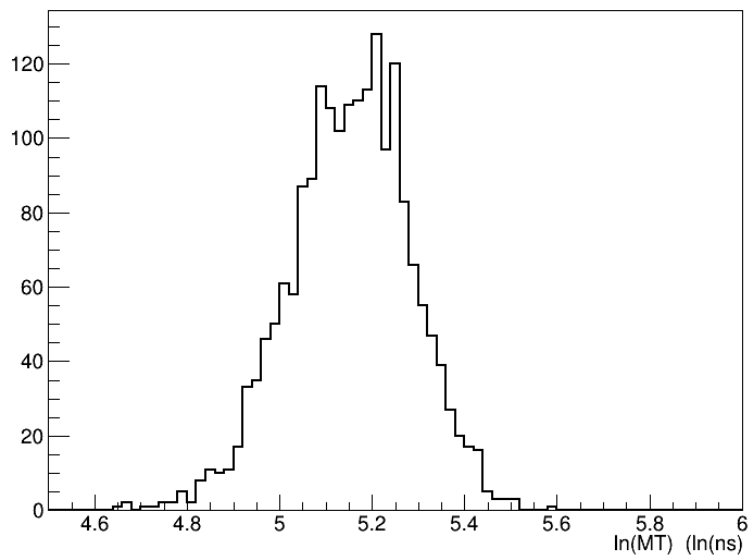
Sum



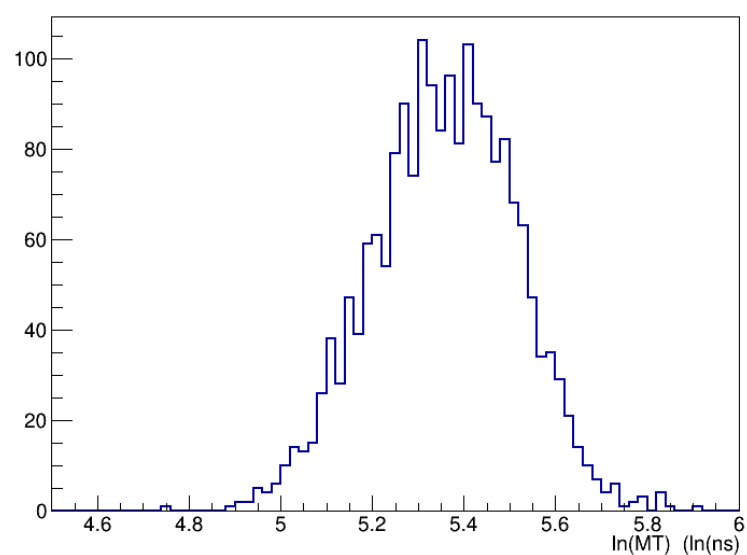
$\ln(MT)$



$\ln(nmt500)$

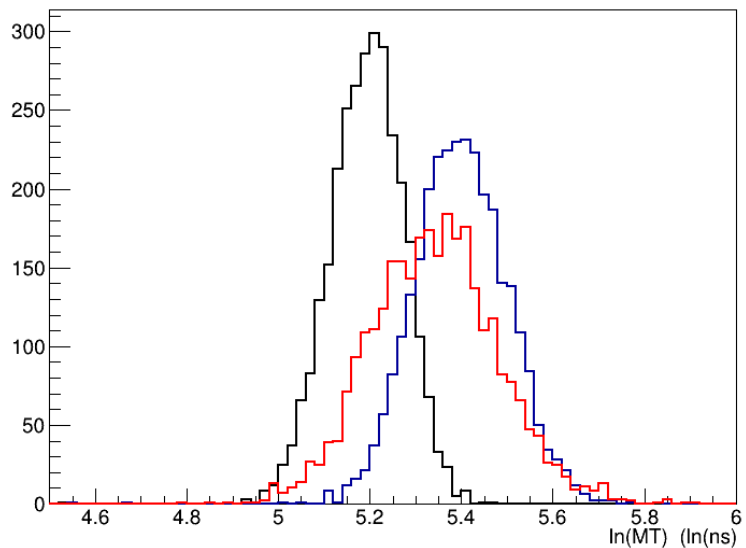


$\ln(nmt)$

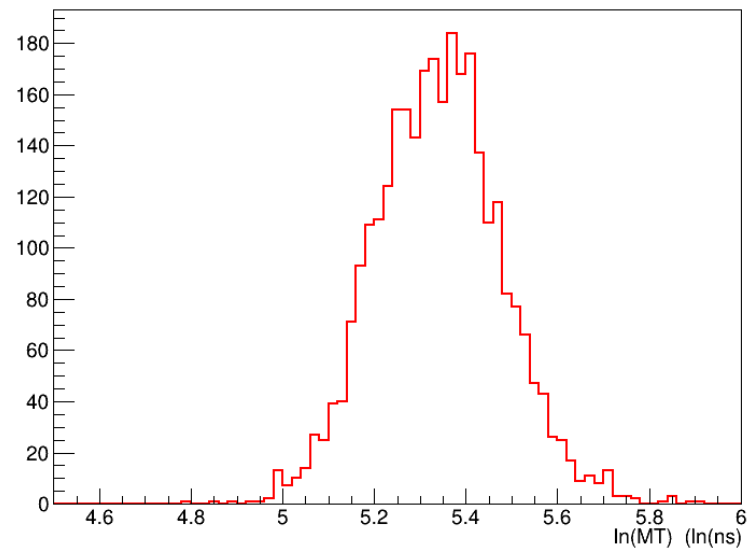


Meantime distribution (Cs137 data, 6~7 keV)

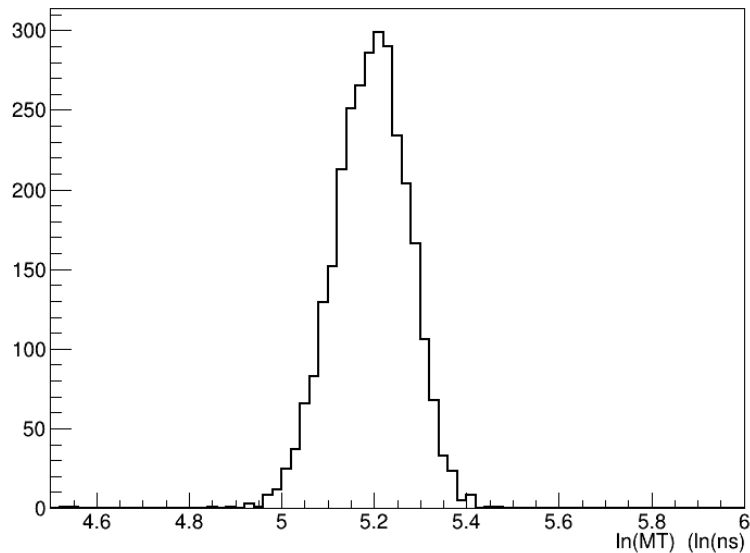
Sum



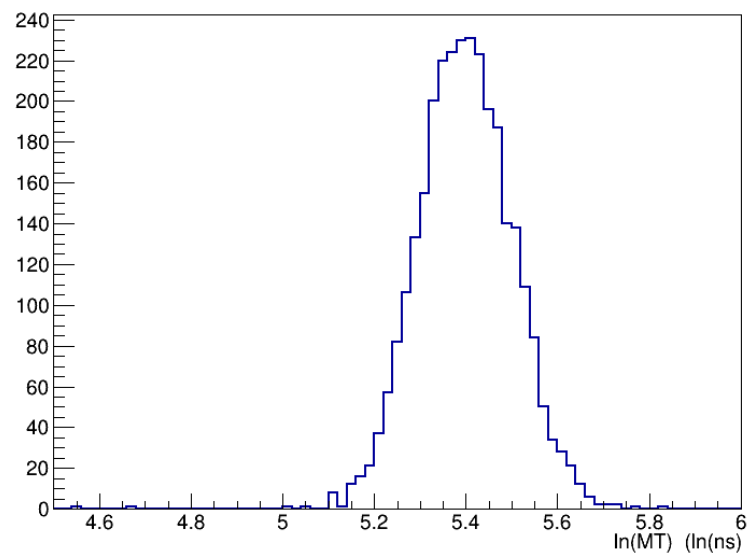
$\ln(MT)$



$\ln(nmt500)$

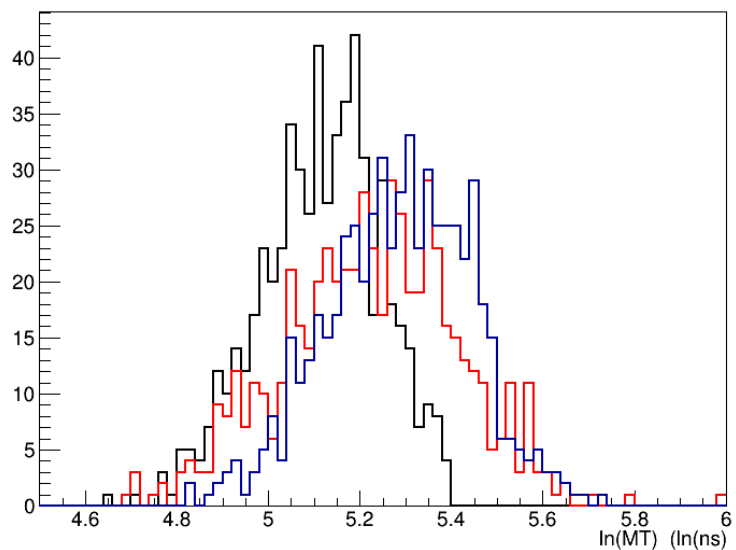


$\ln(nmt)$

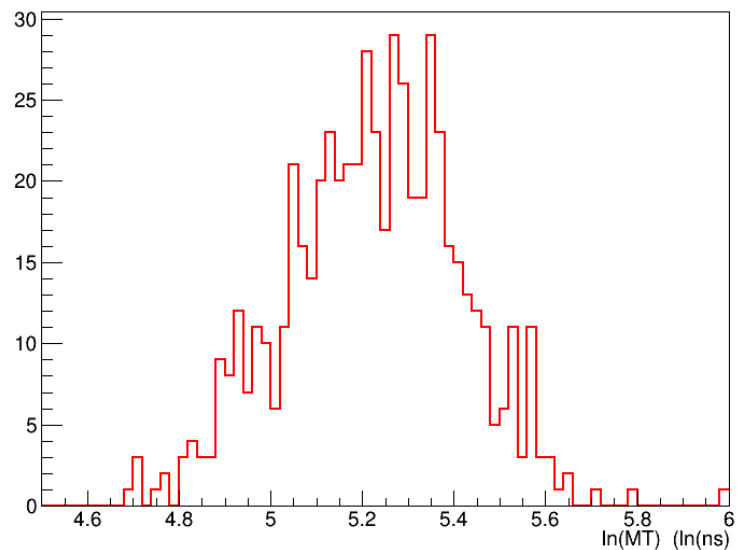


Meantime distribution (neutron data, 2~3 keV)

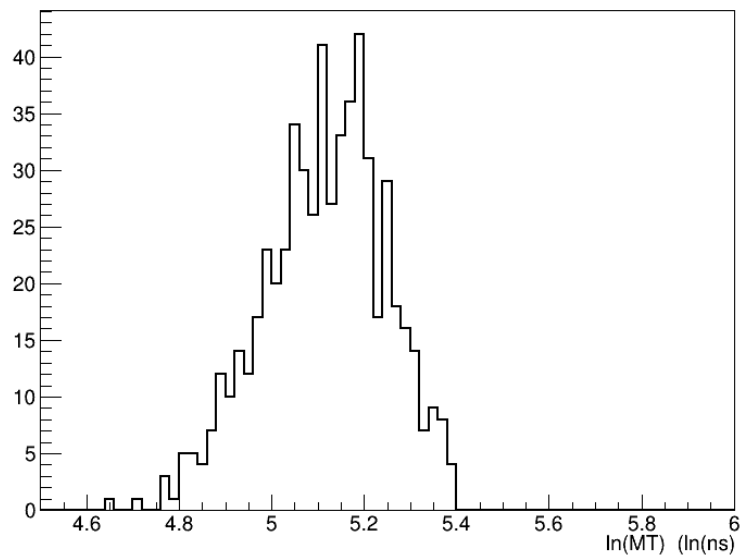
Sum



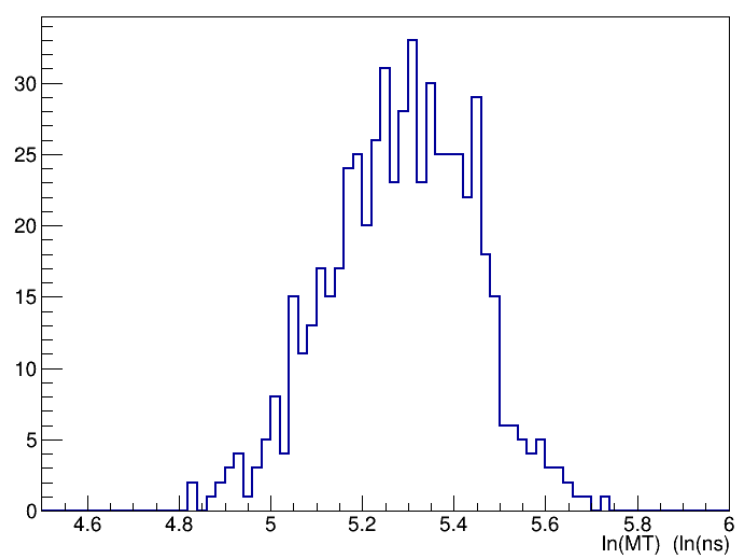
$\ln(MT)$



$\ln(nmt500)$

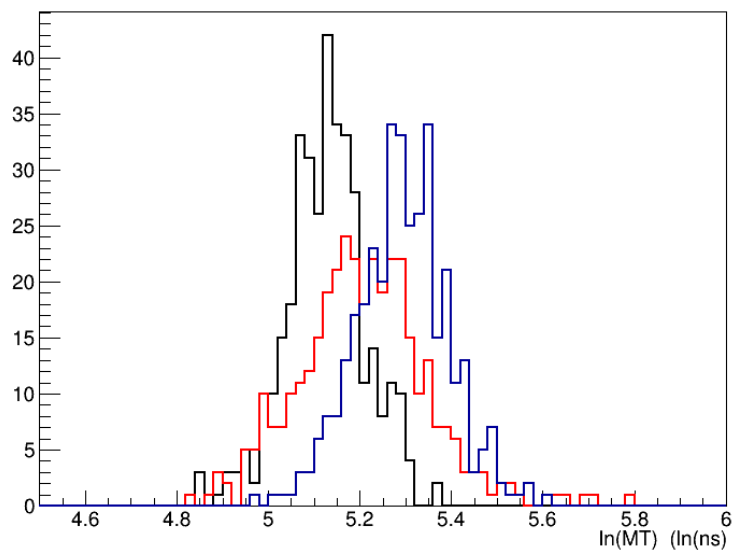


$\ln(nmt)$

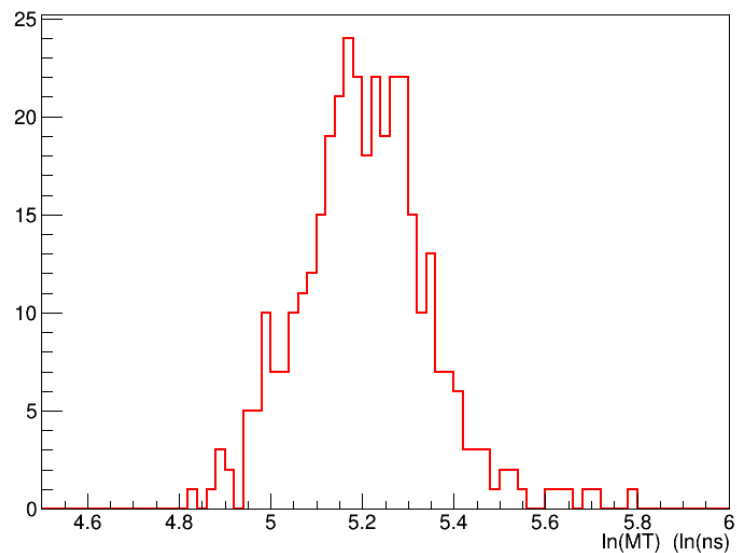


Meantime distribution (neutron data, 6~7 keV)

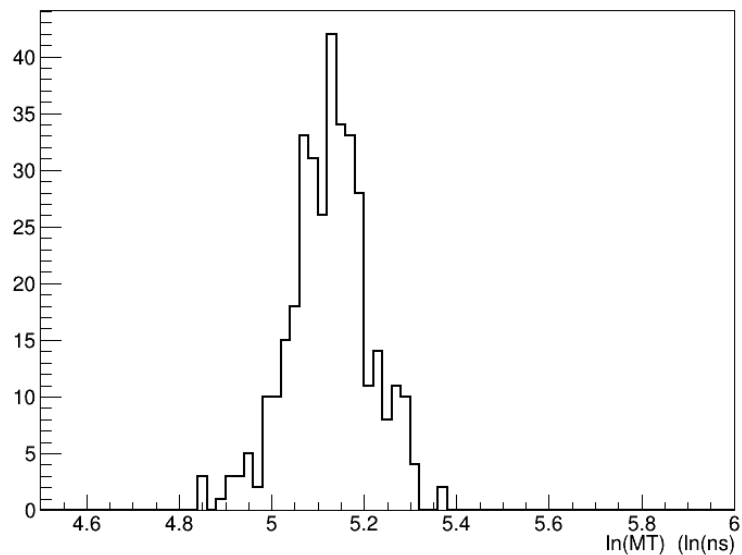
Sum



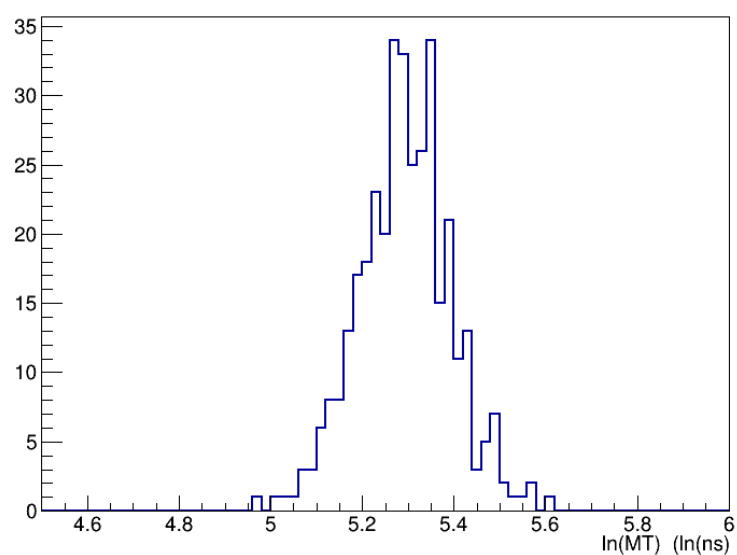
$\ln(MT)$



$\ln(nmt500)$

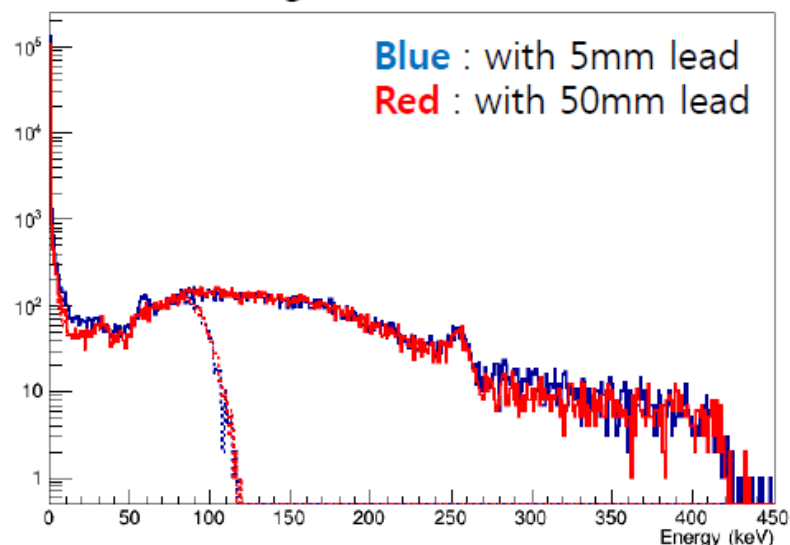


$\ln(nmt)$

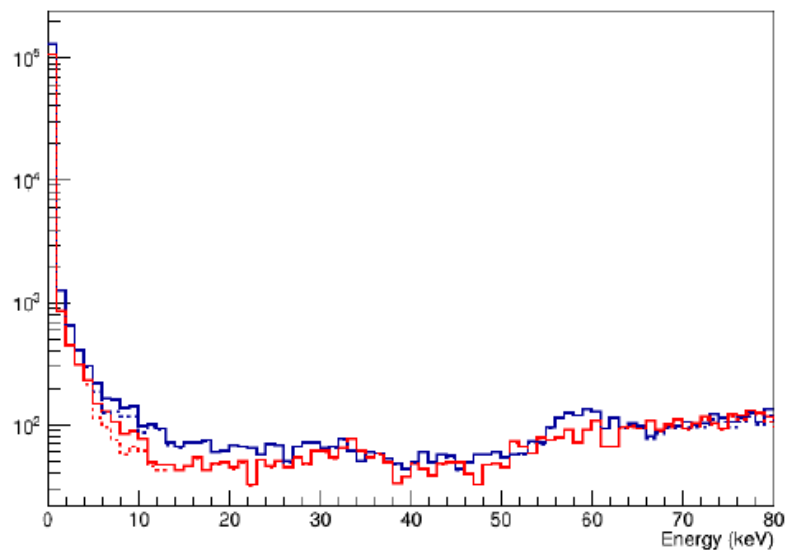


NaI Deposit energy

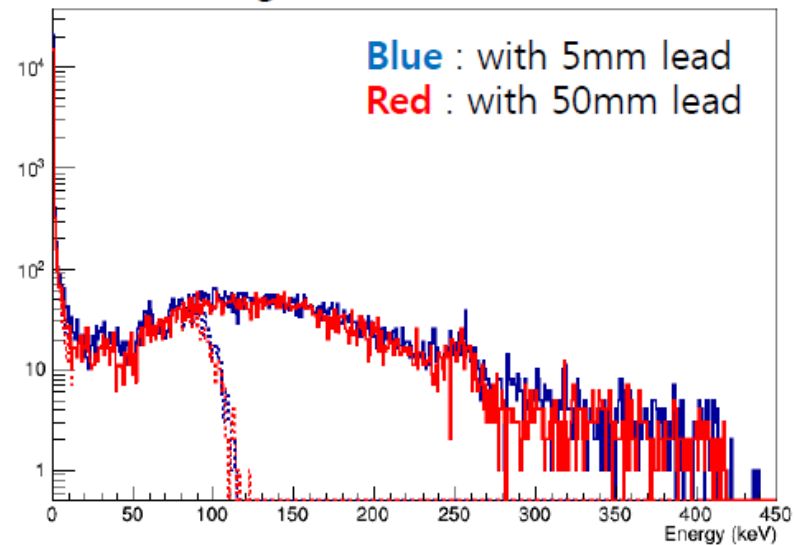
1.5 m from generator



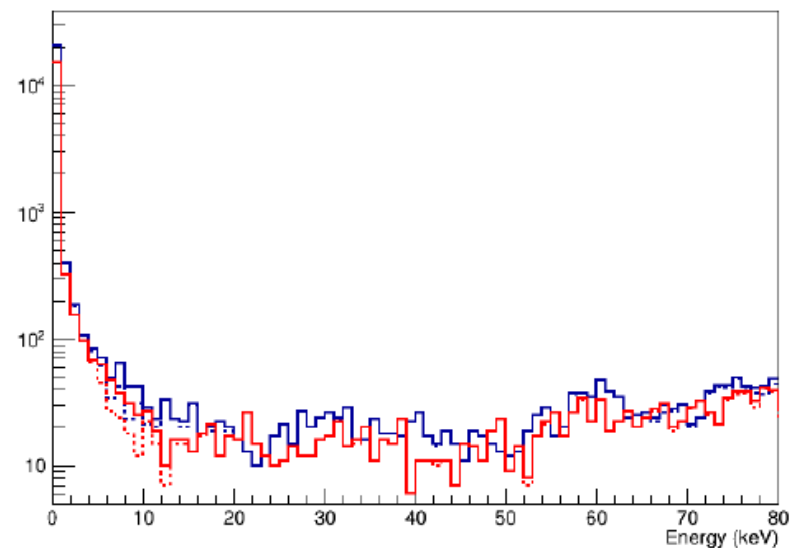
↓ zoomed



3 m from generator

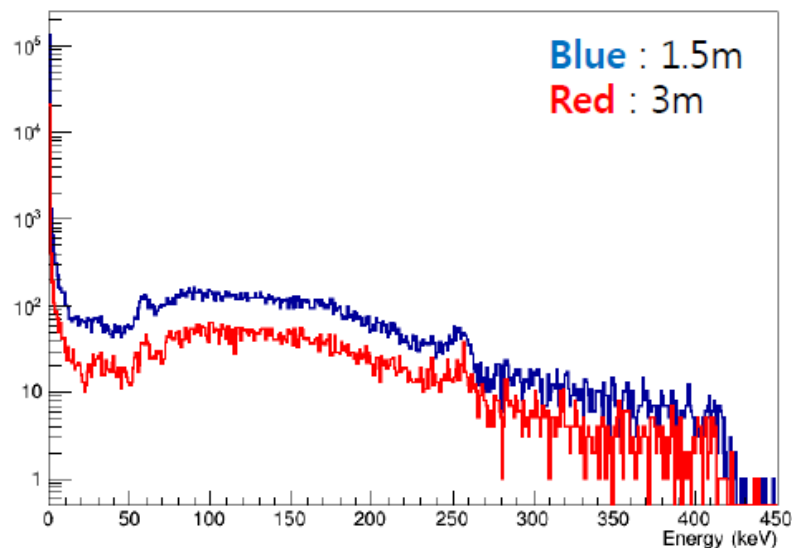


↓ zoomed

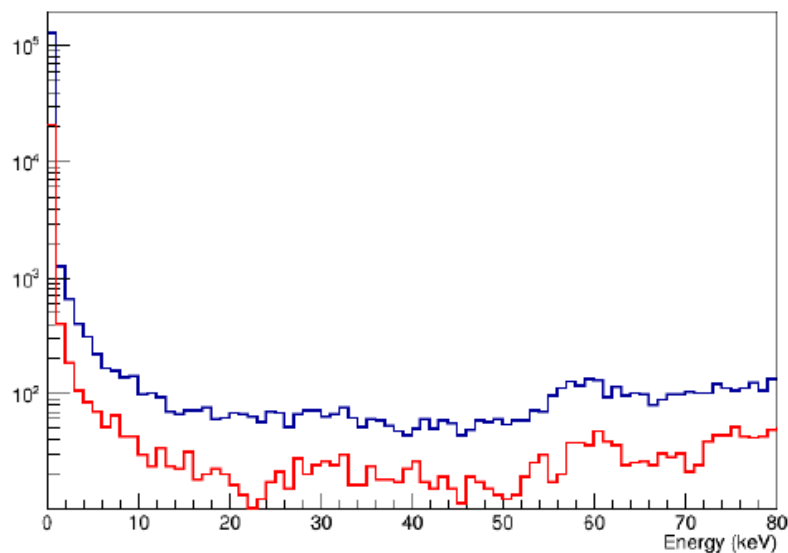


NaI Deposit energy

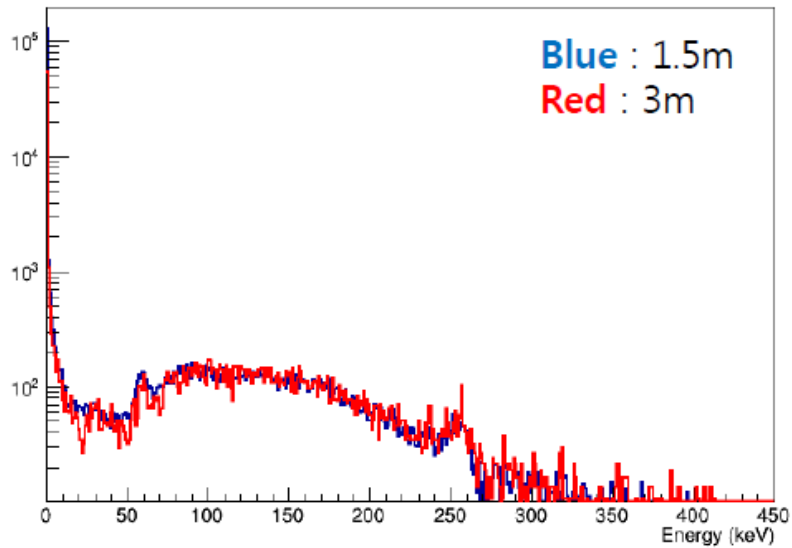
With 5mm lead



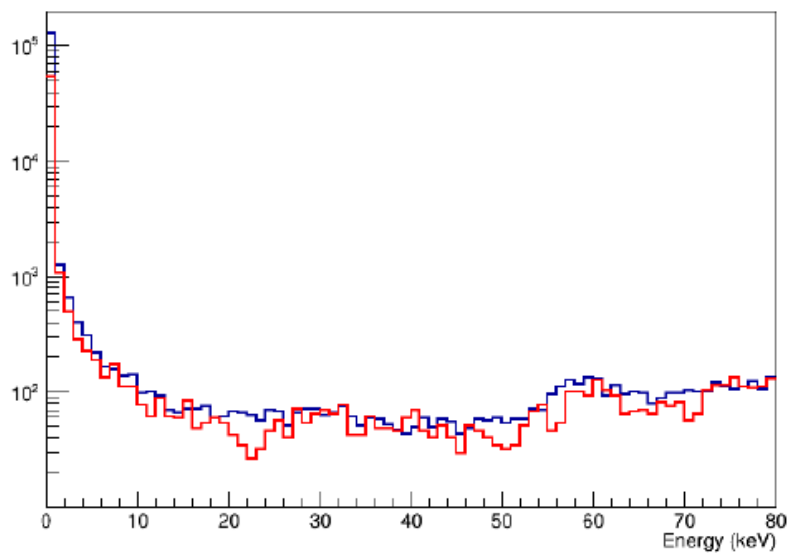
↓ zoomed



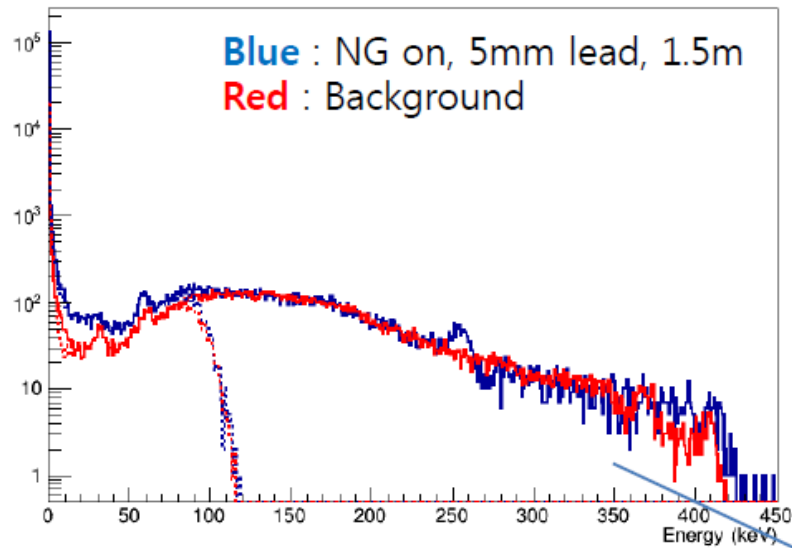
Normalized (*2.667)



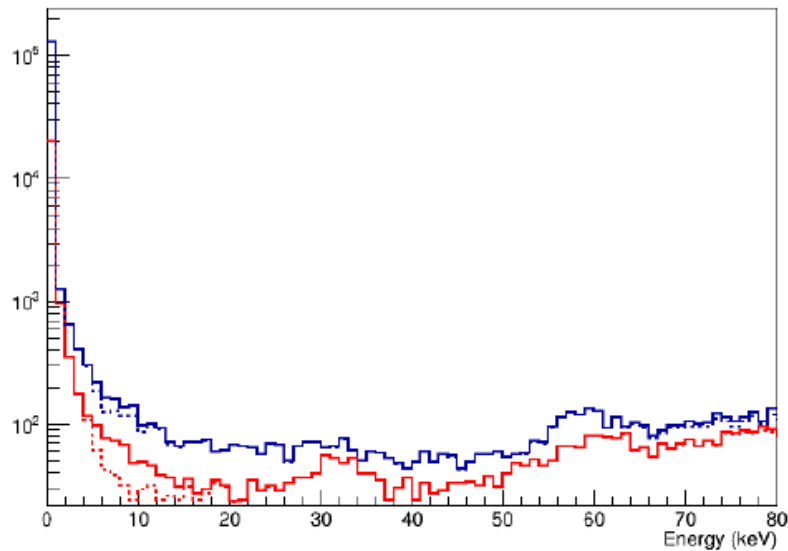
↓ zoomed



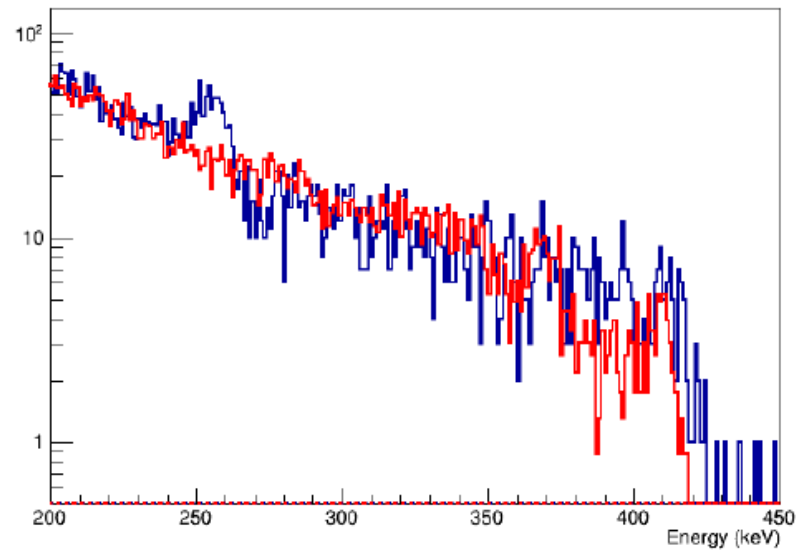
NaI Deposit energy



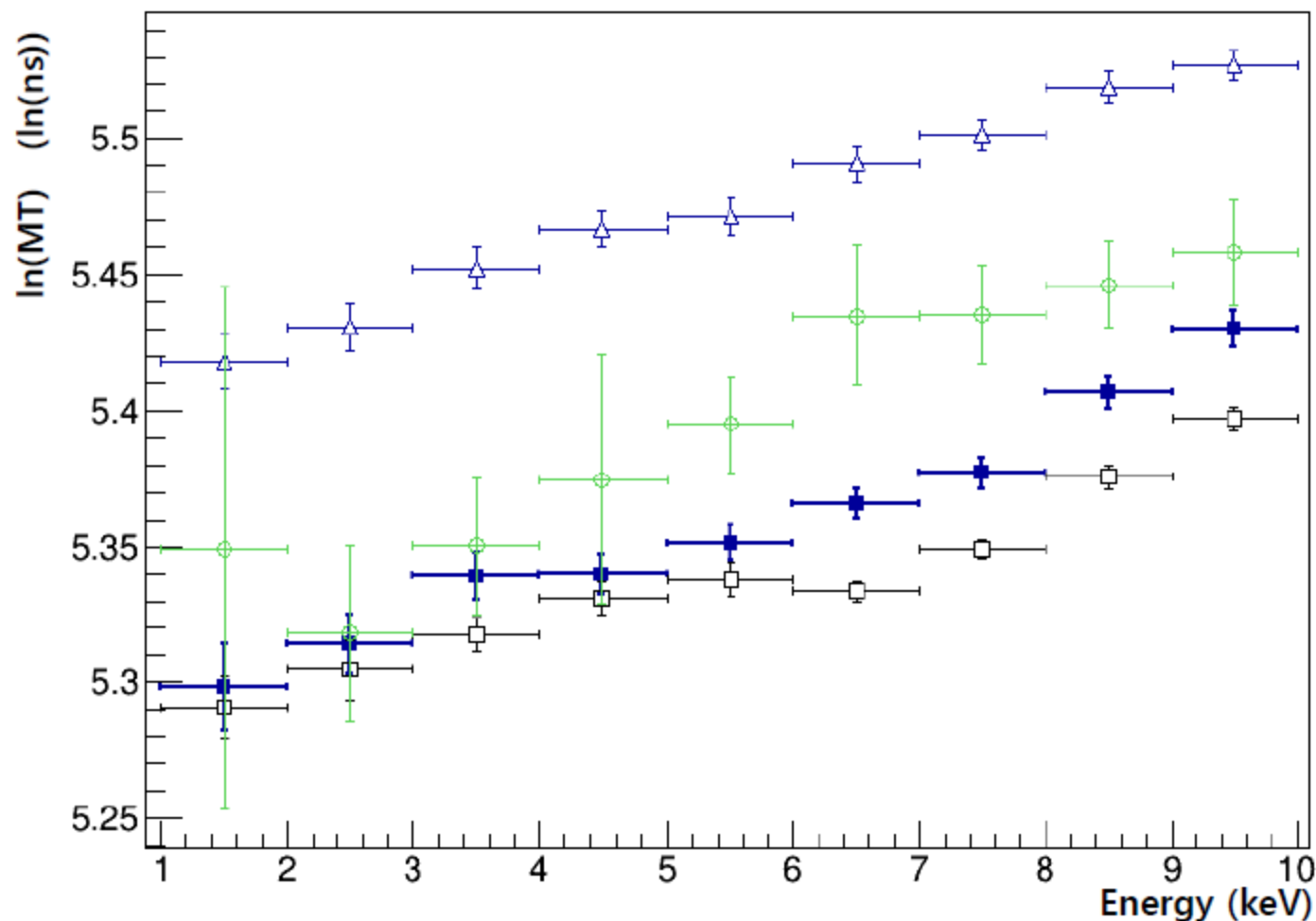
↓ zoomed



zoomed



Meantime distribution (Crystal2 vs crystal7, 9~10 keV)



Electron recoils

- Blue Triangle** : KRISS measurement (with 400 MHz FADC, Cs137 - ~ 20 Hz)
- Thin Blue Triangle** : KRISS measurement (with 500 MHz FADC, Na22 - ~ 1,000 Hz)
- Black Square** : KRISS measurement (with 500 MHz FADC, Cs137 - ~ 15 Hz)
- Green Circle** : Cosine measurement (Co60 - ~ 10 Hz)