



Kaon LT Status Update

January 20th, 2021

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Equations

$$N_{scaler} = \Sigma(trigscaler) - EDTM_{scaler}$$

$$Q_{tot} = (H.BCM.scaler.charge)$$

- Scaler

$$Y_{scaler} = \frac{N_{scaler}}{Q_{tot}}$$

$$N_{electrons} = \int (H/P.hod.goodscinhits)$$

- No track

$$Y_{notrack} = \frac{N_{electrons}}{Q_{tot}\epsilon_{cpuLT}}$$

$$N_{track} = tracks$$


- Track

$$Y_{track} = \frac{N_{track}}{Q_{tot}\epsilon_{track}\epsilon_{cpuLT}}$$

Cuts



- $\text{abs}(I\text{-SetCurrent}) < (|2.5|, |10|) \text{ uA}$
- Delta
 - HMS, $(-8 < \text{delta} < 8)$
 - SHMS, $(-10 < \text{delta} < 20)$
- start time
 - $\text{H(P).hod.goodstarttime} == 1$


$$P_{\text{HMS}} = -3.266$$
$$\theta_{\text{HMS}} = 12.53$$

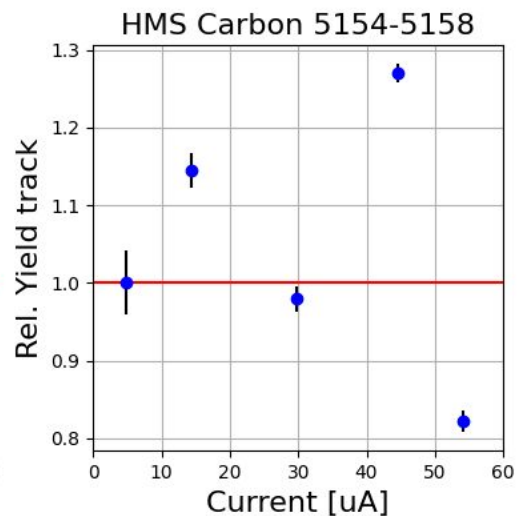
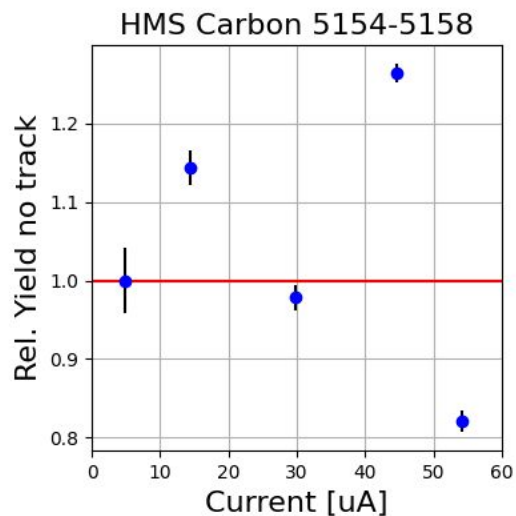
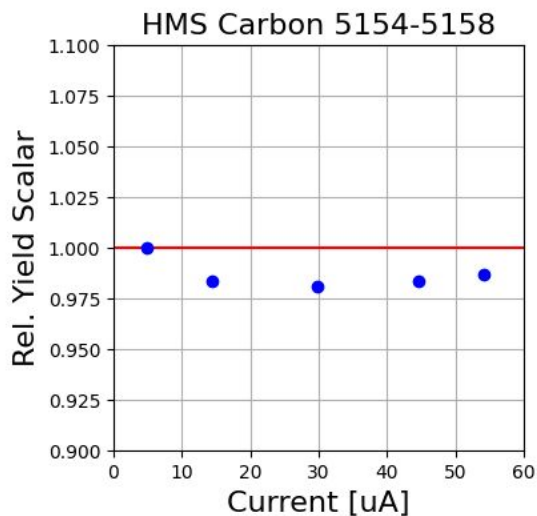
- 65, 55, 50, 45, 30, 15, 5 μA
 - 5154, 5155, 5156, 5157, 5158,
5298, 5299

$$P_{\text{SHMS}} = 6.842$$
$$\theta_{\text{SHMS}} = 6.495$$

- 65, 55, 50, 45, 30, 15, 5 μA
 - 5154, 5155, 5156, 5157, 5158,
5298, 5299

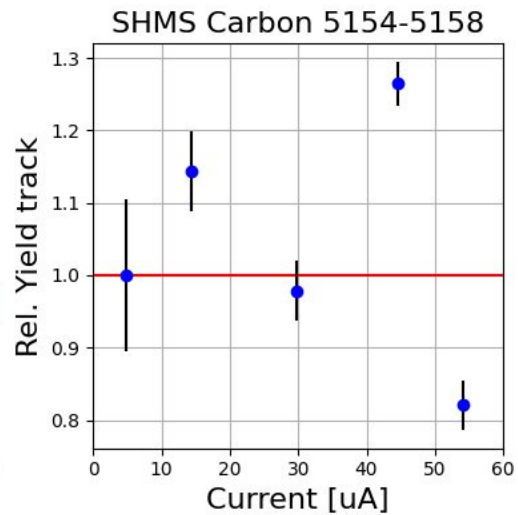
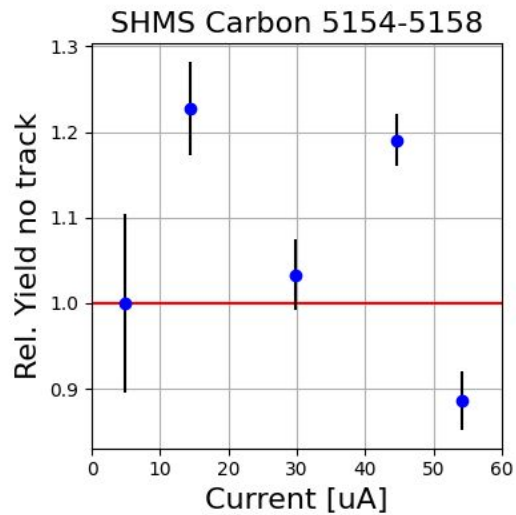
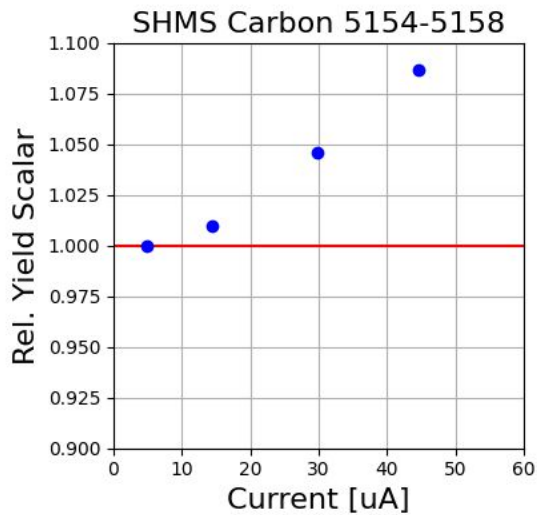
$$P_{HMS} = -3.266$$

Electron
Cer > 0.5
2.0 > Cal > 0.6



$$P_{SHMS} = 6.842$$

Proton
Hgcer < 1.5
Aero < 1.5
0 < Cal <= 0.6



10.6 GeV



$$P_{\text{HMS}} = -4.204$$
$$\theta_{\text{HMS}} = 14.93$$

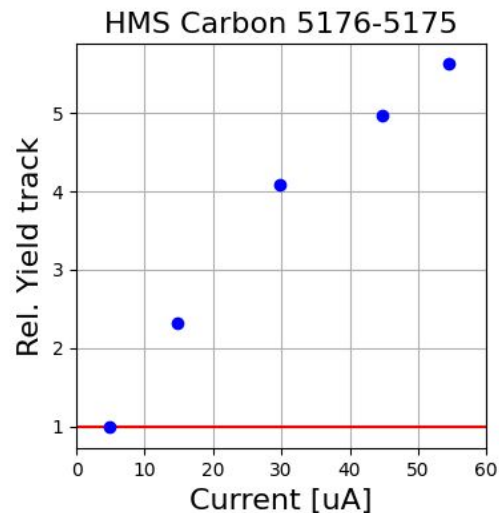
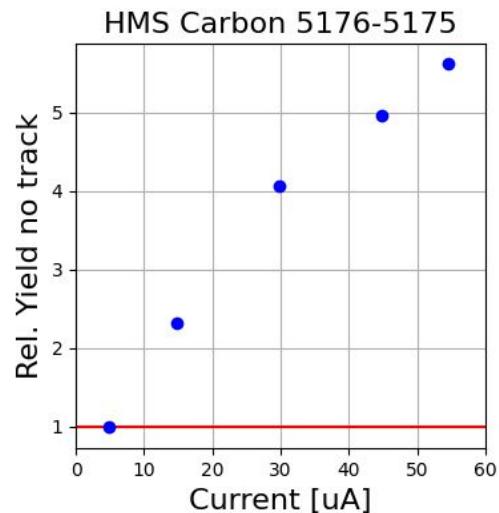
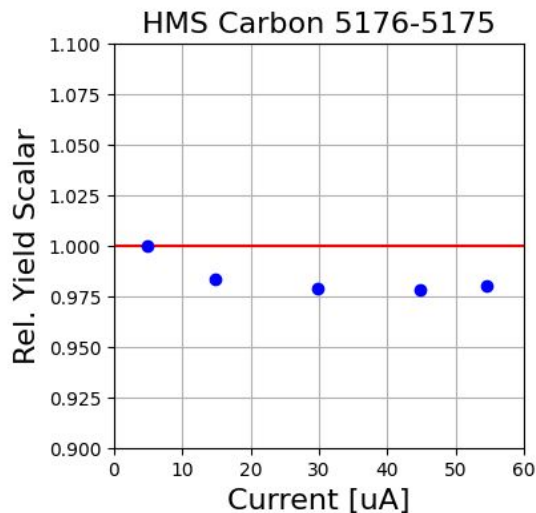
- 70, 55, 50, 45, 30, 15, 5 μA
 - 5175, 5176, 5178, 5179, 5181, 5300, 5301

$$P_{\text{SHMS}} = 6.053$$
$$\theta_{\text{SHMS}} = 6.495$$

- 70, 55, 50, 45, 30, 15, 5 μA
 - 5175, 5176, 5178, 5179, 5181, 5300, 5301

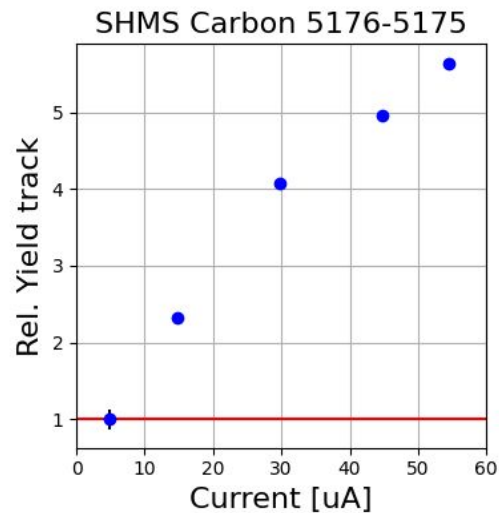
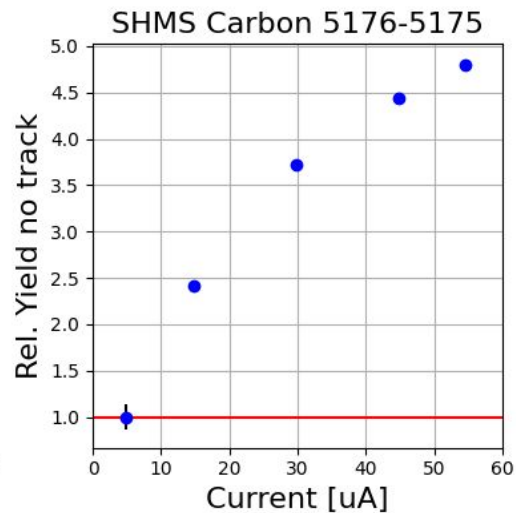
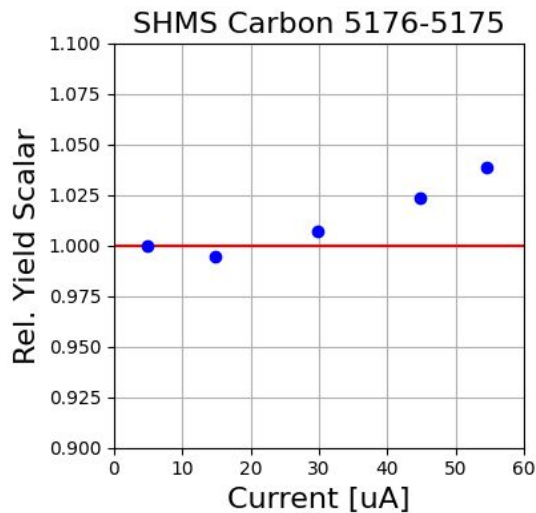
$$P_{HMS} = -4.204$$

Electron
Cer > 0.5
2.0 > Cal > 0.6



$$P_{SHMS} = 6.053$$

Proton
Hgcer < 1.5
Aero < 1.5
0 < Cal <= 0.6



6.2 GeV

$$P_{\text{HMS}} = 3.939$$
$$\theta_{\text{HMS}} = 13.00$$

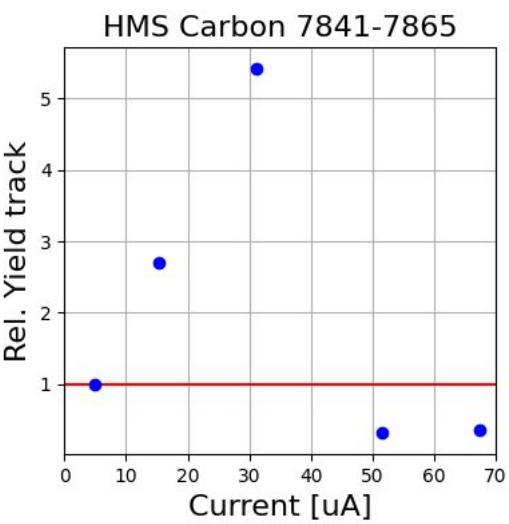
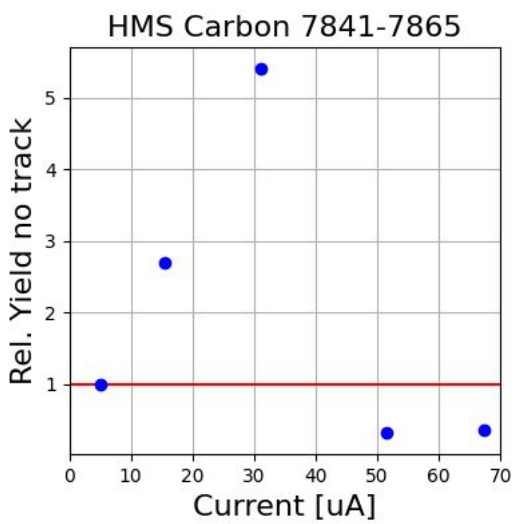
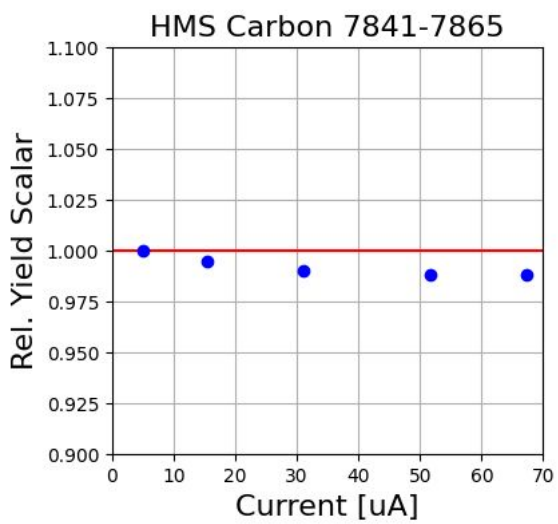
- 65, 50, 30, 15, 5 μA
 - 7841, 7846, 7847, 7864, 7865

$$P_{\text{SHMS}} = 3.939$$
$$\theta_{\text{SHMS}} = 11.00$$

- 65, 50, 30, 15, 5 μA
 - 7841, 7846, 7847, 7864, 7865

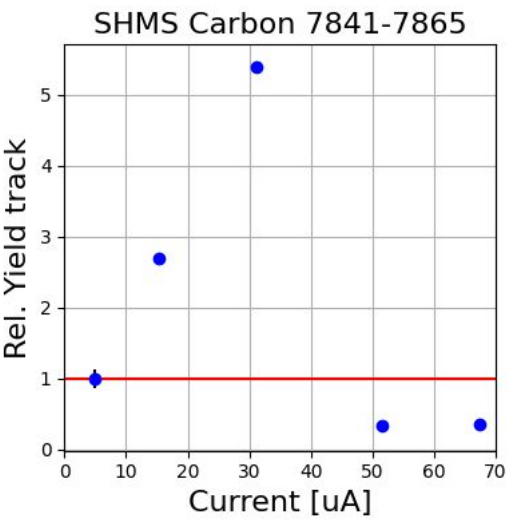
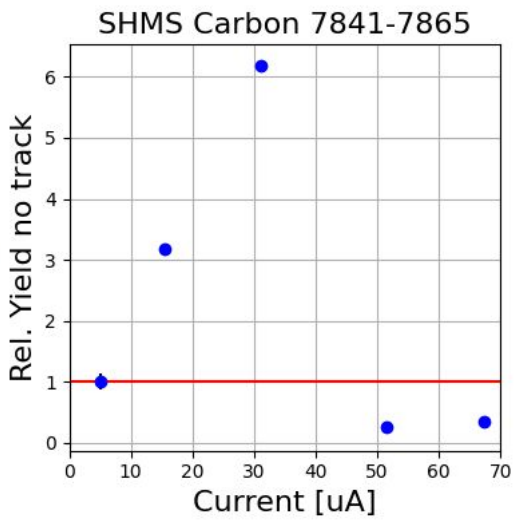
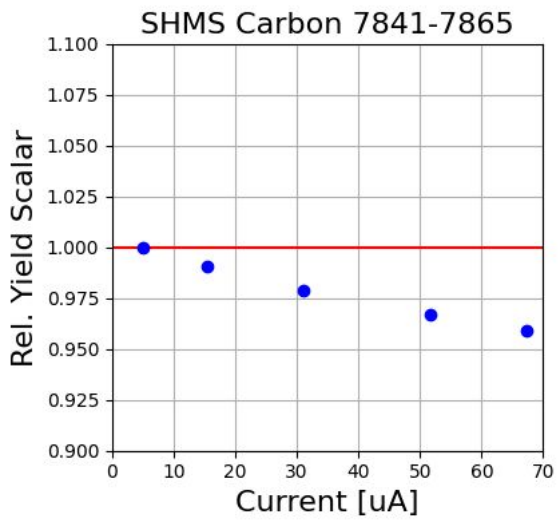
$P_{HMS} = 3.939$

Hadron
Cer < 0.5
 $0.0 < Cal \leq 0.6$



$P_{SHMS} = 3.939$

Proton
Hgcer < 1.5
Aero < 1.5
 $0 < Cal \leq 0.6$



8.2 GeV

$$P_{\text{HMS}} = 5.745$$
$$\theta_{\text{HMS}} = 12.97$$

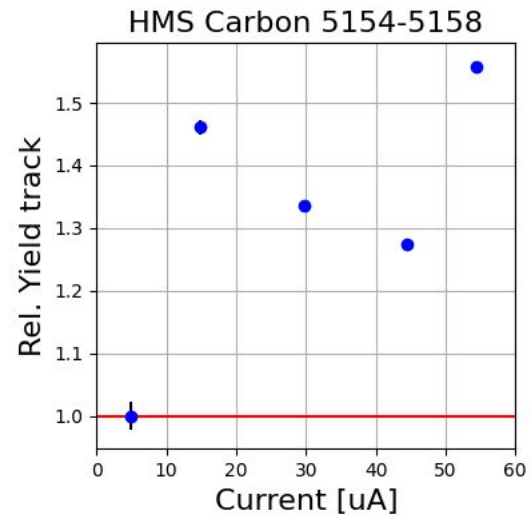
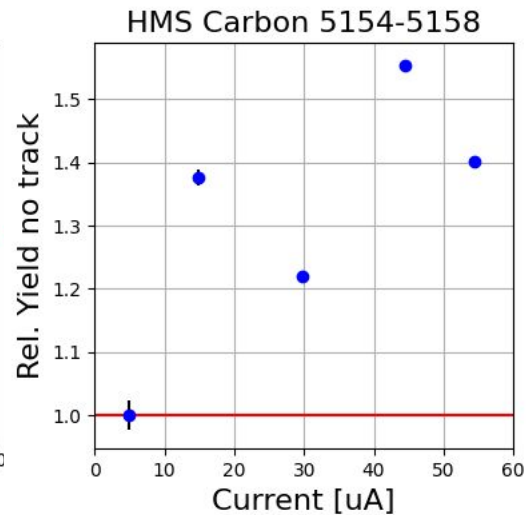
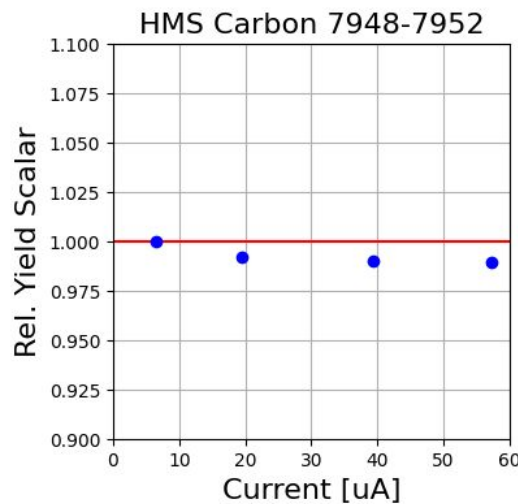
- 65, 50, 30, 15, 5 μA
 - 7948, 7949, 7950, 7951, 7952

$$P_{\text{SHMS}} = 5.745$$
$$\theta_{\text{SHMS}} = 9.51$$

- 65, 50, 30, 15, 5 μA
 - 7948, 7949, 7950, 7951, 7952

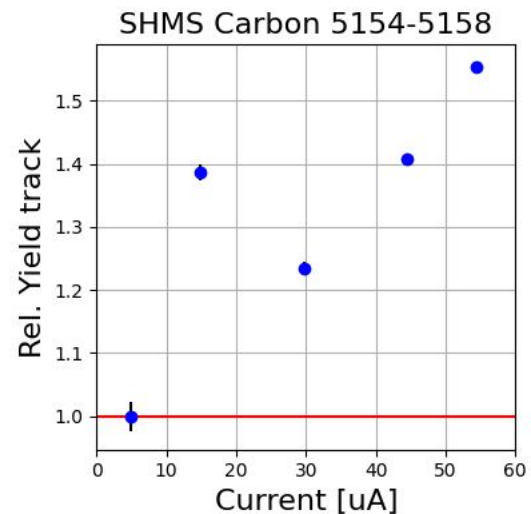
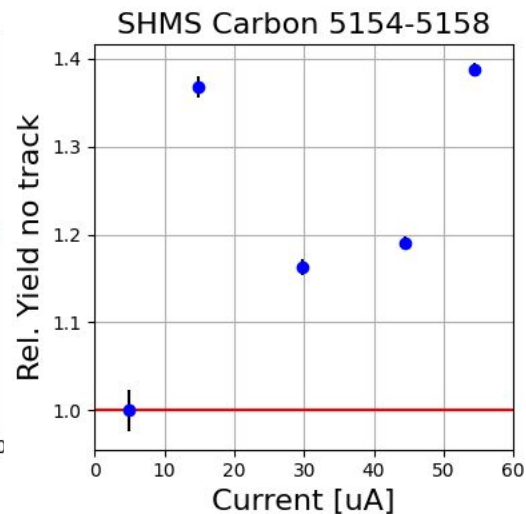
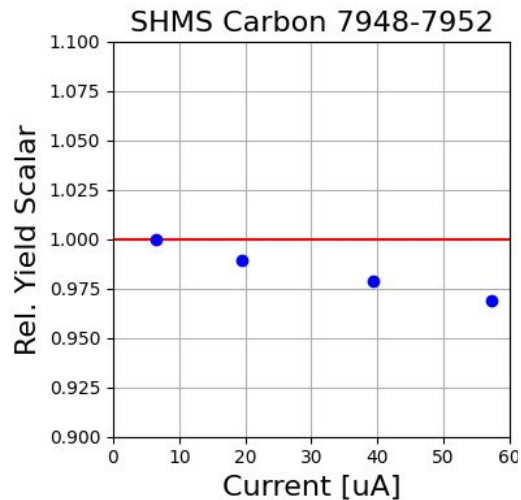
$P_{HMS} = 5.745$

Hadron
Cer < 0.5
 $0.0 < Cal \leq 0.6$



$P_{SHMS} = 5.745$

Proton
Hgcer < 1.5
Aero < 1.5
 $0 < Cal \leq 0.6$



EDTM

$$cpuLT = \frac{EvtType}{\frac{TRIG_{accept}}{PS} - edtm}$$

Total EDTM

$$T_{TDT} = 1 - T_{TLT} = 1 - \frac{N_{edtm,acc}}{N_{edtm,scl}}$$

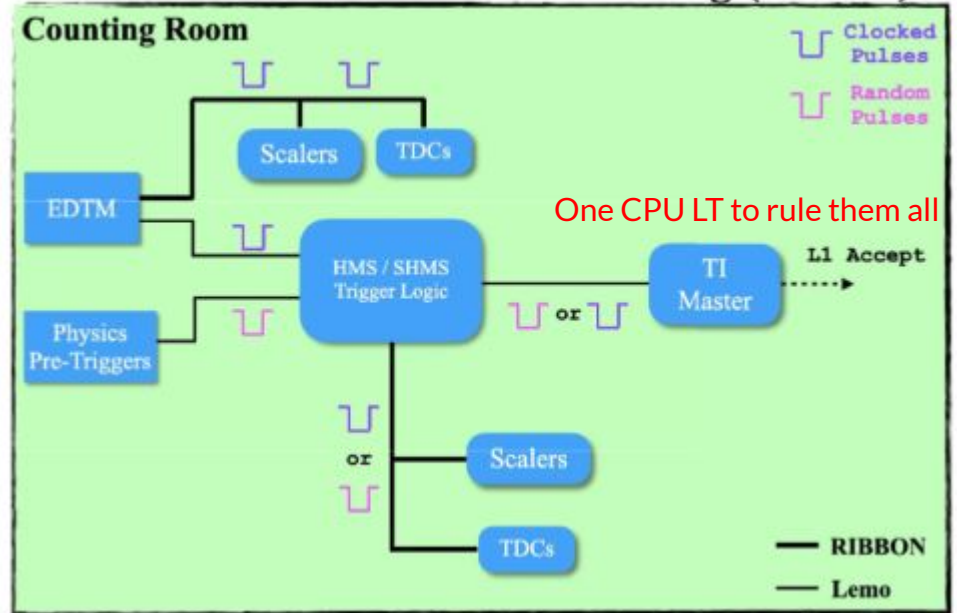
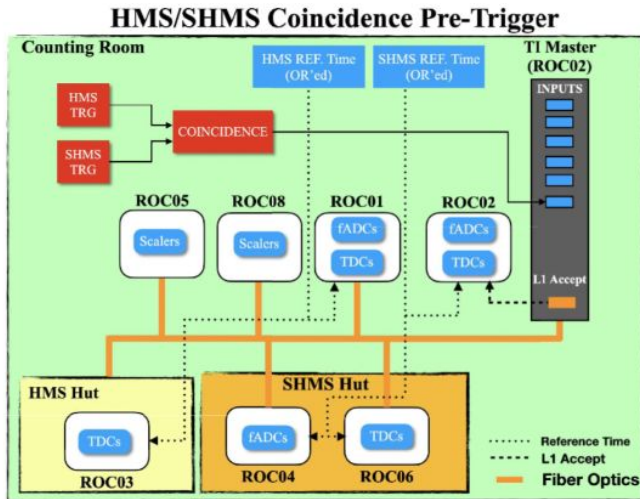
$$EDTM_{LT} = \frac{numOfNonzeroTDChits}{numOfScalerCounts}$$

CPULT

$$T_{CLT} = \frac{N_{phy,acc}}{N_{phy,scl}}$$

$$T_{CLT} = \frac{numOfAccPhysTrigForNonzeroTDChit}{numOfPhysScalerCounts}$$

Electronics Dead Time Monitoring (EDTM)





Extra