

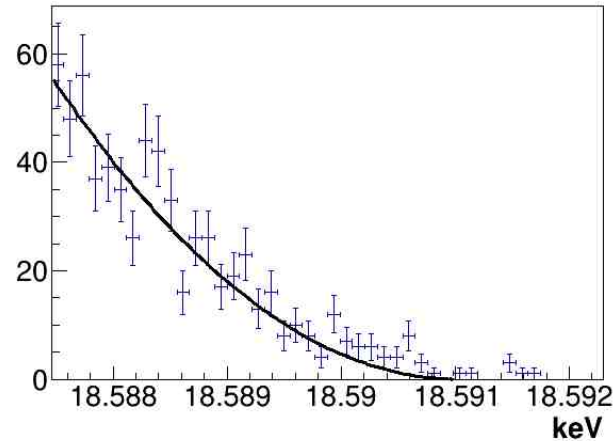
Weekly Report

2018-03-19

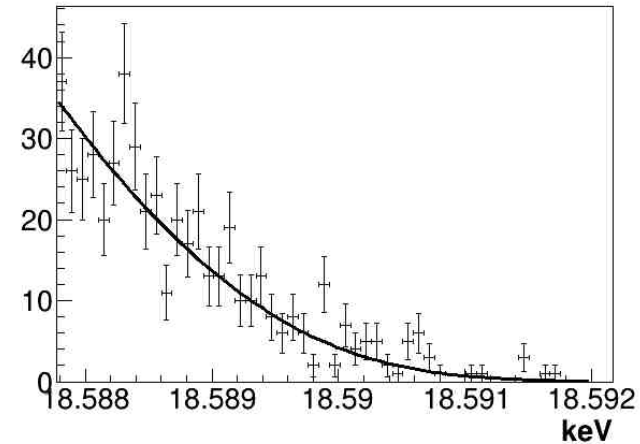
Kim, Hanbeom

Geant4 Simulation $m_\nu=1$ eV with detector resolution (last)

18.5-18.591 keV, 1 eV, 1 eV



$m_\nu=1\text{eV}$ $\text{reso}=1\text{eV}$



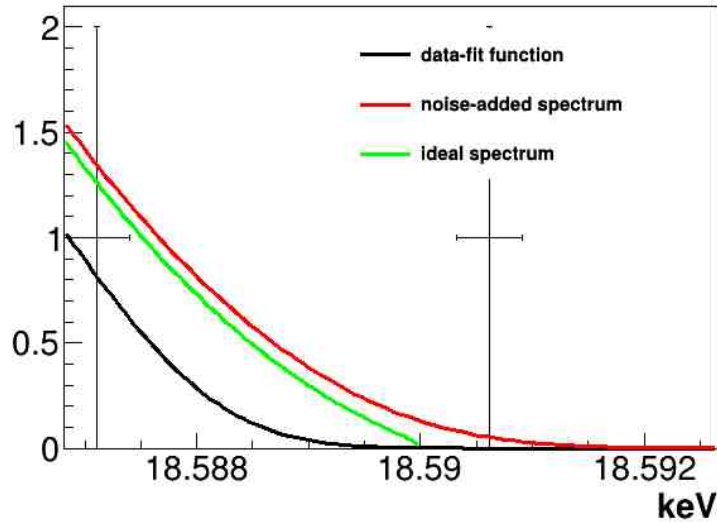
(10^7) 이벤트 발생 범위/keV	전체 이벤트 개수	Q-value/keV	m_ν/eV
18.5-18.591 (old)	$\sim 5 \cdot 10^{13}$	18.5910 ± 0.00002	0.000066 ± 73.0844
18.5-18.591 (new)		18.5910 ± 0.00001	1.28993 ± 0.00213



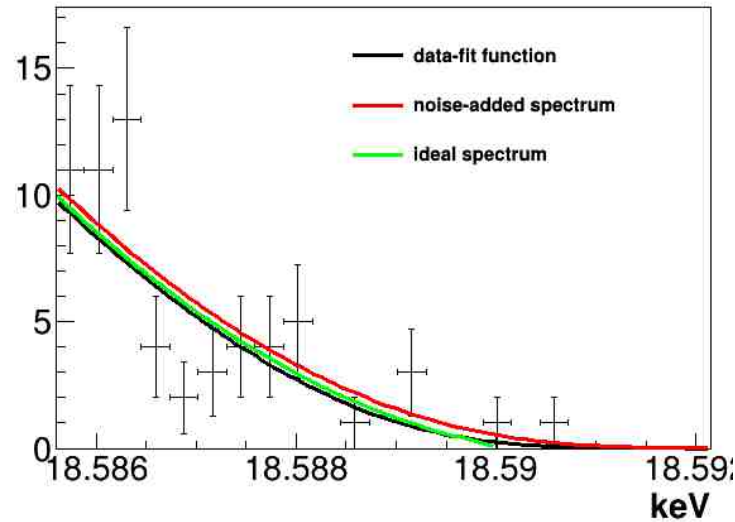
So accurate ???

Geant4 Simulation $m_\nu=1$ eV with detector resolution with free σ

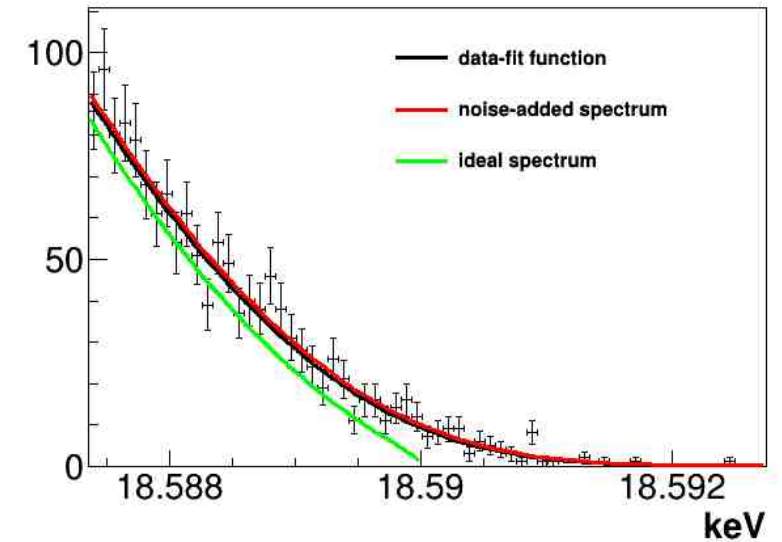
mv=1eV reso=1eV



mv=1eV reso=1eV



mv=1eV reso=1eV



Event range/keV	# of events	# of events (0-endpoint)	Q-value/keV	m_ν/eV	σ/eV
18.0-18.591	10^7	$\sim 1.6 \cdot 10^{11}$	18.5909 ± 0.0001	3.00101 ± 1.36203	0.786161 ± 0.093191
18.3-18.591	10^7	...	18.5910 ± 0.0001	1.93299 ± 0.83707	1.02486 ± 0.00476
18.5-18.591	$2 \cdot 10^7$	$\sim 10^{14}$	18.5910 ± 0.0122	1.03237 ± 0.01160	0.982611 ± 0.009787

Geant4 Simulation $m_\nu=1$ eV with detector resolution

Event range/keV	# of events	# of events (0-endpoint)	Q-value/keV	m_ν/eV	σ/eV
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18.3-18.591	10^7	...	18.5910 ± 0.0001	1.93299 ± 0.83707	1.02486 ± 0.00476
18.5-18.591	$2 \cdot 10^7$	$\sim 10^{14}$	18.5910 ± 0.0122	1.03237 ± 0.01160	0.982611 ± 0.009787



Problems 1: Systematic Error still occurs

Problem 2: Fitting uncertainty