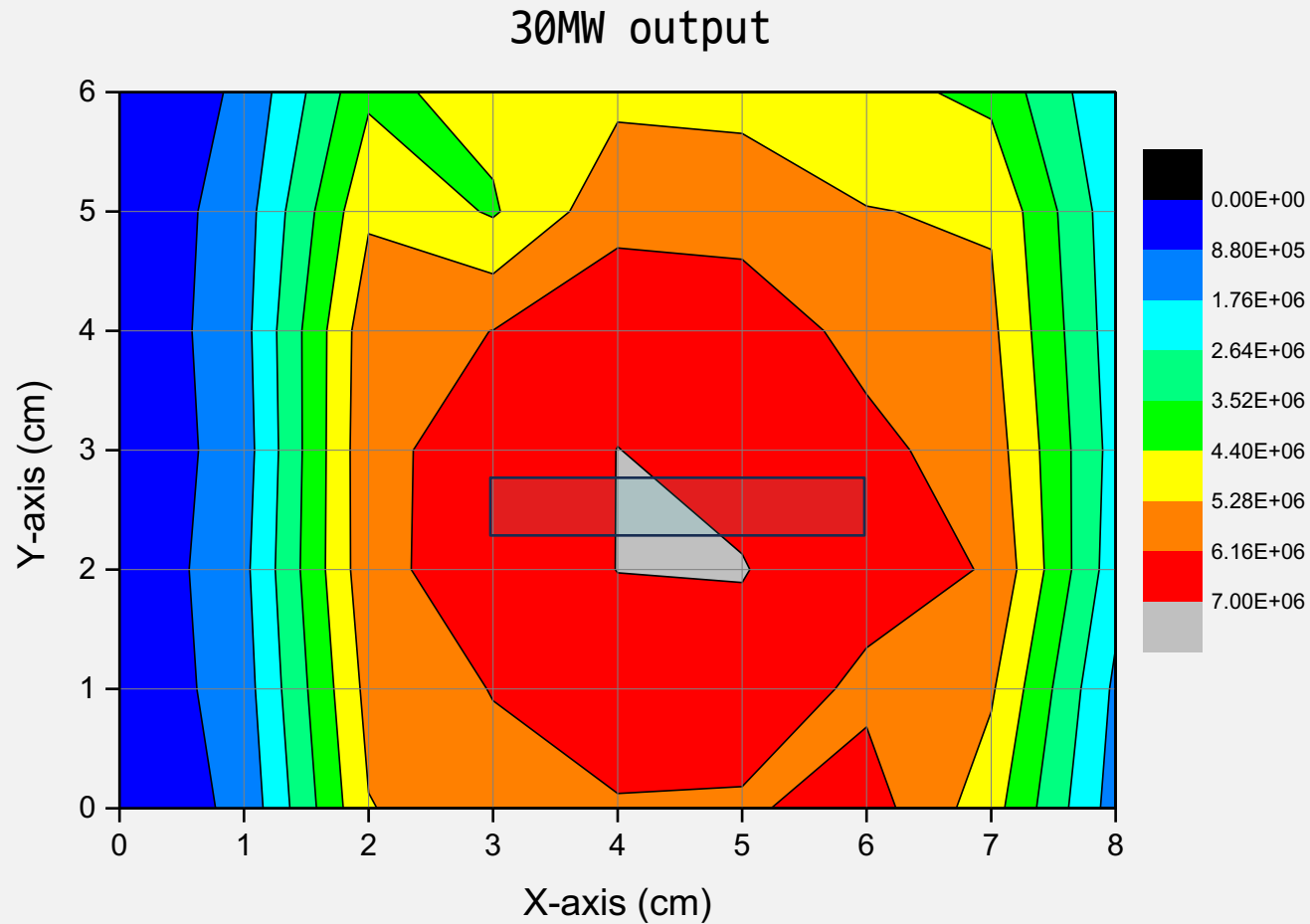


HANARO Experiment Results

2023.09.22

Kim_WooJong

HANARO Neutron Beam Flux



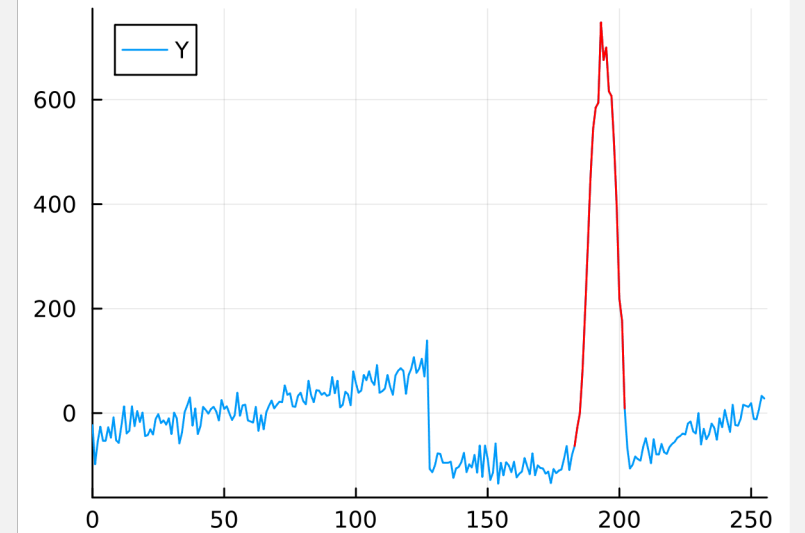
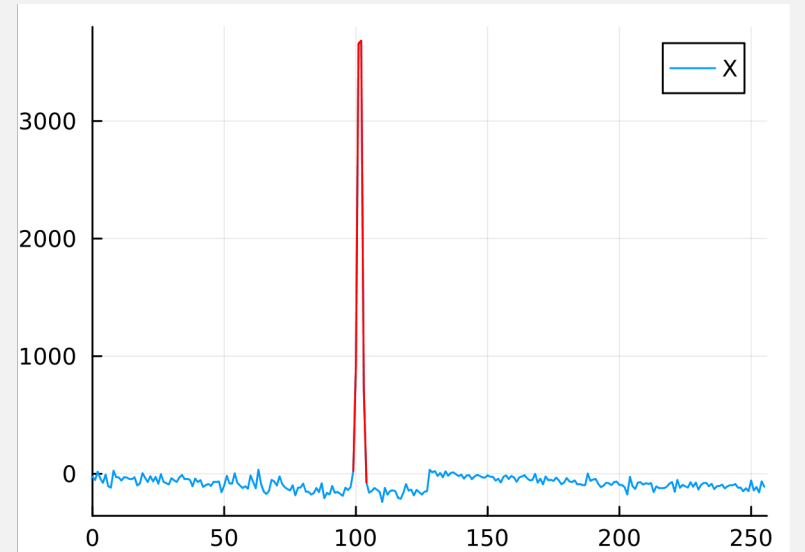
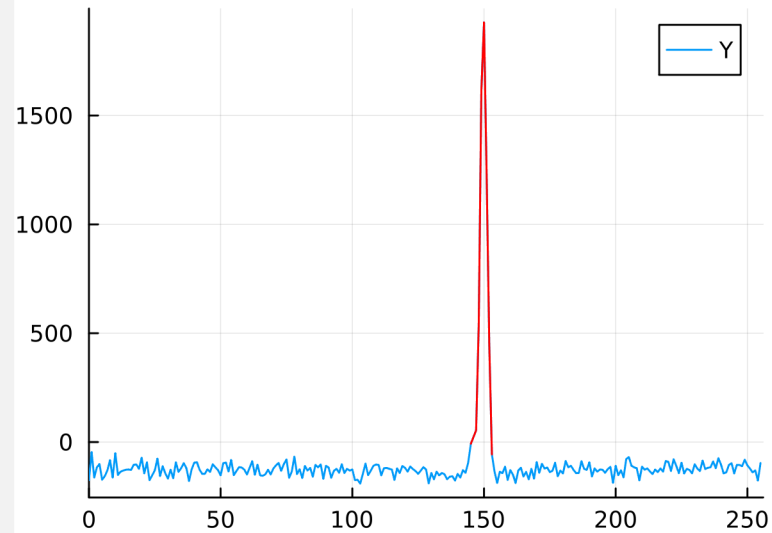
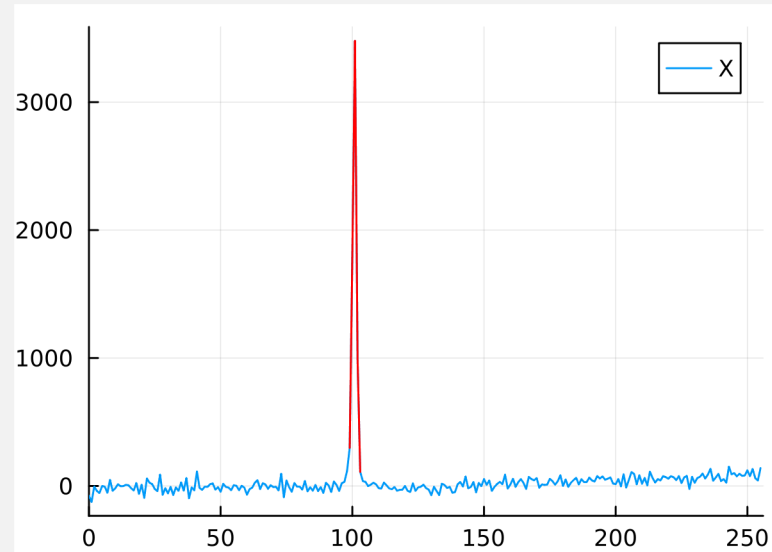
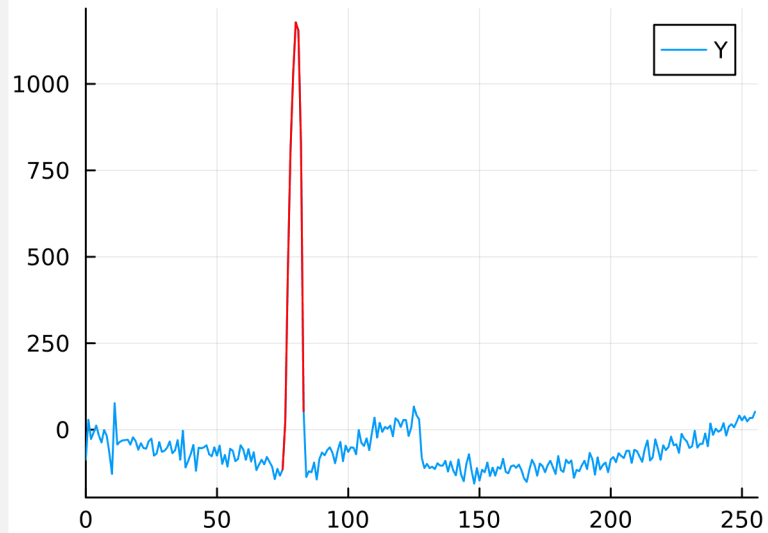
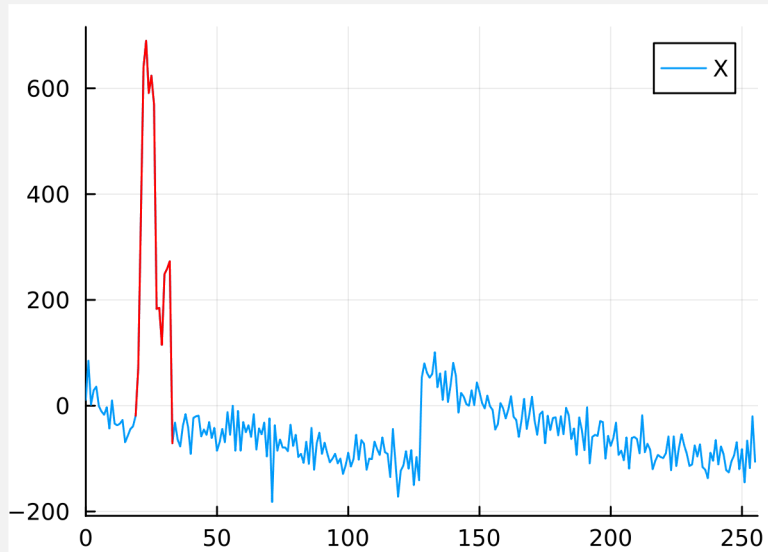
- Total entering neutrons:
 $\approx 4 \text{ cm} \times 0.5 \text{ cm} \times 6.5 \times 10^6 \text{ cm}^2/\text{s}$
 $\approx 1.3 \times 10^7 / \text{s}$
- If the number of neutrons is linearly proportional to the output.
For 22 MW output:
 $\approx 9.5 \times 10^6 / \text{s}$

Efficiency

threshold	Beam W/O	Beam W/	Signal	Efficiency
-30 mV	165773	337183	171410	0.0180 %
-40 mV	11849	94675	82826	0.0087 %
-50 mV	1083	82639	81556	0.0086 %
-60 mV	108	77569	77461	0.0081 %
-70 mV	67	72990	72923	0.0076 %
-80 mV	37	70783	70746	0.0074 %
-90 mV	38	69573	69535	0.0073 %
-100 mV	26	68066	68040	0.0071 %

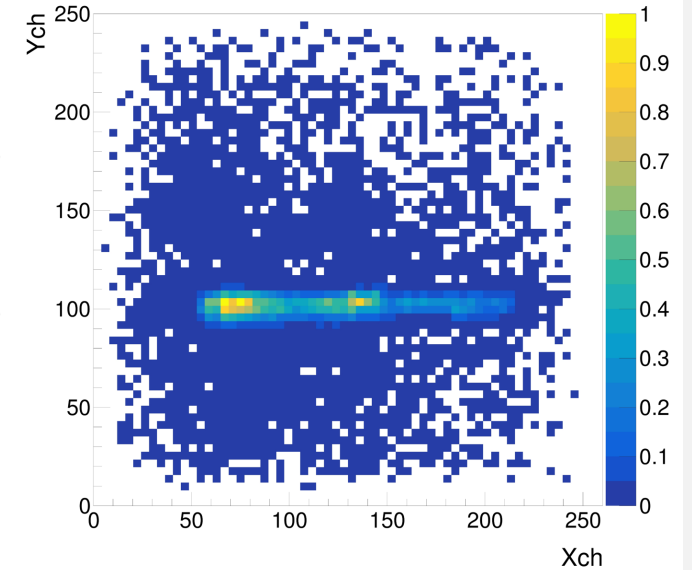
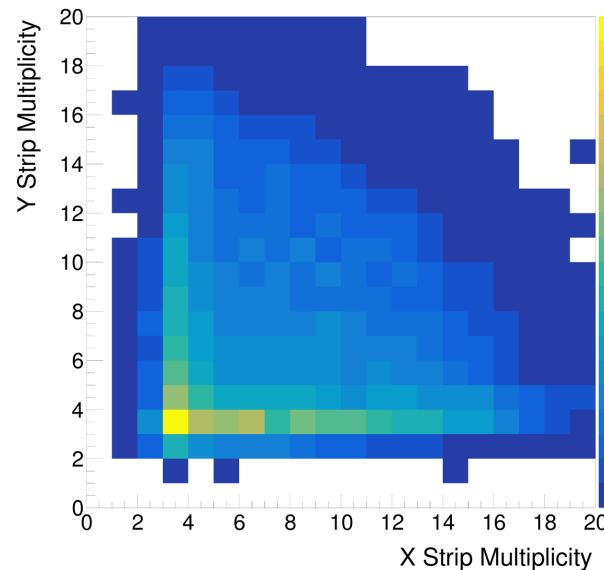
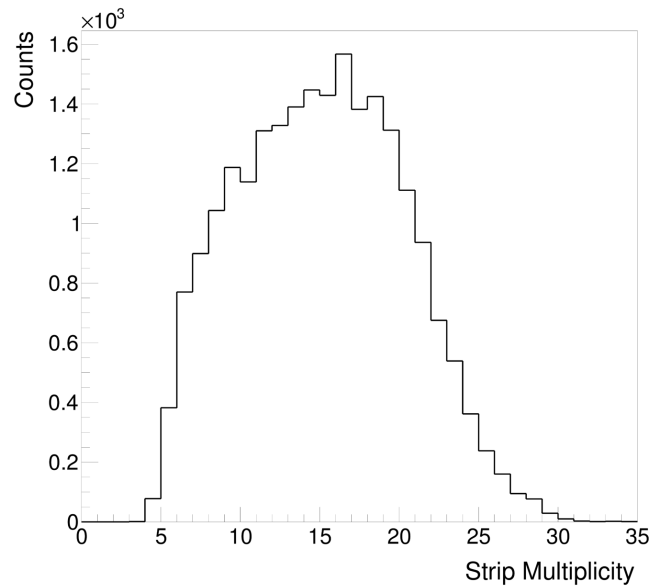
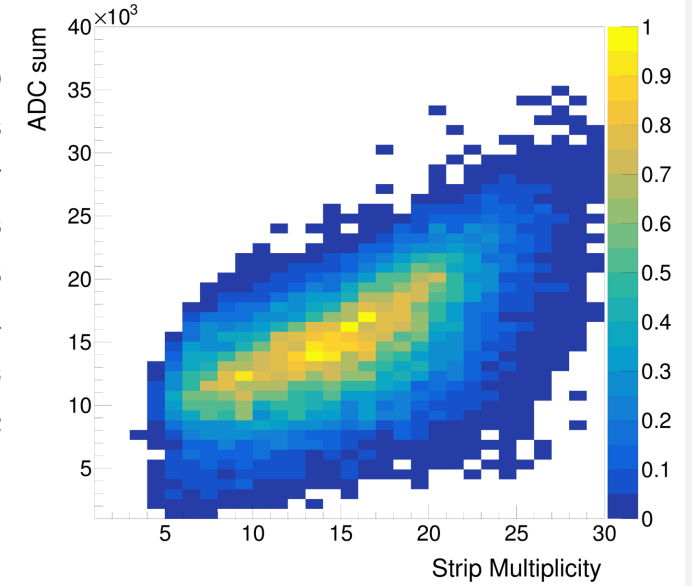
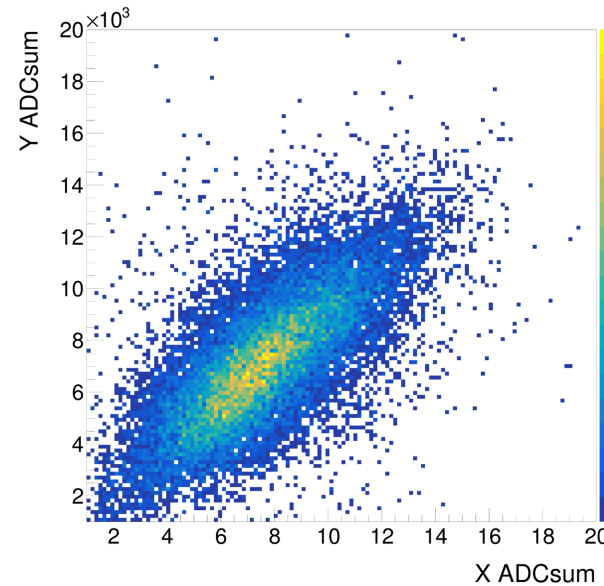
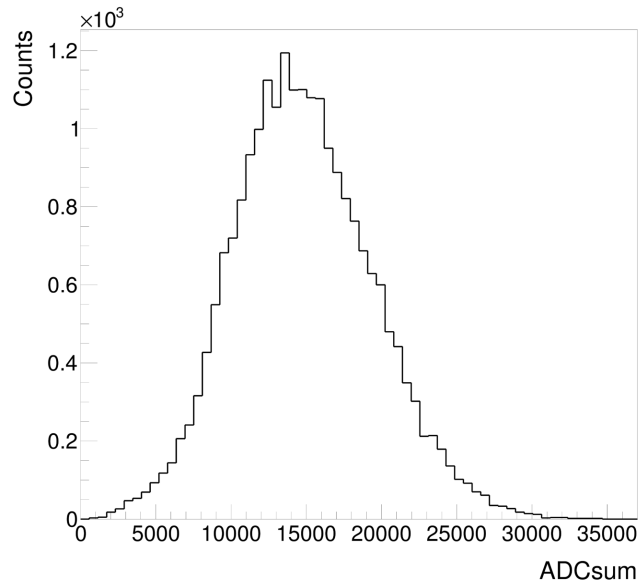
- 2023.09.08
- Humidity : 59 %
- Temperature : 26 °C
- Operating voltage : 4400 V
- Running time : 100 s
- Total neutrons $\approx 9.5 \times 10^8$
- expected signal
 $\approx 9.5 \times 10^8 \times 0.0145$
 $\approx 1.4 \times 10^7$
- veto time : 2 us

APV signal

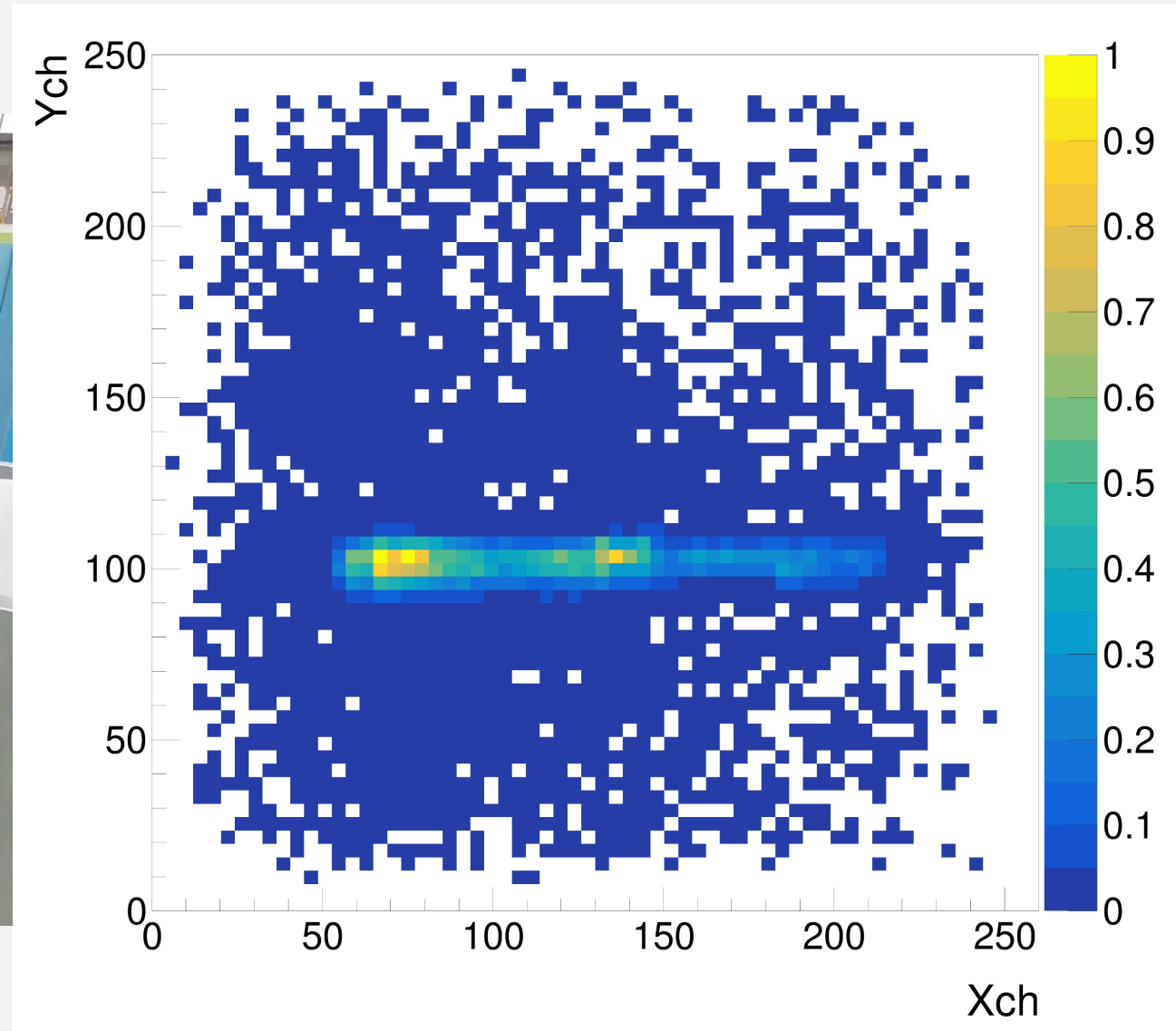


HANARO APV Results

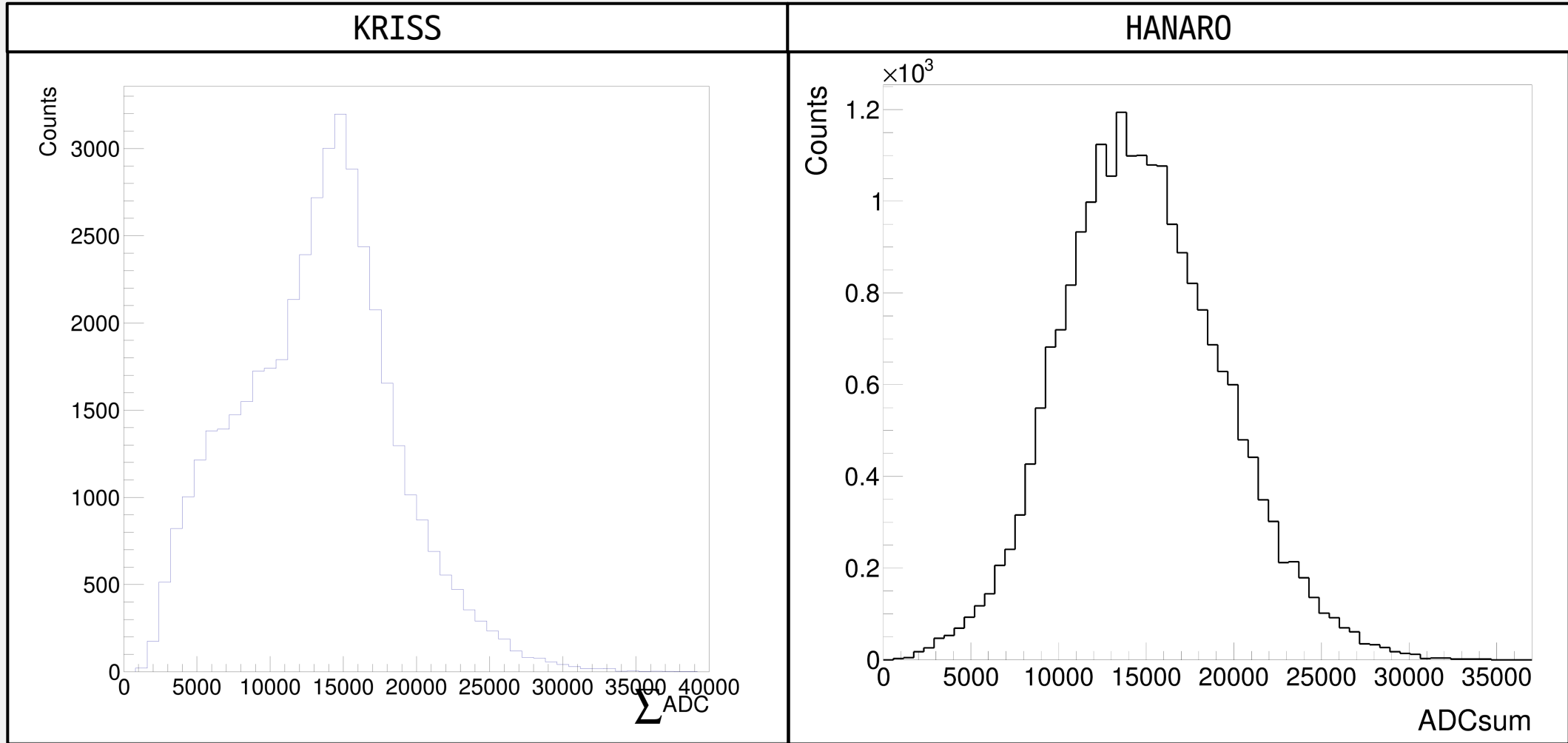
2023.09.08
50,000 Events, 3400 V
43 Minute Running Time



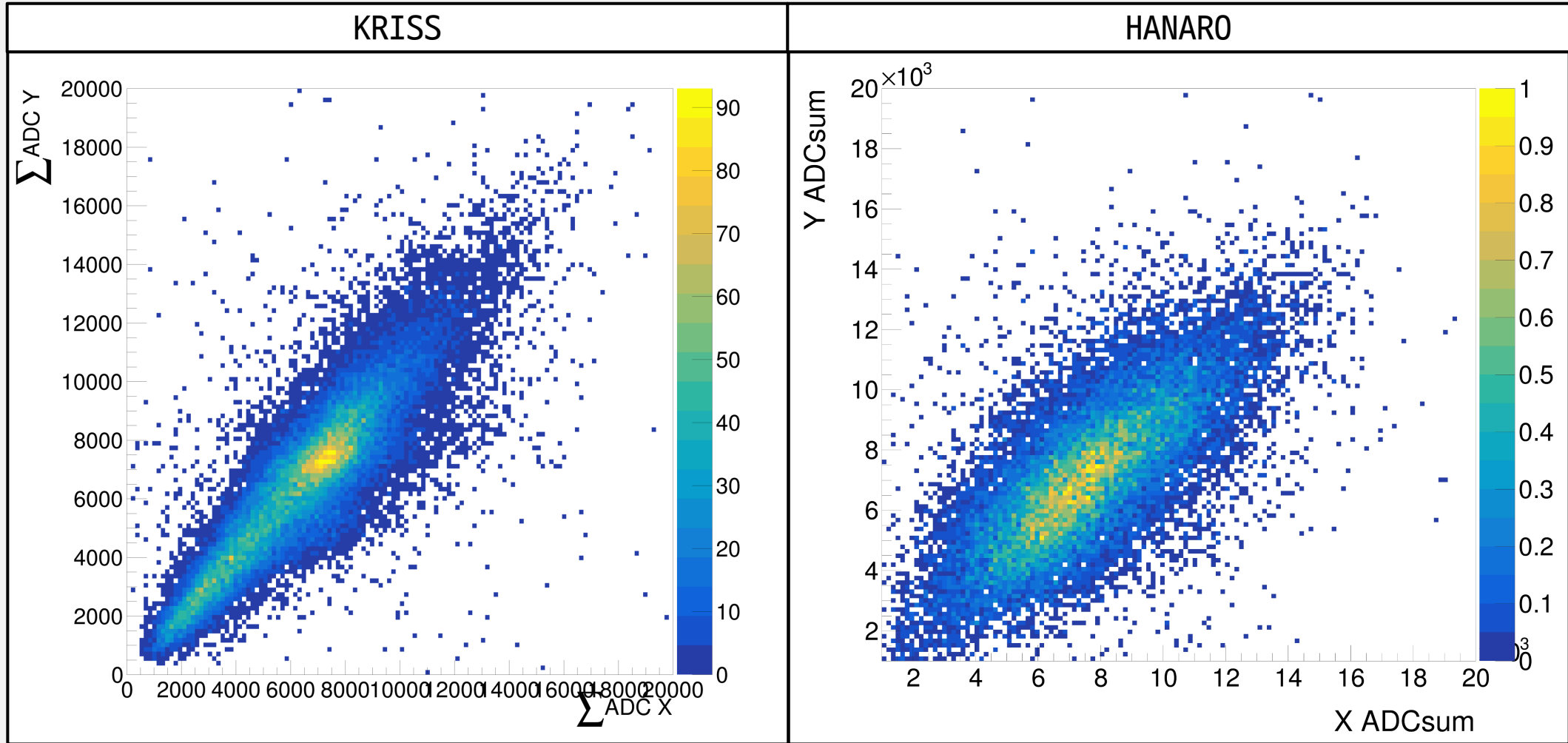
HANARO APV Results



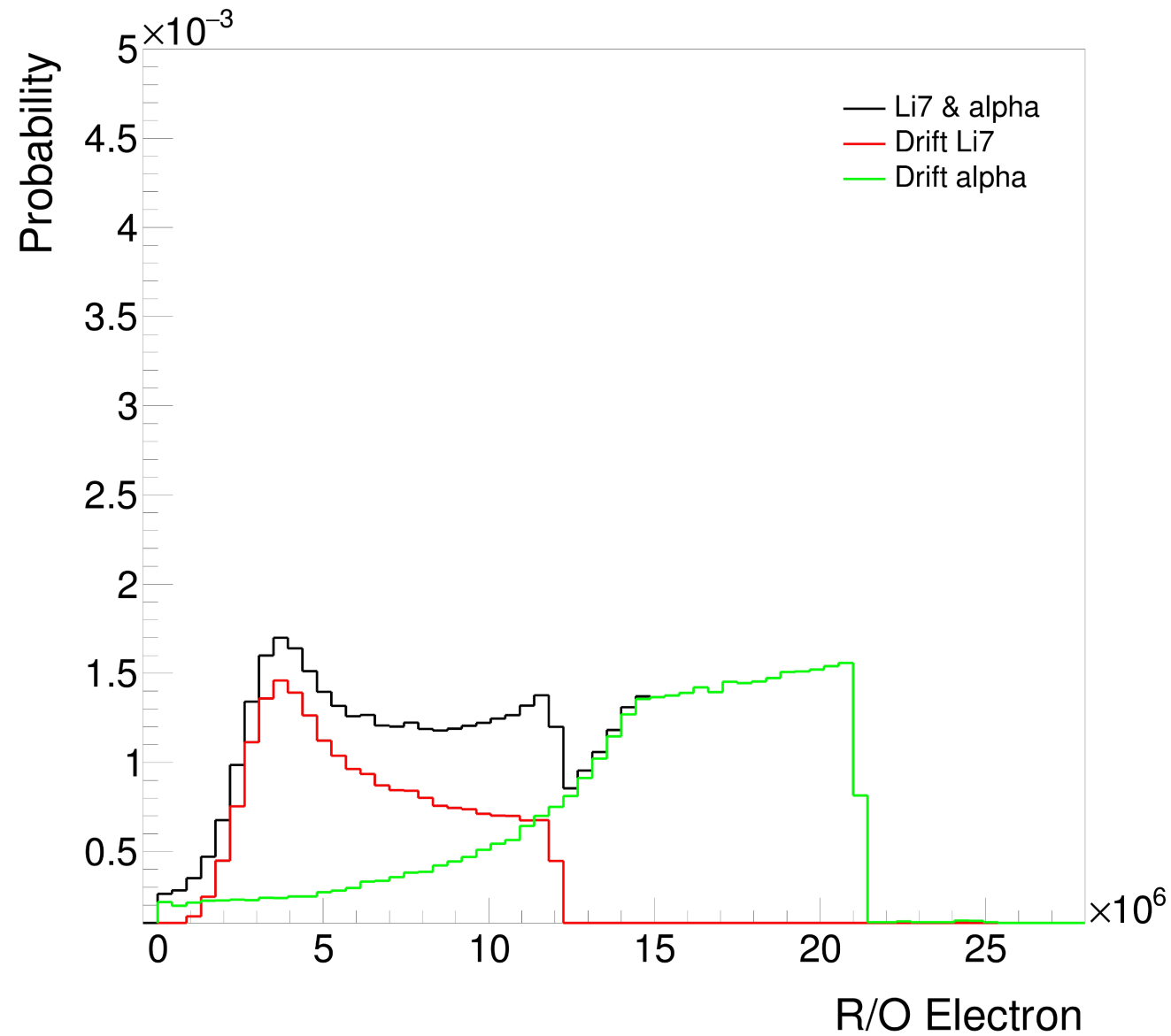
KRISS & HANARO



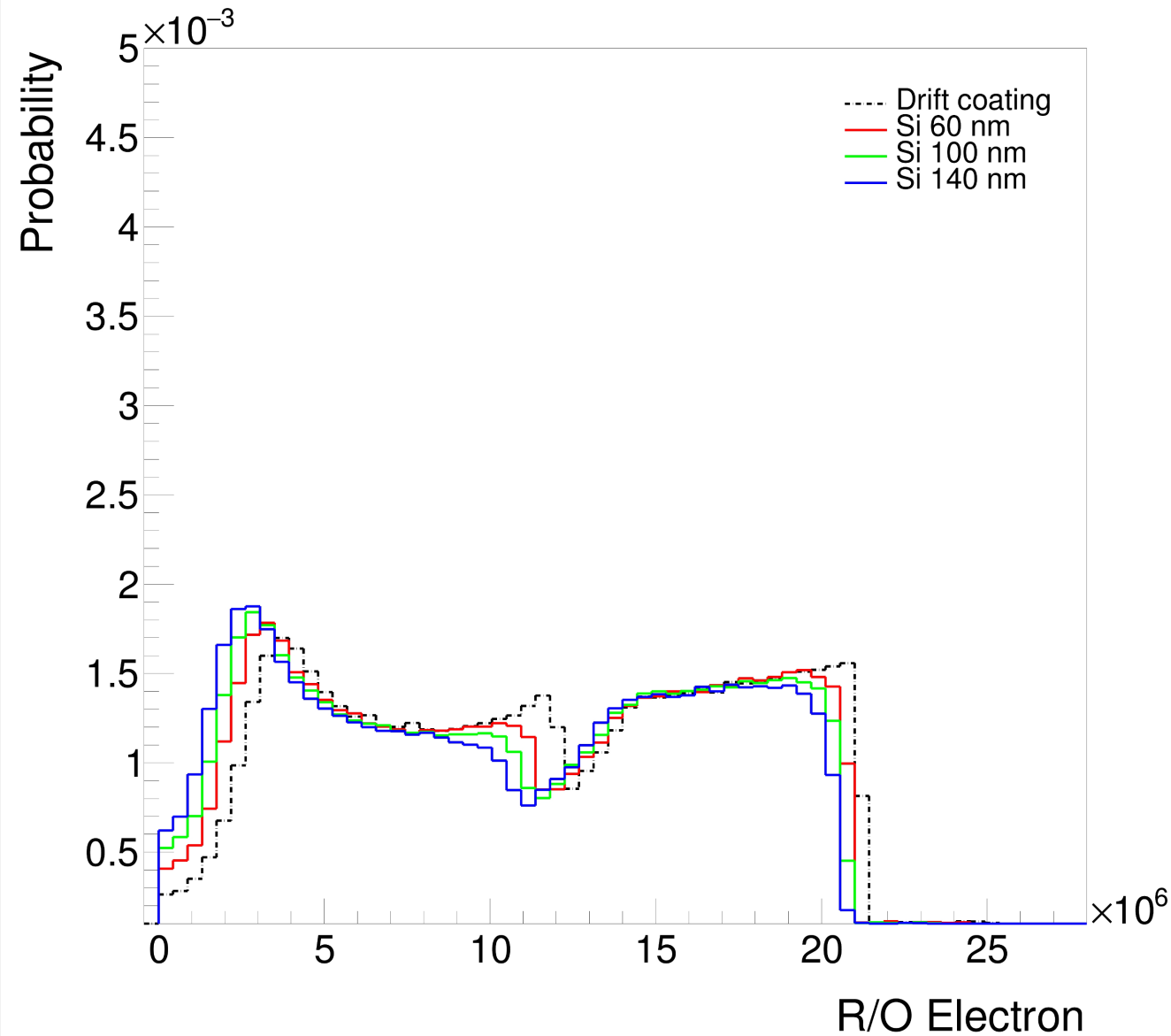
KRISS & HANARO



Alpha & Li7 R/O electron



Si coating on drift foil with cold neutron



over 5×10^6 R/O Electron

Drift: 0.0496153

60nm: 0.0471671 6%

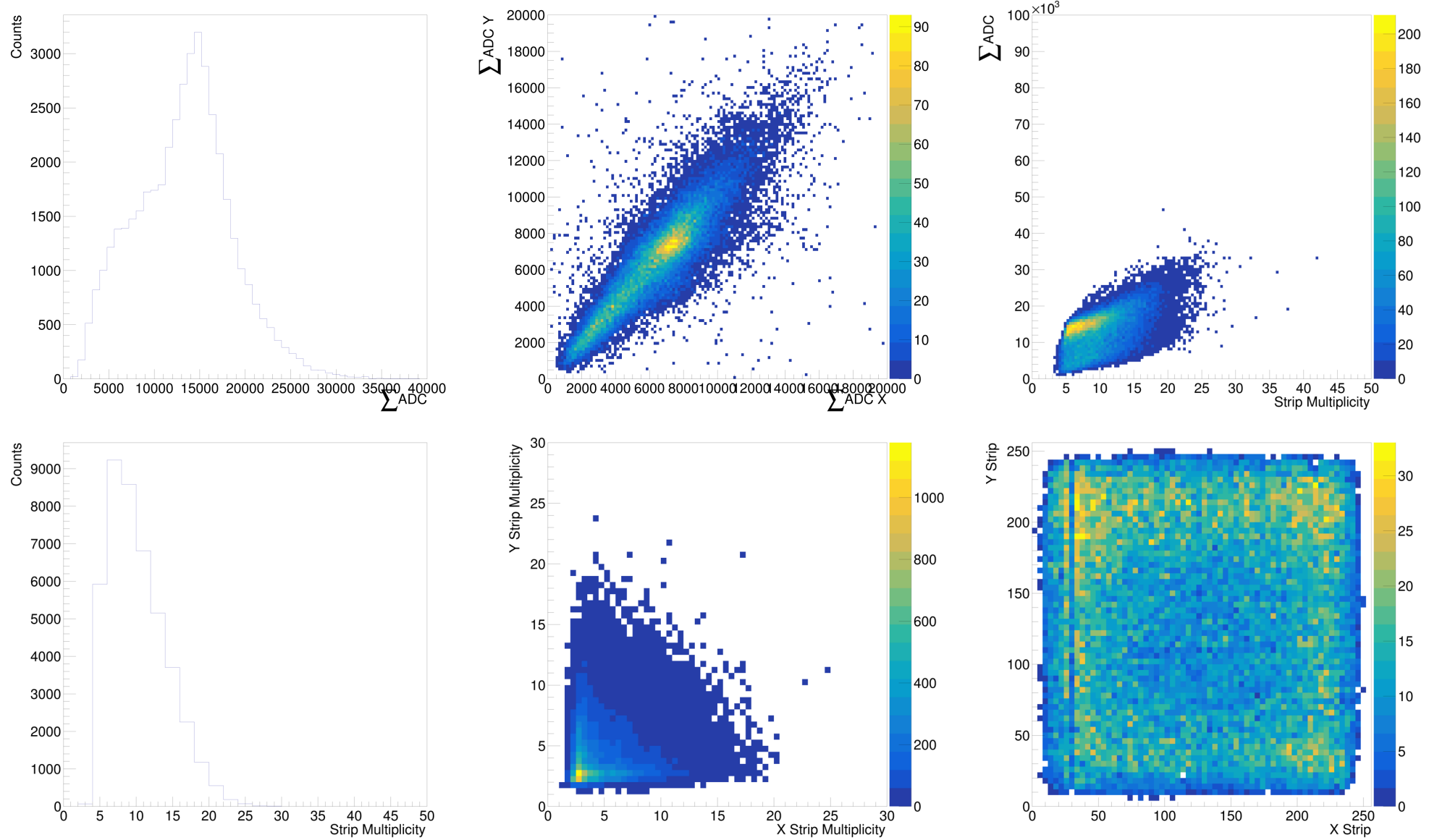
100nm: 0.0455956 10%

140nm: 0.0440054 12%

Backup

KRISS Experiment Results

2022.12.07 (25)
50,000 Events, 3600 V
8 Hour running time,
Front and Back Cd plate



Geant4 simulation for thermal neutron

%	Backward			Forward		
	Sheet	Drift	Foil	Sheet	Drift	Foil
total -> capture	85.44	5.39	24.49	94.47	6.02	26.23
capture -> signal	1.70	65.76	65.52	0.0028	65.08	65.36
total -> signal	1.45	3.54	16.05	0.0027	3.92	17.14