

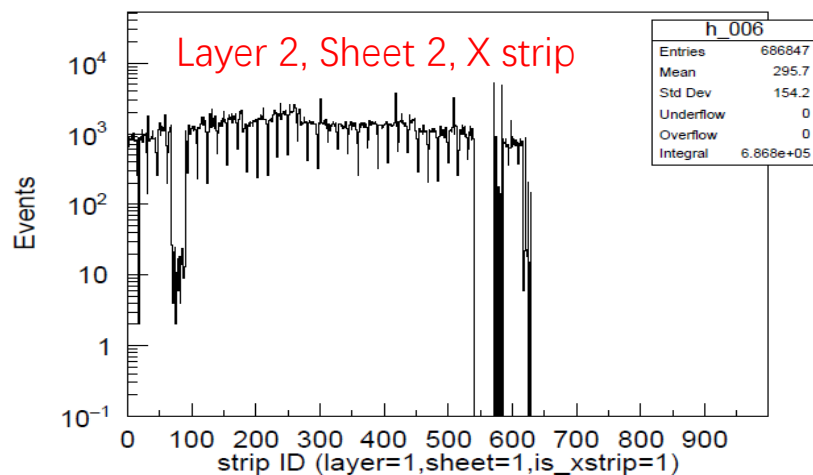
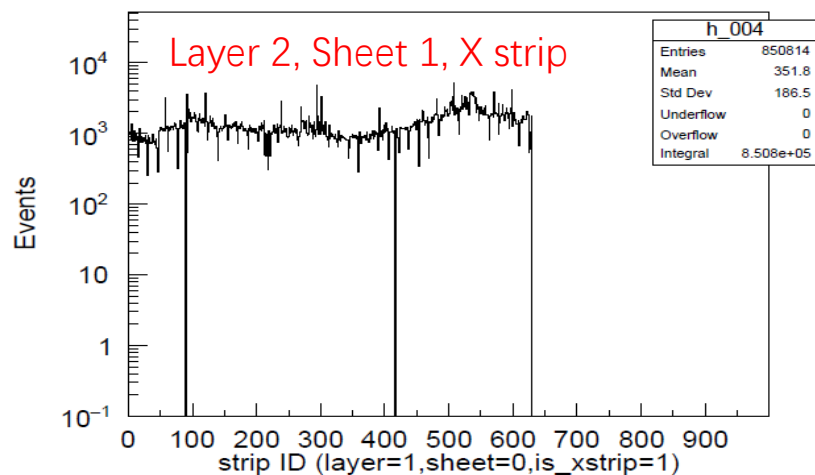
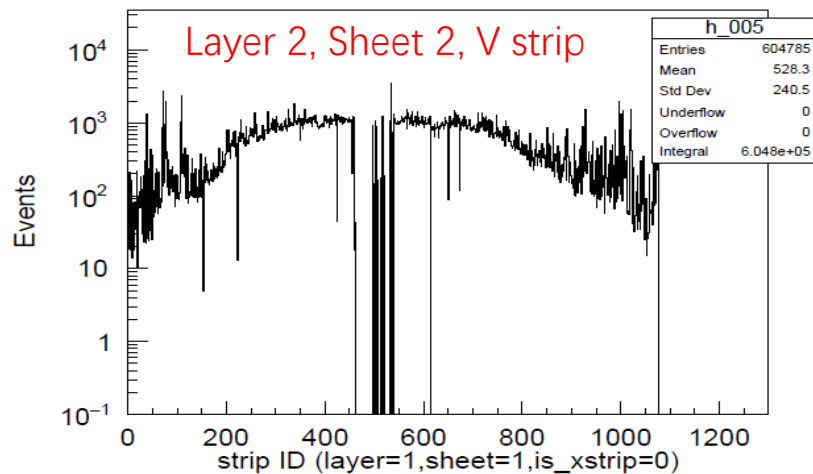
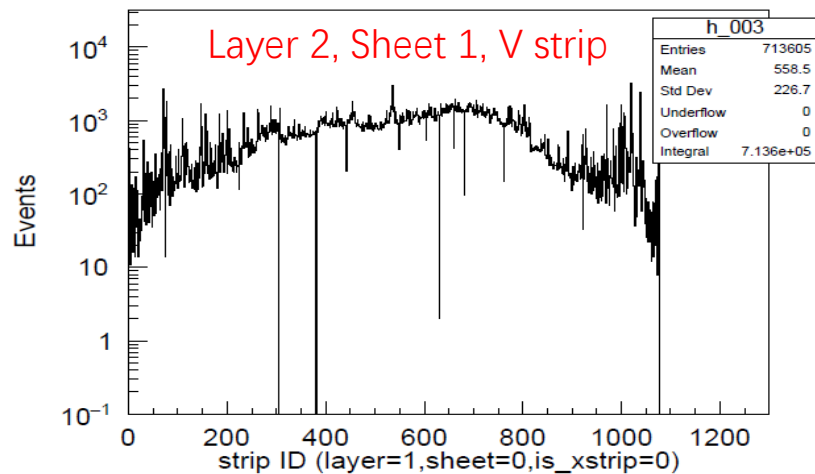
Progress Report

Jingyi Zhao, Linghui Wu, Liangliang Wang, Ryan Mitchell, Xinchou Lou

Dec. 10, 2019

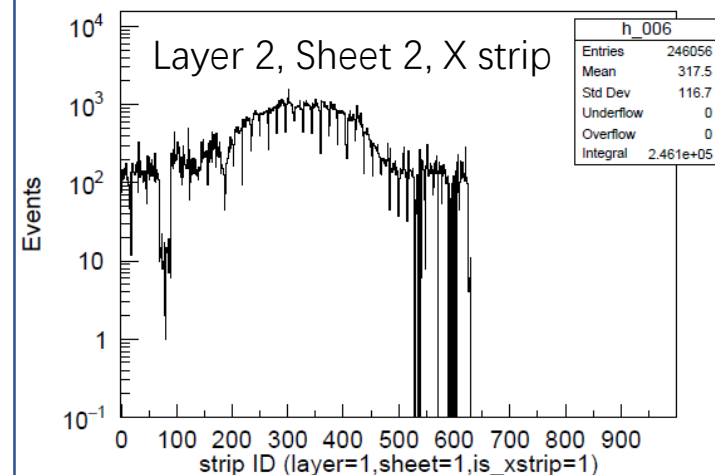
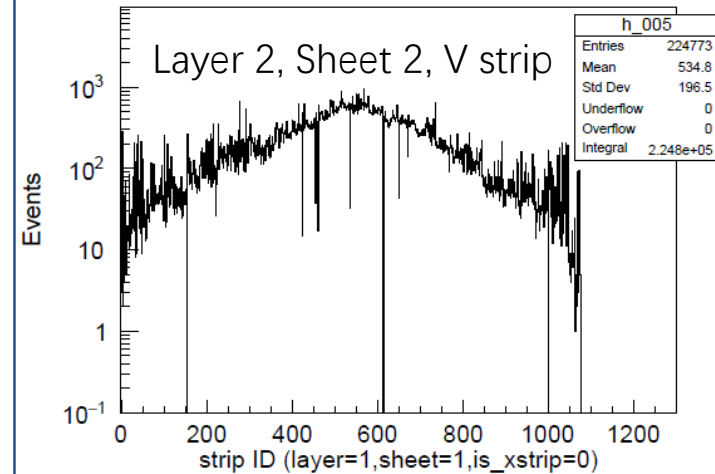
Hitmap

Run 7



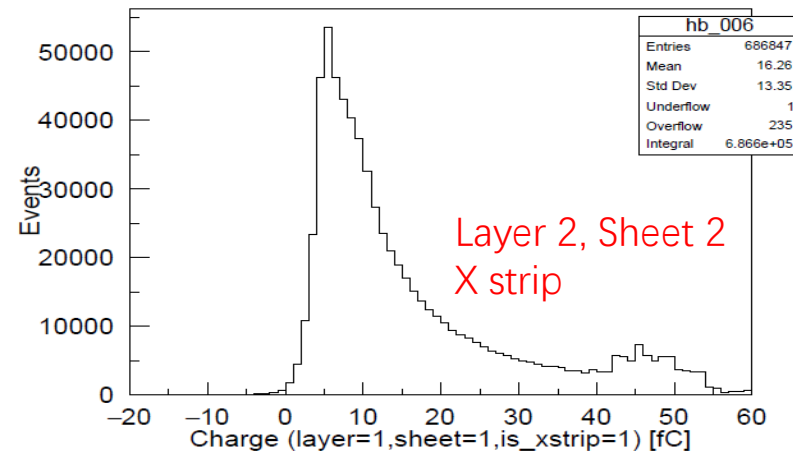
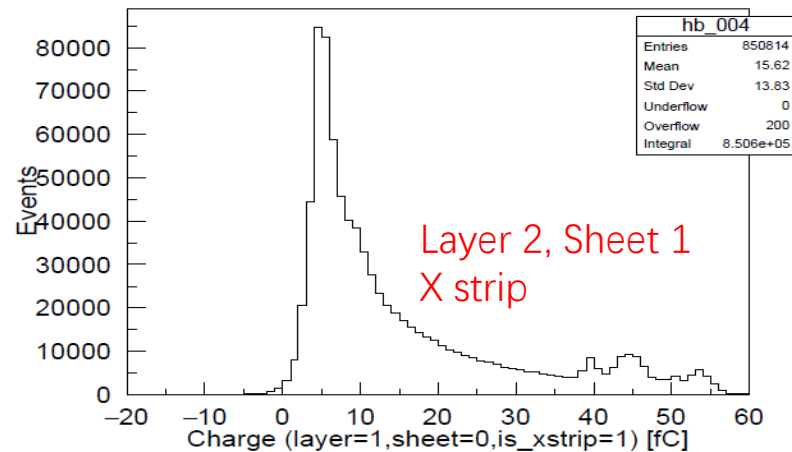
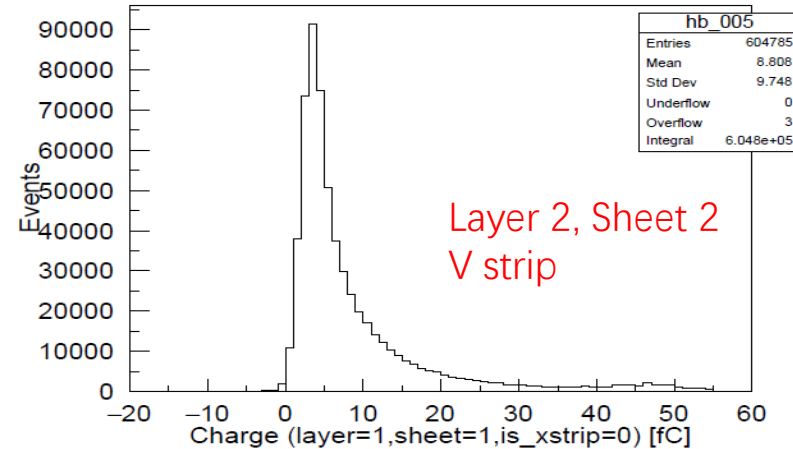
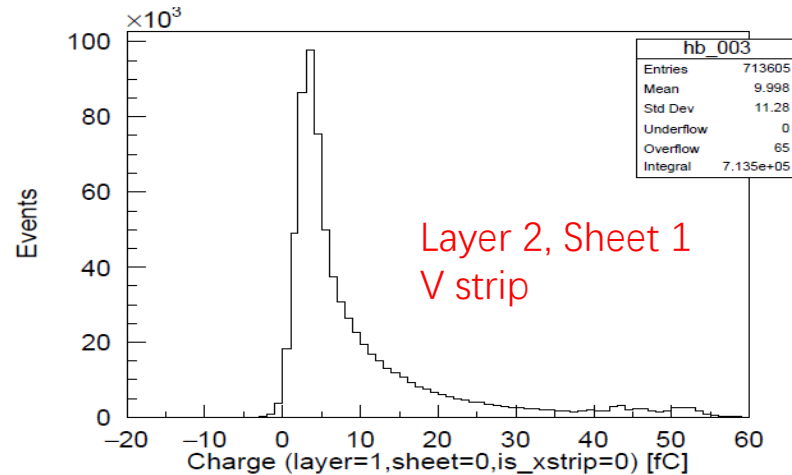
Run 4

Distributions are different from previous cosmic ray data, because the direction of scintillator is changed.



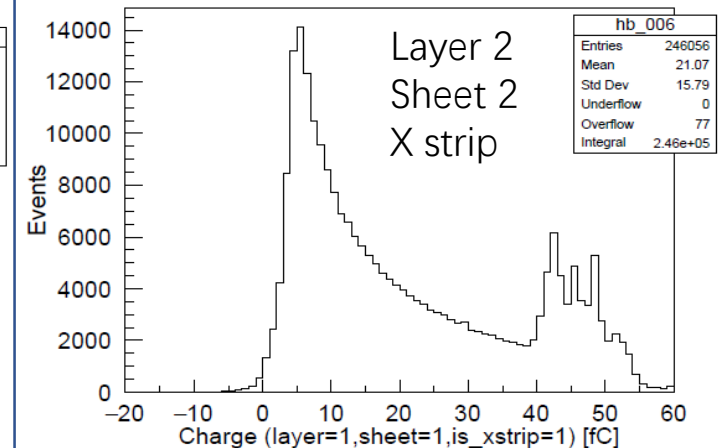
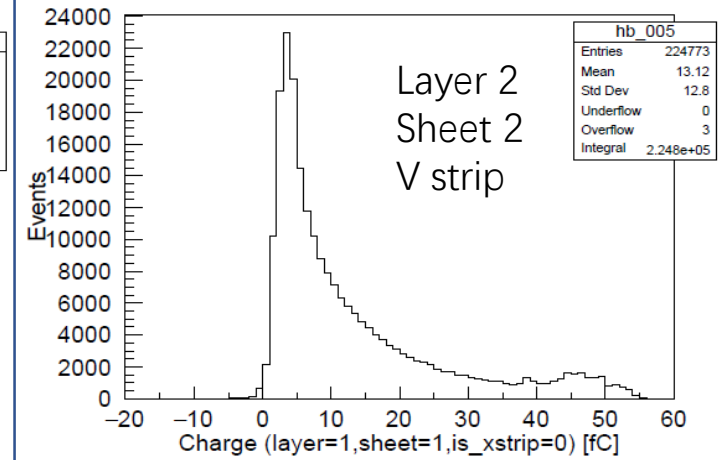
Strip level charge distribution

Run 7



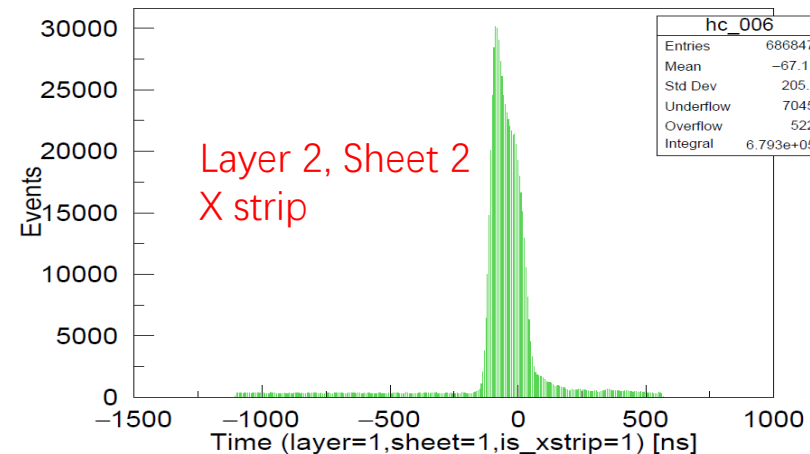
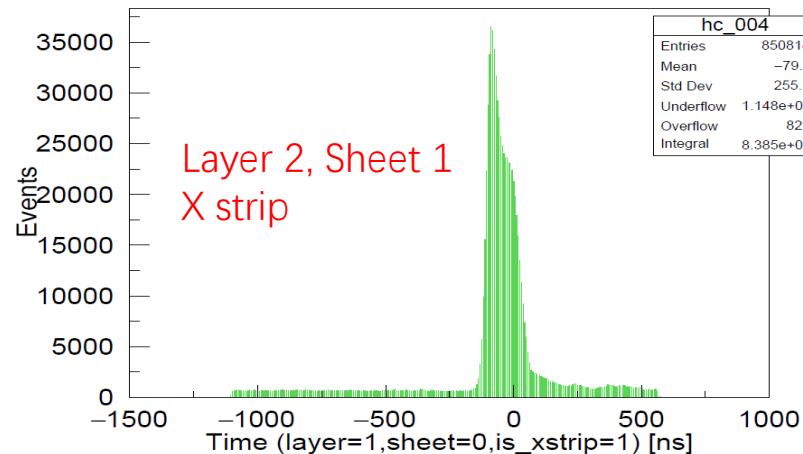
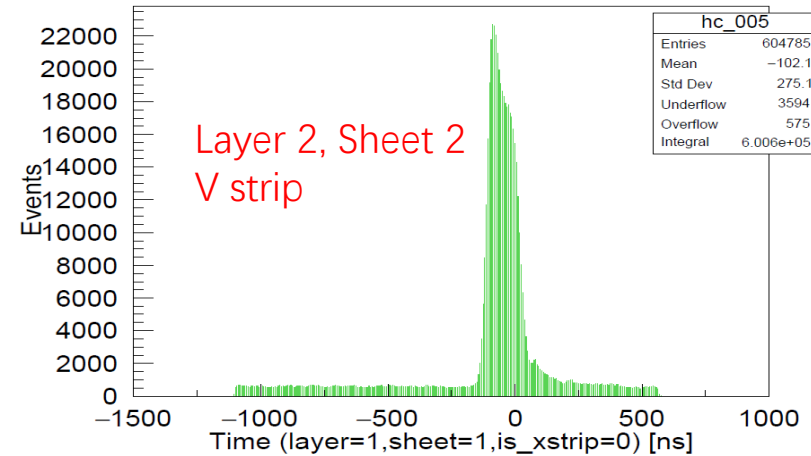
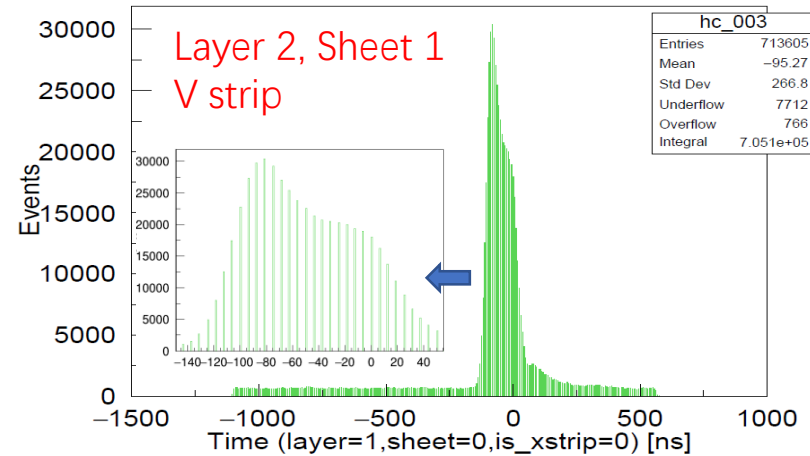
Run 4

Distributions are similar to previous cosmic ray data.



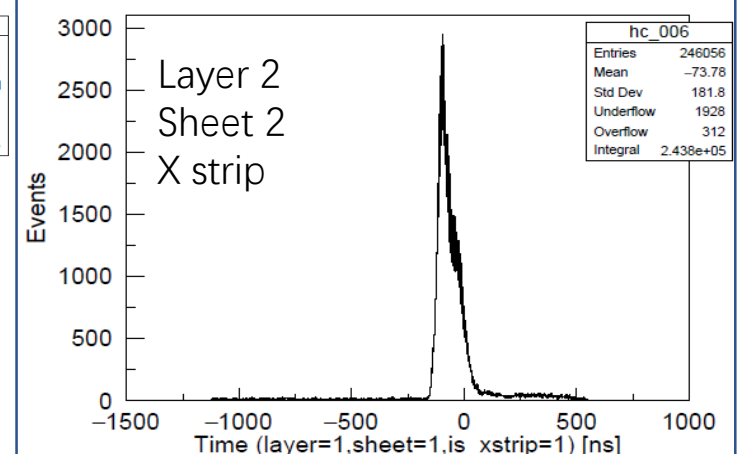
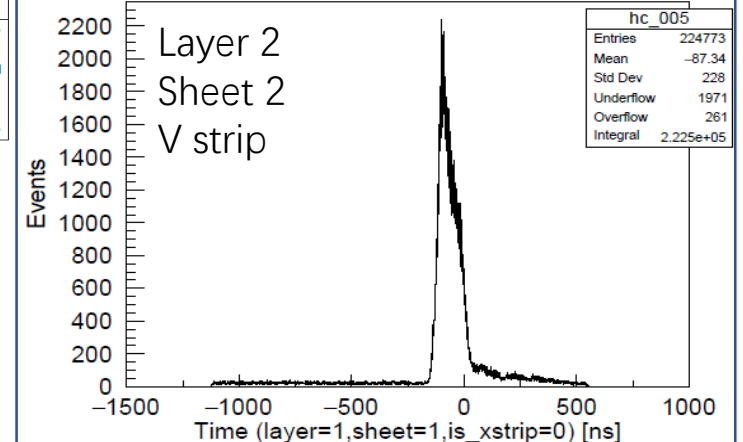
Strip level time distribution

Run 7



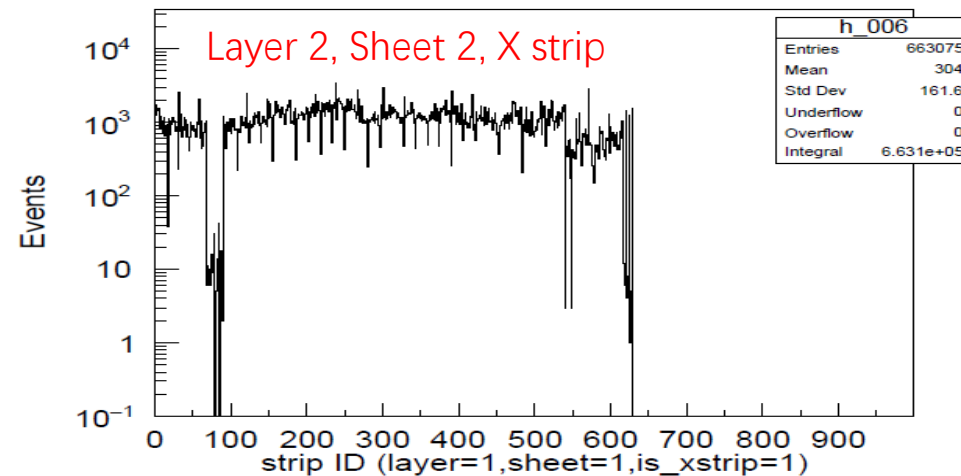
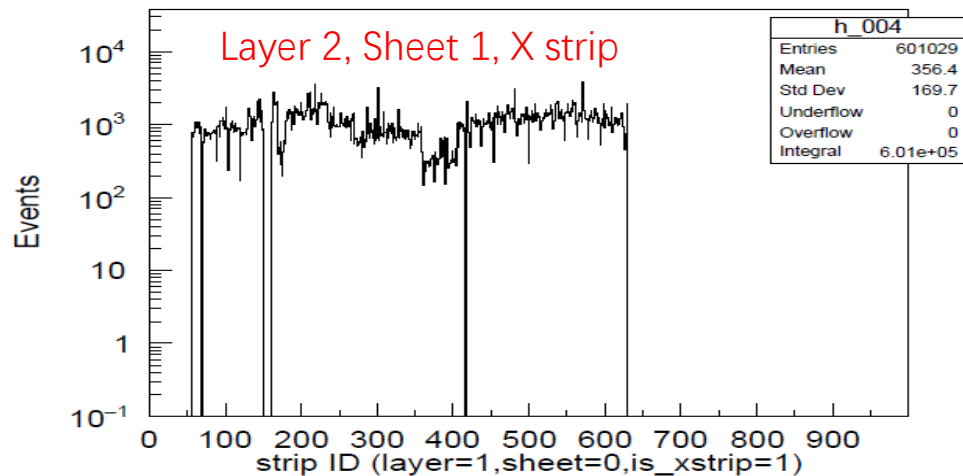
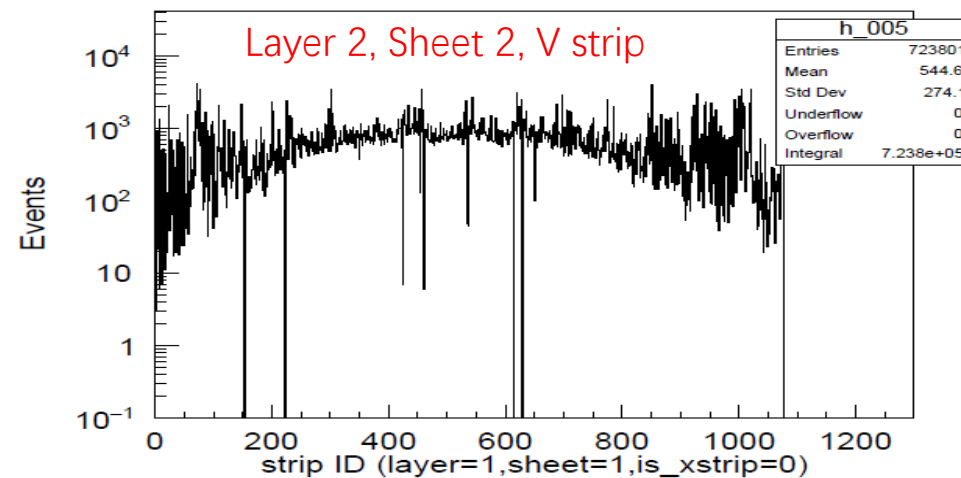
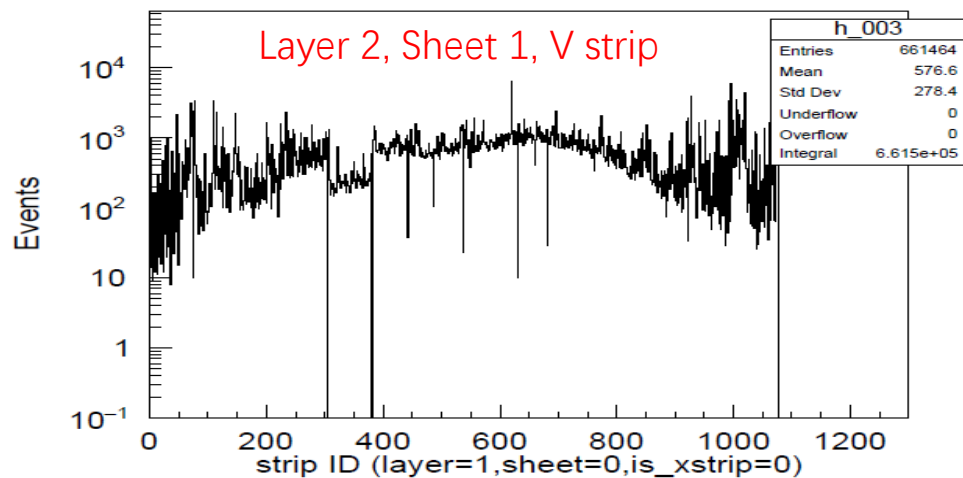
Run 4

Time distributions from previous data sets are continuous.



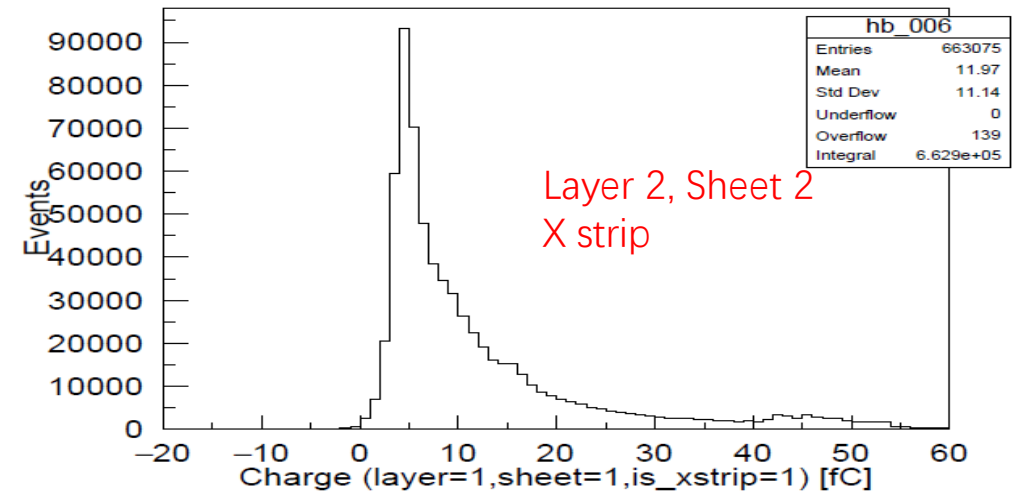
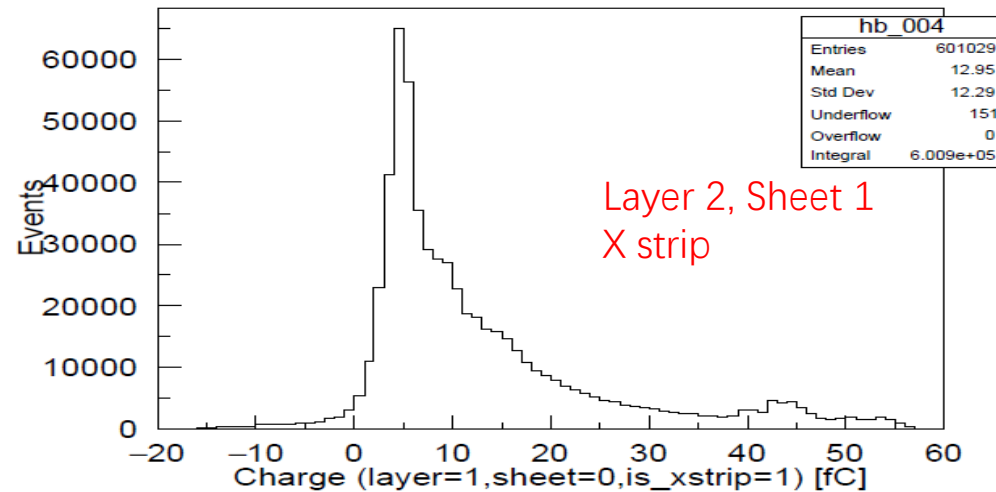
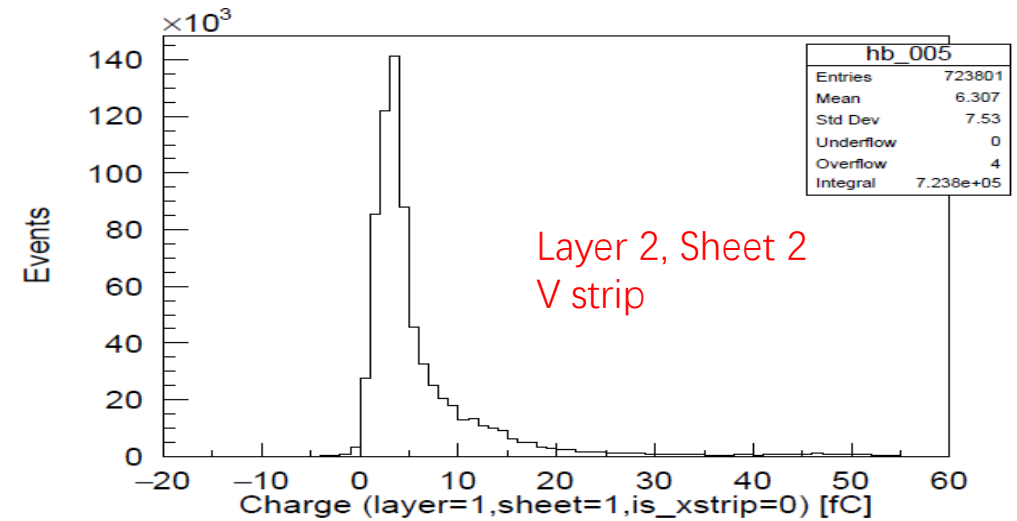
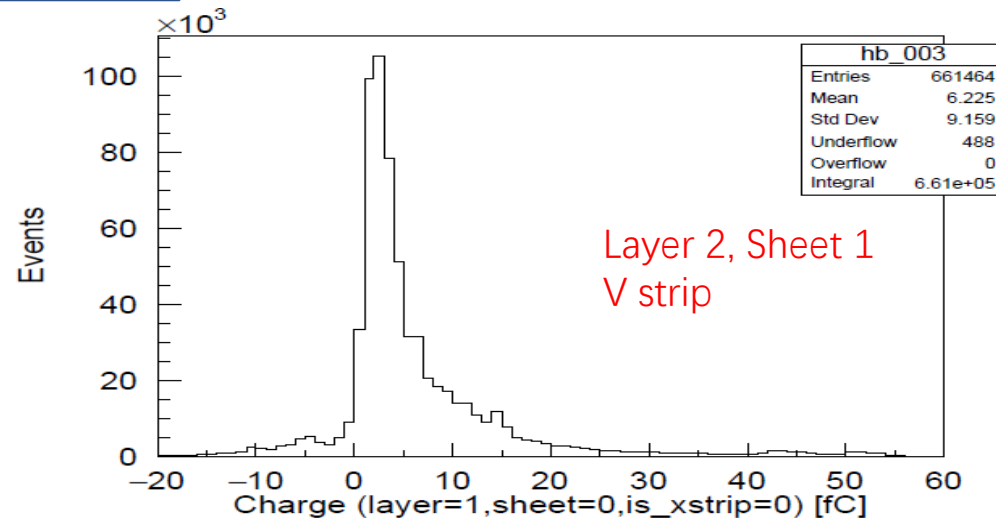
Hitmap

Run 8



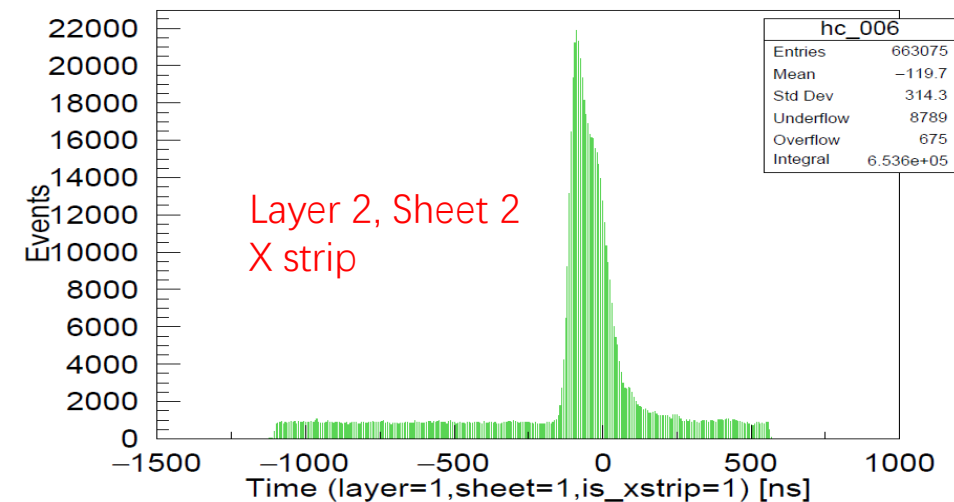
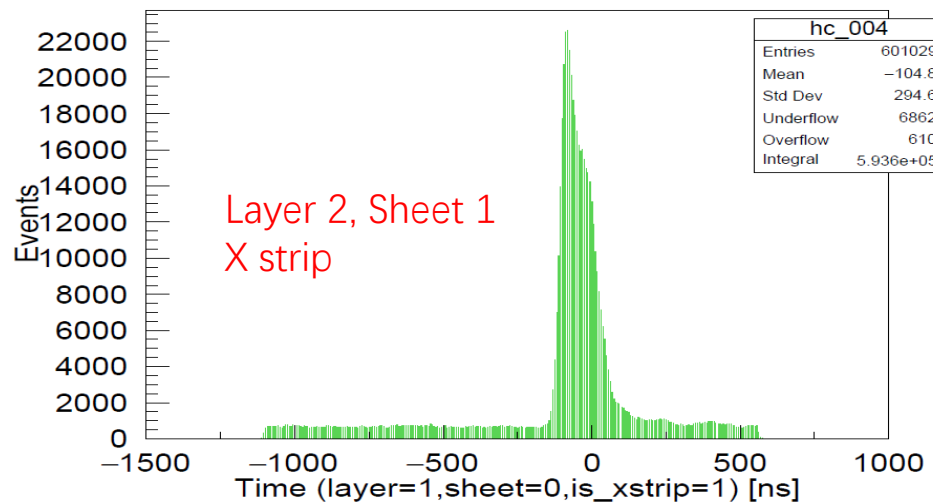
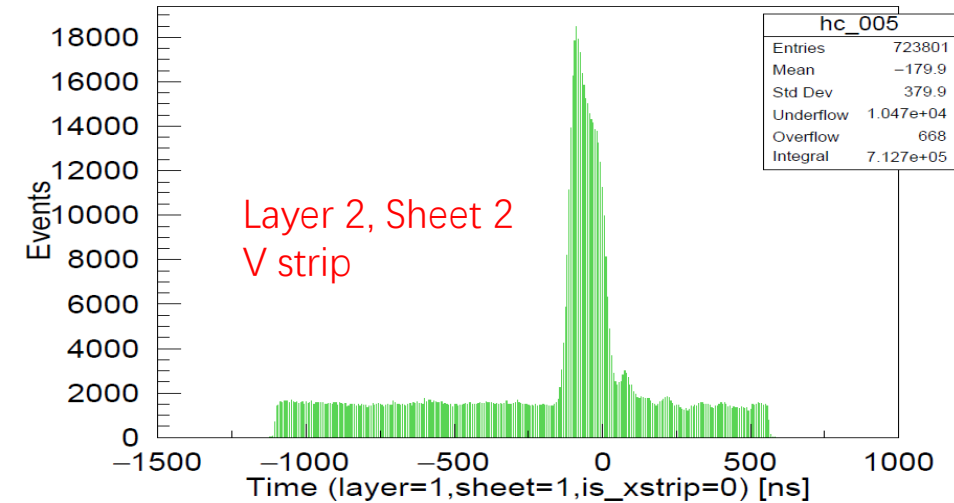
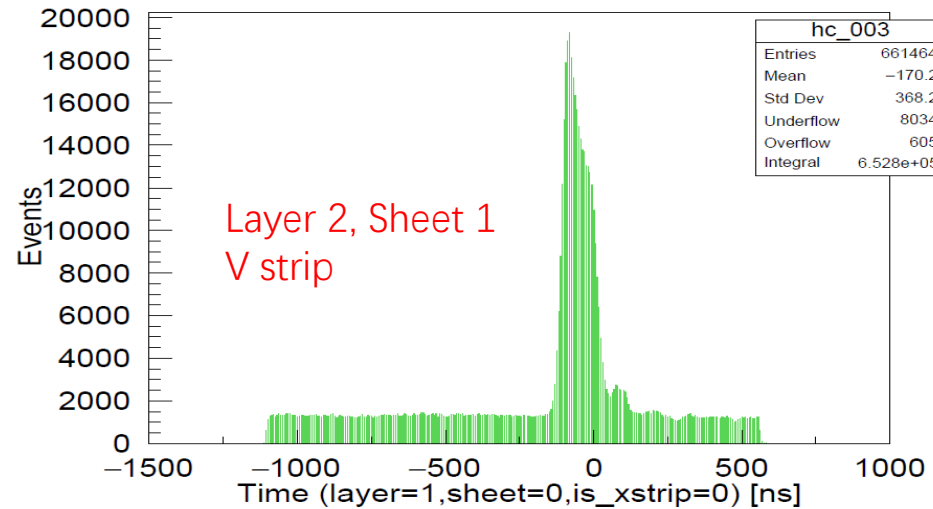
Strip level charge distribution

Run 8



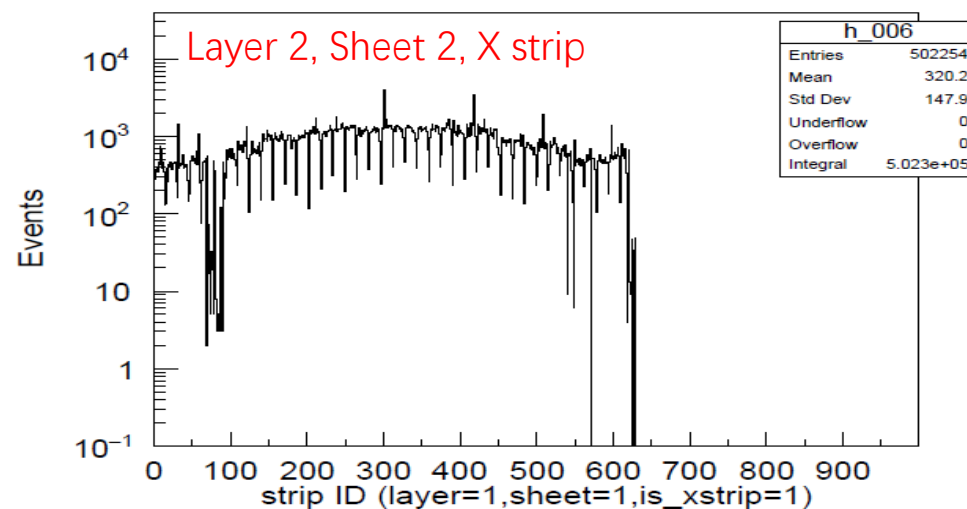
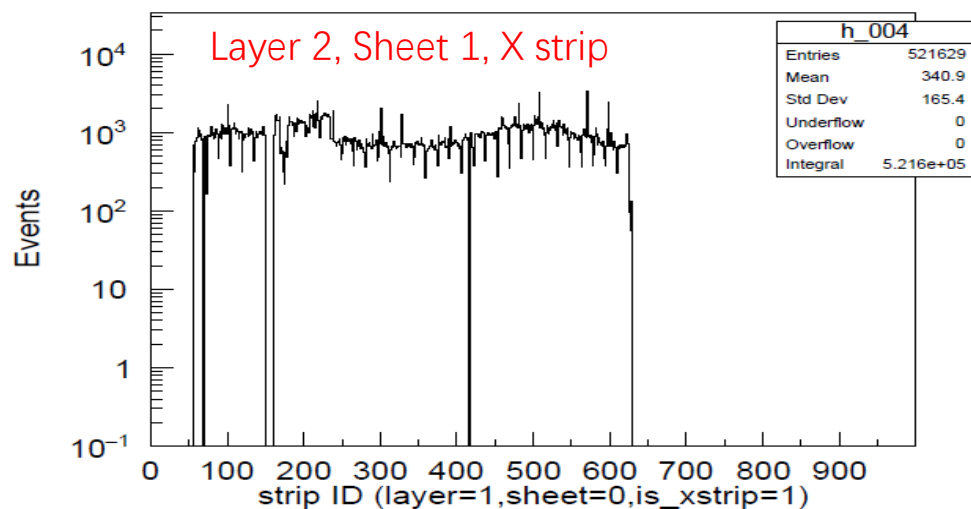
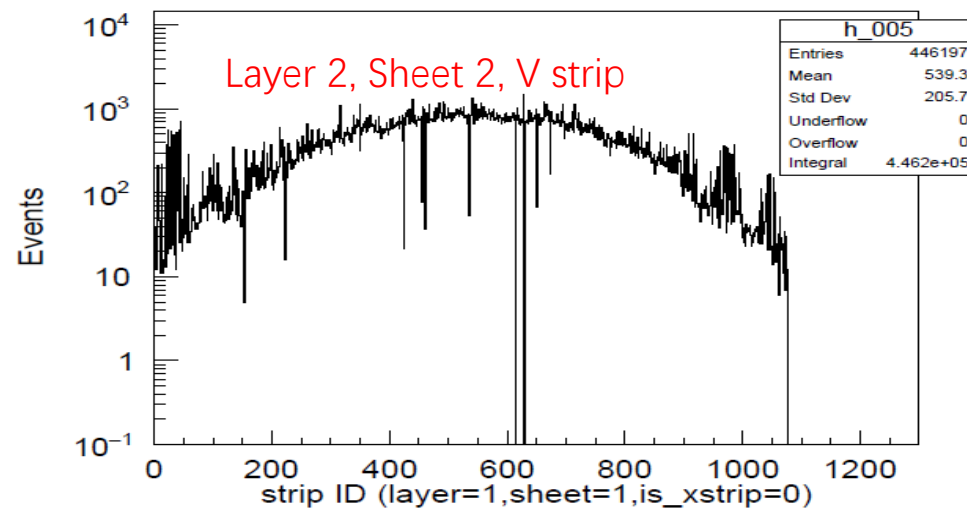
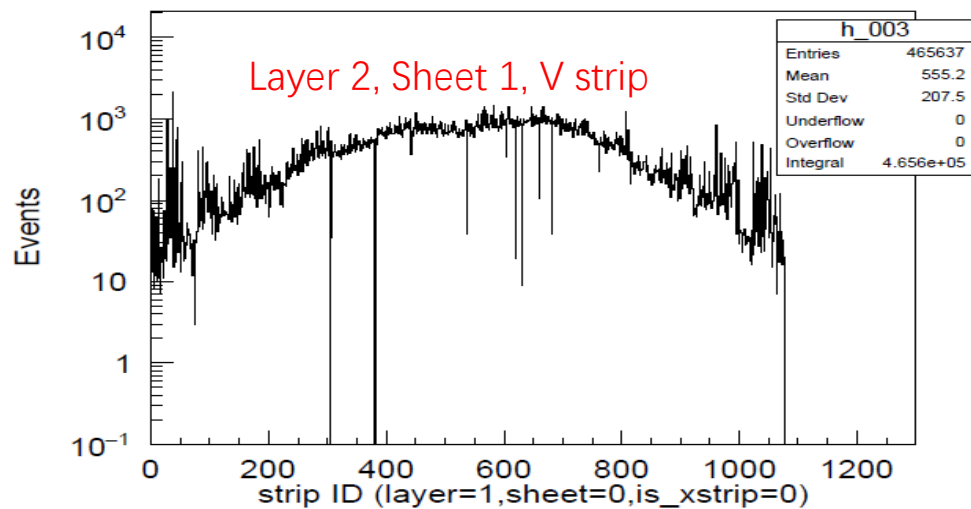
Strip level time distribution

Run 8



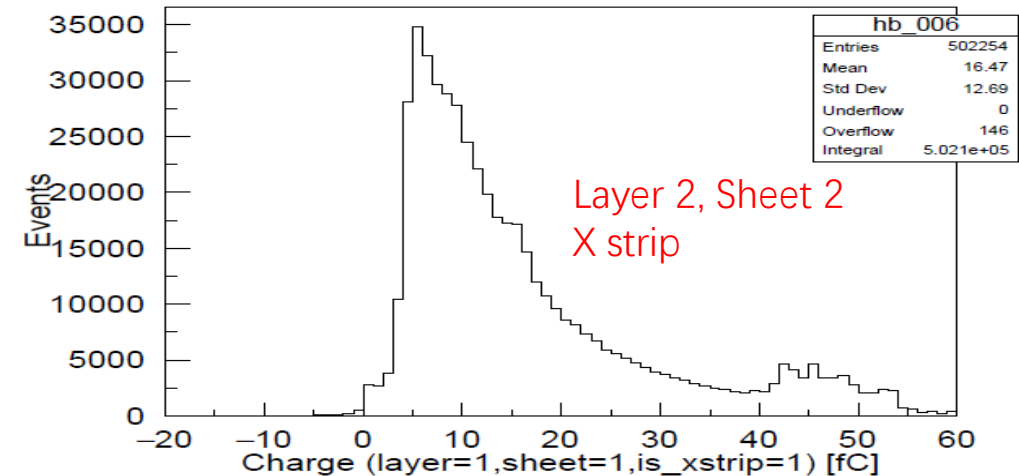
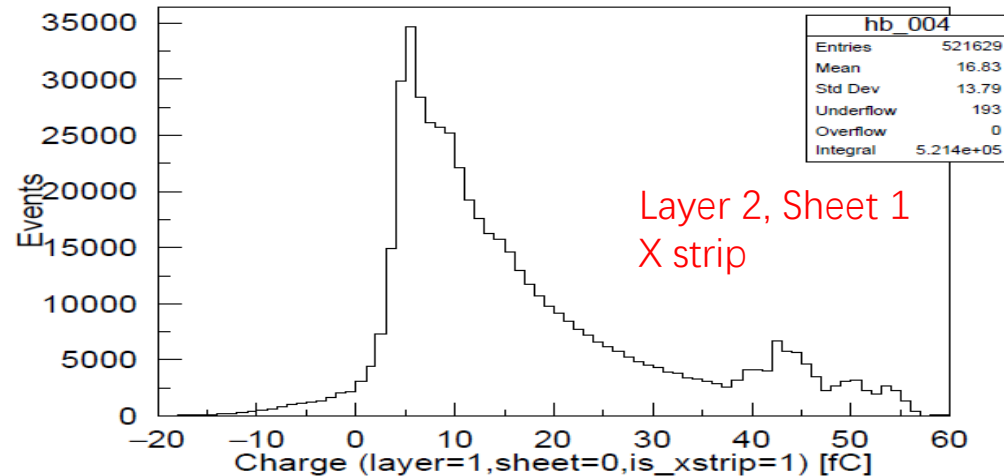
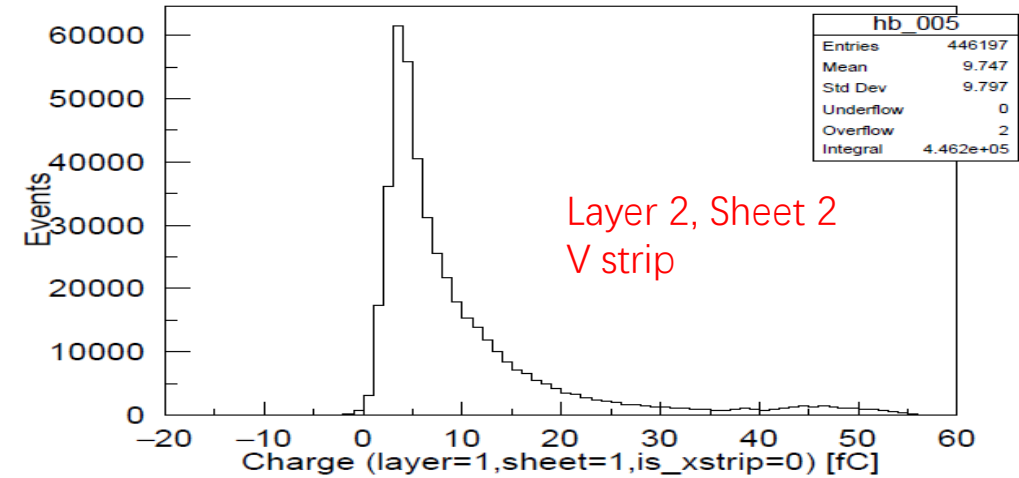
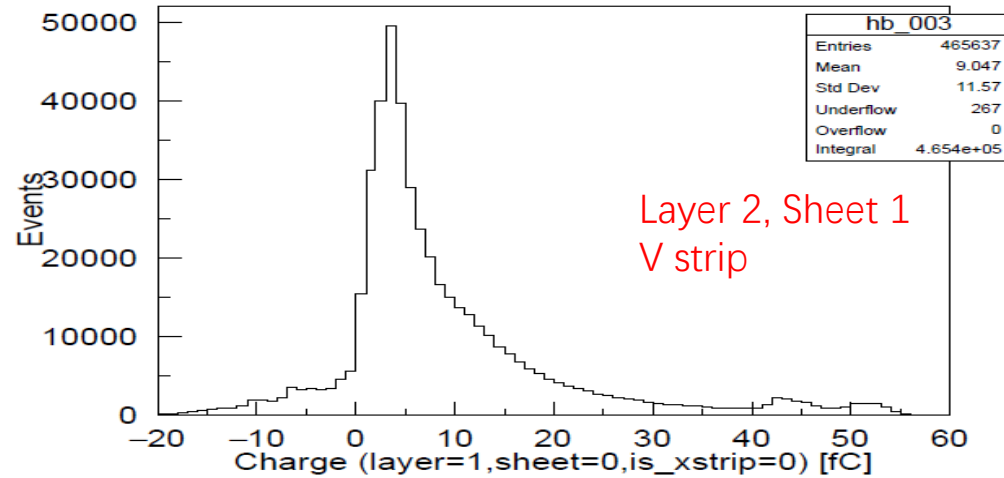
Hitmap

Run 9



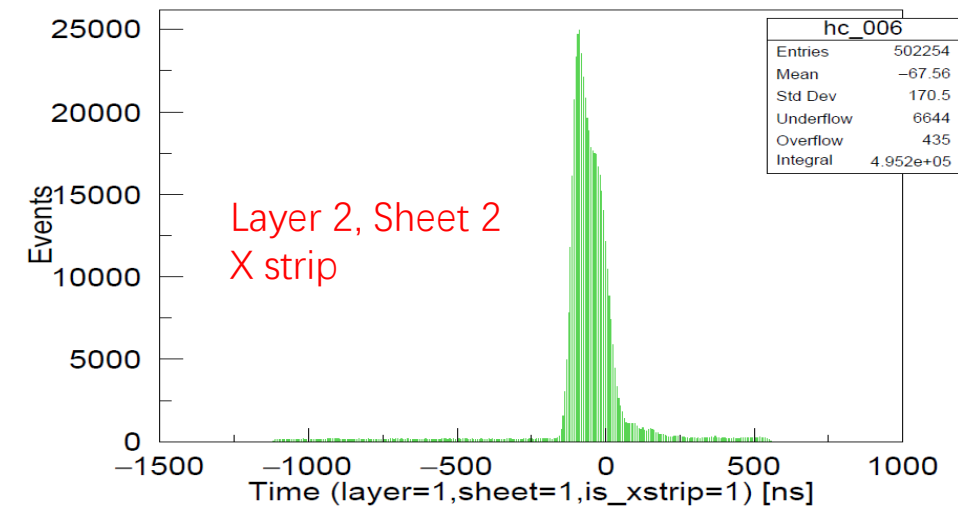
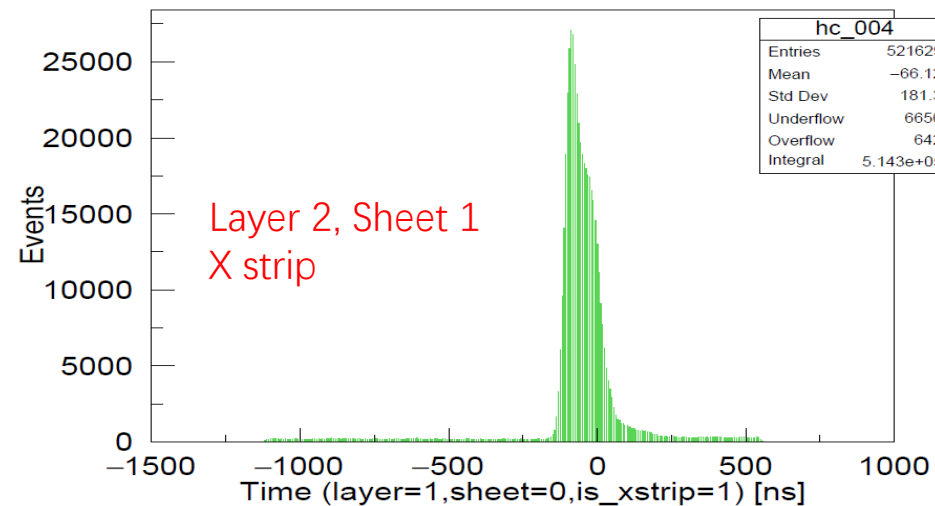
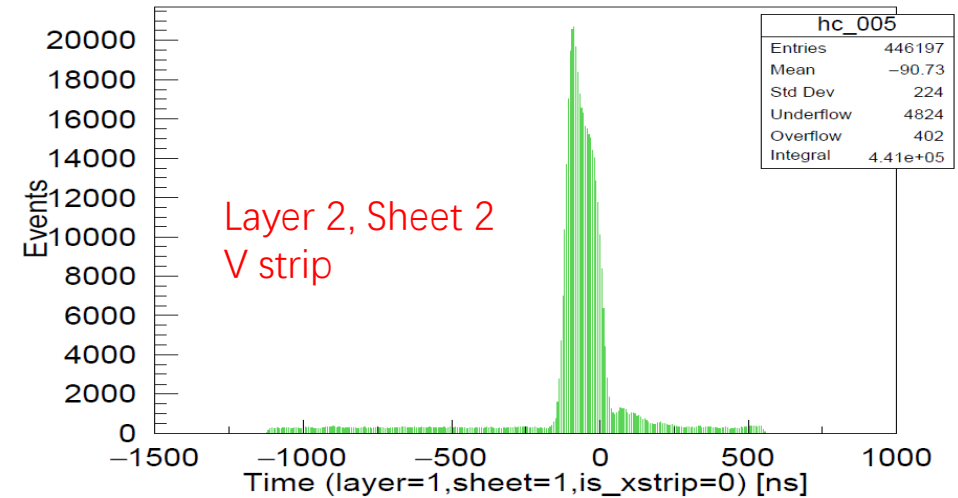
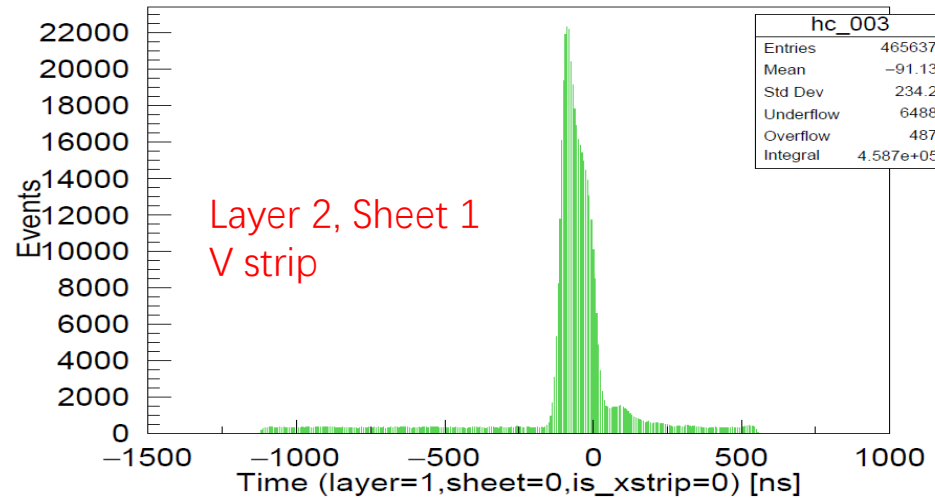
Strip level charge distribution

Run 9



Strip level time distribution

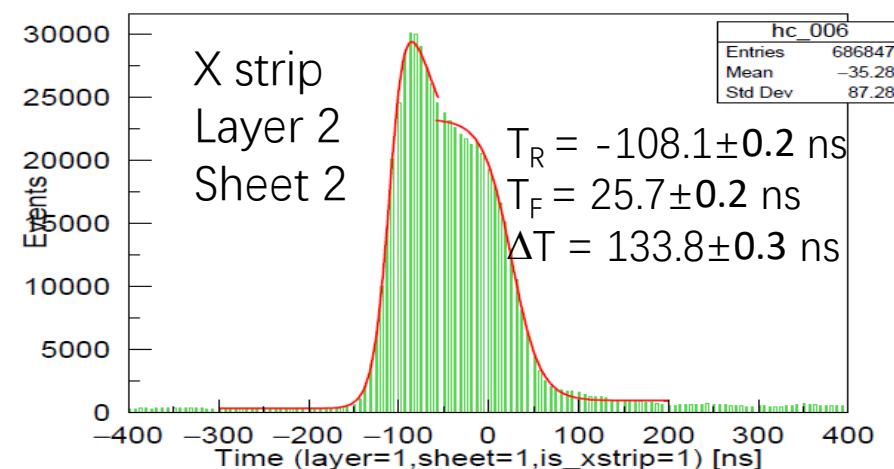
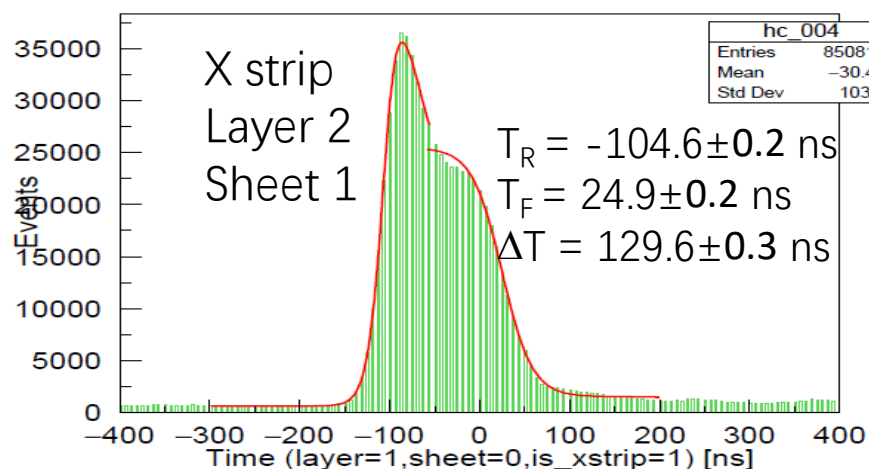
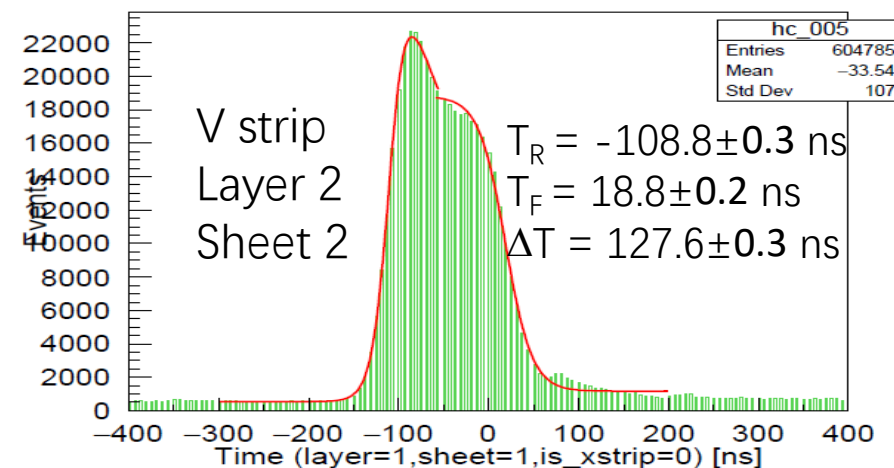
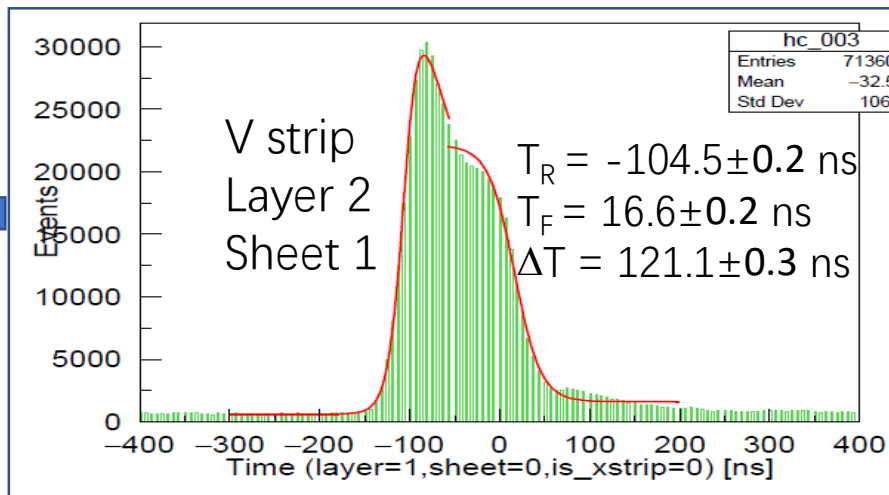
Run 9



Fit of time distribution

Run 7

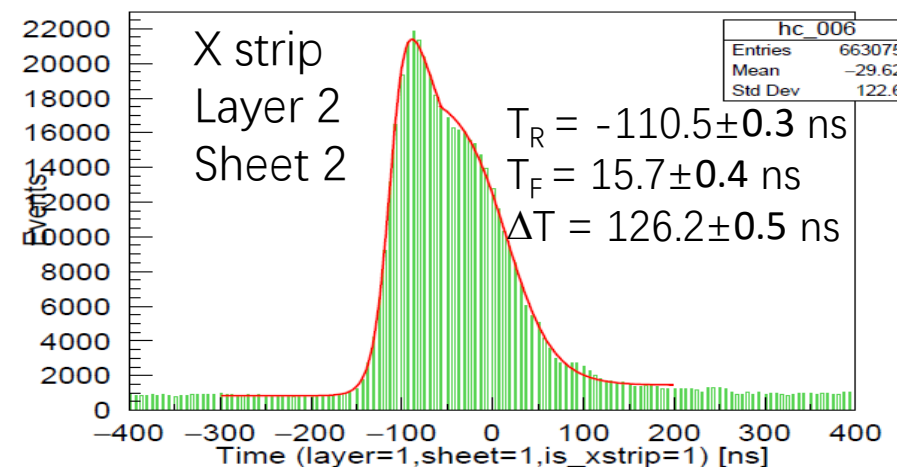
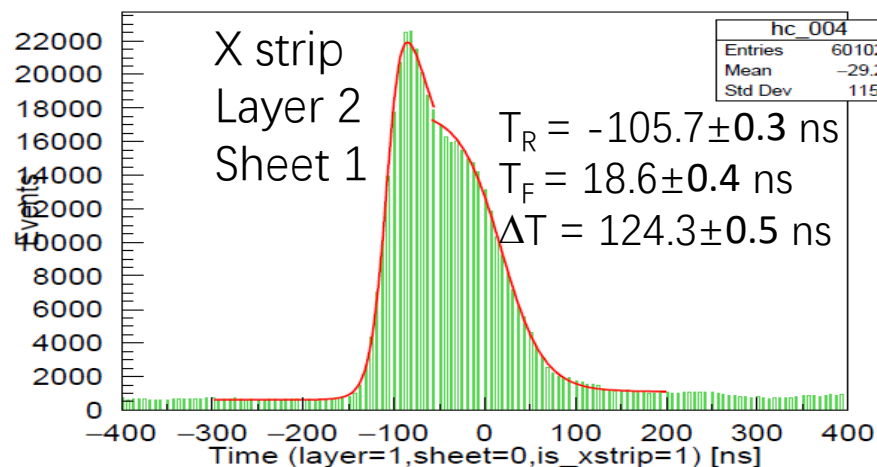
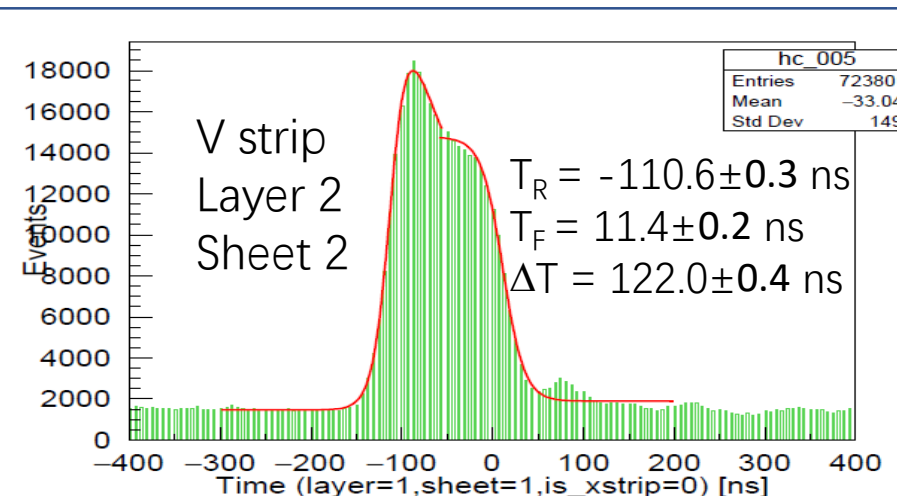
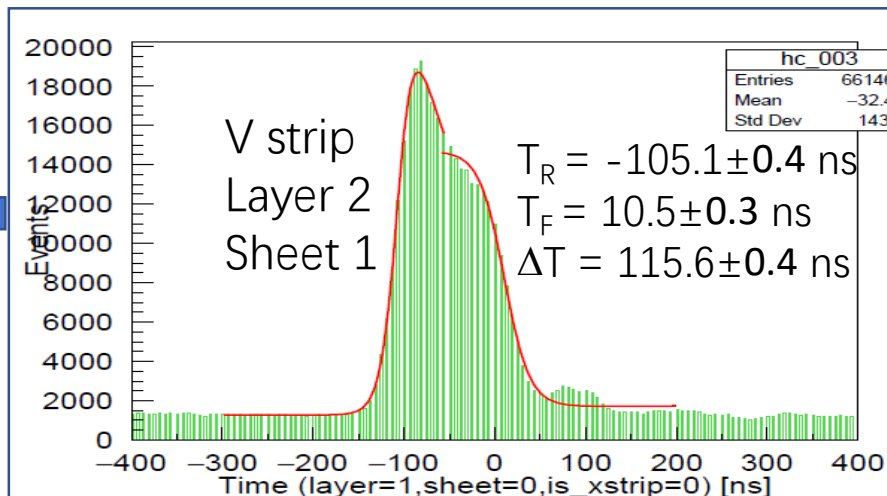
T_R and ΔT for different sheets are not consistent.



Fit of time distribution

Run 8

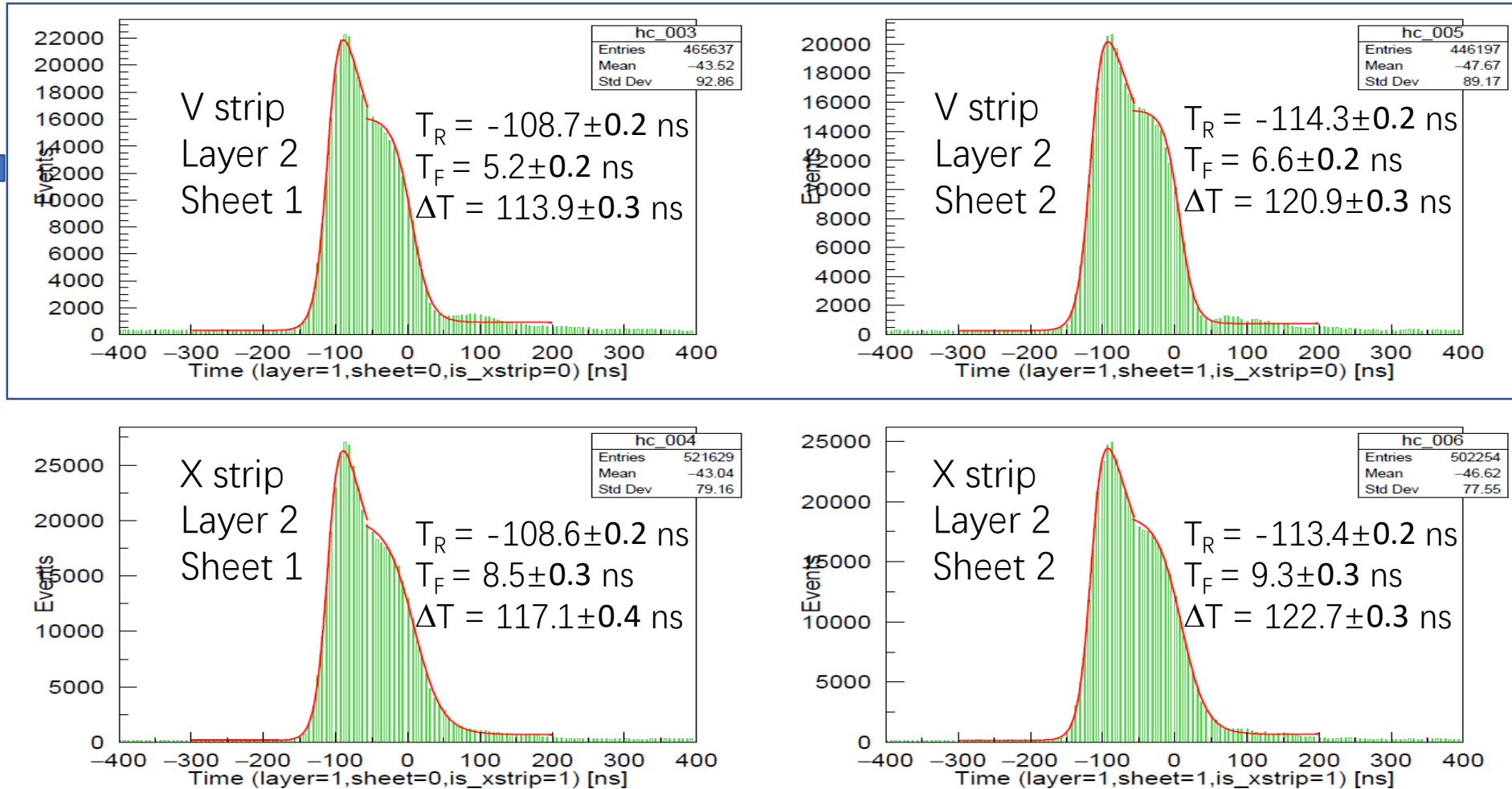
T_R and ΔT for different sheets are not consistent.



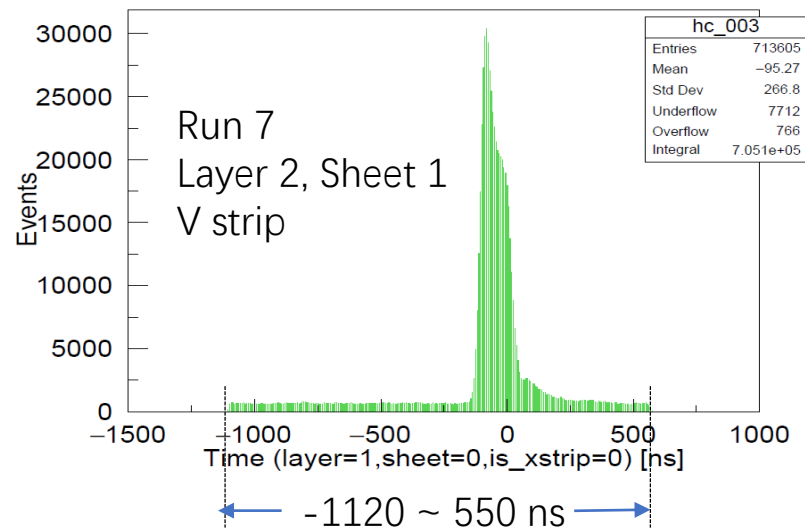
Fit of time distribution

Run 9

T_R and ΔT for different sheets are not consistent.



Occupancy



$$\text{Occupancy} = (N^{\text{hit}} - N^{\text{sig}}) / (N^{\text{evt}} \times N^{\text{strip}})$$

$$\text{Rate} = \text{Occupancy} / (1670 \text{ ns})$$

N^{hit} : entries of histogram in [-1120, 550] ns

N^{sig} : (entries in signal region) – (number of bkg estimated using sideband)

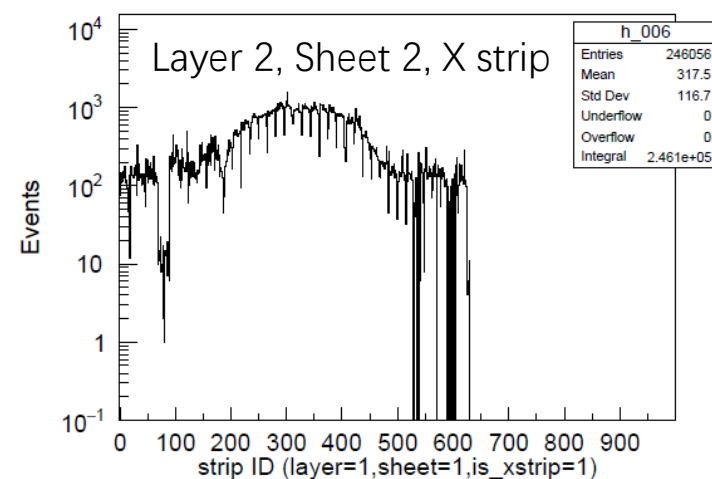
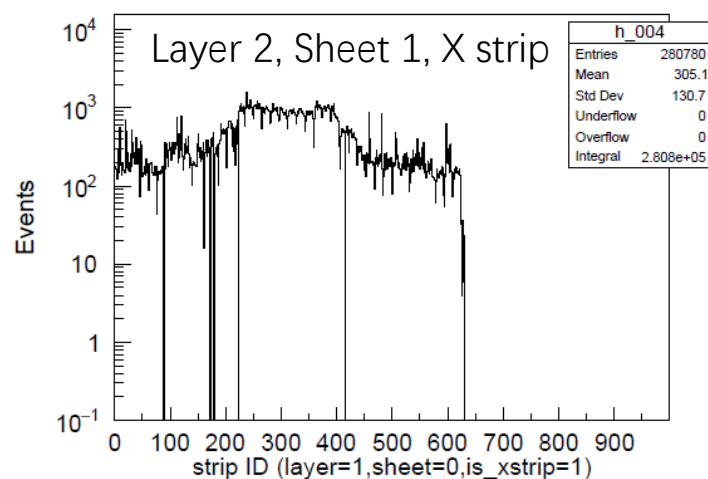
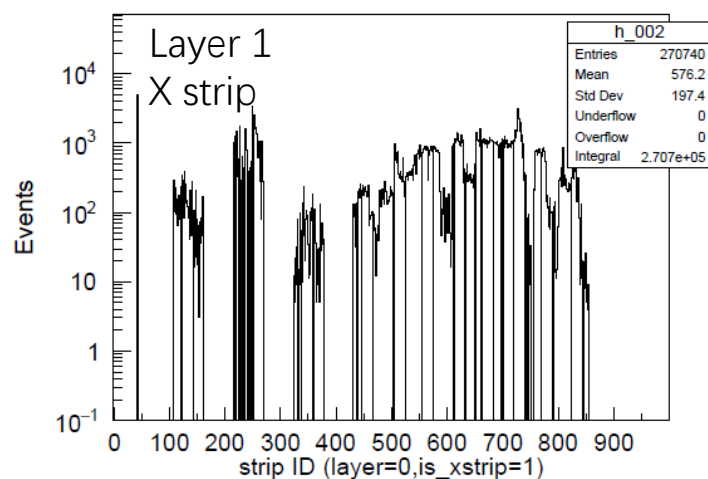
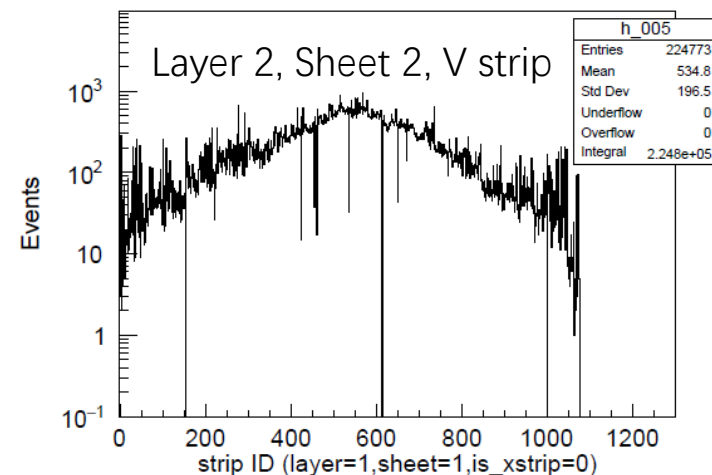
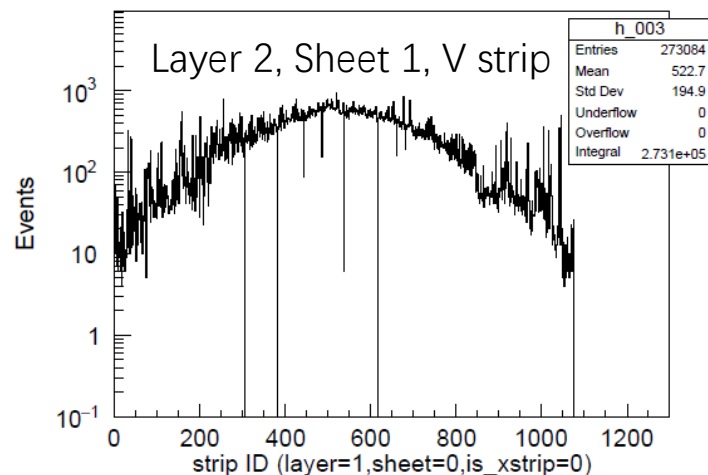
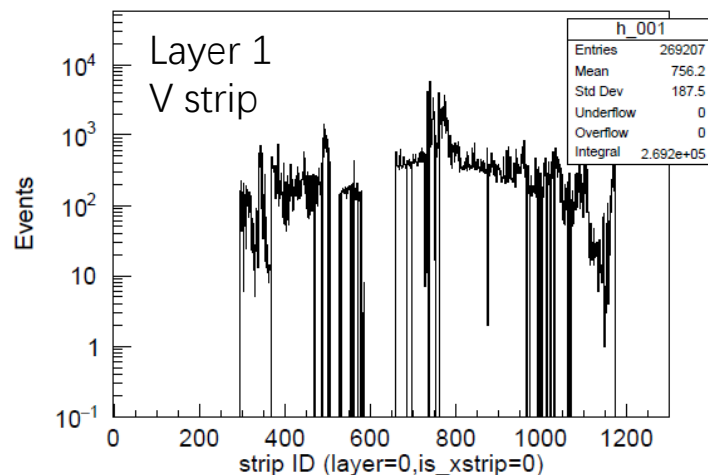
Run	Layer/Sheet	Strip type	Occupancy (10^{-4})	Rate (10^{-7})
7	Layer 2, Sheet 1	V	16.20 ± 0.04	9.70 ± 0.02
		X	29.70 ± 0.07	17.79 ± 0.04
	Layer 2, Sheet 2	V	14.65 ± 0.04	8.77 ± 0.02
		X	14.95 ± 0.05	8.95 ± 0.03
8	Layer 2, Sheet 1	V	44.12 ± 0.08	26.42 ± 0.05
		X	40.70 ± 0.09	24.37 ± 0.06
	Layer 2, Sheet 2	V	51.34 ± 0.08	30.74 ± 0.05
		X	51.57 ± 0.11	30.88 ± 0.06
9	Layer 2, Sheet 1	V	10.35 ± 0.04	6.20 ± 0.02
		X	11.22 ± 0.05	6.72 ± 0.03
	Layer 2, Sheet 2	V	9.14 ± 0.03	5.47 ± 0.02
		X	9.72 ± 0.04	5.82 ± 0.03

Thank you!

Back Up

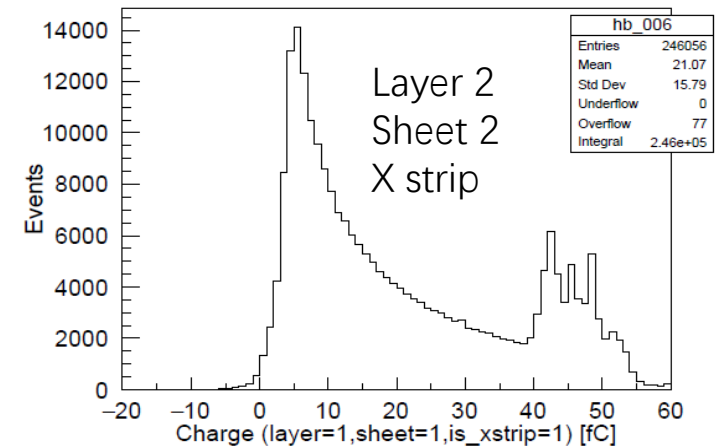
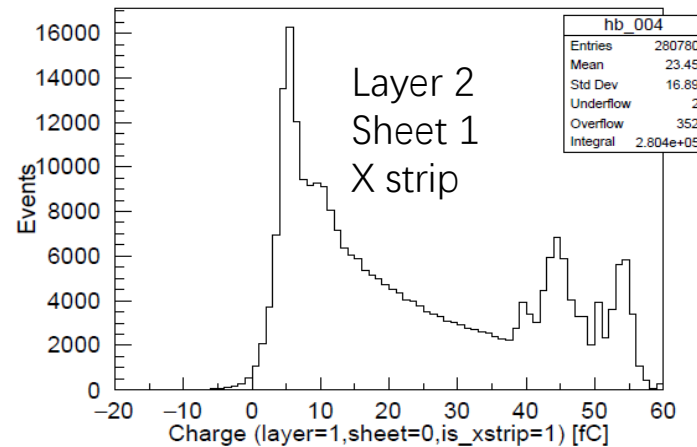
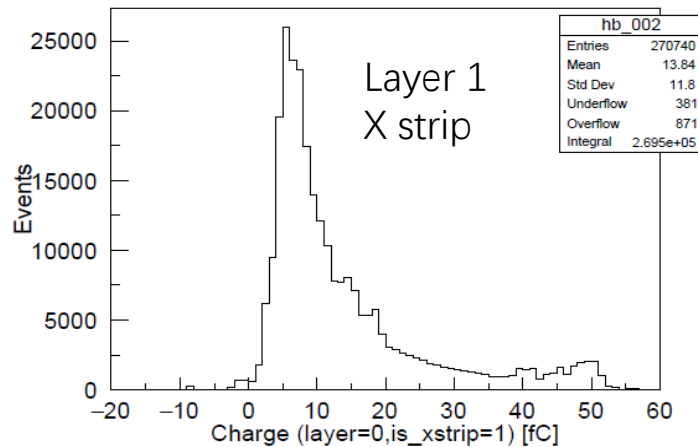
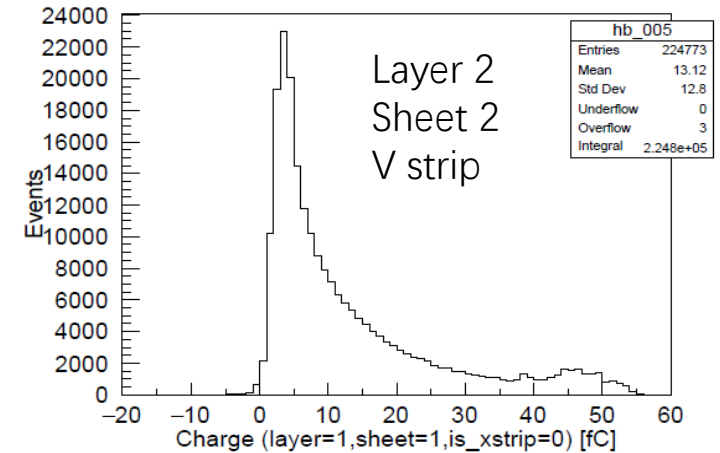
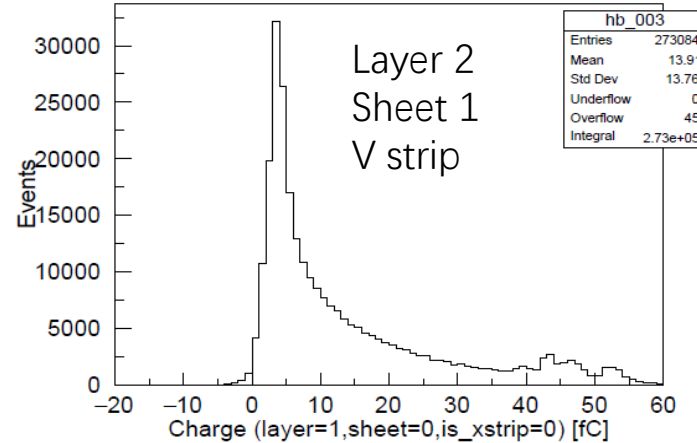
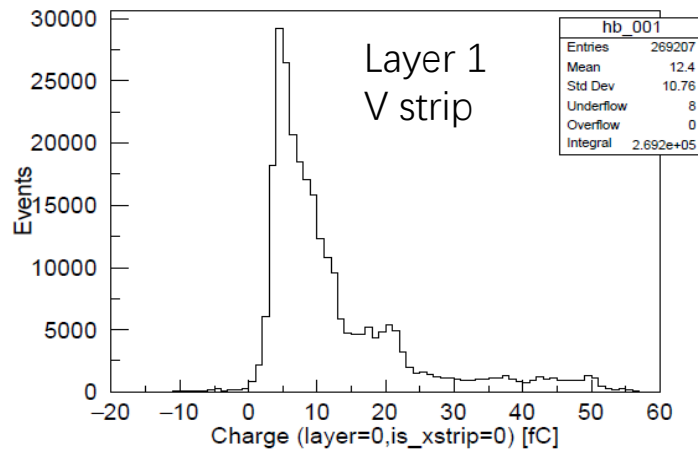
Distributions from previous data sample

Run 4



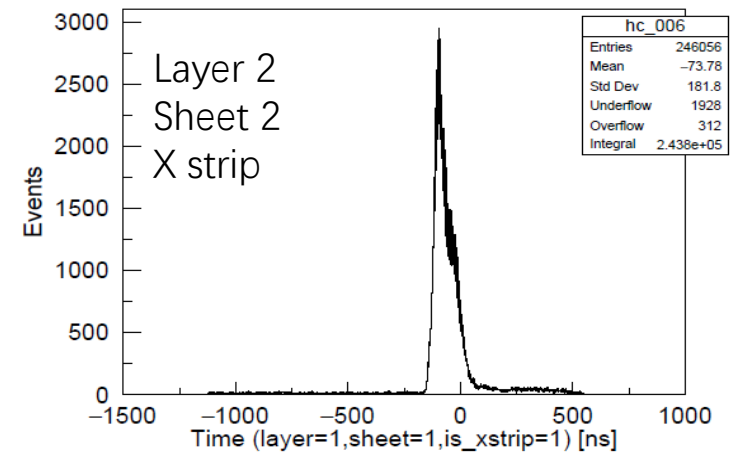
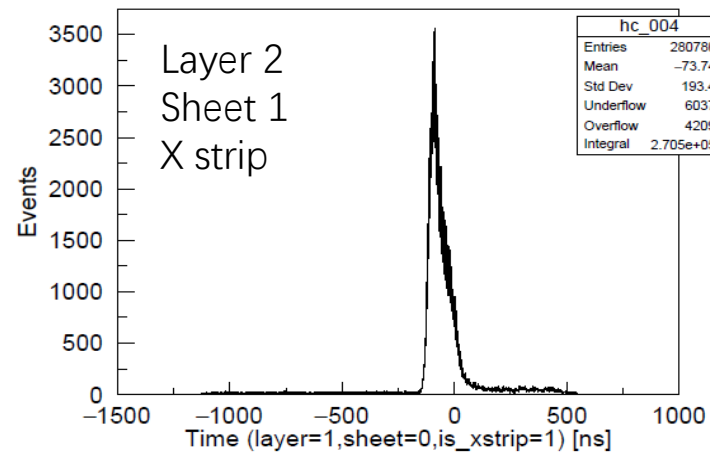
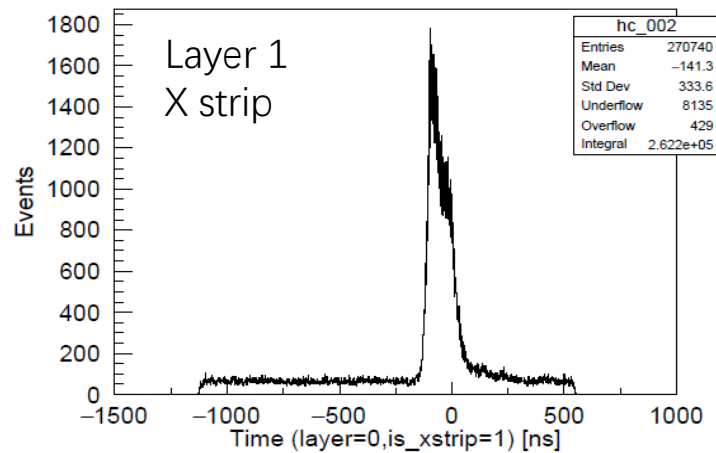
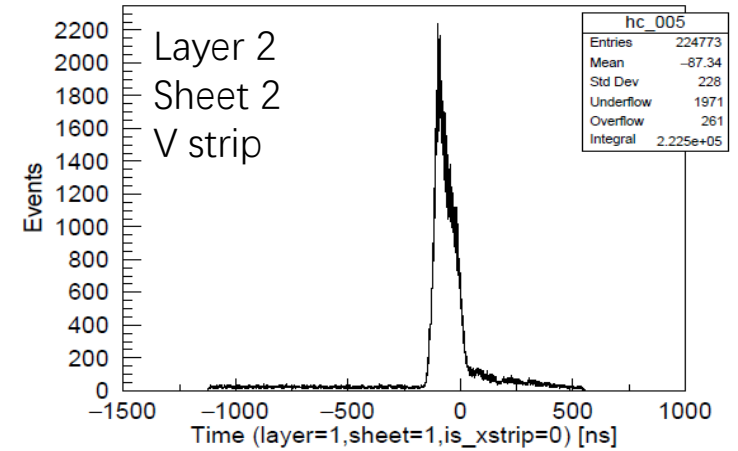
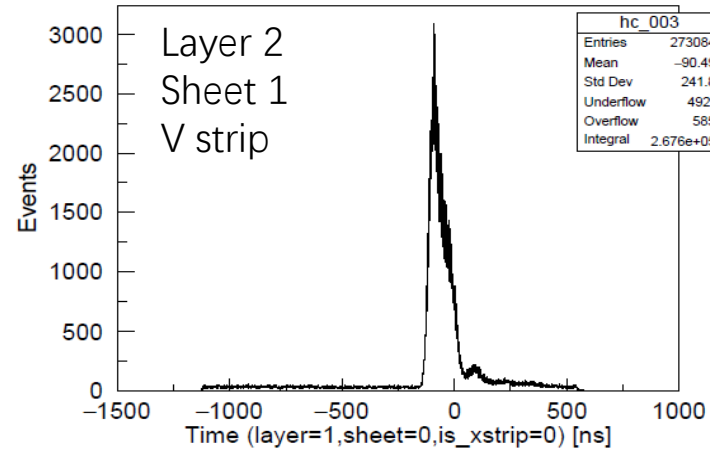
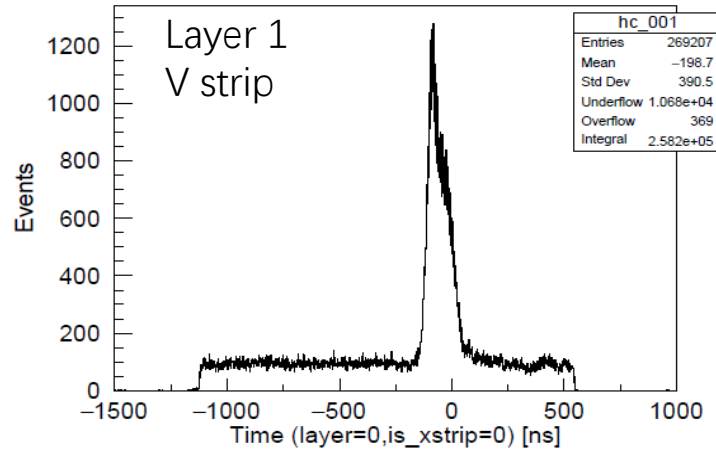
Distributions from previous data sample

Run 4



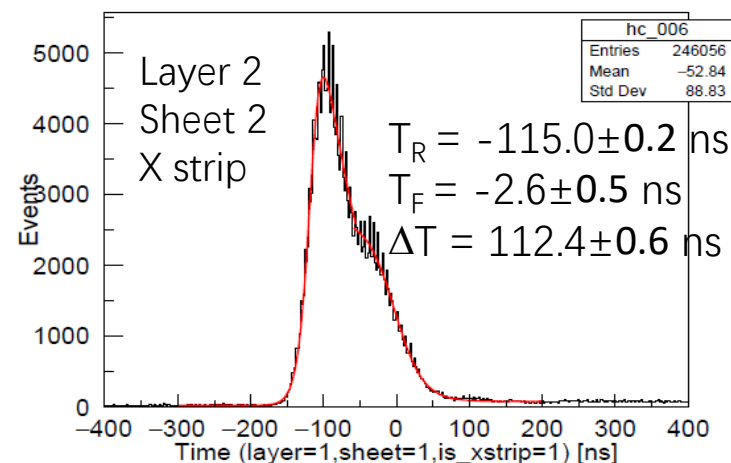
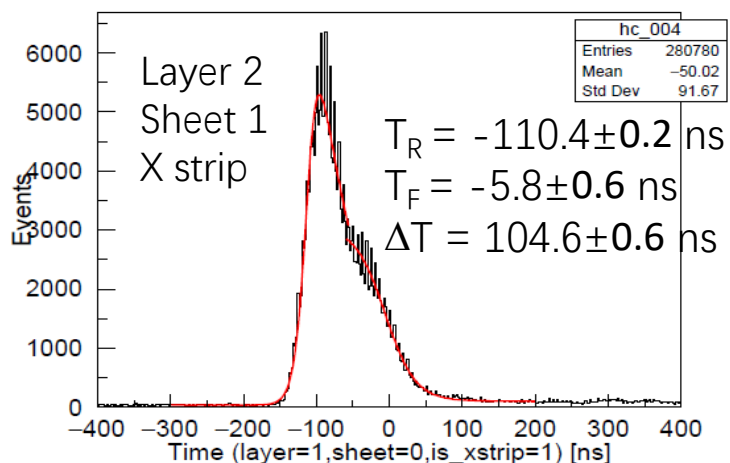
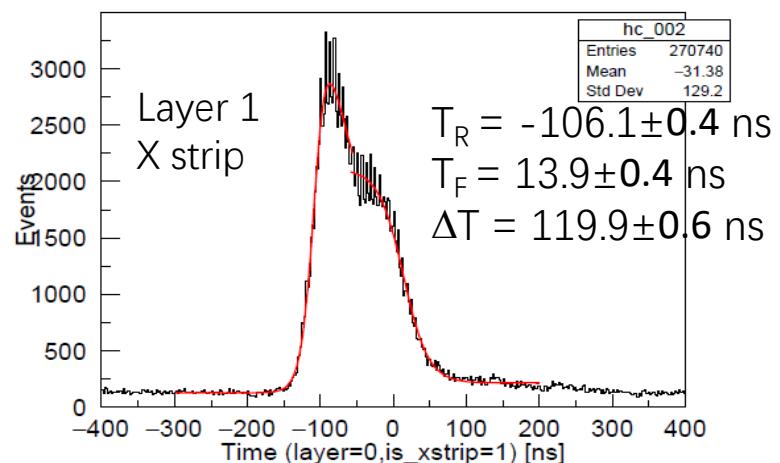
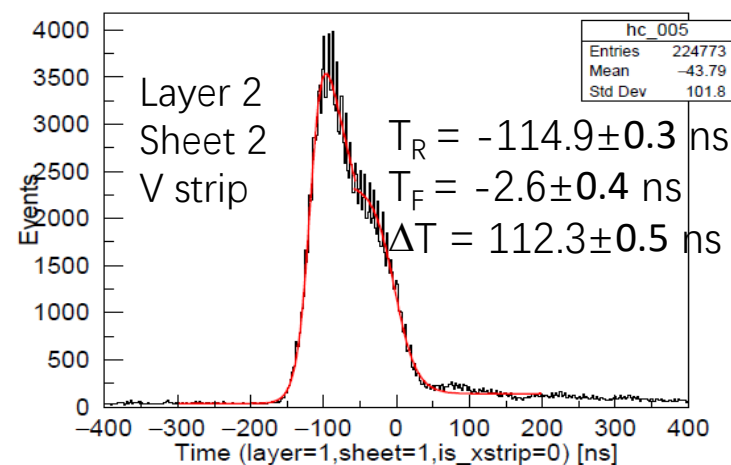
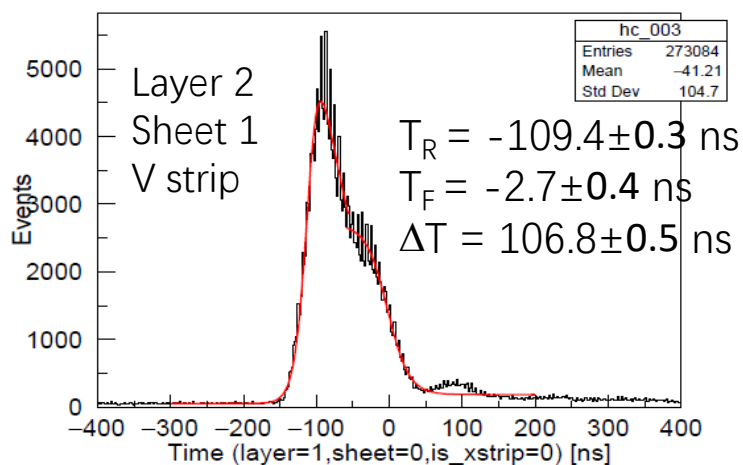
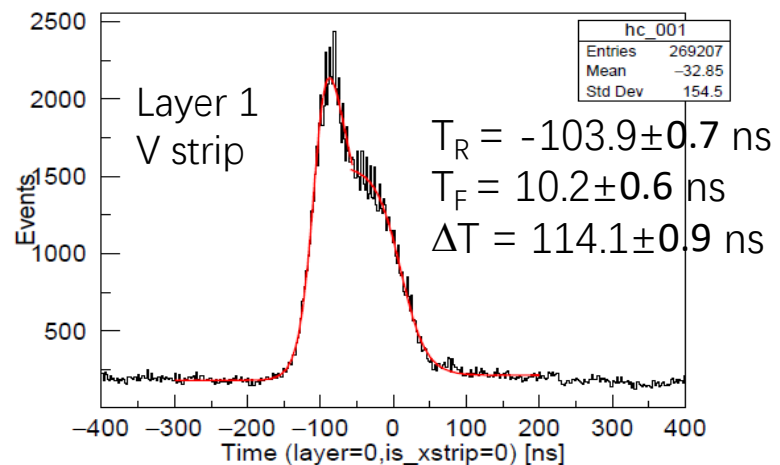
Distributions from previous data sample

Run 4

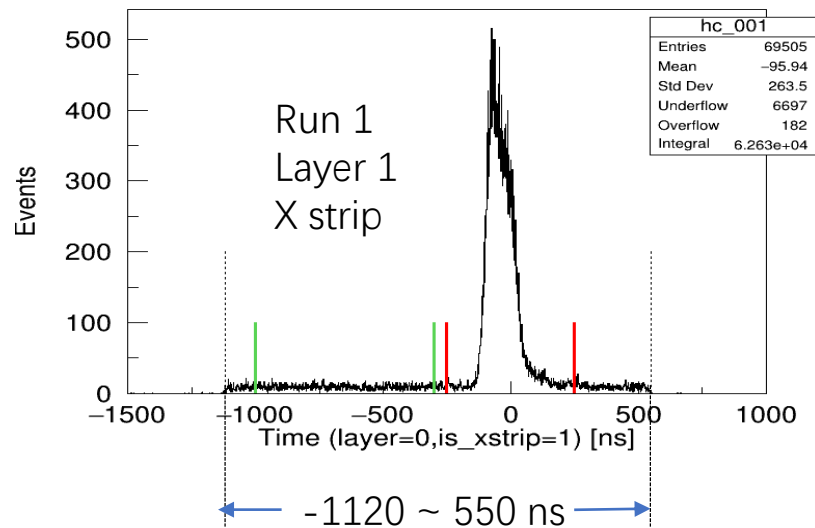


Distributions from previous data sample

Run 4



Occupancy



$$\text{Occupancy} = (N^{\text{hit}} - N^{\text{sig}}) / (N^{\text{evt}} \times N^{\text{strip}})$$

$$\text{Rate} = \text{Occupancy} / (1670 \text{ ns})$$

N^{hit} : entries of histogram in [-1120, 550] ns

N^{sig} : (entries in signal region) – (number of bkg estimated using sideband)

Run	Layer/Sheet	Strip type	Occupancy (10^{-4})	Rate (10^{-7})
1	Layer 1	V	9.94 ± 0.05	5.95 ± 0.03
		X	5.90 ± 0.05	3.53 ± 0.03
	Layer 2, Sheet 1	V	26.51 ± 0.09	15.66 ± 0.05
		X	36.43 ± 0.14	21.81 ± 0.08
	Layer 2, Sheet 2	V	7.45 ± 0.05	4.46 ± 0.03
		X	6.90 ± 0.06	4.13 ± 0.04
2	Layer 1	V	41.83 ± 0.11	25.05 ± 0.06
		X	44.44 ± 0.13	26.61 ± 0.08
	Layer 2, Sheet 1	V	11.98 ± 0.06	7.18 ± 0.04
		X	11.10 ± 0.07	6.65 ± 0.04
	Layer 2, Sheet 2	V	7.80 ± 0.05	4.67 ± 0.03
		X	8.47 ± 0.07	5.07 ± 0.04
3	Layer 1	V	36.99 ± 0.11	22.15 ± 0.06
		X	39.77 ± 0.13	23.81 ± 0.08
	Layer 2, Sheet 1	V	13.31 ± 0.07	7.97 ± 0.04
		X	14.59 ± 0.09	8.73 ± 0.05
	Layer 2, Sheet 2	V	8.37 ± 0.05	5.01 ± 0.03
		X	9.63 ± 0.07	5.77 ± 0.04
4	Layer 1	V	30.08 ± 0.08	18.01 ± 0.05
		X	28.40 ± 0.09	17.01 ± 0.05
	Layer 2, Sheet 1	V	11.30 ± 0.05	6.77 ± 0.03
		X	13.02 ± 0.07	7.80 ± 0.04
	Layer 2, Sheet 2	V	8.36 ± 0.04	5.01 ± 0.03
		X	9.89 ± 0.06	5.92 ± 0.04