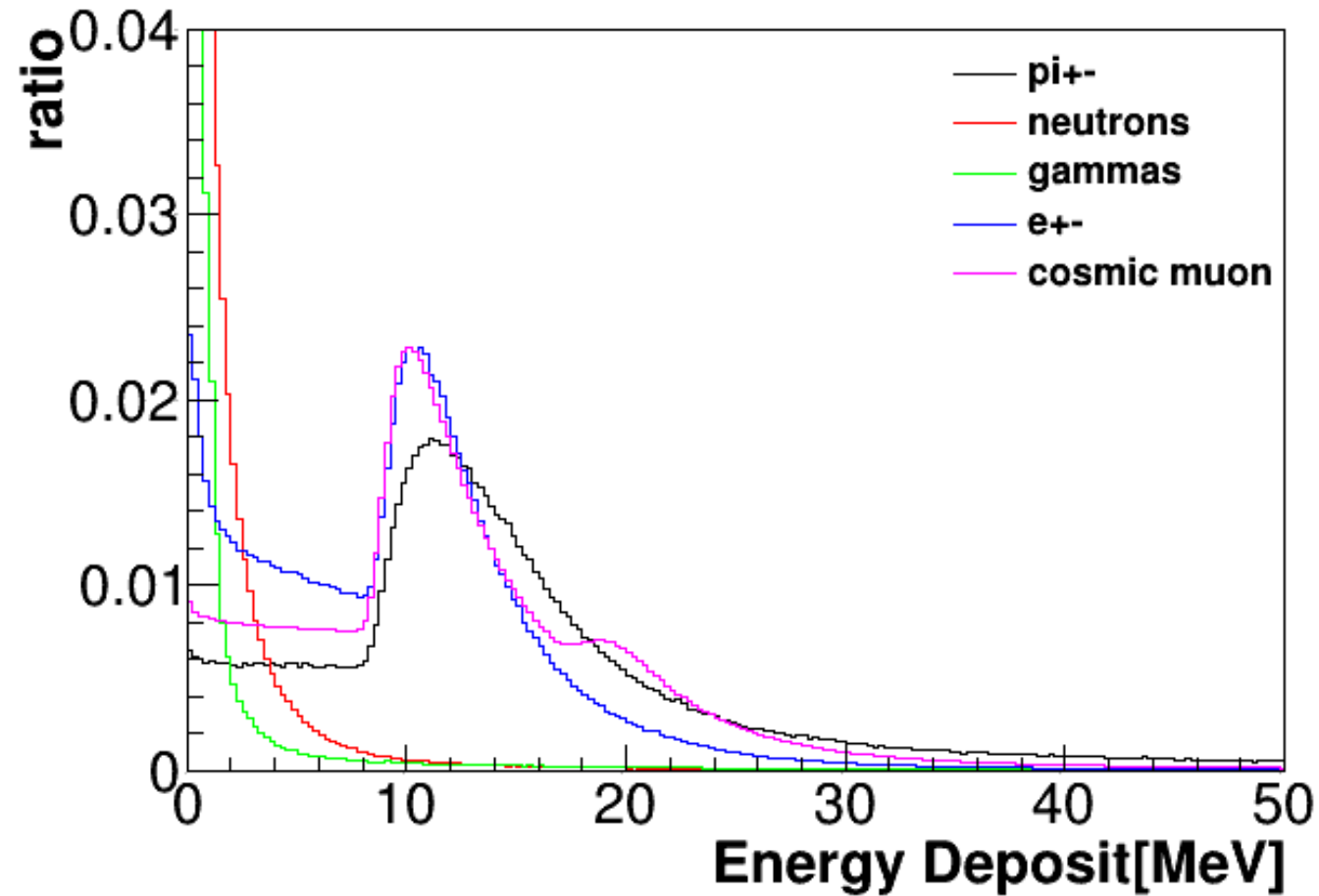
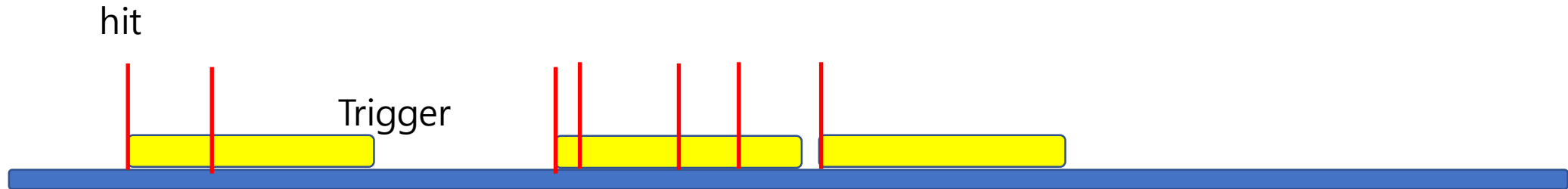


Deposit Energy



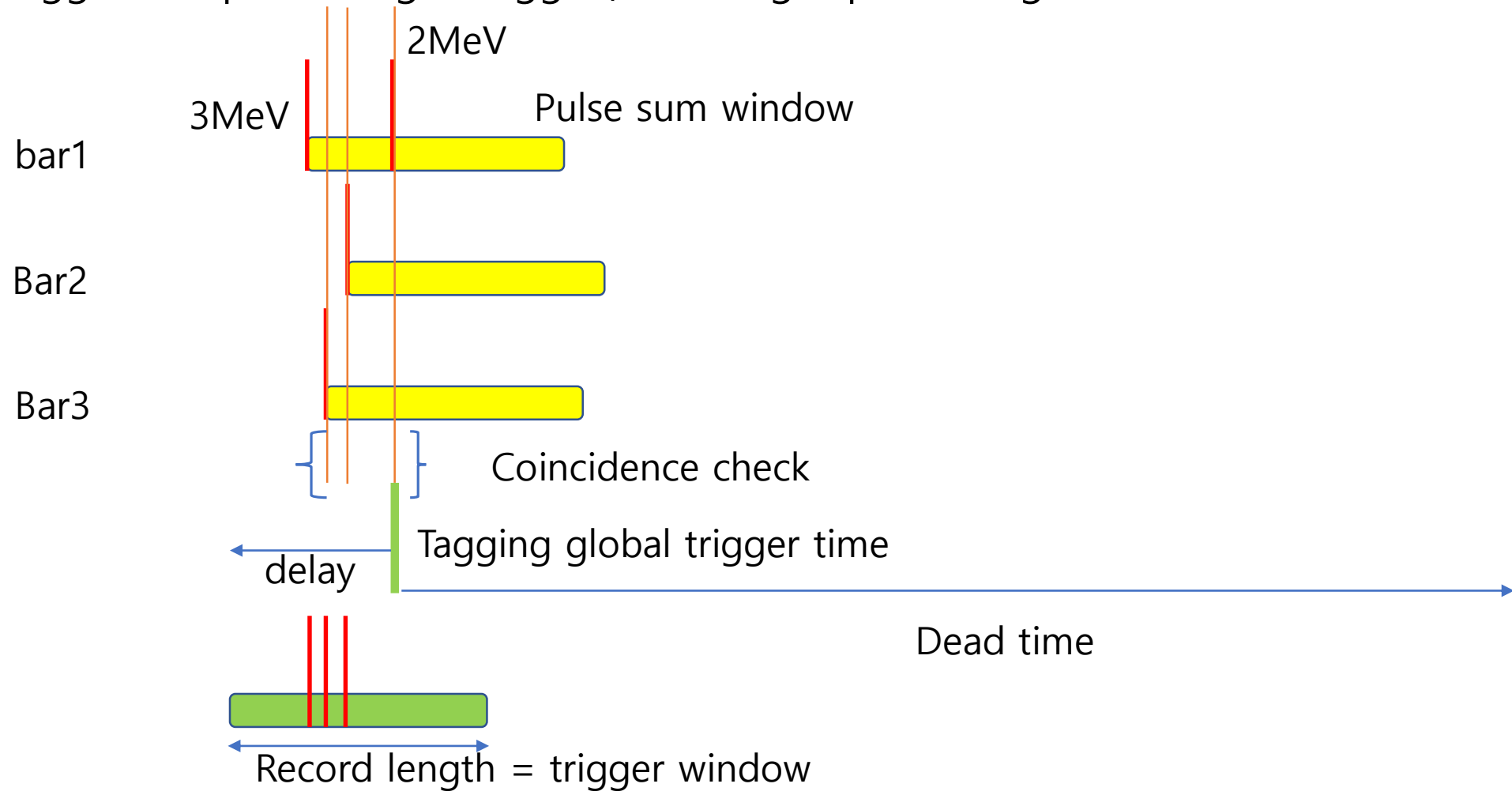
Simulation trigger change

- Previously, trigger is developed when any hit occurs.



Simulation trigger change

- Add coincidence condition, delay, dead time and threshold.
- Use pulse sum trigger not pulse height trigger(hard to get pulse height with no digitization)



Simulation trigger change

- Selection efficiency and false rate are not much change for 50k events.

		1 S.E (B.R)	2 S.E (B.R)	3 S.E (B.R)
Before	Upward	0.2969 (0.0070)	0.2739 (0.0061)	0.2531 (0.0054)
	Downward	0.2768 (0.0072)	0.2688 (0.0060)	0.2575 (0.0049)
After	Upward	0.297 (0.0050)	0.274 (0.0043)	0.252 (0.0034)
	Downward	0.273 (0.0044)	0.265 (0.0037)	0.254 (0.0024)

Record length increase

- For 3rd algorithm, background rate increase.

Record Length	For 3 rd algorithm	S.E (B.R)
128ns	Upward	0.252 (0.0034)
	Downward	0.254 (0.0024)
1024ns	Upward	0.255 (0.0163)
	Downward	0.256 (0.0152)

Back up

- The word “event” means the annihilation of one antiproton event.
- If a hit occurs, a trigger is started.
- Selection efficiency =
$$\frac{(\# \text{ of event whose } \# \text{ of selected trigger is one})}{(\# \text{ of total event})}$$
- Background rate = False trigger rate =
$$\frac{(\# \text{ of false trigger})}{(\# \text{ of event whose } \# \text{ of selected trigger is one})}$$

Back up

- 1) First, we select the triggers having Top-Bottom combination with two or more hits, which have at least one hit at Top and Bottom, each. Then, by checking the time difference between the earliest top hit and earliest bottom hit, we reject the trigger with a condition of $\Delta t = T_{\text{bot}} - T_{\text{top}} > 2 \text{ ns}$ according to the distributions of cosmic-rays.
- 2) This algorithm is almost same as 1) but checking that the time differences of all possible combinations of a top hit and a bottom hit are less than 2 ns. If one of them, at least, is more than 2 ns, that trigger is rejected.
- 3) This algorithm is almost same as 2) but select the trigger with more than two hits at first.