

Cosmic Ray Rejection

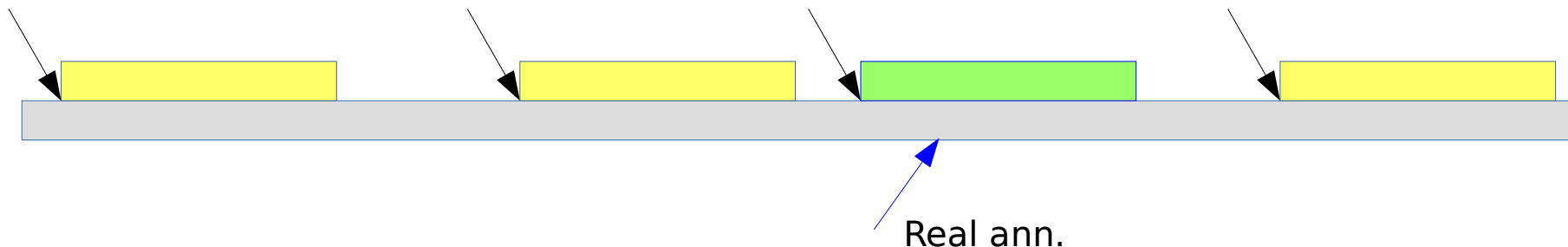
- Selection schemes

1. Top-bottom hits, select the trigger the fastest $T_{\text{bot}} - T_{\text{top}} < 2\text{ns}$
2. Top-bottom hits, all combinations of $T_{\text{bot}} - T_{\text{top}} < 2\text{ns}$
3. 3 hits, including t-b hits, all combinations of $T_{\text{bot}} - T_{\text{top}} < 2\text{ns}$

(selection efficiency) = (# of events with only one trigger selected)
/ (the number of total events)

(selection accuracy) = (# of events with real annihilation trigger selected)
/ (# of events with only one trigger selected)

(background fraction) = 1 - (selection accuracy)



Cosmic Ray Rejection

- Event window = 500 ms
- Trigger window = 128 ns
- Energy thresholds = 0.3 MeV
- Time Resolution = 200 ps

Algorithm	1 st (Top / Bot. ann.)	2 nd (Top / Bot. ann.)	3 rd (Top / Bot. ann.)
Selection Efficiency	0.4822 / 0.3458	0.4335 / 0.3389	0.4211 / 0.3342
Background Rate	0.0212 / 0.0363	0.0242 / 0.0355	0.0152 / 0.0219

	1 st (top/bot. Ann.)	2 nd (top/bot. Ann.)	3 rd (top/bot. Ann.)
Selection efficiency	0.4787 / 0.3521	0.4314 / 0.3453	0.4194/0.3399
Background rate	0.0208 / 0.0357	0.0242 / 0.0345	0.0150/0.0211