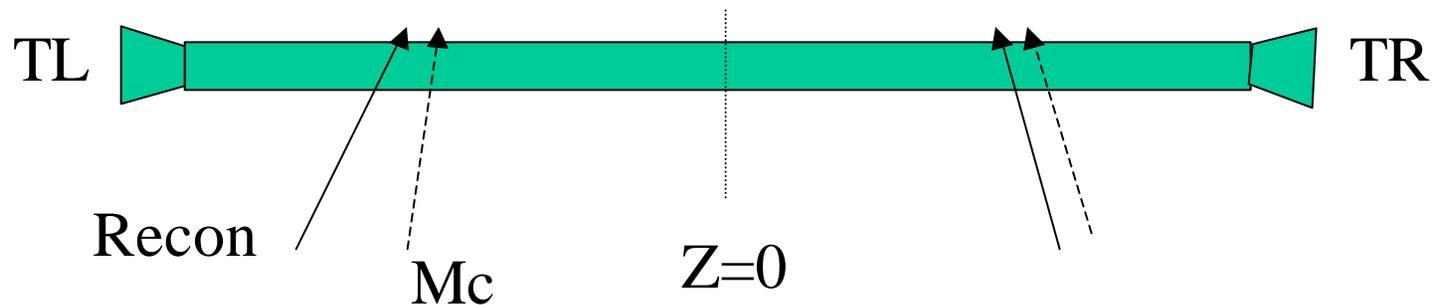


Some conclusions about reconstruction algorithms

- **Efficiency redefined:** just count cases where association can be made -> a **real hit**:
 - a reconstructed track reaching the bar &
 - at least one PMT triggered in that bar

Algor.	TL-TR	Closest	Hybrid
% Hits	76.7	83.5	91.9
% Tracks	79.5	82.3	92.2
% PMTs	89.1	90.6	93.8

- To know when these matches are not **fake**, where can I be doing it wrong?? -> I use MC truth information.
- **Cases:**
 - 2 MC tracks but only one reconstructed track (the last one in time) -> I depend on COT
 - 2 MC tracks & 2 reconst. tracks:



- A 1k event B sample was generated using TofSim and **disabling smearing** of times written to TOFD so that, **TofSim does:**

1) $T_{\text{PMT}} = T_{\text{MC}} + \Delta z_{\text{MC}}/s \rightarrow \text{Digitalization} \rightarrow \text{TDC}$

2) TDC is an integer given by: $4096 * (55 - T)/60$

3) TDC written into TOFD as an integer.

Worst case e.g: 200.99 counts \rightarrow 200 counts

Then, back to time in ns from TOFD in reconstruction module:

We would be losing $0.99 * 60/4096 \sim 20$ ps

reading back TOFD into reconstruction

- To check if the match is fake or not, a check in time is made for each PMT with the time given by the MC Hit, having in mind those max. 20 ps difference from truncation in TDC
- I should be showing here the good match percentages, but something in code is making this difference bigger than 20 ps -> keep investigating, work in progress
- A first glance -> fakes **lower** than 20%