SUMMARY OF JUNLEE'S WORK

29th, Sep., 2016
for Seoul Meeting

CURRENT TASKS

- To demonstrate better timing resolution of IB
  - Timing calibration
  - Purity of data samples
  - Comparison between 6g, 5g+1g
- Acceptance loss due to MB veto

TIMING CALIBRATION

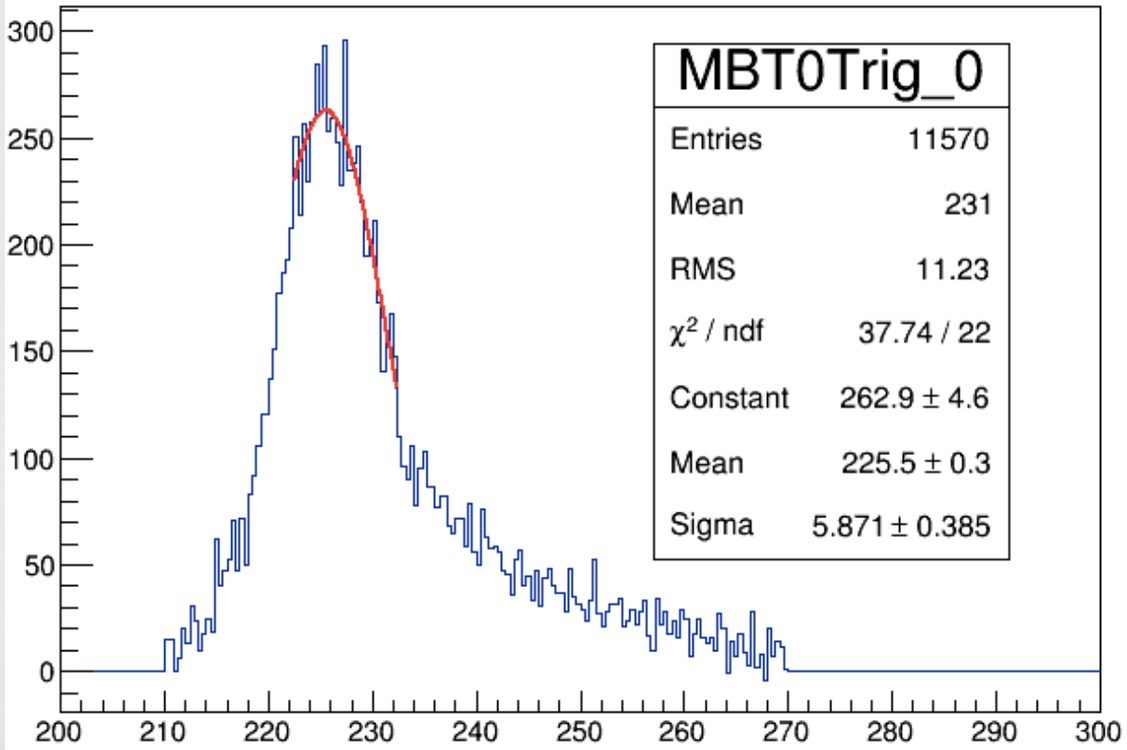
Get timing distribution

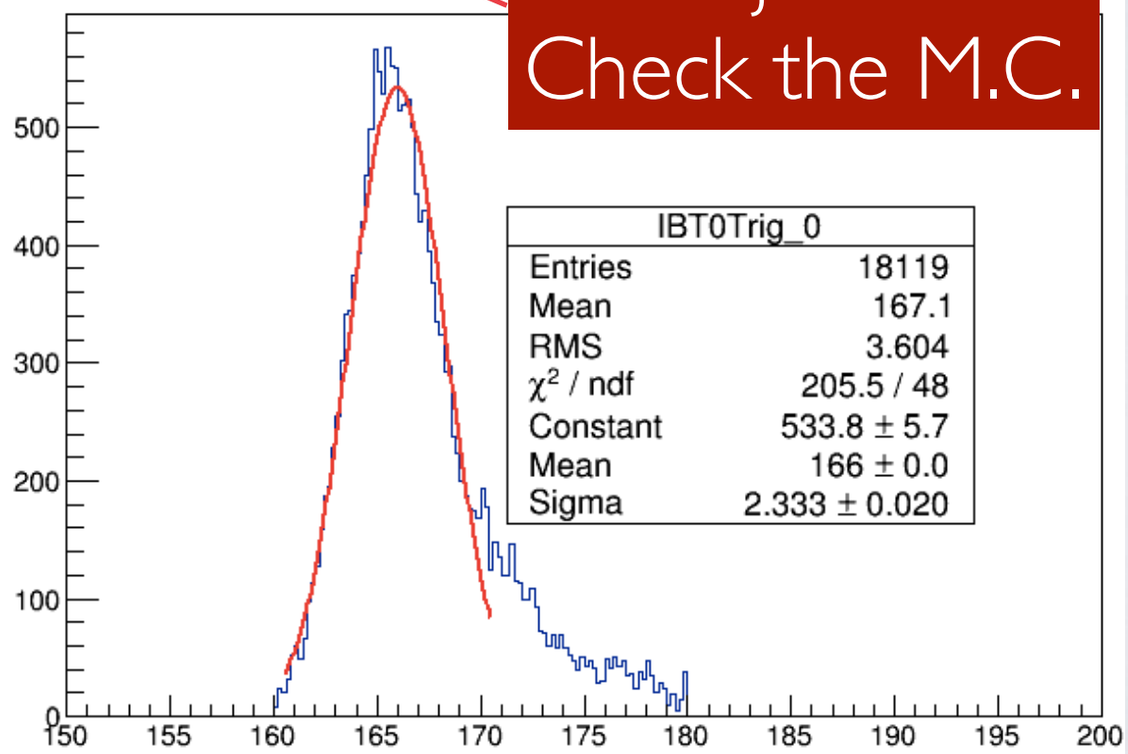
- Mean time
  - $(Time_{Up}+Time_{Down})/2$

Needless correction ? just removing an info.

- Trigger window distribution – Accidental window distribution
- Fitted with gaussian distribution

Is this justified ? Check the M.C.





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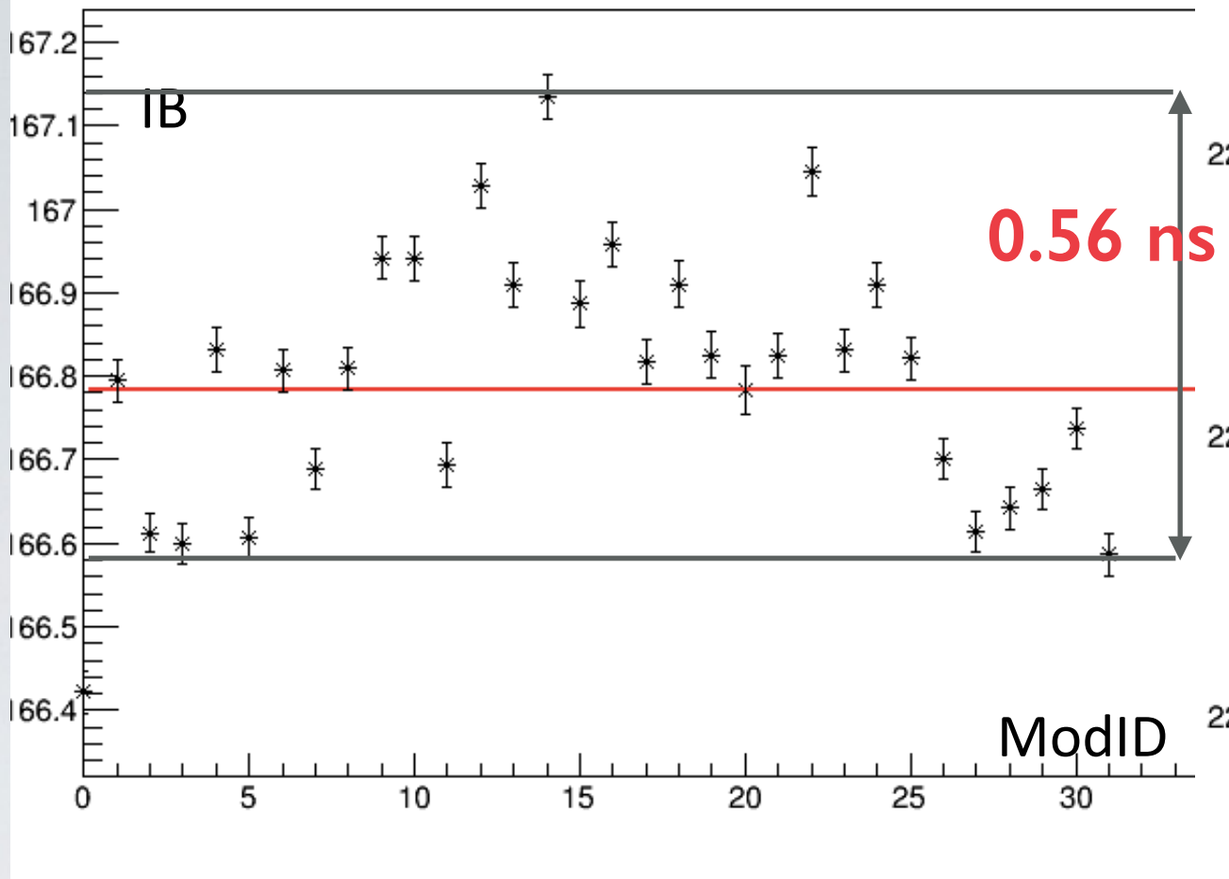
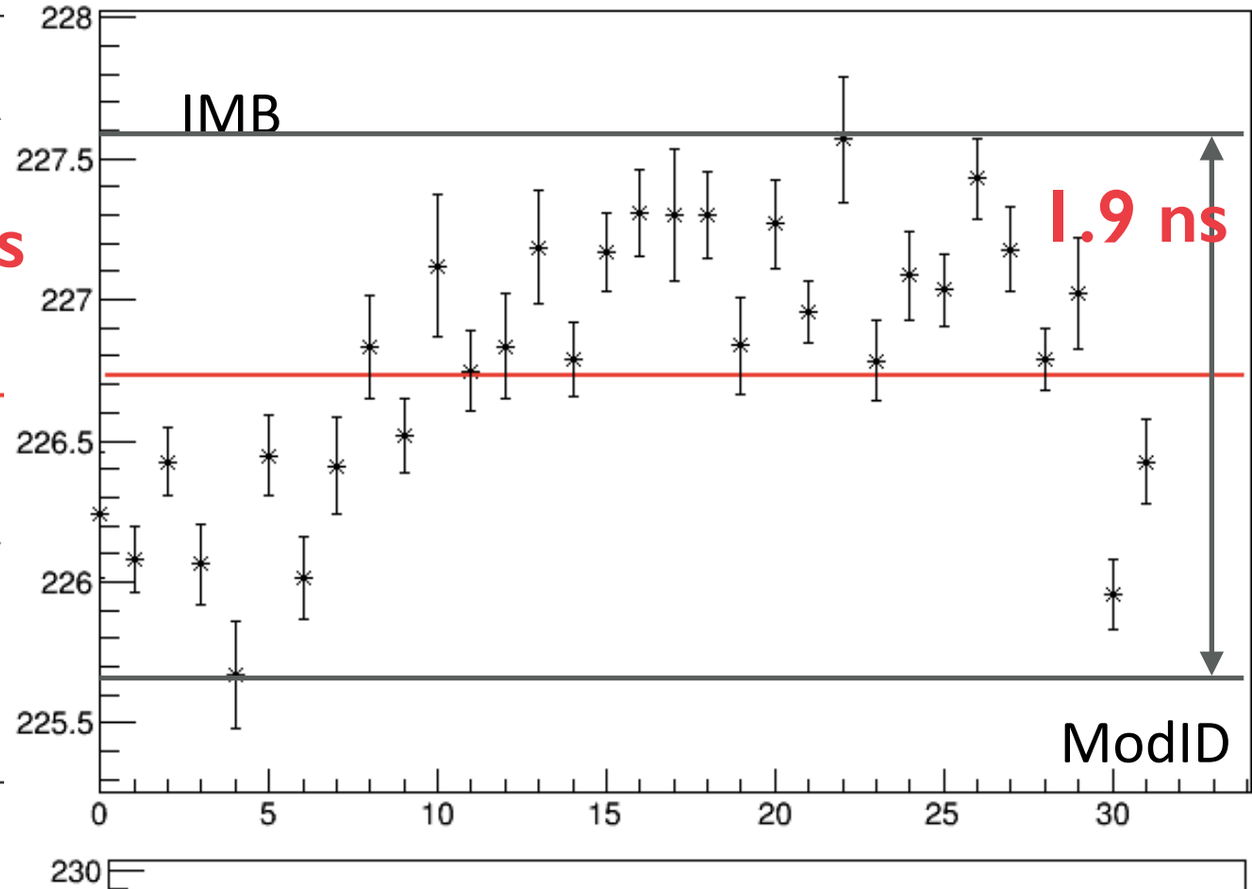
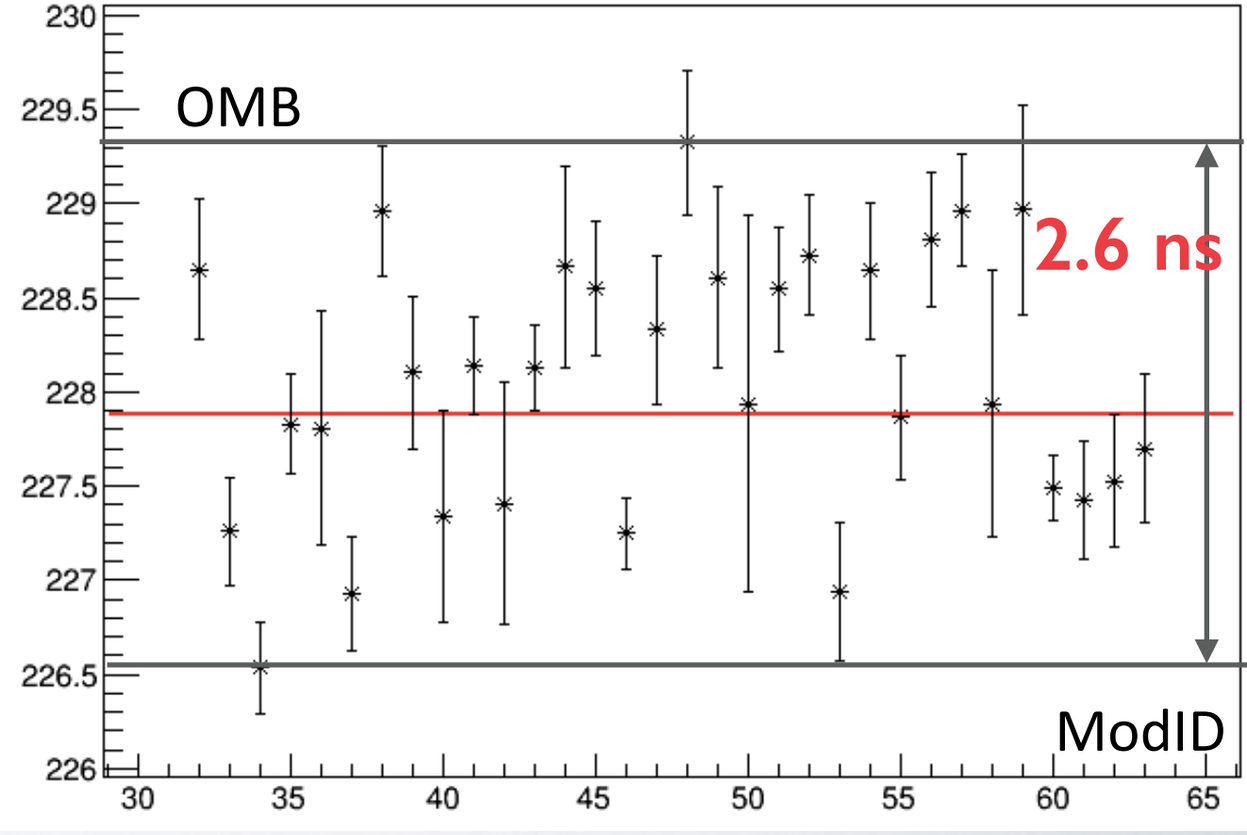
Module by module



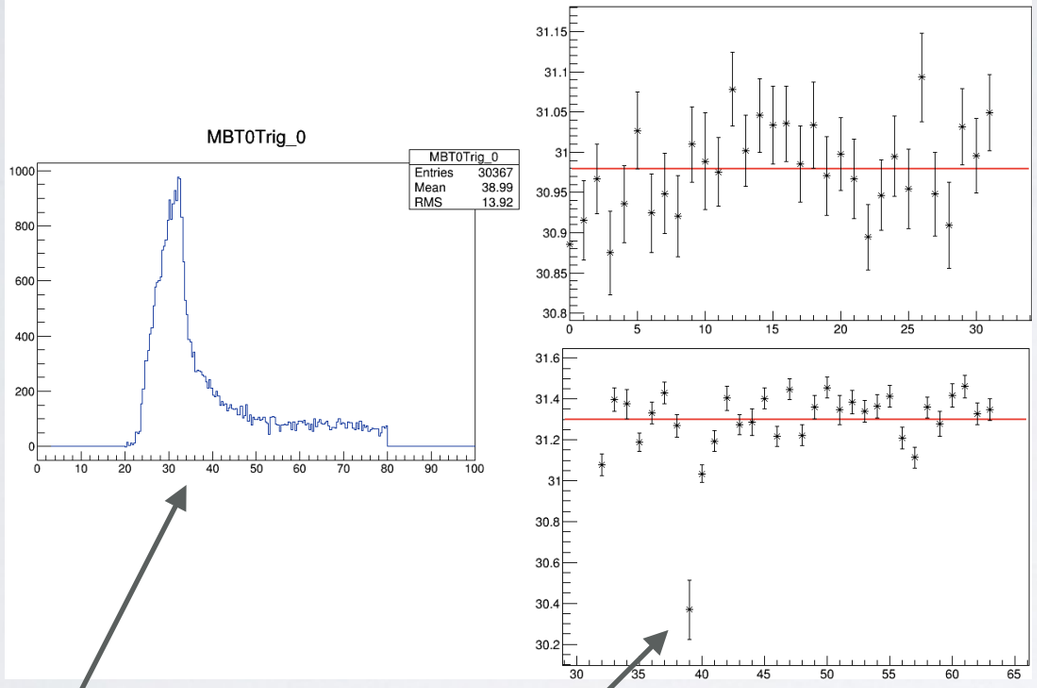


Run 69 data after calibration
MB modules have large variation
Too large (sys. or sta.?)
Is there any effect of the IB?



TIMING CALIBRATION

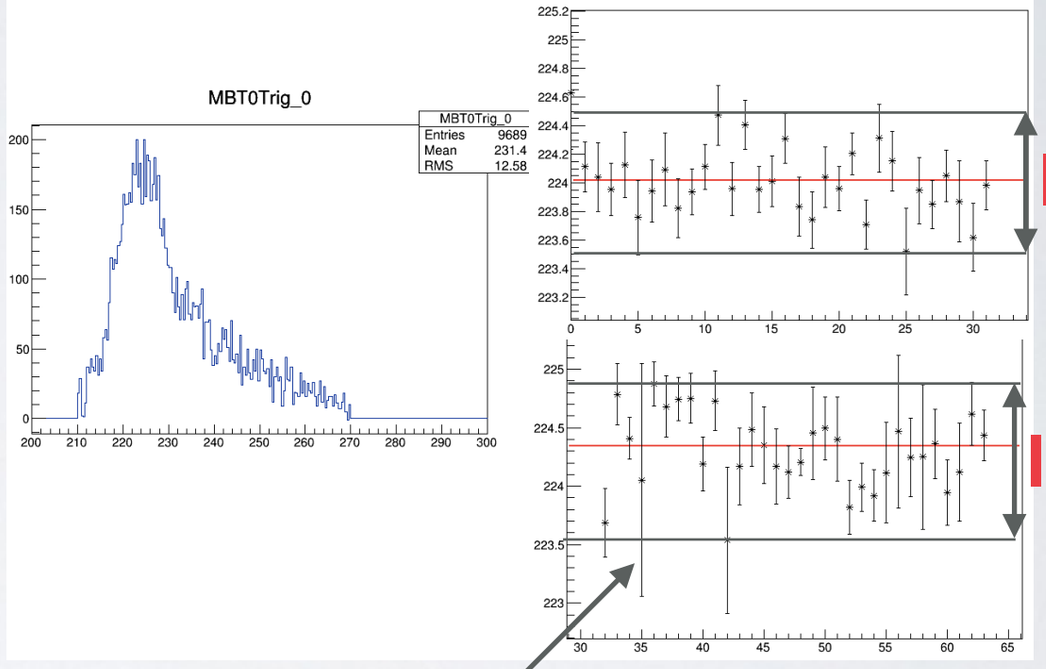
Calibration check in MC



Channel #39:Low gain ?

Not Gaussian distribution

Calibration check in Run62



Why so large error?

Need any smearing?

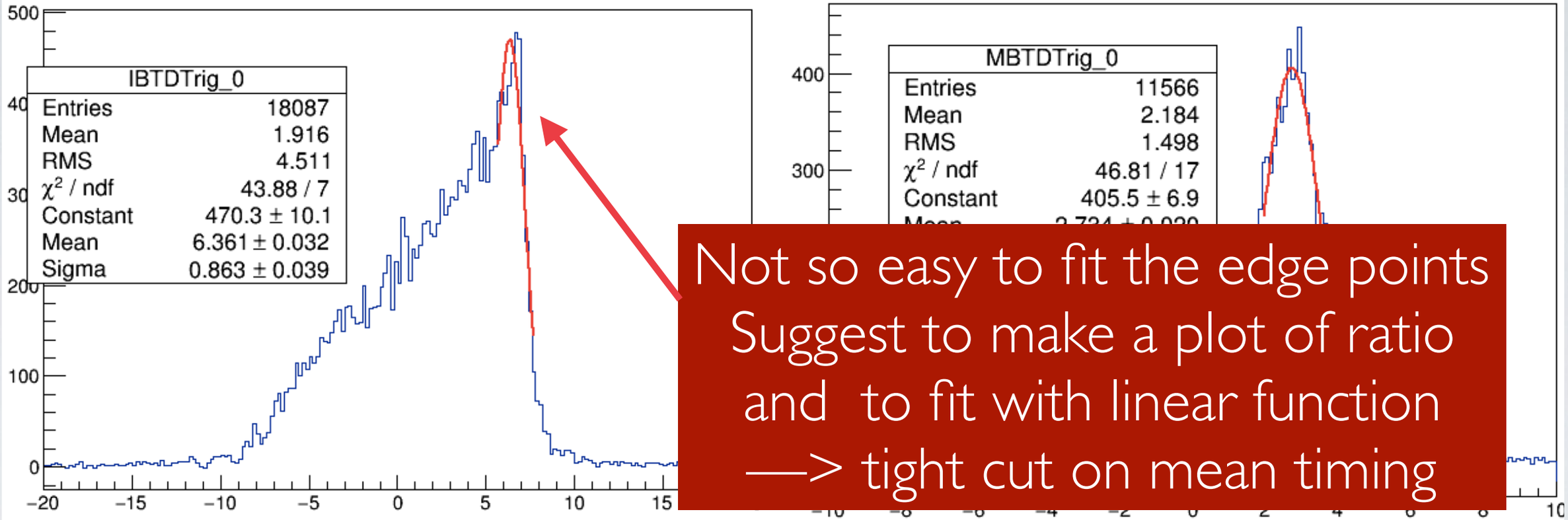
M.C. can not reproduce timing distribution properly

Background (accidental hits) would distort distribution channel-by-channel

EFFECTS ON TIMING RESOLUTION

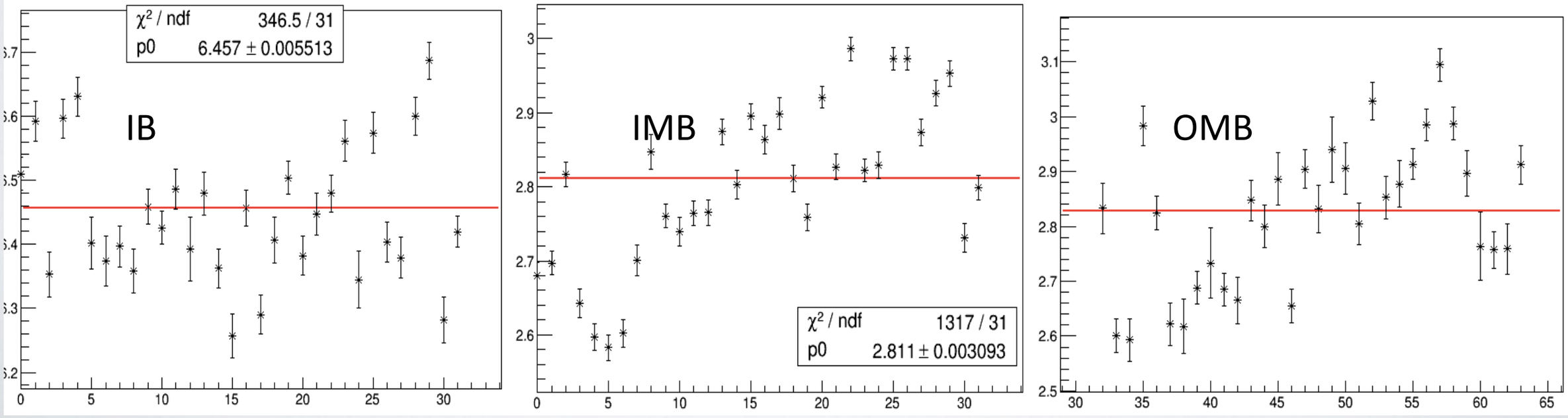
- Intrinsic (detector system) : ? ns
- Vertex timing fluctuation -> vertex timing distribution
- background structure : How to estimate?
- shower development depth : ~few cm -> ~0.1ns

Hit position distribution (timing difference)



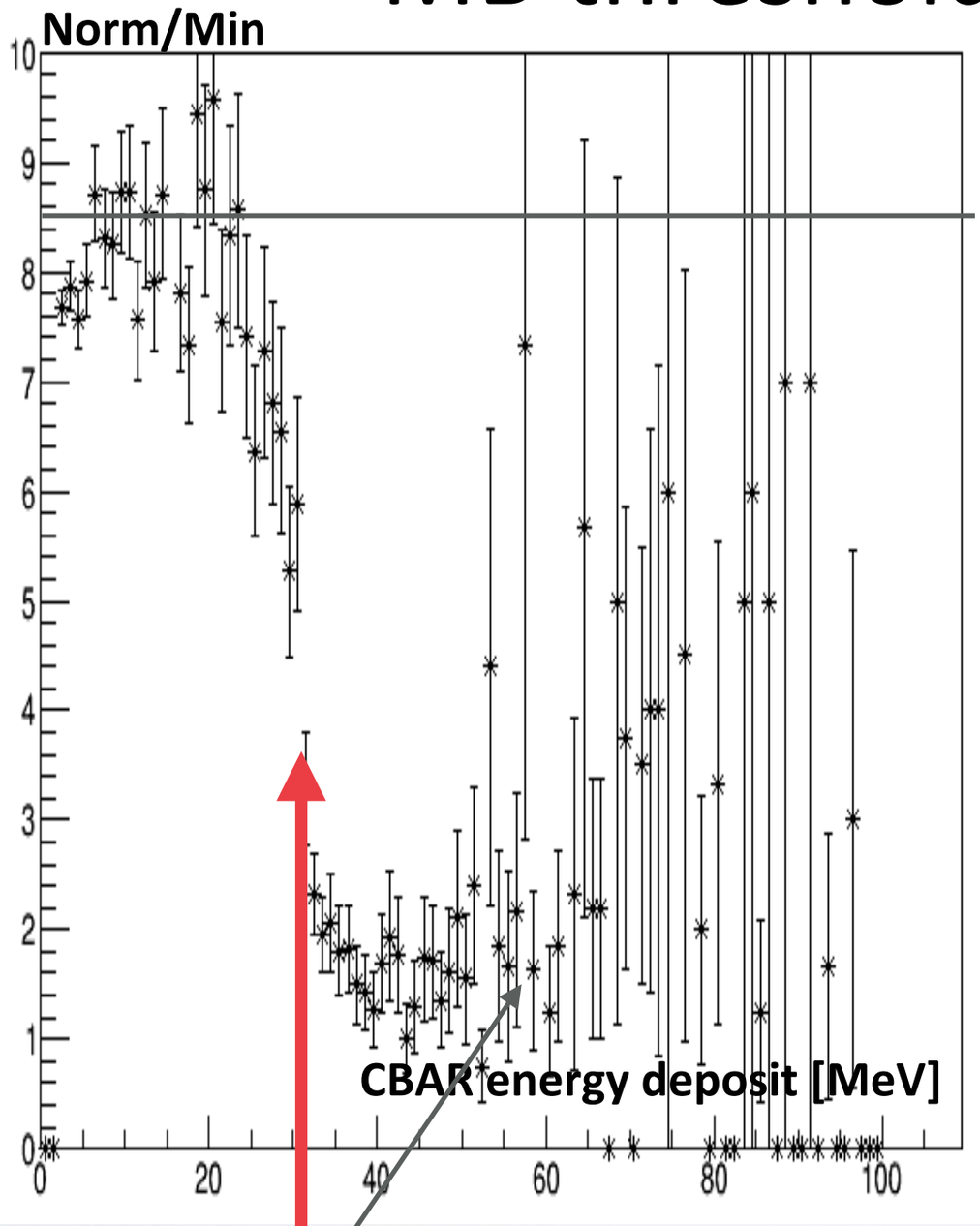
Not so easy to fit the edge points
Suggest to make a plot of ratio and to fit with linear function
—> tight cut on mean timing

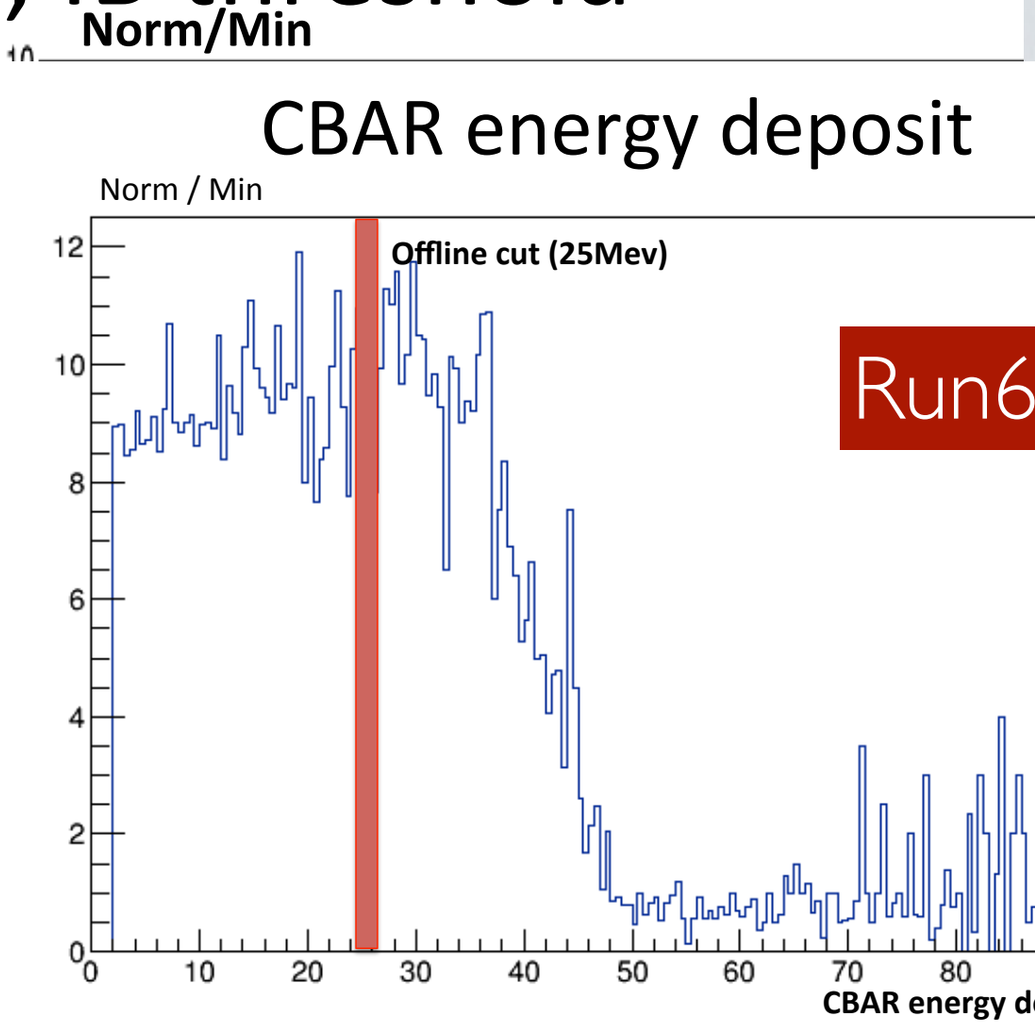
Module by module

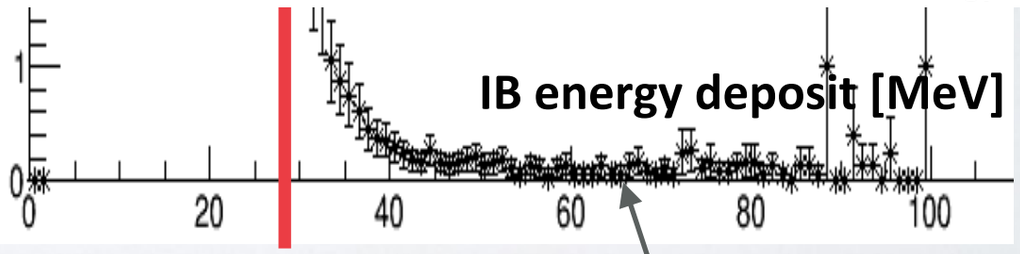


NORMALIZATION V.S. MINIMUM BIASED

Normalization data in run69
MB threshold, IB threshold







~30 MeV on-line veto

Energy deposit outside (on-line) veto window.
Accidental hits (from outside)

We may apply tighter veto less affected by the accidental hits(?). - Unknown, need to compare inside veto window

KL MASS RECONSTRUCTION

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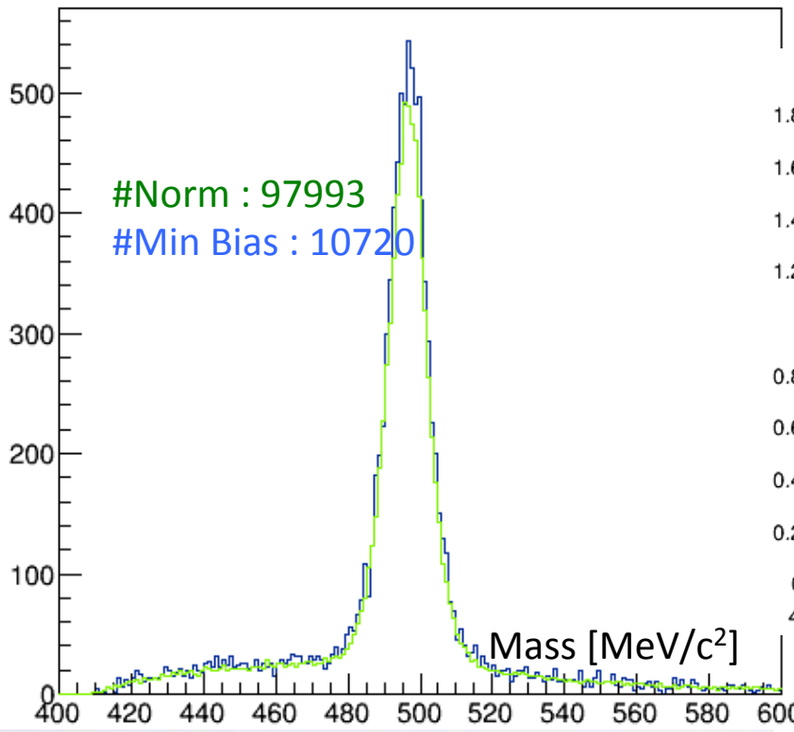
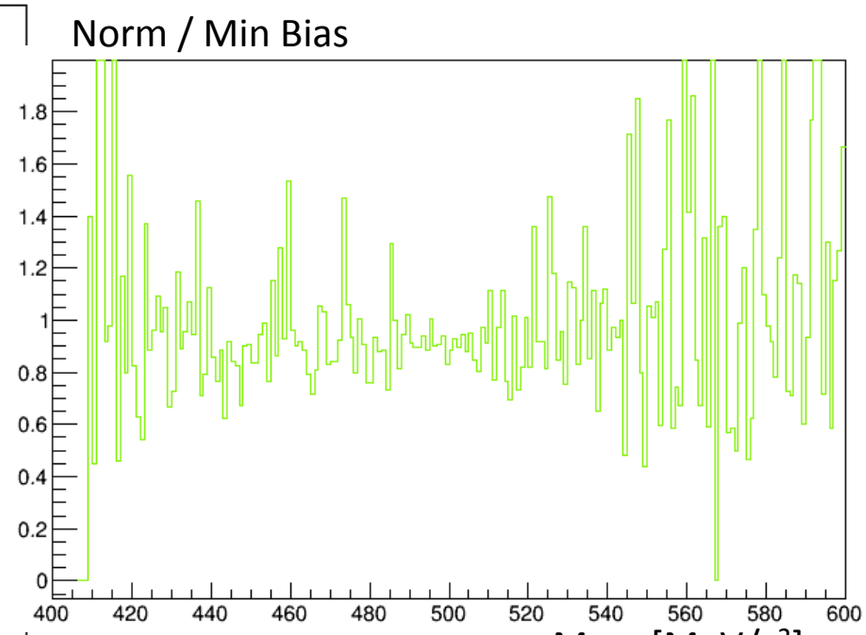
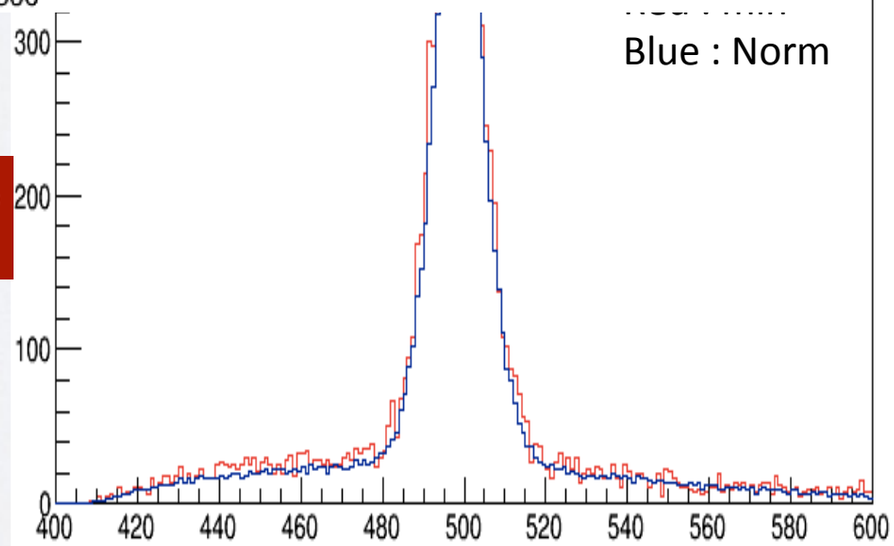
Norm vs Min bias

- CBAR energy threshold in online-veto
  - ~30MeV
  - Select events which have CBAR energy deposit less than 25MeV only.





What is the difference?



lass (IB)

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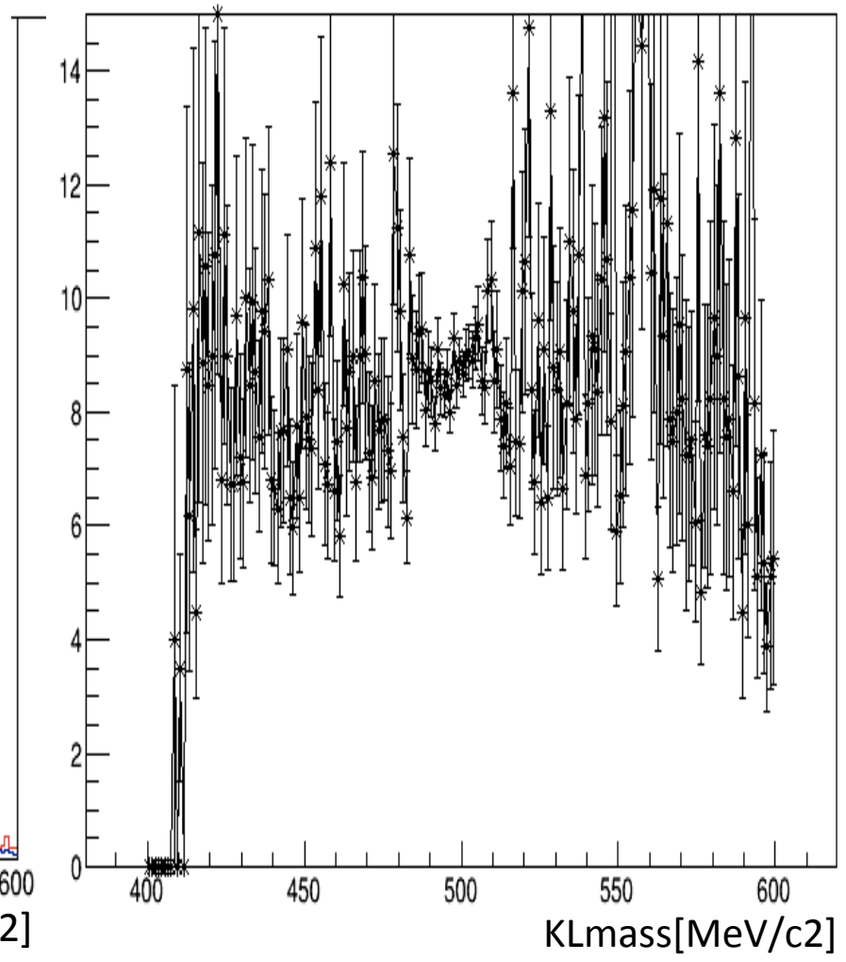


Accidental hit in MC

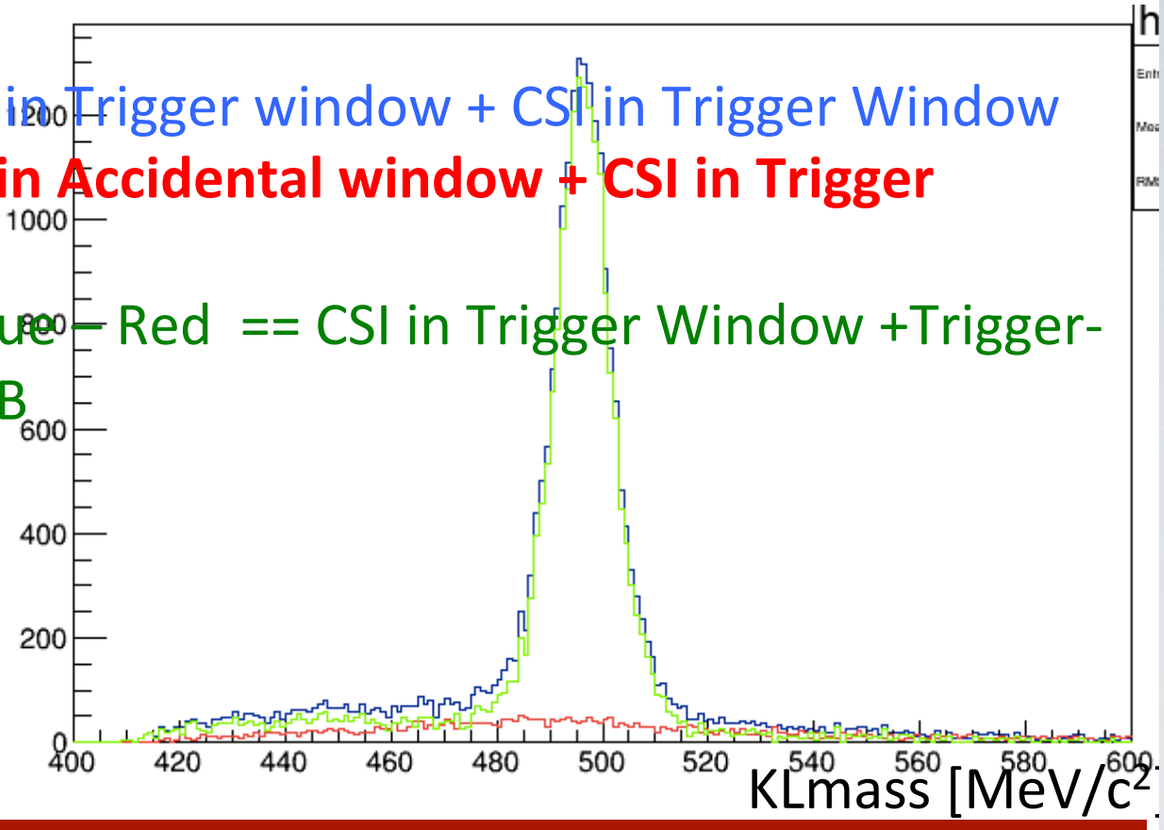
Run62 data

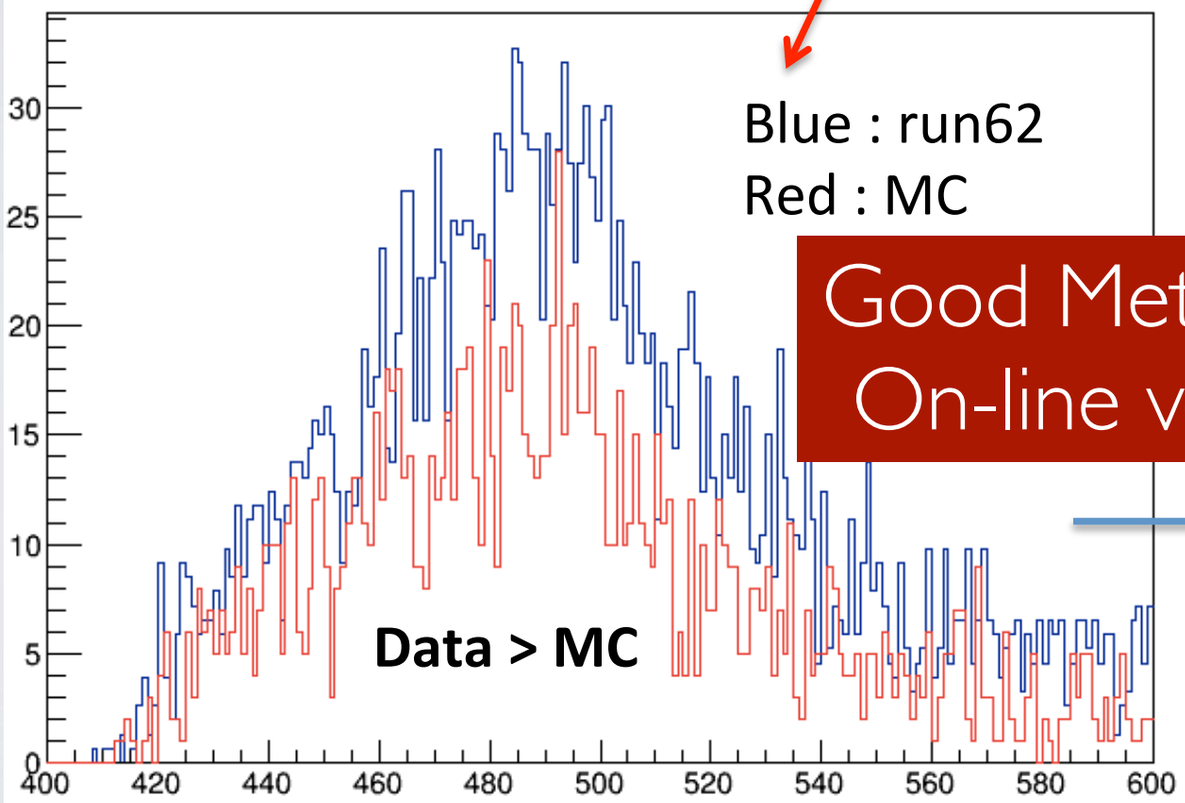
Check effect of MB accidental in MC

Blue : MB in Trigger window + CSI in Trigger Window

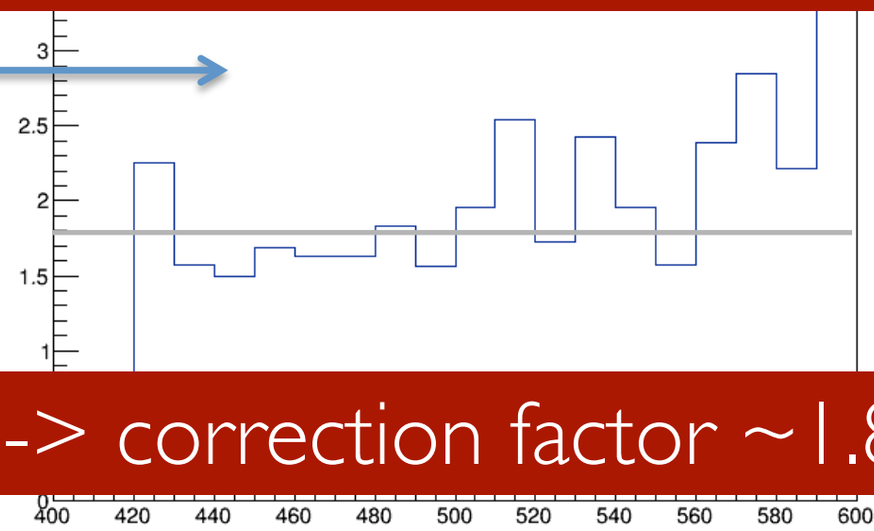
Red : MB in Accidental window + CSI in Trigger Window

Green : Blue – Red == CSI in Trigger Window +Trigger-related MB





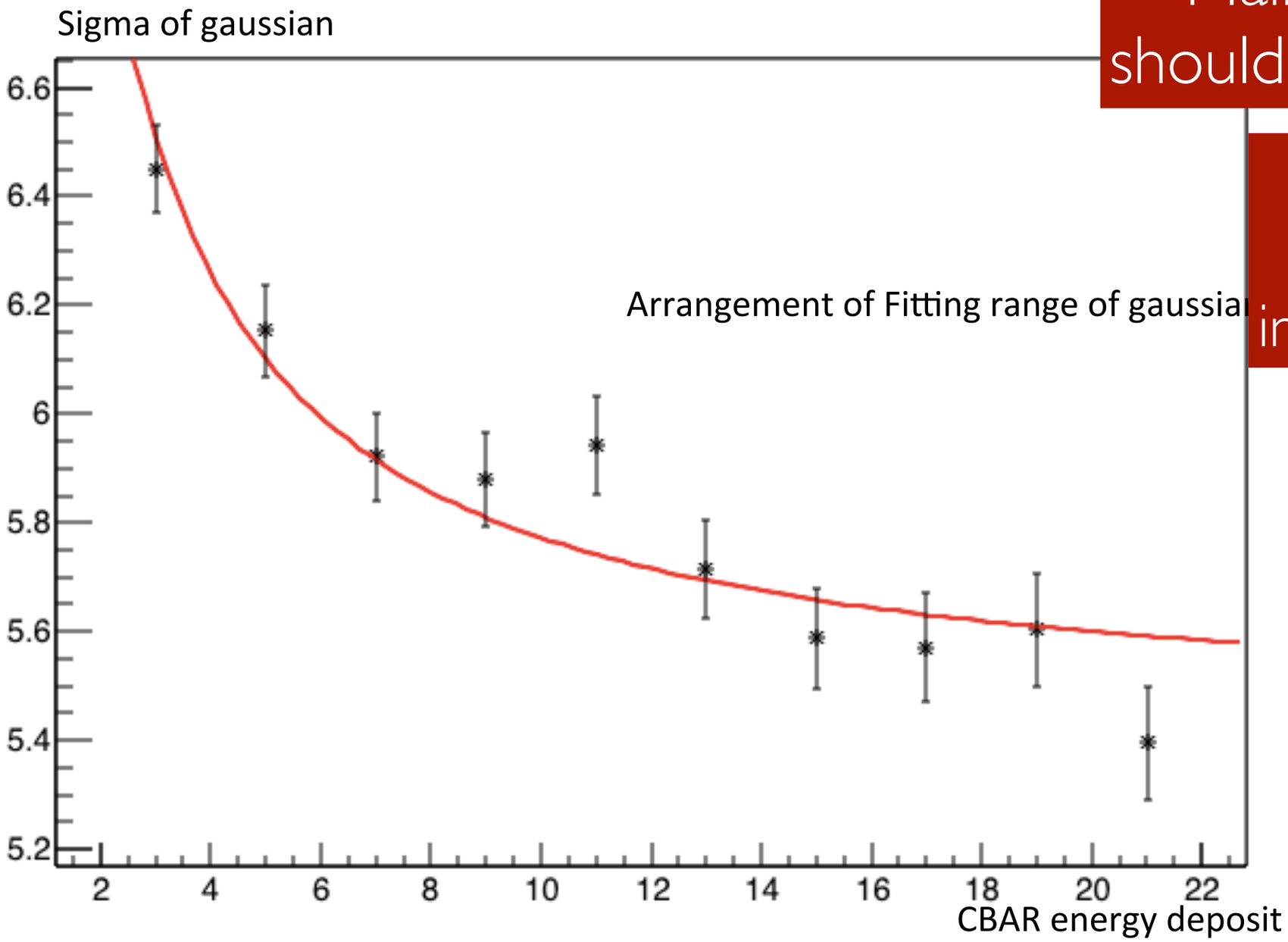
Good Method to estimate Background level.
On-line veto effect is considered correctly?



Accidental hits are underestimated. -> correction factor ~ 1.8

We want this plot without any ambiguity
Good demonstration of better IB timing resolution

Mass resolution



Main diff. Run62 & 69
should be timing resolution

other sources?
6-g invariant mass will
indicate CsI contribution

WORKING PLAN

CURRENT TASKS

- To demonstrate better timing resolution of IB
  - Timing calibration
    - Not enough performance/ How to do?
    - Purity of data samples
    - Comparison between 6g, 5g+1g
- Acceptance loss due to MB veto