

GEM detector update Meeting

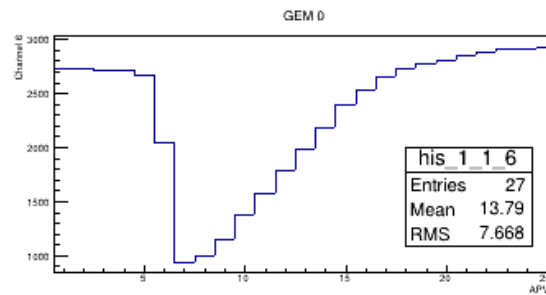
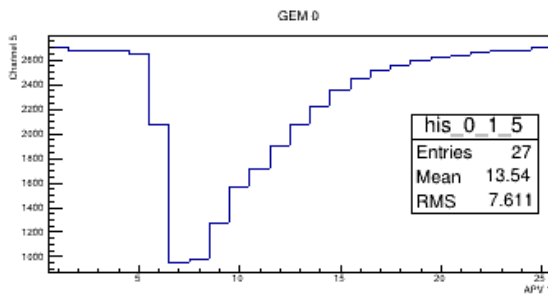
27th April 2018

Chandan Ghosh
SBU Group

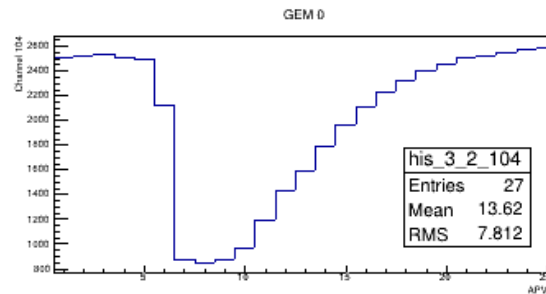
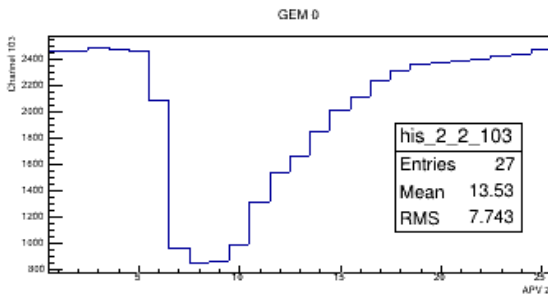
27th April 2018

55Fe Source data analysis

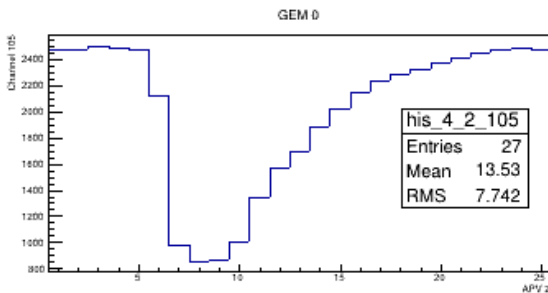
- Run 923 (source on the center of GEM detector)
- Events are selected if $V[ik+5]-V[ik]<10$ && $\text{Integral}(1,24)<55000$ (typical no-pulse integral is ~ 60000)



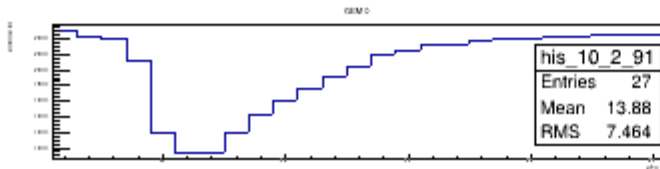
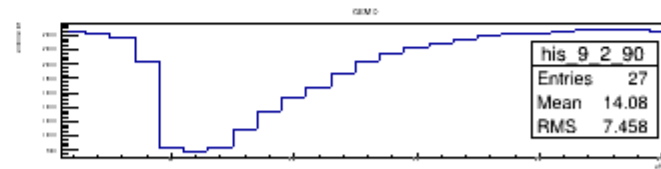
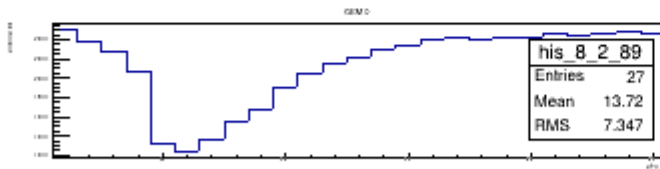
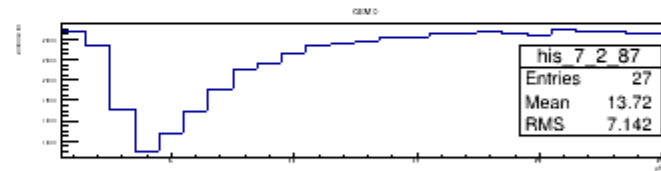
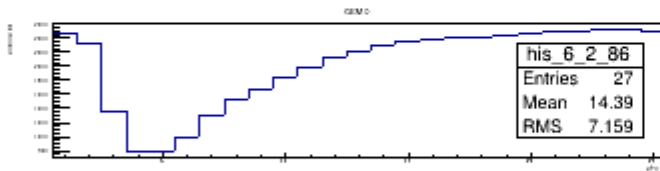
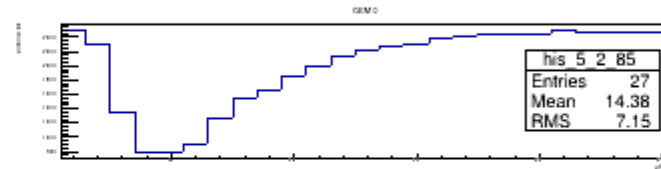
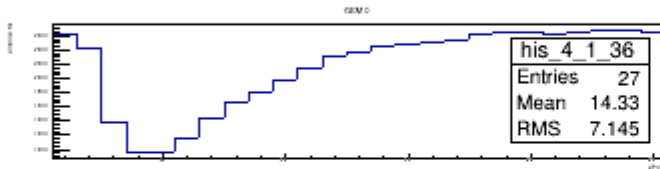
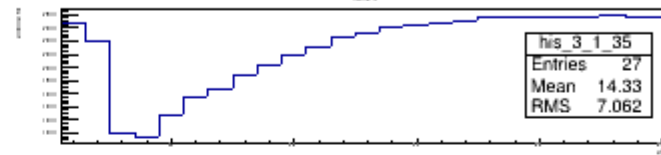
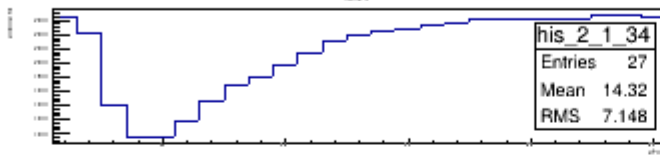
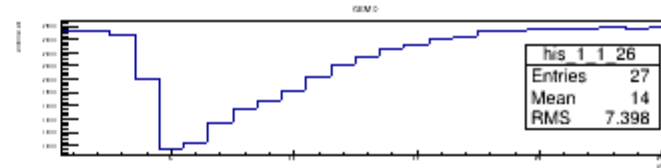
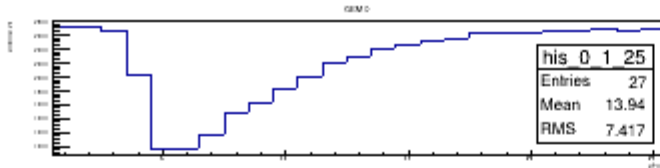
Pulse height in X <
Pulse height in Y !!



↓
For an event:
More Y pulses
than X pulses.



Some pulses from same event



- Some event having only one strip signal!! – may be due to threshold.
- For 10K events having 10 or more strip signal ~ 3

55Fe Source data analysis

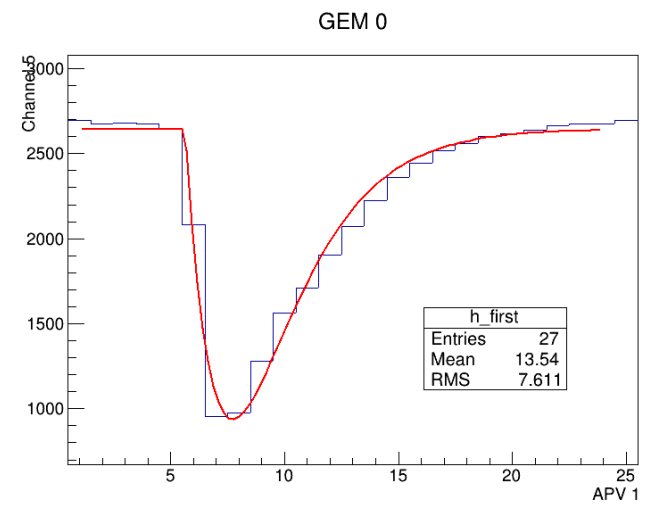
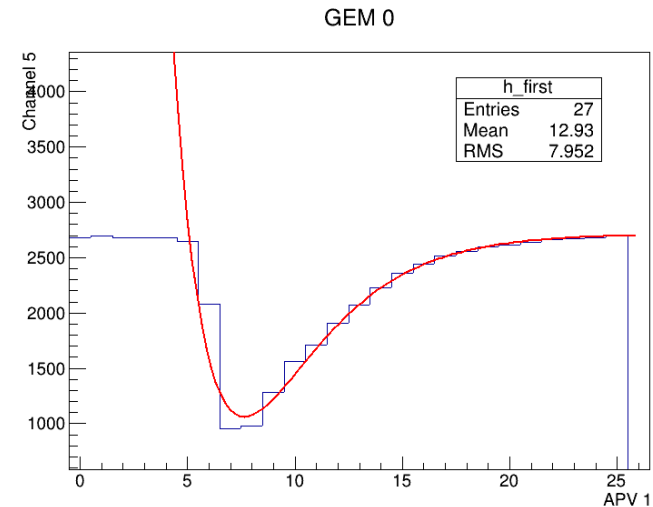
- Tried fitting the original function

$$V = V_{off} - V_0 \frac{t - t_0}{\tau} \text{Exp}\left[-\frac{t - t_0}{\tau}\right]$$

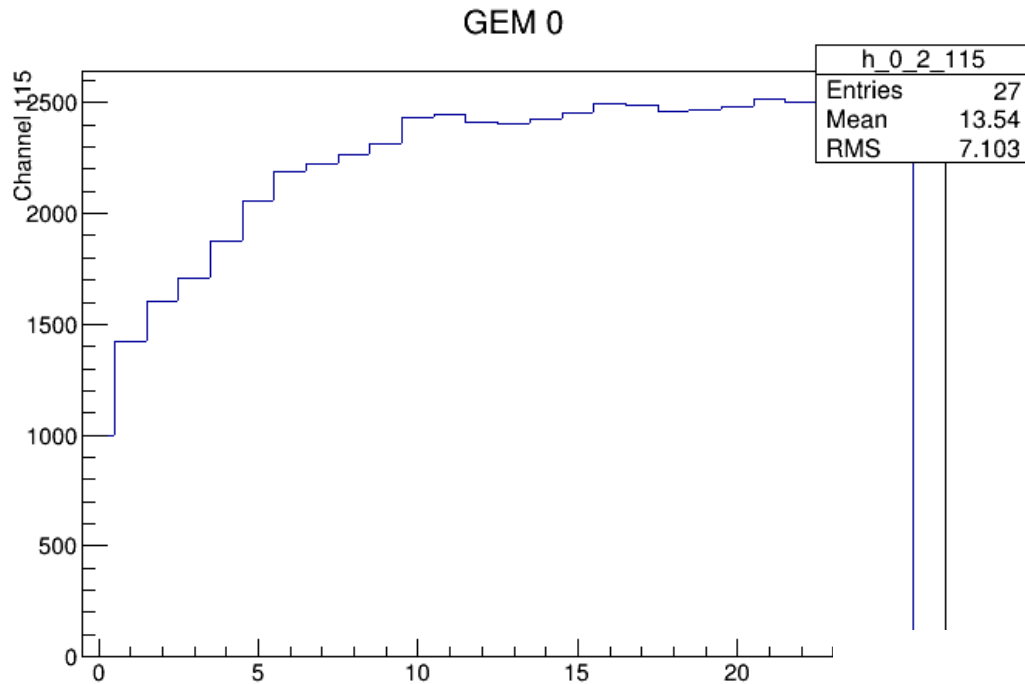
- Modified as

- $V = V_{off}$ for $t \leq t_0$

- $V = V_{off} - V_0 \frac{t - t_0}{\tau} \text{Exp}\left[-\frac{t - t_0}{\tau}\right]$, $t > t_0$

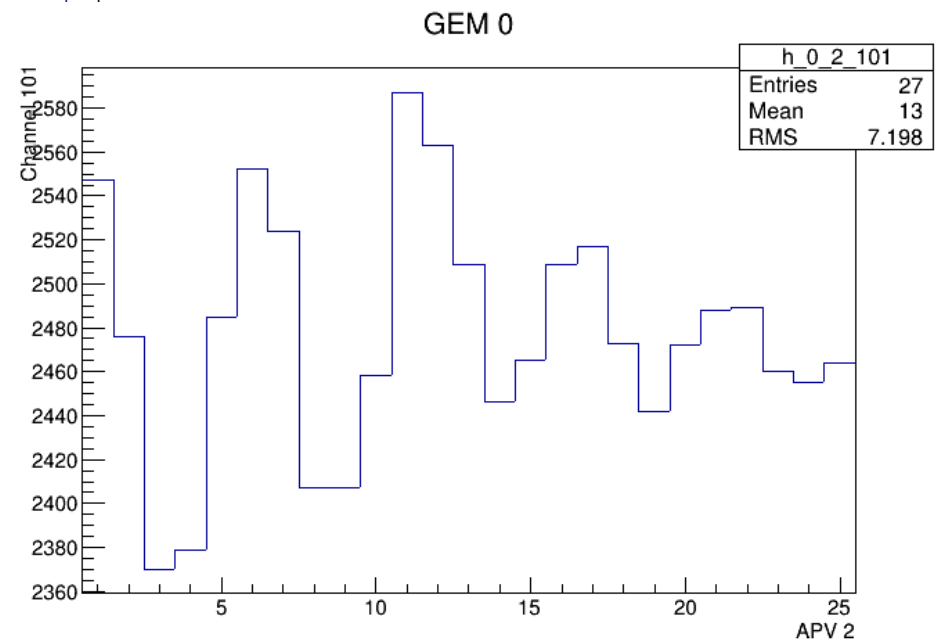


Some more pulses

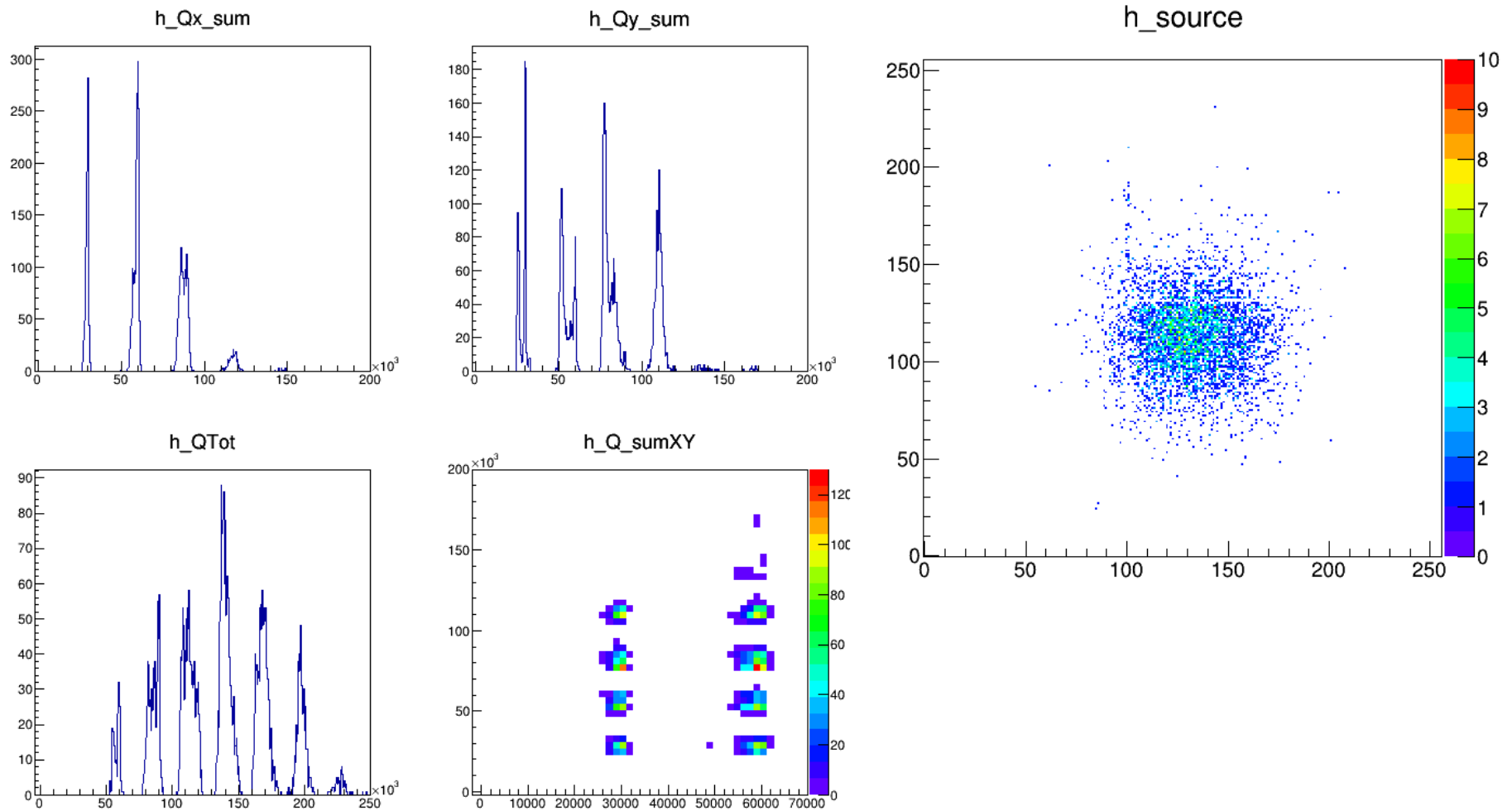


Rejected by
 $t_0 - 4 < 0 \ || \ t_0 + 12 > 24$
condition

Pulse selection criteria
should be very good



2D Plot - just with Integral of the fitted function



Not clear the spectra..

Next steps

- Not clear how to take care of pedestal and common-mode-noise
- Installation CODA – Dustin's suggestion
- Shipment from ISU?

Choice of resistances in GEM det. Voltage Divider

- High resistance – to protect GEM foil from spark
- Low resistance – if some segment is shorted, this setting will allow to use rest of the segments.

