
TPAC1.2 trimming

Paul Dauncey

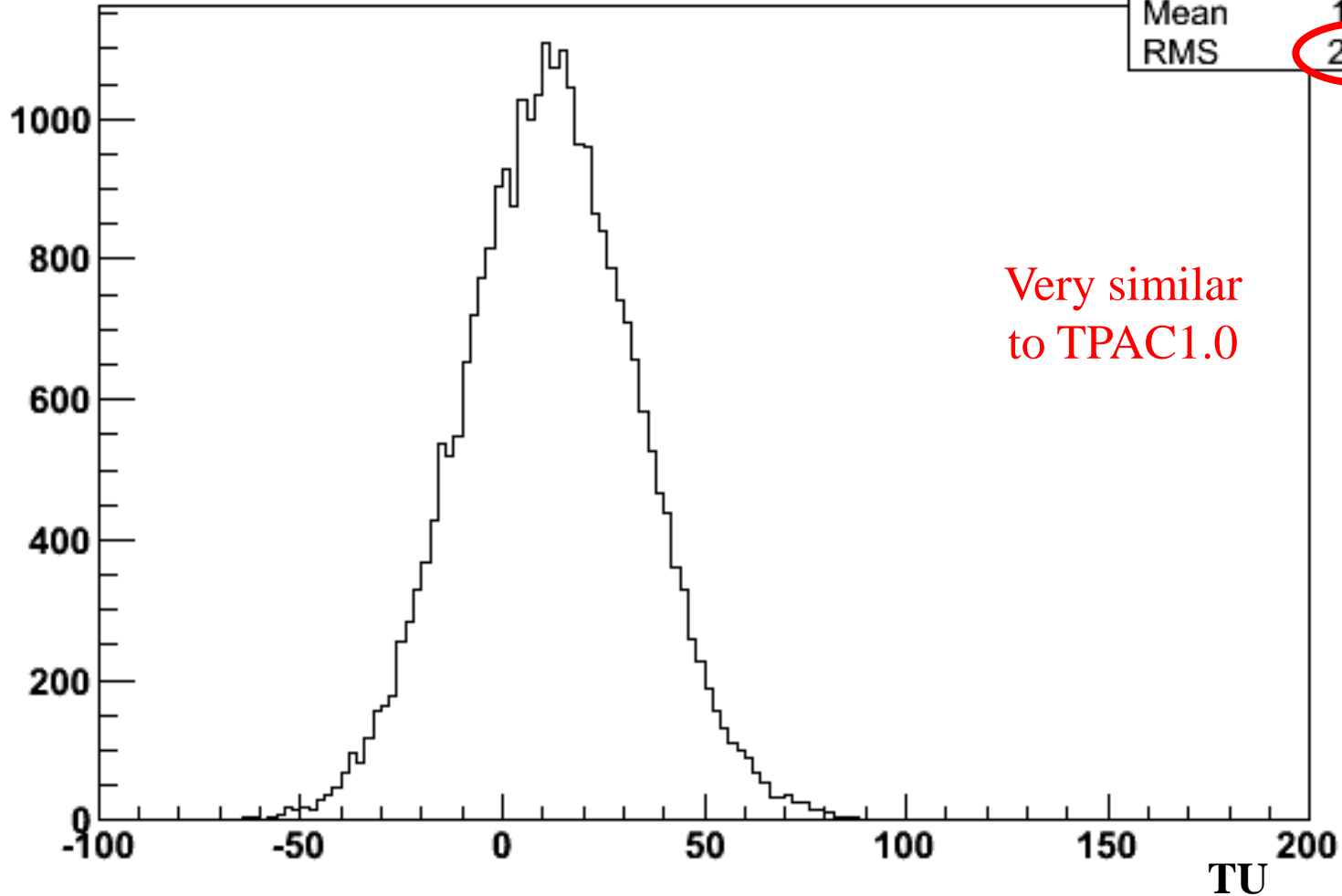
Trimming Sensor #29

- Same method as for TPAC1.0
 - Fix trims to some values
 - Unmask 42 pixels per readout region
 - 4 regions = 168 pixels total in each run
 - Do threshold scan to determine mean and width
 - Do 168 runs to cover complete sensor
- Adjust trim to narrow mean distribution
 - Can only go up from trim=0
 - Need to pick target value near top of range of means
 - Trim each pixel to get mean as close as possible to target
 - Need to iterate; not yet complete for this sensor

Set all trims=0 initially: mean

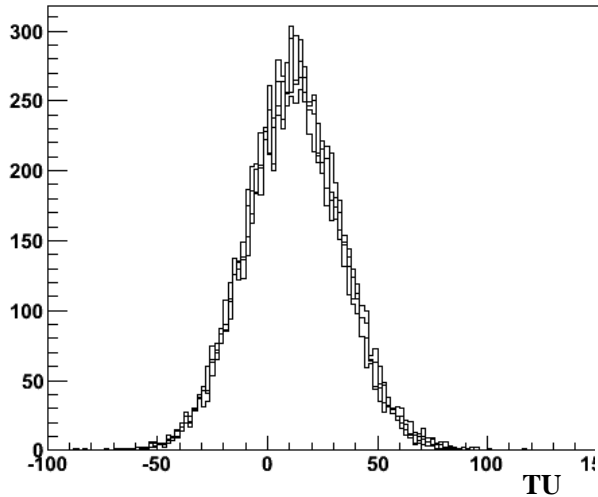
Trim0 All Means

Trim0AllMeans	
Entries	28224
Mean	11.95
RMS	21.63



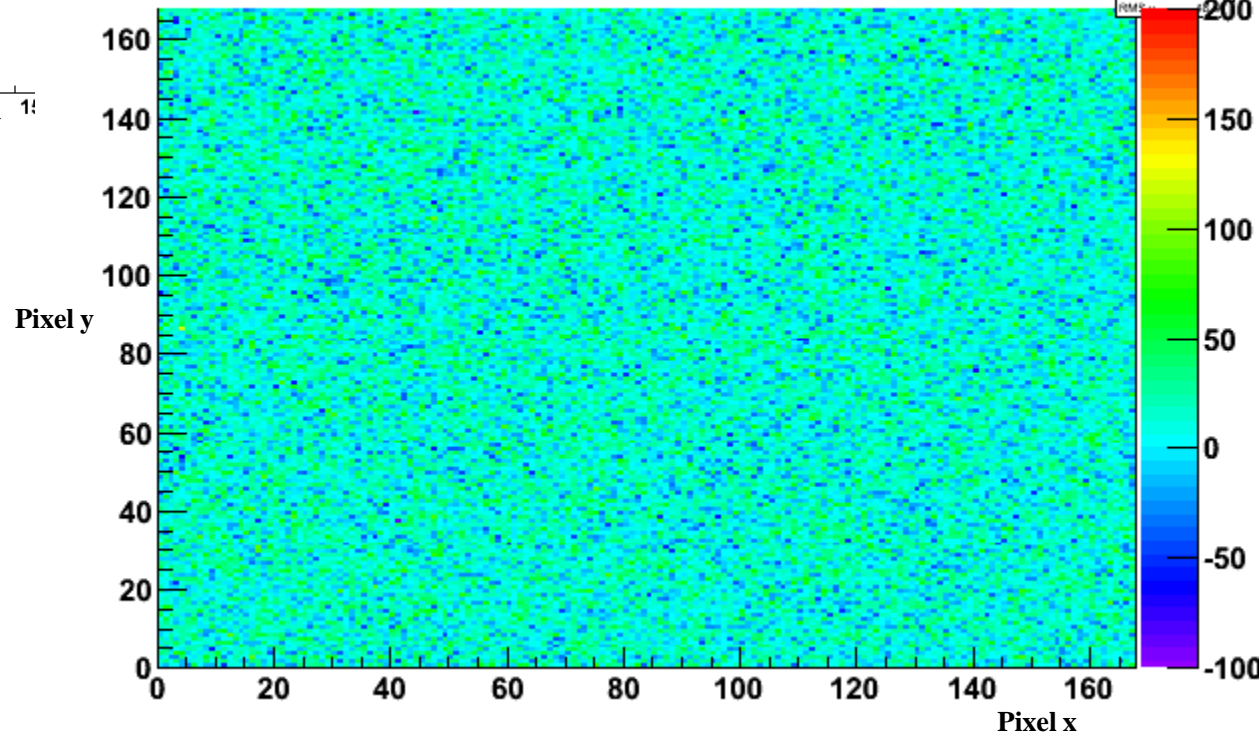
No obvious position dependence for mean

Trim0 Quad0 Means



Trim0Quad0Means	
Entries	7056
Mean	12.87
RMS	21.77

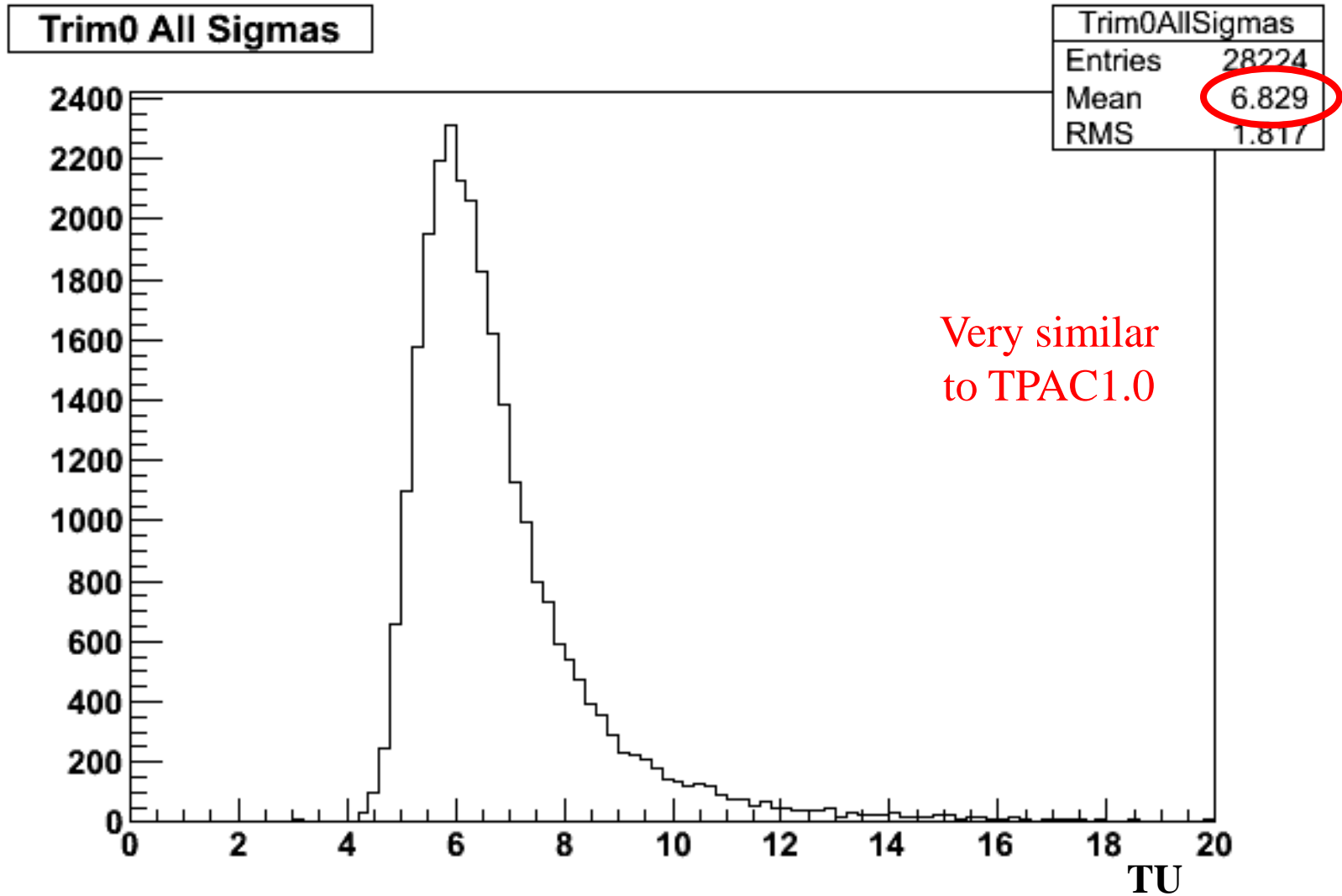
Trim0 All Mean vs x,y



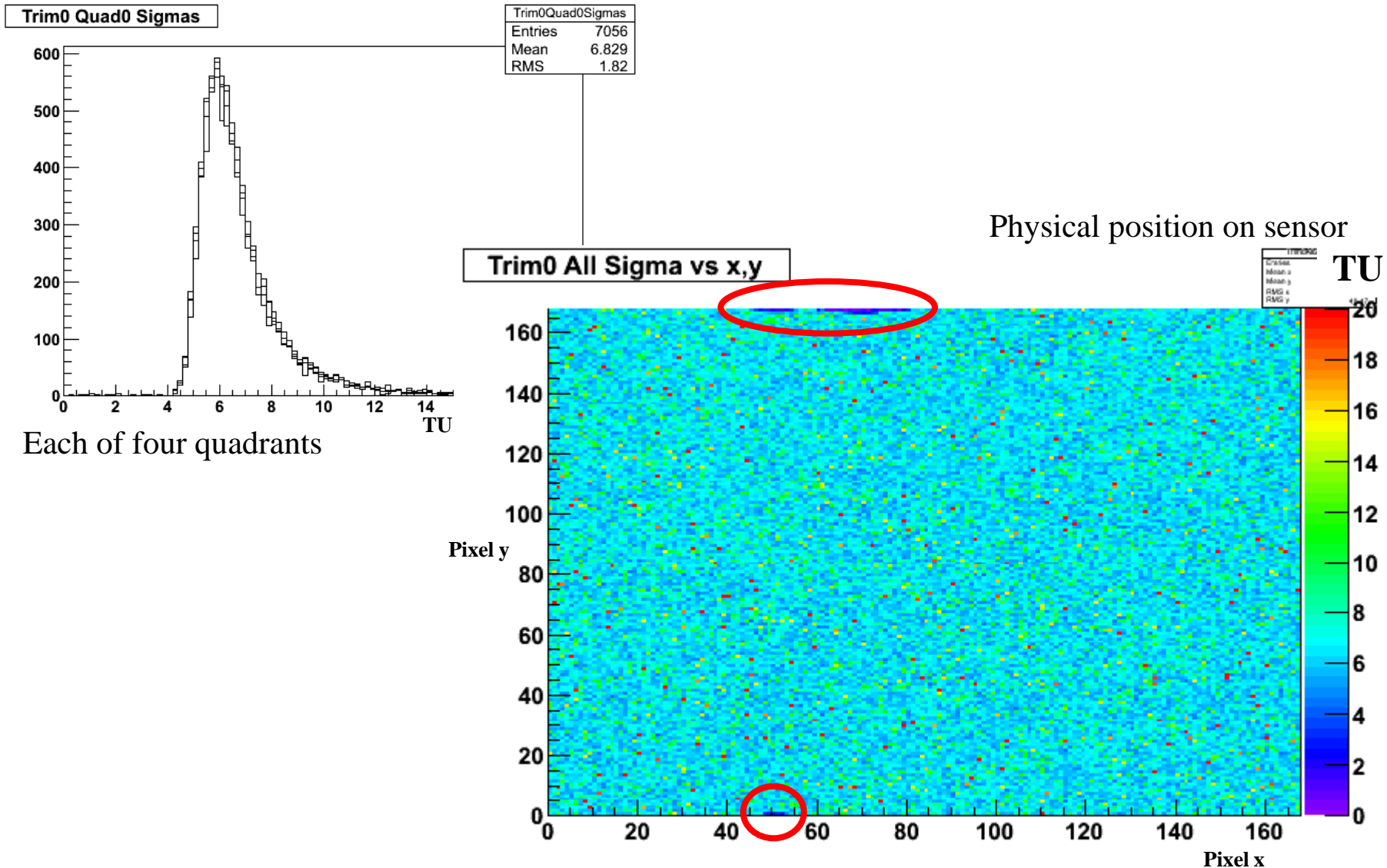
Each of four quadrants

Physical position on sensor

Trims=0: width

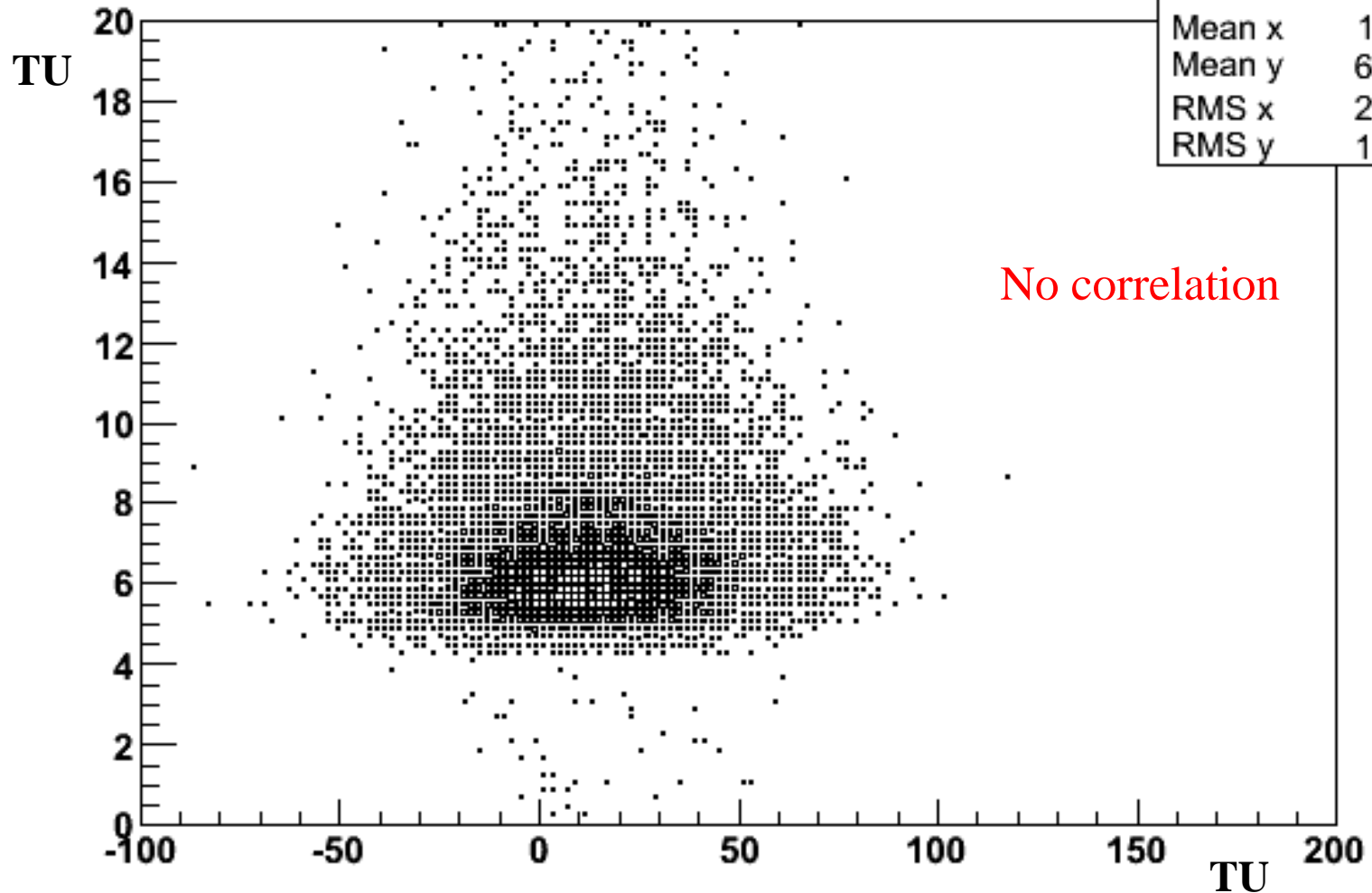


No obvious position dependence for width



Trim=0: width vs mean

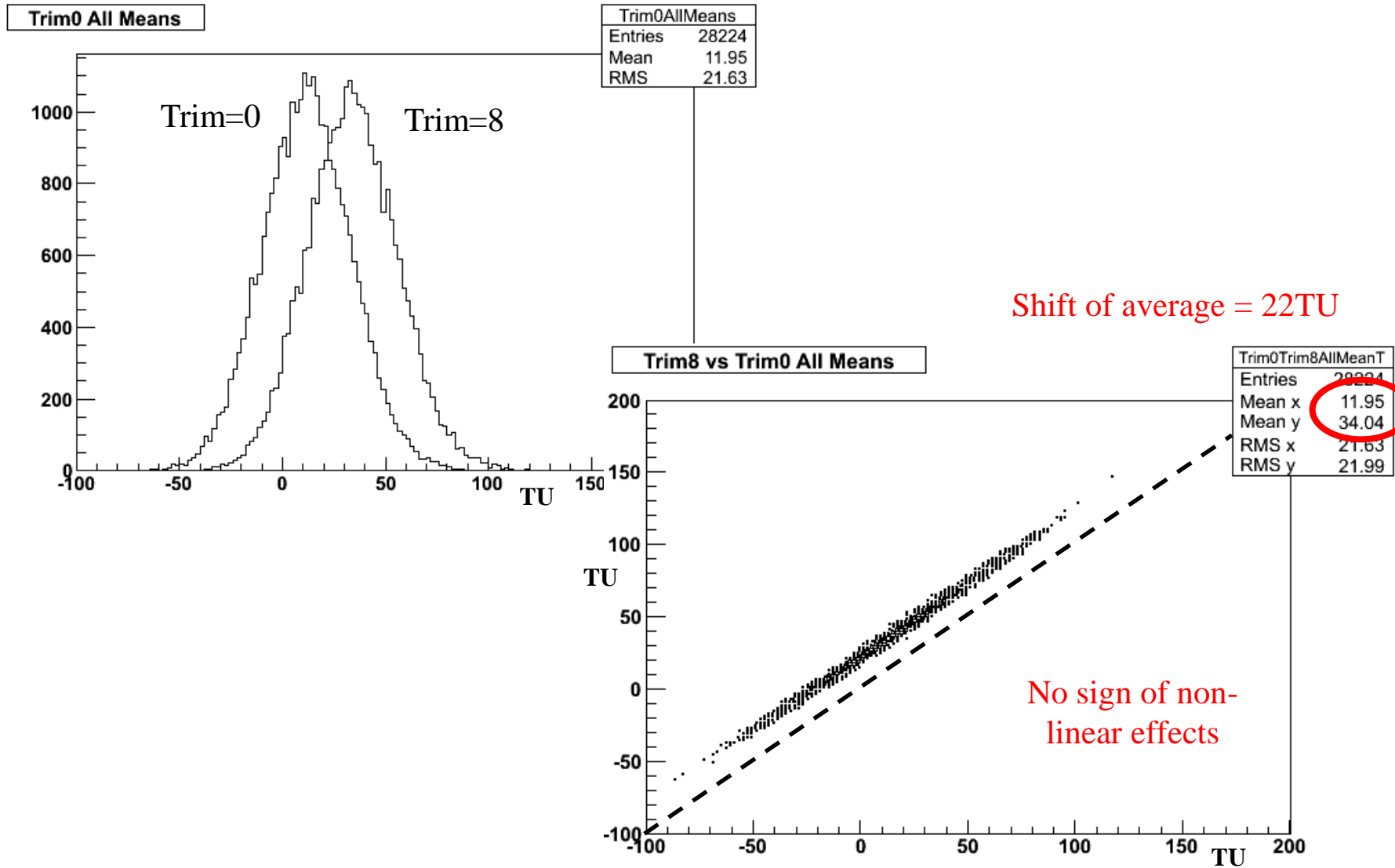
Trim0 All Sigma vs mean



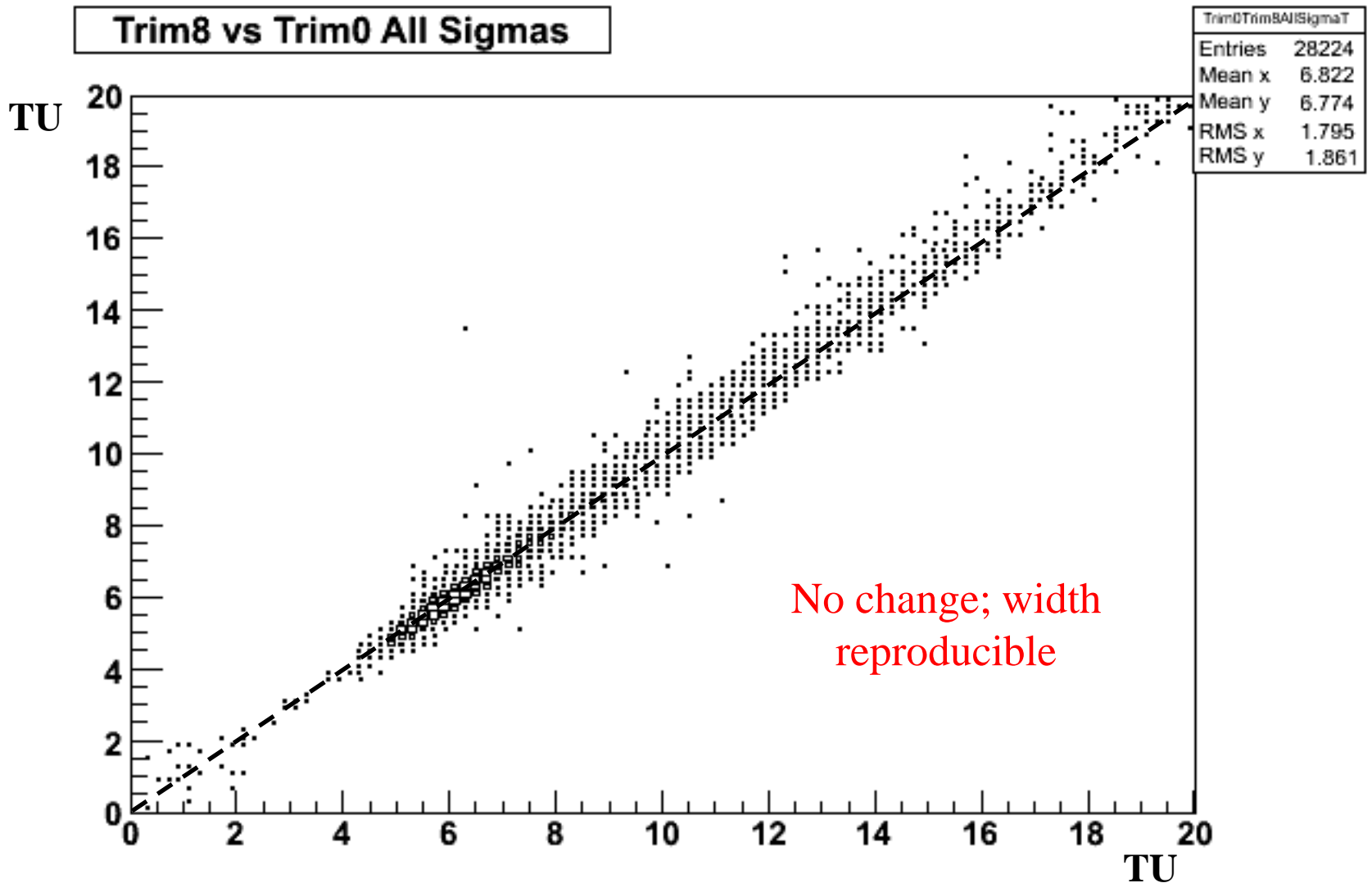
Trim0AllMeanSigma	
Entries	28224
Mean x	11.94
Mean y	6.829
RMS x	21.63
RMS y	1.817

No correlation

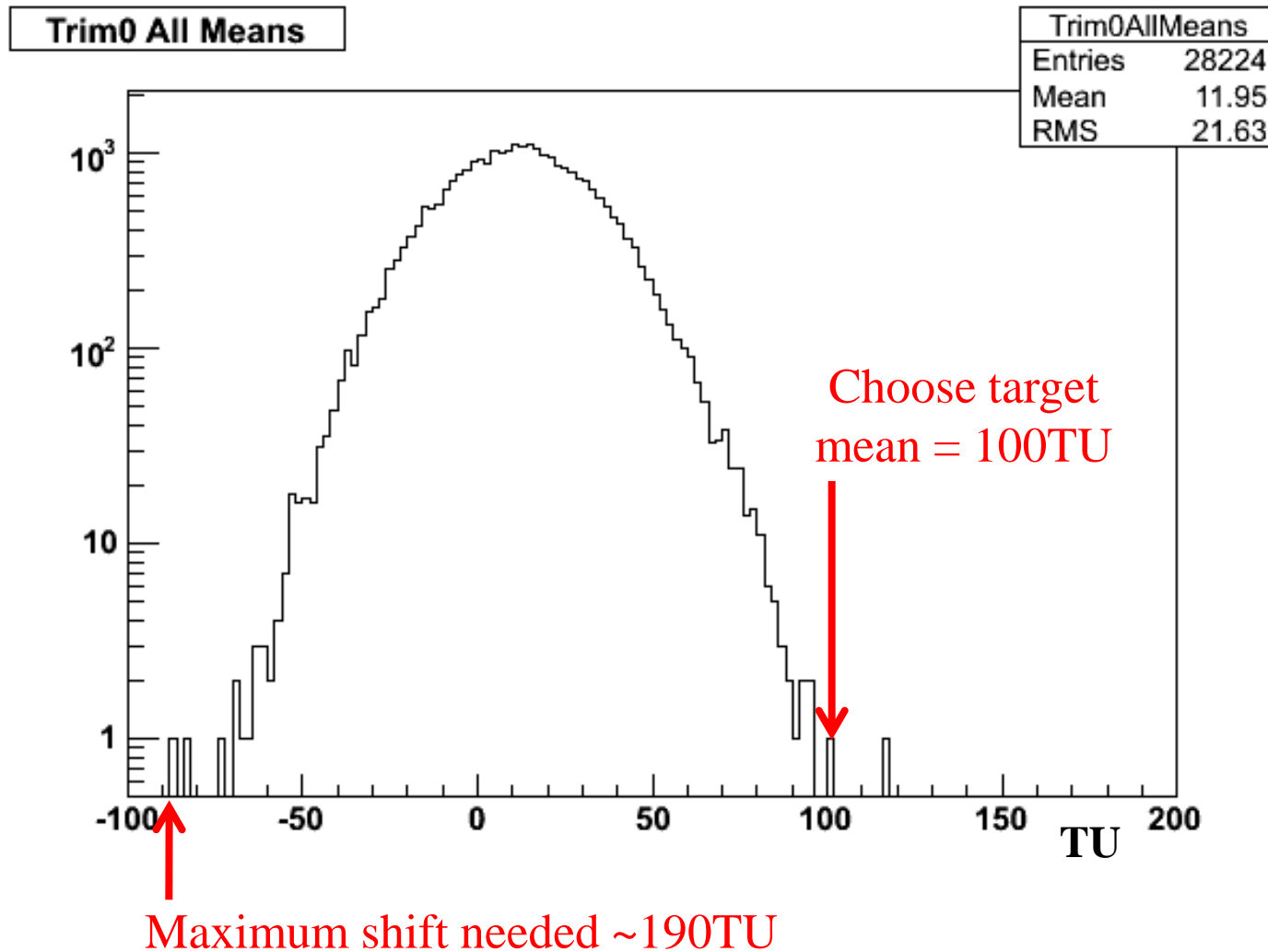
Trim=8: Shift of means



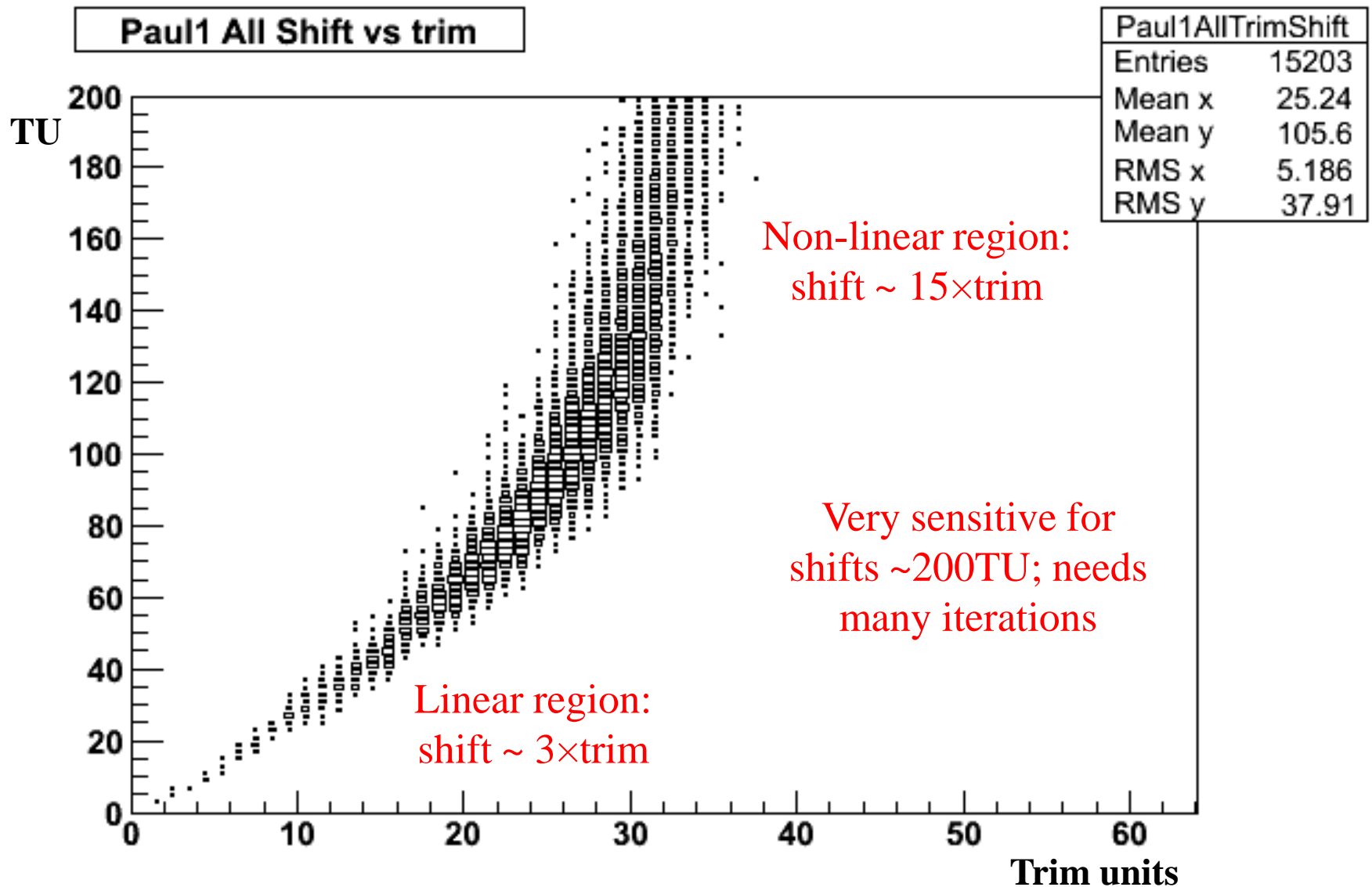
Trim=8: Comparison of widths



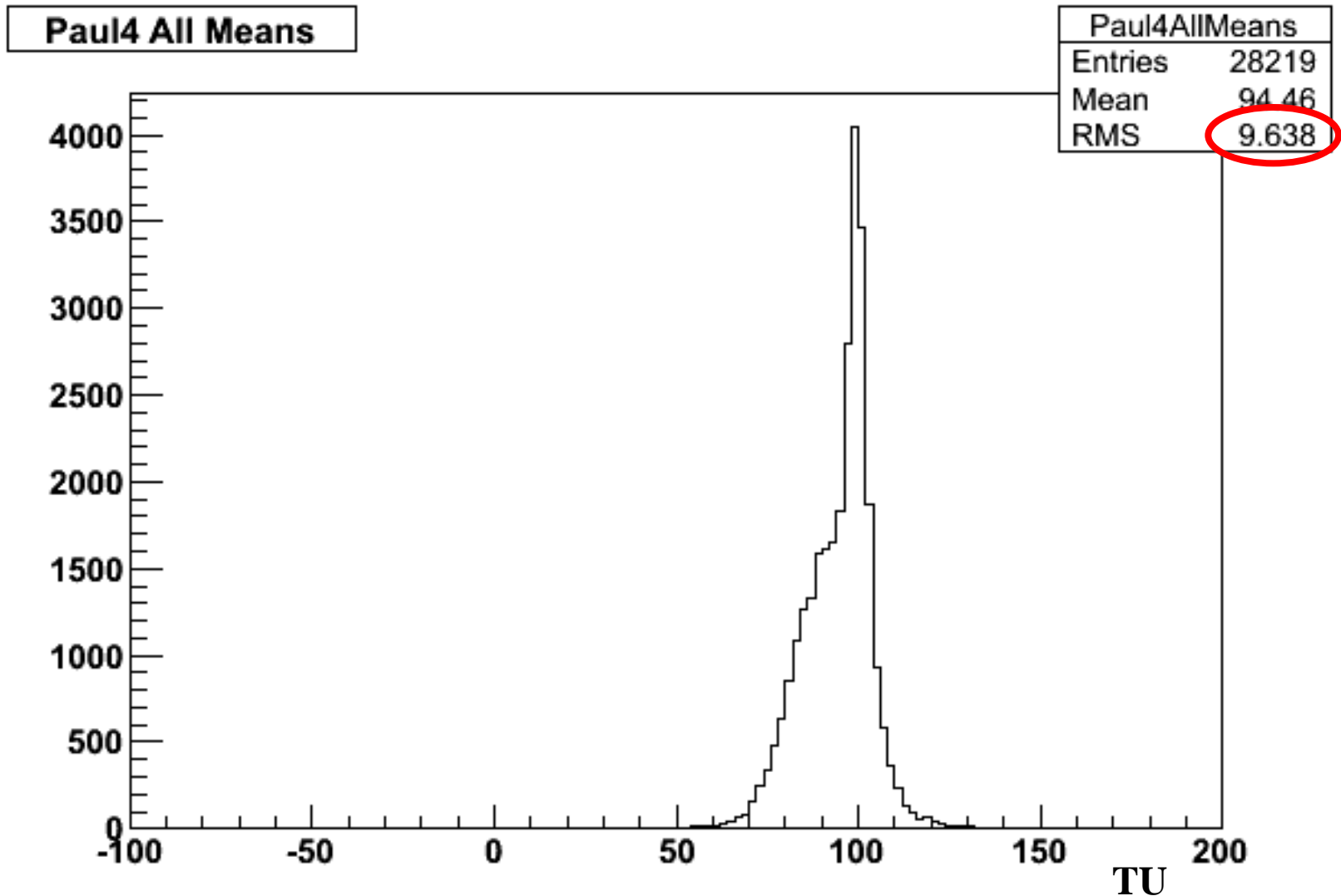
Need to pick target mean value



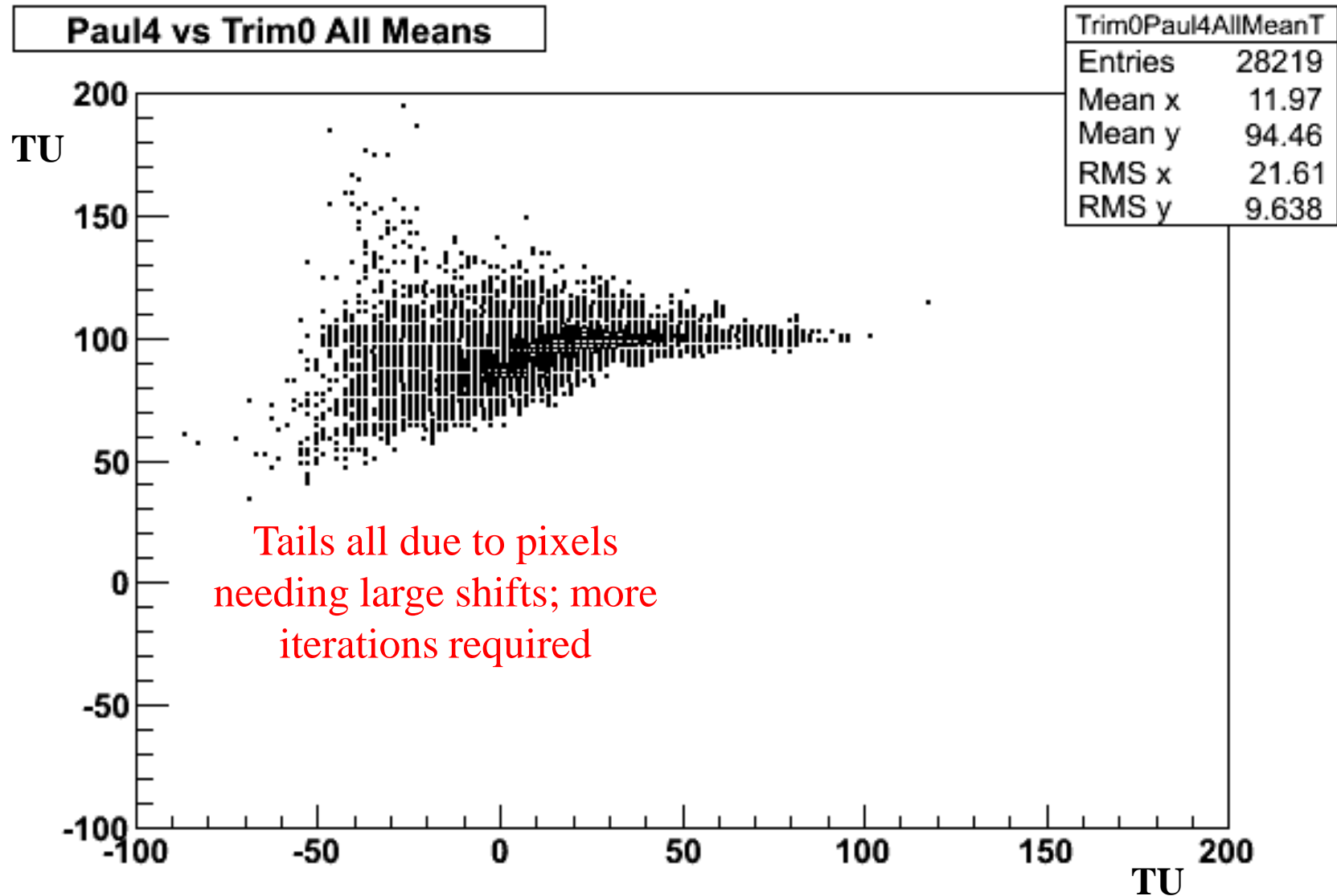
Shift of mean vs trim value



Current status of trim: means



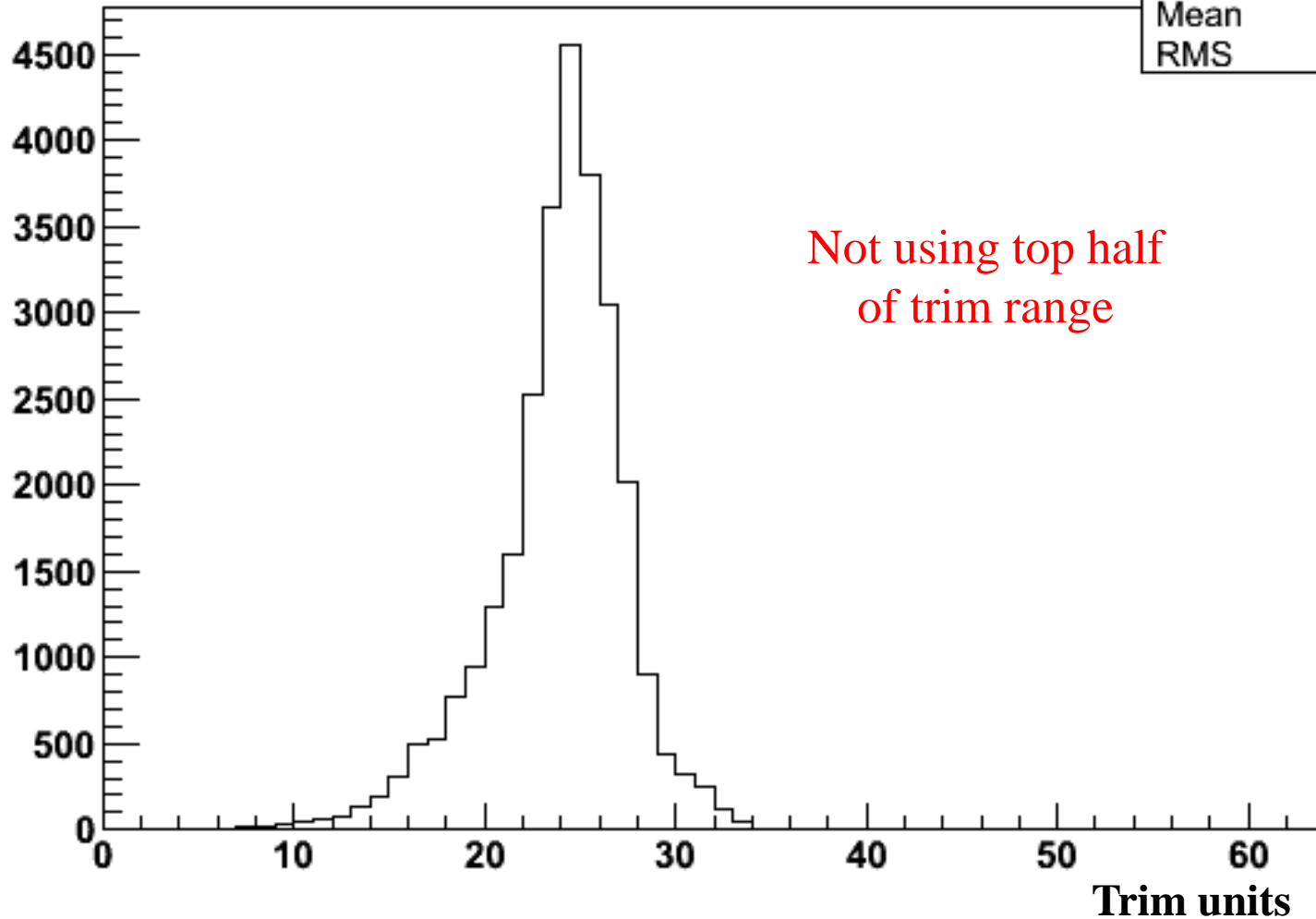
Current status: mean vs trim=0 mean



Current status: trim values

Paul4 All Trims

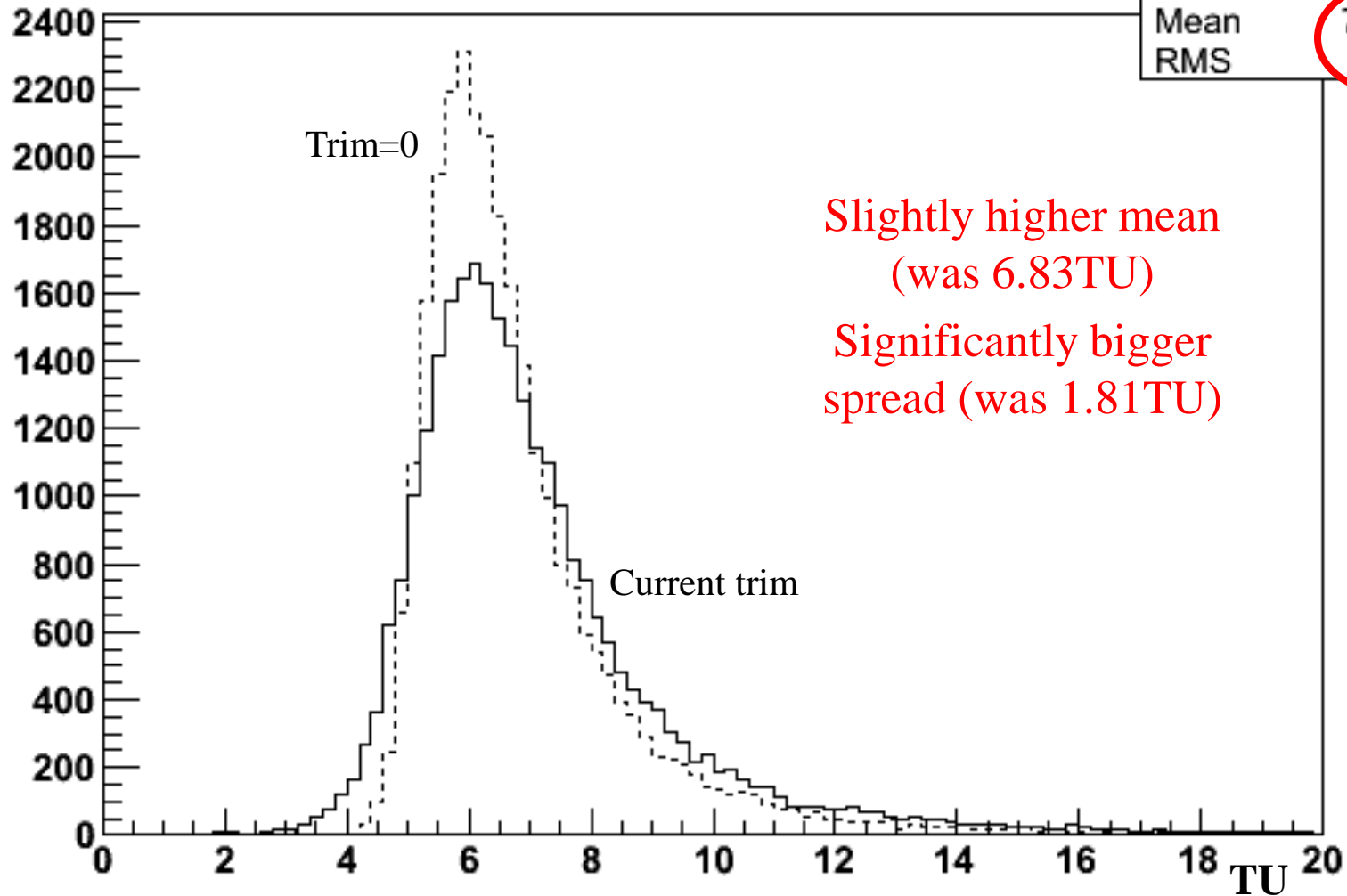
Paul4AllTrims	
Entries	28224
Mean	23.32
RMS	3.581



Current status: widths

Trim0 All Sigmas

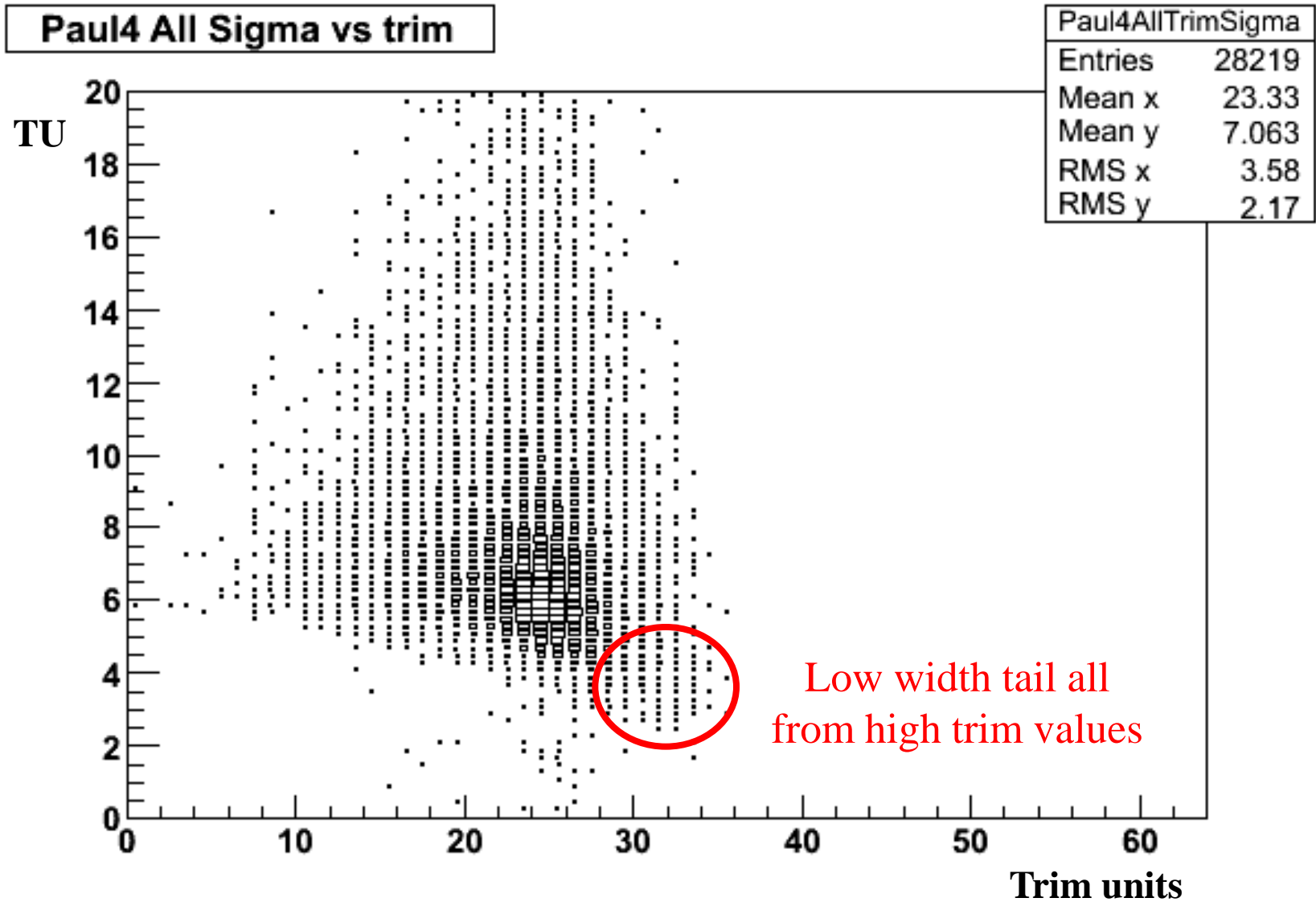
Paul4AllSigmas	
Entries	28219
Mean	7.063
RMS	2.17



Slightly higher mean
(was 6.83TU)

Significantly bigger
spread (was 1.81TU)

Current status: width vs trim



Conclusions

- TPAC1.2 seems to be working very like TPAC1.0
 - Very similar means and widths
 - In terms of both central values and spread
 - This is very good news
- Trim is working and sensor can be trimmed
 - Non-linear trim response makes mean very sensitive
 - Can this be reduced?
 - Can whole trim range be used?
- Width distribution degraded after trimming
 - Not seen in TPAC1.0 (I think)
 - Due to change of gain?
 - 15% variation comparable with normal spread