

First Results from the CERN/GE Source Measurements

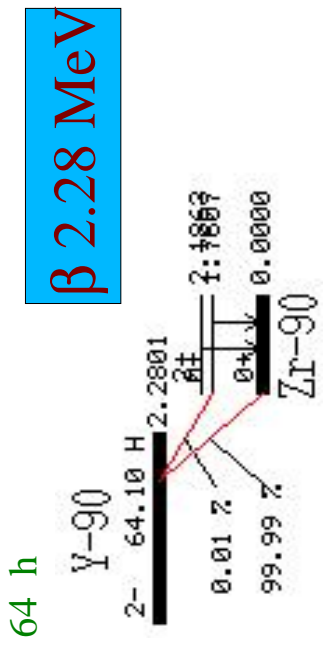
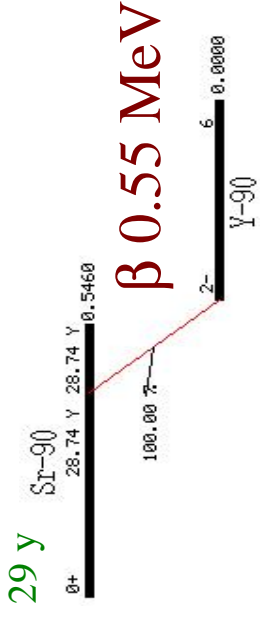
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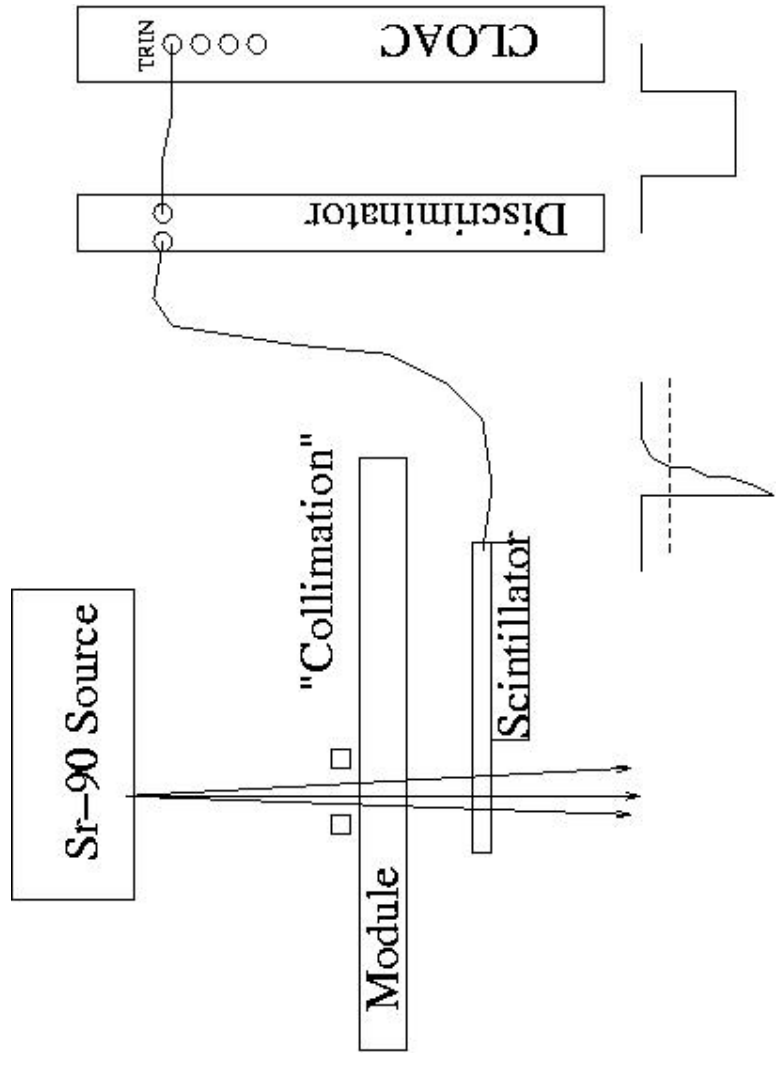


CERN/Geneva Team

The CERN/GE Source Setup



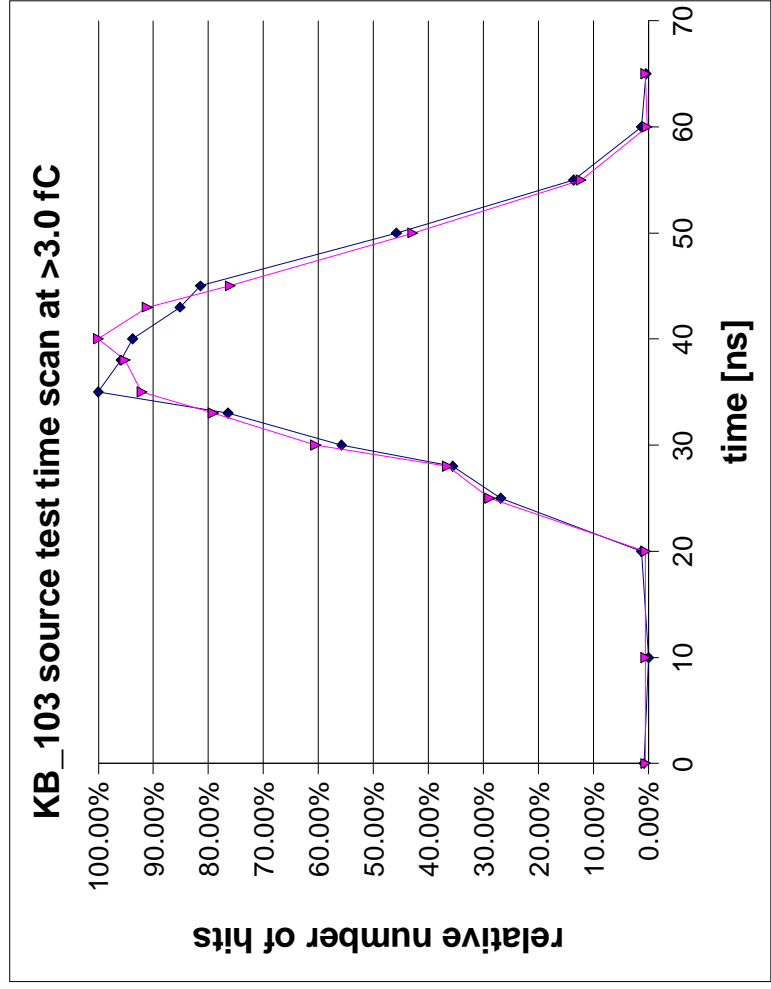
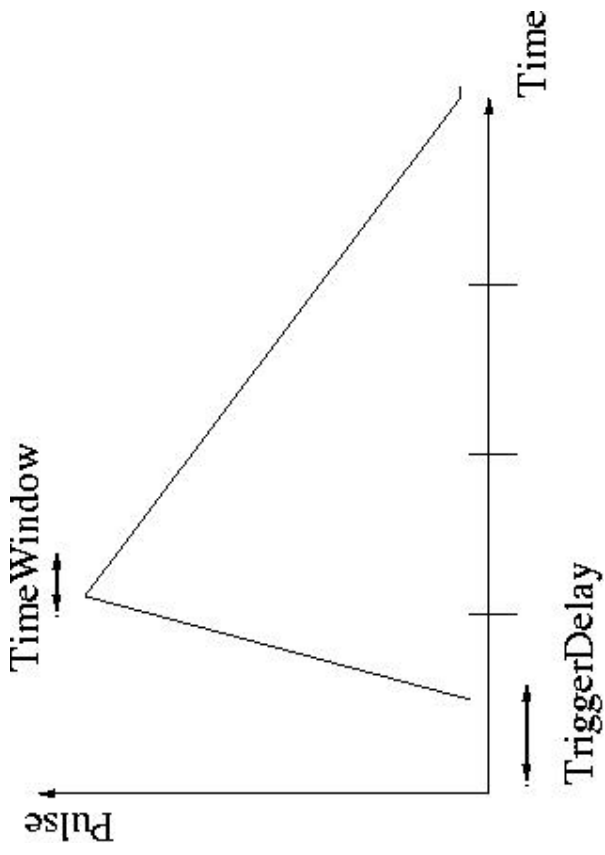
~6% above MIP



- Use TRIN feature of CLOAC
- Use BurstType "20" (External Trigger)
- Use Trigger Window Feature of CLOAC

The Timing

trgdelay	delay	time [delay]	Rela.Hit L0	Rela.Hit L1	Hit L0	Hit L1
122	5	5	0.41%	0.51%	1	2
122	10	10	1.24%	0.26%	3	1
122	15	15	13.64%	12.24%	33	48
122	20	20	45.87%	42.86%	111	168
123	0	25	81.40%	76.02%	197	298
123	2	27	85.12%	91.07%	206	357
123	5	30	93.80%	100.00%	227	392
123	7	32	95.87%	95.15%	232	373
123	10	35	100.00%	92.09%	242	361
123	12	37	76.45%	79.08%	185	310
123	15	40	55.79%	60.46%	135	237
123	17	42	35.54%	36.48%	86	143
123	20	45	26.86%	28.83%	65	113
124	0	50	1.24%	0.51%	3	2
124	10	60	0.00%	0.51%	0	2
124	20	70	0.83%	0.51%	2	2



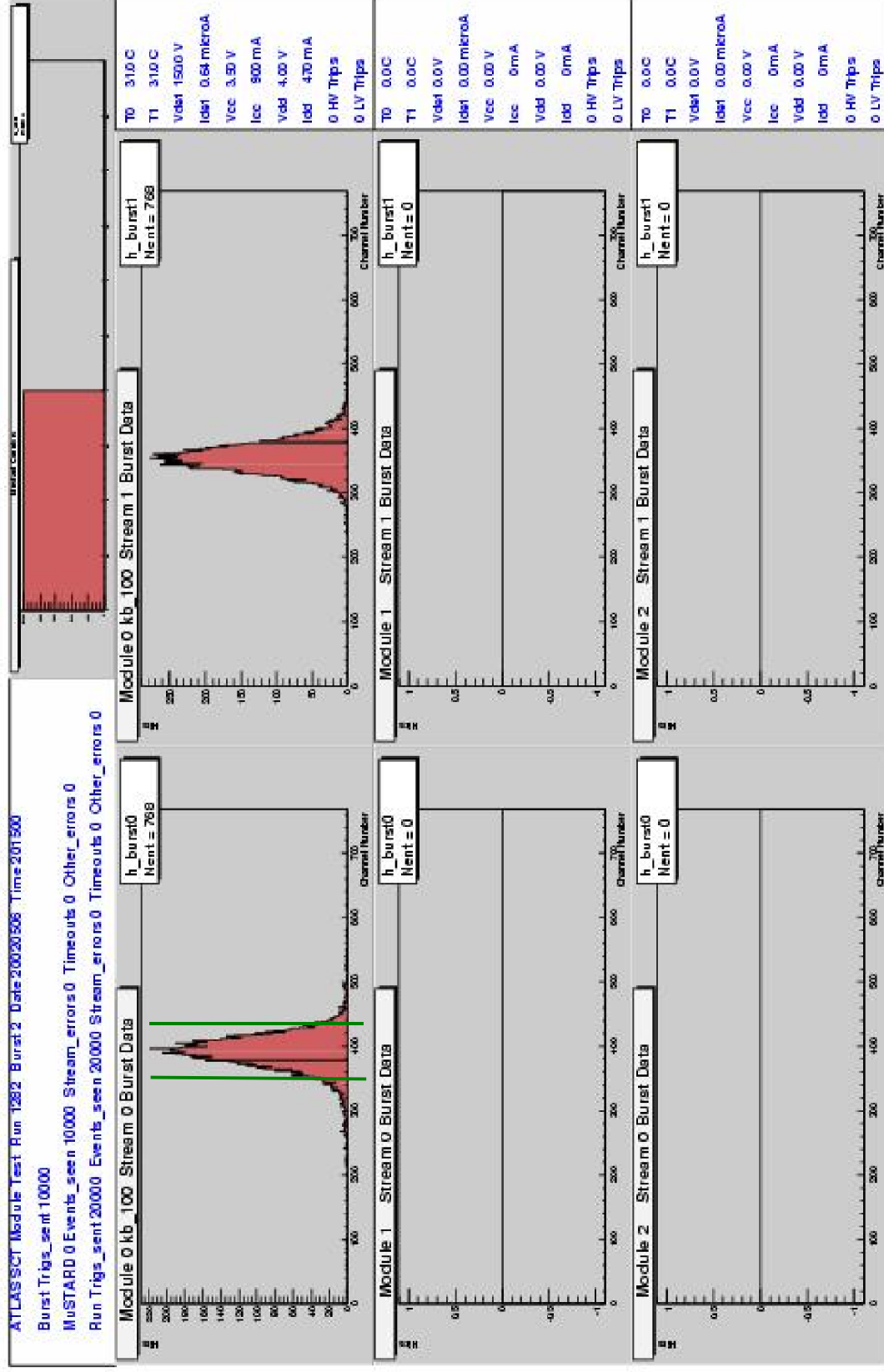
→ Choose TimeWindow 5 ns

→ Choose TriggerDelay 10 ns

→ Use EdgeMode 01X for precise timing on central BC

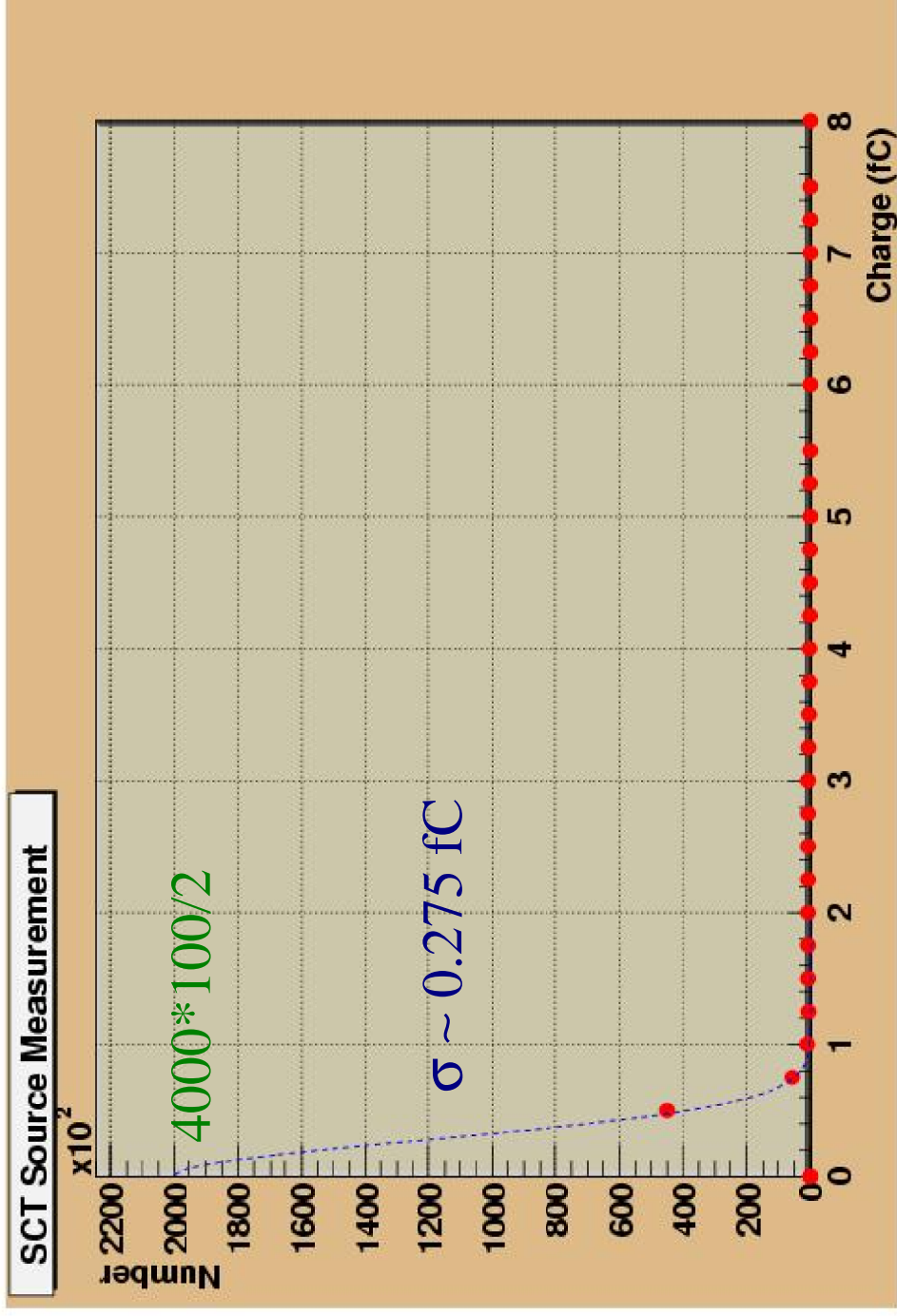
'Beam Profile'

10'000 triggers
@ 1fC



Noise

Derivative of Threshold Scan



4000 trigger/point

100 channels
fiducial area

Fit: $N \exp(-x^2/2 \sigma^2)$

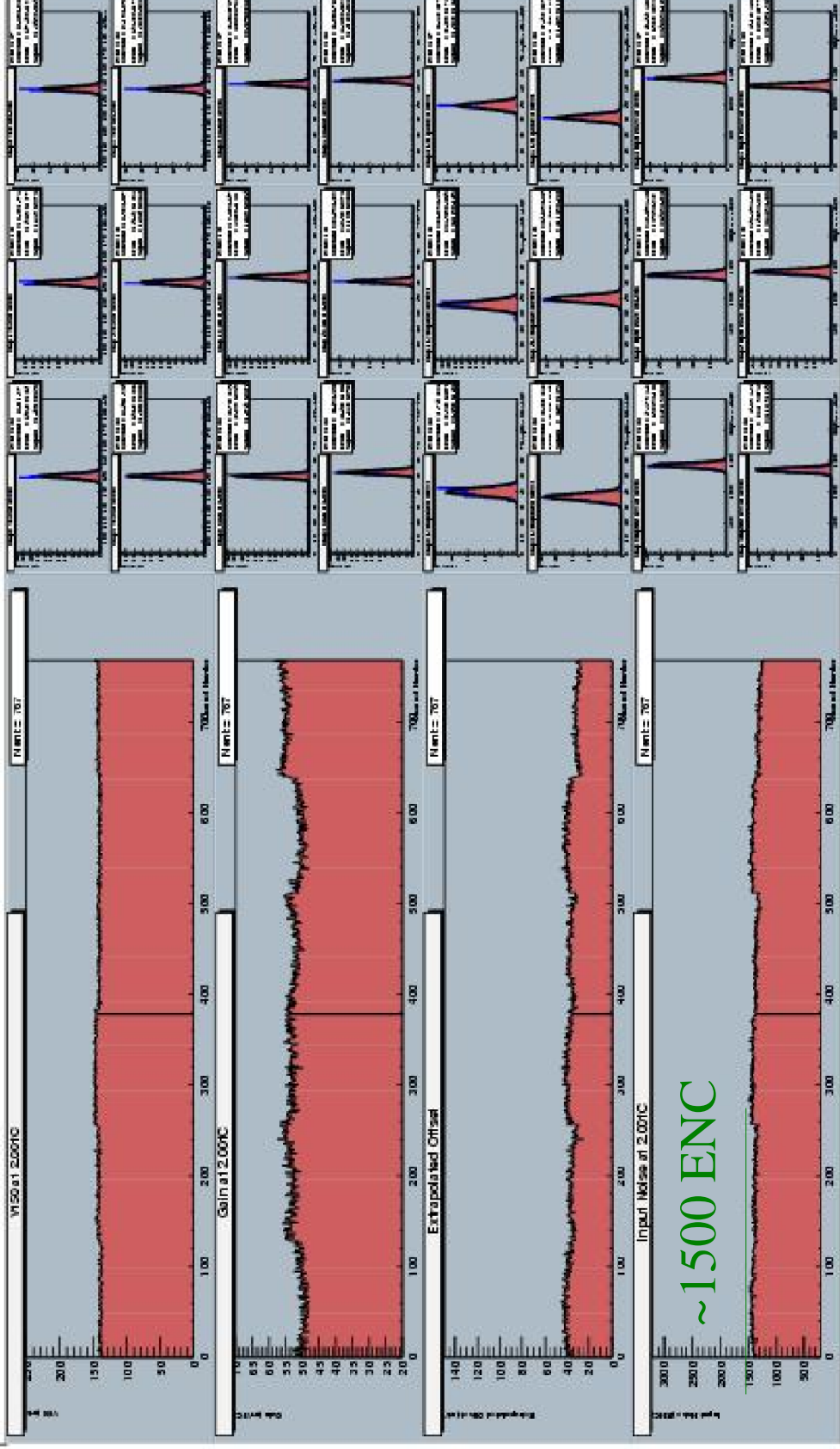
Assume 50% of noise hits on negative side \rightarrow Normalisation

Adjusting sigma to 0.5 fC points yields $\sigma = 0.275 \text{ fC} \sim 1700 \text{ ENC}$

Noise from ResponseCurve

ATLAS SCT Module Test: Response vs. Channel - Tue May 07 11:57:02 2002 - CERN/GE Setup 161 - Module Kb_11

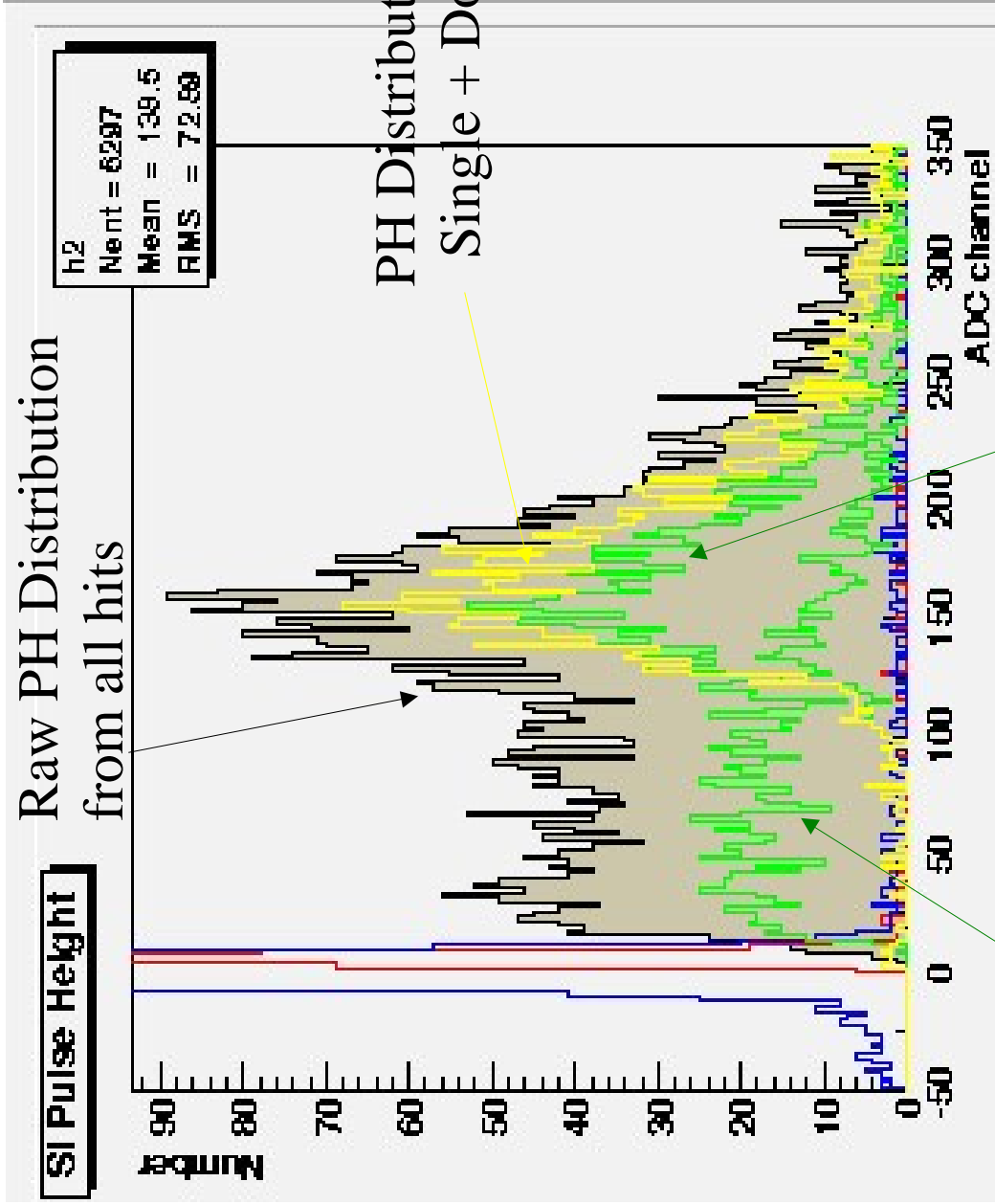
Page 1 Run 1285 Start Scan 1 Module 0 Stream 0



Noise from Source Measurements > Noise of Response Curve

Source Pulse Height Expectation

CLEO Silicon,
analog Readout
Sr-90 Source
private Comm.

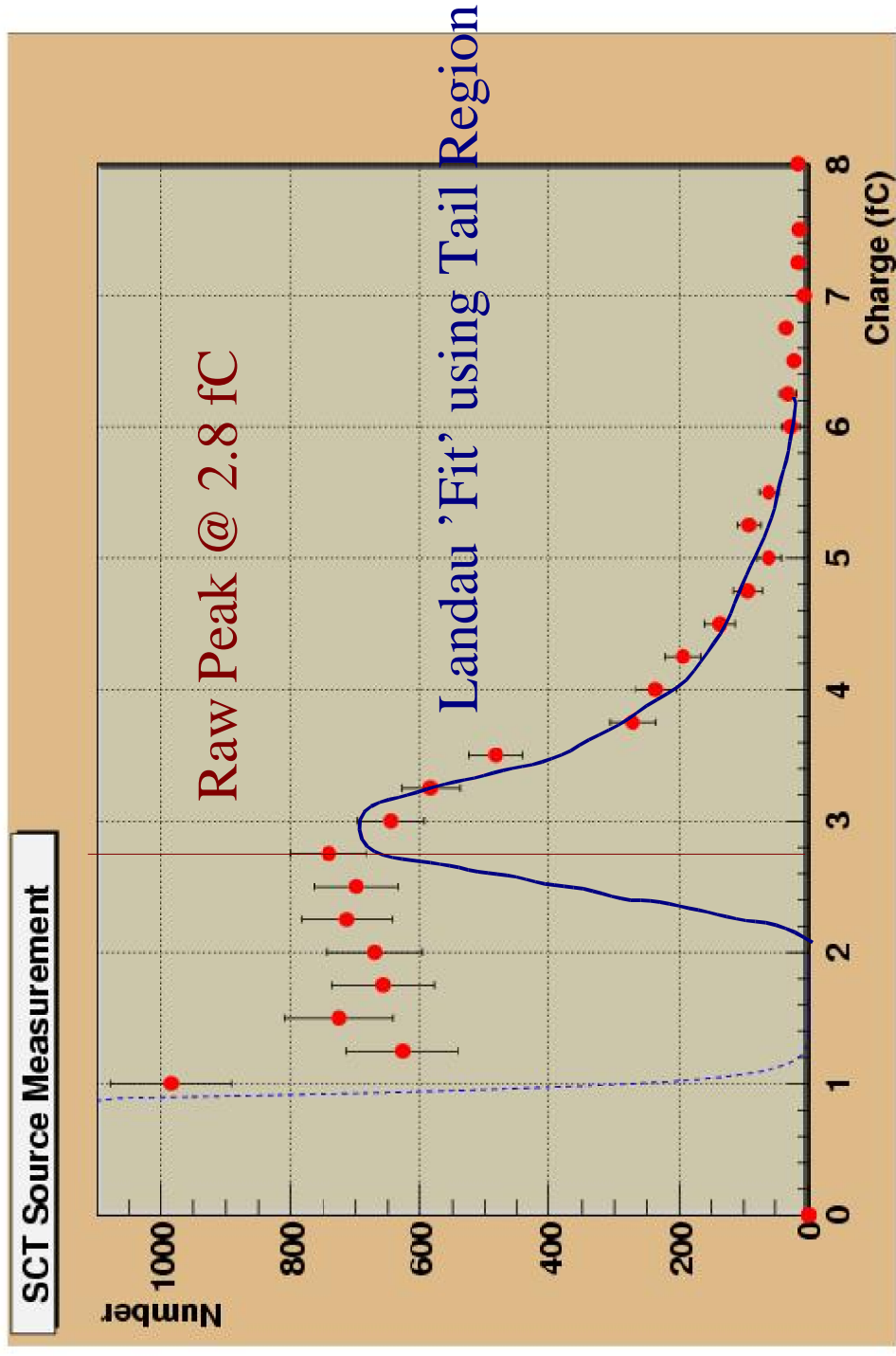


PH Distribution from
Single + Double Hit Cluster

PH Distribution from
Double Hits

PH Distribution from
Single Hits

The Source Signal



Signal from Source is combination of single hit and double hits

The Expected Signal

Unfolded Signal (~3.0 fC)

* Gain Correction (1.12)

* TimeWidthCorr (1.08)

* MIP Correction (0.94) = 3.41 fC

Further Work

- Collimate Source to reduce Charge Sharing → What is the real Signal ?
- Measure Noise without Signal → What is the real Noise ?
- Measure S/N for all Modules