



SCT Beamtest, August 2001

Barrel Module Report

- Residual Distributions
- TDC & Clock Jitter
- Efficiency, S-curves & Angle Scans
- Noise Occupancy
- Common Mode
- Pulse Shapes
- Edge & Gap Efficiencies

All results should be considered

PRELIMINARY!

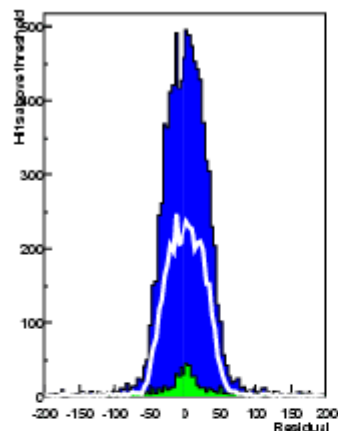
(Analysis still under way)

Alan Barr
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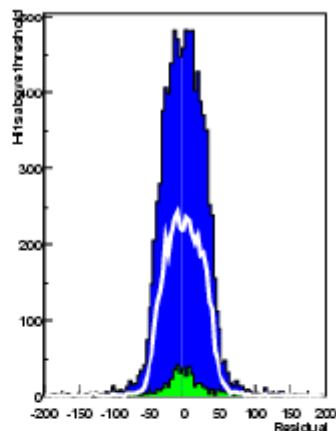


Residual Distributions

0037*:Link0

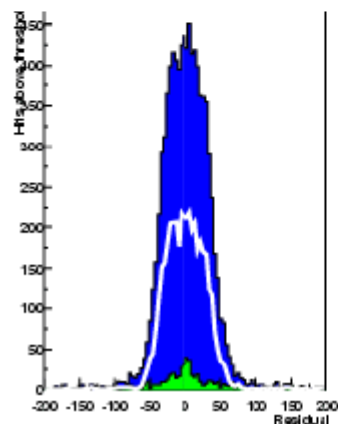


Link1 300V

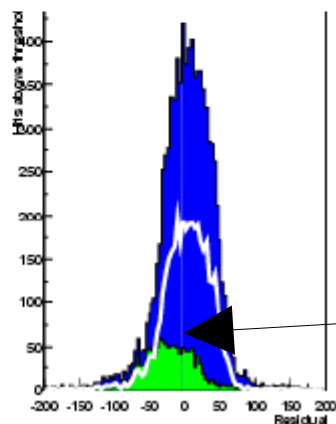


Normal Incidence,
Magnet Off

0036: Link0



Link1 100V



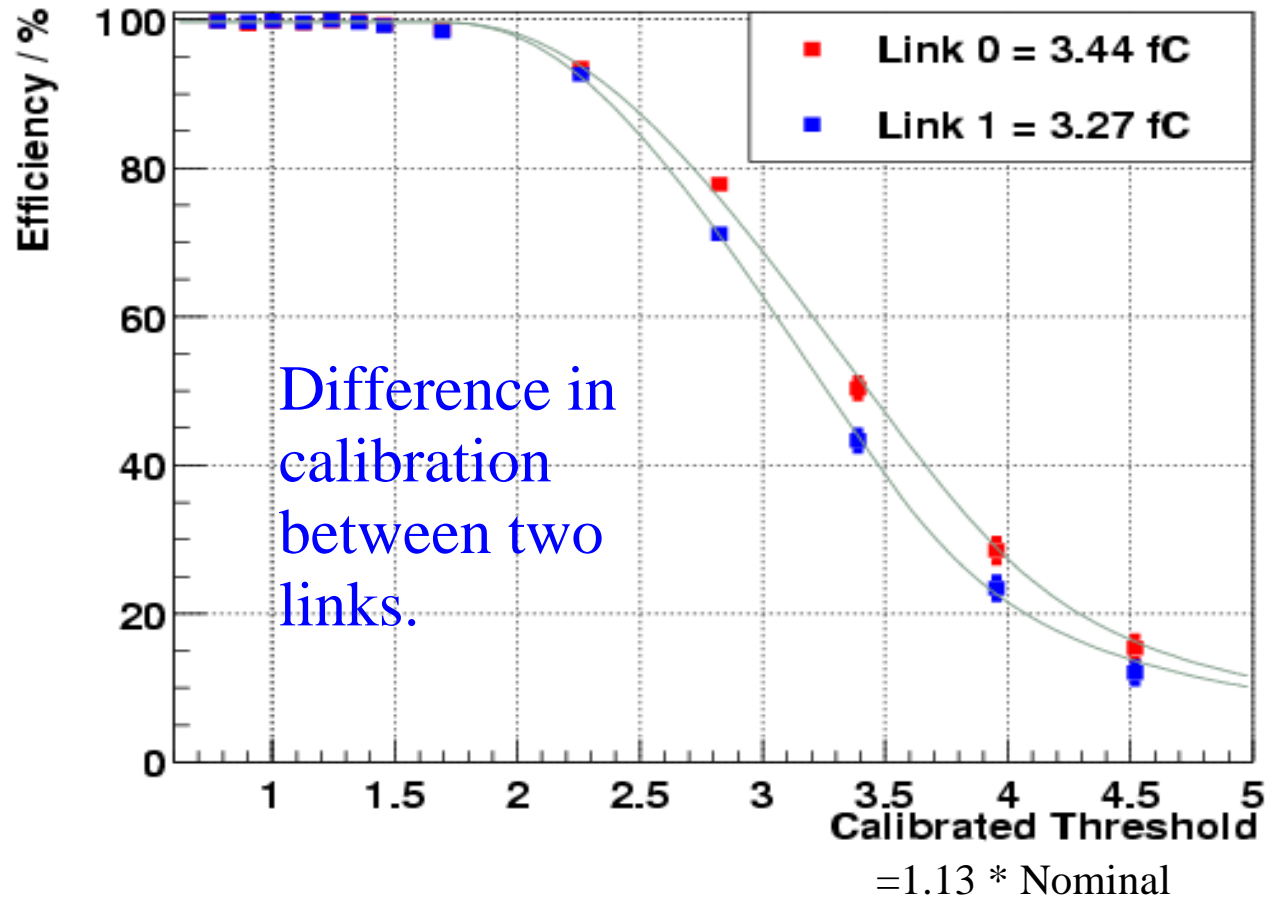
Blue = All Tracks,
White = Four Telescope Hits
Green = Multi-hit clusters

Possible Bonding Error
Offset residuals in multi-hit
clusters



Calibration

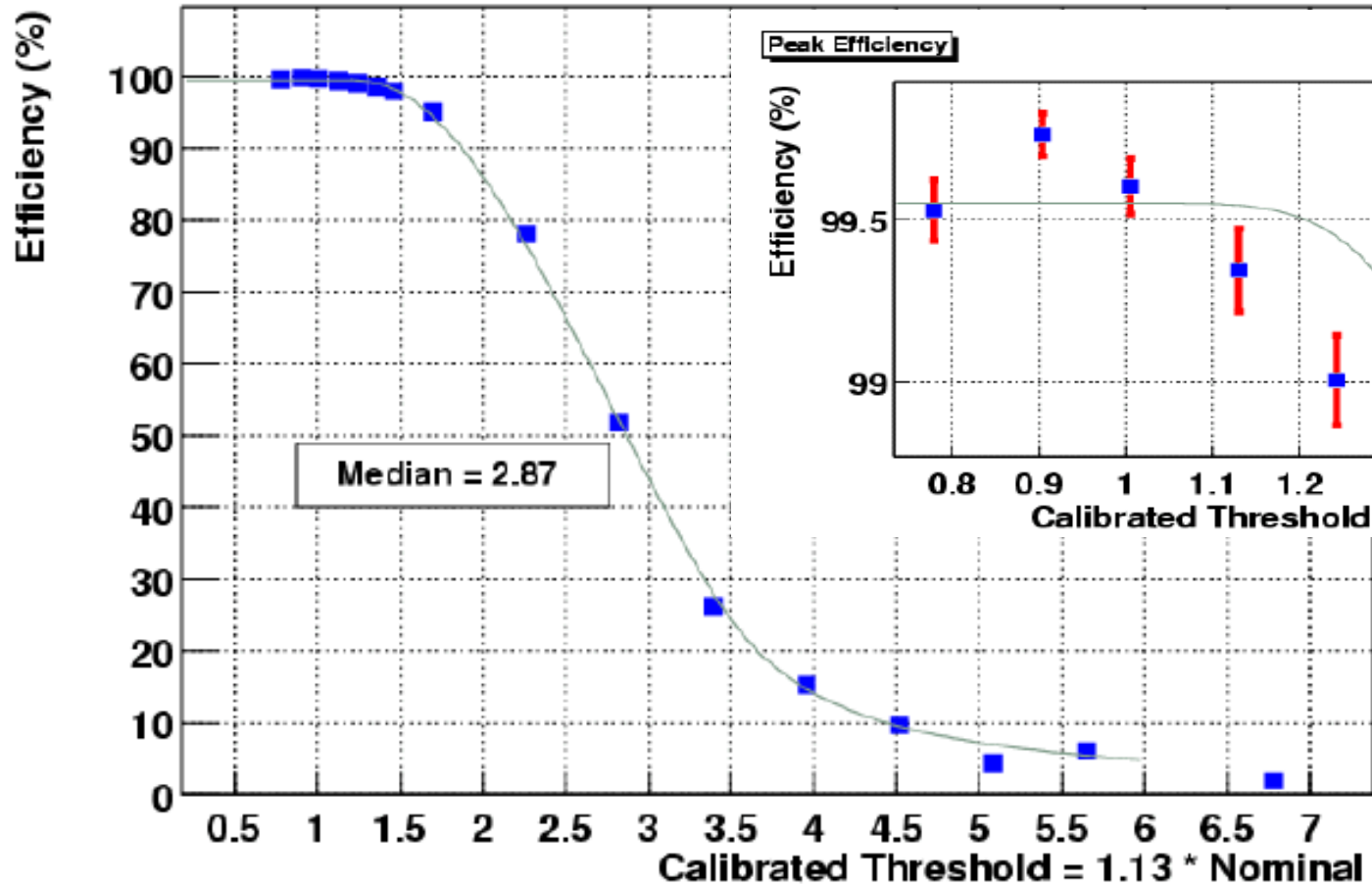
0035 Runs 2883->2895, Vdet= 100, Ang= 0, B=0.00





S-Curve: 0037*

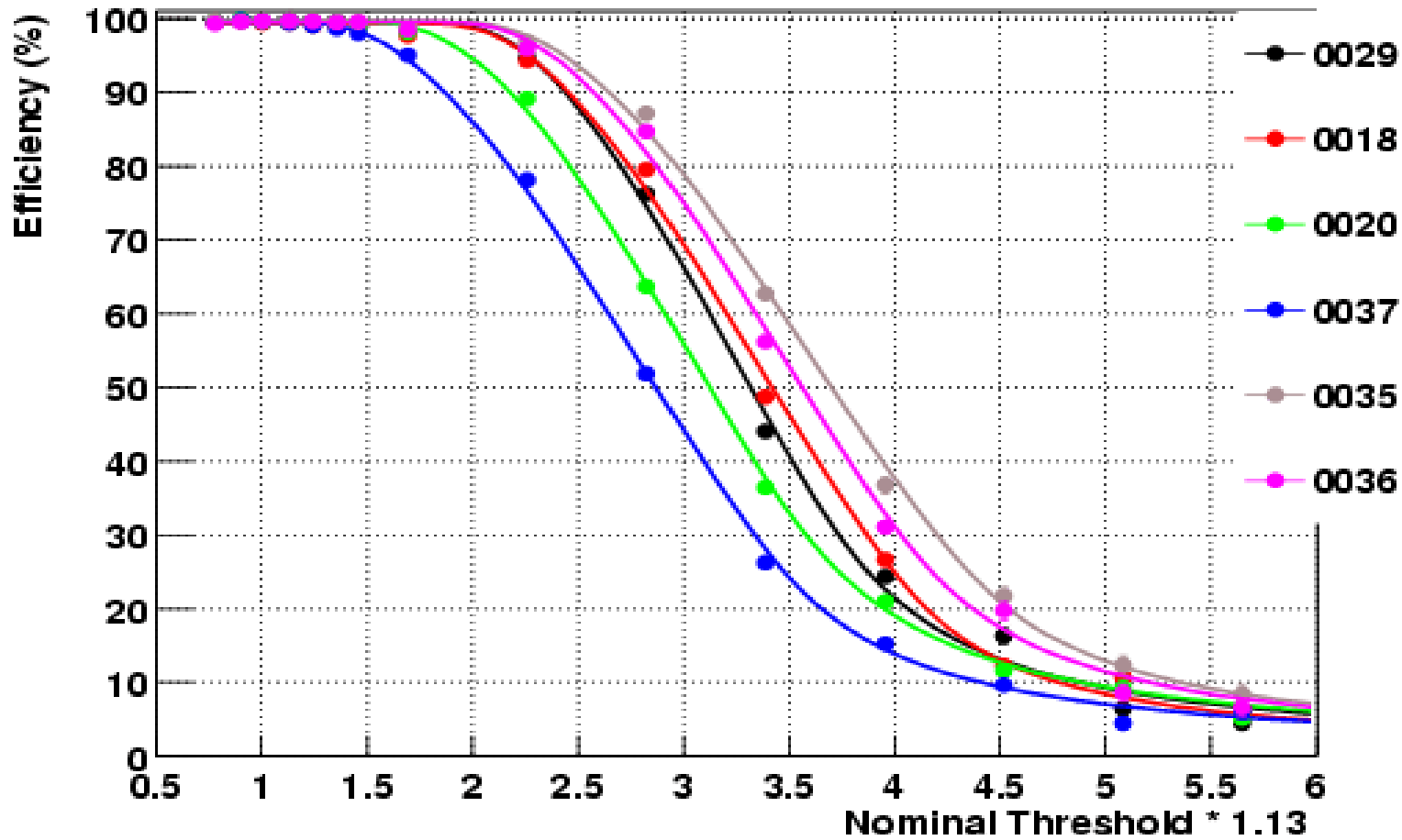
0037* @ 385V detector bias, Magnet Off, Normal incidence





S-Curves

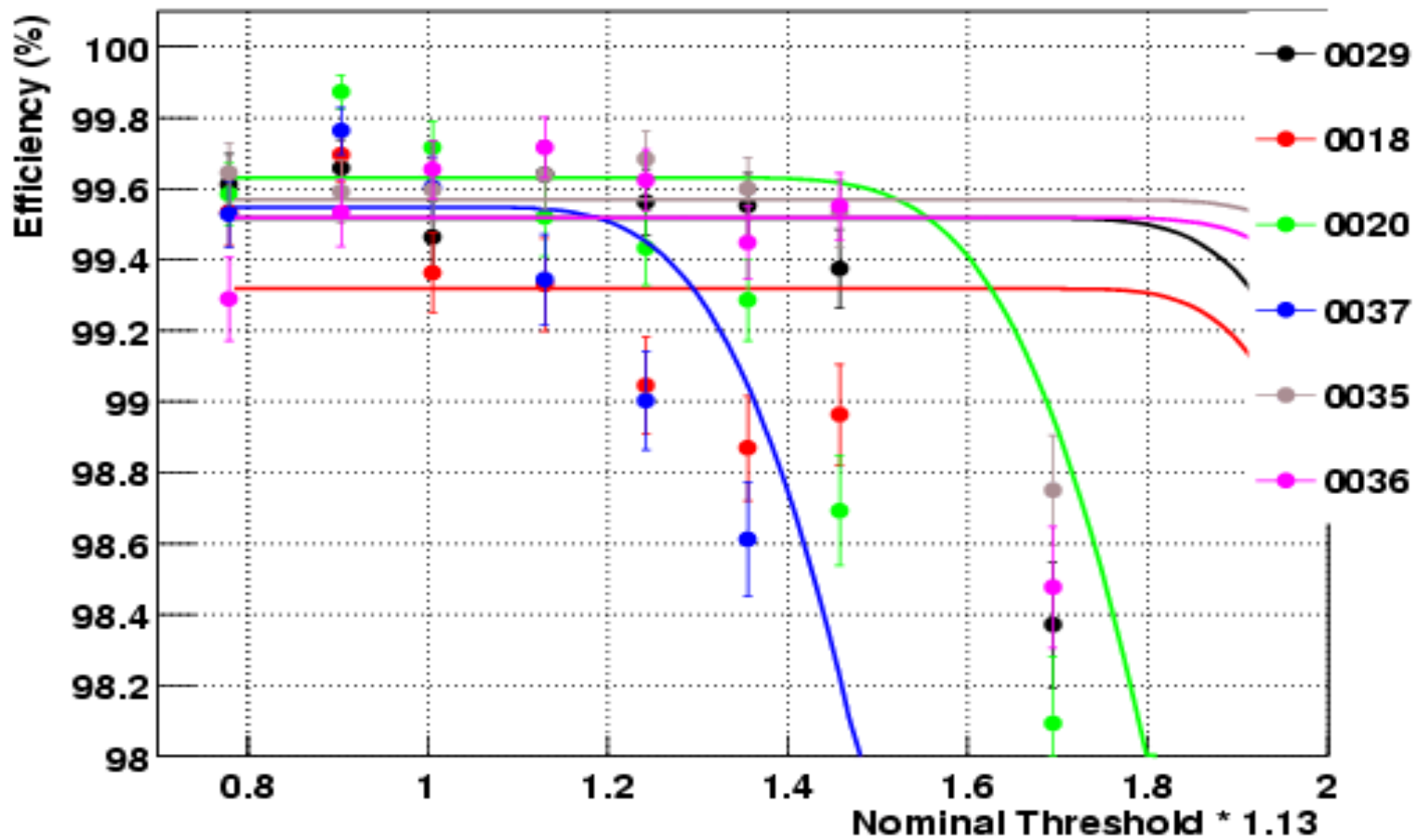
385 V Irrad, 200 V detector bias, Magnet Off, Normal incidence





S-Curves

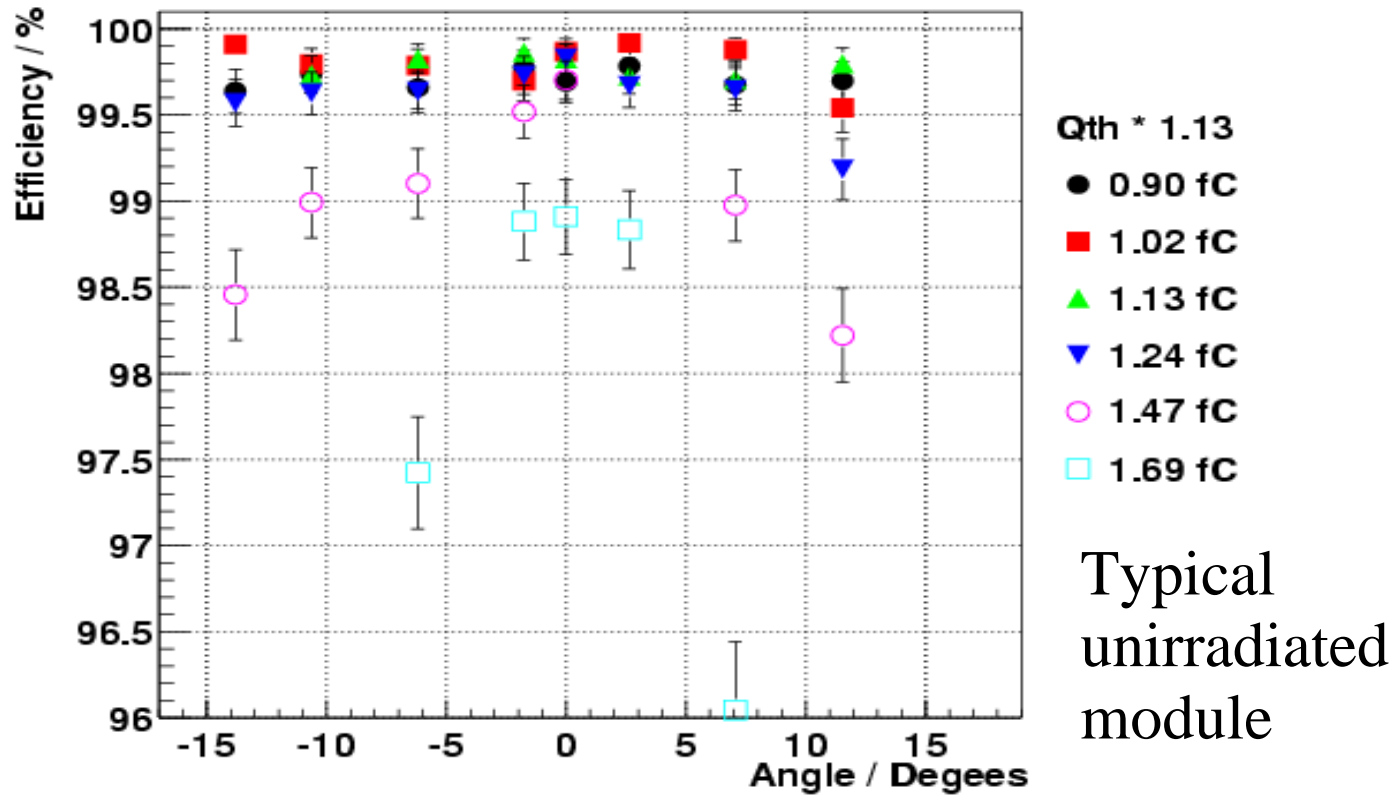
385 V Irrad, 200 V detector bias, Magnet Off, Normal incidence





Angle Scans – Unirradiated

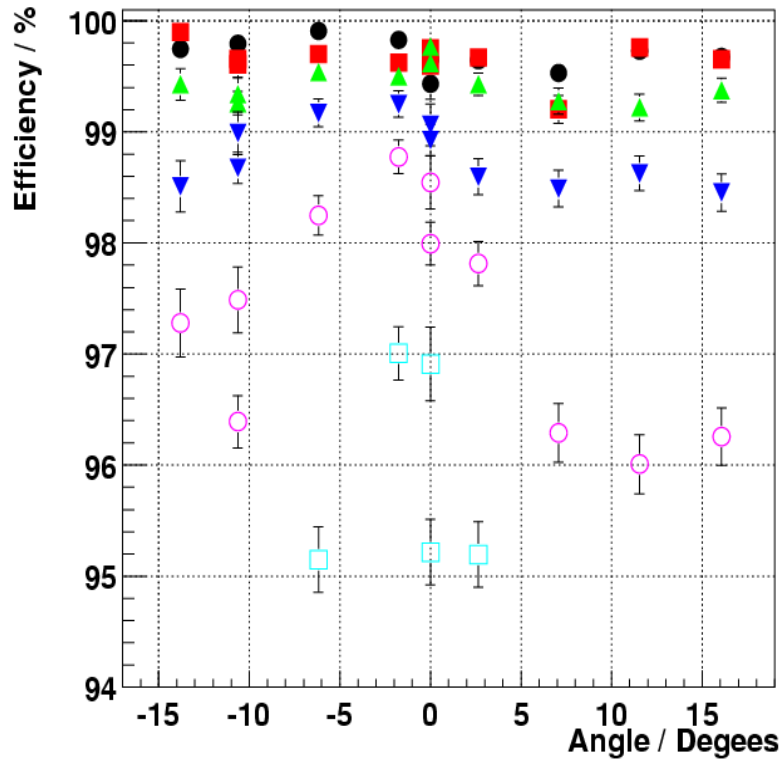
Mod: 0018, 150 V, 0.00 T



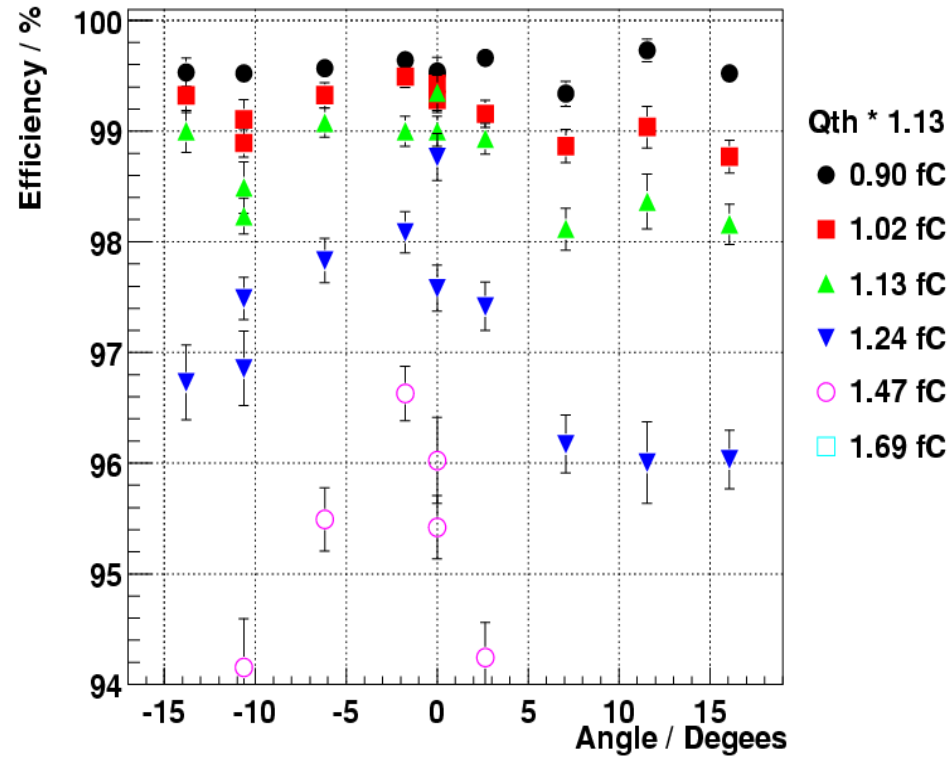


Angle Scans – Irradiated

Mod: 0020*, 335 V, 1.56 T



Mod: 0037*, 335 V, 1.56 T



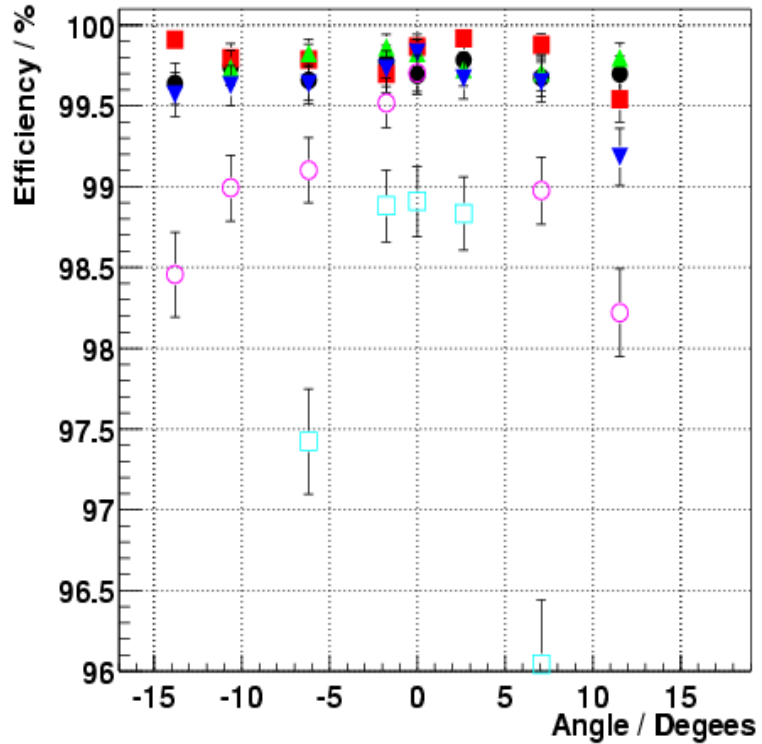
Qth * 1.13
● 0.90 fC
■ 1.02 fC
▲ 1.13 fC
▼ 1.24 fC
○ 1.47 fC
□ 1.69 fC

Magnet ON

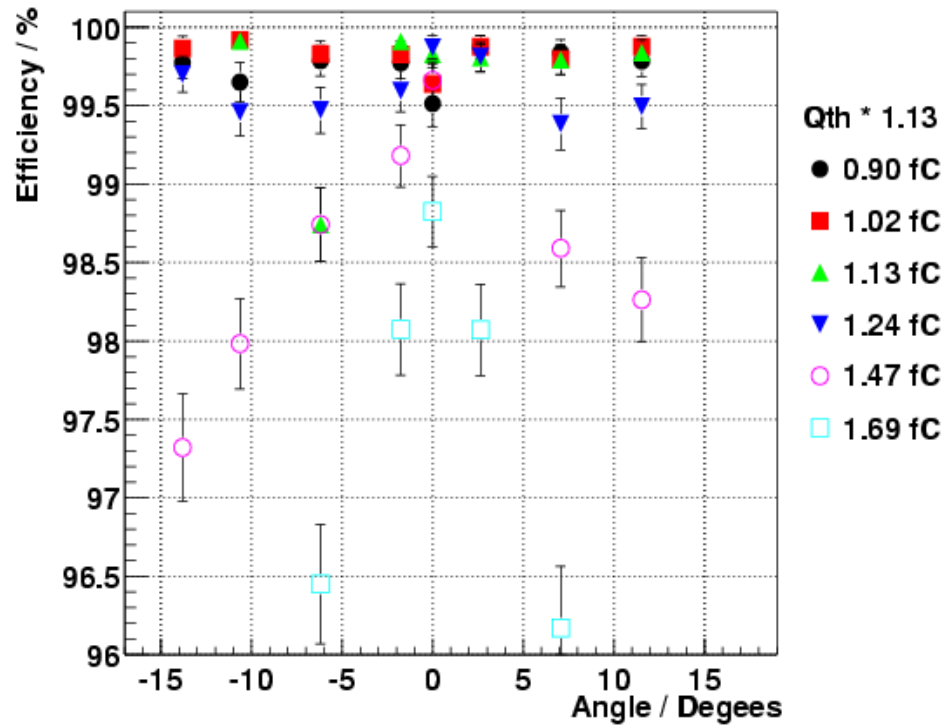


Magnet off, Unirradiated

Mod: 0018, 150 V, 0.00 T



Mod: 0029, 150 V, 0.00 T

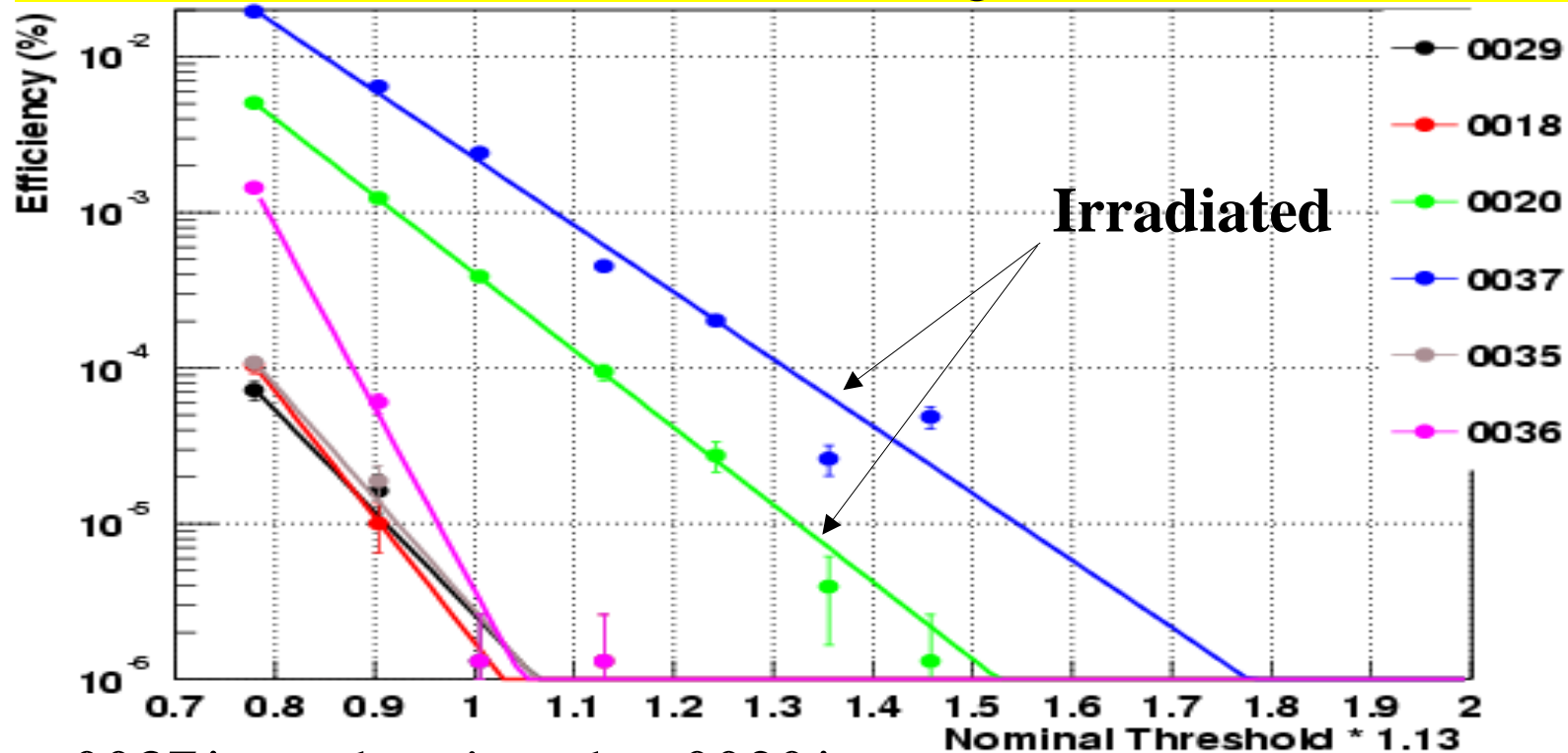


- Qth * 1.13
- 0.90 fC
 - 1.02 fC
 - ▲ 1.13 fC
 - ▼ 1.24 fC
 - 1.47 fC
 - 1.69 fC



Noise Occupancy

385 V Irrad, 200 V detector bias, Magnet Off, Normal incidence



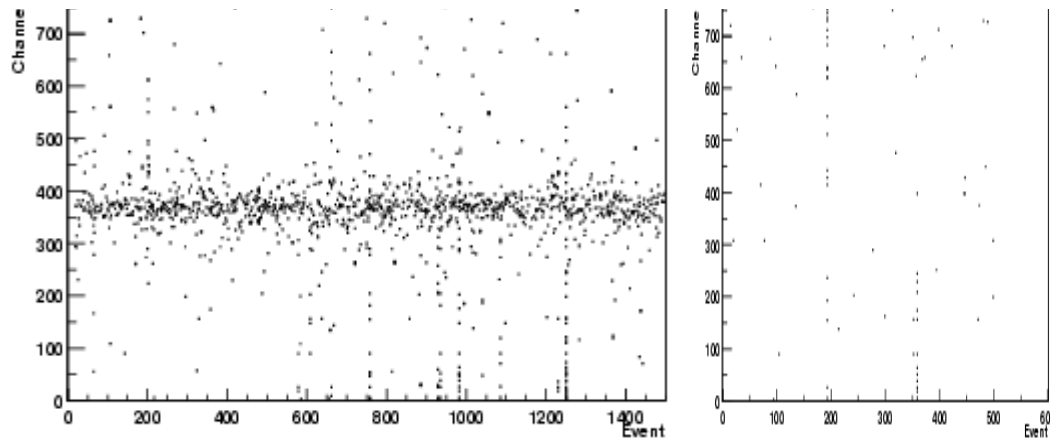
0037* much noisier than 0020*

- ~6–7 noisy channels @ < 1.0 fC
- Also common mode...



Common-Mode Noise

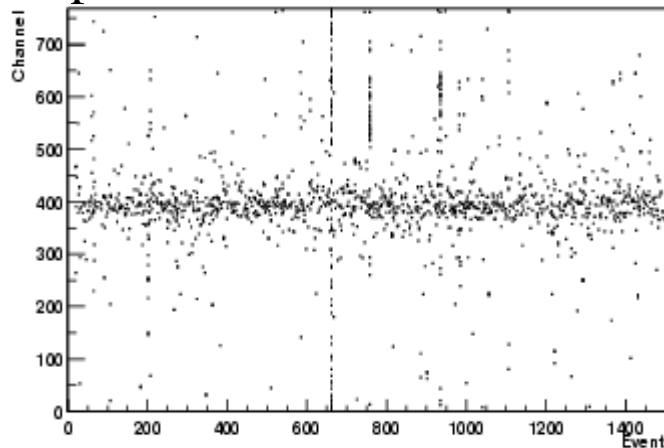
Module 0037* at 1.0 fC nominal Threshold



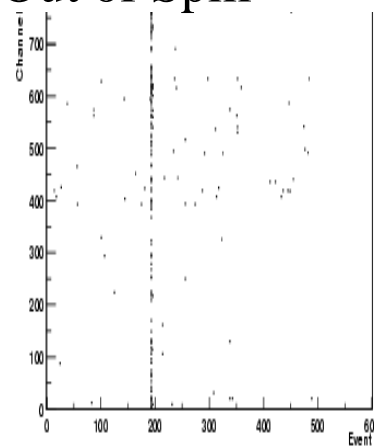
Noise correlated between links, but not between modules

Events with > 20 hits:
0.8 fC: 7 Events
1.0 fC: 2 Events
1.1 fC: 1 Event
From 500 Noise events

In Spill



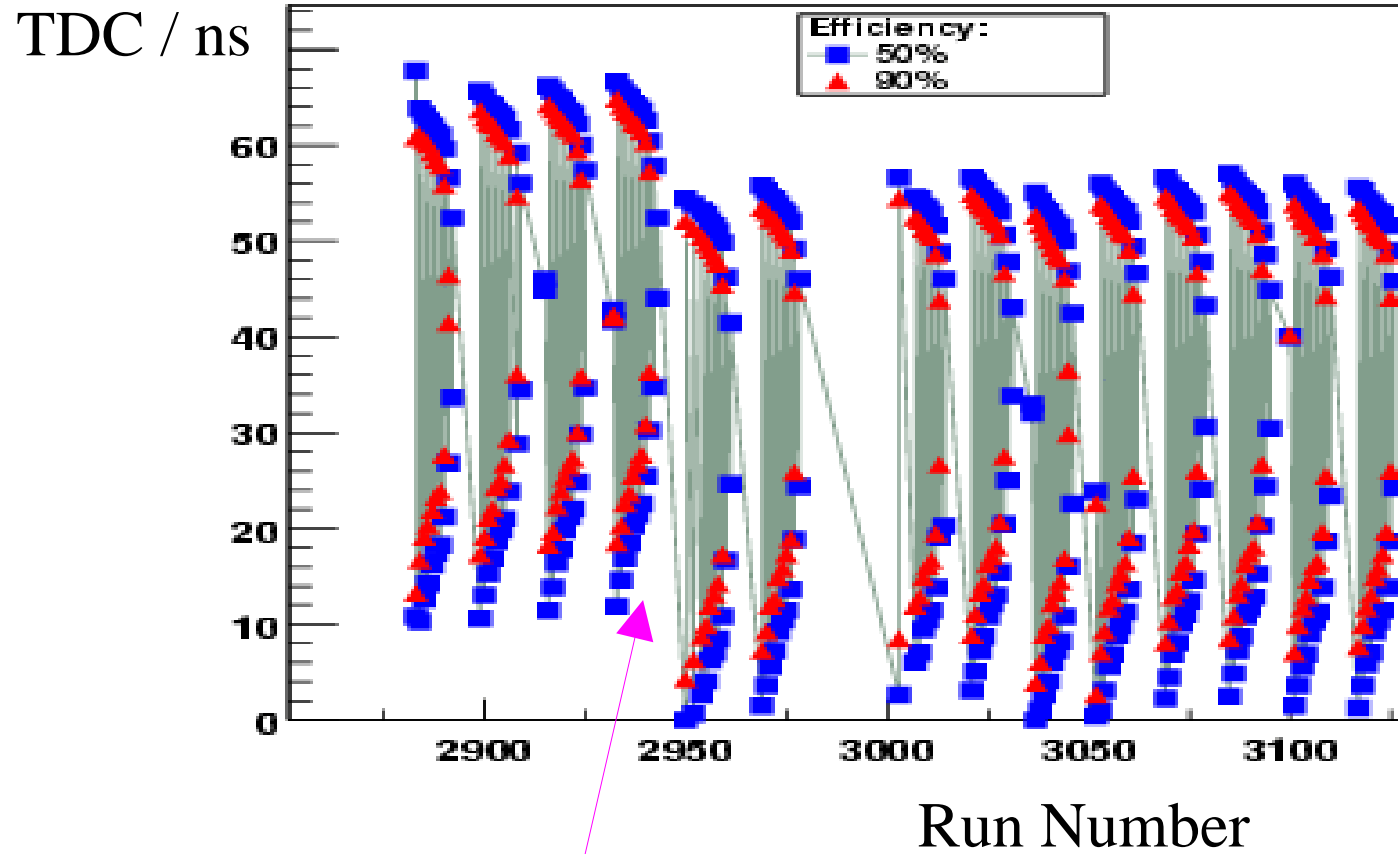
Out of Spill



Also observed at a lower level in irradiated module 0020*



Clock Jitter

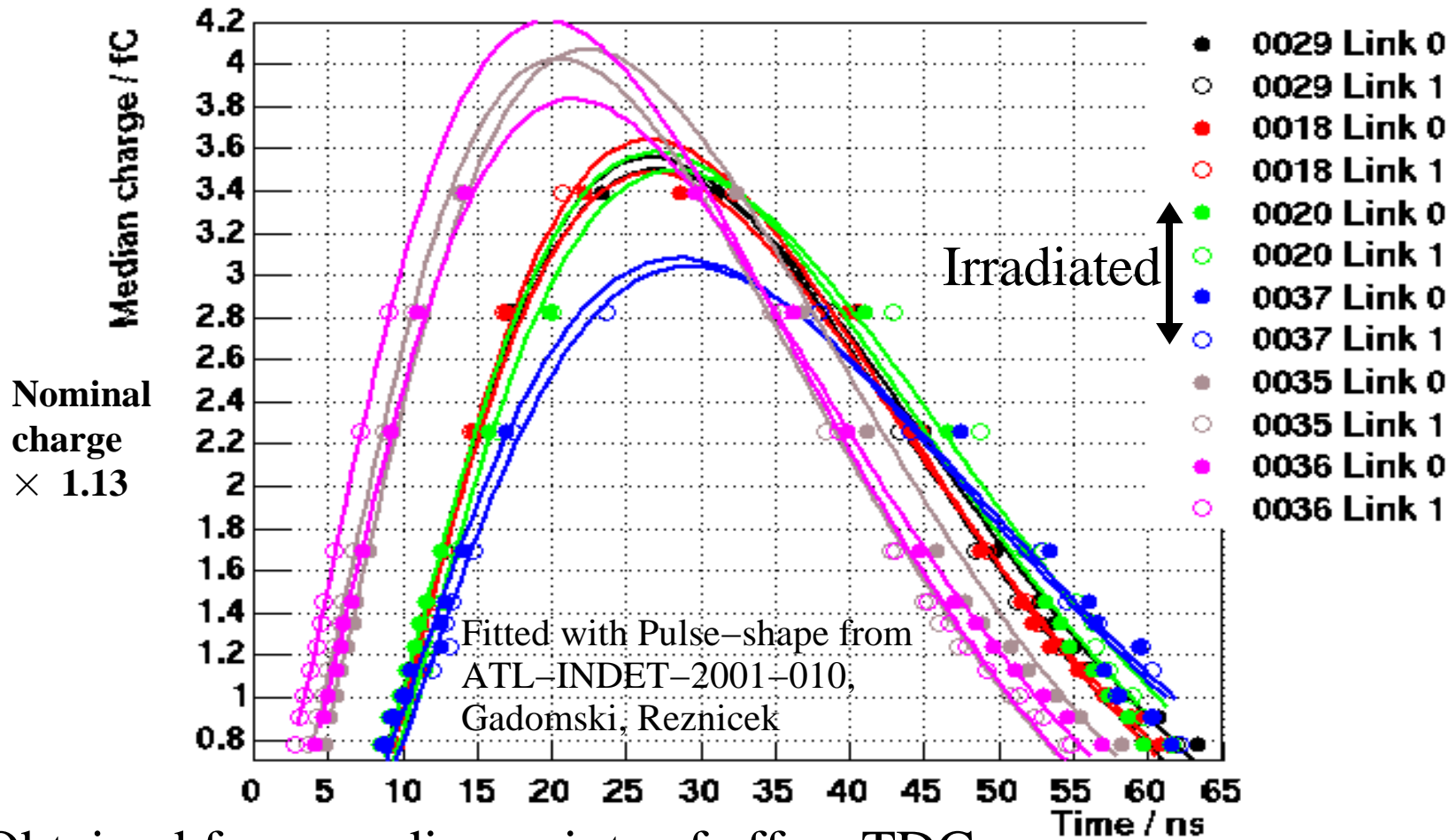


Jump at run 2935



Pulse-Shapes

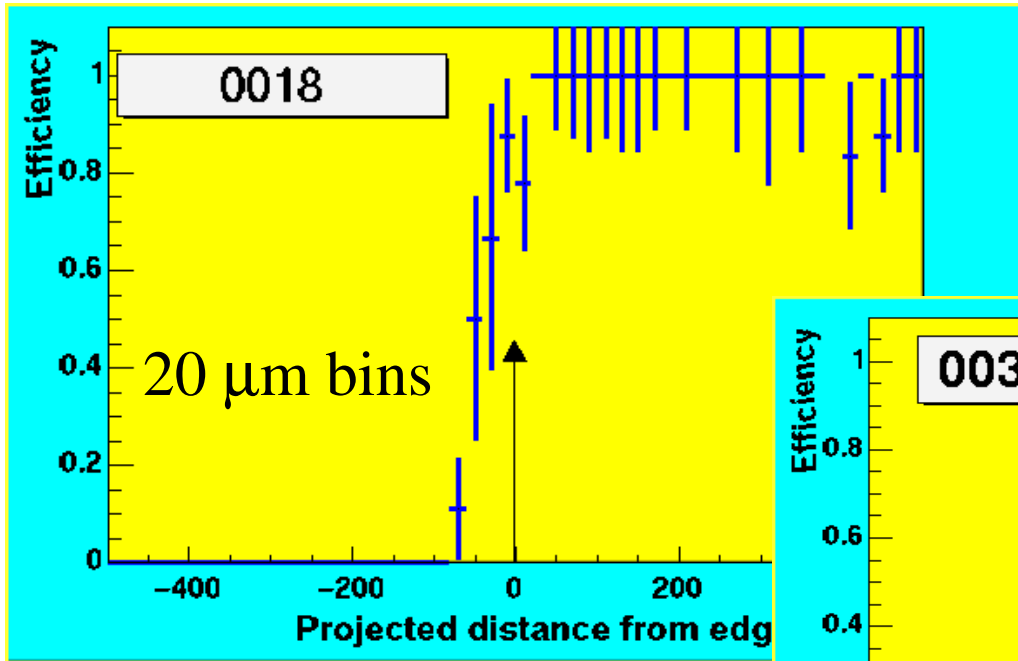
2933->2947, 450/250V, 0 deg, B=0.00



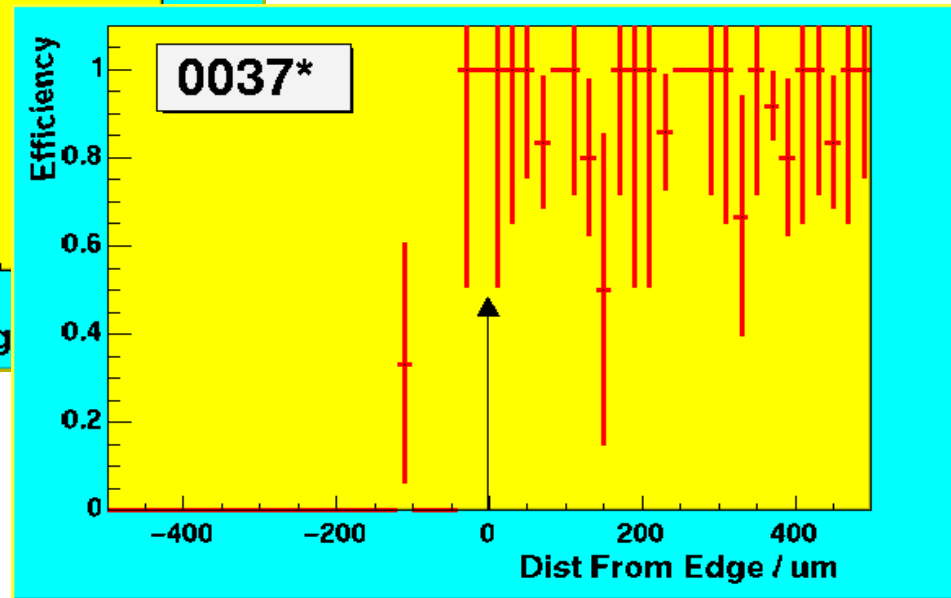
Obtained from median points of eff vs TDC



Edge Efficiency



Very preliminary!



**Analysis just started –
low statistics so far!
Generally looks good.**

Track quality cuts will be improved



Conclusions

- Analysis still under way
- Generally module performance is good
- Some uncertainty in calibration
- Better understanding of origin of common mode noise needed
- All results available at:
www.cern.ch/alanbarr/tb2001/tb2001.html

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