

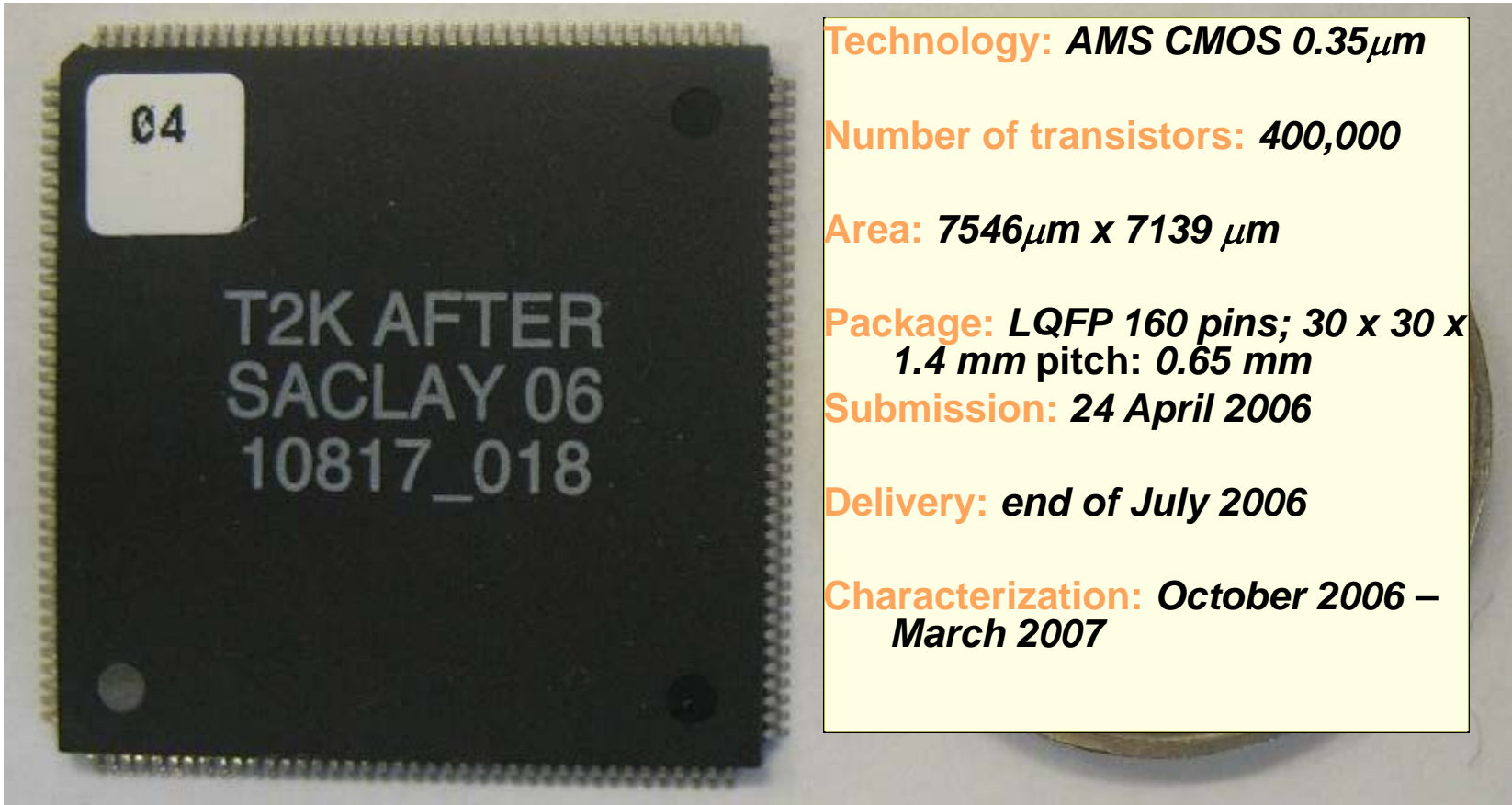
# The AFTER electronics from a user's point of view

D. Attié, P. Colas

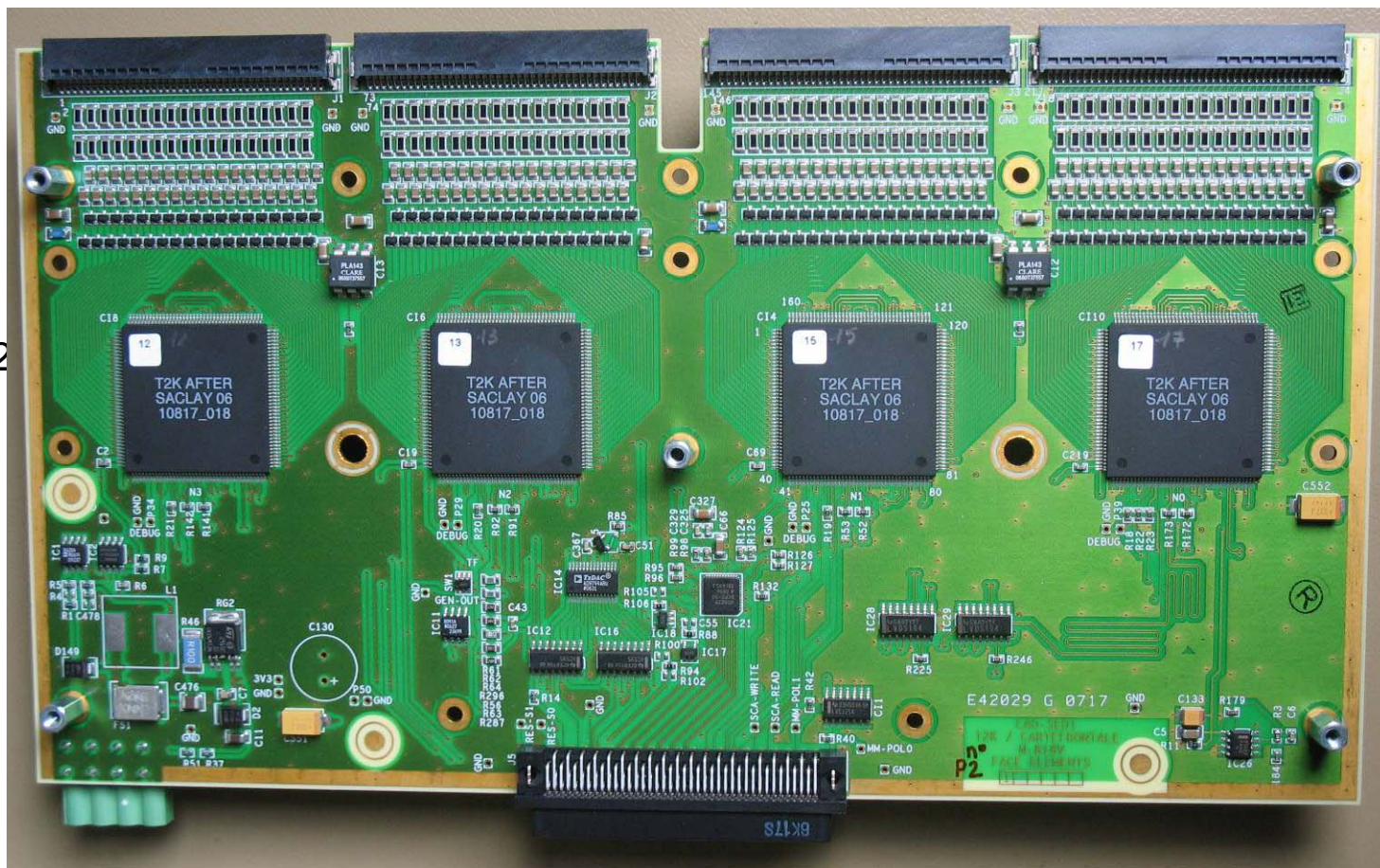
# The AFTER-based electronics

- Based on the AFTER chip: ASIC For TPC Electronic Readout
- Modularity 72 channels (80 pin ERNI connect.)
- Amplifier-shaper, 12-bit digitization, 511 bucket full-wave sampling.
- High versatility: 100 MHz clock (10,... 25, 33, 50, 100 MHz sampling. 100ns to 2  $\mu$ s peaking time, + bypass option, various dynamic range down to 120 fC full scale
- Designed in Saclay for T2K TPC in 2006, prototyped in 2007, produced in 2008, used by LC-TPC and others

# AFTER

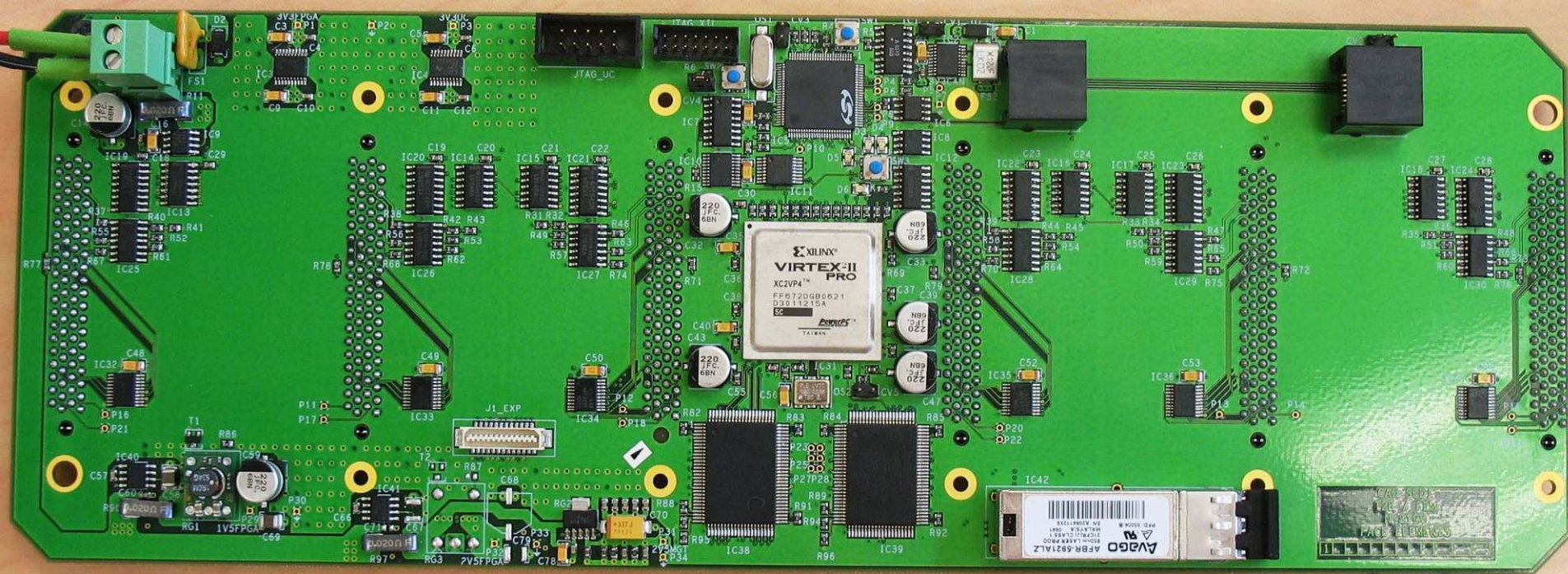


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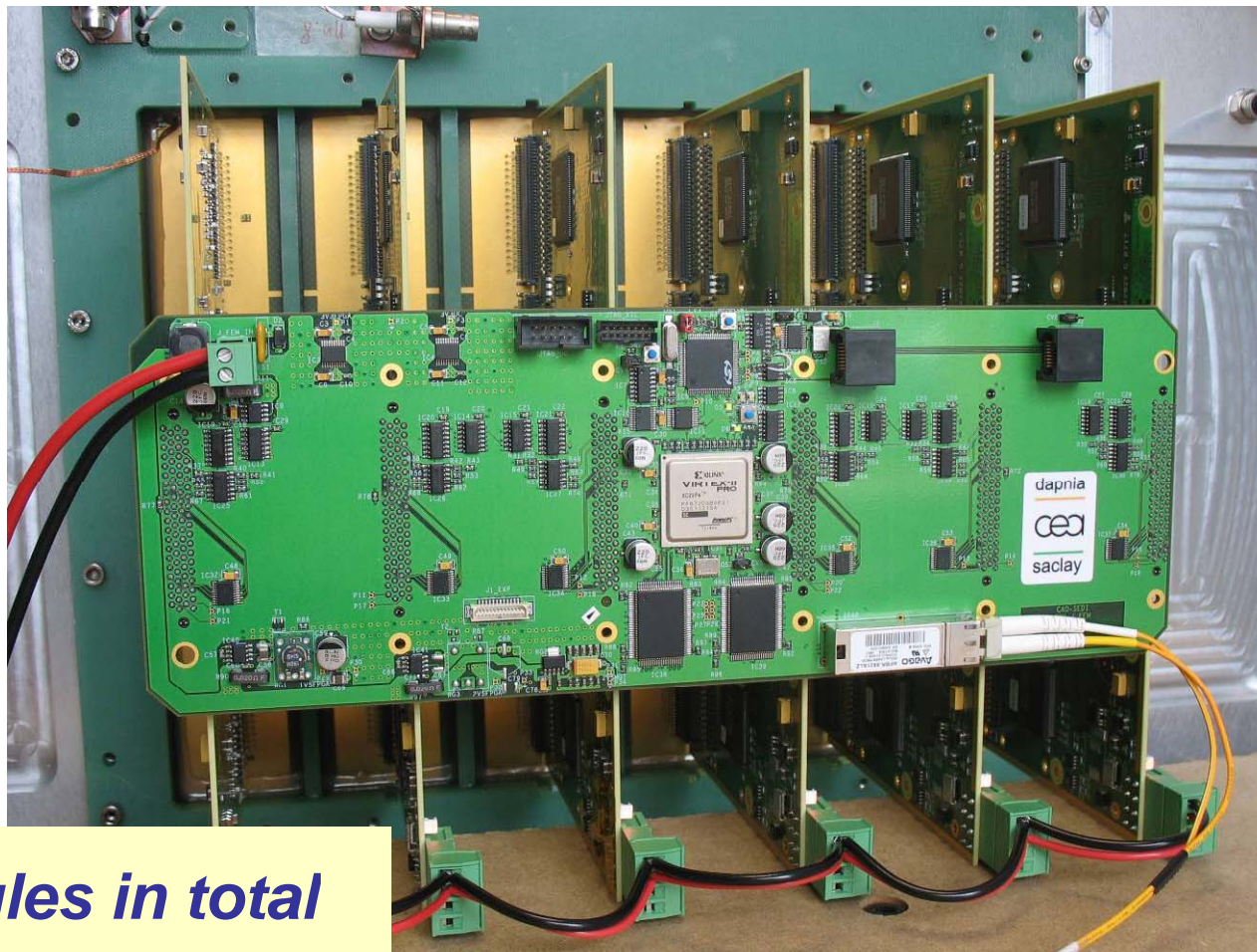


# Front-End Mezzanine



# Detector Module Read-out Electronics

LV supply



Optical fibre

***84 modules in total***

***Data taking at CERN on Harp setup in Sept. 07, on EUEDET setup in Dec 08 and in the T2K testbeam at Triumf***

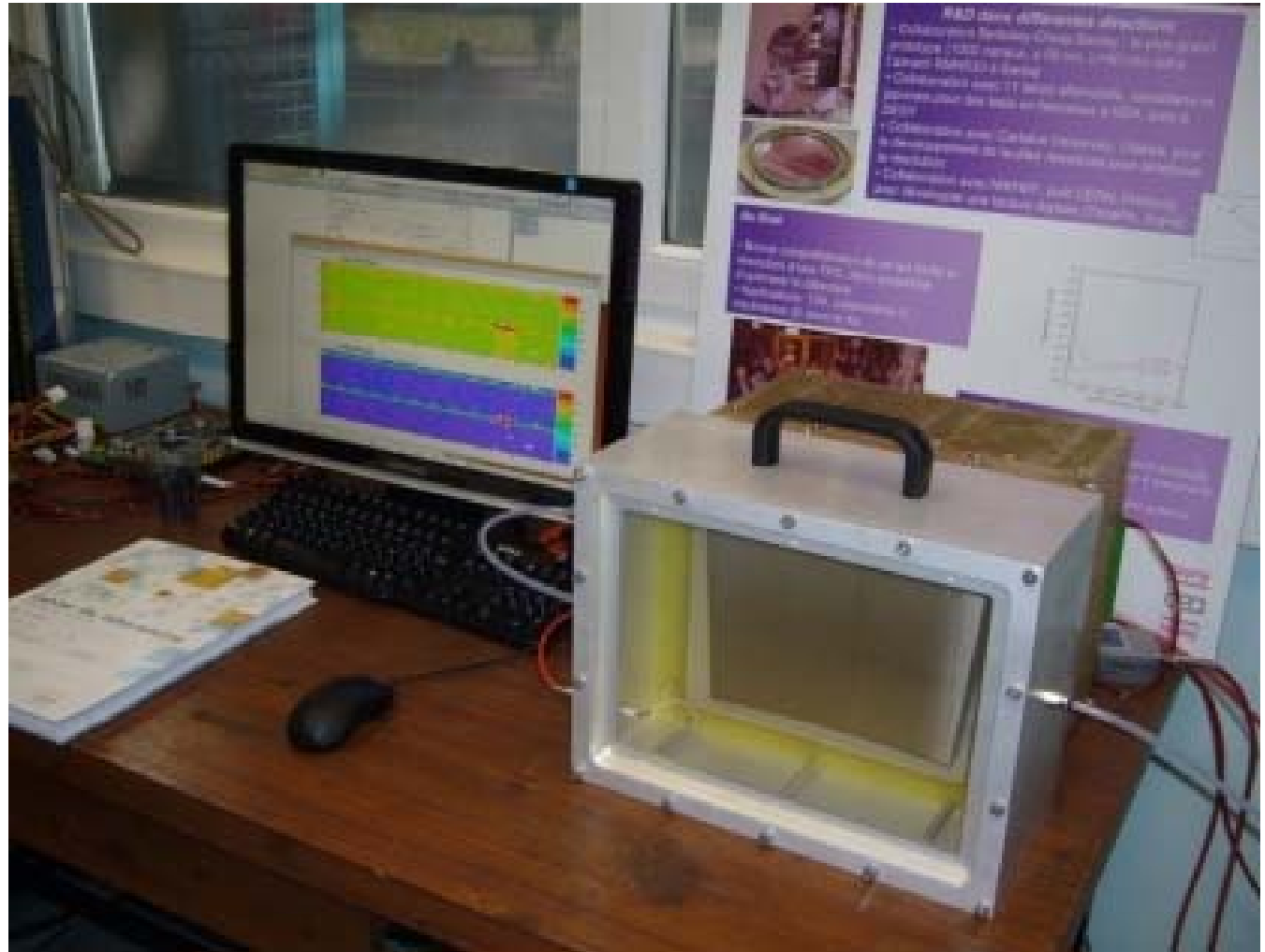
- electronics was very stable during the data taking periods





# AFTER-based electronics for LC-TPC

1728 channels (-2 for HV)

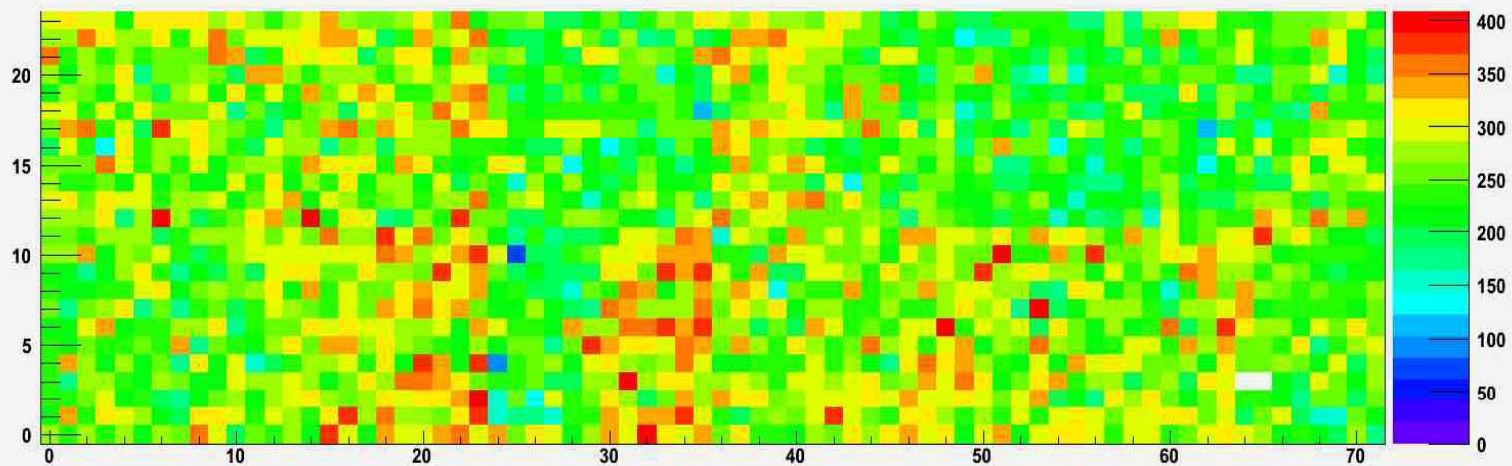




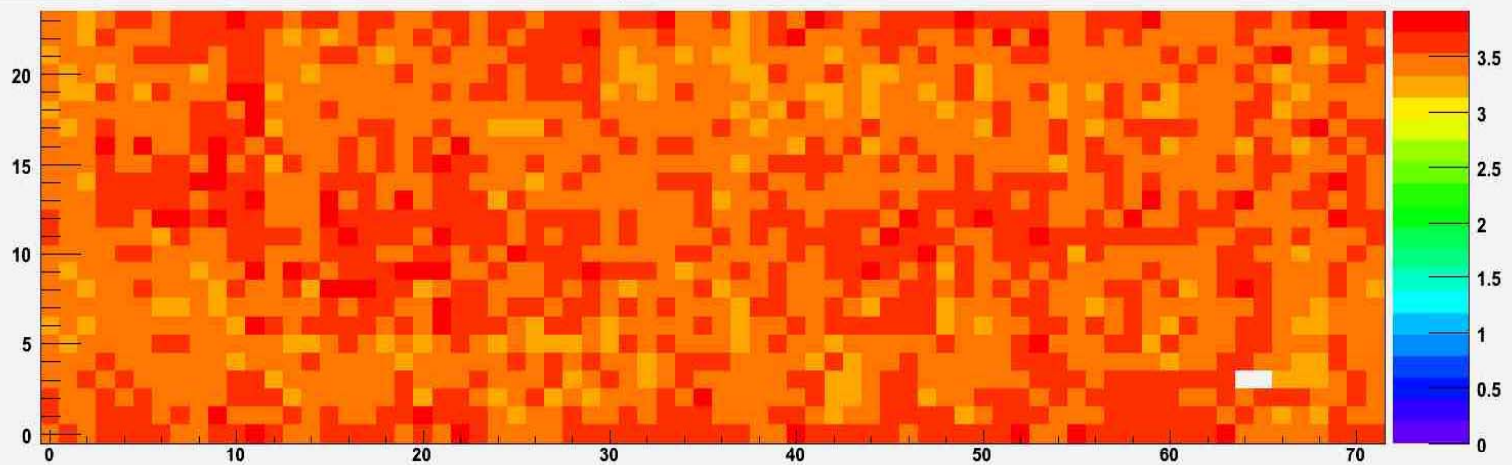


## Pedestal monitoring for LC-TPC (mean and rms)

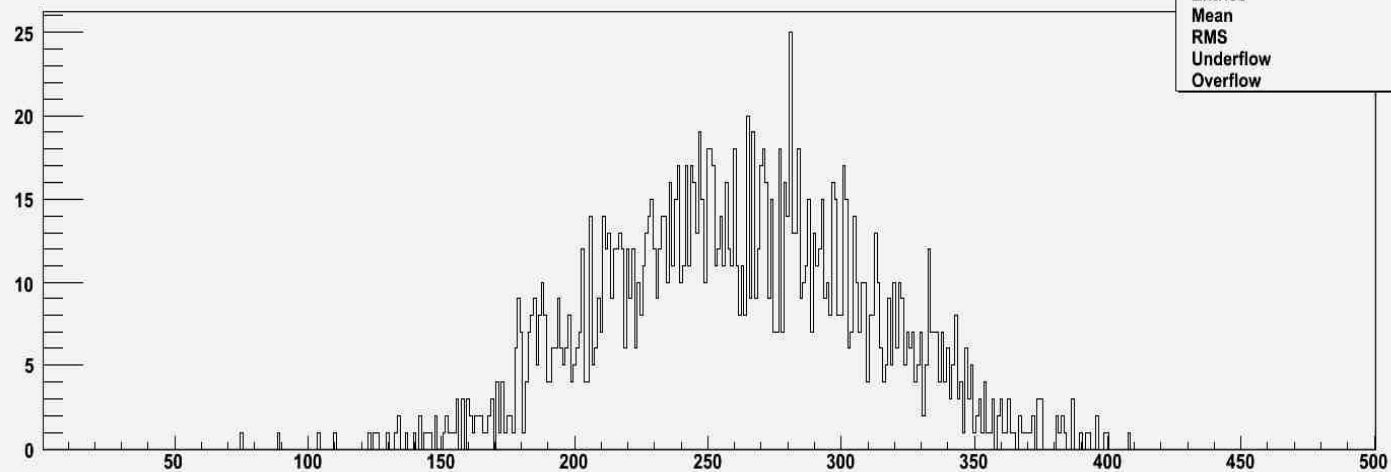
PhysPedMeanDisplay



PhysPedRMSDisplay

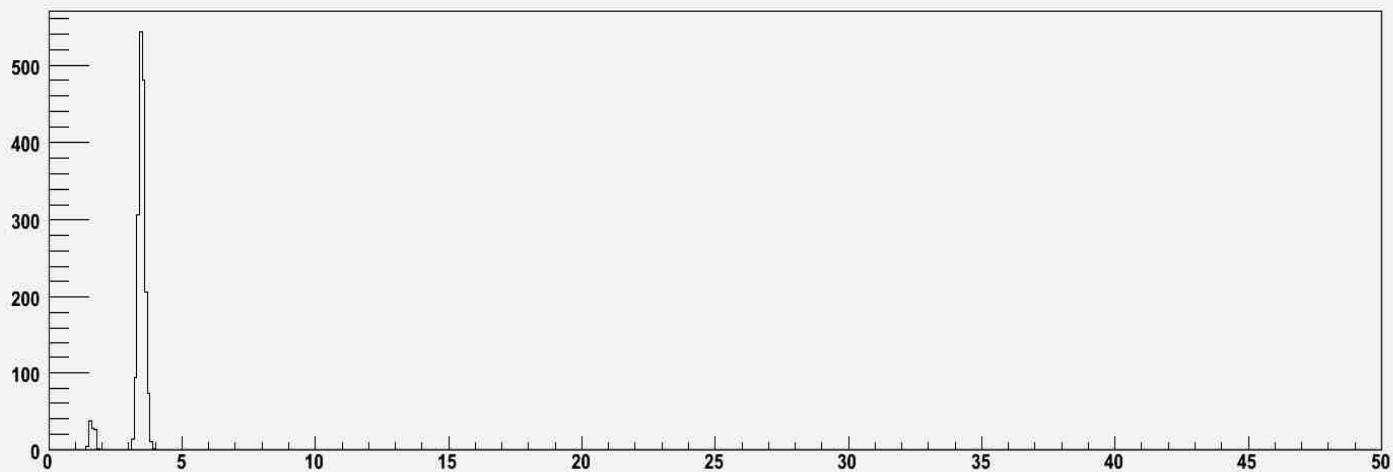


PedMeanGlobal



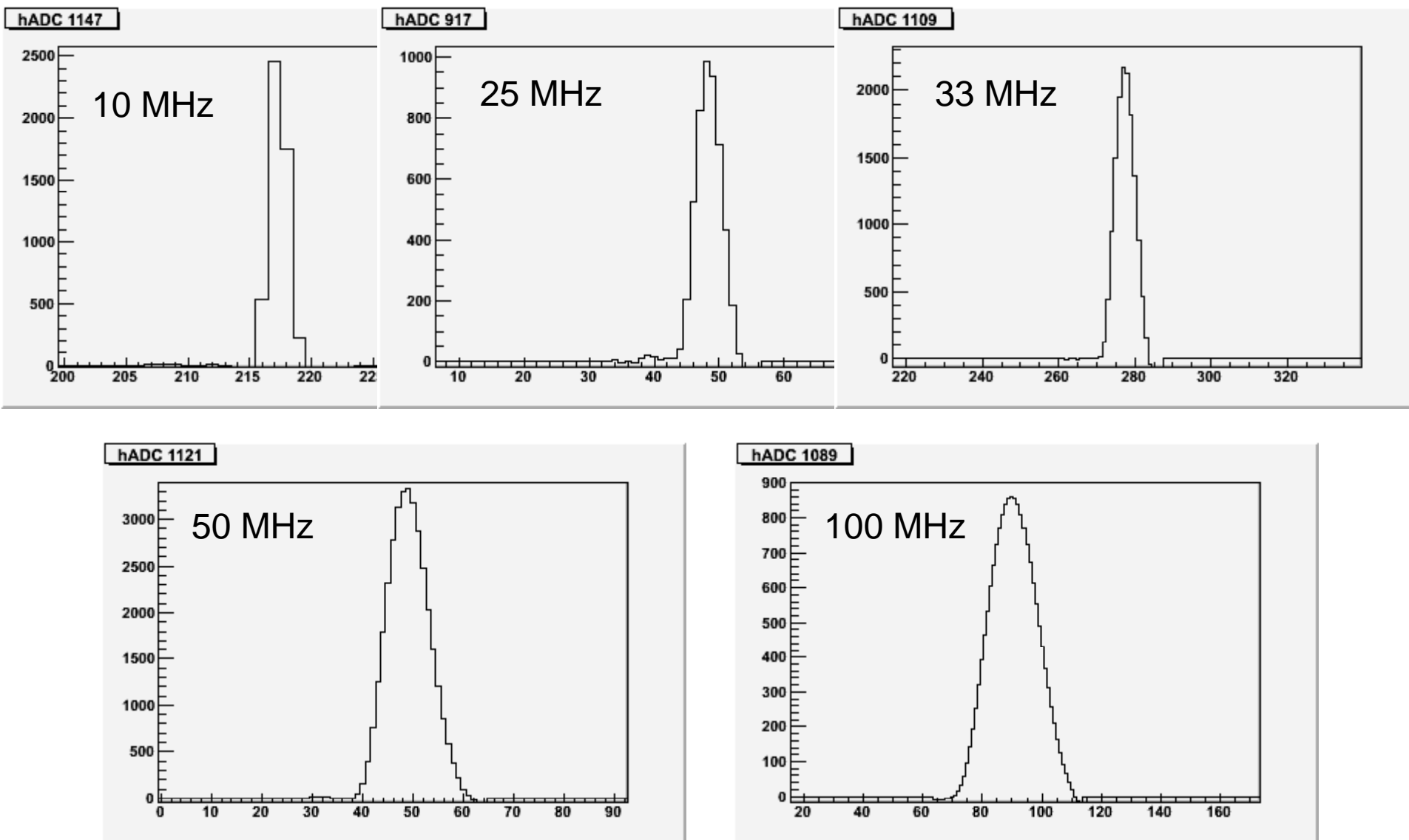
PedMeanGlobal	
Entries	1824
Mean	260.7
RMS	49.85
Underflow	0
Overflow	0

PedRMSGlobal





# Sample signals at various sampling frequencies, 100 ns peaking time





Very friendly user interface.

## Parameters definition for DAQ DCC software control

nClocksBeforeStop	[0x0, 0xFFFF]	FEM MODULE	Delay before the stop signal arrives
delayWriteReadClock	[0x0, 0xFFFF]	FEM MODULE	Delay between the read and write signal of the sca.
powerDown	False <b>True</b>	FEC	Authorize or not the FEC to receive the 4V power supply.
doPACIgx2	False <b>True</b>	ASIC	Double the current of the preamplifier of the AFTER Asic.
gain	120, <b>240</b> , 360, 600	ASIC	To Choose the gain of each channel
peakingTime	100, <b>200</b> , 400, 500, 600, 700, 900, 1000, 1100, 200, 1400, 500, 1600, 700, 1900, 2000	ASIC	To Choose the peacking time of each channel