The DEPFET DUT: status of test beam efforts

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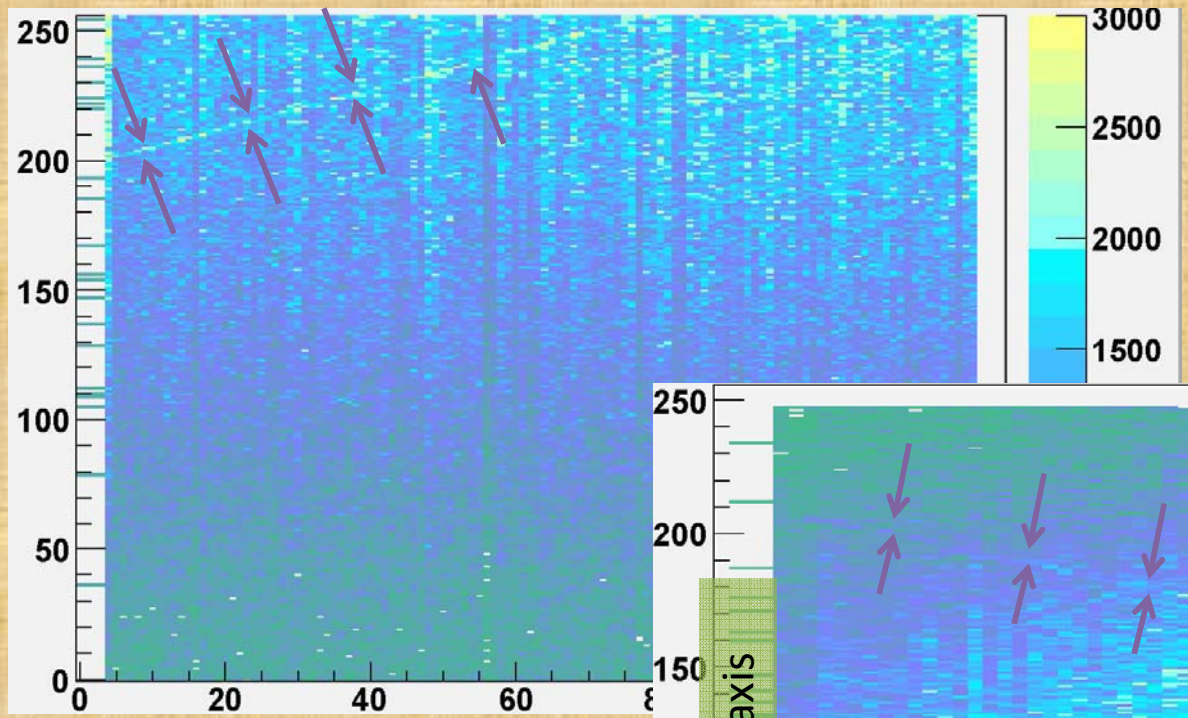
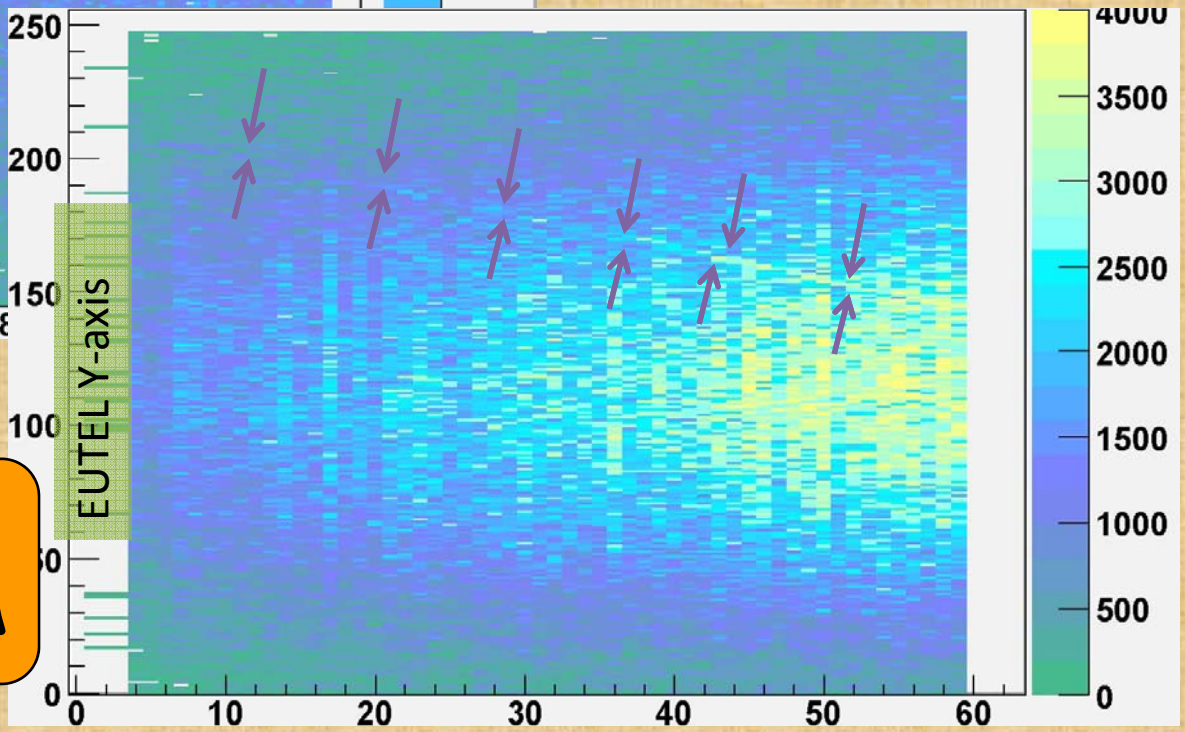
Content

- Early results & alignment/mechanics
- DEPFET – EUDET – DAQ integration
- DEPFET LCIO software efforts

Early results DEPFET-DUT **2007**

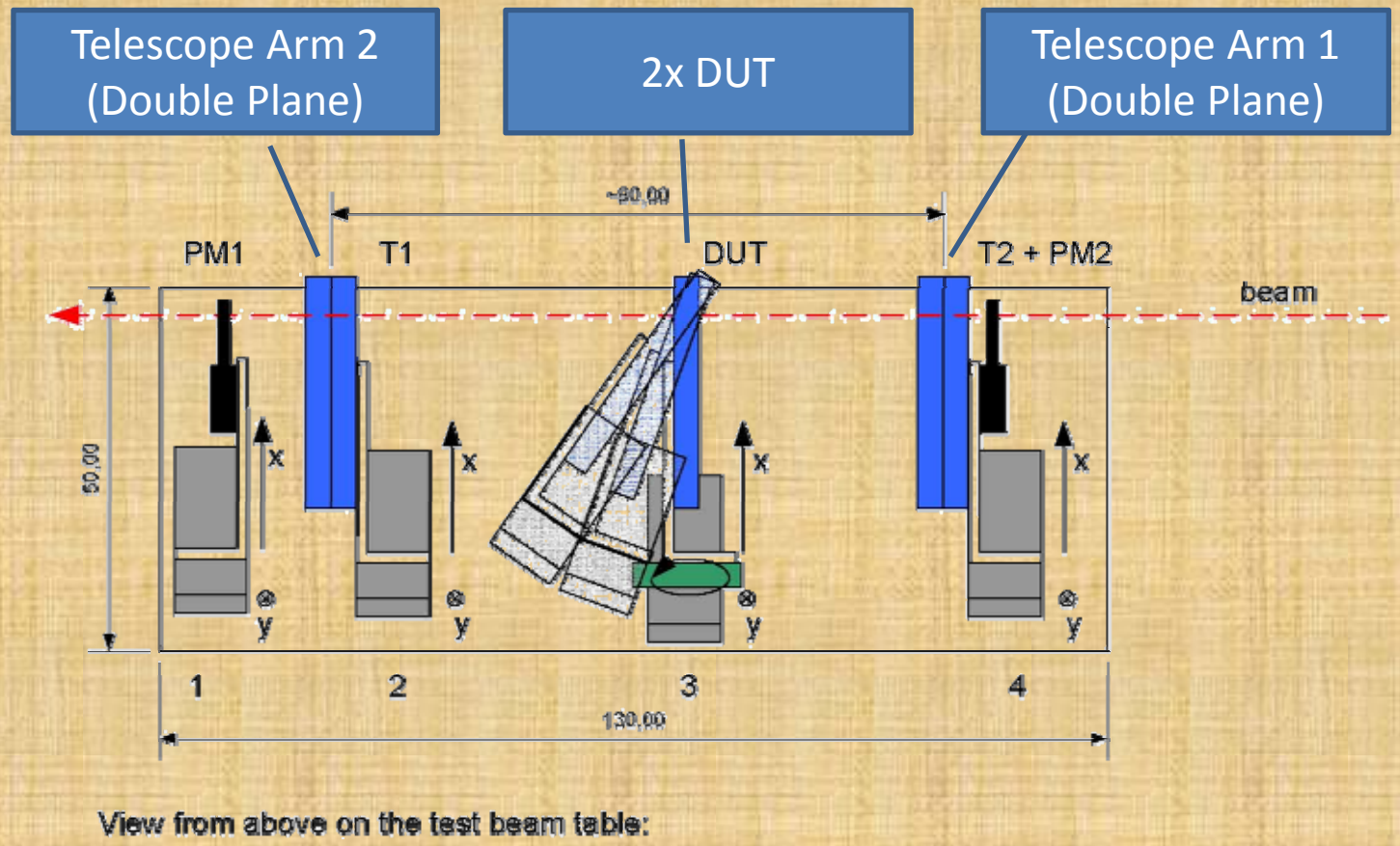


EUDET-DEPFET Hit position correlation found ➔ Data okay



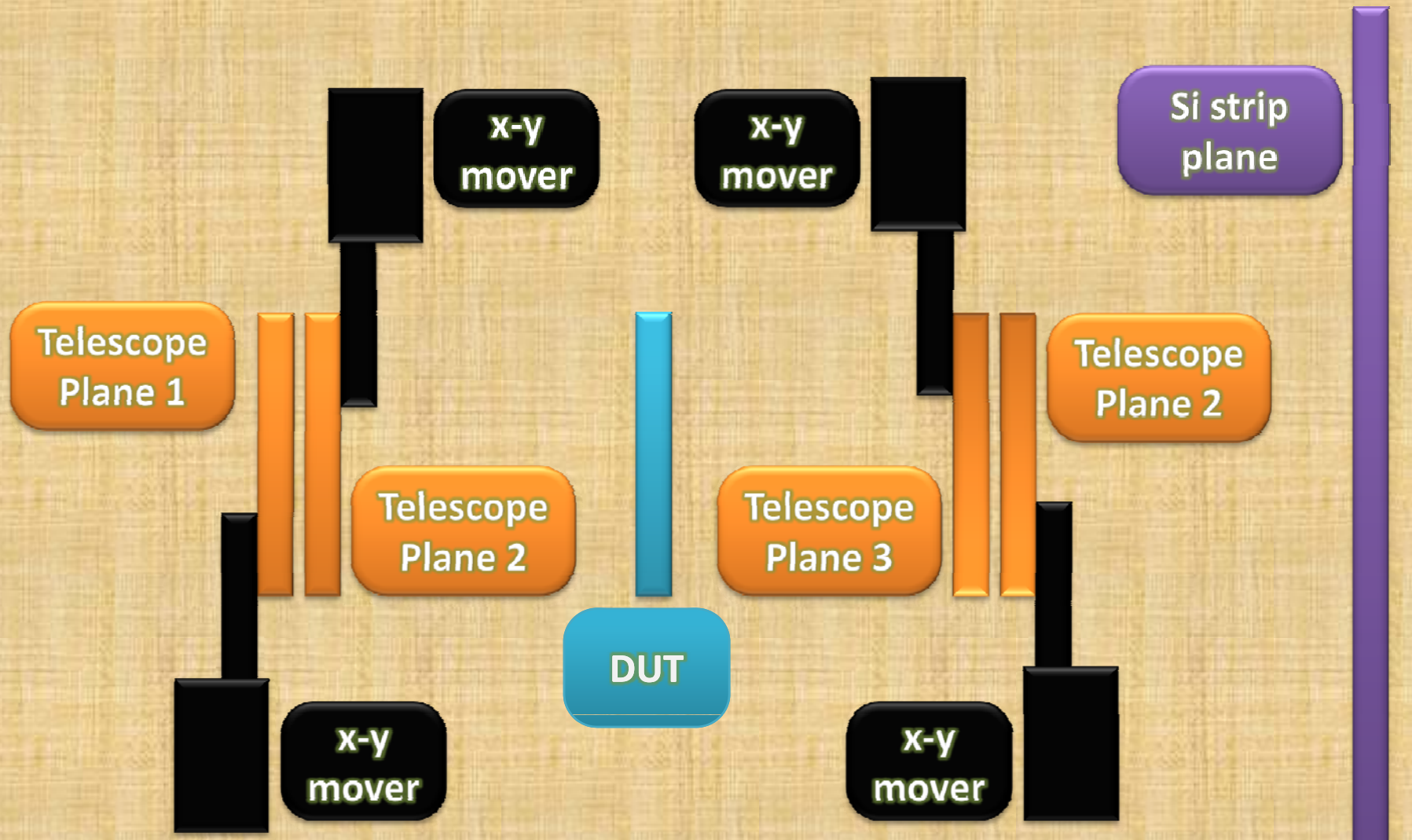
Overlap very small ➔ no common DQM

DEPFET telescope mechanics **2007**



Alignment with small sensors and large lever arm is very tricky

DEPFET telescope mechanics **2008**



Each plane (incl. DUT) movable in x-y
➔ Maximize overlap

Use big SI-strip detector for coarse alignment in beam

Common DAQ efforts

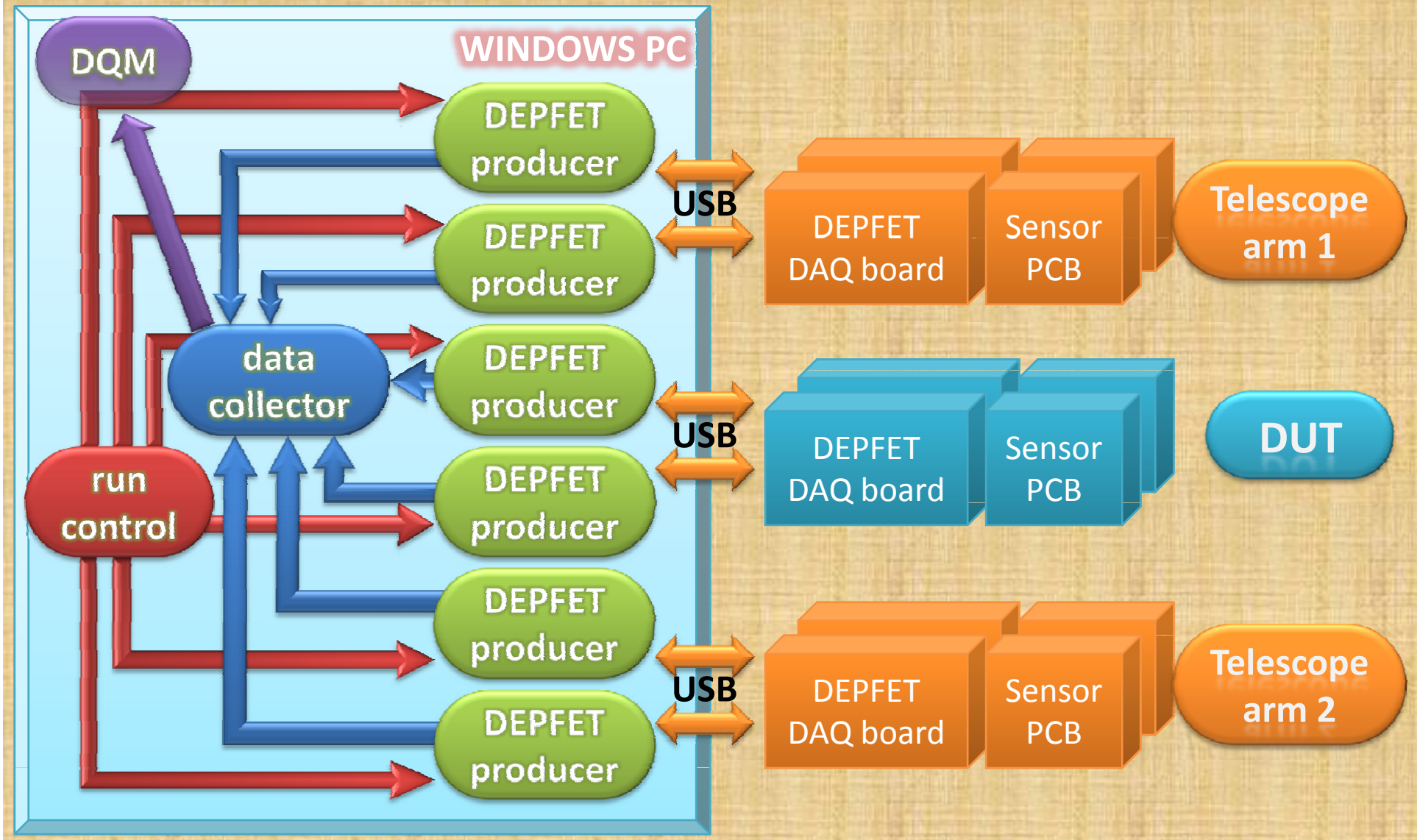
Sergejs work

Last test beam was successful
→ trigger level synchronization
BUT:
Minimal overlap between DEPFET and MAPS sensor
→ no common DAQ
→ no common DQM
→ no alignment check

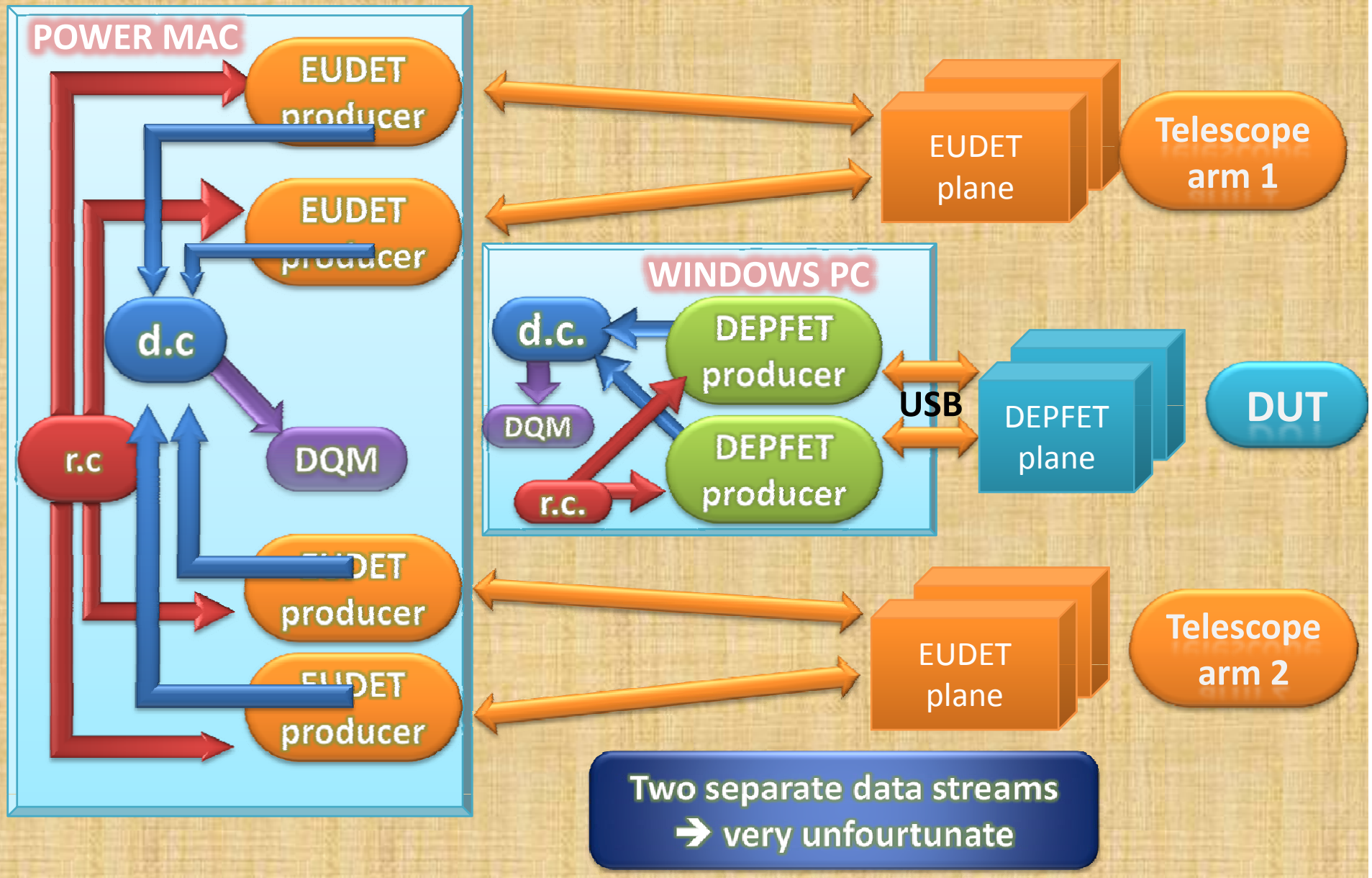
Optimal use of EUDET telescope for DUT:
Combined data stream

In 2007 almost done with windows 2 Linux TCP/IP
→ running out of beam time

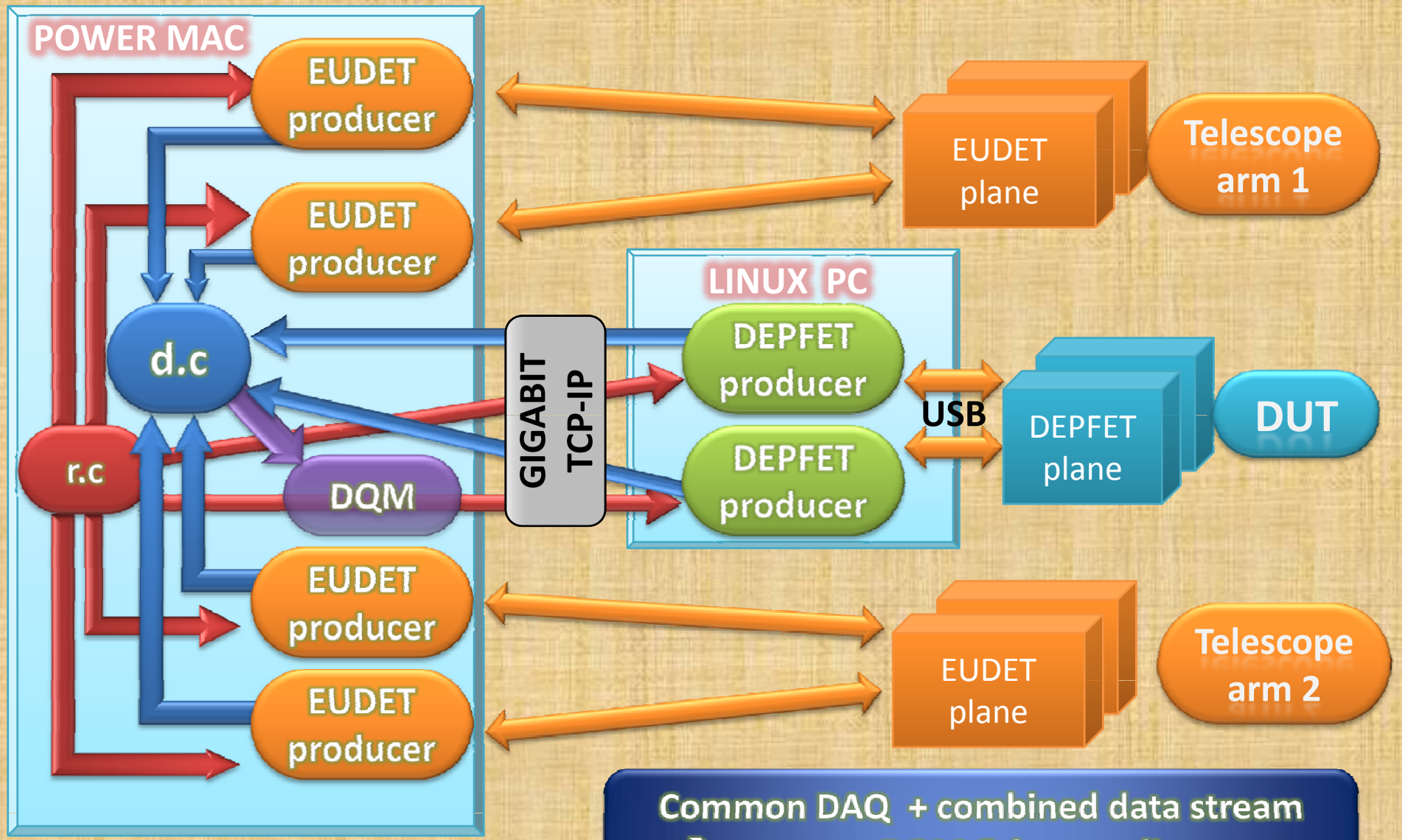
DEPFET telescope DAQ **2007**



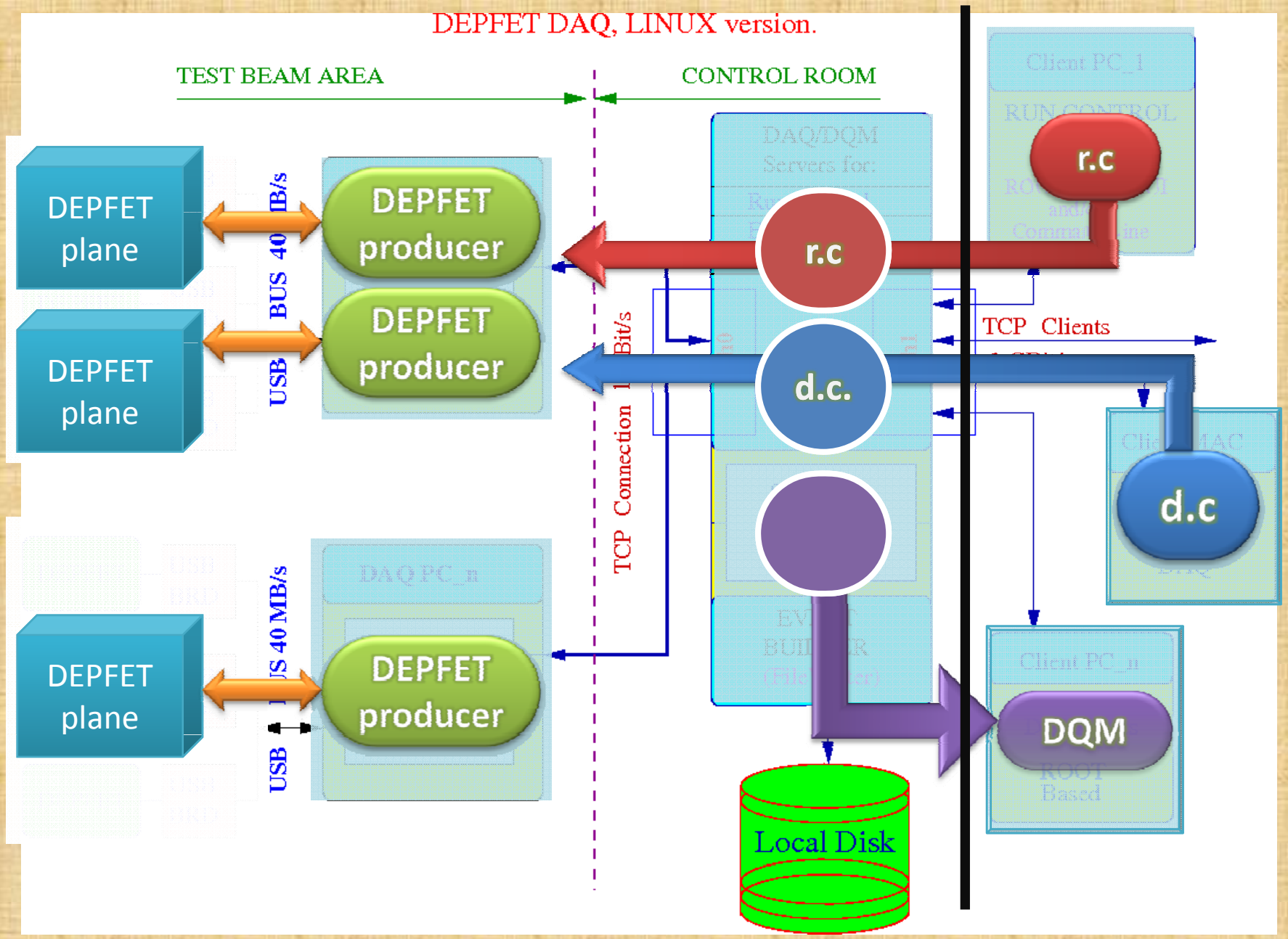
EUDET-DEPFET-DAQ **2007**



EUDET-DEPFET-DAQ **2008**



Common DAQ + combined data stream
→ common DQM & better alignment


DEPFET DAQ, LINUX version.
TEST BEAM AREA
CONTROL ROOM
DEPFET plane
DEPFET plane
DEPFET plane
USB
BUS 40 MB/s
USB
DEPFET producer
DEPFET producer
DEPFET producer
TCP Connection 1 Bit/s
r.c
r.c
d.c.
TCP Clients
d.c
DQM
Local Disk

Common DAQ efforts

Linux USB/DEPFET driver
→ tested up to 37 MB/s

DEPFET I/O library ported from Windows/Borland C++ to LINUX/GBU C++

New software for distributed DAQ system:

- → Multiuser Event Server
- → Network Run Control Software
- → DQM histogram server (online pedestals…)

GIGABIT TCP/IP might be to slow
→ online zero-suppression with beam area DAQ PC planned

Still some work ahead
e.g. multimodule event builder

Extended testing needed

DEPFET – LICO software activities

~~Adapt BONN DEPFET analysis package for use of EUDET telescope data~~

~~→ maintenance uncertain~~
~~→ man power even more uncertain~~
~~→ current data not promising enough~~

Integrate DEPFET into the LCIO analysis frame work

→ maintenance excellent
→ (wo)man power available
→ hopefully ready for next beam period

→Standardize format
→ standardized tools for data analysis
→large (sometimes to large) software framework

Julias work

DEPFET – LICO software activities II

DONE:

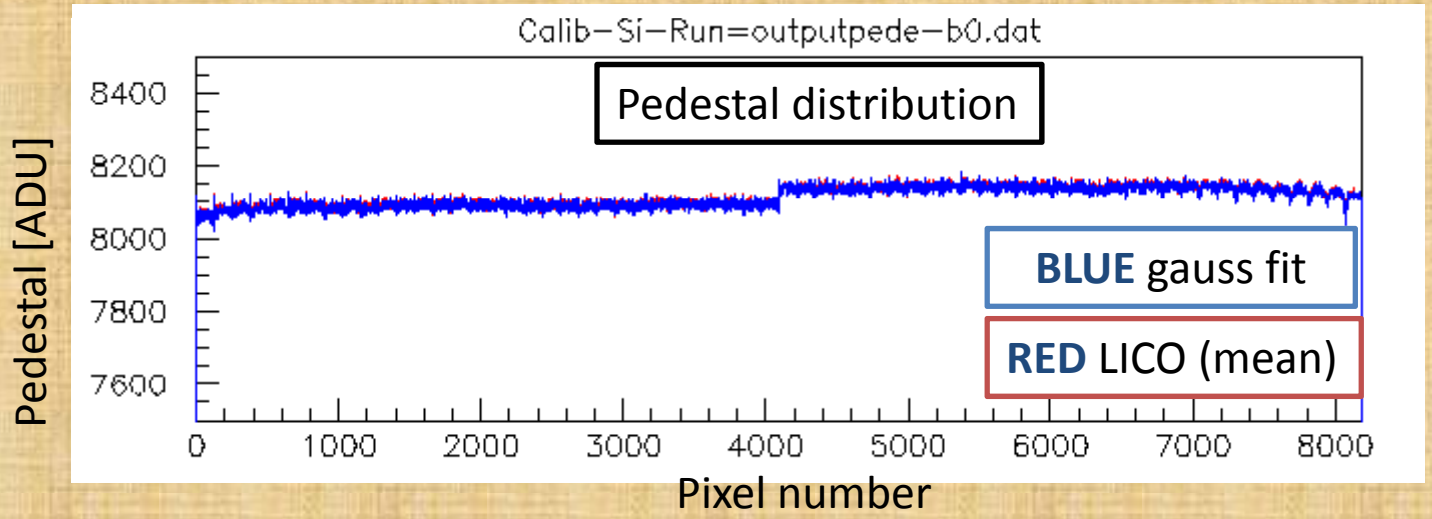
→ILC software installed
(on Local PC with AFS using ilcinstall script)

→DEPFETReader Process written:
Converts native DEPFET data → LICO fromat (TRACKERRAWDATA)

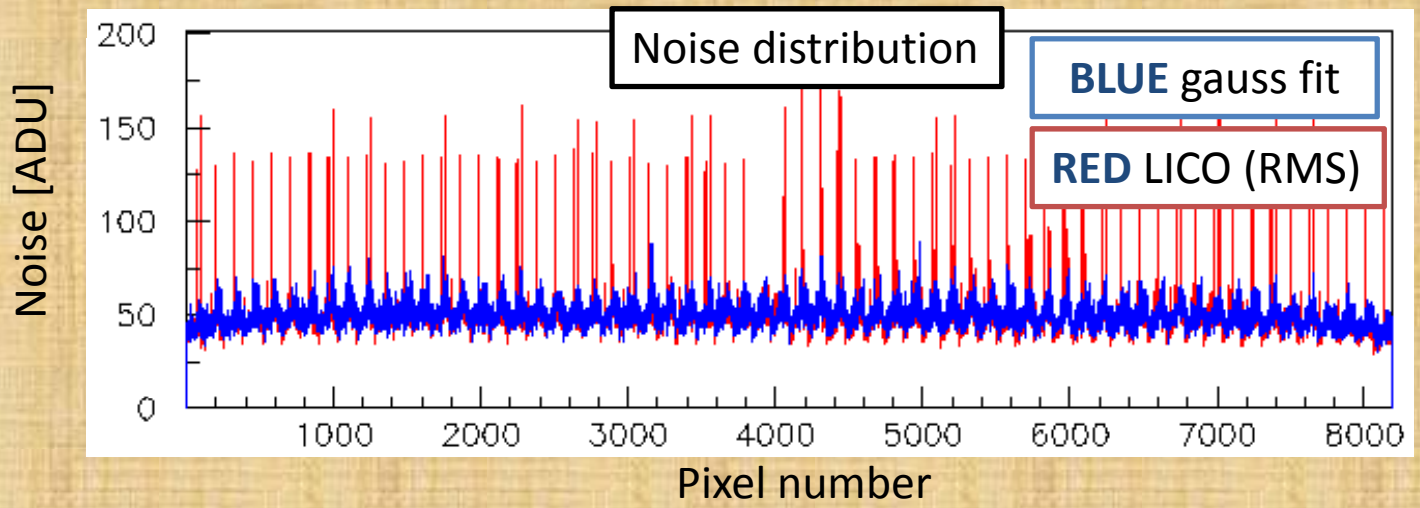
→ Pedestals and Noise → EUTelPedestalNoiseProcessor

→ Clustering → EUTelClusteringProcessor

DEPFET – LICO software activities III



No hit rejection for pedestal & noise calculation



DEPFET – LICO software activities IV

TO DO:

- PedestalNoiseProcessor with hit rejection
- CommonModeProcessor with row wise CM
- EUTelClusteringProcessor requires ZS & NZS
- No GEAR geometry file for DEPFET (hand made used)
- Merging DEPFET LCIO with EUDET telescope

⋮

- DEPFET specific position reconstruction

⋮

Summary

→Common DEPFET DUT and EUDET DAQ basically finished
→ TCPI-IP connection with very flexible and modular DAQ disgn
→ LICO software installed
→ DEPFET raw data converted to LICO
→ First LICO analysis results of DEPFET data