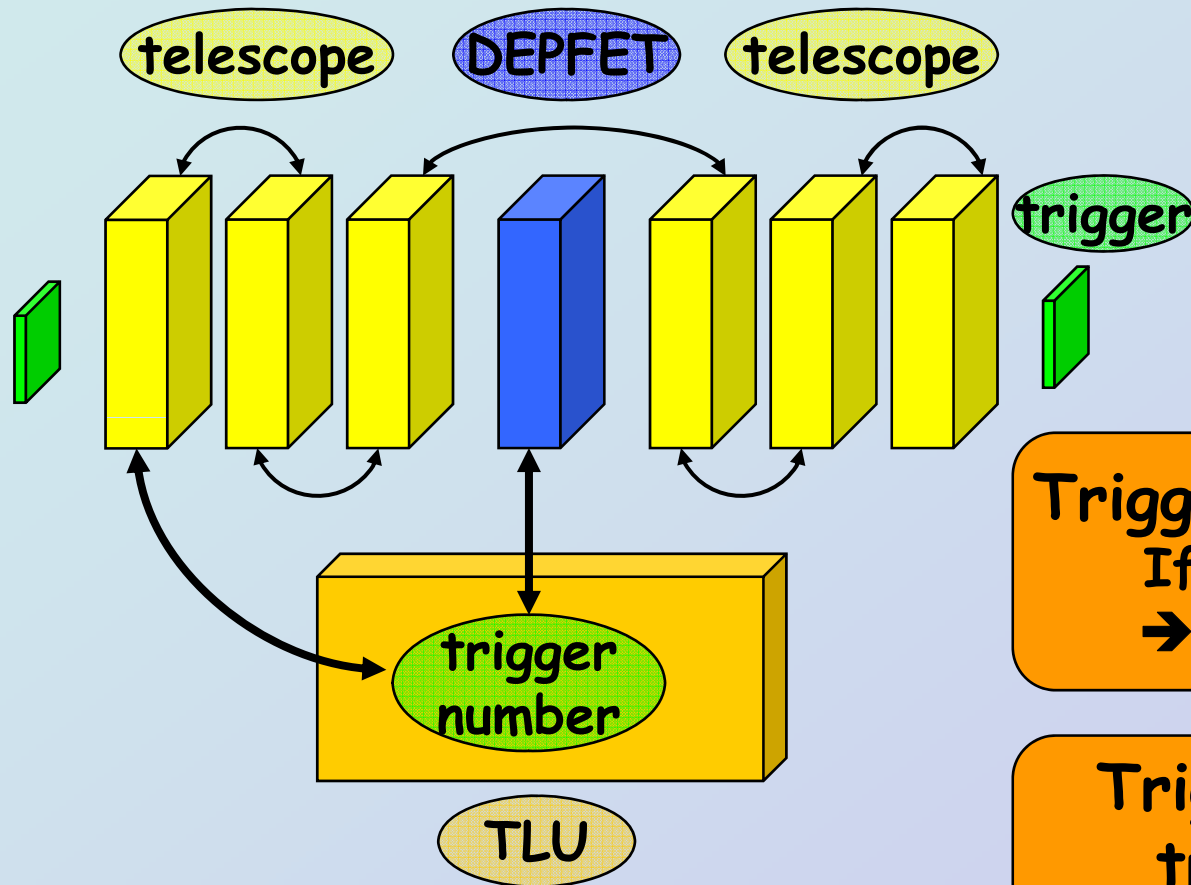


DEPFET as DUT Test Beam Report

Lars Reuen

EUDET Meeting, Paris, 2007

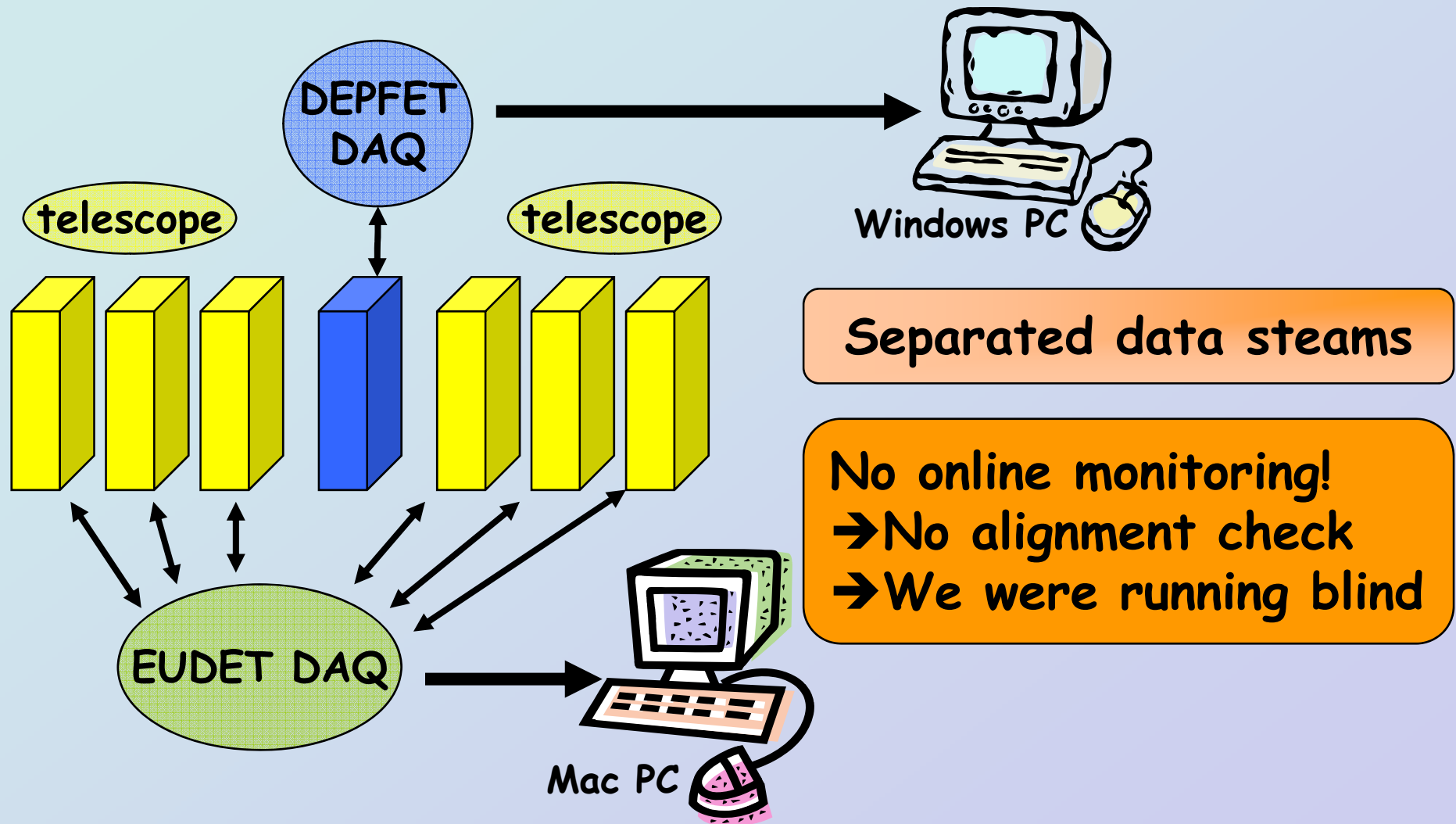
DUT → DAQ Integration I



Trigger-Busy Handshake:
If one device is busy
→ trigger are blocked

**Trigger numbers are
transmitted with
every event !!!**

DUT → DAQ Integration II



Data Taking

One week of (pure) DEPFET test beam

3 days as DUT in EUDET test beam

→ Finished $1\frac{1}{2}$ weeks ago

→ Results shown here are the definition of preliminary

- Minor modifications on DEPFET Software
- Start and Stop (in principle) controlled by EUDET DAQ (via trigger numbers)
- After one day: Second DEPFET DUT included
- Very smooth → No crash !!! (rate was low)
- More than 100k events

First glance at the data

First quick look at high intensity data

→ Looking for correlation between EUDET and DEPFET hits to check alignment!

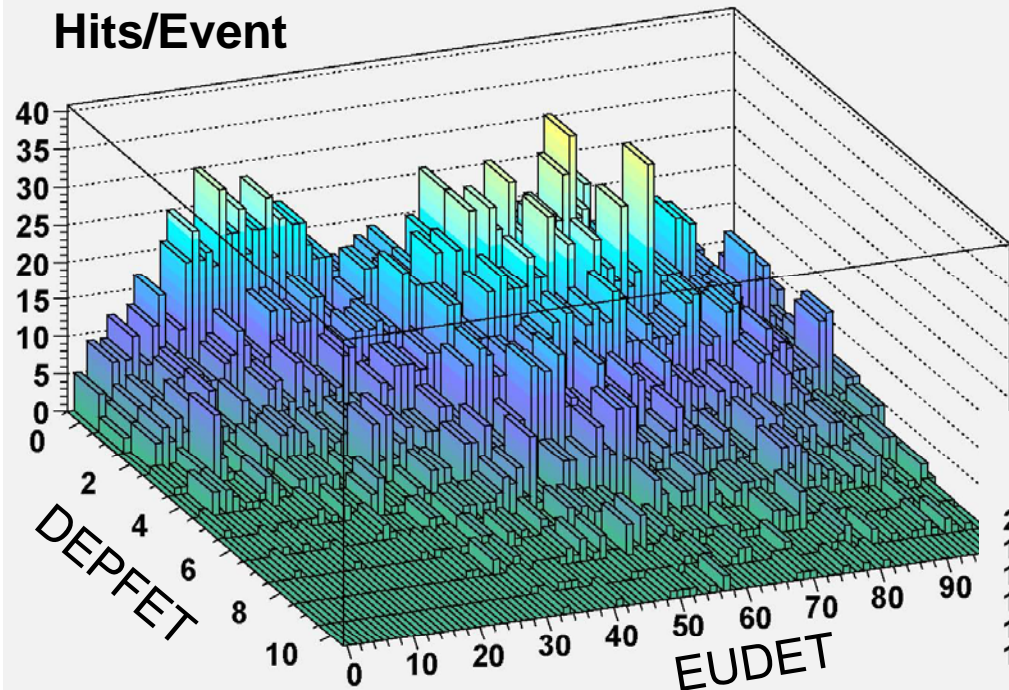
→ Simple seed/cluster finding

→ pixel positions written to text file

→ both text files (EUDET & DEPFET) combined to get correlation plots

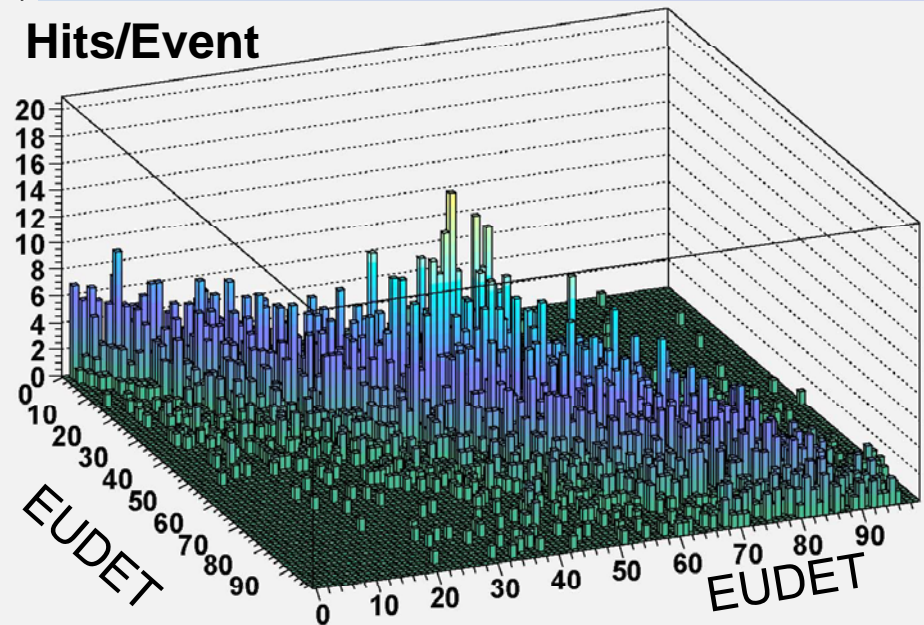
Thanks to Emlyn Corrin for EUDET data

High Intensity Data

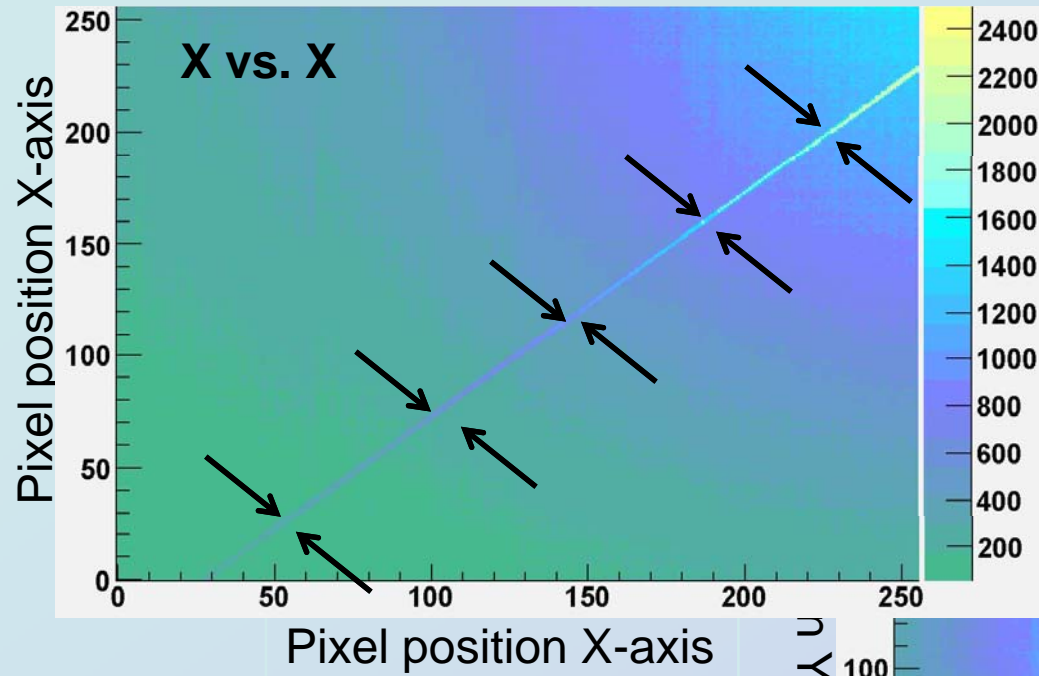


High Multiplicity
→ Hard to see
any correlation

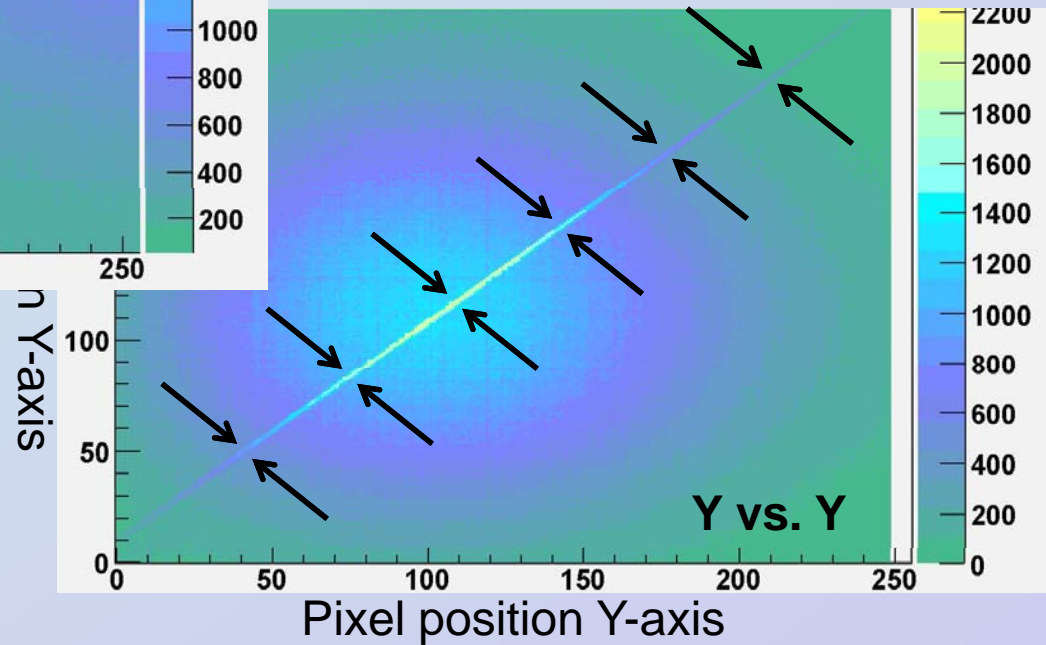
DEPFET: 1-4 Hits/Event
EUDET: 30-50 Hits/Event



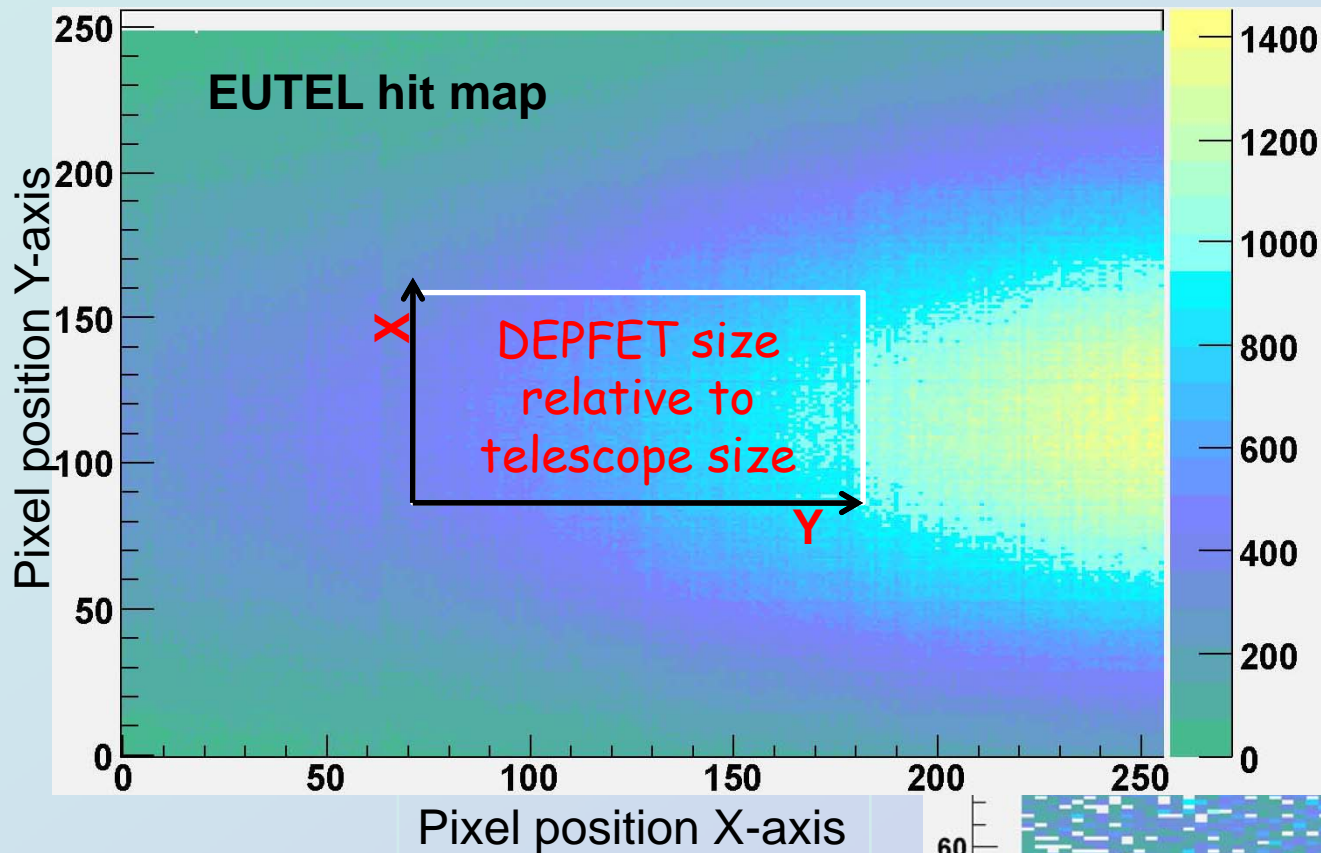
EUTEL to EUTEL Correlation



**As expected:
Correlation with
lots of background**

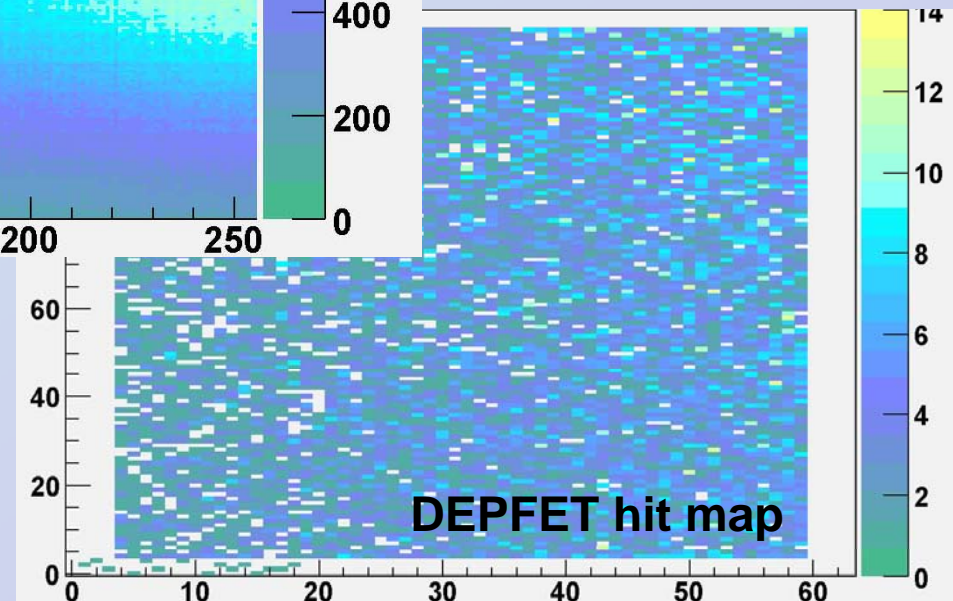


Beam Profile Challenge

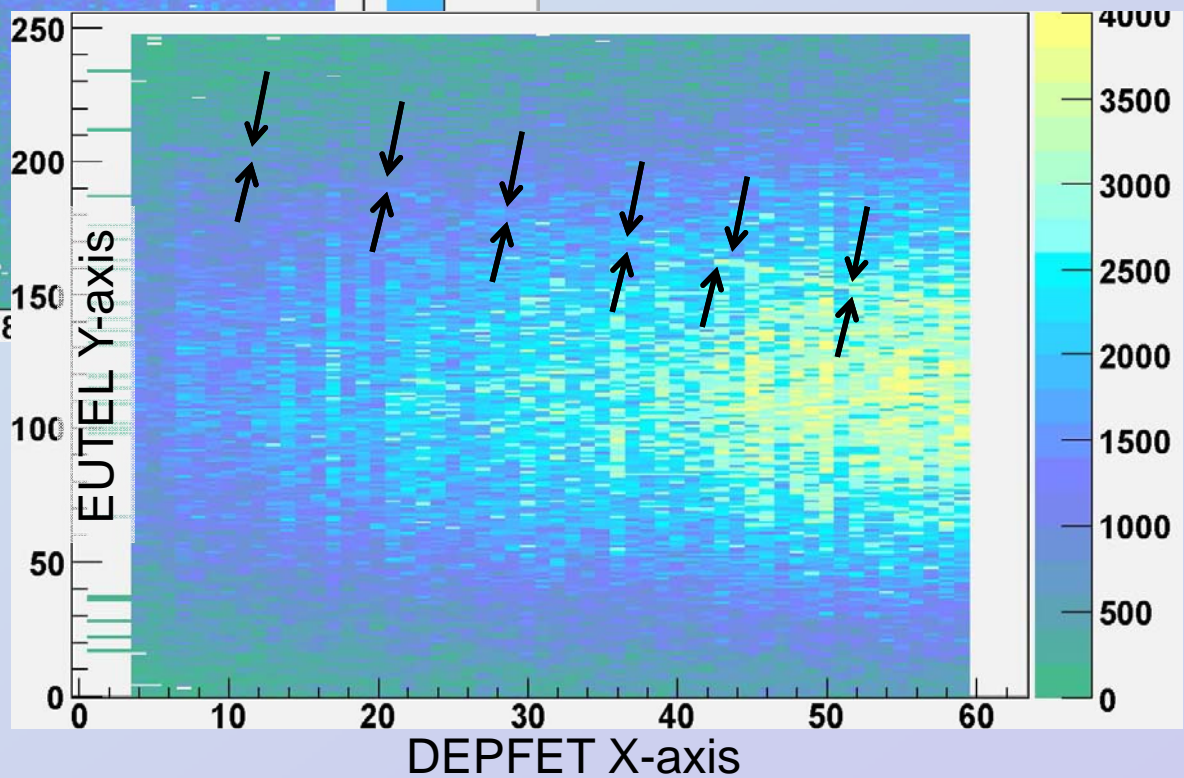
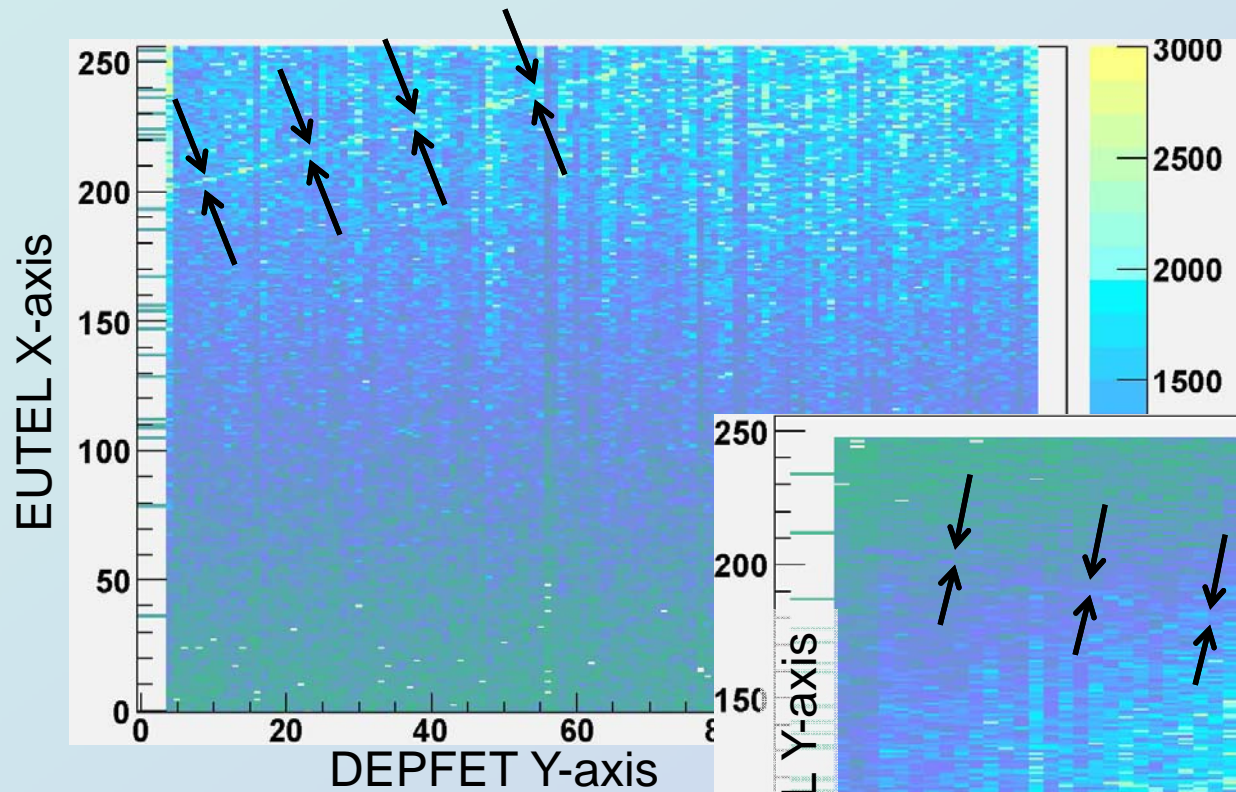


Trigger area not visible due to high multiplicity

Beam profile will make it harder to find a correlation

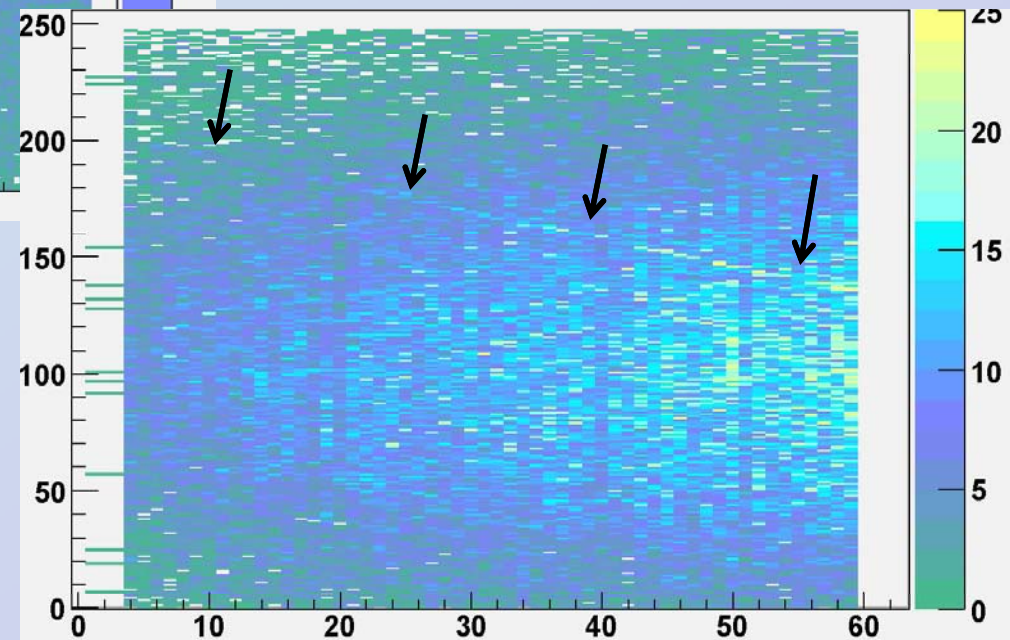
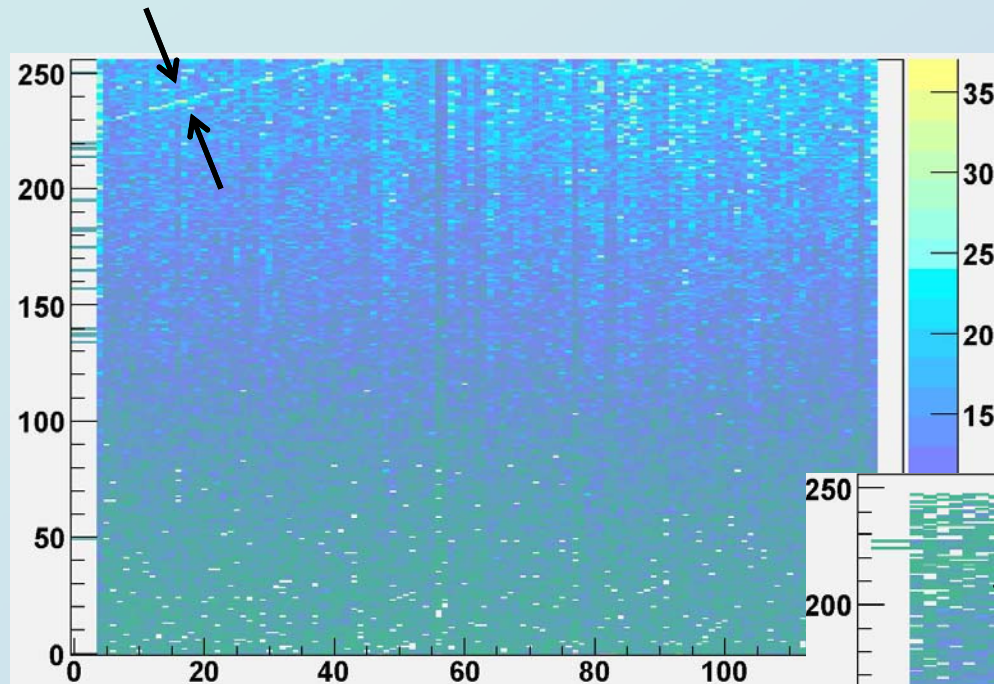


DEPFET to EUTEL Correlation



**Correlation found
→ Data okay
(for one plane)**

DEPFET to EUTEL Correlation



Correlation found
in 3 planes, but still
missing in the other
2 planes

Summary

- Correlation found for 3 planes
→ events synchronized
- High multiplicity will make data analysis a challenge
- Running blind
 - Alignment not good
 - DUT possibly misaligned with 2 planes

Next steps

- Take a look at low intensity runs
- Convert DEPFET data to LCIO
- Full scale analysis

- TCP/IP data transfer to EUDAQ
or
- Port DEPFET DAQ to Linux
 - combined data stream
 - Online Data Monitoring
 - better alignment