Itk DAQ Workshop – Strip
close-out session

J.J Teoh & Dominique on behalf of many others

31 May 2019 @ LBNL

Tasks

|			
Merging 130 branch	Merge branch into devel		JJ
Multichip (ABC) capability	Extend some scan routines to support multiple ABCs		
Multichip (HCC) capability	Extend scan routines to support multiple HCCs (depending on available hardwares; may involve debugging/modification of FELIX firmware)		
NetIO controller optimisation (together with Pixel)	Generalise and optimise NetIO controller.		JJ, Joseph, Bruce
enable channel threshold tuning	implement complete channel threshold tuning routine (also ready for multi-chip)		Stefania
Linking scan routines	Automate the complete calibration chain, linking scans together.		
Scan routines improvement (analysis)	Improve/add scan routines analysis parts (essentially what are done in ITSDAQ have to be "copied" across)		
Scan routines optimisation	Optimise scan routines to be faster/more general or modular.		
Scan routines optimisation	Preliminary performance/benchmarking strategy/code?		
Netio (common task)	Explore other Netio communication patterns and modes (currently using low-latency point-to-point sockets)		
Comparison with ITSDAQ	Compare scan results between ITSDAQ and FELIX_YARR		
Fei4Analysis.cpp-->ABC130Analysis.cpp	Implement latest optimisation (if any) in Fei4Analysis.cpp to ABC130Analysis.cpp		
Initial Star chip implementation	Implement the basic commands and functions to interact with star chips	star_initial	Karol Krizka

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Screw these!

We want to focus on HCC/ABC_Star!
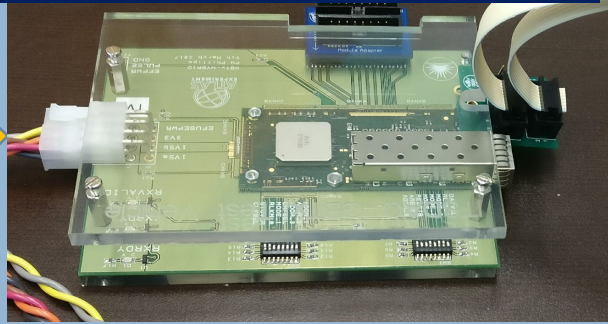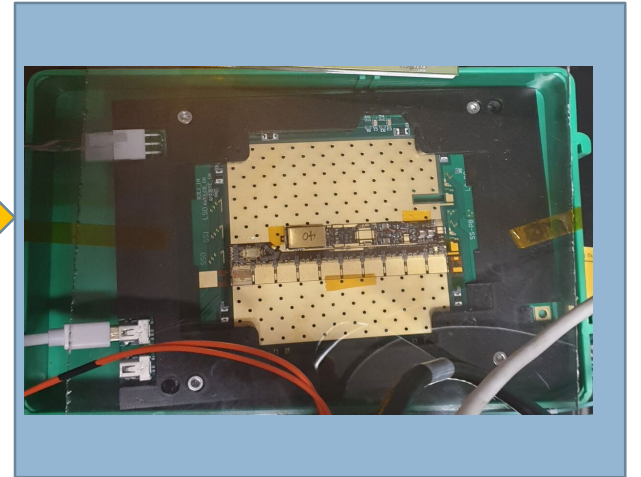### Plus merging Strip130 branch into devel.
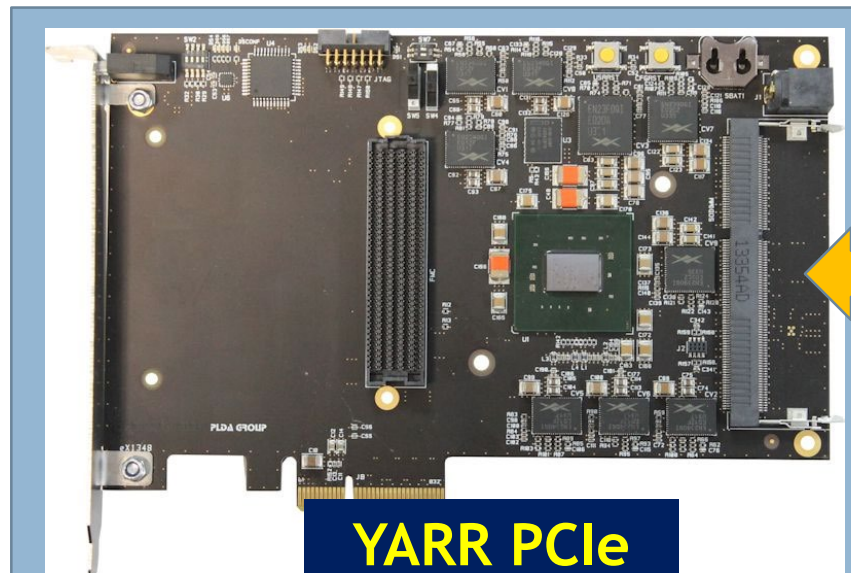
Setup

VC-709
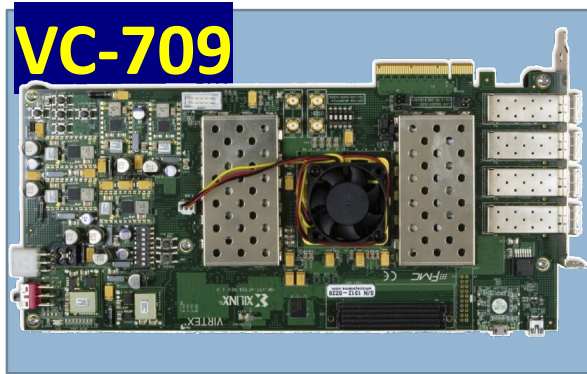
FELIX host PC
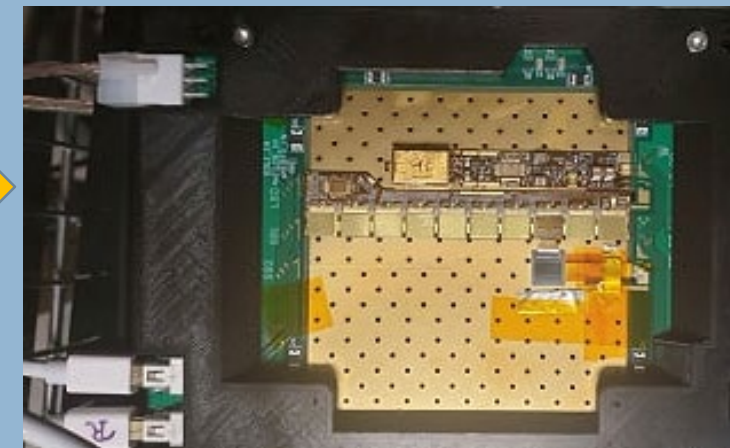
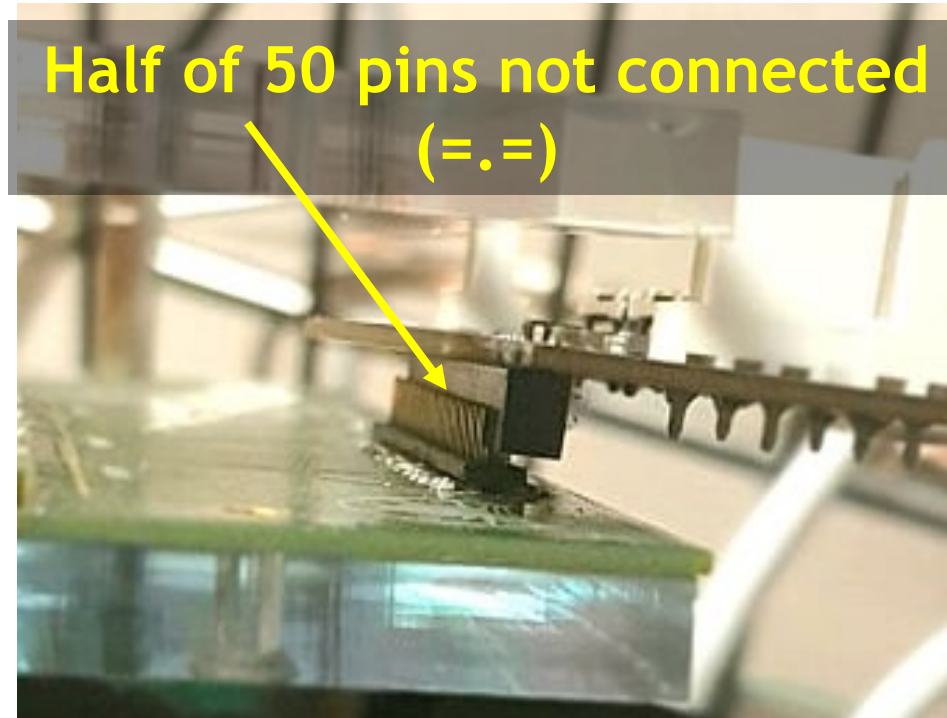Optical links

GBTx Vehicle Board

GBTx adapter

Strip starchip hybrid

YARR PCIe

Lots of debugging and some "inevitable" mistakes...

Cmd to HCC

160 MHz
(6.25ns)

Half of 50 pins not connected
(=.=)
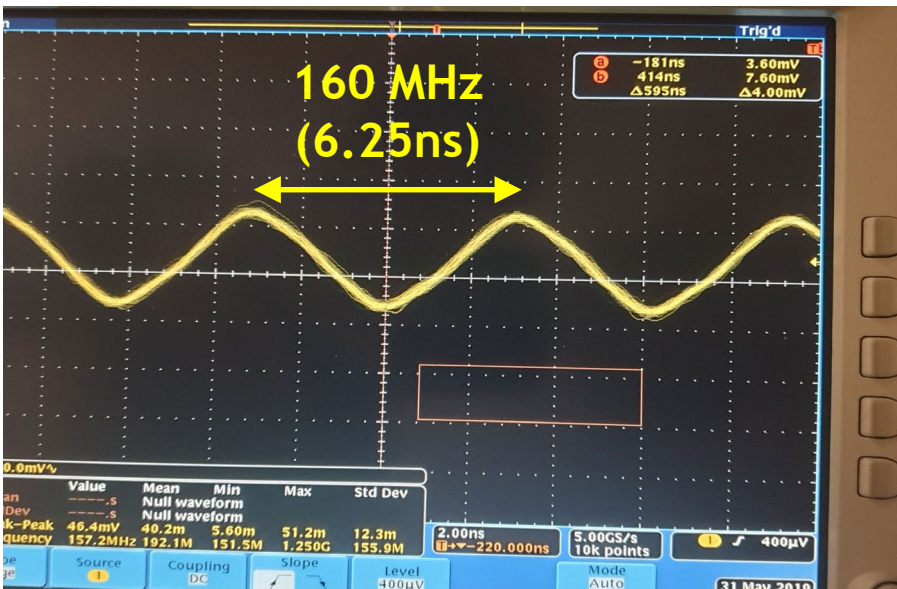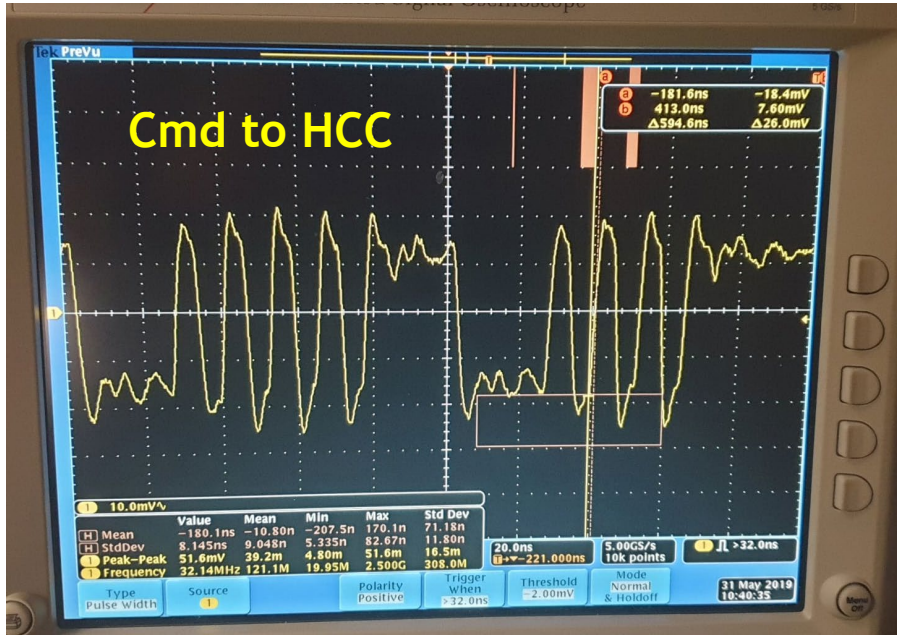
...but also lots of fun

Status (Strip star chip)

- Firmware for both FELIX and YARR PCIe works

- Software (star_initial) base on FELIX::ftools
  - Able to communicate and control HCC/ABC Star Send control cmd and received expected data packets back.
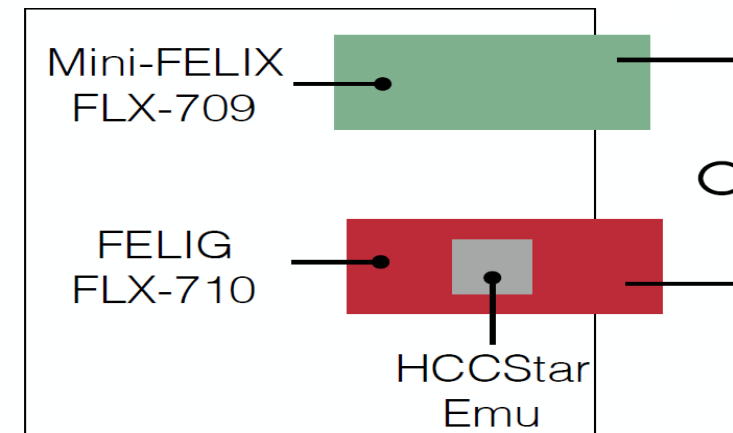   - Read back HCC registers.

HCCStar Emulator Update

HCCStar Emulator Data:

<Type><Tag><BCID><Flags><Chip ID><Hits><Trailer>

- Can send fixed hit data to FELIX
- Can receive and decode data in FELIX with **fdaq/fcheck**

Mini-FELIX
FLX-709

FELIG
FLX-710

HCCStar
Emu

Loading User Data:

- Working on updating the emulator so you can load user data to for emulator to send
  - Data loaded via FELIG registers using **flx-config**

LCB Triggers:

- Use FELIX firmware that sends LCB idles on 4b-elink
- Can send LCB commands to emulator using **fupload**
- Working on implementing LCB decoder firmware in the emulator to produce triggers

Emulator Software:

- Working on using NetIO to configure emulator instead of ftools (along with HCCStar-FELIX setup)

To-do

- Star chip:
  - FELIX firmware
    - Increase the number of supported HCCs
    - encoder for TTC
    - Built firmware for FLX-712
  - Software: adapt 130's NetIO codes for star chip.

*** Need HCC/ABC* for all developers

- Pull and test latest devel branch on Strip130.

- Finish the unfinished jobs

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Thanks

- Thanks Timon and Aleksandra for organising this workshop
- Thanks pixel group for all the help and for sharing the FELIX test server with us

- Wish list for next workshop:
  - >1 FELIX host machine
  - advance access to the host machine to install software.