Status of the OT readout electronics in Heidelberg

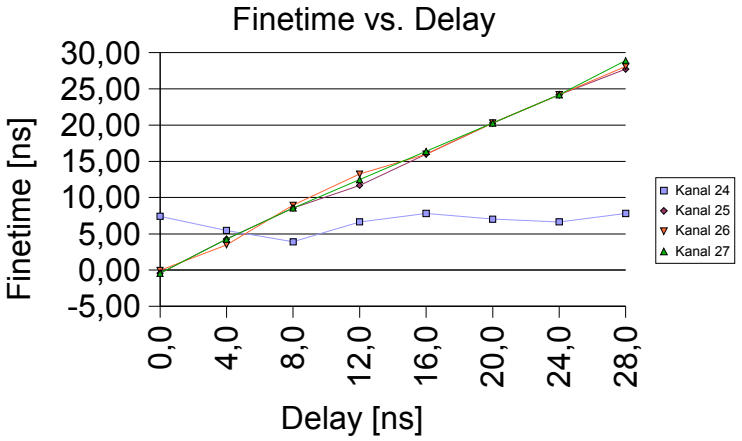
Dirk Wiedner, Physikalisches Institut der Universität Heidelberg

Progress since the electronics review

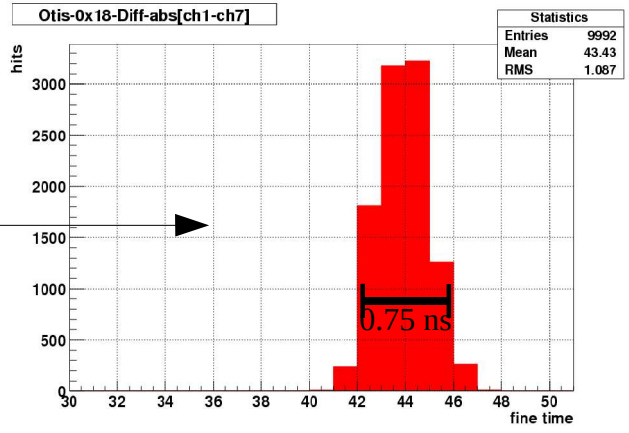
- ASDBLR used with Straw module + FE-box + OTIS 1.1
- OTIS 1.0 and OTIS 1.1 tested in readout chain
- GOL-AUX modifications for preproduction under way
- FE-Box tested with optical link, on module tests started
- O-RxCard: readout tests, BERT, samples for preproduction ready
- TELL1 emulation used for data acquisition

ASDBLR

- System test with with full FE-box (OTIS 1.0):
  - Coupling clock synch. Pulses into ASDBLR via delay

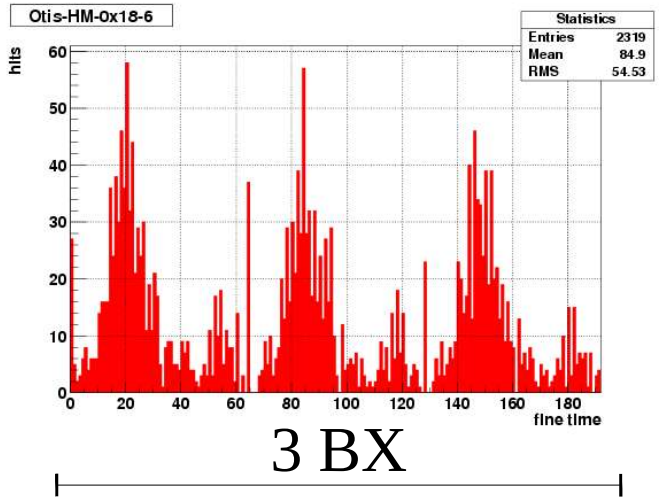


- System with ASDBLR on FE-box, OTIS 1.1 on test board
  - Delayed Pulser signal in ASDBLR rel. Pulser signal on OTIS 1.1



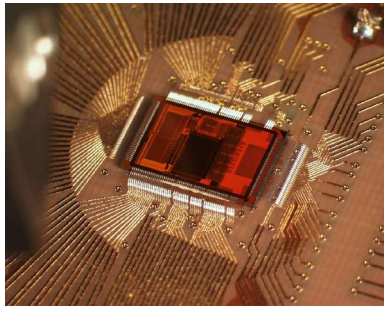
ASDBLR noise

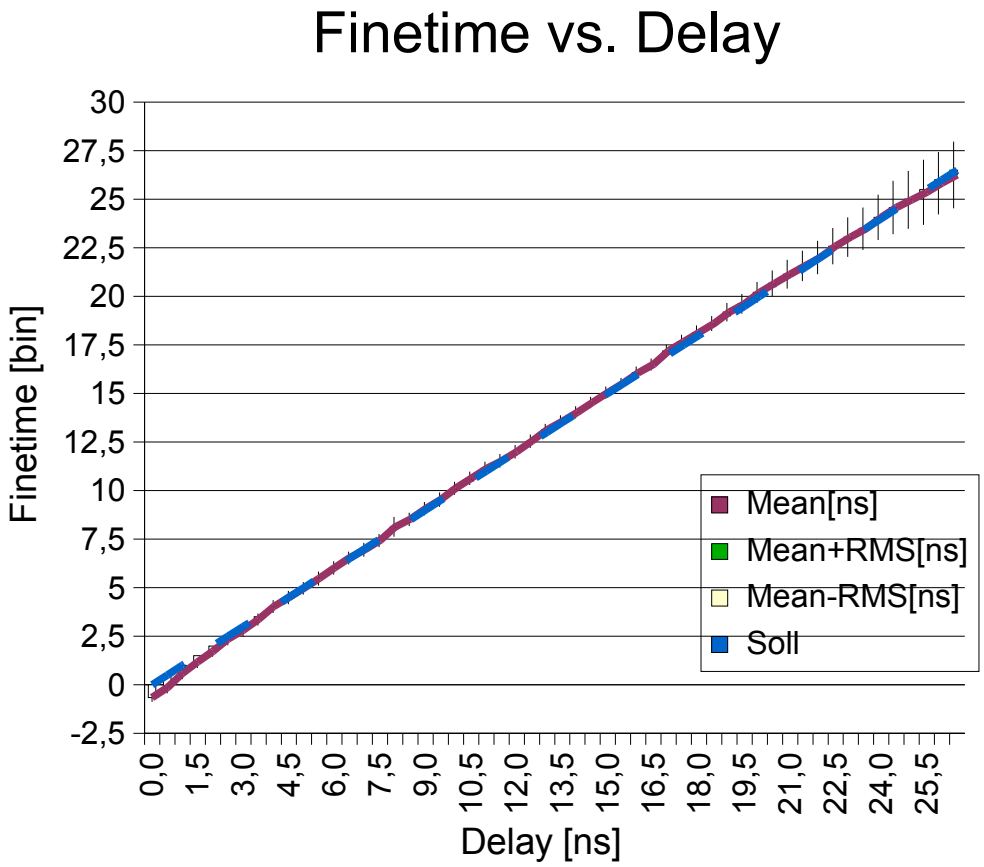
- Noise observed at 600 mV
  3 fC threshold, bad grounding
  - Data shows 12.5 ns „harmonics“
- ASDBLR on Module
- OTIS 1.1 for fine time measurement



OTIS

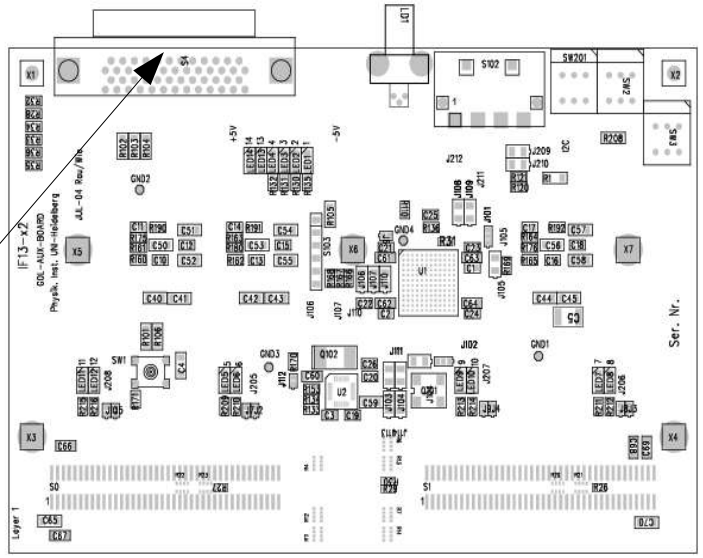
- OTIS 1.0 tested in full FE box
- OTIS 1.1 on test board
  - Integrated non linearity good: max. 0.7 ns off
  - ASDBLR thresholds within 8 mV of programmed level
  - First data with cosmic set up taken





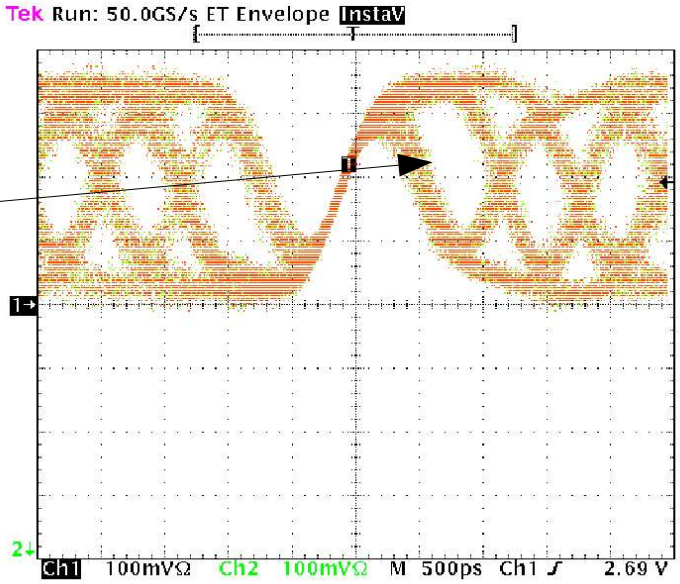
GOL-Aux Board

- First version works but needs modifications:
  - QPLL locking range too small – better results for smaller board capacity? - TTCrq now in HD
  - Monitor for QPLL/GOL + Clock sel.
  - Termination for OTIS Data
  - Passive distribution of TFC signals
  - Negative power regulator demands tantalum or ceramic+series R
  - Now SCSI2 50-pin for TFC
  - LVDS I2C



O-RxCard

- O-RxCard fully tested
  - BERT: error rate (one channel) $< 2.6*10^{-15}$
  - Eye diagrams good
  - Series termination examined 30 – 50 Ohm optimum
  - Test with new Emcore receiver
- First 3 Preproduction samples
  - Very good optical impression
  - Fast turnaround
    - 13 days for PCB
    - 11 days for mounting



TELL1 emulation

- All data taking for tests now with STRATX PCI card
- High data throughput 115s for 1 million events
- TTL or LVDS transmission from O-RxCard (4 links)
- Text menu control
- ROOT diagrams
- 2 systems in use

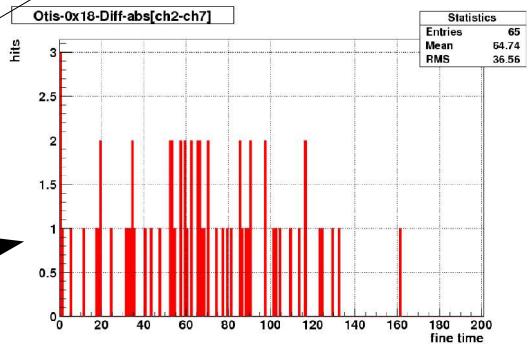
```
SHIPPO_STRATIX main menu
------------------------
1. Write Config Registers
2. Read  Config Registers

4. Send Command
5. Write Events to File
6. Print Events on Screen
7. Read LED Status
8. Set Dummy Readout Event Rate
9. Access SHIPPO_STRATIX registers by name
10. Access SHIPPO_STRATIX memory and IO ranges

11. TURN non_zero mode ON
12. TURN reset, start & stop before reading OFF
13. TURN reset fifo while print on screen ON

99. Exit

Enter option:
```



Summary and outlook

- System tests for ASDBLR + OTIS + GOL + O-RxCard + PC
- Biggest drawback QPLL operation / locking range
- System tests with full readout plus Module has started
- Szintillator Trigger plus time reference works
- Preproduction for O-RxCard in good shape
- To do:
  - GOL AUX board redesign
  - Testing of LVDS I2C
  - Testing of 4-12 optical link readout