

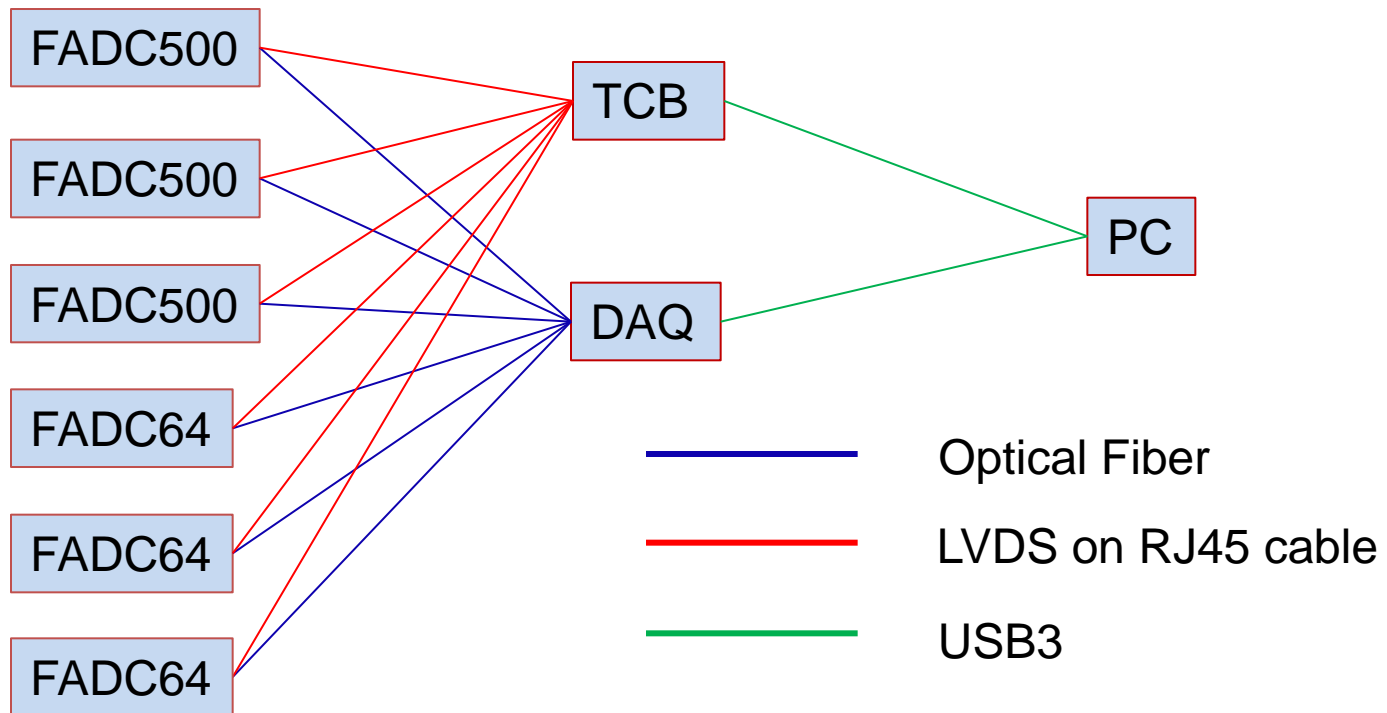
Electronics of SBL main detector

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21th, Nov, 2014

Configuration

- ✓ FADC500 24chs : 3 EA $\leftarrow \nu$
- ✓ FADC64 80chs : 3 EA $\leftarrow \gamma$ capture & μ veto
- ✓ TCB(Trigger & Clock Master Box) : 1 EA
- ✓ DAQ : 1 EA



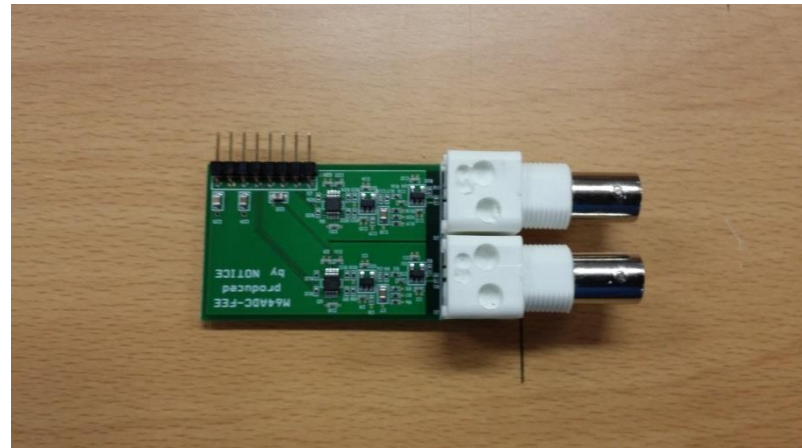
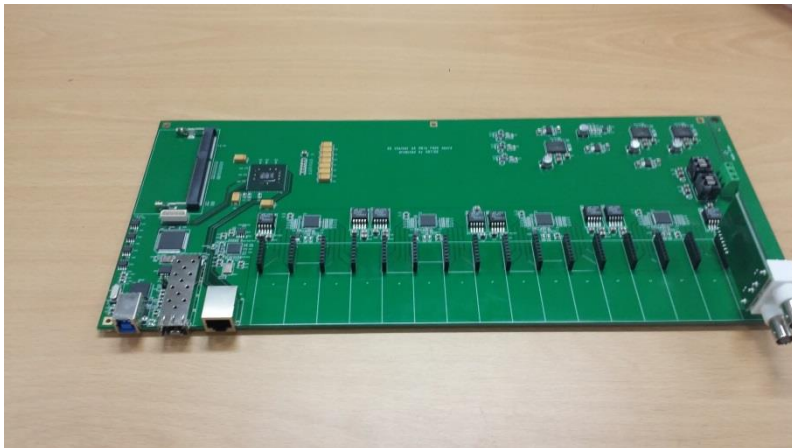
FADC500

- ✓ Waveform digitizer for NaI
- ✓ 500 MHz, 12bit, 2.0V, 8chs
- ✓ Standalone type(No VME) to mount on 9U crate
 - Input BNC picks up noise from VME backplane in readout time
 - Input BNC → SMA, need SMA-to-BNC barrel connector
 - Peak to peak noise: ~3mV, rms noise : ~0.5mV
- ✓ Readout interface : USB3, Optical fiber
- ✓ RJ45 socket : custom serial communication(125MHz) with a trigger board
 - trigger in/out, send trigger on/off of individual channels
 - time sync.
 - control(run start/stop, trigger setting) for optical fiber



FADC64

- ✓ Peak sum ADC for Plastic/Liquid
- ✓ 64 MHz, 12bit, 2.0V, 32 chs
- ✓ 9U standalone type
 - For integration with FADC500
 - height : 1.5 ~ 2U
- ✓ Plug-in analog board + FADC main board
- ✓ USB3, Optical Fiber , RJ45 sockets – same as FADC500
- ✓ Input : BNC



TCB

- ✓ External trigger for FADC500 and FADC64
- ✓ 40 RJ sockets for input/output
- ✓ Programmable trigger logic on FPGA
- ✓ Synchronize the timers of all FADC modules connected
- ✓ Control function for Optical Fiber readout of FADCs
- ✓ 9U standalone

DAQ module

- ✓ Input : Optical fiber for FADCs
- ✓ Output : USB3 for PC
- ✓ Merge 8 inputs into 1 output
- ✓ Used for many connections with PC, instead of USB3 of FADCs
- ✓ Prepare 1Gbit ethernet hardware as backup of USB3 output
(firmware until the end of 2015)

Online monitor(software)

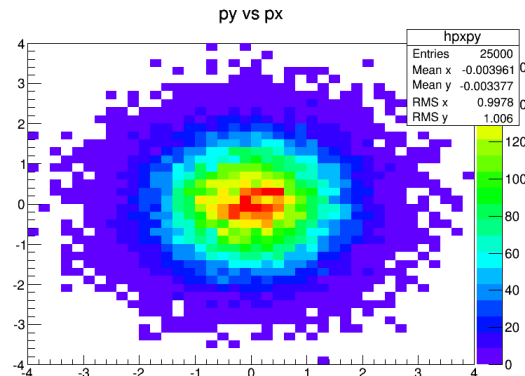
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ROOT session

*****
ROOT 5.34/18 (heads/http-dev@ccfc7cf, Mai 09 2014,
16:18:03 on linuxx8664gcc)

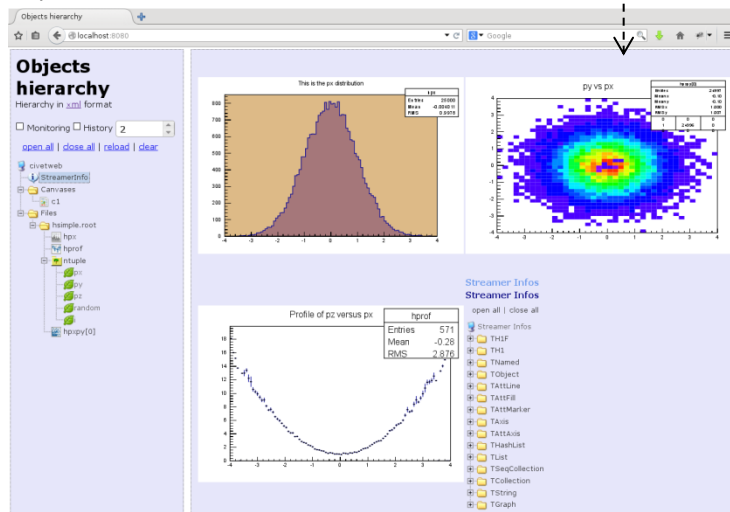
root [0] new THttpServer("http:8080");
root [1] .x $ROOTSYS/tutorials/hsimple.C
```

http

<http://localhost:8080/Files/hsimple.root/hpxpy/root.png?opt=colz>



<http://localhost:8080>



- Single command to start http server:
new THttpServer("http:8080");
- Scans gROOT for existing objects
user can add own objects
- Objects browser is provided
- JSRoot graphics for objects display
- Possibilities for live monitoring
- No any changes in the user code
- Customized version for AMoRE(KIMS)

\$ git clone ssh://cupcluster.ibs.re.kr/home/hokim/repo/amore/amore_daq.git

Schedule and plan

- ✓ FADC500, FADC64, TCB
 - Production : ~2014. 11(Dr. SYKim)
 - Noise & Time Sync. Test : ~2014.12(Dr. HOKim)
- ✓ DAQ module
 - Production : ~2014. 12(Dr. SYKim)
 - Software : 2015.1~ (Dr. JSLee)