Status as of 27/04/15

- **STcontrol works on Ubuntu 14.04**
- **pyBAR works on Ubuntu 14.04 (tested with CNM103, no HV)**
    - **Bug on 32bit Ubuntu reported and solved by Bonn**
- **ViTables works**

Installation/debugging notes below.

This installation was done in my 32bit machine with ubuntu 14.04 up to date (on April 2015)
sgrinstein@pixels-OptiPlex-390:~$ file /sbin/init
/sbin/init: ELF 32-bit …

But the procedure is very similar for 64-bit (see: https://docs.google.com/document/d/14NW3wDoQe-GzQmJH_ImD3ZmyHvplvR0wI6im0Yi3uAI/edit?usp=sharing)

First I install STcontrol then I install pyBAR.

For STcontrol follow: http://icwiki.physik.uni-bonn.de/twiki/bin/view/Systems/UsbPix

for pyBAR Followed: https://github.com/SiLab-Bonn/pyBAR/wiki/Step-by-step-installation-guide

Installing ROOT for usbpix:

See: http://icwiki.physik.uni-bonn.de/twiki/bin/view/Systems/UsbPix#Additional_Prerequisites

```
# Using git:
git clone http://root.cern.ch/git/root.git
cd root
git tag -l
# decide which root tag to use, eg:
git checkout -b v5-34-18 v5-34-18
./configure
make

# Or from root account:
wget http://root.cern.ch/download/root_v5.34.28.source.tar.gz
gzip -dc root_v5.34.28.source.tar.gz | tar -xf -
cd root
./configure --prefix=/usr/local
```

make
make install

problems with fonts? (in 14.04) I did:
apt-get install xfs xfstt

Installed version:
> \root
….
ROOT 5.34/28 (v5-34-28@v5-34-28, Mar 24 2015, 10:54:51 on linux)

QT for ubuntu:

I did this as root
Make sure all the needed packages are there (more needed? see http://doc.qt.digia.com/qt-5.2/linux-requirements.html):
apt-get install libfreetype6-dev libx11-dev libxext-dev libxfixes-dev libxi-dev libxrender-dev libxcb1-dev libx11-xcb-dev libxcb-glx0-dev
get QT:
wget http://download.qt-project.org/official_releases/qt/5.2/5.2.1/single/qt-everywhere-opensource-src-5.2.1.tar.gz

export QT5DIR=/usr/local/Qt-5.2.1
./configure -openssl -qt-xcb -prefix $QT5DIR -opensource
make
make install

QTW (after QT):

Download from: http://sourceforge.net/projects/qwt/files/qwt/6.1.0/
export QWT_ROOT=/usr/local/qwt-6.1.0
/usr/local/Qt-5.2.1/bin/qmake qwt.pro
make
sudo make install

Variables:
Sourcing ROOT setup
sgrinstein@pixels-OptiPlex-390:~$ echo $ROOTSYS
/usr/local

sgrinstein@pixels-OptiPlex-390:~$ echo $QT5DIR
/usr/local/Qt-5.2.1
sgrinstein@pixels-OptiPlex-390:~$ echo $QWTDIR
/home/sgrinstein/qwt-6.1.0

Installed libusb:

See also: http://icwiki.physik.uni-bonn.de/twiki/bin/view/Systems/UsbPix#Using_libusb
(note: USBpix and pyBAR instructions for the libusb are a bit different)

Note: set 0666 on the permission column of the rules file (/etc/udev/rules.d/siusb.rules)

STcontrol:

Checkout software
svn co http://icwiki.physik.uni-bonn.de/svn/USBpixI4/host/trunk/ USBpixI4_trunk

cd USBpixI4_trunk
. ./setup.sh # creates Makefile!

make
…
make[1]: Entering directory `/home/sgrinstein/USBpixI4_trunk/libsiusb'
g++ -c -pipe -g -ggdb -mcmodel=large -g -D_REENTRANT -std=c++0x -Wall -W -fPIC
-DCF__LINUX -D_REENTRANT -D_FORTIFY_SOURCE=2 -DQT_GUI_LIB -DQT_CORE_LIB
-I/usr/local/Qt-5.2.1/mkspecs/linux-g++ -I. -I. -I../inc -Iinclude -I/usr/local/Qt-5.2.1/include
-I/usr/local/Qt-5.2.1/include/QtGui -I/usr/local/Qt-5.2.1/include/QtCore -I. -o interface_libusb.o
interface_libusb.cpp
interface_libusb.cpp:1:0: error: code model ‘large’ not supported in the 32 bit mode
#include "interface_libusb.h"
^
make[1]: *** [interface_libusb.o] Error 1
make[1]: Leaving directory `/home/sgrinstein/USBpixI4_trunk/libsiusb'

→ See usbpix instructions about using **libusb**

Installed libusb-1.0-0-dev (pyBAR only needed libusb-1.0-0):
root@pixels-OptiPlex-390:~# apt-get install libusb-1.0-0-dev

→ To fix: “mcmodel large does not work”:
export GENCCFLAG=

That is, remove this variable (set in “source setup.sh”), since it is used as:
make clean
make
...
g++ -c -pipe -g -ggdb -mcmodel=large -g -D_REENTRANT -std=c++0x -Wall -W -fPIC -DCF__LINUX -D_REENTRANT -D_FORTIFY_SOURCE=2 -DQT_GUI_LIB -DQT_CORE_LIB -I/usr/local/Qt-5.2.1/mkspecs/linux-g++ -I. -I. -I../inc -Iinclude -I/usr/local/Qt-5.2.1/include -I/usr/local/Qt-5.2.1/include/QtGui -I/usr/local/Qt-5.2.1/include/QtCore -I. -o interface_libusb.o interface_libusb.cpp
...
interface_libusb.cpp:1:0: error: code model ‘large’ not supported in the 32 bit mode
export GENCCFLAG=
make
…
works

From Emanuele (installation also in a 32-bit machine):
The problem I had was that gcc was updated to version 4.7 as required but g++ was still at version 4.6. The solution was to install g++-4.7 and change the link in /usr/bin in order to link g++ to the correct version.
In two lines:
sudo apt-get install g++-4.7
sudo rm /usr/bin/g++ && sudo ln -s /usr/bin/g++-4.7 /usr/bin/g++

NOTES:

make[1]: Leaving directory `/home/sgrinstein/USBpixI4_trunk/libgpac'
make: *** [sub-libgpac-make_default-ordered] Error 2
Fabian got the above error and somehow solve it by reinstalling QT/QWT (look at the Bonn twiki)

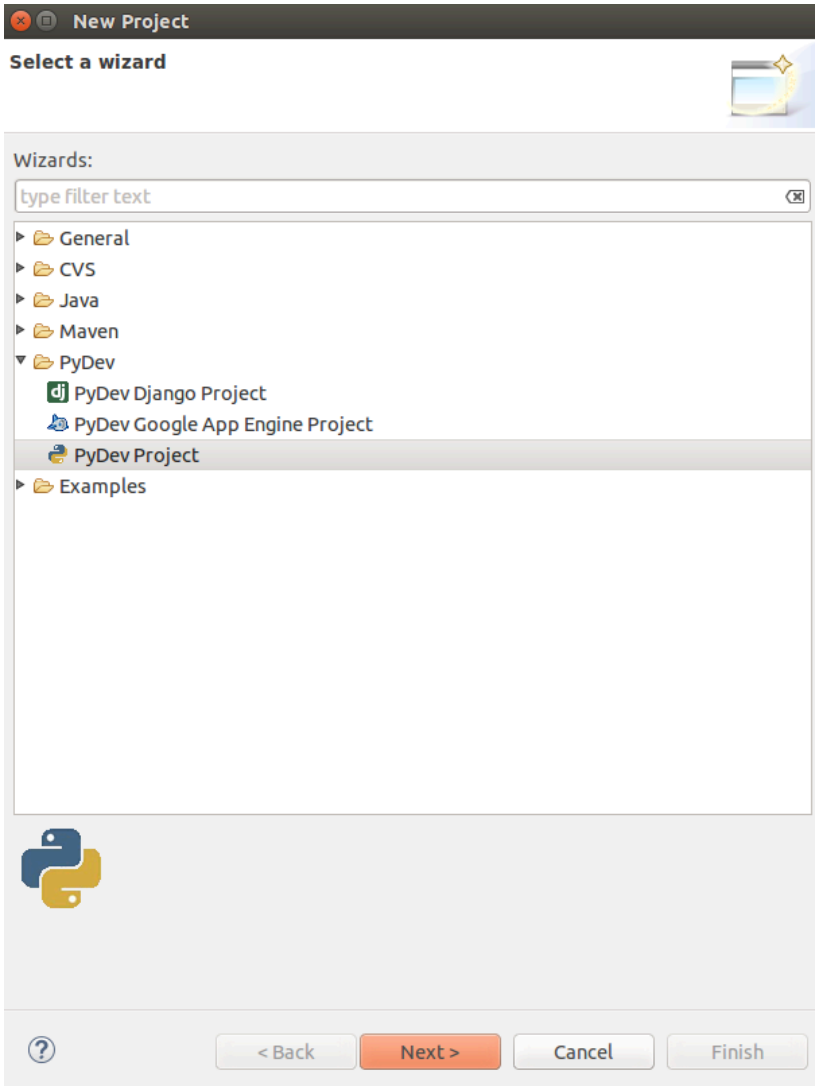
To get STcontrol to work on Unity desktop:
unset XDG_CURRENT_DESKTOP
unset GNOME_DESKTOP_SESSION_ID

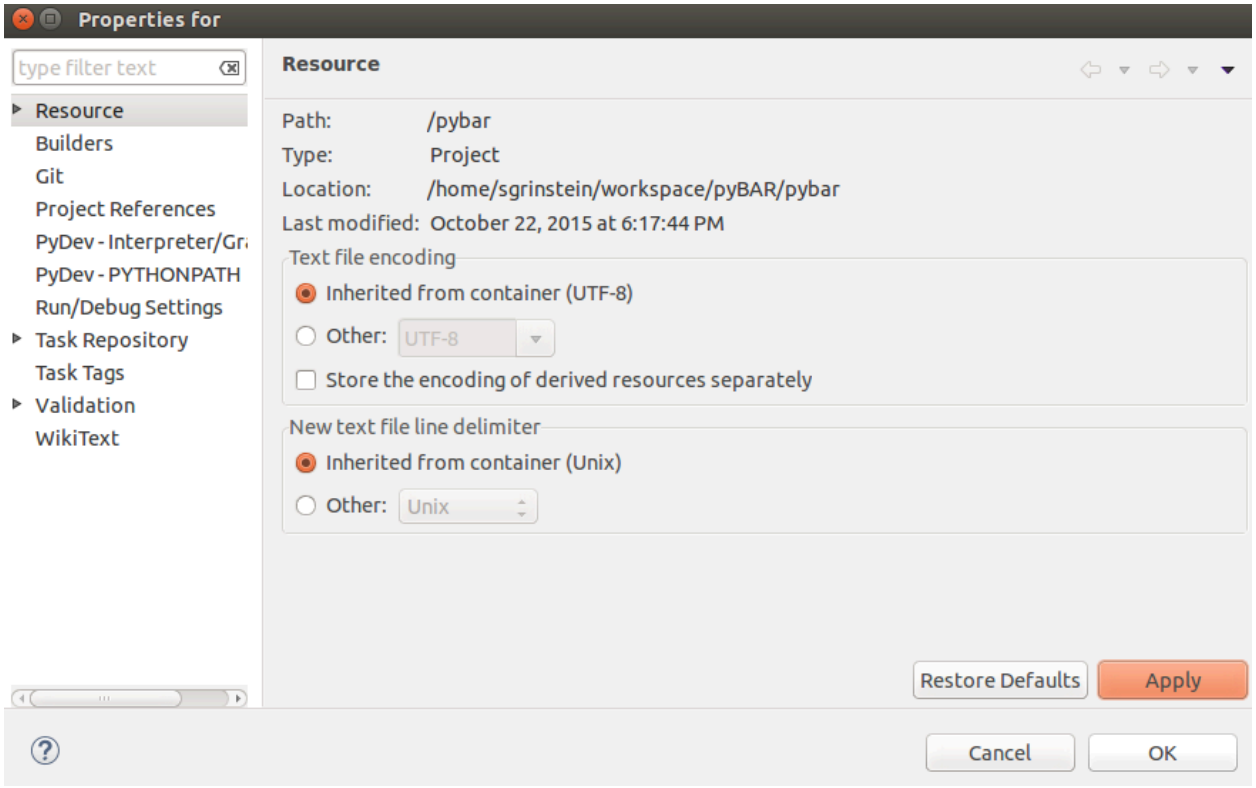
Note to change from STcontrol to pyBAR:
Disconnect USBpix and reconnect when changing softwares.

Below pyBAR related:

Opening the pybar project in eclipse:

select New Project Wizard → PyDev Project →Enter project name (pybar) and project directory (as below)





Note on 8b10b encoding errors:
One can disable stopping on this error by adding the
'reset_rx_on_error': True
to _default_run_conf of the scan.
Note: these errors are *not* checked by STcontrol!

Keep track of where you are writing the results of scans, the code areas, etc...

April 27th 2015: crashed with memory error:

Runing test_analysis.py:

2015-04-27 20:02:20,766 - root - [INFO] (MainThread) Scan parameter(s) from raw data file(s): None
2015-04-27 20:02:20,768 - root - [INFO] (MainThread) Opening output PDF file: test_analysis//unit_test_data_1.pdf
2015-04-27 20:02:20,784 - root - [INFO] (MainThread) Interpreting raw data file(s): test_analysis//unit_test_data_1.h5
2015-04-27 20:02:20,792 - root - [INFO] (MainThread) Interpreting...
0% | | ETA: --:--:--

  0% | | ETA: --:--:--
100% |**| Time: 0:00:01
2015-04-27 20:02:22,128 - root - [INFO   ] (MainThread) Create selected event histograms
2015-04-27 20:02:22,133 - root - [INFO   ] (MainThread) Create selected hit histograms
2015-04-27 20:02:22,138 - root - [INFO   ] (MainThread) Create selected cluster histograms
2015-04-27 20:02:22,145 - root - [INFO   ] (MainThread) Closing output PDF file:
test_analysis//unit_test_data_1.pdf
python: malloc.c:3695: _int_malloc: Assertion `(unsigned long) (size) >= (unsigned long) (nb)'
failed.

32bit vs 64bit?

Update (27 April 2015):

→ Updated to latest pyBAR code, and compiled:
git pull
python setup.py develop

and it worked!

Output of a successful digital scan on CNM103 (on the OC of my office)
2015-04-28 13:36:56,475 - root - [INFO   ] (MainThread) Initializing DigitalScan
2015-04-28 13:36:56,476 - root - [INFO   ] (MainThread) Press Ctrl-C to stop run
2015-04-28 13:36:56,493 - root - [INFO   ] (MainThread) Starting run #10 (DigitalScan) in
/home/sgrinstein/workspace/CNM103/module_test
2015-04-28 13:36:56,493 - root - [INFO   ] (MainThread) Scan parameter(s): None
2015-04-28 13:36:56,663 - root - [INFO   ] (MainThread) Found USB board(s): USBpix with ID 243 (FW 15)
2015-04-28 13:36:56,664 - root - [INFO   ] (MainThread) Programming FPGA: mio.bit...
2015-04-28 13:37:04,808 - root - [INFO   ] (MainThread) Success!
2015-04-28 13:37:04,821 - root - [INFO   ] (MainThread) Found adapter card: Single Chip Adapter Card with ID 20
2015-04-28 13:37:04,874 - root - [INFO   ] (MainThread) Resetting RX
2015-04-28 13:37:04,978 - root - [INFO   ] (MainThread) Resetting SRAM FIFO: size = 0
2015-04-28 13:37:05,211 - root - [INFO   ] (MainThread) Initializing FEI4 registers (flavor: fei4a)
2015-04-28 13:37:05,212 - root - [INFO   ] (MainThread) Setting chip address to 0 (broadcast bit set)
2015-04-28 13:37:05,212 - root - [INFO   ] (MainThread) Sending Global Reset
2015-04-28 13:37:05,319 - root - [INFO   ] (MainThread) Sending global configuration to FE
2015-04-28 13:37:05,342 - root - [INFO   ] (MainThread) Sending pixel configuration to FE
2015-04-28 13:37:05,920 - root - [INFO   ] (MainThread) Resetting Bunch Counter
2015-04-28 13:37:06,028 - root - [INFO   ] (MainThread) Resetting Event Counter
2015-04-28 13:37:06,138 - root - [INFO   ] (MainThread) Opening new raw data file:
/home/sgrinstein/workspace/CNM103/module_test/10_module_test_digital_scan.h5
2015-04-28 13:37:06,211 - root - [INFO   ] (MainThread) Saving configuration:
/home/sgrinstein/workspace/CNM103/module_test/10_module_test_digital_scan.h5
2015-04-28 13:37:06,226 - root - [INFO   ] (MainThread) Resetting RX
2015-04-28 13:37:06,330 - root - [INFO   ] (MainThread) Resetting SRAM FIFO: size = 672
2015-04-28 13:37:06,537 - root - [INFO   ] (MainThread) Data queue size: 0

```
2015-04-28 13:37:06,538 - root - [INFO    ] (MainThread) SRAM FIFO size: 0
2015-04-28 13:37:06,538 - root - [INFO    ] (MainThread) Channel:                CH1 | CH2 | CH3 | CH4
2015-04-28 13:37:06,538 - root - [INFO    ] (MainThread) RX sync:                 NO |  NO |  NO | YES
2015-04-28 13:37:06,539 - root - [INFO    ] (MainThread) RX FIFO discard counter:    0 |   0 |   0 |   0
2015-04-28 13:37:06,539 - root - [INFO    ] (MainThread) RX FIFO 8b10b error counter:   0 |   0 |   0 |   0
2015-04-28 13:37:06,540 - root - [INFO    ] (MainThread) Starting FIFO readout...
2015-04-28 13:37:06,588 - root - [INFO    ] (MainThread) 100 injection(s): mask step 0 [0 - 2]
2015-04-28 13:37:07,242 - root - [INFO    ] (MainThread) 100 injection(s): mask step 1 [0 - 2]
2015-04-28 13:37:07,902 - root - [INFO    ] (MainThread) 100 injection(s): mask step 2 [0 - 2]
2015-04-28 13:37:08,547 - root - [INFO    ] (MainThread) Sending global configuration to FE
2015-04-28 13:37:08,641 - root - [INFO    ] (MainThread) Stopped FIFO readout
2015-04-28 13:37:08,655 - root - [INFO    ] (MainThread) Closing raw data file:
/home/sgrinstein/workspace/CNM103/module_test/10_module_test_digital_scan.h5
2015-04-28 13:37:08,661 - root - [INFO    ] (MainThread) Data queue size: 0
2015-04-28 13:37:08,662 - root - [INFO    ] (MainThread) SRAM FIFO size: 0
2015-04-28 13:37:08,662 - root - [INFO    ] (MainThread) Channel:                CH1 | CH2 | CH3 | CH4
2015-04-28 13:37:08,662 - root - [INFO    ] (MainThread) RX sync:                 NO |  NO |  NO | YES
2015-04-28 13:37:08,663 - root - [INFO    ] (MainThread) RX FIFO discard counter:    0 |   0 |   0 |   0
2015-04-28 13:37:08,663 - root - [INFO    ] (MainThread) RX FIFO 8b10b error counter:   0 |   0 |   0 |   0
2015-04-28 13:37:08,795 - root - [INFO    ] (MainThread) Scan parameter(s) from raw data file(s): None
2015-04-28 13:37:08,799 - root - [INFO    ] (MainThread) Opening output PDF file:
/home/sgrinstein/workspace/CNM103/module_test/10_module_test_digital_scan.pdf
2015-04-28 13:37:08,801 - root - [INFO    ] (MainThread) Interpreting raw data file(s):
/home/sgrinstein/workspace/CNM103/module_test/10_module_test_digital_scan.h5
2015-04-28 13:37:08,811 - root - [INFO    ] (MainThread) Interpreting...
  0% |                                                   | ETA:  --:--:--
100% |***********************************************************| Time: 0:00:00
2015-04-28 13:37:09,067 - root - [INFO    ] (MainThread) Create selected event histograms
2015-04-28 13:37:09,070 - root - [INFO    ] (MainThread) Create selected hit histograms
2015-04-28 13:37:09,073 - root - [INFO    ] (MainThread) Create selected cluster histograms
2015-04-28 13:37:09,075 - root - [INFO    ] (MainThread) Creating histograms (source:
/home/sgrinstein/workspace/CNM103/module_test/10_module_test_digital_scan_interpreted.h5)
2015-04-28 13:37:09,076 - root - [INFO    ] (MainThread) Saving histograms to PDF file:
/home/sgrinstein/workspace/CNM103/module_test/10_module_test_digital_scan.pdf
2015-04-28 13:37:12,362 - root - [INFO    ] (MainThread) Plot 1d histogram: Relative BCID (former LVL1ID)
2015-04-28 13:37:12,592 - root - [INFO    ] (MainThread) Plot 1d histogram: Event status
2015-04-28 13:37:12,789 - root - [INFO    ] (MainThread) Plot 1d histogram: Service records (1799 entries)
#Data Words 2880342
#Data Header 192000
#Data Records 2688000
#Service Records 6
#Other Words 336
#Unknown words 0
#TDC words 0

#Hits 2688000
MaxHitsPerEvent 224
#Events 12000
#Trigger 0
```

#Empty Events 0
#Incomplete Events 0

#ErrorCounters

0	1	Events with SR
1	12000	Events with no trigger word
2	0	Events with LVLID non const.
3	0	Events that are incomplete (# BCIDs wrong)
4	0	Events with unknown words
5	12000	Events with jumping BCIDs
6	0	Events with TLU trigger error
7	0	Events has too many hits and was truncated
8	0	Events with TDC words
9	0	Events with > 1 TDC word
10	0	Events with TDC overfloe
11	0	Events with no hit

#TriggerErrorCounters

0	0	Trigger number does not increase by 1
1	0	# Trigger per event > 1
2	0	TLU trigger accept error
3	0	TLU low time out error

#ServiceRecords

0	0
1	0
2	0
3	0
4	0
5	0
6	0
7	0
8	129
9	1023
10	0
11	0
12	0
13	0
14	0
15	0
16	0
17	0
18	0
19	0
20	0
21	0
22	15
23	374
24	0
25	0
26	0
27	0

28 1
29 257
30 0
31 0
2015-04-28 13:37:12,960 - root - [INFO] (MainThread) Closing output PDF file: /home/sgrinstein/workspace/CNM103/module_test/10_module_test_digital_scan.pdf
2015-04-28 13:37:13,027 - root - [INFO] (MainThread) Saving configuration: /home/sgrinstein/workspace/CNM103/module_test/configs/10_module_test_digital_scan.cfg
2015-04-28 13:37:14,204 - root - [INFO] (MainThread) Finished run #10 (DigitalScan) in /home/sgrinstein/workspace/CNM103/module_test. STATUS: FINISHED

Threshold scan (no bias!)

2015-04-30 09:07:43,536 - root - [INFO] (MainThread) SRAM FIFO size: 0
2015-04-30 09:07:43,536 - root - [INFO] (MainThread) Channel: CH1 | CH2 | CH3 | CH4
2015-04-30 09:07:43,536 - root - [INFO] (MainThread) RX sync: NO | NO | NO | NO
2015-04-30 09:07:43,536 - root - [INFO] (MainThread) RX FIFO discard counter: 0 | 0 | 0 | 0
2015-04-30 09:07:43,536 - root - [INFO] (MainThread) RX FIFO 8b10b error counter: 0 | 0 | 0 | 0
2015-04-30 09:07:43,538 - root - [WARNING] (MainThread) RX errors detected
2015-04-30 09:07:43,538 - root - [WARNING] (MainThread) Run 16 was aborted: No RX sync
2015-04-30 09:07:43,539 - root - [WARNING] (MainThread) Finished run #16 (ThresholdScan) in /home/sgrinstein/workspace/CNM103/module_test. STATUS: ABORTED

The power was off! So turn on the power (to chip and usbpix), this is the threshold scan console output:

2015-04-30 09:11:08,070 - root - [INFO] (MainThread) Initializing ThresholdScan
2015-04-30 09:11:08,072 - root - [INFO] (MainThread) Press Ctrl-C to stop run
2015-04-30 09:11:08,073 - root - [INFO] (MainThread) Starting run #17 (ThresholdScan) in /home/sgrinstein/workspace/CNM103/module_test
2015-04-30 09:11:08,074 - root - [INFO] (MainThread) Scan parameter(s): PlsrDAC=[None, 100]
2015-04-30 09:11:08,130 - root - [INFO] (MainThread) Found USB board(s): USBpix with ID 243 (FW 15)
2015-04-30 09:11:08,130 - root - [INFO] (MainThread) Programming FPGA: mio.bit...
2015-04-30 09:11:16,264 - root - [INFO] (MainThread) Success!
2015-04-30 09:11:16,278 - root - [INFO] (MainThread) Found adapter card: Single Chip Adapter Card with ID 20
2015-04-30 09:11:16,332 - root - [INFO] (MainThread) Resetting RX
2015-04-30 09:11:16,436 - root - [INFO] (MainThread) Resetting SRAM FIFO: size = 0
2015-04-30 09:11:16,642 - root - [INFO] (MainThread) Loading configuration: /home/sgrinstein/workspace/CNM103/module_test/configs/15_module_test_analog_scan.cfg
2015-04-30 09:11:16,648 - root - [INFO] (MainThread) Initializing FEI4 registers (flavor: fei4a)
2015-04-30 09:11:16,648 - root - [INFO] (MainThread) Setting chip address to 0 (broadcast bit set)
2015-04-30 09:11:16,768 - root - [INFO] (MainThread) Sending Global Reset
2015-04-30 09:11:16,877 - root - [INFO] (MainThread) Sending global configuration to FE
2015-04-30 09:11:16,900 - root - [INFO] (MainThread) Sending pixel configuration to FE
2015-04-30 09:11:17,463 - root - [INFO] (MainThread) Resetting Bunch Counter
2015-04-30 09:11:17,570 - root - [INFO] (MainThread) Resetting Event Counter
2015-04-30 09:11:17,680 - root - [INFO] (MainThread) Opening new raw data file: /home/sgrinstein/workspace/CNM103/module_test/17_module_test_threshold_scan.h5

```
2015-04-30 09:11:17,741 - root - [INFO    ] (MainThread) Saving configuration:
/home/sgrinstein/workspace/CNM103/module_test/17_module_test_threshold_scan.h5
2015-04-30 09:11:17,750 - root - [INFO    ] (MainThread) Resetting RX
2015-04-30 09:11:17,855 - root - [INFO    ] (MainThread) Resetting SRAM FIFO: size = 672
2015-04-30 09:11:18,064 - root - [INFO    ] (MainThread) Data queue size: 0
2015-04-30 09:11:18,065 - root - [INFO    ] (MainThread) SRAM FIFO size: 0
2015-04-30 09:11:18,065 - root - [INFO    ] (MainThread) Channel:                CH1 | CH2 | CH3 | CH4
2015-04-30 09:11:18,065 - root - [INFO    ] (MainThread) RX sync:                 NO |  NO |  NO | YES
2015-04-30 09:11:18,065 - root - [INFO    ] (MainThread) RX FIFO discard counter:   0 |   0 |   0 |   0
2015-04-30 09:11:18,065 - root - [INFO    ] (MainThread) RX FIFO 8b10b error counter:   0 |   0 |   0 |   0
2015-04-30 09:11:18,066 - root - [INFO    ] (MainThread) Scanning PlsrDAC from 0 to 100
2015-04-30 09:11:18,067 - root - [INFO    ] (MainThread) Scan step: PlsrDAC 0
2015-04-30 09:11:18,071 - root - [INFO    ] (MainThread) Changing scan parameter(s): PlsrDAC=0
2015-04-30 09:11:18,071 - root - [INFO    ] (MainThread) Starting FIFO readout...
2015-04-30 09:11:18,109 - root - [INFO    ] (MainThread) 100 injection(s): mask step 0 [0 - 2]
2015-04-30 09:11:18,588 - root - [INFO    ] (MainThread) 100 injection(s): mask step 1 [0 - 2]
2015-04-30 09:11:19,077 - root - [INFO    ] (MainThread) 100 injection(s): mask step 2 [0 - 2]
2015-04-30 09:11:19,554 - root - [INFO    ] (MainThread) Sending global configuration to FE
2015-04-30 09:11:19,643 - root - [INFO    ] (MainThread) Stopped FIFO readout
2015-04-30 09:11:19,643 - root - [INFO    ] (MainThread) Scan step: PlsrDAC 1
2015-04-30 09:11:19,648 - root - [INFO    ] (MainThread) Changing scan parameter(s): PlsrDAC=1
2015-04-30 09:11:19,648 - root - [INFO    ] (MainThread) Starting FIFO readout...
2015-04-30 09:11:19,686 - root - [INFO    ] (MainThread) 100 injection(s): mask step 0 [0 - 2]
2015-04-30 09:11:20,152 - root - [INFO    ] (MainThread) 100 injection(s): mask step 1 [0 - 2]
2015-04-30 09:11:20,643 - root - [INFO    ] (MainThread) 100 injection(s): mask step 2 [0 - 2]
2015-04-30 09:11:21,125 - root - [INFO    ] (MainThread) Sending global configuration to FE
2015-04-30 09:11:21,209 - root - [INFO    ] (MainThread) Stopped FIFO readout
2015-04-30 09:11:21,209 - root - [INFO    ] (MainThread) Scan step: PlsrDAC 2
2015-04-30 09:11:21,212 - root - [INFO    ] (MainThread) Changing scan parameter(s): PlsrDAC=2
2015-04-30 09:11:21,212 - root - [INFO    ] (MainThread) Starting FIFO readout...
2015-04-30 09:11:21,244 - root - [INFO    ] (MainThread) 100 injection(s): mask step 0 [0 - 2]
2015-04-30 09:11:21,712 - root - [INFO    ] (MainThread) 100 injection(s): mask step 1 [0 - 2]
2015-04-30 09:11:22,211 - root - [INFO    ] (MainThread) 100 injection(s): mask step 2 [0 - 2]
2015-04-30 09:11:22,687 - root - [INFO    ] (MainThread) Sending global configuration to FE
2015-04-30 09:11:22,773 - root - [INFO    ] (MainThread) Stopped FIFO readout
2015-04-30 09:11:22,773 - root - [INFO    ] (MainThread) Scan step: PlsrDAC 3
2015-04-30 09:11:22,776 - root - [INFO    ] (MainThread) Changing scan parameter(s): PlsrDAC=3
2015-04-30 09:11:22,776 - root - [INFO    ] (MainThread) Starting FIFO readout...
2015-04-30 09:11:22,811 - root - [INFO    ] (MainThread) 100 injection(s): mask step 0 [0 - 2]
2015-04-30 09:11:23,308 - root - [INFO    ] (MainThread) 100 injection(s): mask step 1 [0 - 2]
2015-04-30 09:11:23,814 - root - [INFO    ] (MainThread) 100 injection(s): mask step 2 [0 - 2]
2015-04-30 09:11:24,293 - root - [INFO    ] (MainThread) Sending global configuration to FE
2015-04-30 09:11:24,443 - root - [INFO    ] (MainThread) Stopped FIFO readout
2015-04-30 09:11:24,443 - root - [INFO    ] (MainThread) Scan step: PlsrDAC 4
2015-04-30 09:11:24,449 - root - [INFO    ] (MainThread) Changing scan parameter(s): PlsrDAC=4
2015-04-30 09:11:24,449 - root - [INFO    ] (MainThread) Starting FIFO readout...
2015-04-30 09:11:24,484 - root - [INFO    ] (MainThread) 100 injection(s): mask step 0 [0 - 2]
2015-04-30 09:11:24,985 - root - [INFO    ] (MainThread) 100 injection(s): mask step 1 [0 - 2]
2015-04-30 09:11:25,498 - root - [INFO    ] (MainThread) 100 injection(s): mask step 2 [0 - 2]
2015-04-30 09:11:25,999 - root - [INFO    ] (MainThread) Sending global configuration to FE
```

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2015-04-30 09:11:26,098 - root - [INFO    ] (MainThread) Stopped FIFO readout
2015-04-30 09:11:26,098 - root - [INFO    ] (MainThread) Scan step: PlsrDAC 5
2015-04-30 09:11:26,103 - root - [INFO    ] (MainThread) Changing scan parameter(s): PlsrDAC=5
2015-04-30 09:11:26,104 - root - [INFO    ] (MainThread) Starting FIFO readout...
...
2015-04-30 09:14:31,654 - root - [INFO    ] (MainThread) Changing scan parameter(s): PlsrDAC=96
2015-04-30 09:14:31,655 - root - [INFO    ] (MainThread) Starting FIFO readout...
2015-04-30 09:14:31,687 - root - [INFO    ] (MainThread) 100 injection(s): mask step 0 [0 - 2]
2015-04-30 09:14:32,339 - root - [INFO    ] (MainThread) 100 injection(s): mask step 1 [0 - 2]
2015-04-30 09:14:32,989 - root - [INFO    ] (MainThread) 100 injection(s): mask step 2 [0 - 2]
2015-04-30 09:14:33,615 - root - [INFO    ] (MainThread) Sending global configuration to FE
2015-04-30 09:14:33,710 - root - [INFO    ] (MainThread) Stopped FIFO readout
2015-04-30 09:14:33,710 - root - [INFO    ] (MainThread) Scan step: PlsrDAC 97
2015-04-30 09:14:33,716 - root - [INFO    ] (MainThread) Changing scan parameter(s): PlsrDAC=97
2015-04-30 09:14:33,716 - root - [INFO    ] (MainThread) Starting FIFO readout...
2015-04-30 09:14:33,747 - root - [INFO    ] (MainThread) 100 injection(s): mask step 0 [0 - 2]
2015-04-30 09:14:34,400 - root - [INFO    ] (MainThread) 100 injection(s): mask step 1 [0 - 2]
2015-04-30 09:14:35,073 - root - [INFO    ] (MainThread) 100 injection(s): mask step 2 [0 - 2]
2015-04-30 09:14:35,718 - root - [INFO    ] (MainThread) Sending global configuration to FE
2015-04-30 09:14:35,813 - root - [INFO    ] (MainThread) Stopped FIFO readout
2015-04-30 09:14:35,813 - root - [INFO    ] (MainThread) Scan step: PlsrDAC 98
2015-04-30 09:14:35,819 - root - [INFO    ] (MainThread) Changing scan parameter(s): PlsrDAC=98
2015-04-30 09:14:35,819 - root - [INFO    ] (MainThread) Starting FIFO readout...
2015-04-30 09:14:35,853 - root - [INFO    ] (MainThread) 100 injection(s): mask step 0 [0 - 2]
2015-04-30 09:14:36,527 - root - [INFO    ] (MainThread) 100 injection(s): mask step 1 [0 - 2]
2015-04-30 09:14:37,213 - root - [INFO    ] (MainThread) 100 injection(s): mask step 2 [0 - 2]
2015-04-30 09:14:37,874 - root - [INFO    ] (MainThread) Sending global configuration to FE
2015-04-30 09:14:37,969 - root - [INFO    ] (MainThread) Stopped FIFO readout
2015-04-30 09:14:37,970 - root - [INFO    ] (MainThread) Scan step: PlsrDAC 99
2015-04-30 09:14:37,975 - root - [INFO    ] (MainThread) Changing scan parameter(s): PlsrDAC=99
2015-04-30 09:14:37,975 - root - [INFO    ] (MainThread) Starting FIFO readout...
2015-04-30 09:14:38,012 - root - [INFO    ] (MainThread) 100 injection(s): mask step 0 [0 - 2]
2015-04-30 09:14:38,667 - root - [INFO    ] (MainThread) 100 injection(s): mask step 1 [0 - 2]
2015-04-30 09:14:39,308 - root - [INFO    ] (MainThread) 100 injection(s): mask step 2 [0 - 2]
2015-04-30 09:14:39,940 - root - [INFO    ] (MainThread) Sending global configuration to FE
2015-04-30 09:14:39,998 - root - [INFO    ] (MainThread) Stopped FIFO readout
2015-04-30 09:14:39,998 - root - [INFO    ] (MainThread) Scan step: PlsrDAC 100
2015-04-30 09:14:40,001 - root - [INFO    ] (MainThread) Changing scan parameter(s): PlsrDAC=100
2015-04-30 09:14:40,001 - root - [INFO    ] (MainThread) Starting FIFO readout...
2015-04-30 09:14:40,034 - root - [INFO    ] (MainThread) 100 injection(s): mask step 0 [0 - 2]
2015-04-30 09:14:40,680 - root - [INFO    ] (MainThread) 100 injection(s): mask step 1 [0 - 2]
2015-04-30 09:14:41,334 - root - [INFO    ] (MainThread) 100 injection(s): mask step 2 [0 - 2]
2015-04-30 09:14:41,969 - root - [INFO    ] (MainThread) Sending global configuration to FE
2015-04-30 09:14:42,126 - root - [INFO    ] (MainThread) Stopped FIFO readout
2015-04-30 09:14:42,149 - root - [INFO    ] (MainThread) Closing raw data file:
/home/sgrinstein/workspace/CNM103/module_test/17_module_test_threshold_scan.h5
2015-04-30 09:14:42,155 - root - [INFO    ] (MainThread) Data queue size: 0
2015-04-30 09:14:42,156 - root - [INFO    ] (MainThread) SRAM FIFO size: 0
2015-04-30 09:14:42,156 - root - [INFO    ] (MainThread) Channel:                CH1 | CH2 | CH3 | CH4
2015-04-30 09:14:42,156 - root - [INFO    ] (MainThread) RX sync:                 NO |  NO |  NO | YES
```

```
2015-04-30 09:14:42,156 - root - [INFO    ] (MainThread) RX FIFO discard counter:       0 |   0 |   0 |   0
2015-04-30 09:14:42,156 - root - [INFO    ] (MainThread) RX FIFO 8b10b error counter:   0 |   0 |   0 |   0
2015-04-30 09:14:42,300 - root - [INFO    ] (MainThread) Scan parameter(s) from raw data file(s): PlsrDAC
2015-04-30 09:14:42,303 - root - [INFO    ] (MainThread) Opening output PDF file:
/home/sgrinstein/workspace/CNM103/module_test/17_module_test_threshold_scan.pdf
2015-04-30 09:14:42,305 - root - [INFO    ] (MainThread) Interpreting raw data file(s):
/home/sgrinstein/workspace/CNM103/module_test/17_module_test_threshold_scan.h5
2015-04-30 09:14:42,369 - root - [INFO    ] (MainThread) Interpreting...
  0% |                                                           | ETA:  --:--:--
...
 97% |**********************************************************  | ETA:  0:00:00
 98% |********************************************************** | ETA:  0:00:00
 99% |********************************************************** | ETA:  0:00:00
100% |***********************************************************| Time: 0:00:24
2015-04-30 09:15:06,980 - root - [INFO    ] (MainThread) Create selected event histograms
2015-04-30 09:15:07,020 - root - [INFO    ] (MainThread) Save meta data with scan parameter PlsrDAC
2015-04-30 09:15:07,050 - root - [INFO    ] (MainThread) Create selected hit histograms
2015-04-30 09:15:07,107 - root - [INFO    ] (MainThread) Start S-curve fit on 4 CPU core(s)
2015-04-30 09:15:23,128 - root - [INFO    ] (MainThread) S-curve fit finished
2015-04-30 09:15:23,140 - root - [INFO    ] (MainThread) Create selected cluster histograms
2015-04-30 09:15:23,151 - root - [INFO    ] (MainThread) Creating histograms (source:
/home/sgrinstein/workspace/CNM103/module_test/17_module_test_threshold_scan_interpreted.h5)
#Data Words 276305498
#Data Header 19390400
#Data Records 256889638
#Service Records 8
#Other Words 25452
#Unknown words 0
#TDC words 0

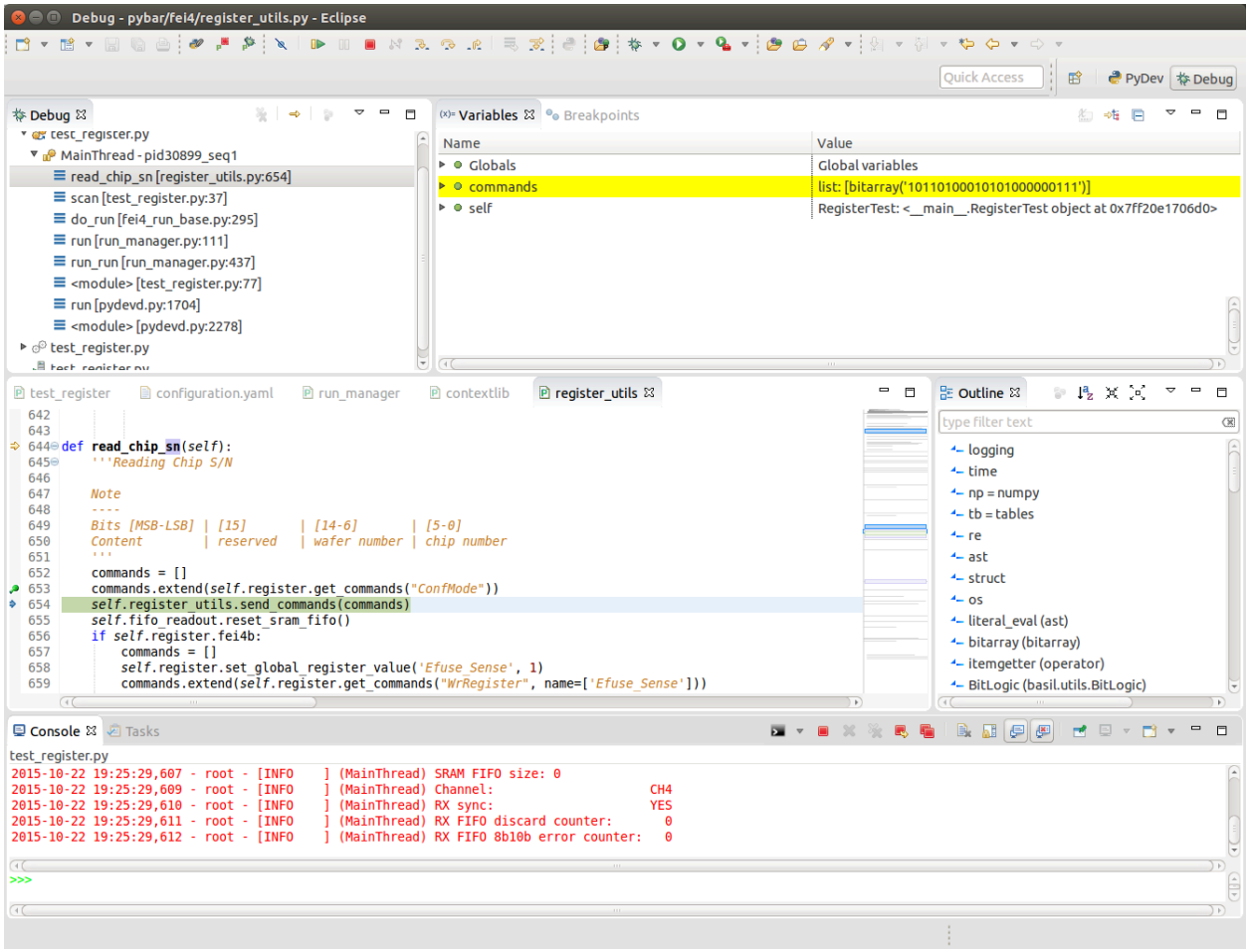
#Hits 256320710
MaxHitsPerEvent 349
#Events 1211900
#Trigger 0

#Empty Events 0
#Incomplete Events 0

#ErrorCounters
        0       1       Events with SR
        1       1211900 Events with no trigger word
        2       0       Events with LVLID non const.
        3       0       Events that are incomplete (# BCIDs wrong)
        4       0       Events with unknown words
        5       1211900 Events with jumping BCIDs
        6       0       Events with TLU trigger error
        7       0       Events has too many hits and was truncated
        8       0       Events with TDC words
        9       0       Events with > 1 TDC word
        10      0       Events with TDC overfloe
```

```
        11      0       Events with no hit
#TriggerErrorCounters
        0       0       Trigger number does not increase by 1
        1       0       # Trigger per event > 1
        2       0       TLU trigger accept error
        3       0       TLU low time out error
#ServiceRecords
        0       0
        1       0
        2       0
        3       0
        4       0
        5       0
        6       10
        7       0
        8       129
        9       1023
        10      0
        11      0
        12      0
        13      0
        14      0
        15      0
        16      0
        17      0
        18      0
        19      0
        20      0
        21      0
        22      18
        23      365
        24      257
        25      0
        26      0
        27      0
        28      2
        29      257
        30      0
        31      0
2015-04-30 09:15:23,152 - root - [INFO    ] (MainThread) Saving histograms to PDF file:
/home/sgrinstein/workspace/CNM103/module_test/17_module_test_threshold_scan.pdf
2015-04-30 09:15:23,155 - root - [INFO    ] (MainThread) Masking 5008 pixel(s)
2015-04-30 09:15:23,158 - root - [INFO    ] (MainThread) S-curve fit: masking 5008 pixel(s)
2015-04-30 09:15:31,123 - root - [INFO    ] (MainThread) Plot 1d histogram: Relative BCID (former LVL1ID)
2015-04-30 09:15:31,515 - root - [INFO    ] (MainThread) Plot 1d histogram: Event status
2015-04-30 09:15:31,665 - root - [INFO    ] (MainThread) Plot 1d histogram: Service records (2061 entries)
2015-04-30 09:15:31,838 - root - [INFO    ] (MainThread) Closing output PDF file:
/home/sgrinstein/workspace/CNM103/module_test/17_module_test_threshold_scan.pdf
2015-04-30 09:15:31,995 - root - [INFO    ] (MainThread) Saving configuration:
/home/sgrinstein/workspace/CNM103/module_test/configs/17_module_test_threshold_scan.cfg
```

2015-04-30 09:15:33,204 - root - [INFO] (MainThread) Finished run #17 (ThresholdScan) in /home/sgrinstein/workspace/CNM103/module_test. STATUS: FINISHED



send_commands → send_commad → self.dut[ ][[ ]
command put in Conf Mode = 101101000 1010 1000 000111
\ / \ / \ / \ /
slow cmd run chip conf
mode ID mode

Chip ID = XYYY if X=1 write to all. YYY is chip ID.

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9 Nov 2015: problem with ROOT in LAB PC ubuntu 14.04 32 bit solved, see below.

When trying to open a TBrowser ROOT would crash with:
libpng warning: Application built with libpng-1.2.50 but running with 1.5.13

So it turned out that libpng was pointing the the miniconda version of libpng:
/home/pixel/miniconda/lib/./libpng15.so.15
and all the shared libraries were using this version of libpng.
So I “make clean” and removed miniconda from the LD_LIBRARY_PATH and PATH and then “make” ROOT again.
libASImage.so insisted in depending on libpng15.so.15, so I deleted it by hand:
rm /home/pixel/root/lib/libASImage.so
then “make” and ROOT works as expected and creates pngs with no problem.

Updating to a new version of USBpix in the ubuntu 32 bit lab PC:

Getting the errors like:
PixGPIB “iberr” undefined...
when trying to compile. Not clear why I get this error, but since we do not usually use GPIB through the USBpix software I got rid ot it with:
make clean
. ./setup.sh -gpib no
make
STcontrol → works
