

IST Report

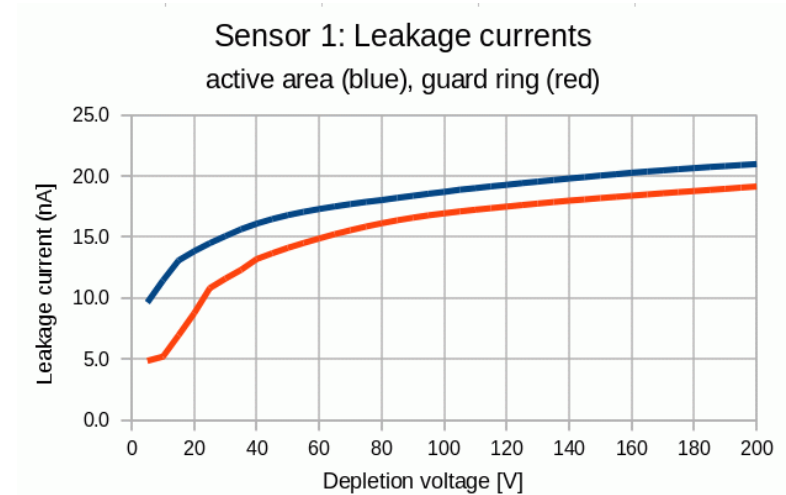
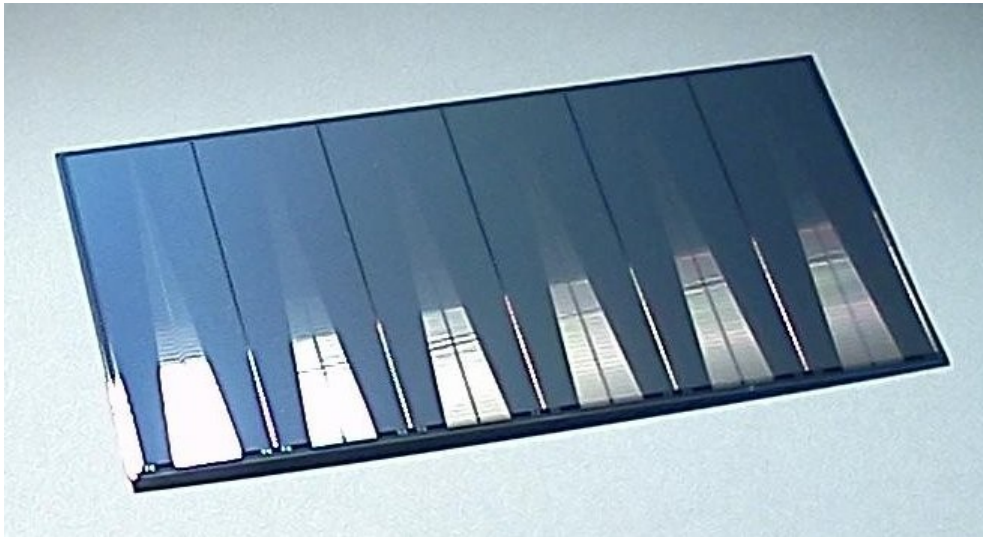
Gerrit van Nieuwenhuizen
MIT

IST presentation overview



- IST prototype staves status
 - Critical items/tasks for run-13 installation
 - Critical items/tasks for run-14 installation
 - Needs for CF shop
 - Revisit Risk list
 - Major upcoming procurements
 - Survey plans
 - Upcoming internal Reviews
 - IST cooling liquid
 - Ladder assembly plan
-

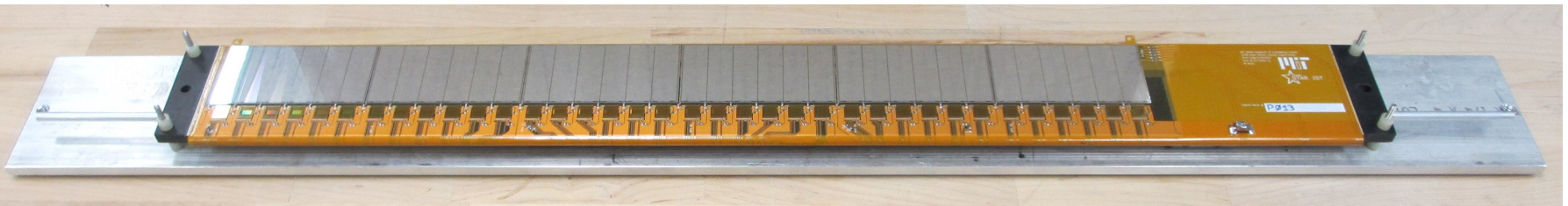
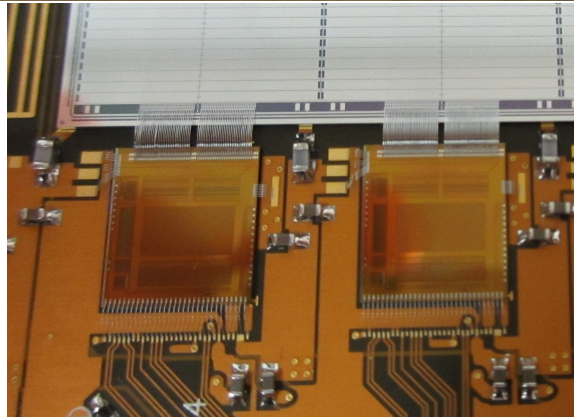
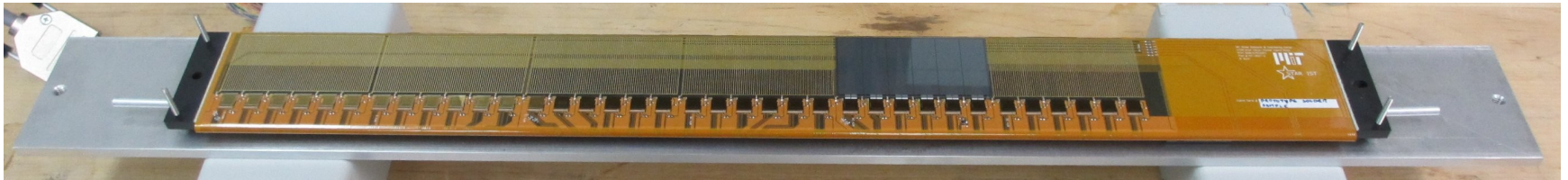
IST silicon pad sensor



Serial No.	1	2
NG strips	0%	0%
coupling short	0	0
readout short	0	0
readout open	0	0
implant short	0	0
implant open	0	0
Bad connection	0	0

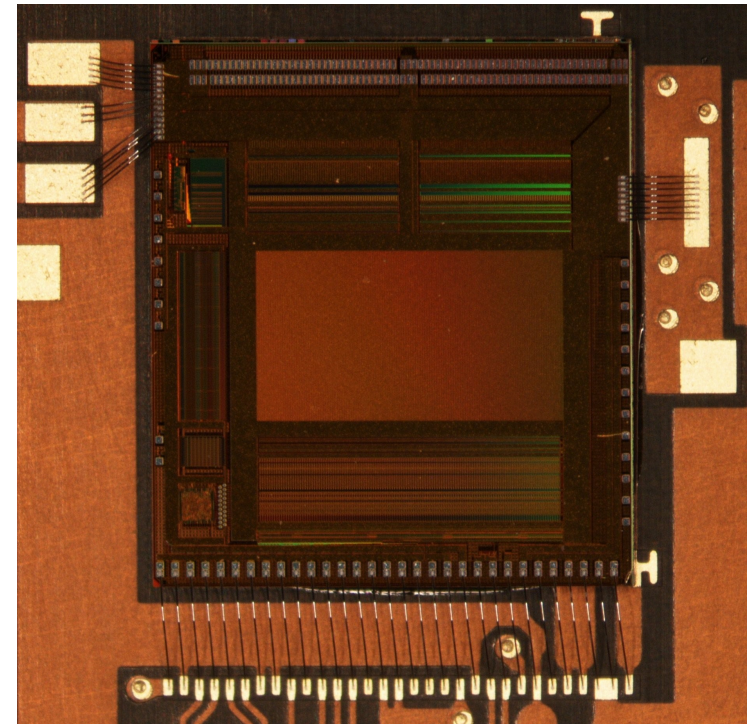
**8 prototypes received on Dec. 14th 2012
Pre-tested, excellent quality, will use as is.**

IST prototype staves



ProtoStave02, 36 APV's, 1 bonded sensor
ProtoStave03, 36 APV's, 6 unbonded sensors

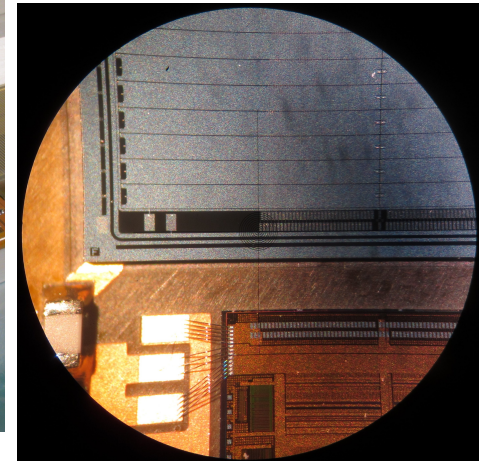
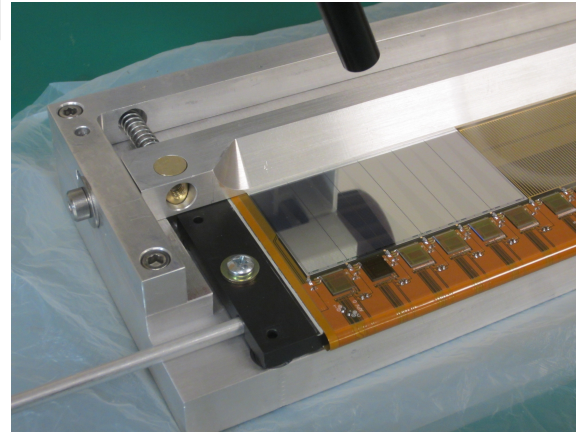
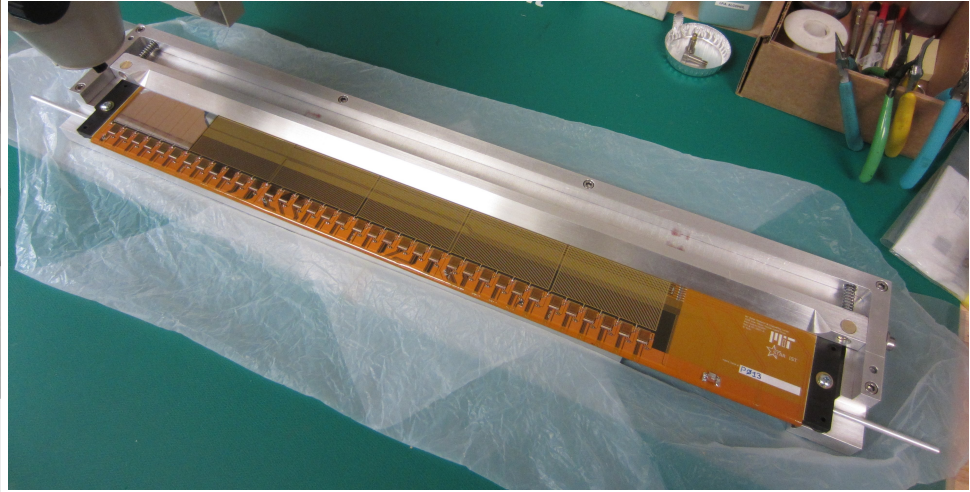
IST prototype stave bonding



Bonded APV25-S1 chip

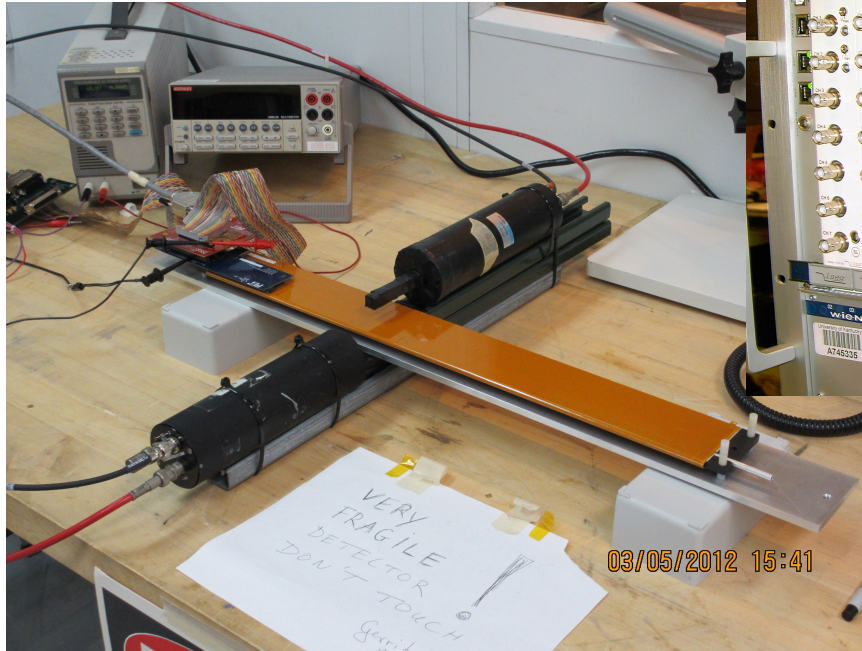
**Bonding of APV's and sensors successful.
Bonding on hybrid and CF stave works great.
Reckon with $\frac{1}{2}$ day for APV's, 1 day for sensors**

IST prototype stave assembly



Placement: 1/2 day for APV's, 1/2 day for sensors

IST prototype stave testing

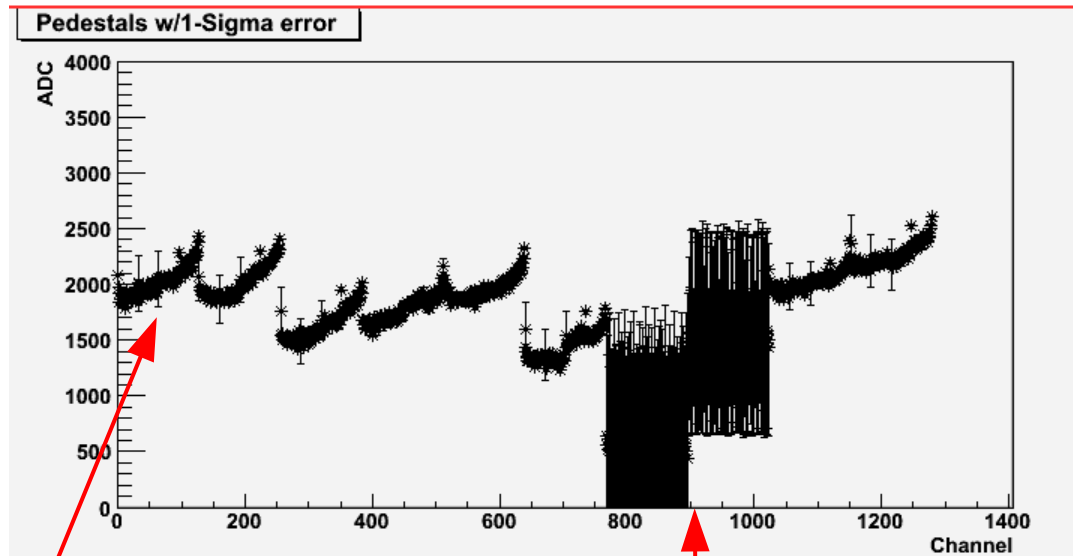


VOLTHGE	CURRENT	TEMP
5 V	5,000	0,000
0,000	0,000	0,000
5 V	5,000	7,000
24 V	24,000	9,080
0,000	0,000	0,000
0,000	0,000	0,000

```
operator@diagram...
File Edit View Search Terminal CtrlP
3_VFSP30_protstave02_sectionC_SensBias060_VFS070_Lat030.sfs
WARNING: fgt_run_daq.C [line 101]: this is the test stand v
INFO: ars_lib.C [line 62]: Reading configuration parameters
INFO: ars_lib.C [line 505]: Configuring RDO 1 with ARM mask
INFO: ars_lib.C [line 375]: ARM address setup completed
WARNING: ars_lib.C [line 386]: GV override on ARC data gath
INFO: ars_lib.C [line 532]: doing I2C for RDO 1...
INFO: ars_lib.C [line 572]: I2C completed
INFO: ars_lib.C [line 578]: RDO 1 is configured
WARNING: fgt_run_daq.C [line 240]: getting ARC clock source selector to INTERNAL
INFO: fgt_run_daq.C [line 278]: Opened /RTScache/data/ist_test_483_VFSP30_protstave02_section
C_SensBias060_VFS070_Lat030.sfs
INFO: fgt_run_daq.C [line 309]: Event 1/100: words 3848, status 0x0F08082
INFO: ars_lib.C [line 627]: Detected ARC firmware rev 80 (0x0050)
INFO: fgt_run_daq.C [line 309]: Event 2/100: words 3848, status 0x0F08082
INFO: fgt_run_daq.C [line 309]: Event 3/100: words 3848, status 0x0F08082
INFO: fgt_run_daq.C [line 309]: Event 4/100: words 3848, status 0x0F08082
```

Remote controlled cosmic ray testing station

IST prototype stave issues



I2C?

Missing termination

Not optimal clock termination

Adding termination on card solves first problem

IST clock termination issue

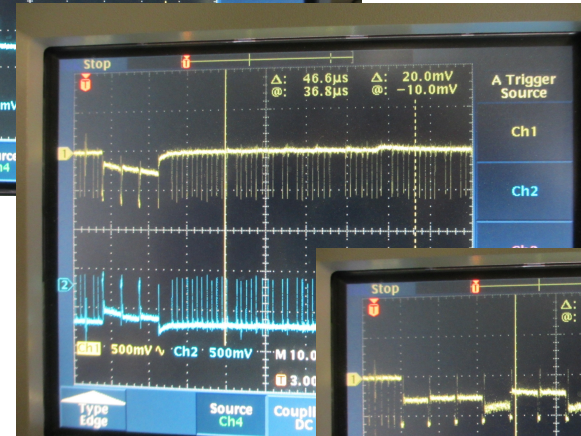
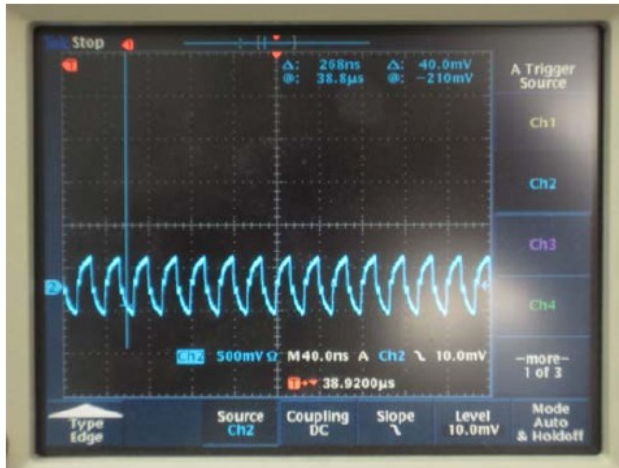


Figure 5: Clock line on APV35 on IST-01 with the design clock termination

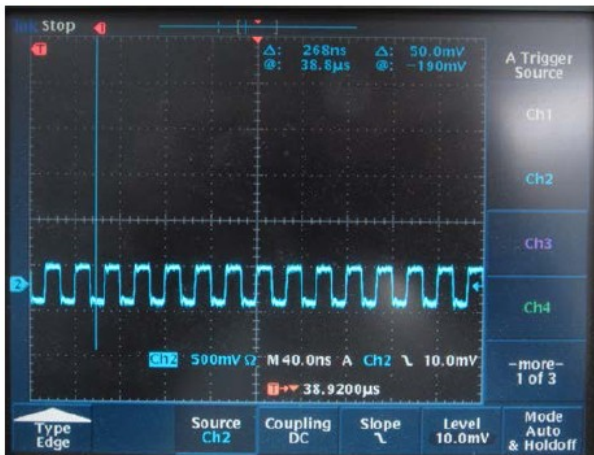


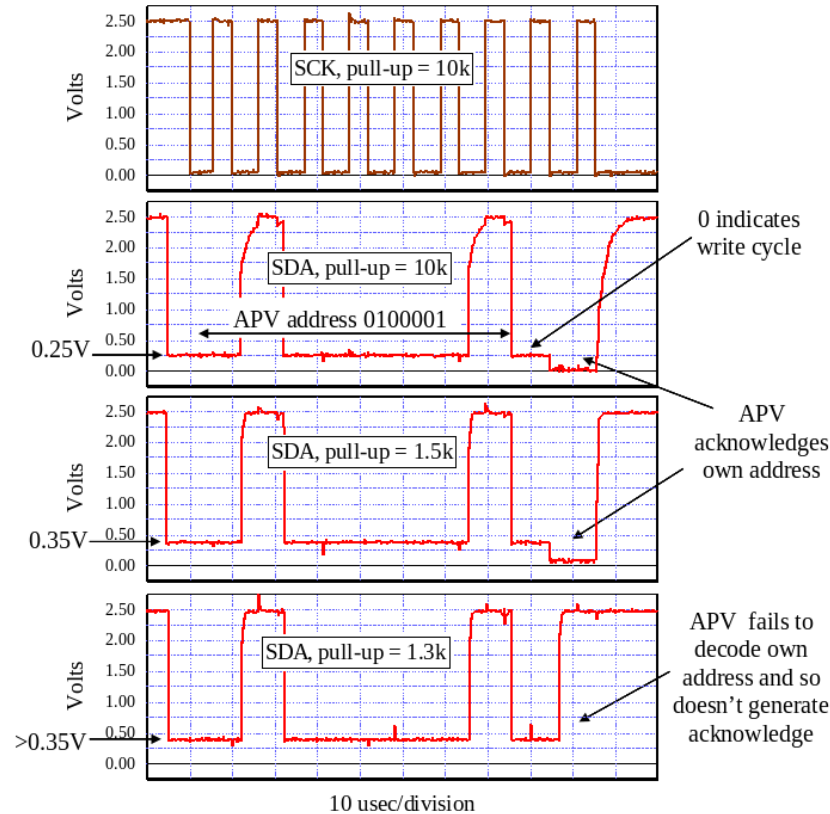
Figure 6: Clock line on APV35 of IST-01 with 50 ohm clock termination

Solved by proper termination

IST(?) I2C level issue



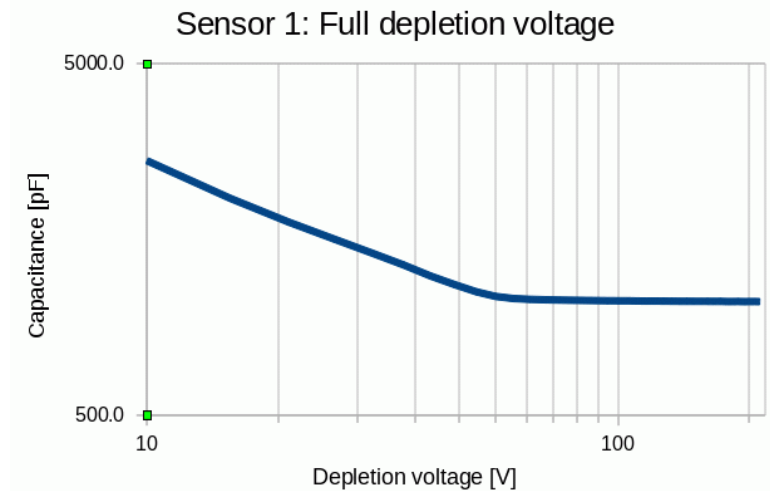
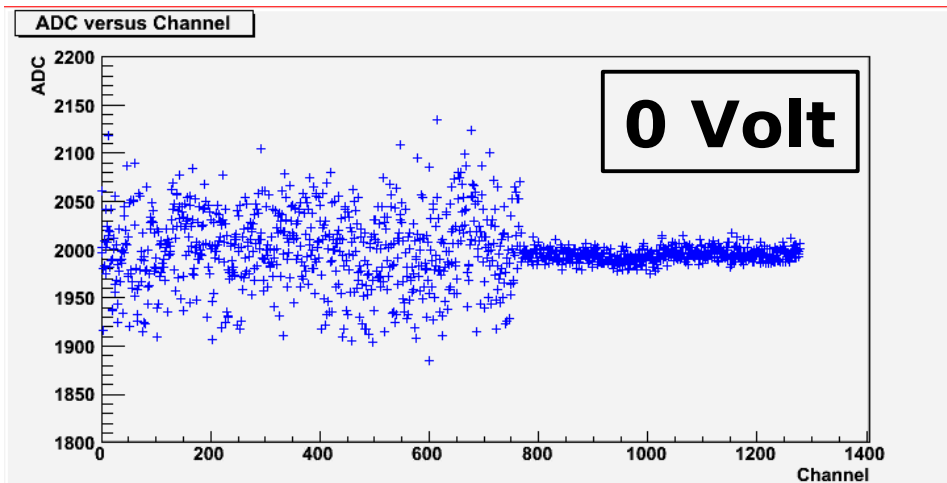
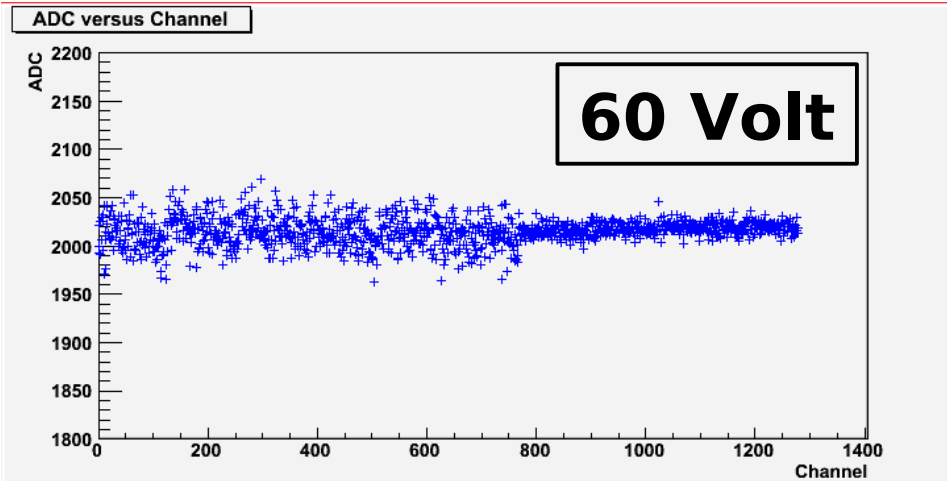
I2C measurements on the IC APV test setup



I2C transaction fails on this setup if SDA line not pulled lower than ~ 0.35 Volts

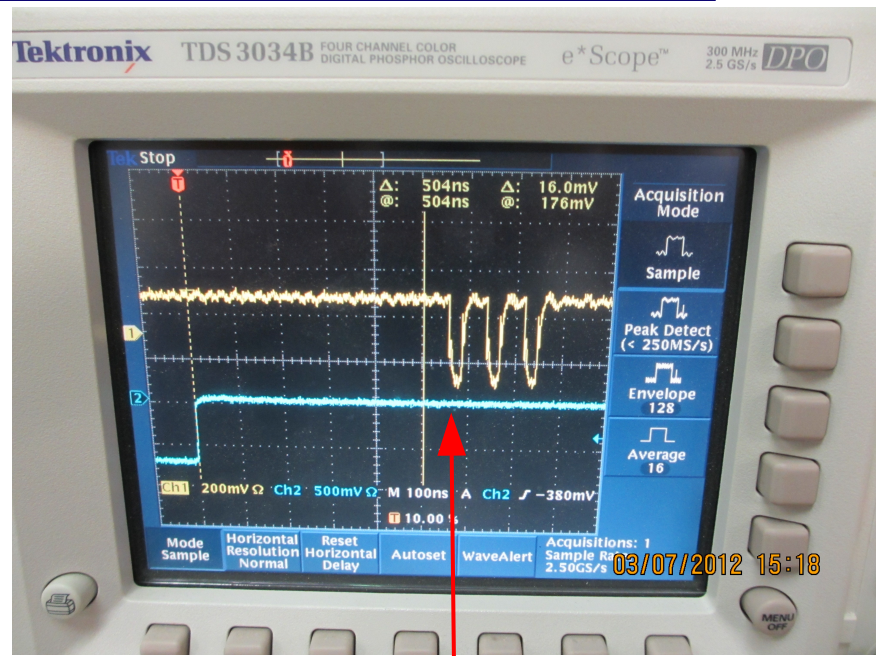
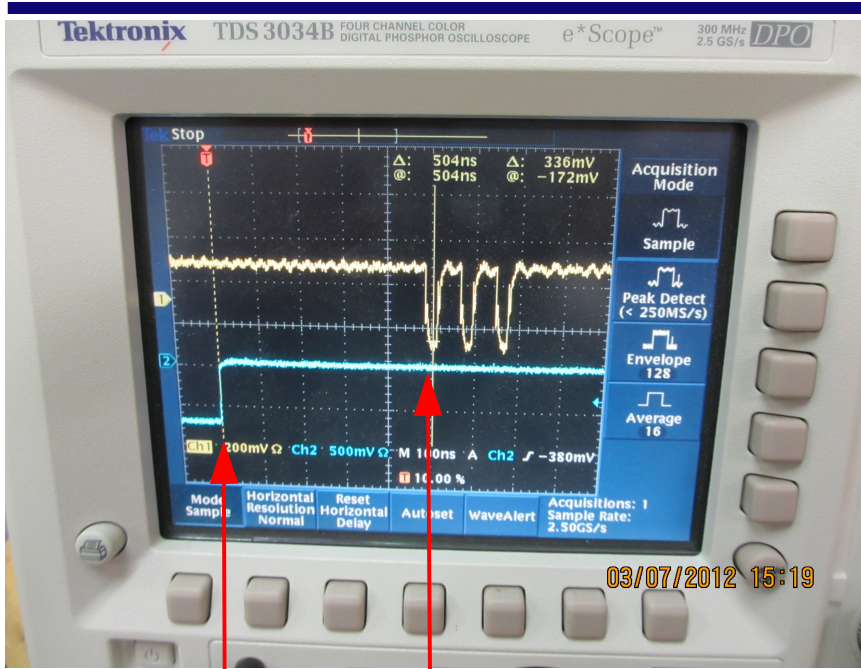
Problem for FGT! Problem for IST? Solvable!

IST silicon biasing



Noise behaves as expected when applying bias

IST slow controls



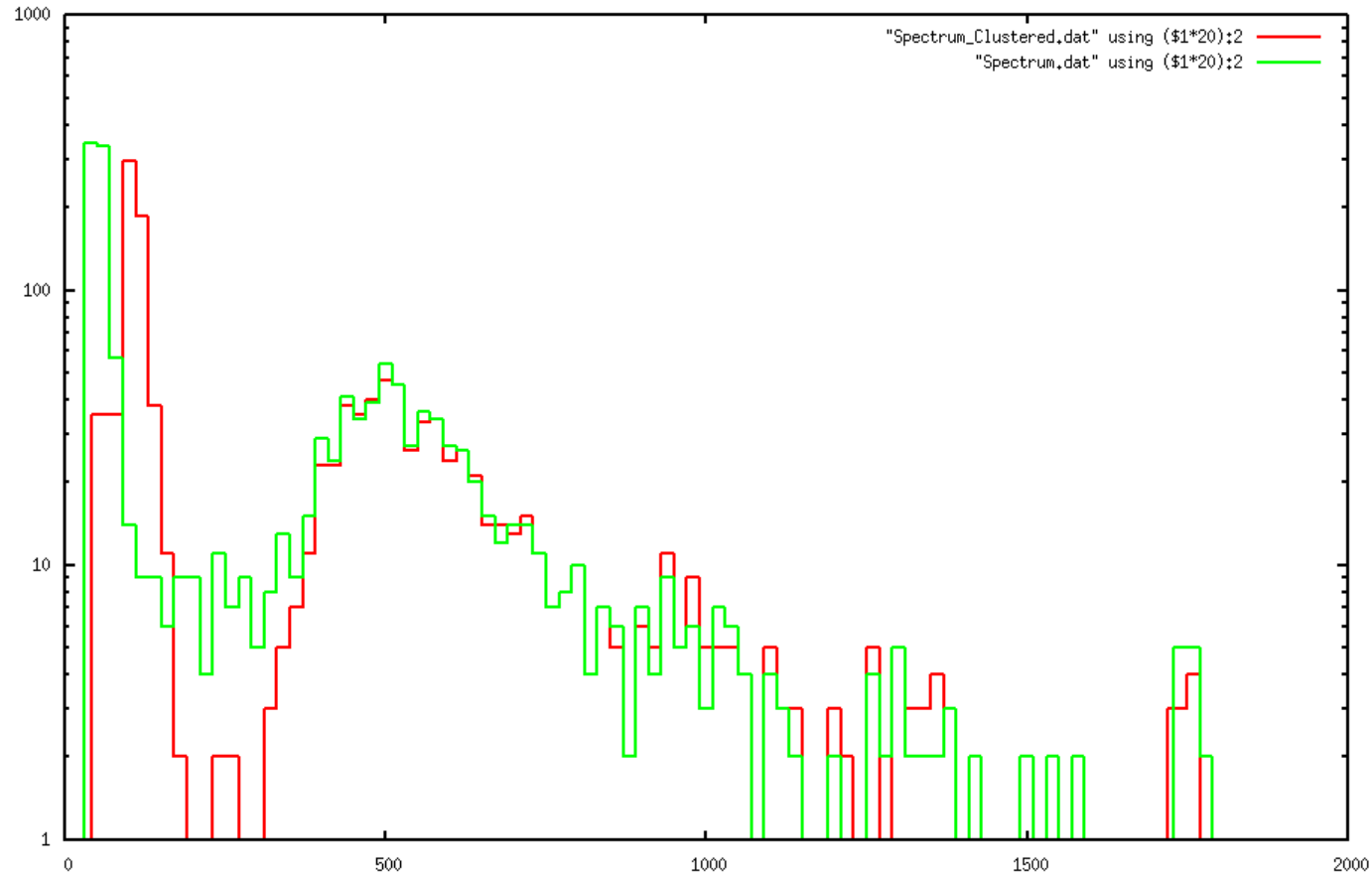
Readout trigger

> 100ns later

Scintillator trigger

**Random trigger latched by 107ns RHCstrobe!
'Fix' in software, but need more time bins.....**

IST cosmics spectrum



**Nice spectrum, S/N better than 10:1, 17:1(?)
Clustering 'split' tracks shows expected dip**

IST installation



Run-13: IST prototype support structures on MSC

Run-14: ??? Dunno, have the whole thing ready ???

IST major procurements



- **MPOD crate, Bias supply, DAQ computer, D-RORC, SIU ---> in process**
 - **Silicon sensors**
 - > **sign off on prototype staves first**
Hopefully in April
6 month lead time
 - **Hybrids**
 - > **sign off on prototype staves first**
Hopefully in April
1-2 months lead time
-

IST cooling system



- **Novec 7200 (C₄F₉O₂H₅) is a stable cooling and cleaning liquid**
- **Opposition in STR against freon, but Novec is not a freon**
- **Have to buy cooling tube stock now to avoid delays, can't wait months for STAR to decide**
- **Ongoing discussions but bit unclear on how to proceed with current manpower**

IST stave assembly



- April-May: CF stave prep
Hybrid procurement
- July: start stave production
8-12 staves per week = 1-2 months
- August: 10 staves per week components
10 staves per week APV's
10 staves per week bonding
10 staves per week testing
- October: 10 staves per week sensors
5 staves per week bonding
5 staves per week testing (no cosmics!)

Aim is to be ready with 24+3 staves by end of CY12
