

Pixel detector commissioning

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Pixel Detector installation was completed June 28 2007:

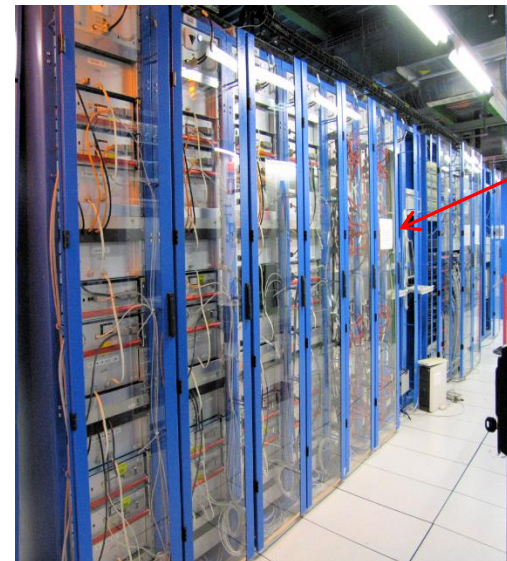
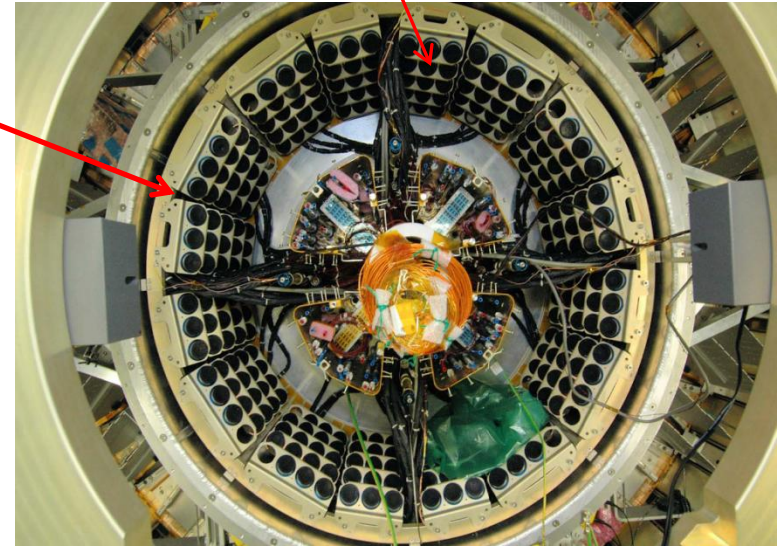
- Last view of the Detector for a very long time as it entered the C-side of ATLAS:



Da allora...

- ✓ Partial test of the continuity from PP1 to the detector after unfolding.
- ✓ ***Services Test*** which exercised the system down to the PP1 connection point using a "dummy detector" consisting of programmable loads, simulated temperatures, and voltage and current measurements.
- ✓ All installed optical services have been qualified with an optical TDR (reflectometer) to validate their attenuation and optical length.
- ✓ ***Cooling: "Loopback Tests"*** with real capillaries and heaters outside the detector to begin flushing and operating all Pixel cooling circuits (and clean the system).

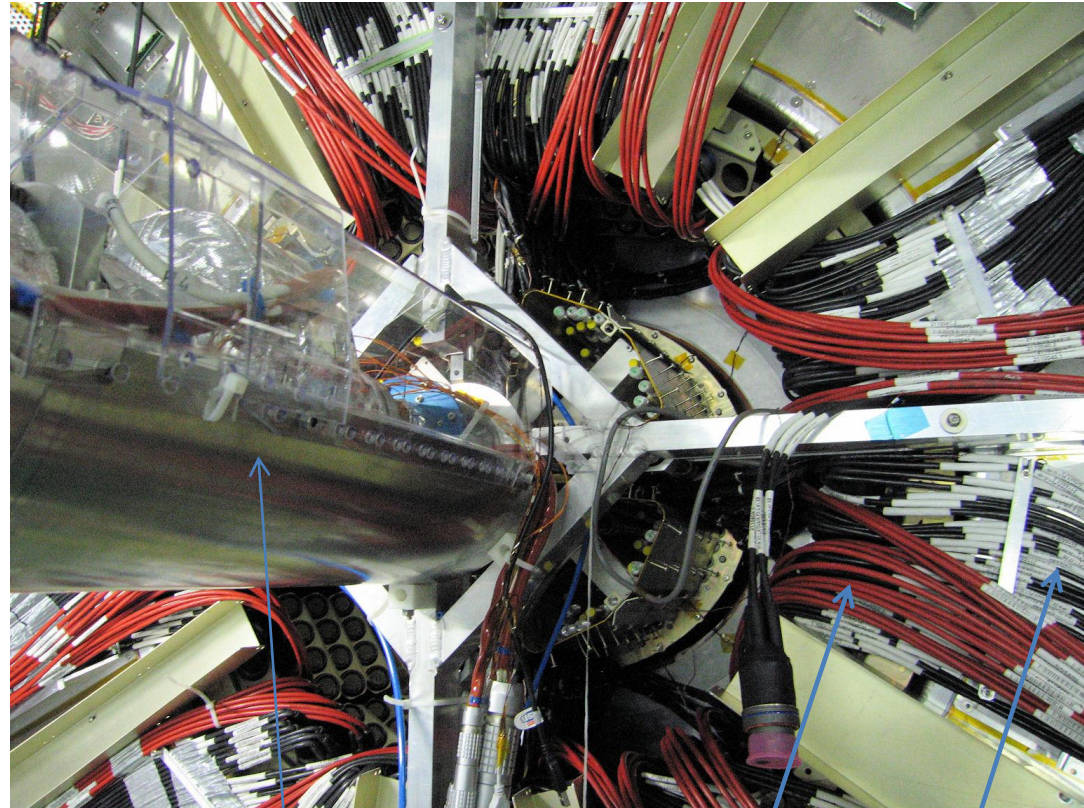
PP1: Pixel interface to external services (before beginning of external service connection)



Counting rooms USA:
LV, HV, LU,
SCOLinks...

Pixel connection

- ✓ La connessione dei servizi e' iniziata il 5 Febbraio sul lato C e una settimana dopo sul lato A. Una decina di persone impegnate sui due lati.
- ✓ Necessario connettere ~ 300 cavi per lato. Per ottante un bundle di cavi NTC, HV e due di LV.
- ✓ Test online per ogni cavo connesso per verificare la connessione sia stata fatta correttamente e che ci sia continuita'.
- ✓ Lavoro maggiore e' il dressing dei cavi per non violare l'ID envelope.



Beam pipe (support)

HV

NTC

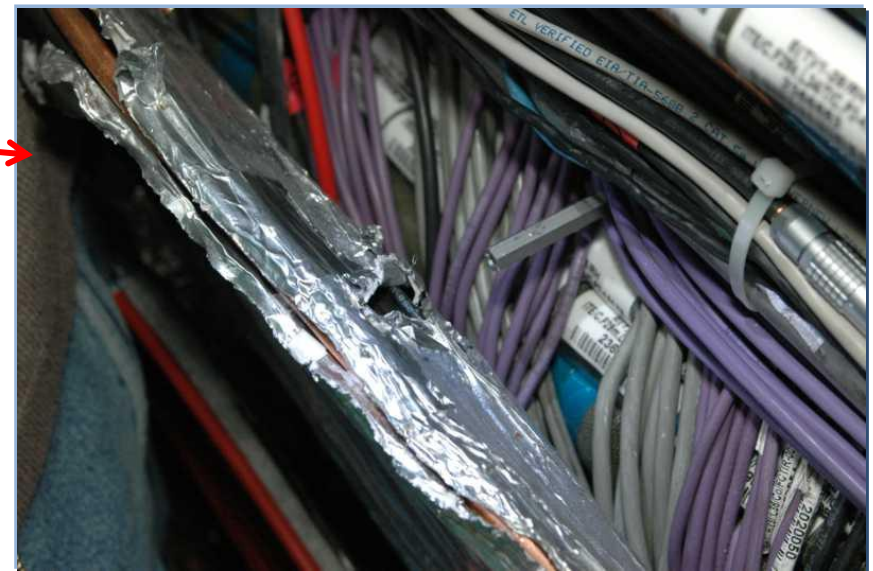
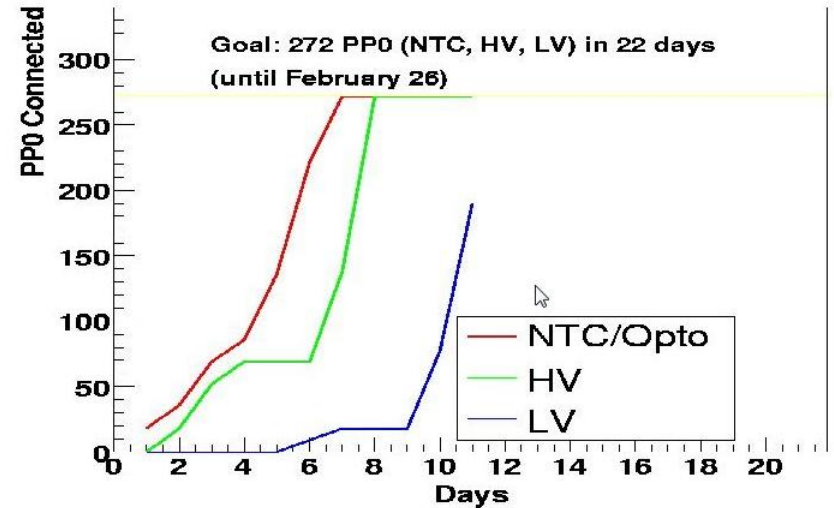
Ultimi cavi cablati oggi sul lato C. Una ventina di cavi mancano sul lato A.

Relativamente pochi i problemi trovati:

- alcune carte negli Scolink (alimentatori delle optoboard) non piu' funzionanti,
- alcuni problemi minori nelle PP2 (diodo rotto, un cavo sconnesso, un corto a massa),
- un cavo troppo corto-> necessario aggiungere uno spare,
- Un cavo con shielding danneggiato,
- due sensori ambientali in corto sul detector,
- **Molti retracted pin nei connettori Lemo (dell'ordine di alcuni per decina di cavi). Necessario rincollarli e curing overnight.**

Connected cables

Pixel Electrical Connection (Feb. 18)



Octant	NTC (EI, Mech, EI Check)	HV (EI, Mech)	Bottom LV (EI, Mech, EI Check)	Top LV (EI, Mech, EI Check)	Further tests	Comments
C1	😊😊✅	😊😊	😊😊	😊😊 SIGNED-OFF	✅ NTC retest after complete LV dressing	short cable very tight (VVDC)
C2	😊😊✅	😊😊	😊😊 tested but one high AVDD (109mA in 106)	😊😊 SIGNED-OFF	✅ NTC retest after complete LV dressing	
C3	😊😊✅	😊😊	😊😊	😊 not dressed	✅ NTC retest after L1 LV dressing	
C4	😊😊✅	😊😊	😊😊	😊	✅ NTC retest after L2 LV connection	
C5	😊😊✅	😊😊	😊😊	😊	✅ NTC retest after L2 LV connection	Ground fault on 034 solved, damaged cable LV (059 VDD or VDDA) see https://atlpix01.cern.ch/elog/Detector/290
C6	😊😊✅	😊😊	😊😊	tested but one cables in gluing	✅ NTC retest after L1 LV dressing	R Hygrotron@BBM to be tested
C7	😊😊✅✅	😊😊	😊😊	connected but one cables in gluing	✅ NTC retest after L1 LV dressing	P5ex is shorted to GND on the detector
C8	😊😊✅	😊😊	😊😊	😊	✅ NTC retest after L1 LV dressing	Type0 env 17=0.0
A1	😊😊✅	😊😊	😊 to be dressed			
A2	😊😊✅	😊😊	😊😊	😊 to be dressed	✅ NTC retest after L1 LV dressing	
A3	😊😊✅	😊😊	😊😊	tested- two cables to be glued	✅ NTC retest after L1 LV dressing	
A4	😊😊✅	😊😊	😊 to be dressed			P3Rs is shorted to GND on the detector

what is next

Optical connection: 1 week per side (will be parallel for 2 sides)

- ✓ For each side need to route and connect 160 MT-16 connectors.
- ✓ These connections must also be fully validated for connectivity and for continuity as Once cooling connection starts, the fiber patch-panels are no longer accessible.
- ✓ This is done by making power measurements for each fiber at the receiving end (turning on the lasers for one fiber at a time).

Cooling connection: 4 weeks per side (will be parallel for 2 sides)

what is next-to-next

- Based on a detailed schedule, total connection time is 2 months, all connection work should be finished by April 2nd (C-side) and April 7th (A-side), ready for start of cooling/detector commissioning.
- Basic activities for sign-off:
 - Create temporary dry-zone in PP1 region by sealing nose and heater tray regions,
 - Commission cooling services in octants,
 - Operate larger and larger groups of modules, making basic performance checks and stability checks. Focus on issues that could be “repairable at PP1”.
 - Do some temperature/power cycling to validate control parameters and pixel interlocks.
- Once the basic qualification measurements have been completed, we need reopening at PP1, and repeating the leak-check and leak-down tests (and tighten connectors if needed).
 - We have experienced connector leaking after first thermal cycles
- Estimated time for overall Pixel sign-off: dry-out (3d), commission/operate (1w), re-do leak check (3d) → **2w overall**
 - assuming no technical problems!

Look at Kevin’s talk at the ATLAS week to know more

<http://indico.cern.ch/materialDisplay.py?contribId=24&sessionId=8&materialId=slides&confId=20499>

Pixel are coming (relatively) soon!

20-feb-08

First combined cosmics run (SCT+TRT)!

