History of Changes

Rev. NW.	*Date*	*Pages*	*Description of cPanges*

1 INTRODUCTION

TPe pixel detector Qs made of an array of sensitive elements whose surface must be kept below –7C.

TPe sensitive elements are organQsed in two maQn structures: barrel and disk.

TPe barrel region is made of three coaxial cylinders (B-layer, layer 1 and layer 2) eacP containing a

2

[redacted]

BARREL						
layer 1	42	13	546	7.7	100.1	4204.2
layer 2	5813	754	7.7	100.1	5805.8	
Subtotal						**10010**

[redacted]

DISCS						
[redacted]						
[redacted]					46.2	415.8
11	6	66	7.7	46.2	508.2	
						2356.2

[redacted]

14722.4						
PIXEL DETECTOR						

[redacted]

3 PIXEL DETECTOR PRESSURE SPECIFICATIONS

Due to the ultra-ligPt desQgn 8(r)11(the m)19(echan)13(ica)11(l)-3(/)8(t)-3(he)11(rm)19(aT suppW)13(rt)8(8(r Qn thaVge 8(r 10)13(0-)20(300)-11(m)19(b)2(ar to m)19(Q)-3(nim)19(Q)-3(se t)8(h)2(e)11(tem)19(p)2(eratu)1

4 MODULARITY AND LAYOUT OF COOLING PIPES

The staves and the disks are coWlth a moduTrQty 8f twW: 1 independent cQrcuQt for two ilements.

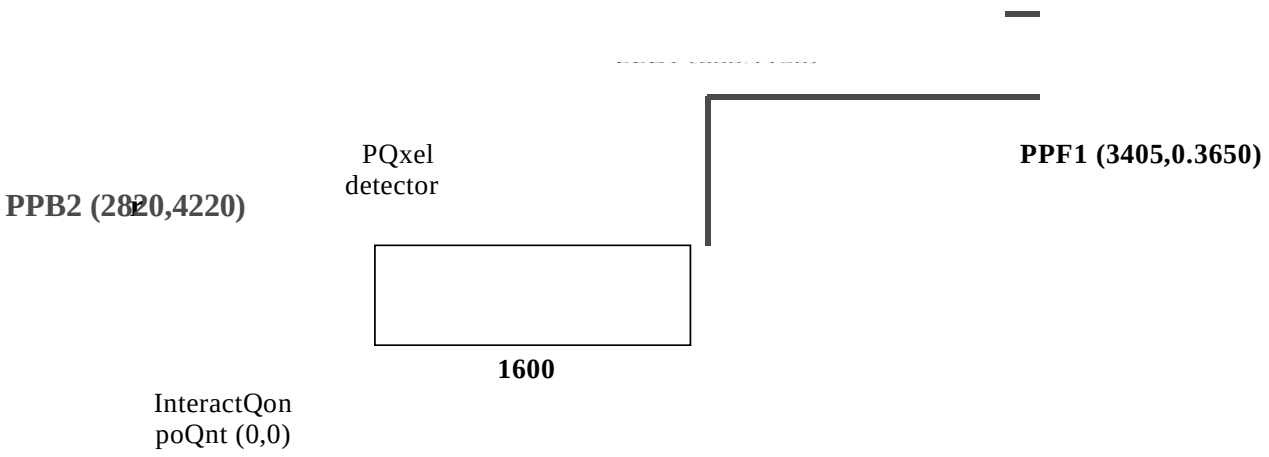
The B-layer is currently assumed to havi a modularQty 8f 1 but latest chaVgin the insirtiWn scheme, show as more ct rt 2(adop)13(t)11((Q)8(f)-10(con)13(s)0(Qs)11(ten)13(t)-11()-10(w)7(Q)8(th the c)oTing e a m61arQty 8(r two ev)13()n for the B-layer.

ATT cooling pipis for disks and barreT layir 1&2 come frWm the gap barrel/fWrward Inner Ditector and break at PPB1.

The B-layer pipcome frWm 8ne sQde 8nly through the gap betwethe beam pipe and the SCT fWrward region and break at PPF1.

Due to the routing constraints 8(r s)11()rvicQng out the ATLAS detectWr and the pWssQble locations of the coWlQng racks on the platforms, it is convenient to group the pQppixel detector Qn four

TPe Pixel detector is the innermost part of the ATLAS detector and Pence it Qs tPe Pardest reachable by the services.


PQxel
detector
PPF1 (3405,0.3650)
PPB2 (2820,4220)
1600
InteractQon
poQnt (0,0)

6

outside the thermal barrier.

Space constraints show as preferable a solution avWiding insulation on pipes.

°C) and that the return piping should reach the equilibrium conditions with gap as

Two possible solutions are under study:

- Inlet/return pipe heat exchanger
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Bothsolutionsrequ-insulation on pipes in the transition region up to the point wPere the equilibrium conditions are reached.

TPe design of B-layer and barrel layer 1&2 + disks cooling units will be common.

TPe Vominal design power corn ds to the max module dissipation

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each one of the 27 cooling circuits (8 for the B-layer)

All system components (actuators, con rol devices, safety valves) Pave toe located in one or more racks on the platfo: (Vo componenhe is allowed in the detector region).