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PRINCIPAL LHCC DELIBERATIONS

29TH MEETING OF THE ATLAS RESOURCES REVIEW BOARD

12 OCTOBER 2009

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GENERAL

This document summarises the principal LHCC deliberations concerning ATLAS at the Committee's sessions in July 2009 and September 2009.

The LHCC considers that ATLAS has made excellent progress in all aspects of the experiment and is ready for the start of the LHC.

CONCERNS FROM THE PREVIOUS ATLAS RESOURCES REVIEW BOARD

SUB-SYSTEM	CONCERN	STATUS
Cathode Strip Chambers	Instability of the read-out modules of the Cathode Strip Chambers (CSCs).	Instability problems have been resolved and the read-out rate of the CSCs has improved to 15 kHz. Reaching the design value of 75 kHz may require new electronics.
LAr Electromagnetic Calorimeter	High failure of front-end optical transmitters of LAr Electromagnetic Calorimeter.	The LHCC recommends that ATLAS continues to monitor the failures and develops a long-term plan to resolve the issue.
Inner Detector Cooling System	Reduced operational efficiency.	The stability and reliability of the evaporative cooling system remain a concern. Given the expected long lifetime of the experiment, replacement of the evaporative cooling plant is warranted.

STATUS OF THE EXPERIMENT SUB-SYSTEMS

The ATLAS detector is prepared for the onset of collider data. All detector systems have more than 98% of their channels operational. The recent cosmic-ray runs show that the complete ATLAS experiment is operational and the achieved performance is good enough for early physics in most cases.

LAR ELECTROMAGNETIC CALORIMETER

The failure rate of optical transmitters of the LAr Electromagnetic Calorimeter is worrisome. The cause is not yet fully understood. Since May 2009 there have been 15 failures, representing about 1% of the calorimeter's total channel count. The LHCC recommends that ATLAS continues to monitor the failures and develops a long-term plan to resolve the issue.

CATHODE STRIP CHAMBERS

The read-out rate of the Cathode Strip Chambers (CSCs) has improved to several kHz and is expected to reach 40 kHz soon. Achieving the required design value of 75 kHz may require new electronics. In order to ensure the successful preparation for the next long LHC shutdown, ATLAS should prepare a plan to resolve the low read-out rate of the CSCs.

DETECTOR COOLING

The stability and reliability of the evaporative cooling system, used for the Semiconductor Tracker and Pixel Detector, remain a concern. Given the expected long lifetime of the experiment, replacement of the evaporative cooling plant is warranted.

TRIGGER AND DAQ

Good progress was reported on the Trigger and DAQ, with no major concerns having been identified.

SOFTWARE AND COMPUTING

The ATLAS software is in good shape, with the software for simulation, reconstruction, and analysis tools ready for LHC beam.

PHYSICS PLANS

The initial physics strategy focuses on detector commissioning and Standard Model physics evolving towards a second phase involving searches. The Standard Model analysis will include minimum bias investigations together with the measurement of jet, J/ψ , and W/Z boson production cross-sections. Thereafter, top quark measurements and searches for Z' and supersymmetric particles will emerge.

INSERTABLE B LAYER

The design of the Pixel Detector Insertable B-Layer (IBL) for the ATLAS Phase-1 upgrade is advancing. The Technical Design Report will be submitted to the LHCC by mid-2010. In order to ensure that the IBL remains on schedule, the LHCC recommends that funding for 2010 should be identified.