

PRINCIPAL LHCC DELIBERATIONS

27TH MEETING OF THE ALICE RESOURCES REVIEW BOARD
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GENERAL

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

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

CONCERNS FROM THE PREVIOUS ALICE RESOURCES REVIEW BOARD

SUB-SYSTEM	CONCERN	STATUS
Photon Multiplicity Detector (PMD)	Concerns remain on the detector being able to meet its ready-for-installation milestone.	Discharge problems on the PMD are resolved and the detector has been installed.
Transition Radiation Detector (TRD)	Gas leak in the wire chambers resulting in delay of TRD installation.	The gas leak has been repaired. Seven out of the 18 TRD modules have been installed and it is expected that the full TRD configuration will be completed by early-2011.
Photon Spectrometer (PHOS)	Condensation on the PHOS requires re-design of the detector enclosure, resulting in the delay of the PHOS installation.	All three PHOS modules have been installed in ALICE inside the redesigned gas-tight enclosures. The modules are being flushed with dry nitrogen and it is expected that they can be cooled down within the next months.

SHUTDOWN AND COSMIC-RAY RUN

The MINIFRAME, which carries the services to the ALICE central detector, has been modified in order to allow for better access to the TPC Side-A electronics.

Global commissioning of the ALICE experiment took place during a cosmic-ray run in August and September 2009. All sub-detectors, except for the Photon Multiplicity Detector (PMD), were included in the run and the ALICE Trigger and DAQ systems were integrated and functioned stably.

STATUS OF THE EXPERIMENT SUB-SYSTEMS

FORWARD DETECTORS

The T0 timing detector and the Zero Degree Calorimeters (ZDCs) are ready for data taking. The V0 detector suffers from after-pulses of the photomultipliers, but this is not a source of concern for the upcoming run and solutions are being investigated for the future. Good progress was reported on the Forward Multiplicity Detector (FMD), with no major issues been identified. The Photon Multiplicity Detector (PMD) is overheating and an upgrade of the ventilation system is underway. The cosmic-ray detector ACORDE is fully operational.

INNER TRACKING SYSTEM AND TIME PROJECTION CHAMBER

The status of the Inner Tracking System (ITS), consisting of the Silicon Pixel Detector (SPD), the Silicon Drift Detector (SDD) and the Silicon Strip Detector (SSD), was extensively discussed. The SPD has a serious issue related to the cooling system where problems have deteriorated since the last LHCC session. In July 2009 14 % of the pixel channels were not working, mainly due to insufficient cooling, while in September 2009, even after extensive work on the cooling system, this number has gone up to 29%. Such a large loss of pixel channels might result in considerable degradation of the tracking performance. The Committee encourages the ALICE Collaboration to seek external advice from experts in thermodynamics engineering in order to find a solution as quickly as possible. Good progress was reported on the Silicon Drift Detector (SDD) and Silicon Strip Detector (SSD), with no major issues having been identified.

The Time Projection Chamber (TPC) electronics is in excellent shape and the full ^{83}Kr calibration was performed, showing the good response uniformity of the detector.

PARTICLE IDENTIFICATION

The gas leak in the wire chambers of the Transition Radiation Detector (TRD) has been repaired. Seven out of the 18 TRD modules have been installed in ALICE and it is expected that the full TRD configuration will be completed by early-2011.

The Time-of-Flight (TOF) detector is performing well and with a time resolution approaching its design value. The detector was used for triggering during the recent ALICE cosmic-ray run.

Good progress was reported on the High Momentum Particle Identification Detector (HMPID), with no major issues been identified.

CALORIMETERS

Four super-modules of the Electromagnetic Calorimeter (ECAL) were installed and commissioned during the shutdown. Two more super-modules will be available for installation in January 2010.

All three Photon Spectrometer (PHOS) modules have been installed in ALICE inside the redesigned gas-tight enclosures. The PHOS modules cannot yet be cooled to their optimal temperature because the residual humidity in their cases is decreasing only slowly. The modules are being flushed with dry nitrogen and it is expected that they can be cooled down within the next months.

MUON SPECTROMETER

The Muon Spectrometer was commissioned with cosmic-rays for the first time and a large data sample was collected with the dipole magnet on and off. The electronics of both the tracking and triggering systems are in excellent shape.

TRIGGER AND DAQ

The DAQ has been successfully upgraded to reach its required performance. The new hardware has been commissioned and is ready to be used.

The Detector Control System (DCS) is in good shape and ready for the upcoming LHC run.

All the required hardware for the High Level Trigger (HLT) is ready to trigger on data from the first LHC proton-proton run. The subsequent Pb-Pb run will need more computing power and this is expected to be installed in time.

COMPUTING

The ALICE computing resources have been re-profiled to match the LHC running plan and this has improved the situation for 2009/2010. ALICE now has 1.5 PB of disk buffer prior to the main storage, representing a standard year of proton-proton running at the LHC and allowing for more flexibility on the offline selection.

PHYSICS PLANS

For the first LHC physics run, ALICE is focusing on minimum bias proton-proton event characterization in order to have data for comparison with the heavy-ion programme and for tuning the minimum bias proton-proton event generators. The initial lower LHC 7 TeV centre-of-mass energy and luminosities are suitable for these studies. Specific studies of very-high-multiplicity events are also planned.