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PRINCIPAL LHCC DELIBERATIONS

10TH MEETING OF THE TOTEM RESOURCES REVIEW BOARD

24 APRIL 2012

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GENERAL

This document summarizes the principal LHCC deliberations concerning TOTEM at the Committee's sessions in December 2011 and March 2012.

The LHCC congratulates TOTEM for their successful physics runs and for the experiment's physics results.

CONCERNS FROM THE PREVIOUS TOTEM RESOURCES REVIEW BOARD

No major concerns were reported to the previous TOTEM Resources Review Board.

STATUS OF TOTEM DETECTOR

All TOTEM detectors are operational and the work planned for the year-end 2011-2012 Technical Stop has been successfully achieved. In particular, the hardware installations required to enable the electrical trigger, which should deliver to the CMS Level-1 trigger the Roman Pot (RP) trigger signals, has been completed, and the trigger is ready for commissioning at the earliest opportunity. Minor issues on the RP vacuum system and cooling, on the T1 detector trigger and high-voltage partition, and water leaks and low-voltage connector problems with the T2 detector have likewise been fixed. Work has also taken place to improve the reliability of the RP movement controls, following the requests of the Machine Protection Panel, and the new controls will be in place for both TOTEM and the ATLAS ALFA Roman Pots for the 2012 run.

TOTEM PHYSICS RESULTS

The LHCC took note of the TOTEM charged-multiplicity measurement with the T2 detector, of the analysis of the elastic rates, of the studies on double-Pomeron-exchange and single diffractive processes and of the important progress towards the luminosity-independent measurement of the total proton-proton cross-section at 7 TeV centre-of-mass energy, including an in-depth assessment of the systematic uncertainties. The preliminary results are consistent with those obtained earlier through the determination of the elastic slope at t=0 via the optical theorem and the luminosity provided by CMS, and through the direct determination of the total inelastic rate. The LHCC nevertheless **encourages** TOTEM to review, in collaboration with CMS, the impact of the revised luminosity calibration by CMS, which was used by TOTEM in the already published cross-section measurement.

TOTEM OPERATION IN 2012

The Committee **supports** the request by TOTEM to benefit from the upcoming LHC runs dedicated to the alignment of the tertiary collimators and to begin the work of alignment of the TOTEM RP detectors. However, to minimise the number of dedicated fills, these runs should be limited to the alignment of the minimum number of RP detectors necessary to allow the commissioning of the electrical triggers, during the low pile-up runs scheduled for the first week of April 2012.

The TOTEM running strategy for 2012 foresees RP data-taking during the high-luminosity runs, as well as a few special runs. The top priority for the latter is a study of hard diffraction events, in parallel with CMS, using the 90 m optics and 156 bunches. TOTEM is also requesting to take part in a possible run with the 500 m optics, which is expected to become available later in the year. The Committee recognises the scientific value of these runs, and **endorses** the requests provided they can fit within the time frame and the allocation for special runs that have postponed to later in the year as emerged from the LHC Performance Workshop in Chamonix 2012.