Minutes of the 22nd TOTEM Resource Review Board Meeting
(CERN, Geneva, 24th April 2018)

Present:

O. Novak (Ministry of Education, Youth and Sports, Prague, Czech Republic)
A. Kupčo (Institute of Physics AS CR, Czech Republic)
K. Huitu, K. Osterberg (Helsinki Institute of Physics, Finland)
A. Zoccoli, N. Pastrone (INFN, Italy)
M. Malawski (AGH - University of Science and Higher Education, Poland)
D. Drewniak (Ministry of Science and Higher Education, Poland)

TOTEM
M. Arneodo, S. Giani

CERN
G. Cavallo, E. Elsen (Chairperson), M. Krammer, E. van Herwijnen (Scientific Secretary),
T. Wengler

Scrutiny Group: F. Simon


Documents can be found in the RRB indico pages; accessible via the LHC-RRB home page
http://cern.ch/committees/LHCRRRB

E. Elsen welcomed delegates to the meeting.

2. Approval of the minutes of the last meeting. E. Elsen, Director for Research and Scientific Computing.
CERN-RRB-2017-131

The minutes of the last RRB CERN-RRB-2017-131 were approved.

3. Status of the experiment. S. Giani, Spokesperson
CERN-RRB-2018-029

Summary:
Experimental results:
- \( \rho \) measurement at 13 TeV significantly (>4\( \sigma \)) lower than pre-LHC expectations;
None of the Pomeron(s)-only models compatible with \( \sigma_{\text{tot}} \) and \( \rho \) measurements: inclusion of Odderon component essential (with the implication of existence of vector-gluonball \( J^{PC} 1^{-} \));
High energy dip pattern in ppbar vs pp (unique TOTEM measurement): evidence for t-channel 3-gluons-state exchange, which seems to be independent of \( \rho \) and \( \sigma_{\text{tot}} \).
If crossing-odd component shown unimportant, current measurements give first observation (dispersion relations) of slower rise of \( \sigma_{\text{tot}} \) at higher energies.

There were no questions arising from this presentation.

4. LHCC Deliberations (paper only). T. Wengler, LHCC Scientific Secretary
CERN-RRB-2018-030

Summary:
- The LHCC considers that TOTEM has made excellent progress and the Committee congratulates the TOTEM Collaboration on its achievements.
- Two papers have been submitted: elastic, inelastic and total cross sections and the \( \rho \) parameter at 13 TeV.
- The CT-PPS analysis of the high-mass dilepton spectrum is completed.
- The full CT-PPS detector has been implemented in the Geant simulation.
- The YETS activities have been completed: tracking stations in the roman pots are equipped with pixel detectors, vertical timing stations re-instrumented, lead shield to protect from radiation from TCL6 collimators deployed.
- Piezoelectric motor for additional flexibility in repositioning the pixel sensors at 200 m to be installed during LS1.

The LHCC:
- **Recognizes** the physics potential of CT-PPS and the possible value of continued operations in Run 3, in order to fully exploit the physics programme.
- **Requests** a complete review of the long-term physics potential.
- **Requests** a precise description of the anticipated resources required to support the needs of PPS during Run 3.

There were no questions arising from this presentation.


G. Cavallo presented the financial situation as of 24 April 2018.

There were no questions arising from this presentation.

6. Budgets. S. Giani, Spokesperson
CERN-RRB-2018-033 (Status of Resources and Financial Plan)

Summary:
- TOTEM will review with the Scrutiny Group referees the refinements required in the projections 2019.
- TOTEM is grateful to the RRB, LHCC, Funding Agencies, Scrutiny Group, and CERN Management, which helped the collaboration for the production of its 13 TeV physics results, and is looking forward to their support during LS2 in order to complete the physics program at the start of LHC Run 3.
- TOTEM is also grateful to CMS for the fruitful collaboration on the CT-PPS full integration in CMS and to the LHC groups for their continued successful developments of large $\beta^*$ optics on the accelerator.
- TOTEM is looking forward to iterating with the Scrutiny Group on the required reviews in order to finalize the 2019 M&O budget request.

The MoU between TOTEM and CMS was completed on Friday 20 April and signed by CERN on Monday 23 April:
- It allows the full integration of CT-PPS in CMS as a Level 1 subsystem of CMS. From now on it will be called PPS.
- It guarantees that TOTEM can complete its approved physics program at 14 TeV.
- On the completion of the TOTEM physics program all the TOTEM institutes will have the possibility to merge with CMS. During the transition period there is a formula allowing dual membership.
- It covers the transfer of hardware, detectors, ownership, funds, and personnel during the transition period.

E. Elsen congratulated TOTEM and CMS for achieving this agreement and S. Giani personally for taking the lead of the new PPS group in CMS. It is important to note that there will be no double charging during the transition period. Concerning the 14 TeV run, there is no guarantee that this will happen immediately at the start of Run 3. This run will conclude the TOTEM physics program.

7. Summary. E. Elsen, Director for Research and Scientific Computing

The developments with the forward detectors and CMS are in the right direction with interesting physics emerging.

There being no further business, E. Elsen thanks the Funding Agencies and closed the meeting. The proposed dates for the next RRB are 29-31 October 2018.

Reported by: E. van Herwijnen