

TOTEM Status Report

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Status of the publications

(Since last TOTEM talk at LHCC open session in June/2019)

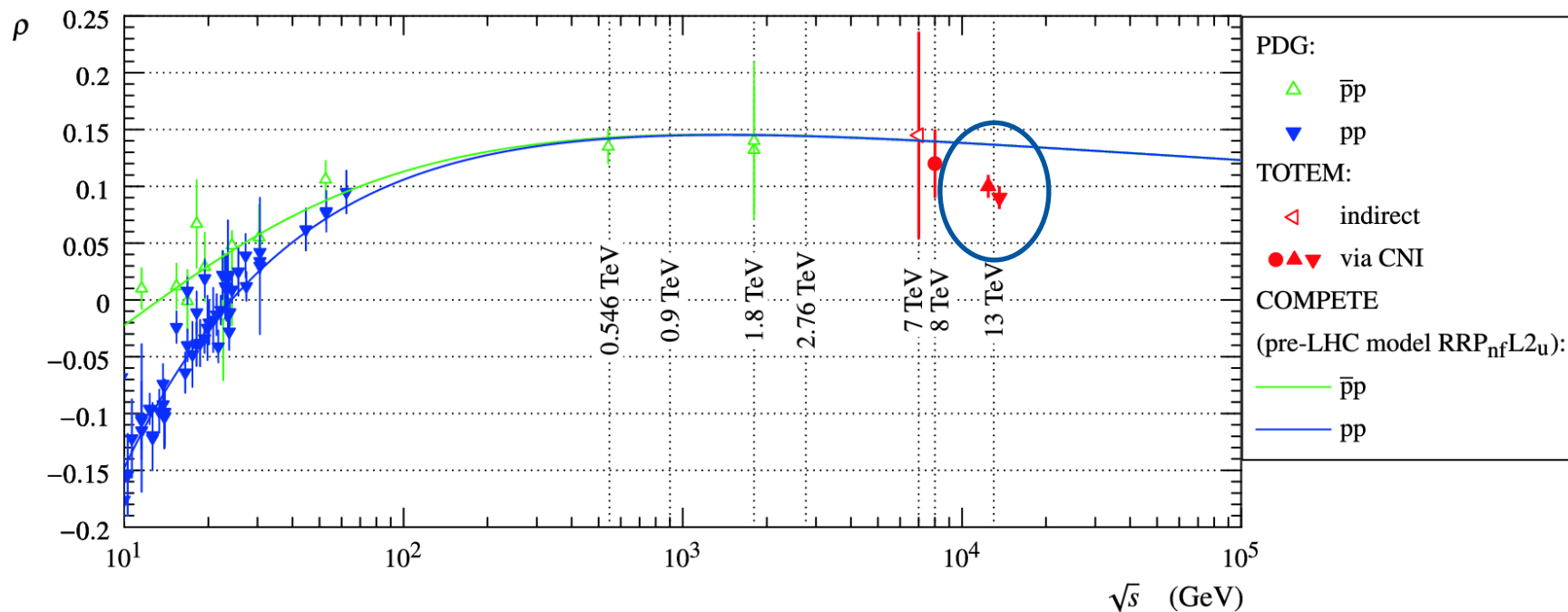




Published on 23.09.2019

First determination of the ρ parameter at $\sqrt{s} = 13$ TeV: probing the existence of a colourless C-odd three-gluon compound state

TOTEM Collaboration





Published on 19.10.2019

Elastic differential cross-section measurement at $\sqrt{s} = 13$ TeV by TOTEM

The European Physical Journal

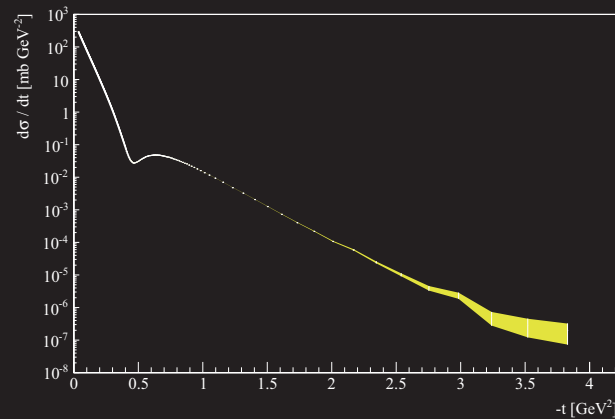
volume 79 · number 10 · october · 2019

EPJ C



Recognized by European Physical Society

Particles and Fields





Elastic differential cross-section $d\sigma/dt$ at $\sqrt{s} = 2.76$ TeV and implications on the existence of a colourless 3-gluon bound state

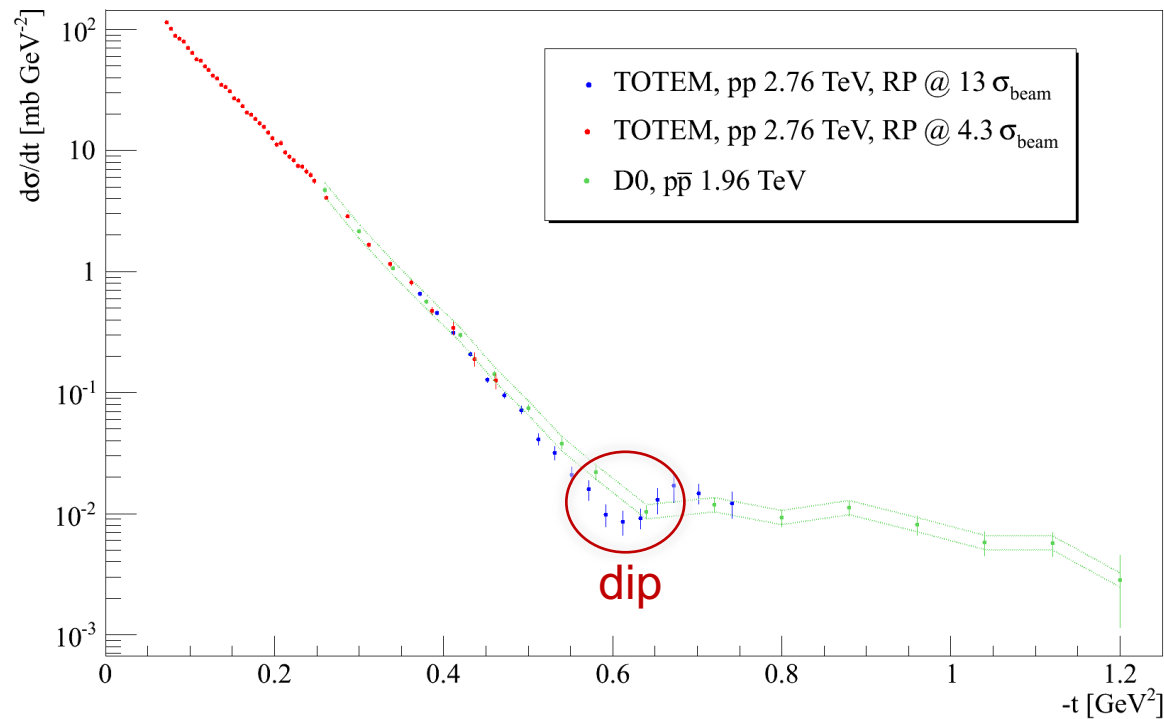


TOTEM 2018-002
December 13, 2018

The TOTEM Collaboration

CERN-EP-2018-341
18 December 2018

Preprint submitted to EPJC: refereeing stage with the journal

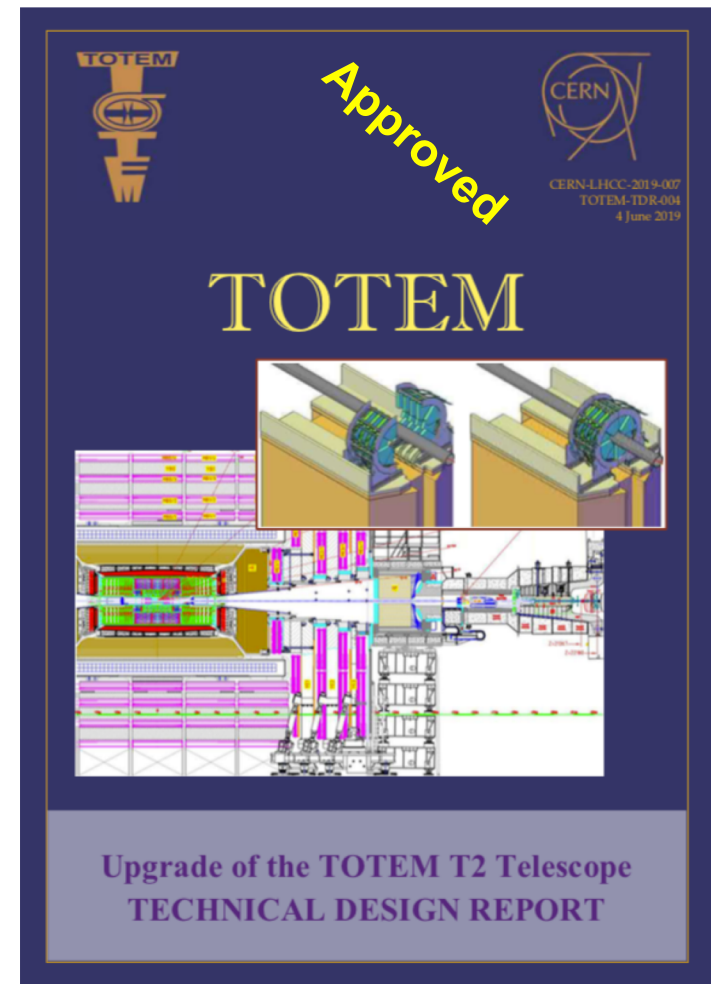


Status about new T2 Telescope and tunnel services



New T2 Forward Telescopes

- ❖ TDR submitted to LHCC on June;
- ❖ Questions from referees and answers have been included inside the TDR by September LHCC;
- ❖ Endorsed by LHCC in September;
- ❖ Approved by Research Board in September;
- ❖ Details discussed at 138th LHCC open session (June/2019).



New T2 Forward Telescopes Activities

❖ Mechanical Design:

- ✓ A mock-up has been done to test integration, assembly and disassembly in CMS along with fiber and services paths.



❖ Scintillators and WLS:

- ✓ Different light collection configurations are under test using cosmic rays. Test beams are planned for 2020;
- ✓ Black box testing facility for scintillator slabs, fibers and light collectors at bdg. 226.

New T2 Forward Telescopes Activities

❖ Readout and DAQ (frontend/backend):

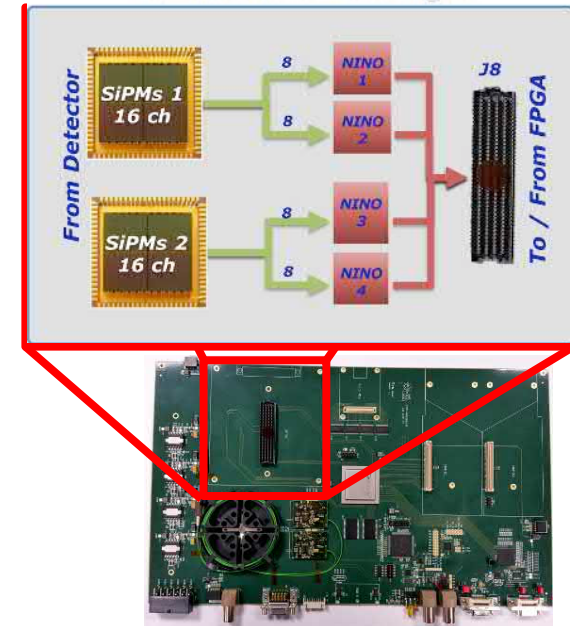
- ✓ The new T2 will be **readout by SiPMs** collecting the signals from the scintillator paddles;
- ✓ Different models on Multianode SiPM, MPPC (multi pixel photon counter), are being tested. Possible candidate for final production is the S13361 series;

During run 2, a “*Digitizer board*” has been used to readout data from TOTEM/PPS timing detectors:

- Advantage to be **transparent under CMS DAQ environment** (slow control, configuration and readout);
- *Software* and *firmware* are very compatible with the new configuration;
- New mezzanine card including the SiPM readout (design ongoing).

New T2 is on schedule. Detectors will be prepared before run 3.

Mezzanine Board – block diagram



Summary of LS2 Activities (since June 2019)

- ❖ Roman Pot (RP) infrastructure ready: RP210 <near> horizontal RP (high-lumi qualified) relocated to RP220 <near> horizontal RP position to double the number of timing diamond stations. **Done 20.9.2019**;
- ❖ CMS has requested **3mm-beamline downshift**: implied breaking RP vacuum, mechanical movement of all RP units and safety checks (**done 27.9.2019**);
- ❖ **Laser metrology** of the RP spectrometer area is **planned to be done** in the **beginning of the next year by EN-SMM** group;
- ❖ **RP movement system commissioning** **ongoing** (*software and firmware*): upgrade of the PXI low-level motor control system (more robust components);



Conclusions

- ❖ Since June, TOTEM collaboration has published 2 new papers and 1 paper is in refereeing stage;
- ❖ New T2 forward telescope has been approved:
 - ✓ many parallel activities ongoing (and on schedule): mechanics, electronics and detectors.
- ❖ RP beamline levelling done, will be followed by laser metrology in January 2020.



