

The TOTEM nT2 detector: architecture, operation and performance

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The TOTEM experiment at the LHC has produced a large set of measurements on diffractive processes and pp cross sections. A new detector, called nT2, has been designed to measure the inelastic scattering rate during the LHC special run of 2023. Due to the high radiation environment and the special run schedule, the detector had to be installed in 10-20 minutes at most, then commissioned and operated after only few days. The detector, based on plastic scintillators read out by matrices of SiPMs, was designed with such constraints in mind. The front-end, DAQ and control electronics was developed with a fault tolerant architecture, moving as many functionalities as possible on a radiation tolerant SoC FPGA, hosting an integrated ARM controller. In this talk we will describe, for the first time, the nT2 detector and its read out and control electronics. The detector was successfully operated during the special run: we will here present the preliminary results on the detector performance.

Alternate track

1. Detectors for Future Facilities, R&D, Novel Techniques

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