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[A01] CMS Inner Tracker Status and Performance

Monday 24 October 2022 08:45 (30 minutes)

The CMS pixel tracker provided high-quality physics data during the LHC Run 2, finishing with a detector live fraction of 95% and hit efficiency of >99% in all but the innermost layer. However, issues encountered during Run 2 - in particular DCDC converter failures during power cycles to reset stuck TBMs - necessitated a thorough refurbishment of the detector during LS2. The innermost layer of the barrel section was replaced, incorporating new versions of the PROC600 readout chip, TBM, and HDI. New FEAST 2.3 DCDC converters were installed in the full detector, and damaged modules were replaced where accessible. The refurbished pixel detector was reinstalled in CMS in June 2021. A thorough period of commissioning followed, including the acquisition of 3.5M cosmics tracks for alignment. Currently, the detector is taking the first 13.6 TeV data of Run 3. This talk will summarize the refurbishment and commissioning of the pixel detector, as well as preliminary performance results from Run 3 operation.

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