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CMS Silicon Strip Tracker Performance

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The CMS Silicon Strip Tracker (SST), comprising 9.6 million readout channels from 15 148 modules covering an area of 198m², needs to be precisely calibrated in order to correctly interpret and reconstruct the events recorded from the detector, ensuring that the SST performance fully meets the physics research program of the CMS experiment. Calibration constants may be derived within several workflows, from promptly reconstructed events with particles as well as from commissioning events gathered just before the acquisition of physics runs. The performance of the SST have been carefully studied since the start of data taking: the noise of the detector, together with its correlations with the strip length and the temperature, the data integrity, the S/N ratio, the hit reconstruction efficiency, the correlation with the trigger patterns have been all investigated with time and for different conditions, at the full detector granularity. In this paper we describe the reconstruction strategies, the calibration procedures and the detector performance results from the latest CMS operation.

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