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Tracking and vertexing in CMS experiment

Track and vertex reconstruction in the CMS detector use the information from the silicon pixel and the silicon strip detectors. The track and vertex finding and fitting algorithms are based on the Kalman filter approach. Difficulties arise in the context of standard LHC events with a high density of charged particles, where the rate of fake combinatorial tracks is very large for low p_T tracks, and nuclear interactions in the tracker material reduce the tracking efficiency for charged hadrons. The performance of track and vertex reconstruction derived with 2016 and 2017 data collected by CMS are presented. Recent improvements with the CMS tracking detectors are described with emphasis of the impact of the new pixel detector, able to sustain larger instantaneous luminosities. Prospects for the tracker upgrade for Phase II high luminosity scenario of the LHC are also described.

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