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## Performance of Track Reconstruction at the CMS High-Level Trigger in 2022 data

The CMS inner tracking system, responsible for measuring the trajectories of charged particles, consists of a silicon pixel detector and a silicon strip detector. The CMS two-tier trigger system, used to select events of interest, consists of a hardware-based Level-1 trigger and a software-based High-Level Trigger (HLT). The HLT runs a version of the full event reconstruction, streamlined for fast processing, on a computer farm. Tracks can be reconstructed in the HLT using hits from both the pixel and strip detectors.

The CMS detector has undergone extensive improvements in preparation for Run 3 of the LHC, to operate efficiently at the increased luminosity and pileup. This includes the installation of a completely new inner layer in the pixel detector, as well as the development of HLT software to make use of heterogeneous computing architectures. In Run 3, track reconstruction in the HLT is based on a single iteration, seeded by pixel tracks reconstructed by the Patatrack algorithm which can be offloaded to GPUs.

This poster presents the HLT track reconstruction performance in terms of the efficiency and fake rate with respect to offline track reconstruction, as well as the parameters of tracks reconstructed in the HLT. The performance is measured in data recorded at a center-of-mass energy of  $\sqrt{s} = 13.6$  TeV in 2022, in particular during periods with significant detector condition changes, expected to have an impact on HLT track reconstruction.

### Collaboration / Activity

CMS Collaboration

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