CHEP 07

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Track Reconstruction with the CMS Tracking Detector

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content :

With nominal collision energies of 14 TeV at luminosities of 10^34 cm^-2 s^-1, the LHC will explore energies an order of magnitude higher than colliders before. This poses big challenges for the tracking system and the tracking software to reconstruct tracks in the primary collision and the ~20 underlying events.

CMS has built a full silicon tracking system consisting of an inner pixel detector and an outer strip detector with over 200 m^2 of active area and over 70 million readout channels. The tracking software for the CMS tracking system has to master the dense environment in LHC collisions and also take into account multiple scattering. On average, a track has to transverse 13 layers of the silicon tracker.

An overview of the tracking system and the tracking software will be given. Both general and specialized tracking algorithms covering for example electron reconstruction will be discussed.

To prepare for the start of data taking expected at the end of 2007, CMS is conducting extensive cosmics tests with the tracking detector outside of the collision hall. An overview of the preliminary results of cosmic muon reconstruction with the CMS tracker using some of the previously described algorithms will be given.

experiment :

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