

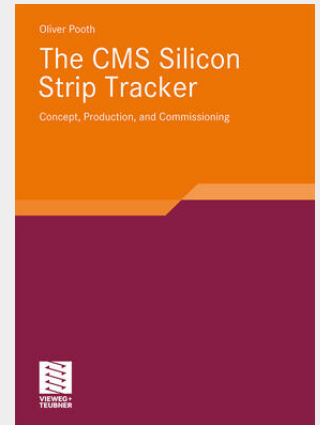
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The CMS Silicon Strip Tracker

Concept, Production and Commissioning

When the experiments at the Large Hadron Collider (LHC) at CERN begin data taking the biggest high energy physics experiments ever will be underway. One of these experiments is the Compact Muon Solenoid (CMS) with more than 3,000 collaborators working at the energy frontier of particle physics. The silicon strip tracker of the CMS experiment is the largest silicon based tracking detector system worldwide. A sensitive silicon surface of about 200 m² is realised on more than 15,000 individual detector modules. The silicon strip tracker is one of the central subdetector components inside the CMS experiment at the LHC. The CMS experiment is conceived to study proton-proton collisions at a centre-of-mass energy of 14 TeV at luminosities up to 10 cm⁻² s⁻¹. To deliver best possible particle track identification in the very harsh radiation environment - inside the CMS detector a tracking device with high granularity, high readout speed and radiation hardness is needed. The construction of the CMS silicon tracker required production methods and quality control mechanisms that are new to the field of particle physics: An easy to use detector module test system that was used by the entire CMS community and partners in industry, and specialised tests for larger subdetector structures where detector modules were tested together with internal optical readout components in cold environment.

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