

SciFi - A large Scintillating Fibre Tracker for LHCb

The LHCb detector is currently being upgraded to cope with higher instantaneous luminosities and to read out data at 40 MHz using a trigger-less read-out system. The new main tracker consists of 250 μ m thick scintillating fibres (SciFi) and covers an area of 340 m². The tracker provides a spatial resolution for charged particles better than 80 μ m. The scintillation light is recorded with arrays of multi-channel silicon photomultipliers (SiPMs). A custom ASIC is used to digitize the SiPM signals and subsequent digital electronics performs clustering and data-compression. Single detector modules are mounted on so-called C-frames (3m \times 6m) which will provide the mechanical support and the necessary services. The serial assembly of the 12 large frames, each comprising 50,000 SiPM channels, has started and the first detector elements are being commissioned. This presentation will cover the development, construction and the commissioning results of the detector.

Funding information

Primary authors: LHCb SCIFI COLLABORATION; UWER, Ulrich (Ruprecht Karls Universitaet Heidelberg (DE))

Session Classification: Plenary

Track Classification: Experiments: Trackers