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Upstream Tracker: the new silicon microstrip detector for the LHCb Upgrade

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The LHCb experiments is in the commissioning phase of an ambitious upgrade project that will allow improved sensitivity to interesting beauty and charm decays with a combination of higher luminosity and the deployment of a purely software trigger. A key element of the trigger is a fast-tracking algorithm based on the vertex detector, and a tracking system located in front of the LHCb magnet, the Upstream Tracker (UT). This Silicon microstrip detector features finer granularity, larger coverage and a smaller material budget compared to the Tracker Turicensis it replaces. It comprises four layers of silicon sensors, mounted on both sides of carbon fiber structures (staves) that provide mechanical support and embedded CO2 cooling. The charge signals from the sensors are processed by novel front end ASICs that features fast signal processing, digitization, common mode subtraction and zero suppression to meet the requirement of real time data processing . The qualification of the detector and associated electronics is aiming at achieving the desired speed and efficiency in the trigger algorithm . We will discuss the design of the detector as well as its current installation and commissioning status.

In-person participation

Yes

Primary authors: NEUBERT, Sebastian (Bonn University); BRAUN, Svende (University of Maryland)

Presenter: BRAUN, Svende (University of Maryland)

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