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Status & Challenges of Tracker Design for FCC-hh

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A 100TeV proton collider is a central aspect of the Future Circular Collider (FCC) study. An integral part of such a study is the conceptual design of individual detector systems that can exploit the luminosities reaching values up-to $30 \times 10^{34}\mathrm{cm}^{-2}\mathrm{s}^{-1}$. One of the key limitations in detector design arises from an increased number of pile-up events O(1000), which makes the tracking and identification of vertices extremely challenging. This talk will review the general ideas, which drive the current tracker/vertex detector design for the FCC-hh, like material budget, granularity in R-Φ & Z, pattern recognition & tagging capabilities, uniformity of magnetic field across large detection region, occupancy and data rates. We will also discuss the limits of current tracker/vertex detector technologies and requirements on their progress to meet the challenging conditions of FCC-hh environment.

Author: DRASAL, Zbynek (CERN)

Presenter: DRASAL, Zbynek (CERN)

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