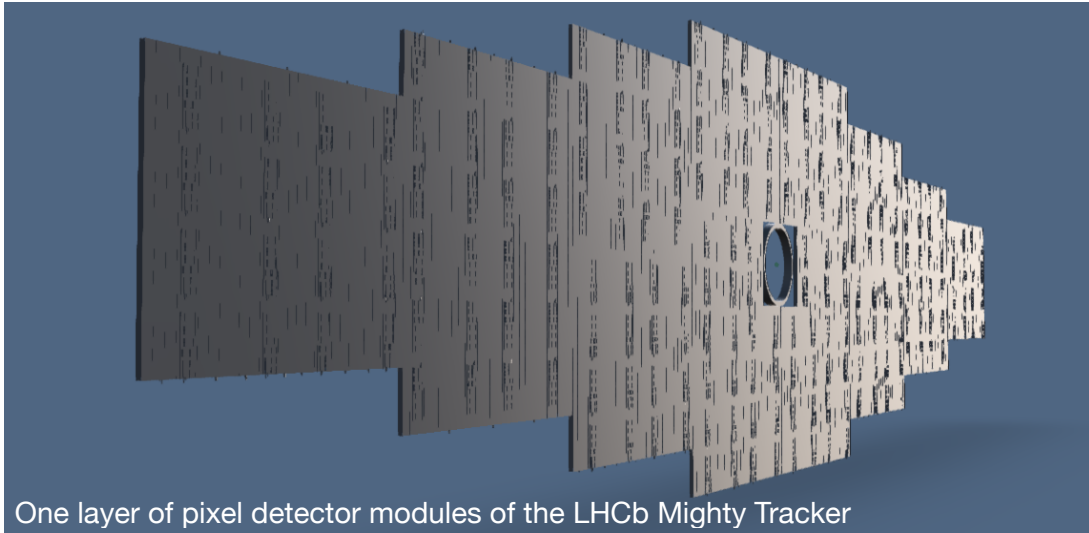


Bachelor/Master thesis projects:

The LHCb Mighty Tracker

Working towards the LHCb experiment's next-generation tracking detector
Group Prof. Dr. Marco Gersabeck



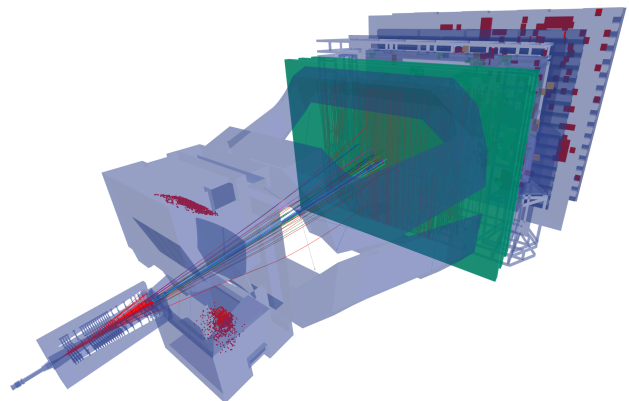
One layer of pixel detector modules of the LHCb Mighty Tracker

The LHCb experiment is the dedicated flavour physics experiment at the Large Hadron Collider (LHC). The experiment has just undergone a first major upgrade that introduced for the first time a full detector readout at the collision frequency of 40 MHz and real-time processing of the data. A second major upgrade is planned for installation around 2033. This will include the Mighty Tracker, a tracking detector system located after the experiment's dipole magnet and comprising several layers of scintillating fibres (green layers in the event display below) and of silicon pixel sensors, which instrument the area immediately surrounding the beam pipe (shown above).

The group will play a major role in the development and construction of the Mighty Tracker. Specifically, we will develop a hardware alignment system to monitor the position of the silicon pixel detector modules, which are housed inside an insulated cold box. Possible projects include the determination of the requirements and simulation of the performance of the system as well as the development and tests of prototype setups.

A second focus area will be the development of the mechanical support structure for the individual modules. Projects here include the development of a test stand and test of the mechanical stability of support structures as well as their behaviour under temperature variation.

The projects will be carried out with the support of the group's detector development team and will be embedded in the international Mighty Tracker project.



Interested?

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