



Contribution ID: 26

Type: not specified

Lessons learned LHCb VELO Upgrade module construction

Thursday 9 June 2022 12:00 (20 minutes)

This spring, the LHCb collaboration installed a new vertex detector, the so-called upgraded Vertex Locator (VELO). The Velo consists of 52 modules with hybrid silicon pixel detectors. The sensors are kept cold using bi-phase CO₂ as a cooling medium. The CO₂ flows through micro-channels embedded in a silicon substrate on which pixel sensors and the hybrids are glued. The first active detector elements are located within 5 mm from the interaction point inside a secondary vacuum. Cooling temperature, vacuum level, radiation hardness and radiation length define strict requirements for the design and materials used. The choice of the adhesives is therefore of utmost importance. They must be thermally conductive and retain tackiness after several thermal cycles.

In this presentation the module design and construction will be described. The glue selection and jig design with emphasis on geometrical precision and handling will be discussed in detail.

Authors: CARVALHO AKIBA, Kazuyoshi (Nikhef); DE ROO, Krista (Nikhef National institute for subatomic physics (NL)); COLLINS, Paula (CERN); DE CAPUA, Stefano (University of Manchester (GB)); HULSBERGEN, Wouter (Nikhef National institute for subatomic physics (NL))

Presenter: DE ROO, Krista (Nikhef National institute for subatomic physics (NL))