Contribution ID: **550** Type: **Parallel session talk**

Upgrade of the Belle II Vertex Detector with monolithic active pixel sensors

Thursday 18 July 2024 15:57 (15 minutes)

The Belle II experiment considers upgrading its vertex detector with new pixel sensors to prepare for the target luminosity of 6 10ˆ35 cm-2 s-1. The 5 layers of the new VTX detector are equipped with the same depleted monolithic active CMOS pixel sensor, featuring a 33 µm pitch, a 100 ns integration time and a trigger logic matching 30 kHz average rate and 10 µs trigger latency for a maximum hit rate of 120 MHz/cm2.
The two innermost layers are based on an all-silicon ladder concept with air cooling, aiming for a material budget below 0.2 % X0/layer. The three outer layers follow a more traditional approach still targeting aggressive material budget, from 0.3 % to 0.8 % X0 depending on the radius.
The VTX could be the first MAPS-based vertex detector running at an e+e- collider, facing high rate and featuring low mass. This contribution will overview the VTX concepts, detail critical aspects, and discuss the various tests on-going with prototypes to validate the technical choices.

Alternate track

1. Detectors for Future Facilities, R&D, Novel Techniques

I read the instructions above

Yes

Author: KUMAR, Ajit (IPHC Strasbourg)

Presenter: KUMAR, Ajit (IPHC Strasbourg)

Session Classification: Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors

Track Classification: 12. Operation, Performance and Upgrade (incl. HL-LHC) of Present Detectors