

## The Belle II pixel detector: high precision with low material

*Monday 3 September 2012 14:20 (20 minutes)*

An upgrade of the existing Japanese Flavour Factory (KEKB in Tsukuba, Japan) is under construction, and is foreseen for commissioning by the end of 2014. This new  $e^+e^-$  machine ("SuperKEKB") will deliver an instantaneous luminosity of  $8 \cdot 10^{35} \text{ cm}^{-2}\text{s}^{-1}$ , which is 40 times higher than the world record set by KEBK.

In order to be able to fully exploit the increased number of events and provide high precision measurements of the decay vertex of the B meson systems in such a harsh environment, the Belle detector will be upgraded ("Belle II") and a new silicon vertex detector, based on the DEPFET technology, will be designed and constructed. The new pixel detector, close to the interaction point, will consist of two layers of DEPFET active pixel sensors. This technology combines the detection together with the in-pixel amplification by the integration, on every pixel, of a field effect transistor into a fully depleted silicon bulk. In Belle II, DEPFET sensors thinned down to  $75 \mu\text{m}$  with low power consumption and low intrinsic noise will be used.

In the talk, a general overview of the pixel detector will be presented, from the sensor description to the data transmission chain, all the way up the ASICs and the cooling concept.

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**Session Classification:** Session2

**Track Classification:** Particle physics applications - High Energy Physics