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The Belle II Pixel Detector - Status and Performance

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The Japanese Super flavor factory, SuperKEKB, is in its final commissioning phase and will start operating in 2019. This new e^+/e^- - machine will deliver an instantaneous luminosity of $8\times10^{35}\mathrm{cm}^{-2}\mathrm{s}^{-1}$, 40 times higher than the current world record. A new detector, Belle II, is needed to exploit the high event rate and provide high precision measurements of the B meson system while coping with increased backgrounds. It features a silicon pixel detector consisting of two layers of DEPFET active pixel sensors close to the interaction point for vertexing.
The DEPFET technology combines detection together with in-pixel amplification by integrating a field effect transistor into a fully depleted bulk for every pixel. This combines low power consumption in the active pixel area with low intrinsic noise, allowing Belle II pixel modules to be thinned to 75 µm without the need of additional cooling structures.
To commission the accelerator and ensure a safe radiation environment for the final vertex detector, a pre-experiment called BEAST was performed this year which featured a slice of the Belle II pixel detector mounted at its final position. In this talk the performance of Belle II pixel modules during this commissioning phase will be presented and the current status of the final detector integration in Belle II will be discussed.

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