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Characterization and performance of large thin DEPFET detectors

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The DEPFET collaboration is building a highly granular, ultra-transparent active pixel detector for high-performance vertex reconstruction at the Belle II experiment in the new super flavour factory in Japan. A complete detector system is being produced, including solutions for ultra-thin sensors and their mechanical support and cooling, front-end electronics, services and a DAQ system for handling the huge amount of data coming from the pixel detector placed close to the interaction point.

The first production grade sensors have been equipped with the latest generation of read-out and steering ASICs. The modules were extensively tested in the lab and two modules, one for each layer of the Belle II pixel detector have been illuminated with an electron beam at DESY. Together with four double-sided strip detector layers, the system under test was effectively a complete sector of the final vertex detector of Belle II. This presentation will present the pre-characterization in the lab and the test beam results obtained during the latest test beam campaign.

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