

## Upgrade of the Belle II vertex detector with CMOS pixel technology

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The Belle II experiment currently records data at the SuperKEKB e+e- collider, which holds the world luminosity record of  $5.1 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$  and plans to push up to  $6 \times 10^{35} \text{ cm}^{-2} \text{ s}^{-1}$ . In such luminosity range for e+e- collisions, the inner detection layers should both cope with a hit rate dominated by beam-induced parasitic particles and provide tracking precision. A R&D program has been established to develop a new pixelated vertex detector (VTX), based on the most recent CMOS pixel detection technologies. The VTX design matches the current vertex detector radial acceptance, from 14 mm up to 140 mm. It includes 5 layers for an overall material budget lower than 3 % of  $X_0$ . All layers are equipped with the same depleted monolithic active pixel sensors, OBELIX, adapted from the TJ-Monopix2 sensor originally developed for the ATLAS experiment. This contribution will review the latest results on chip design and characterization and on the detection modules early prototyping.

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