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[A06] The Vertex Locator at LHCb Upgrade I

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LHCb is a forward spectrometer at LHC (CERN), aimed to study CP-violation in b-quark physics, but proven during the 2011-2018 data taking years to be a general purpose spectrometer with many exciting measurements. The Vertex Locator (VELO) is a silicon pixel tracking detector in the heart of the LHCb spectrometer. As a higher instantaneous luminosity of $2 \cdot 10^{33} \text{ s}^{-1} \text{ cm}^{-2}$ is expected during Run 3 (2022 - 2025), the tracking detectors, including the VELO detector, were upgraded, and the hardware trigger was dropped. The upgraded VELO is a brand-new detector that replaces the silicon-strip technology with new 55 micrometers pitch pixels, operating as close as a 5 mm radius from the LHC beams. The VELO new readout ASIC, called VeloPix, is capable of operating at the 40 MHz collision rate, reaching 900 MHits/s. The detector is built with a modular design, composed of 52 modules divided into two-detector halves. The production of the required modules was completed in 2021, leading to the detector assembly phase. Both detector halves were successfully installed in May 2022. In this presentation, the final steps of construction and installation will be shown. The detector is now under commissioning with beam and preliminary results will also be presented.

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