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LHCb VELO Upgrade

During Long Shutdown 2 (LS2) of the LHC, LHCb will undergo a series of upgrades to all of its sub detectors. LHCb aims to run at luminosity 5 times greater than the current luminosity, requiring upgrades to the readout to all of the sub detectors and redesign of all front end electronics. The increased rate means many of the detector components will be exposed to much harsher running conditions therefore the new detector components must be radiation hard. This is most critical for the Vertex Locator (VELO) due to its proximity to the beam. The upgraded VELO will consist of lightweight pixel hybrid pixel sensors. Silicon sensors will be bump bonded to a custom developed Velopix front end ASICs. Currently silicon sensors of different characteristics are being extensively tested in both a lab and test beam environment to determine which will be used for the VELO.

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