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Technology developments for LHCb Upgrade II

A major LHCb detector upgrade will be installed during Long Shutdown 4 (LS4) of the CERN Large Hadron Collider. The experiment will operate at a maximum luminosity of $1.5 \times 10^{34} \text{ cm}^{-2} \text{ sec}^{-1}$, with acceptance covering a pseudorapidity range close to the beamline. The detector will therefore experience extremely high particle fluences. In order to carry out the LHCb physics programme, technologies are being developed that can withstand the high rates and associated radiation damage while also providing excellent resolution in both space and time. The amount of data to be processed in the online computing and trigger system is also unprecedented. In this document, the technology developments that are necessary to realise this programme are summarised.

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