

The LHCb Upgrade II

Thursday 18 July 2024 09:06 (18 minutes)

The Upgrade II of the LHCb experiment is proposed for the long shutdown 4 of the LHC. The upgraded detector will operate at a maximum luminosity of $1.5 \times 10^{34} \text{ cm}^{-2} \text{ s}^{-1}$, with the aim of reaching a total integrated luminosity of $\sim 300 \text{ fb}^{-1}$ over the lifetime of the HL-LHC. The collected data will probe a wide range of physics observables with unprecedented accuracy, with unique sensitivities for the measurement of CKM phases, charm CP violation, and rare heavy-quark decays.

To achieve this, the current detector performance must be maintained at the expected maximum pile-up of ~ 40 , and even improved in certain specific areas. It is planned to replace all existing spectrometer components to increase the granularity, reduce the amount of material in the detector and exploit the use of new technologies, including precision timing on the order of tens of picoseconds.

The presentation will review the key points of the physics programme and the main options of the detector design.

Alternate track

I read the instructions above

Yes

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