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Flavour Physics at the High Luminosity LHC: LHCb Upgrade II

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The LHCb Collaboration is planning an Upgrade II, a flavour physics experiment for the high luminosity era. This will be installed in LS4 (2030) and targets an instantaneous luminosity of 1.5 x10ˆ34 cm-2 s-1, and an integrated luminosity of at least 300fb-1. Consolidation of the current experiment will also be introduced in LS3 (2025). Physics goals include probing new physics scenarios in lepton flavour universality, obtaining unprecedented precision on CKM tests, and expanding the LHCb programme into new measurement areas such as Higgs decays to charm. The detector design options include the introduction of timing information with tens of ps resolution across multiple subdetectors. Opportunities for novel detector development are available across 4D vertexing, MAPS and scintillating fibre tracking, 5D electromagnetic calorimetery, hadron particle identification, DAQ and triggering. Preliminary studies for the LHC suggest that the luminosity goals will be achievable. Following the issue of a physics case and accelerator note in 2018, the collaboration was approved by the LHCC to proceed to the preparation of a TDR and R&D programmes are underway across all subdetectors.

I read the instructions

Secondary track (number)

12

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