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Computing and software for LHCb Upgrade II

A second major upgrade of the LHCb experiment is necessary to allow full exploitation of the High Luminosity LHC for flavour physics. The new experiment will operate in Run 5 of the LHC at a maximum luminosity of $1.5 \times 10^{34} cm^{-2} s^{-1}$. The experiment will therefore experience extremely high particle fluences and data rates, posing a high challenge not only for the detector but also for the software and computing resources needed to readout, reconstruct, select and analyse the data. This document presents these challenges and the ongoing and future R&D programme necessary to address them. This programme will benefit not only the LHCb Upgrade II experiment, but the whole particle physics community as similar challenges will be faced by the next generation of experiments.

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