Real time analysis with the upgraded LHCb trigger in Run III

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LHCb upgrade induces a number of critical changes in the detector construction and trigger infrastructure

Need to remove hardware trigger (L0), i.e., move from the full detector readout done @1 MHz to 40 MHz one

The upgraded LHCb must cope with up to five times higher inst. luminosity relative to Run II ($\mathcal{L} = 2 \cdot 10^{33} \text{ cm}^{-2}\text{s}^{-1}$)

Triggerless readout with the full software trigger that requires real-time calibration and alignment

Offline-like reconstruction run in real time

Use Run II trigger system as a testbed for new techniques for Run III

Huge Challenge!