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The LHCb tracks reconstruction in Run 2: strategy and performance

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In order to accomplish its wide program of physics measurements, the LHCb collaboration has developed in the past years a complex of algorithms for the reconstruction of the trajectories of charged particles, taking into account the heterogeneous structure of the LHCb tracking system. Several data-driven approaches have been conceived to provide a precise evaluation of the tracking efficiency, a crucial ingredient of many physics analysis. These are mostly based on clean samples of muons, but the recent hints of lepton universality violation required the development of robust data-driven techniques specifically dedicated to electrons, in order to reduce the systematic uncertainties. In addition, special data streams with prompt access have been put in place to collect the calibration samples for both muons and electrons. While the end of the Run 2 data taking period is approaching, we provide an overview of the whole reconstruction strategy and of its performances, which have a direct impact on the quality of the current LHCb results and provide the basis for the upgrade era.

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