

Downstream and T-Track reconstruction at the first level of LHCb trigger

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SM and many new physics scenarios predict existing of Long-living particles (LLPs). However, their reconstruction is very challenging at LHC due to significantly displaced vertices. Because of the recently renovated LHCb detector and usage of GPU-based first level of the trigger, it became possible to develop two algorithms for fast track reconstruction without the usage of the hits from the first tracker (VERTex LOcator): downstream (for tracks with hits in two trackers, UT and SciFi) and faraway (for tracks with hits only in SciFi) reconstruction. Both algorithms actively use Neural networks (NN) for selection purposes. Besides serving to calibrate and align the detectors with Ks and L0 particles, the Downstream algorithm will largely increase the LHCb physics potential during Run3.

Summary

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