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Downstream tracking at LHCb

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In this talk the new "Downstream" algorithm developed at LHCb is reviewed, at both HLT1 and HLT2 trigger levels. At HLT1, the algorithm is able to reconstruct and select very displaced vertices in real time, making use of the Upstream Tracker (UT) and the Scintillator Fiber detector (SciFi) of LHCb, and being executed on GPUs inside the Allen framework. In addition to an optimized strategy, it utilizes a Neural Network (NN) implementation to increase the track efficiency and reduce the ghost rates, with very high throughput and limited time budget. The Downstream algorithm and the associated two-track vertexing will largely increase the LHCb physics potential for detecting long-lived particles during the Run3.

Authors: DE OYANGUREN CAMPOS, Arantza (Univ. of Valencia and CSIC (ES)); JASHAL, Brij Kishor (TIFR, RAL, IFIC); ZHUO, Jiahui (Univ. of Valencia and CSIC (ES)); KHOLOIMOV, Valerii (Instituto de Física Corpuscular (Univ. of Valencia)); SVINTOZELSKYI, Volodymyr (Univ. of Valencia and CSIC (ES))

Presenter: ZHUO, Jiahui (Univ. of Valencia and CSIC (ES))

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