Contribution ID: **187** Type: **Parallel**

BuSca: New Strategies for LLP Searches at 30 MHz at LHCb

The new fully software-based trigger of the LHCb experiment operates at a 30 MHz data rate, opening a search window into previously unexplored regions of physics phase space. The BuSca (Buffer Scanner) project at LHCb acquires and analyzes data in real time, extending sensitivity to new lifetimes and mass ranges thanks to the recently deployed Downstream tracking algorithm. BuSca identifies hotspots indicative of potential new particle candidates in a model-independent manner, providing strategic guidance for developing new trigger lines. To control background, regions with minimal detector material interactions are selected, and pairs of same-sign tracks are used to suppress combinatorial background. This talk presents the results from the analysis of the first data.

Secondary track

T12 - Data Handling and Computing

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Session Classification: T09

Track Classification: T09 - Beyond the Standard Model