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BuSca: a Buffer Scanner at 30 MHz data rate for New Long-Lived Particle Searches at LHCb

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BuSca is a prototype algorithm at LHCb designed for real-time BSM particle searches, and focused on downstream reconstructed tracks, detected exclusively by the UT and SciFi detectors. By projecting physics candidates onto 2D histograms of flight distance and mass hypotheses at 30 MHz rate, BuSca identifies hot spots indicative of potential candidates of new particles, thereby providing strategic guidance for the development of new trigger lines. Additionally, BuSca offers an Armenteros-Podolanski representation, providing insights into the mass hypotheses of the decay products associated with the new particle. The performance of BuSca, including the outcomes of its initial prototype on simulated data, will be presented in this talk.

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