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Data Scouting and Data Parking with the CMS High level Trigger

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The CMS experiments has devised two new strategies at the High Level trigger, to search for new physics in difficult corners of the phase space, or in large samples with B hadrons. The first strategy, called Data Scouting and already introduced in Run 1, allows to take data that would otherwise be rejected by the normal trigger filters. It is based on event-size reduction rather than event filtering and it is useful for instance to search for low mass resonances. The second strategy, called Data Parking, aims at overcoming the main limitation in the CMS data taking, which is the computing power involved in the prompt reconstruction. In 2018, a large amount of additional data, more than 1×10^{10} events containing a pair of B hadrons, was collected by CMS and parked for a delayed offline reconstruction during the Long Shutdown 2. This dataset was triggered requiring a soft displaced muon originating from the decay of a B hadron, without applying any selection on the other B hadron, allowing an unbiased sample for competitive measurements on rare B-meson decays. The challenges of both methods are reviewed in this talk.

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