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CMS Level-1 trigger Data Scouting for online trigger-less data processing

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The Level-1 trigger Data Scouting (L1DS) is a novel data acquisition system under development for the Phase-2 CMS detector at the High-Luminosity LHC (HL-LHC). Its purpose is to capture and process L1 trigger information at the bunch crossing frequency of the LHC preceding the L1 accept. It has the potential for filterless detector diagnostics, luminosity studies and investigations into signatures and processes that would be otherwise inaccessible or constrained by the standard triggers. At LHC Run-3, a 40MHz Scouting demonstrator is being tested as proof of concept and deep learning algorithms on FPGAs are being implemented to perform close-to real-time analysis. The current status of the L1DS demonstrator will be present, along with the first data-taking results and the developments of machine learning applications.

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Session Classification: Lightning talks - flash talks